

Supplemental Materials

OEHHA Synthetic Turf Study

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Public Review Draft

Prepared by
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Office of Environmental Health Hazard Assessment
California Environmental Protection Agency

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**S1. Supplemental Material for Appendix F.1. Assessing Human Time-Activity
Exposure Patterns Occurring on Synthetic Turf Fields – by The University of
California, Berkeley**

S1.1. Online Survey, In-Person Questionnaire, and Videotape Observation Forms



Synthetic Turf Exposure Assessment Study

In-Person Participant Questionnaire

P1.	Date of interview	<u> </u> / <u> </u> / <u> </u> MO DAY YR	
P2.	Time interview began	<u> </u> : <u> </u>	AM / PM
P3.	Study Interviewer	<u> </u>	<u> </u> <u> </u> [CODE]
P4.	HSN	<u> </u> <u> </u> <u> </u>	



Thank you for participating in this important study. I would like to ask you some questions today regarding your/your child's activities while playing soccer on synthetic turf fields. Synthetic turf fields do not have natural grass and soil, but often have black rubber pebbles called crumb rubber for cushioning. In this study, we want to learn more about how soccer players come in contact with the black "crumb rubber" used in some synthetic turfs so that we can better understand potential exposure to chemicals released from crumb rubber while playing soccer on synthetic turf fields.

If you do not understand any of the questions or need clarification, please tell me and I will explain. If you don't want to answer any of the questions that I ask you, please let me know and we will skip it and go to the next question.

A. GENERAL DEMOGRAPHIC AND SOCCER PLAYER INFORMATION

1. Are you a soccer player or a parent of a child soccer player?
Soccer player 14 or older(89)..... 1
Parent of child soccer player 2
2. What is your child's year of birth? _____
YEAR
3. What is your child's month of birth? _____
MONTH
4. Is your child male or female?
Male 1
Female 2
Prefer not to identify.....3
5. What ethnic group best describes your child?
Asian or Pacific Islander.....1
Black/African American.....2
Caucasian 3
Hispanic/Latino.....4
Native American.....5
Mixed.....6
Prefer not to identify.....7
Other 8
Specify _____



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6. How tall is your child? _____ FEET
_____ INCHES
7. How much does your child weigh? _____ POUNDS
8. What is your child's current grade in school?
- | | |
|------------------------|----|
| Pre-Kindergarten..... | 1 |
| Kindergarten..... | 2 |
| 1 st | 3 |
| 2 nd | 4 |
| 3 rd | 5 |
| 4 th | 6 |
| 5 th | 7 |
| 6 th | 8 |
| 7 th | 9 |
| 8 th | 10 |
| 9 th | 11 |
| 10 th | 12 |
| 11 th | 13 |
| 12 th | 14 |
| Other | 15 |
| Specify | |
9. What is your child's residential zip code? _____
10. Does your child primarily play recreational or competitive soccer?
- | | |
|---------------------------|---|
| Recreational | 1 |
| Competitive | 2 |
| Both | 3 |
| Don't know | 9 |
| Prefer not to answer..... | 8 |
11. What position does your child usually play? (**Check all that apply**)
- | | |
|---------------------------|--------------------------|
| Goalie | ☐ |
| Forward | ☐ |
| Midfielder..... | ☐ |
| Defender | ☐ |
| Don't Know..... | 9 |
| Prefer not to answer..... | 8 |

B. CONTACT TYPES AND SCENARIOS DURING SOCCER PRACTICE

*The following questions pertain specifically to your child's activities and behaviors during soccer **PRACTICE** days on synthetic turf fields.*

12. Approximately what percent of your child's soccer **PRACTICES** take place on synthetic turf fields?
- | | | |
|--------------|-----------|---|
| 0% | (27)..... | 1 |
| >0-25%..... | | 2 |
| >25-50%..... | | 3 |



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- >50-75% 4
>75% 5
Don't Know 9
Prefer not to answer 8
13. Approximately how long before a **PRACTICE** does your child eat or have a snack/meal?
< 1 Hour 1
>1-3 Hours 2
> 3 Hours 3
Don't Know 9
Prefer not to answer 8
14. Approximately how many hours in the **past week** has your child **PRACTICED** soccer on a synthetic turf field?
_____ HOURS
[CODE 99 IF DK/DR]
15. **Over the past year**, approximately how many days per week has your child typically spent **PRACTICING** soccer on synthetic turf fields in each season?
a. Spring _____ DAYS PER WEEK
[CODE 99 IF DK/DR]
b. Summer _____ DAYS PER WEEK
[CODE 99 IF DK/DR]
c. Fall _____ DAYS PER WEEK
[CODE 99 IF DK/DR]
d. Winter _____ DAYS PER WEEK
[CODE 99 IF DK/DR]
16. **Over the past year**, approximately how many hours per day has your child typically spent **PRACTICING** soccer on synthetic turf fields in each season?
a. Spring _____ HOURS PER DAY
[CODE 99 IF DK/DR]
b. Summer _____ HOURS PER DAY
[CODE 99 IF DK/DR]
c. Fall _____ HOURS PER DAY
[CODE 99 IF DK/DR]
d. Winter _____ HOURS PER DAY
[CODE 99 IF DK/DR]
17. **Over the past year**, what is the longest period of time that your child has spent **PRACTICING** soccer on a synthetic turf field in a single day?
<1 Hour 1
>1-2 Hours 2
>2-4 Hours 3
>4-5 Hours 4
> 5 Hours 5
Don't Know 9
Prefer not to answer 8

*Please indicate how often your child does the following activities on a soccer **PRACTICE** day on synthetic turf fields.*

18. On a soccer **PRACTICE** day on synthetic turf fields, how often does your child do the following activities?
a. Dive Never 0
..... ~1-3 times 1
..... ~4-10 times 2



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b. Slide/tackle

>10 times 3

Don't Know 9

Prefer not to answer 8

Never 0

~1-3 times 1

~4-10 times 2

>10 times 3

Don't Know 9

Prefer not to answer 8

c. Slip/fall on ground

Never 0

~1-3 times 1

~4-10 times 2

>10 times 3

Don't Know 9

Prefer not to answer 8

C. DERMAL AND INGESTION EXPOSURES DURING SOCCER PRACTICE

19. On a soccer **PRACTICE** day on synthetic turf fields, how often does your child eat or have a snack while at practice?

Never (21) 0

1 time 1

2 times 2

> 2 times 3

Don't Know 9

Prefer not to answer 8

20. While your child is **PRACTICING** soccer on a synthetic turf field, how often does your child wash or wipe their hands before eating?

Never 0

Rarely 1

Sometimes 2

Often 3

Always 4

Don't Know 9

Prefer not to answer 8

21. On a soccer **PRACTICE** day on synthetic turf fields, how many ounces of water/sports drink does your child

8 oz 1



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typically drink? A normal water bottle is approximately 16 ounces [SEE CARD].

16 oz 2
24 oz 3
32 oz 4
48 oz 5
64 oz 6
> 64 oz 7
Don't Know 9
Prefer not to answer 8

22. On a soccer **PRACTICE** day, approximately how much time does your child usually spend doing sit-ups, putting on equipment, stretching, etc., where more than their feet are in contact with the synthetic turf?

0 minutes 0
>0-15 minutes 1
>15-30 minutes 2
>30-60 minutes 3
>60 minutes 4
Don't Know 9
Prefer not to answer 8

23. On a soccer **PRACTICE** day, approximately how many minutes does your child usually spend walking barefoot on the synthetic turf?

0 minutes 0
>0-10 minutes 1
>10-30 minutes 2
>30 minutes 3
Don't Know 9
Prefer not to answer 8

24. While your child is **PRACTICING** soccer on a synthetic turf field, what percent of the time do they usually use a mouth guard?

0% 0
>0-25% 1
>25-50% 2
>50-75% 3
>75% 4
Don't Know 9
Prefer not to answer 8

25. While your child is **PRACTICING** soccer on a synthetic turf field, how often do they usually:



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- a. Get crumb rubber in their mouth?
- Never.....0
- Rarely.....1
- Sometimes.....2
- Often.....3
- Always.....4
- Don't Know.....9
- Prefer not to answer.....8
- b. Get crumb rubber in their eyes?
- Never.....0
- Rarely.....1
- Sometimes.....2
- Often.....3
- Always.....4
- Don't Know.....9
- Prefer not to answer.....8
- c. Play with crumb rubber (i.e. making a pile, throwing it, playing with it in their hands, etc.)?
- Never.....0
- Rarely.....1
- Sometimes.....2
- Often.....3
- Always.....4
- Don't Know.....9
- Prefer not to answer.....8
- d. Get cuts or abrasions from contact with the turf?
- Never..... (26).....0
- Rarely.....1
- Sometimes.....2
- Often.....3
- Always.....4
- Don't Know.....9
- Prefer not to answer.....8
- e. During **PRACTICE**, where on their body usually has the most cuts or abrasions?
- Elbow.....1
- Knee.....2
- Thigh.....3
- Stomach.....4



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Other _____

Don't Know 9

Prefer not to answer 8

D. INHALATION EXPOSURES DURING PRACTICE

26. While at soccer **PRACTICE** on synthetic turf fields, what percent of the time is your child typically resting, lightly active, moderately active, and highly active? **Your responses should all add up to 100%.** Please enter "DK" if you don't know. You may leave this question blank if you prefer not to answer.

Resting (i.e. sitting or standing)	Lightly active (i.e. walking)	Moderately active (i.e. jogging)	Highly active (i.e. running hard)
— —	— —	— —	— —
100%			

E. CONTACT TYPES AND SCENARIOS DURING SOCCER GAMES

*The following questions pertain specifically to your child's activities and behaviors during soccer **GAME** days, including warm-up and cool-down, on synthetic turf fields.*

27. Approximately what percent of your child's soccer **GAMES** take place on synthetic turf fields?
- 0% (43) 0
>0-25% 1
>25-50% 2
>50-75% 3
>75% 4
Don't Know 9
Prefer not to answer 8
28. Approximately how long before a **GAME** does your child usually eat or have a meal/snack?
- < 1 Hour 1
>1-3 Hours 2
> 3 Hours 3
Don't Know 9
Prefer not to answer 8



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29. Approximately how many minutes does your child play during a typical soccer **GAME**? _____ MINUTES
[CODE 99 IF DK/DR]
30. Approximately how many hours in the **past week** has your child played soccer **GAMES** on a synthetic turf field? _____ HOURS
[CODE 99 IF DK/DR]
31. **Over the past year**, approximately how many days per week has your child typically spent playing soccer **GAMES** on synthetic turf fields in each season?
- a. Spring _____ DAYS PER WEEK
[CODE 99 IF DK/DR]
- b. Summer _____ DAYS PER WEEK
[CODE 99 IF DK/DR]
- c. Fall _____ DAYS PER WEEK
[CODE 99 IF DK/DR]
- d. Winter _____ DAYS PER WEEK
[CODE 99 IF DK/DR]
32. **Over the past year**, approximately how many hours per day has your child typically spent playing soccer **GAMES** on synthetic turf fields in each season?
- a. Spring _____ HOURS PER DAY
[CODE 99 IF DK/DR]
- b. Summer _____ HOURS PER DAY
[CODE 99 IF DK/DR]
- c. Fall _____ HOURS PER DAY
[CODE 99 IF DK/DR]
- d. Winter _____ HOURS PER DAY
[CODE 99 IF DK/DR]
33. **Over the past year**, what is the longest period of time that has your child has spent playing soccer **GAMES** on a synthetic turf field in a single day?
- <1 Hour 1
- >1-2 Hours 2
- >2-4 Hours 3
- >4-5 Hours 4
- > 5 Hours 5
- Don't know 9
- Prefer not to answer.....8

*Please indicate how often your child does the following activities on a soccer **GAME** day on synthetic turf fields.*

34. On a soccer **GAME** day on synthetic turf fields, how often does your child do the following activities?
- a. Dive
- Never.....0
- ~1-3 times 1
- ~4-10 times 2
- >10 times 3
- Don't Know 9
- Prefer not to answer.....8
- b. Slide/tackle
- Never.....0



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	~1-3 times	1
	~4-10 times	2
	>10 times	3
	Don't Know	9
	Prefer not to answer	8
c. Slip/fall on ground	Never	0
	~1-3 times	1
	~4-10 times	2
	>10 times	3
	Don't Know	9
	Prefer not to answer	8

F. DERMAL AND INGESTION EXPOSURES DURING SOCCER GAMES

35. On a soccer GAME day on synthetic turf fields, how often does your child eat or have a snack while at the game?	Never..... (37)	0
	1 time	1
	2 times	2
	> 2 times	3
	Don't Know	9
	Prefer not to answer	8
36. While your child is playing a soccer GAME on a synthetic turf field, how often do they usually wash or wipe hands before eating?	Never.....	0
	Rarely.....	1
	Sometimes	2
	Often	3
	Always.....	4
	Don't Know	9
	Prefer not to answer	8
37. On a soccer GAME day on synthetic turf fields, how many ounces water/sports drink does your child typically drink? A normal water bottle is approximately 16 ounces [SEE CARD].	8 oz	1
	16 oz	2
	24 oz	3
	32 oz	4
	48 oz	5



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	64 oz	6
	> 64 oz	7
	Don't Know	9
	Prefer not to answer	8
38.	On a soccer GAME day, approximately how much time does your child spend doing sit-ups, putting on equipment, stretching, etc., where more than their feet are in contact with the synthetic turf?	0 minutes.....0
		>0-15 minutes 1
		>15-30 minutes 2
		>30-60 minutes 3
		>60 minutes 4
		Don't Know.....9
		Prefer not to answer.....8
39.	On a soccer GAME day, approximately how many minutes does your child spend walking barefoot on the synthetic turf?	0 minutes.....0
		>0-10 minutes 1
		>10-30 minutes 2
		>30 minutes 3
		Don't Know.....9
		Prefer not to answer.....8
40.	While your child is playing a soccer GAME on a synthetic turf field, what percent of the time do they usually use a mouth guard?	0%.....0
		>0-25% 1
		>25-50% 2
		>50-75% 3
		>75%.....4
		Don't Know.....9
		Prefer not to answer.....8
41.	While your child is playing a soccer GAME on a synthetic turf field, how often do they usually:	
	a. Get crumb rubber in their mouth?	Never 0
		Rarely.....1
		Sometimes 2



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	Often	3
	Always.....	4
	Don't Know.....	9
	Prefer not to answer	8
b. Get crumb rubber in their eyes?	Never	0
	Rarely.....	1
	Sometimes	2
	Often	3
	Always.....	4
	Don't Know.....	9
	Prefer not to answer	8
c. Play with crumb rubber (i.e. making a pile, throwing it, playing with it in their hands, etc.)?	Never	0
	Rarely.....	1
	Sometimes	2
	Often	3
	Always.....	4
	Don't Know.....	9
	Prefer not to answer	8
d. Get cuts or abrasions from contact with the turf?	Never(42)	0
	Rarely.....	1
	Sometimes	2
	Often	3
	Always.....	4
	Don't Know.....	9
	Prefer not to answer	8
e. During GAMES , where on their body usually has the most cuts or abrasions?	Elbow	1
	Knee.....	2



Thigh 3
Stomach 4
Other _____
Don't Know 9
Prefer not to answer 8

G. INHALATION EXPOSURES DURING GAMES

42. While playing soccer **GAMES** on synthetic turf fields, what percent of the time is your child typically resting, lightly active, moderately active, and highly active? **Your responses should all add up to 100%.** Please enter "DK" if you don't know. You may leave this question blank if you prefer not to answer.

Resting (i.e. sitting or standing)	Lightly active (i.e. walking)	Moderately active (i.e. jogging)	Highly active (i.e. running hard)
— —	— —	— —	— —
100%			

H. ADDITIONAL DERMAL AND NON-DIETARY EXPOSURES

*General Soccer Activities - the following questions pertain to your child's activities and behaviors while **PRATICING SOCCER OR PLAYING SOCCER GAMES.***

43. Please indicate whether or not your child wears each of the following clothing items while playing soccer on synthetic turf fields in each of the four seasons (**Select all that apply**):

a. Shorts (without leggings or long layers) Spring ☐
Summer ☐
Fall ☐



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Winter ☐

Never ☐

Don't Know 9

Prefer not to answer 8

b. Short-sleeve shirt (without a long sleeve shirt or long layers)

Spring ☐

Summer ☐

Fall ☐

Winter ☐

Never ☐

Don't Know 9

Prefer not to answer 8

c. Long pants or leggings

Spring ☐

Summer ☐

Fall ☐

Winter ☐

Never ☐

Don't Know 9

Prefer not to answer 8

d. Long-sleeve shirt

Spring ☐

Summer ☐



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Fall..... ☐

Winter ☐

Never ☐

Don't Know 9

Prefer not to answer 8

e. Gloves

Spring ☐

Summer ☐

Fall..... ☐

Winter ☐

Never ☐

Don't Know 9

Prefer not to answer 8

f. Long socks

Spring ☐

Summer ☐

Fall..... ☐

Winter ☐

Never ☐

Don't Know 9

Prefer not to answer 8



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44. Has your child ever complained about an unpleasant **odor** while playing soccer on synthetic turf field?
- No 0
- Yes 1
- Don't Know 9
- Prefer not to answer 8
45. Has your child ever experienced **eye or nose irritation** while playing soccer on a synthetic turf field?
- No 0
- Yes 1
- Don't Know 9
- Prefer not to answer 8
46. Has your child ever experienced **nausea** while playing soccer on a synthetic turf field?
- No 0
- Yes 1
- Don't Know 9
- Prefer not to answer 8
47. Has your child ever experienced **headaches** while playing soccer on a synthetic turf field?
- No 0
- Yes 1
- Don't Know 9
- Prefer not to answer 8
48. Has your child ever felt **overheated** while playing soccer on a synthetic turf field?
- No 0
- Yes 1
- Don't Know 9
- Prefer not to answer 8
49. Have you ever noticed a unpleasant **odor** while you are on synthetic turf field?
- No (51) 0
- Yes 1
- Don't Know 9
- Prefer not to answer 8
50. Can you describe the odor?
- _____
- _____



51. Have you ever experienced **eye or nose irritation** while you are on a synthetic turf field?
- No 0
- Yes 1
- Don't Know 9
- Prefer not to answer 8
52. Have you ever experienced **nausea** while you are on a synthetic turf field?
- No 0
- Yes 1
- Don't Know 9
- Prefer not to answer 8
53. Have you ever experienced **headaches** while you are on a synthetic turf field?
- No 0
- Yes 1
- Don't Know 9
- Prefer not to answer 8
54. Have you ever felt **overheated** while you are on a synthetic turf field?
- No 0
- Yes 1
- Don't Know 9
- Prefer not to answer 8

I. CRUMB RUBBER TAKE-HOME

*These questions pertain to your child's activities **AFTER** a soccer practice or game on a synthetic turf field.*

55. **After** your child plays soccer on a synthetic turf field, how often do you notice crumb rubber granules, or crumb rubber dirt and debris, such as black dust:
- a. In your car?
- Never 0
- Rarely 1
- Sometimes..... 2



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	Often.....	3
	Don't Know	9
	Prefer not to answer	8
b. In your home?	Never..... (57).....	0
	Rarely	1
	Sometimes.....	2
	Often.....	3
	Don't Know	9
	Prefer not to answer	8
56. After your child plays soccer on a synthetic turf field, what percent of the time do you notice crumb rubber granules, or crumb rubber dirt and debris, such as black dust:		
a. In your garage/mudroom/entrance to your house?	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
b. In your laundry room?	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
c. In their bedroom?	0%	0



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	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
d. In your/their bathroom?	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
57. After your child plays soccer on a synthetic turf field, what percent of the time do you notice crumb rubber granules, or crumb rubber dirt and debris, such as black dust:		
a. In their water bottle?	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
b. On their clothes?	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3



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	>75%	4
	Don't Know	9
	Prefer not to answer	8
c. In their shoes?	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
d. In their socks?	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
e. In their underwear?	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
58. Each time after your child plays soccer on a synthetic turf field, approximately how much crumb rubber (including granules or crumb rubber dirt and debris) do you find in your home? [SEE CARD].	None	0
	Some, but < 1 Tablespoon	1



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	1 Tablespoon – ¼ Cup	2
	> ¼ Cup – ½ Cup	3
	> ½ cup	4
	Don't Know	9
	Prefer not to answer	8
59. After your child plays soccer on a synthetic turf field, what percent of the time do you notice crumb rubber granules, or crumb rubber dirt and debris, such as black dust on their body?	0% (61).....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
60. After your child plays soccer on a synthetic turf field, what percent of the time do you find/notice crumb rubber particles or crumb rubber dirt and debris, such as black dust on the following parts of their body:		
a. Mouth	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
b. Hair	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3



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	>75%	4
	Don't Know	9
	Prefer not to answer	8
c. Face	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
d. Neck	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
e. Chest	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
f. Back	0%	0
	>0-25%	1
	>25-50%	2



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	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
g. Thighs	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
h. Lower legs	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
i. Feet	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
j. Upper arms	0%	0
	>0-25%	1



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	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
k. Lower arms	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
l. Hands	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8

J. HYGIENE PRACTICES

61. After playing soccer on a synthetic turf field, how often does your child wipe, clean, or remove shoes, socks, shin guards, etc. before entering the vehicle ?	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9



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62. After playing soccer on a synthetic turf field, how often does your child wipe, clean, or remove shoes, socks, shin guards, etc. before entering the **home**?
- Prefer not to answer 8
- 0% 0
- >0-25% 1
- >25-50% 2
- >50-75% 3
- >75% 4
- Don't Know 9
- Prefer not to answer 8
63. After playing soccer on a synthetic turf field, how often do you/your child wash their gloves?
- My child does not wear gloves 1
- Weekly 2
- Monthly 3
- > Once per month – once every six months..... 4
- < Once every six months..... 5
- Don't Know 9
- Prefer not to answer 8
64. How long after playing soccer on a synthetic turf field does your child typically wear their soccer clothes before changing them? _____HOURS _____MINUTES
[CODE 99 IF DK]
65. What is the longest amount of time after playing soccer on a synthetic turf field that your child may wear their soccer clothes before changing them? _____HOURS _____MINUTES
[CODE 99 IF DK]
66. How long after playing soccer on a synthetic turf field does your child typically bathe or shower? _____HOURS _____MINUTES
[CODE 99 IF DK]
67. What is the longest amount of time after playing soccer on a synthetic turf field that your child may wait to bathe or shower? _____HOURS _____MINUTES
[CODE 99 IF DK]

K. GENERAL HYGIENE

68. In general, how many times per day does your child wash their hands? _____
[CODE 99 IF DK]
69. In general, how many times per week does your child bathe/shower? _____



[CODE 99 IF DK]

L. PLAYER HISTORY BEFORE THIS SEASON

70. How many years has your child played soccer? _____ YEARS

[CODE 99 IF DK/DR]

71. Does your child play soccer year-round? No 0

Yes 1

72. Did your child play recreational soccer in the two years prior to the current season? No 0

Yes 1

Don't Know/Don't Remember 9

Prefer not to answer 8

73. Did your child play competitive soccer in the two years prior to the current season? No 0

Yes 1

Don't Know/Don't Remember 9

Prefer not to answer 8

74. Did your child play soccer between the ages of **4 and 8**? No (78) 0

Yes 1

Don't Know/Don't Remember 9

Prefer not to answer 8

75. What position did your child play between the ages of **4 and 8**? (Check all that apply) Goalie ☐

Forward ☐

Midfielder ☐

Defender ☐

Didn't have a position 1

Don't Know/Don't Remember 9

Prefer not to answer 8

76. On average, how many weeks per year did your child play soccer on synthetic turf fields between the ages of **4 and 8**? _____ WEEKS PER YEAR

[CODE 99 IF DK/DR]



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77. On average, how many hours per week did your child play soccer on synthetic turf fields between the ages of **4 and 8**? _____ HOURS PER WEEK
[CODE 99 IF DK/DR]
78. Did your child play soccer between the ages of **9 and 12**? No (82)..... 0
Yes 1
Not Applicable (86)..... 2
Don't Know/Don't Remember 9
Prefer not to answer 8
79. What position did your child play between the ages of **9 and 12**? (Check all that apply) Goalie ☐
Forward ☐
Midfielder ☐
Defender ☐
Don't Know/Don't Remember 9
Prefer not to answer 8
80. On average, how many weeks per year did your child play soccer on synthetic turf fields between the ages of **9 and 12**? _____ WEEKS PER YEAR
[CODE 99 IF DK/DR]
81. On average, how many hours per week did your child play soccer on synthetic turf fields between the ages of **9 and 12**? _____ HOURS PER WEEK
[CODE 99 IF DK/DR]
82. Did your child play soccer between the ages of **13 and 17**? No (86)..... 0
Yes 1
Not Applicable (86)..... 2
Don't Know/Don't Remember 9
Prefer not to answer 8
83. What position did your child play between the ages of **13 and 17**? (Check all that apply) Goalie ☐
Forward ☐
Midfielder ☐
Defender ☐
Don't Know/Don't Remember 9
Prefer not to answer 8
84. On average, how many weeks per year did your child play soccer on synthetic turf fields between the ages of **13 and 17**? _____ WEEKS PER YEAR
[CODE 99 IF DK/DR]
85. On average, how many hours per week did your child play soccer on synthetic turf fields between the ages of **13 and 17**? _____ HOURS PER WEEK
[CODE 99 IF DK/DR]



86. Has your child attended a soccer camp where they played on synthetic turf fields **in the last year**?
No[END OF SURVEY] .0
Yes..... 1
Don't Know.....9
Prefer not to answer 8
87. Approximately how many days per year did your child spend playing soccer on synthetic turf fields for soccer camps **in the last year**? _____DAYS PER YEAR
88. Approximately how many hours per day did your child spend playing soccer on synthetic turf fields for soccer camps **in the last year**? _____HOURS PER DAY

Are there any other comments or concerns you would like to share?

This concludes the survey. Thank you for your time!

If you have any questions or concerns, please let me know now. If you have questions later, please refer to the informed consent sheet we gave you to obtain our contact information.



A. GENERAL DEMOGRAPHIC AND SOCCER PLAYER INFORMATION

89. What is your year of birth? _____
YEAR
[IF BIRTH YEAR AFTER 1999 – END SURVEY]

90. What is your month of birth? _____
MONTH
[IF BIRTH IN 11/1999 or 12/1999 – END SURVEY]

91. Are you male or female? Male 1
Female 2
Prefer not to identify..... 3

92. What ethnic group best describes you? Asian or Pacific Islander 1
Black/African American..... 2
Caucasian 3
Hispanic/Latino 4
Native American 5
Mixed 6
Prefer not to identify..... 7
Other 8
Specify _____

93. How tall are you? _____ FEET
_____ INCHES

94. How much do you weigh? _____ POUNDS

95. What is your current grade in school? 11th 11
12th 12
Other 13
N/A 14
Specify _____

96. What is your residential zip code? _____

97. Do you primarily play recreational or competitive soccer? Recreational..... 1
Competitive 2
Both..... 3
Don't Know..... 9



98. What position do you usually play? (**Check all that apply**)

Prefer not to answer 8
Goalie ☐
Forward ☐
Midfielder ☐
Defender ☐
Don't Know.....9
Prefer not to answer 8

B. CONTACT TYPES AND SCENARIOS DURING SOCCER PRACTICE

*The following questions pertain specifically to activities during soccer **PRACTICE** days on synthetic turf fields.*

99. Approximately what percent of your soccer **PRACTICES** take place on synthetic turf fields?

0%(114) 1
>0-25% 2
>25-50% 3
>50-75% 4
>75% 5
Don't Know.....9
Prefer not to answer 8

100. Approximately how long before a **PRACTICE** do you eat or have a snack/meal?

< 1 Hour 1
> 1-3 Hours 2
>3 Hours 3
Don't Know.....9
Prefer not to answer 8

101. Approximately how many hours in the **past week** have you **PRACTICED** soccer on a synthetic turf field?

___ HOURS

[CODE 99 IF DK/DR]

102. **Over the past year**, approximately how many days per week have you typically spent **PRACTICING** soccer on synthetic turf fields in each season?

a. Spring

___ DAYS PER WEEK
[CODE 99 IF DK/DR]

b. Summer

___ DAYS PER WEEK
[CODE 99 IF DK/DR]

c. Fall

___ DAYS PER WEEK
[CODE 99 IF DK/DR]



d. Winter

___ DAYS PER WEEK
[CODE 99 IF DK/DR]

103. Over the past year, approximately how many hours per day have you typically spent **PRACTICING** soccer on synthetic turf fields in each season?

a. Spring

___ HOURS PER DAY
[CODE 99 IF DK/DR]

b. Summer

___ HOURS PER DAY
[CODE 99 IF DK/DR]

c. Fall

___ HOURS PER DAY
[CODE 99 IF DK/DR]

d. Winter

___ HOURS PER DAY
[CODE 99 IF DK/DR]

104. **Over the past year**, what is the longest period of time that you have spent **PRACTICING** soccer on a synthetic turf field in a single day?

<1 Hour 1
>1-2 Hours 2
>2-4 Hours 3
>4-5 Hours 4
> 5 Hours 5
Don't Know 9
Prefer not to answer 8

*Please indicate how often you do the following activities on a soccer **PRACTICE** day on synthetic turf fields.*

105. On a soccer **PRACTICE** day on synthetic turf fields, how often do you do the following activities?

a. Dive

Never 0
~1-3 times 1
~4-10 times 2
>10 times 3
Don't Know 9
Prefer not to answer 8

b. Slide/tackle

Never 0
~1-3 times 1
~4-10 times 2



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	>10 times	3
	Don't Know.....	9
	Prefer not to answer	8
c. Slip/fall on ground	Never	0
	~1-3 times	1
	~4-10 times	2
	>10 times	3
	Don't Know.....	9
	Prefer not to answer	8

C. DERMAL AND INGESTION EXPOSURES DURING SOCCER PRACTICE

106. On a soccer PRACTICE day on synthetic turf fields, how often do you eat or have a snack while at practice?	Never(108).....	0
	1 time	1
	2 times	2
	>2 times	3
	Don't Know.....	9
	Prefer not to answer	8
107. On a soccer PRACTICE day on synthetic turf fields, how often do you wash or wipe your hands before eating?	Never	0
	Rarely.....	1
	Sometimes	2
	Often	3
	Always.....	4
	Don't Know.....	9
	Prefer not to answer	8
108. On a soccer PRACTICE day on synthetic turf fields, how many ounces water/sports drink do you typically drink? A normal water bottle is approximately 16 ounces [SEE CARD].	8 oz	1
	16 oz	2
	24 oz	3



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	32 oz	4
	48 oz	5
	64 oz	6
	> 64 oz	7
	Don't Know.....	9
	Prefer not to answer	8
109. On a soccer PRACTICE day, approximately how much time do you usually spend doing sit-ups, putting on equipment, stretching, etc., where more than your feet are in contact with the synthetic turf?	0 minutes	0
	>0-15 minutes	1
	>15-30 minutes	2
	>30-60 minutes	3
	>60 minutes	4
	Don't Know.....	9
	Prefer not to answer	8
110. On a soccer PRACTICE day, approximately how many minutes do you usually spend walking barefoot on the synthetic turf?	0 minutes	0
	>0-10 minutes	1
	>10-30 minutes	2
	>30 minutes	3
	Don't Know.....	9
	Prefer not to answer	8
111. While you are PRACTICING soccer on a synthetic turf field, what percent of the time do you usually use a mouth guard?	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9



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Prefer not to answer 8

112. While you are **PRACTICING** soccer on a synthetic turf field, how often do you usually:

a. Get crumb rubber in your mouth?

Never 0

Rarely..... 1

Sometimes 2

Often 3

Always..... 4

Don't Know..... 9

Prefer not to answer 8

b. Get crumb rubber in your eyes?

Never 0

Rarely..... 1

Sometimes 2

Often 3

Always..... 4

Don't Know..... 9

Prefer not to answer 8

c. Play with crumb rubber (i.e. making a pile, throwing it, playing with it in your hands, etc.)?

Never 0

Rarely..... 1

Sometimes 2

Often 3

Always..... 4

Don't Know..... 9

Prefer not to answer 8

d. Get cuts or abrasions from contact with the turf?

Never(113)..... 0

Rarely..... 1

Sometimes 2



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- Often 3
- Always..... 4
- Don't Know..... 9
- Prefer not to answer 8
- e. During **PRACTICE**, where on your body usually has the most cuts or abrasions?
- Elbow 1
- Knee..... 2
- Thigh 3
- Stomach..... 4
- Other
- Don't Know..... 9
- Prefer not to answer 8

D. INHALATION EXPOSURES DURING PRACTICE

113. While at soccer **PRACTICE** on synthetic turf fields, what percent of the time are you typically resting, lightly active, moderately active, and highly active? **Your responses should all add up to 100%.** Please enter "DK" if you don't know. You may leave this question blank if you prefer not to answer.

Resting (i.e. sitting or standing)	Lightly active (i.e. walking)	Moderately active (i.e. jogging)	Highly active (i.e. running hard)
— —	— —	— —	— —
100%			

E. CONTACT TYPES AND SCENARIOS DURING SOCCER GAMES

*The following questions pertain specifically to your activities and behaviors during soccer **GAME** days, including warm-up and cool-down, on synthetic turf fields.*



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114. Approximately what percent of your soccer **GAMES** take place on synthetic turf fields?
- 0% (130)..... 1
>0-25% 2
>25-50% 3
>50-75% 4
>75% 5
Don't Know 9
Prefer not to answer 8
115. Approximately how long before a **GAME** do you usually eat or have a snack/meal?
- < 1 Hour 1
> 1-3 Hours..... 2
> 3 Hours 3
Don't Know 9
Prefer not to answer 8
116. Approximately how many minutes do you play during a typical soccer **GAME**? _____ MINUTES
[CODE 99 IF DK/DR]
117. Approximately how many hours in the **past week** have you played soccer **GAMES** on a synthetic turf field? _____ HOURS
[CODE 99 IF DK/DR]
118. **Over the past year**, approximately how many days per week have you typically spent playing soccer **GAMES** on synthetic turf fields in each season?
- a. Spring _____ DAYS PER WEEK
[CODE 99 IF DK/DR]
b. Summer _____ DAYS PER WEEK
[CODE 99 IF DK/DR]
c. Fall _____ DAYS PER WEEK
[CODE 99 IF DK/DR]
d. Winter _____ DAYS PER WEEK
[CODE 99 IF DK/DR]
119. **Over the past year**, approximately how many hours per day have you typically spent playing soccer **GAMES** on synthetic turf fields in each season?
- a. Spring _____ HOURS PER DAY
[CODE 99 IF DK/DR]
b. Summer _____ HOURS PER DAY
[CODE 99 IF DK/DR]
c. Fall _____ HOURS PER DAY
[CODE 99 IF DK/DR]



d. Winter

— HOURS PER DAY
[CODE 99 IF DK/DR]

120. **Over the past year**, what is the longest period of time that you have spent playing soccer **GAMES** on a synthetic turf field in a single day?

<1 Hour..... 1
> 1-2 Hours..... 2
> 2-4 Hours..... 3
> 4-5 Hours..... 4
> 5 Hours..... 5
Don't know 9
Prefer not to answer 8

*Please indicate how often you do the following activities on a soccer **GAME** day on synthetic turf fields.*

121. On a soccer **GAME** day on synthetic turf fields, how often do you do the following activities?

a. Dive

Never 0
Rarely (~1-3 times) 1
Sometimes (~4-10 times) 2
Often (>10 times)..... 3
Don't Know..... 9
Prefer not to answer 8

b. Slide/tackle

Never 0
~1-3 times 1
~4-10 times 2
>10 times 3
Don't Know..... 9
Prefer not to answer 8

c. Slip/fall on ground

Never 0
~1-3 times 1
~4-10 times 2
>10 times 3
Don't Know..... 9



Prefer not to answer 8

F. DERMAL AND INGESTION EXPOSURES DURING SOCCER GAMES

122. On a soccer **GAME** day on synthetic turf fields, how often do you eat or have a snack while at the game?
- Never(124)..... 0
- 1 time 1
- 2 times 2
- > 2 times 3
- Don't Know..... 9
- Prefer not to answer 8
123. While playing a soccer **GAME** on a synthetic turf field, how often do you usually wash or wipe hands before eating?
- Never 0
- Rarely..... 1
- Sometimes 2
- Often 3
- Always..... 4
- Don't Know..... 9
- Prefer not to answer 8
124. On a soccer **GAME** day on synthetic turf fields, how many ounces water/sports drink do you typically drink? A normal water bottle is approximately 16 ounces [SEE CARD].
- 8 oz 1
- 16 oz 2
- 24 oz 3
- 32 oz 4
- 48 oz 5
- 64 oz 6
- > 64 oz 7
- Don't Know..... 9
- Prefer not to answer 8



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125. On a soccer **GAME** day, approximately how much time do you usually spend doing sit-ups, putting on equipment, stretching, etc., where more than your feet are in contact with the synthetic turf?
- 0 minutes 0
- >0-15 minutes 1
- >15-30 minutes 2
- >30-60 minutes 3
- >60 minutes 4
- Don't Know..... 9
- Prefer not to answer 8
126. On a soccer **GAME** day, approximately how many minutes do you usually spend walking barefoot on the synthetic turf?
- 0 minutes 0
- >0-10 minutes 1
- >10-30 minutes 2
- >30 minutes 3
- Don't Know..... 9
- Prefer not to answer 8
127. While playing a soccer **GAME** on a synthetic turf field, what percent of the time do you usually use a mouth guard?
- 0% 0
- >0-25% 1
- >25-50% 2
- >50-75% 3
- >75%..... 4
- Don't Know..... 9
- Prefer not to answer 9
128. While playing a soccer **GAME** on a synthetic turf field, how often do you usually:
- a. Get crumb rubber in your mouth?
- Never 0
- Rarely..... 1
- Sometimes 2
- Often 3



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	Always.....	4
	Don't Know.....	8
	Prefer not to answer	9
b. Get crumb rubber in your eyes?	Never	0
	Rarely.....	1
	Sometimes	2
	Often	3
	Always.....	4
	Don't Know.....	9
	Prefer not to answer	8
c. Play with crumb rubber (i.e. making a pile, throwing it, playing with it in your hands, etc.)?	Never	0
	Rarely.....	1
	Sometimes	2
	Often	3
	Always.....	4
	Don't Know.....	9
	Prefer not to answer	8
d. Get cuts or abrasions from contact with the turf?	Never(129).....	0
	Rarely.....	1
	Sometimes	2
	Often	3
	Always.....	4
	Don't Know.....	9
	Prefer not to answer	8
e. During GAMES , where on your body usually has the most cuts or abrasions?	Elbow	1
	Knee.....	2
	Thigh	3



Stomach.....4
Other
Don't Know.....9
Prefer not to answer 8

G. INHALATION EXPOSURES DURING GAMES

129. On a soccer **GAME** day on synthetic turf fields, what percent of the time are you typically resting, lightly active, moderately active, and highly active? **Your responses should all add up to 100%.** Please enter “DK” if you don’t know. You may leave this question blank if you prefer not to answer.

Resting (i.e. sitting or standing)	Lightly active (i.e. walking)	Moderately active (i.e. jogging)	Highly active (i.e. running hard)
— —	— —	— —	— —
100%			

H. ADDITIONAL DERMAL AND NON-DIETARY EXPOSURES

General Soccer Activities - the following questions pertain to your activities and behaviors while
PRATICING SOCCER OR PLAYING SOCCER GAMES.

130. Please indicate whether or not you wear each of the following clothing items while playing soccer on synthetic turf fields in each of the four seasons (**Select all that apply**):

a. Shorts (without leggings or long layers)

Spring..... ☐

Summer ☐

Fall ☐



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- Winter..... ☐
- Never ☐
- Don't Know..... 9
- Prefer not to answer 8
- b. Short-sleeve shirt (without a long sleeve shirt or long layers)
- Spring..... ☐
- Summer ☐
- Fall ☐
- Winter..... ☐
- Never ☐
- Don't Know..... 9
- Prefer not to answer 8
- c. Long pants or leggings
- Spring..... ☐
- Summer ☐
- Fall ☐
- Winter..... ☐
- Never ☐
- Don't Know..... 9
- Prefer not to answer 8
- d. Long-sleeve shirt
- Spring..... ☐
- Summer ☐
- Fall ☐
- Winter..... ☐



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e. Gloves

Never ☐

Don't Know..... 9

Prefer not to answer 8

Spring..... ☐

Summer ☐

Fall ☐

Winter..... ☐

Never ☐

Don't Know..... 9

Prefer not to answer 8

f. Long socks

Spring..... ☐

Summer ☐

Fall ☐

Winter..... ☐

Never ☐

Don't Know..... 9

Prefer not to answer 8

131. Have you ever noticed an unpleasant **odor**
while you are on synthetic turf field?

No(133)..... 0

Yes..... 1

Don't Know..... 9

Prefer not to answer 8

132. Can you describe the odor?



-
133. Have you ever experienced **eye or nose irritation** while you are on a synthetic turf field?
- No 0
- Yes 1
- Don't Know 9
- Prefer not to answer 8
134. Have you ever experienced **nausea** while you are on a synthetic turf field?
- No 0
- Yes 1
- Don't Know 9
- Prefer not to answer 8
135. Have you ever experienced **headaches** while you are on a synthetic turf field?
- No 0
- Yes 1
- Don't Know 9
- Prefer not to answer 8
136. Have you ever felt **overheated** while you are on a synthetic turf field?
- No 0
- Yes 1
- Don't Know 9
- Prefer not to answer 8

I. CRUMB RUBBER TAKE-HOME

*These questions pertain to your activities and behaviors **AFTER** a soccer practice or game on a synthetic turf field.*

137. **After** you play soccer on a synthetic turf field, how often do you notice crumb rubber granules, or crumb rubber dirt and debris, such as black dust:
- a. In your car?
- Never 0
- Rarely 1
- Sometimes 2
- Often 3



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	Don't Know.....	9
	Prefer not to answer	8
b. In your home?	Never(139).....	0
	Rarely.....	1
	Sometimes	2
	Often	3
	Don't Know.....	9
	Prefer not to answer	8
138. After you play soccer on a synthetic turf field, what percent of the time do you notice crumb rubber granules, or crumb rubber dirt and debris, such as black dust:		
a. In your garage/mudroom/entrance to your house?	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
b. In your laundry room?	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
c. In your bedroom?	0%.....	0
	>0-25%	1



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	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
d. In your bathroom?	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
139. After you play soccer on a synthetic turf field, how often do you notice crumb rubber granules, or crumb rubber dirt and debris, such as black dust:		
a. In your water bottle?	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
b. On your clothes?	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4



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	Don't Know.....	9
	Prefer not to answer	8
c. In your shoes?	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
d. In your socks?	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
e. In your underwear?	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
140. Each time after you play soccer on a synthetic turf field, approximately how much crumb rubber (including granules or crumb rubber dirt and debris) do you find in your home? [SEE CARD].	None	0
	Some, but < 1 Tablespoon	1
	1 Tablespoon – ¼ Cup	2



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- > ¼ Cup – ½ Cup 3
- > ½ cup 4
- Don't Know..... 9
- Prefer not to answer 8
141. **After** you play soccer on a synthetic turf field, what percent of the time do you notice crumb rubber granules, or crumb rubber dirt and debris, such as black dust on your body?
- 0%(143)..... 0
- >0-25% 1
- >25-50% 2
- >50-75% 3
- >75%..... 4
- Don't Know..... 9
- Prefer not to answer 8
142. **After** you play soccer on a synthetic turf field, how often do you find/notice crumb rubber particles or crumb rubber dirt and debris, such as black dust on the following parts of your body:
- a. Mouth
- 0% 0
- >0-25% 1
- >25-50% 2
- >50-75% 3
- >75%..... 4
- Don't Know..... 9
- Prefer not to answer 8
- b. Hair
- 0% 0
- >0-25% 1
- >25-50% 2
- >50-75% 3
- >75%..... 4



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	Don't Know.....	9
	Prefer not to answer	8
c. Face	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
d. Neck	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
e. Chest	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
f. Back	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3



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	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
g. Thighs	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
h. Lower legs	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
i. Feet	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
j. Upper arms	0%.....	0
	>0-25%	1
	>25-50%	2



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	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
k. Lower arms	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
l. Hands	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8

J. HYGIENE PRACTICES

143. After playing soccer on a synthetic turf field, how often do you wipe, clean, or remove shoes, socks, shin guards, etc. before entering the vehicle ?	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8



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144. After playing soccer on a synthetic turf field, how often do you wipe, clean, or remove shoes, socks, shin guards, etc. before entering the **home**?
- 0% 0
>0-25% 1
>25-50% 2
>50-75% 3
>75% 4
Don't Know 9
Prefer not to answer 8
145. After playing soccer on a synthetic turf field, how often do you wash your gloves?
- I do not wear gloves 1
Weekly 2
Monthly 3
> Once per month – once every six months 4
< Once every six months 5
Don't Know 9
Prefer not to answer 8
146. How long after playing soccer on a synthetic turf field do you typically wear your soccer clothes before changing them? _____ HOURS _____ MINUTES
[CODE 99 IF DK]
147. What is the longest amount of time after playing soccer on a synthetic turf field that you may wear your soccer clothes before changing them? _____ HOURS _____ MINUTES
[CODE 99 IF DK]
148. How long after playing soccer on a synthetic turf field do you typically bathe or shower? _____ HOURS _____ MINUTES
[CODE 99 IF DK]
149. What is the longest amount of time after playing soccer on a synthetic turf field that you may wait to bathe or shower? _____ HOURS _____ MINUTES
[CODE 99 IF DK]

K. GENERAL HYGIENE

150. In general, how many times per day do you wash your hands? _____
[CODE 99 IF DK]
151. In general, how many times per week do you typically bathe/shower? _____



[CODE 99 IF DK]

L. PLAYER HISTORY BEFORE THIS SEASON

152. How many years have you played soccer? _____ YEARS

153. Do you play soccer year-round? No 0
Yes 1
Don't Know/Don't Remember 9
Prefer not to answer 8

154. Did you play recreational soccer in the two years prior to the current season? No 0
Yes 1
Don't Know 9
Prefer not to answer 8

155. Did you play competitive soccer in the two years prior to the current season? No 0
Yes 1
Don't Know 9
Prefer not to answer 8

156. Did you play soccer between the ages of **4 and 8**? No(160) 0
Yes 1
Don't Know 9
Prefer not to answer 8

157. What position did you play between the ages of **4 and 8**? Goalie ☐
Forward ☐
Midfielder ☐
Defender ☐
Didn't have a position 1
Don't Know/Don't Remember 9
Prefer not to answer 8

158. On average, how many weeks per year did you play soccer on synthetic turf fields between the ages of **4 and 8**? _____ WEEKS PER YEAR
[CODE 99 IF DK/DR]



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159. On average, how many hours per week did you play soccer on synthetic turf fields between the ages of **4 and 8**? _____ **HOURS PER WEEK**
[CODE 99 IF DK/DR]
160. Did you play soccer between the ages of **9 and 12**?
No(164)..... 0
Yes..... 1
Not applicable(172)..... 2
Don't Know/Don't Remember 9
Prefer not to answer 8
161. What position did you play between the ages of **9 and 12**?
Goalie ☐
Forward..... ☐
Midfielder ☐
Defender ☐
Don't Know/Don't Remember 9
Prefer not to answer 8
162. On average, how many weeks per year did you play soccer on synthetic turf fields between the ages of **9 and 12**? _____ **WEEKS PER YEAR**
[CODE 99 IF DK/DR]
163. On average, how many hours per week did you play soccer on synthetic turf fields between the ages of **9 and 12**? _____ **HOURS PER WEEK**
[CODE 99 IF DK/DR]
164. Did you play soccer between the ages of **13 and 17**?
No(168)..... 0
Yes..... 1
Not Applicable.....(172)..... 2
Don't Know/Don't Remember 9
Prefer not to answer 8
165. What position did you play between the ages of **13 and 17**?
Goalie ☐
Forward..... ☐
Midfielder ☐
Defender ☐
Don't Know/Don't Remember 9
Prefer not to answer 8
166. On average, how many weeks per year did you play soccer on synthetic turf fields between the ages of **13 and 17**? _____ **WEEKS PER YEAR**
[CODE 99 IF DK/DR]



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167. On average, how many hours per week did you play soccer on synthetic turf fields between the ages of **13 and 17**? _____ **HOURS PER WEEK**
[CODE 99 IF DK/DR]
168. Did you play soccer between the ages of **18 and 25**?
No(172)..... 0
Yes..... 1
Not Applicable.....(172)..... 2
Don't Know/Don't Remember 9
Prefer not to answer 8
169. What position did you play between the ages of **18 and 25**?
Goalie ☐
Forward..... ☐
Midfielder ☐
Defender ☐
Don't Know/Don't Remember 9
Prefer not to answer 8
170. On average, how many weeks per year did you play soccer on synthetic turf fields between the ages of **18 and 25**? _____ **WEEKS PER YEAR**
[CODE 99 IF DK/DR]
171. On average, how many hours per week did you play soccer on synthetic turf fields between the ages of **18 and 25**? _____ **HOURS PER WEEK**
[CODE 99 IF DK/DR]
172. Have you attended a soccer camp or pre-season conditioning camp where you have played soccer on synthetic turf fields **in the last year**?
No[END OF SURVEY] 0
Yes..... 1
Don't Know/Don't Remember 9
Prefer not to answer 8
173. Approximately how many days per year did you spend playing soccer on synthetic turf fields for soccer camps or pre-season conditioning **in the last year**? _____ **DAYS PER YEAR**
174. Approximately how many hours per day did you spend playing soccer on synthetic turf fields for soccer camps or pre-season conditioning **in the last year**? _____ **HOURS PER DAY**

Are there any other comments or concerns you would like to share?



This concludes the survey. Thank you for your time!

If you have any questions or concerns, please let me know now. If you have questions later, please refer to the informed consent sheet we gave you to obtain our contact information.



Card 1. Water bottles

8 oz



16 oz



24 oz



32 oz



64 oz





Card 2. Crumb rubber amounts





Synthetic Turf Exposure Assessment Study

Online Survey

Thank you for participating in this important study. Today you will answer some questions regarding your/your child's activities while playing soccer on synthetic turf fields. Synthetic turf fields do not have natural grass and soil, but often have black rubber pebbles called crumb rubber for cushioning. In this study, we want to learn more about how soccer players come in contact with the black "crumb rubber" used in some synthetic turfs so that we can better understand potential exposure to chemicals released from crumb rubber while playing soccer on synthetic turf fields.

If you are the parent of a soccer player and play soccer yourself, we invite you to complete this survey for your child and yourself. Please complete the survey for one soccer player at a time.

If you do not want to answer any of the questions, you may select "prefer not to answer" and go to the next question.

A. GENERAL DEMOGRAPHIC AND SOCCER PLAYER INFORMATION

1.	Are you a soccer player or a parent of a child soccer player?	Soccer player 18 or older .. (89)..... 1 Parent of child soccer player.....2
2.	What is your child's year of birth?	_____ YEAR
3.	What is your child's month of birth?	_____ MONTH
4.	Is your child male or female?	Male 1 Female..... 2 Prefer not to identify 3
5.	What ethnic group best describes your child?	Asian or Pacific Islander 1 Black/African American 2



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Caucasian..... 3
Hispanic/Latino 4
Native American 5
Mixed 6
Prefer not to identify 7
Other..... 8
Specify _____

6. How tall is your child? _____ FEET

_____ INCHES

7. How much does your child weigh? _____ POUNDS

8. What is your child's current grade in school?

Pre-Kindergarten 1
Kindergarten 2
1st 3
2nd 4
3rd 5
4th 6
5th 7
6th 8
7th 9
8th 10
9th 11
10th 12
11th 13
12th 14
Other 15
Specify _____

9. What is your child's residential zip code? _____

10. Does your child primarily play recreational or competitive soccer?

Recreational 1
Competitive..... 2
Both 3
Don't know 9
Prefer not to answer 8

11. What position does your child usually play? Goalie ☐



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(Check all that apply)

- Forward ☐
Midfielder ☐
Defender ☐
Don't Know 9
Prefer not to answer 8

B. CONTACT TYPES AND SCENARIOS DURING SOCCER PRACTICE

*The following questions pertain specifically to your child's activities and behaviors during soccer
PRACTICE days on synthetic turf fields.*

12. Approximately what percent of your child's soccer **PRACTICES** take place on synthetic turf fields?
- 0% (27) 1
>0-25% 2
>25-50% 3
>50-75% 4
>75% 5
Don't Know 9
Prefer not to answer 8
13. Approximately how long before a **PRACTICE** does your child eat or have a snack/meal?
- < 1 Hour 1
> 1-3 Hours 2
> 3 Hours 3
Don't know 9
Prefer not to answer 8
14. Approximately how many hours in the **past week** has your child **PRACTICED** soccer on a synthetic turf field? _____ HOURS
[CODE 99 IF DK/DR]
15. **Over the past year**, approximately how many days per week has your child typically spent **PRACTICING** soccer on synthetic turf fields in each season?
- a. Spring _____ DAYS PER WEEK
[CODE 99 IF DK/DR]
b. Summer _____ DAYS PER WEEK
[CODE 99 IF DK/DR]
c. Fall _____ DAYS PER WEEK
[CODE 99 IF DK/DR]
d. Winter _____ DAYS PER WEEK
[CODE 99 IF DK/DR]
16. **Over the past year**, approximately how many hours per day has your child typically



spent **PRACTICING** soccer on synthetic turf fields in each season?

- a. Spring _____ HOURS PER DAY
[CODE 99 IF DK/DR]
- b. Summer _____ HOURS PER DAY
[CODE 99 IF DK/DR]
- c. Fall _____ HOURS PER DAY
[CODE 99 IF DK/DR]
- d. Winter _____ HOURS PER DAY
[CODE 99 IF DK/DR]

17. **Over the past year**, what is the longest period of time that your child has spent **PRACTICING** soccer on a synthetic turf field in a single day?
- <1 Hour..... 1
- > 1-2 Hours..... 2
- > 2-4 Hours..... 3
- > 4-5 Hours..... 4
- > 5 Hours..... 5
- Don't Know 9
- Prefer not to answer 8

*Please indicate how often your child does the following activities on a soccer **PRACTICE** day on synthetic turf fields.*

18. On a soccer **PRACTICE** day on synthetic turf fields, how often does your child do the following activities?
- a. Dive
- Never..... 0
- ~1-3 times..... 1
- ~4-10 times..... 2
- >10 times..... 3
- Don't Know 9
- Prefer not to answer 8
- b. Slide/tackle
- Never..... 0
- ~1-3 times..... 1
- ~4-10 times..... 2
- >10 times..... 3
- Don't Know 9



c. Slip/fall on ground

Prefer not to answer 8
Never 0
~1-3 times 1
~4-10 times 2
>10 times 3
Don't Know 9
Prefer not to answer 8

C. DERMAL AND INGESTION EXPOSURES DURING SOCCER PRACTICE

19. On a soccer **PRACTICE** day on synthetic turf fields, how often does your child eat or have a snack while at practice?
- Never (21) 0
1 time 1
2 times 2
>2 times 3
Don't Know 9
Prefer not to answer 8
20. While your child is **PRACTICING** soccer on a synthetic turf field, how often does your child wash or wipe their hands before eating?
- Never 0
Rarely 1
Sometimes 2
Often 3
Always 4
Don't Know 9
Prefer not to answer 8
21. On a soccer **PRACTICE** day on synthetic turf fields, how many ounces water/sports drink does your child typically drink? A normal water bottle is approximately 16 ounces.
- 8 oz 1
16 oz 2
24 oz 3
32 oz 4
48 oz 5



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	64 oz.....	6
	> 64 oz.....	7
	Don't Know	9
	Prefer not to answer	8
22. On a soccer PRACTICE day, approximately how much time does your child usually spend doing sit-ups, putting on equipment, stretching, etc., where more than their feet are in contact with the synthetic turf?	0 minutes	0
	>0-15 minutes.....	1
	>15-30 minutes	2
	>30-60 minutes	3
	>60 minutes	4
	Don't Know	9
	Prefer not to answer	8
23. On a soccer PRACTICE day, approximately how many minutes does your child usually spend walking barefoot on the synthetic turf?	0 minutes	0
	>0-10 minutes.....	1
	>10-30 minutes.....	2
	>30 minutes	3
	Don't know	9
	Prefer not to answer	8
24. While your child is PRACTICING soccer on a synthetic turf field, what percent of the time do they usually use a mouth guard?	0%	0
	0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8



25. While your child is **PRACTICING** soccer on a synthetic turf field, how often do they usually:
- a. Get crumb rubber in their mouth?
 - Never 0
 - Rarely 1
 - Sometimes..... 2
 - Often..... 3
 - Always 4
 - Don't Know 9
 - Prefer not to answer 8
 - b. Get crumb rubber in their eyes?
 - Never 0
 - Rarely 1
 - Sometimes..... 2
 - Often..... 3
 - Always 4
 - Don't Know 9
 - Prefer not to answer 8
 - c. Play with crumb rubber (i.e. making a pile, throwing it, playing with it in their hands, etc.)?
 - Never 0
 - Rarely 1
 - Sometimes..... 2
 - Often..... 3
 - Always 4
 - Don't Know 9
 - Prefer not to answer 8
 - d. Get cuts or abrasions from contact with the turf?
 - Never (26)..... 0
 - Rarely 1
 - Sometimes..... 2
 - Often..... 3
 - Always 4



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- Don't Know 9
- Prefer not to answer 8
- e. During **PRACTICE**, where on their body usually has the most cuts or abrasions?
- Elbow 1
- Knee 2
- Thigh..... 3
- Stomach 4
- Other _____
- Don't Know 9
- Prefer not to answer 8

D. INHALATION EXPOSURES DURING PRACTICE

26. While at soccer **PRACTICE** on synthetic turf fields, what percent of the time is your child typically resting, lightly active, moderately active, and highly active? **Your responses should all add up to 100%.** Please enter "DK" if you don't know. You may leave this question blank if you prefer not to answer.

Resting (i.e. sitting or standing)	Lightly active (i.e. walking)	Moderately active (i.e. jogging)	Highly active (i.e. running hard)
— —	— —	— —	— —
100%			

E. CONTACT TYPES AND SCENARIOS DURING SOCCER GAMES

*The following questions pertain specifically to your child's activities and behaviors during soccer **GAME** days, including warm-up and cool-down, on synthetic turf fields.*

27. Approximately what percent of your child's soccer **GAMES** take place on synthetic turf fields?
- 0% (42)..... 0
- >0-25% 1



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- >25-50% 2
- >50-75% 3
- >75% 4
- Don't Know 9
- Prefer not to answer 8
28. Approximately how long before a **GAME** does your child usually eat or have a meal/snack?
- < 1 Hour 1
- > 1-3 Hours..... 2
- > 3 Hours 3
- Don't Know.....9
- Prefer not to answer 8
29. Approximately how many minutes does your child play during a typical soccer **GAME**? _____ MINUTES
[CODE 99 IF DK/DR]
30. Approximately how many hours in the **past week** has your child played soccer **GAMES** on a synthetic turf field? _____ HOURS
[CODE 99 IF DK/DR]
31. **Over the past year**, approximately how many days per week has your child typically spent playing soccer **GAMES** on synthetic turf fields in each season?
- a. Spring _____ DAYS PER WEEK
[CODE 99 IF DK/DR]
- b. Summer _____ DAYS PER WEEK
[CODE 99 IF DK/DR]
- c. Fall _____ DAYS PER WEEK
[CODE 99 IF DK/DR]
- d. Winter _____ DAYS PER WEEK
[CODE 99 IF DK/DR]
32. **Over the past year**, approximately how many hours per day has your child typically spent playing soccer **GAMES** on synthetic turf fields in each season?
- a. Spring _____ HOURS PER DAY
[CODE 99 IF DK/DR]
- b. Summer _____ HOURS PER DAY
[CODE 99 IF DK/DR]
- c. Fall _____ HOURS PER DAY
[CODE 99 IF DK/DR]
- d. Winter _____ HOURS PER DAY
[CODE 99 IF DK/DR]



33. **Over the past year**, what is the longest period of time that has your child has spent playing soccer **GAMES** on a synthetic turf field in a single day?
- | | |
|----------------------------|---|
| <1 Hour..... | 1 |
| > 1-2 Hours..... | 2 |
| > 2-4 Hours..... | 3 |
| > 4-5 Hours..... | 4 |
| > 5 Hours..... | 5 |
| Don't know | 9 |
| Prefer not to answer | 8 |

*Please indicate how often your child does the following activities on a soccer **GAME** day on synthetic turf fields.*

34. On a soccer **GAME** day on synthetic turf fields, how often does your child do the following activities?
- | | | |
|------------------------|----------------------------|---|
| a. Dive | Never | 0 |
| | ~1-3 times..... | 1 |
| | ~4-10 times..... | 2 |
| | >10 times | 3 |
| | Don't Know | 9 |
| | Prefer not to answer | 8 |
| b. Slide/tackle | Never | 0 |
| | ~1-3 times..... | 1 |
| | ~4-10 times..... | 2 |
| | >10 times | 3 |
| | Don't Know | 9 |
| | Prefer not to answer | 8 |
| c. Slip/fall on ground | Never | 0 |
| | ~1-3 times..... | 1 |
| | ~4-10 times..... | 2 |
| | >10 times | 3 |
| | Don't Know | 9 |



Prefer not to answer 8

F. DERMAL AND INGESTION EXPOSURES DURING SOCCER GAMES

35. On a soccer **GAME** day on synthetic turf fields, how often does your child eat or have a snack while at the game?
- Never (37) 0
- 1 time 1
- 2 times 2
- > 2 times 3
- Don't Know 9
- Prefer not to answer 8
36. While your child is playing a soccer **GAME** on a synthetic turf field, how often do they usually wash or wipe hands before eating?
- Never 0
- Rarely 1
- Sometimes 2
- Often 3
- Always 4
- Don't Know 9
- Prefer not to answer 8
37. On a soccer **GAME** day on synthetic turf fields, how many ounces water/sports drink does your child typically drink? A normal water bottle is approximately 16 ounces [SEE CARD].
- 8 oz 1
- 16 oz 2
- 24 oz 3
- 32 oz 4
- 48 oz 5
- 64 oz 6
- > 64 oz 7
- Don't Know 9
- Prefer not to answer 8
38. On a soccer **GAME** day, approximately how much time does your child spend doing sit-
- 0 minutes 0



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- ups, putting on equipment, stretching, etc., where more than their feet are in contact with the synthetic turf?
- >0-15 minutes..... 1
- >15-30 minutes..... 2
- >30-60 minutes..... 3
- >60 minutes..... 4
- Don't Know 9
- Prefer not to answer 8
39. On a soccer **GAME** day, approximately how many minutes does your child spend walking barefoot on the synthetic turf?
- 0 minutes 0
- >0-10 minutes..... 1
- >10-30 minutes..... 2
- >30 minutes..... 3
- Don't Know 9
- Prefer not to answer 8
40. While your child is playing a soccer **GAME** on a synthetic turf field, what percent of the time do they usually use a mouth guard?
- 0% 0
- >0-25% 1
- >25-50% 2
- >50-75% 3
- >75% 4
- Don't Know 9
- Prefer not to answer 8
41. While your child is playing a soccer **GAME** on a synthetic turf field, how often do they usually:
- a. Get crumb rubber in their mouth?
- Never 0
- Rarely 1
- Sometimes..... 2
- Often..... 3
- Always 4



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	Don't Know	9
	Prefer not to answer	8
b. Get crumb rubber in their eyes?	Never	0
	Rarely	1
	Sometimes.....	2
	Often.....	3
	Always	4
	Don't Know	9
	Prefer not to answer	8
c. Play with crumb rubber (i.e. making a pile, throwing it, playing with it in their hands, etc.)?	Never	0
	Rarely	1
	Sometimes.....	2
	Often.....	3
	Always	4
	Don't Know	9
	Prefer not to answer	8
d. Get cuts or abrasions from contact with the turf?	Never..... (42).....	0
	Rarely	1
	Sometimes.....	2
	Often.....	3
	Always	4
	Don't Know	9
	Prefer not to answer	8
e. During GAMES , where on their body usually has the most cuts or abrasions?	Elbow.....	1
	Knee	2
	Thigh.....	3
	Stomach	4



Other _____

Don't Know 9

Prefer not to answer 8

G. INHALATION EXPOSURES DURING GAMES

42. While playing soccer **GAMES** on synthetic turf fields, what percent of the time is your child typically resting, lightly active, moderately active, and highly active? **Your responses should all add up to 100%.** Please enter "DK" if you don't know. You may leave this question blank if you prefer not to answer.

Resting (i.e. sitting or standing)	Lightly active (i.e. walking)	Moderately active (i.e. jogging)	Highly active (i.e. running hard)
_____	_____	_____	_____
100%			

H. ADDITIONAL DERMAL AND NON-DIETARY EXPOSURES

*General Soccer Activities - the following questions pertain to your child's activities and behaviors while **PRATICING SOCCER OR PLAYING SOCCER GAMES.***

43. Please indicate whether or not your child wears each of the following clothing items while playing soccer on synthetic turf fields in each of the four seasons: **(Select all that apply):**
- a. Shorts (without leggings or long layers)
- Spring..... ☐
- Summer ☐
- Fall ☐
- Winter..... ☐



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Never ☐

Don't Know..... 9

Prefer not to answer 8

b. Short-sleeve shirt (without a long sleeve shirt or long layers)

Spring..... ☐

Summer ☐

Fall ☐

Winter..... ☐

Never ☐

Don't Know..... 9

Prefer not to answer 8

c. Long pants or leggings

Spring..... ☐

Summer ☐

Fall ☐

Winter..... ☐

Never ☐

Don't Know..... 9

Prefer not to answer 8

d. Long-sleeve shirt

Spring..... ☐

Summer ☐

Fall ☐



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Winter..... ☐

Never ☐

Don't Know..... 9

Prefer not to answer 8

e. Gloves

Spring..... ☐

Summer ☐

Fall ☐

Winter..... ☐

Never ☐

Don't Know..... 9

Prefer not to answer 8

f. Long socks

Spring..... ☐

Summer ☐

Fall ☐

Winter..... ☐

Never ☐

Don't Know..... 9

Prefer not to answer 8

44. Has your child ever complained about a
unpleasant **odor** while playing soccer on
synthetic turf field?

No 0

Yes..... 1



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	Don't Know.....	9
	Prefer not to answer	8
45. Has <u>your child</u> ever experienced eye or nose irritation while playing soccer on a synthetic turf field?	No	0
	Yes.....	1
	Don't Know.....	9
	Prefer not to answer	8
46. Has <u>your child</u> ever experienced nausea while playing soccer on a synthetic turf field?	No	0
	Yes.....	1
	Don't Know.....	9
	Prefer not to answer	8
47. Has <u>your child</u> ever experienced headaches while playing soccer on a synthetic turf field?	No	0
	Yes.....	1
	Don't Know.....	9
	Prefer not to answer	8
48. Has <u>your child</u> ever felt overheated while playing soccer on a synthetic turf field?	No	0
	Yes.....	1
	Don't Know.....	9
	Prefer not to answer	8
49. Have <u>you</u> ever noticed an unpleasant odor while you are on synthetic turf field?	No(51).....	0
	Yes.....	1
	Don't Know.....	9
	Prefer not to answer	8
50. Can you describe the odor?	_____	



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51. Have you ever experienced **eye or nose irritation** while you are on a synthetic turf field?
- No 0
- Yes 1
- Don't Know 9
- Prefer not to answer 8
52. Have you ever experienced **nausea** while you are on a synthetic turf field?
- No 0
- Yes 1
- Don't Know 9
- Prefer not to answer 8
53. Have you ever experienced **headaches** while you are on a synthetic turf field?
- No 0
- Yes 1
- Don't Know 9
- Prefer not to answer 8
54. Have you ever felt **overheated** while you are on a synthetic turf field?
- No 0
- Yes 1
- Don't Know 9
- Prefer not to answer 8

I. CRUMB RUBBER TAKE-HOME

*These questions pertain to your child's activities **AFTER** a soccer practice or game on a synthetic turf field.*

55. **After** your child plays soccer on a synthetic turf field, how often do you notice crumb rubber granules, or crumb rubber dirt and debris, such as black dust:
- a. In your car?
- Never 0
- Rarely 1
- Sometimes 2
- Often 3
- Always 4



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b. In your home?

Don't Know..... 9
Prefer not to answer 8
Never(57) 0
Rarely..... 1
Sometimes 2
Often 3
Always..... 4
Don't Know..... 9
Prefer not to answer 8

56. **After** your child plays soccer on a synthetic turf field, what percent of the time do you notice crumb rubber granules, or crumb rubber dirt and debris, such as black dust:

a. In your garage/mudroom/entrance to your house?

0% 0
>0-25% 1
>25-50% 2
>50-75% 3
>75%..... 4
Don't Know..... 9
Prefer not to answer 8

b. In your laundry room?

0% 0
>0-25% 1
>25-50% 2
>50-75% 3
>75%..... 4
Don't Know..... 9
Prefer not to answer 8

c. In their bedroom?

0% 0



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	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
d. In your/their bathroom?	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
57. After your child plays soccer on a synthetic turf field, what percent of the time do you notice crumb rubber granules, or crumb rubber dirt and debris, such as black dust:		
a. In their water bottle?	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
b. On their clothes?	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3



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	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
c. In their shoes?	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
d. In their socks?	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
e. In their underwear?	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
58. Each time after your child plays soccer on a synthetic turf field, approximately how much crumb rubber (including granules or crumb rubber dirt and debris) do you find in your home?	None	0
	Some, but < 1 Tablespoon	1



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	1 Tablespoon – ¼ Cup	2
	> ¼ Cup – ½ Cup	3
	> ½ cup	4
	Don't Know.....	9
	Prefer not to answer	8
59. After your child plays soccer on a synthetic turf field, what percent of the time do you notice crumb rubber granules, or crumb rubber dirt and debris, such as black dust on their body?	0%.....(61)	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
60. After your child plays soccer on a synthetic turf field, what percent of the time do you find/notice crumb rubber particles or crumb rubber dirt and debris, such as black dust on the following parts of their body:		
a. Mouth	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
b. Hair	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3



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	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
c. Face	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
d. Neck	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
e. Chest	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
f. Back	0%.....	0
	>0-25%	1
	>25-50%	2



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	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
g. Thighs	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
h. Lower legs	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
i. Feet	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
j. Upper arms	0%.....	0
	>0-25%	1



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	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
k. Lower arms	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
l. Hands	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8

J. HYGIENE PRACTICES

61. After playing soccer on a synthetic turf field, how often does your child wipe, clean, or remove shoes, socks, shin guards, etc. before entering the vehicle ?	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9



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- Prefer not to answer 8
62. After playing soccer on a synthetic turf field, how often does your child wipe, clean, or remove shoes, socks, shin guards, etc. before entering the **home**?
0% 0
>0-25% 1
>25-50% 2
>50-75% 3
>75% 4
Don't Know 9
Prefer not to answer 8
63. After playing soccer on a synthetic turf field, how often do you/your child wash their gloves?
My child does not wear gloves 1
Weekly 2
Monthly 3
> Once per month – once every six months 4
< Once every six months 5
Don't Know 9
Prefer not to answer 8
64. How long after playing soccer on a synthetic turf field does your child typically wear their soccer clothes before changing them? _____ HOURS _____ MINUTES
[CODE 99 IF DK]
65. What is the longest amount of time after playing soccer on a synthetic turf field that your child may wear their soccer clothes before changing them? _____ HOURS _____ MINUTES
[CODE 99 IF DK]
66. How long after playing soccer on a synthetic turf field does your child typically bathe or shower? _____ HOURS _____ MINUTES
[CODE 99 IF DK]
67. What is the longest amount of time after playing soccer on a synthetic turf field that your child may wait to bathe or shower? _____ HOURS _____ MINUTES
[CODE 99 IF DK]

K. GENERAL HYGIENE

68. In general, how many times per day does your child wash their hands? _____
[CODE 99 IF DK]
69. In general, how many times per week does your child bathe/shower? _____



[CODE 99 IF DK]

L. PLAYER HISTORY BEFORE THIS SEASON

70. How many years has your child played soccer? _____ YEARS

[CODE 99 IF DK/DR]

71. Does your child play soccer year-round? No 0

Yes..... 1

72. Did your child play recreational soccer in the two years prior to the current season? No 0

Yes..... 1

Don't Know/Don't remember..... 9

Prefer not to answer 8

73. Did your child play competitive soccer in the two years prior to the current season? No 0

Yes..... 1

Don't know/Don't remember 9

Prefer not to answer 8

74. Did your child play soccer between the ages of **4 and 8**? No(78)..... 0

Yes..... 1

Don't know/Don't remember 9

Prefer not to answer 8

75. What position did your child play between the ages of **4 and 8**? (Check all that apply) Goalie
.....

☐

Forward
.....

☐

Midfielder
.....

☐



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Defender

.....

☐

Didn't have a position 1

Don't know/Don't remember 9

Prefer not to answer 8

76. On average, how many weeks per year did your child play soccer on synthetic turf fields between the ages of **4 and 8**? _____ WEEKS PER YEAR
[CODE 99 IF DK/DR]

77. On average, how many hours per week did your child play soccer on synthetic turf fields between the ages of **4 and 8**? _____ HOURS PER WEEK
[CODE 99 IF DK/DR]

78. Did your child play soccer between the ages of **9 and 12**? No(82) 0

Yes..... 1

Not Applicable.....(86) 2

Don't know/Don't remember 9

Prefer not to answer 8

79. What position did your child play between the ages of **9 and 12**? (Check all that apply) Goalie ☐

Forward ☐

Midfielder ☐

Defender ☐

Don't know/Don't remember 9

Prefer not to answer 8

80. On average, how many weeks per year did your child play soccer on synthetic turf fields between the ages of **9 and 12**? _____ WEEKS PER YEAR
[CODE 99 IF DK/DR]

81. On average, how many hours per week did your child play soccer on synthetic turf fields between the ages of **9 and 12**? _____ HOURS PER WEEK
[CODE 99 IF DK/DR]

82. Did your child play soccer between the ages of **13 and 17**? No(86) 0

Yes..... 1

Not Applicable.....(86) 2

Don't know/Don't remember 9

Prefer not to answer 8

83. What position did your child play between the ages of **13 and 17**? (Check all that apply) Goalie

.....

☐



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Forward

.....

☐

Midfielder

.....

☐

Defender

.....

☐

Don't know/Don't remember 9

Prefer not to answer 8

84. On average, how many weeks per year did your child play soccer on synthetic turf fields between the ages of **13 and 17**? _____ WEEKS PER YEAR
[CODE 99 IF DK/DR]

85. On average, how many hours per week did your child play soccer on synthetic turf fields between the ages of **13 and 17**? _____ HOURS PER WEEK
[CODE 99 IF DK/DR]

86. Has your child attended a soccer camp where they played on synthetic turf fields **in the last year**? No [END OF SURVEY] . 0
Yes 1

Don't Know 9

Prefer not to answer 8

87. Approximately how many days per year did your child spend playing soccer on synthetic turf fields for soccer camps **in the last year**? _____ DAYS PER YEAR

88. Approximately how many hours per day did your child spend playing soccer on synthetic turf fields for soccer camps **in the last year**? _____ HOURS PER DAY

This concludes the survey. Thank you for your time!

If you would like to complete the survey again for yourself or another child, click here.

Learn more about the Synthetic Turf Exposure Study on OEHHA's website.

Connect with us on the study's Facebook page.



A. GENERAL DEMOGRAPHIC AND SOCCER PLAYER INFORMATION

89. What is your year of birth?

— — — —

YEAR

**[IF BIRTH YEAR AFTER 1999 – END
SURVEY]**

90. What is your month of birth?

— —

MONTH

**[IF BIRTH IN 11/1999 or 12/1999 – END
SURVEY]**

91. Are you male or female?

Male 1

Female 2

Prefer not to identify..... 3

92. What ethnic group best describes you?

Asian or Pacific Islander 1

Black/African American..... 2

Caucasian 3

Hispanic/Latino 4

Native American 5

Mixed 6

Prefer not to identify..... 7

Other 8

Specify _____

93. How tall are you?

— — FEET

— — INCHES

94. How much do you weigh?

— — POUNDS

95. What is your current grade in school?

11th 11

12th 12

Other 13

N/A 14

Specify _____

96. What is your residential zip code?

— — — — —

97. Do you primarily play recreational or
competitive soccer?

Recreational..... 1



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- Competitive 2
- Both 3
- Don't know 9
- Prefer not to answer 8
98. What position do you usually play? (**Check all that apply**)
- Goalie ☐
- Forward ☐
- Midfielder ☐
- Defender ☐
- Don't know 9
- Prefer not to answer 8

B. CONTACT TYPES AND SCENARIOS DURING SOCCER PRACTICE

*The following questions pertain specifically to activities and behaviors during soccer **PRACTICE** days on synthetic turf fields.*

99. Approximately what percent of your soccer **PRACTICES** take place on synthetic turf fields?
- 0%(114) 1
- >0-25% 2
- >25-50% 3
- >50-75% 4
- >75% 5
- Don't know 9
- Prefer not to answer 8
100. Approximately how long before a **PRACTICE** do you eat or have a snack/meal?
- < 1 Hour 1
- >1-3 Hours 2
- > 3 Hours 3
- Don't know 9
- Prefer not to answer 8
101. Approximately how many hours in the **past week** have you **PRACTICED** soccer on a synthetic turf field? _____ HOURS
- [CODE 99 IF DK/DR]
102. **Over the past year**, approximately how many days per week have you typically spent **PRACTICING** soccer on synthetic turf fields in each season?



- a. Spring _____ DAYS PER WEEK
[CODE 99 IF DK/DR]
- b. Summer _____ DAYS PER WEEK
[CODE 99 IF DK/DR]
- c. Fall _____ DAYS PER WEEK
[CODE 99 IF DK/DR]
- d. Winter _____ DAYS PER WEEK
[CODE 99 IF DK/DR]
103. **Over the past year**, approximately how many hours per day have you typically spent **PRACTICING** soccer on synthetic turf fields in each season?
- a. Spring _____ HOURS PER DAY
[CODE 99 IF DK/DR]
- b. Summer _____ HOURS PER DAY
[CODE 99 IF DK/DR]
- c. Fall _____ HOURS PER DAY
[CODE 99 IF DK/DR]
- d. Winter _____ HOURS PER DAY
[CODE 99 IF DK/DR]
104. **Over the past year**, what is the longest period of time that you have spent **PRACTICING** soccer on a synthetic turf field in a single day?
- <1 Hour 1
- >1-2 Hours 2
- >2-4 Hours 3
- >4-5 Hours 4
- > 5 Hours 5
- Don't know 9
- Prefer not to answer 8

Please indicate how often you do the following activities on a soccer **PRACTICE** day on synthetic turf fields.

105. On a soccer **PRACTICE** day on synthetic turf fields, how often do you do the following activities?
- a. Dive
- Never 0
- ~1-3 times 1
- ~4-10 times 2
- >10 times 3
- Don't know 9
- Prefer not to answer 8



b. Slide/tackle

Never 0

~1-3 times 1

~4-10 times 2

>10 times 3

Don't know 9

Prefer not to answer 8

c. Slip/fall on ground

Never 0

~1-3 times 1

~4-10 times 2

>10 times 3

Don't know 9

Prefer not to answer 8

C. DERMAL AND INGESTION EXPOSURES DURING SOCCER PRACTICE

106. On a soccer **PRACTICE** day on synthetic turf fields, how often do you eat or have a snack while at practice?

Never(108)..... 0

1 time 1

2 times 2

> 2 times 3

Don't know 9

Prefer not to answer 8

107. On a soccer **PRACTICE** day on synthetic turf fields, how often do you wash or wipe your hands before eating?

Never 0

Rarely..... 1

Sometimes 2

Often 3

Always..... 4

Don't know 9

Prefer not to answer 8



108. On a soccer **PRACTICE** day on synthetic turf fields, how many ounces water/sports drink do you typically drink? A normal water bottle is approximately 16 ounces.
- 8 oz 1
16 oz 2
24 oz 3
32 oz 4
48 oz 5
64 oz 6
> 64 oz 7
Don't know 9
Prefer not to answer 8
109. On a soccer **PRACTICE** day, approximately how much time do you spend doing sit-ups, putting on equipment, stretching, etc., where more than your feet are in contact with the synthetic turf?
- 0 minutes 0
>0-15 minutes 1
>15-30 minutes 2
>30-60 minutes 3
>60 minutes 4
Don't know 9
Prefer not to answer 8
110. On a soccer **PRACTICE** day, approximately how many minutes do you usually spend walking barefoot on the synthetic turf?
- 0 minutes 0
>0-10 minutes 1
>10-30 minutes 2
>30 minutes 3
Don't know 9
Prefer not to answer 8
111. While you are **PRACTICING** soccer on a synthetic turf field, what percent of the time do you usually use a mouth guard?
- 0% 0
>0-25% 1
>25-50% 2



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>50-75% 3
>75%..... 4
Don't Know..... 9
Prefer not to answer 8

112. While you are **PRACTICING** soccer on a synthetic turf field, how often do you usually:

- a. Get crumb rubber in your mouth? Never 0
Rarely..... 1
Sometimes 2
Often 3
Always..... 4
Don't know 9
Prefer not to answer 8
- b. Get crumb rubber in your eyes? Never 0
Rarely..... 1
Sometimes 2
Often 3
Always..... 4
Don't know 9
Prefer not to answer 8
- c. Play with crumb rubber (i.e. making a pile, throwing it, playing with it in your hands, etc.)? Never 0
Rarely..... 1
Sometimes 2
Often 3
Always..... 4
Don't know 9



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- Prefer not to answer 8
- d. Get cuts or abrasions from contact with the turf?
- Never(113)..... 0
- Rarely..... 1
- Sometimes 2
- Often 3
- Always..... 4
- Don't know 9
- Prefer not to answer 8
- e. During **PRACTICE**, where on your body usually has the most cuts or abrasions?
- Elbow 1
- Knee..... 2
- Thigh 3
- Stomach..... 4
- Other _____
- Don't know 9
- Prefer not to answer 8

D. INHALATION EXPOSURES DURING PRACTICE

113. While at soccer **PRACTICE** on synthetic turf fields, what percent of the time are you typically resting, lightly active, moderately active, and highly active? **Your responses should all add up to 100%.** Please enter "DK" if you don't know. You may leave this question blank if you prefer not to answer.

Resting (i.e. sitting or standing)	Lightly active (i.e. walking)	Moderately active (i.e. jogging)	Highly active (i.e. running hard)
— —	— —	— —	— —
100%			

E. CONTACT TYPES AND SCENARIOS DURING SOCCER GAMES



*The following questions pertain specifically to your activities and behaviors during soccer **GAME** days, including warm-up and cool-down, on synthetic turf fields.*

114. Approximately what percent of your soccer **GAMES** take place on synthetic turf fields?
- 0% (130) 1
>0-25% 2
>25-50% 3
>50-75% 4
>75% 5
Don't Know 9
Prefer not to answer 8
115. Approximately how long before a **GAME** do you usually eat or have a snack/meal?
- < 1 Hour 1
> 1-3 Hours 2
> 3 Hours 3
Don't know 9
Prefer not to answer 8
116. Approximately how many minutes do you play during a typical soccer **GAME**? _____ MINUTES
[CODE 99 IF DK/DR]
117. Approximately how many hours in the **past week** have you played soccer **GAMES** on a synthetic turf field? _____ HOURS
[CODE 99 IF DK/DR]
118. **Over the past year**, approximately how many days per week have you typically spent playing soccer **GAMES** on synthetic turf fields in each season?
- a. Spring _____ DAYS PER WEEK
[CODE 99 IF DK/DR]
b. Summer _____ DAYS PER WEEK
[CODE 99 IF DK/DR]
c. Fall _____ DAYS PER WEEK
[CODE 99 IF DK/DR]
d. Winter _____ DAYS PER WEEK
[CODE 99 IF DK/DR]
119. **Over the past year**, approximately how many hours per day have you typically spent playing soccer **GAMES** on synthetic turf fields in each season?



- a. Spring _____ HOURS PER DAY
[CODE 99 IF DK/DR]
- b. Summer _____ HOURS PER DAY
[CODE 99 IF DK/DR]
- c. Fall _____ HOURS PER DAY
[CODE 99 IF DK/DR]
- d. Winter _____ HOURS PER DAY
[CODE 99 IF DK/DR]
120. **Over the past year**, what is the longest period of time that you have spent playing soccer **GAMES** on a synthetic turf field in a single day?
- <1 Hour 1
- > 1-2 Hours 2
- > 2-4 Hours 3
- > 4-5 Hours 4
- > 5 Hours.....5
- Don't know 9
- Prefer not to answer.....8

*Please indicate how often you do the following activities on a soccer **GAME** day on synthetic turf fields.*

121. On a soccer **GAME** day on synthetic turf fields, how often do you do the following activities?
- a. Dive
- Never 0
- ~1-3 times 1
- ~4-10 times 2
- >10 times.....3
- Don't know.....9
- Prefer not to answer 8
- b. Slide/tackle
- Never 0
- Rarely (~1-3 times).....1
- Sometimes (~4-10 times).....2
- Often (>10 times) 3
- Don't know.....9
- Prefer not to answer 8
- c. Slip/fall on ground
- Never 0



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~1-3 times	1
~4-10 times	2
>10 times.....	3
Don't know.....	9
Prefer not to answer.....	8

F. DERMAL AND INGESTION EXPOSURES DURING SOCCER GAMES

122. On a soccer GAME day on synthetic turf fields, how often do you eat or have a snack while at the game?	Never(124).....	0
	1 time	1
	2 times	2
	> 2 times	3
	Don't know	9
	Prefer not to answer	8
123. While playing a soccer GAME on a synthetic turf field, how often do you usually wash or wipe hands before eating?	Never	0
	Rarely.....	1
	Sometimes	2
	Often	3
	Always.....	4
	Don't know	9
	Prefer not to answer	8
124. On a soccer GAME day on synthetic turf fields, how many ounces water/sports drink do you typically drink? A normal water bottle is approximately 16 ounces [SEE CARD].	8 oz	1
	16 oz	2
	24 oz	3
	32 oz	4
	48 oz	5
	64 oz	6
	> 64 oz	7



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- Don't know 9
- Prefer not to answer 8
125. On a soccer **GAME** day, approximately how much time do you spend doing sit-ups, putting on equipment, stretching, etc., where more than your feet are in contact with the synthetic turf?
- 0 minutes 0
- >0-15 minutes 1
- >15-30 minutes 2
- >30-60 minutes 3
- >60 minutes 4
- Don't know 9
- Prefer not to answer 8
126. On a soccer **GAME** day, approximately how many minutes do you usually spend walking barefoot on the synthetic turf?
- 0 minutes 0
- >0-10 minutes 1
- >10-30 minutes 2
- >30 minutes 3
- Don't know 9
- Prefer not to answer 8
127. While playing a soccer **GAME** on a synthetic turf field, what percent of the time do you usually use a mouth guard?
- 0% 0
- >0-25% 1
- >25-50% 2
- >50-75% 3
- >75% 4
- Don't Know 9
- Prefer not to answer 8
128. While playing a soccer **GAME** on a synthetic turf field, how often do you usually:
- a. Get crumb rubber in your mouth?
- Never 0
- Rarely 1



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	Sometimes	2
	Often	3
	Always.....	4
	Don't know	9
	Prefer not to answer	8
b. Get crumb rubber in your eyes?	Never	0
	Rarely.....	1
	Sometimes	2
	Often	3
	Always.....	4
	Don't know	9
	Prefer not to answer	8
c. Play with crumb rubber (i.e. making a pile, throwing it, playing with it in your hands, etc.)?	Never	0
	Rarely.....	1
	Sometimes	2
	Often	3
	Always.....	4
	Don't know	9
	Prefer not to answer	8
d. Get cuts or abrasions from contact with the turf?	Never(129).....	0
	Rarely.....	1
	Sometimes	2
	Often	3
	Always.....	4
	Don't know	9
	Prefer not to answer	8
e. During GAMES , where on your body usually has the most cuts or abrasions?	Elbow	1



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Knee..... 2
Thigh 3
Stomach 4
Other _____
Don't know 9
Prefer not to answer 8

G. INHALATION EXPOSURES DURING GAMES

129. On a soccer **GAME** day on synthetic turf fields, what percent of the time are you typically resting, lightly active, moderately active, and highly active? **Your responses should all add up to 100%.** Please enter "DK" if you don't know. You may leave this question blank if you prefer not to answer.

Resting (i.e. sitting or standing)	Lightly active (i.e. walking)	Moderately active (i.e. jogging)	Highly active (i.e. running hard)
— —	— —	— —	— —
100%			

H. ADDITIONAL DERMAL AND NON-DIETARY EXPOSURES

*General Soccer Activities - the following questions pertain to your child's activities and behaviors while **PRATICING SOCCER OR PLAYING SOCCER GAMES.***

130. Please indicate whether or not you wear each of the following clothing items while playing soccer on synthetic turf fields in each of the four seasons: **(Select all that apply):**

a. Shorts (without leggings or long layers) Spring..... ☐
Summer ☐



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- Fall ☐
- Winter..... ☐
- Never ☐
- Don't know 9
- Prefer not to answer 8
- b. Short-sleeve shirt (without a long sleeve shirt or long layers)
- Spring..... ☐
- Summer ☐
- Fall ☐
- Winter..... ☐
- Never ☐
- Don't know 9
- Prefer not to answer 8
- c. Long pants or leggings
- Spring..... ☐
- Summer ☐
- Fall ☐
- Winter..... ☐
- Never ☐
- Don't know 9
- Prefer not to answer 8
- d. Long-sleeve shirt
- Spring..... ☐
- Summer ☐
- Fall ☐



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Winter..... ☐

Never ☐

Don't know 9

Prefer not to answer 8

e. Gloves

Spring..... ☐

Summer ☐

Fall ☐

Winter..... ☐

Never ☐

Don't know 9

Prefer not to answer 8

f. Long socks

Spring..... ☐

Summer ☐

Fall ☐

Winter..... ☐

Never ☐

Don't know 9

Prefer not to answer 8

131. Have you ever noticed an unpleasant **odor**
while you are on synthetic turf field?

No(133)..... 0

Yes..... 1

Don't know 9

Prefer not to answer 8

132. Can you describe the odor?



- _____
- _____
133. Have you ever experienced **eye or nose irritation** while you are on a synthetic turf field?
- No 0
- Yes 1
- Don't know 9
- Prefer not to answer 8
134. Have you ever experienced **nausea** while you are on a synthetic turf field?
- No 0
- Yes 1
- Don't know 9
- Prefer not to answer 8
135. Have you ever experienced **headaches** while you are on a synthetic turf field?
- No 0
- Yes 1
- Don't know 9
- Prefer not to answer 8
136. Have you ever felt **overheated** while you are on a synthetic turf field?
- No 0
- Yes 1
- Don't know 9
- Prefer not to answer 8

I. CRUMB RUBBER TAKE-HOME

*These questions pertain to your activities and behaviors **AFTER** a soccer practice or game on a synthetic turf field.*

137. **After** you play soccer on a synthetic turf field, how often do you notice crumb rubber granules, or crumb rubber dirt and debris, such as black dust:
- a. In your car?
- Never 0
- Rarely 1
- Sometimes 2



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	Often	3
	Always.....	4
	Don't know	9
	Prefer not to answer	8
b. In your home?	Never(139).....	0
	Rarely.....	1
	Sometimes	2
	Often	3
	Always.....	4
	Don't know	9
	Prefer not to answer	8

138. **After** you play soccer on a synthetic turf field, what percent of the time do you notice crumb rubber granules, or crumb rubber dirt and debris, such as black dust:

a. In your garage/mudroom/entrance to your house?	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't know	9
	Prefer not to answer	8
b. In your laundry room?	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't know	9



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	Prefer not to answer	8
c. In your bedroom?	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't know	9
	Prefer not to answer	8
d. In your bathroom?	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't know	9
	Prefer not to answer	8
139. After you play soccer on a synthetic turf field, how often do you notice crumb rubber granules, or crumb rubber dirt and debris, such as black dust:		
a. In your water bottle?	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't know	9
	Prefer not to answer	8
b. On your clothes?	0%	0
	>0-25%	1



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	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't know	9
	Prefer not to answer	8
c. In your shoes?	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't know	9
	Prefer not to answer	8
d. In your socks?	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't know	9
	Prefer not to answer	8
e. In your underwear?	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8



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140. **Each time after** you play soccer on a synthetic turf field, approximately how much crumb rubber (including granules or crumb rubber dirt and debris) do you find in your home?
- None 0
- Some, but < 1 Tablespoon 1
- 1 Tablespoon – ¼ Cup 2
- > ¼ Cup – ½ Cup 3
- > ½ cup 4
- Don't Know..... 9
- Prefer not to answer 8
141. **After** you play soccer on a synthetic turf field, what percent of the time do you notice crumb rubber granules, or crumb rubber dirt and debris, such as black dust on your body?
- 0%.....(143)..... 0
- >0-25% 1
- >25-50% 2
- >50-75% 3
- >75%..... 4
- Don't Know..... 9
- Prefer not to answer 8
142. **After** you play soccer on a synthetic turf field, how often do you find/notice crumb rubber particles or crumb rubber dirt and debris, such as black dust on the following parts of your body:
- a. Mouth
- 0%..... 0
- >0-25% 1
- >25-50% 2
- >50-75% 3
- >75%..... 4
- Don't Know..... 9
- Prefer not to answer 8
- b. Hair
- 0%..... 0
- >0-25% 1



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	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
c. Face	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
d. Neck	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
e. Chest	0%.....	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
f. Back	0%.....	0



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	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
g. Thighs	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
h. Lower legs	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8
i. Feet	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%.....	4
	Don't Know.....	9
	Prefer not to answer	8



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j. Upper arms

0% 0
>0-25% 1
>25-50% 2
>50-75% 3
>75% 4
Don't Know 9
Prefer not to answer 8

k. Lower arms

0% 0
>0-25% 1
>25-50% 2
>50-75% 3
>75% 4
Don't Know 9
Prefer not to answer 8

l. Hands

0% 0
>0-25% 1
>25-50% 2
>50-75% 3
>75% 4
Don't Know 9
Prefer not to answer 8

J. HYGIENE PRACTICES

143. After playing soccer on a synthetic turf field, how often do you wipe, clean, or remove shoes, socks, shin guards, etc. before entering the **vehicle**?

0% 0
>0-25% 1
>25-50% 2
>50-75% 3



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- >75%.....4
- Don't Know.....9
- Prefer not to answer 8
144. After playing soccer on a synthetic turf field, how often do you wipe, clean, or remove shoes, socks, shin guards, etc. before entering the **home**?
- 0%.....0
- >0-25% 1
- >25-50% 2
- >50-75% 3
- >75%.....4
- Don't Know.....9
- Prefer not to answer 8
145. After playing soccer on a synthetic turf field, how often do you wash your gloves?
- I do not wear gloves.....1
- Weekly 2
- Monthly 3
- > Once per month – every six months.....4
- < Once every six months 5
- Don't Know.....9
- Prefer not to answer 8
146. How long after playing soccer on a synthetic turf field do you typically wear your soccer clothes before changing them? _____HOURS _____MINUTES
[CODE 99 IF DK]
147. What is the longest amount of time after playing soccer on a synthetic turf field that you may wear your soccer clothes before changing them? _____HOURS _____MINUTES
[CODE 99 IF DK]
148. How long after playing soccer on a synthetic turf field do you typically bathe or shower? _____HOURS _____MINUTES
[CODE 99 IF DK]
149. What is the longest amount of time after playing soccer on a synthetic turf field that you may wait to bathe or shower? _____HOURS _____MINUTES
[CODE 99 IF DK]

K. GENERAL HYGIENE

150. In general, how many times per day do you wash your hands? _____



[CODE 99 IF DK]

151. In general, how many times per week do you typically bathe/shower? _____

[CODE 99 IF DK]

L. PLAYER HISTORY BEFORE THIS SEASON

152. How many years have you played soccer? _____ YEARS

153. Do you play soccer year-round? No 0
Yes 1
Don't Know 9
Prefer not to answer 8

154. Did you play recreational soccer in the two years prior to the current season? No 0
Yes 1
Don't Know 9
Prefer not to answer 8

155. Did you play competitive soccer in the two years prior to the current season? No 0
Yes 1
Don't Know/Don't Remember 9
Prefer not to answer 8

156. **Do you currently** play competitive and/or recreational soccer in **college**? (i.e. for a college/university team, intramural team, etc.) No 0
Yes (158) 1
Don't Know/Don't Remember 9
Prefer not to answer 8

157. **Did you ever** play competitive and/or recreational soccer in **college** (i.e. for a college/university team, intramural team, etc.) No (165) 0
Yes 1
Don't Know 9
Prefer not to answer 8

158. **During college**, how many years have you played/did you play soccer? 1 Year 1



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- 2 Years..... 2
- 3 Years..... 3
- 4 Years..... 4
- Don't Know/Don't Remember 9
- Prefer not to answer 8
159. **During college**, how many weeks per year do you/did you spend playing soccer on synthetic turf fields in each season? WEEKS PER YEAR
[CODE 99 IF DK/DR]
160. **During college**, how many hours per week do you/did you spend playing soccer on synthetic turf fields in each season? HOURS PER WEEK
[CODE 99 IF DK/DR]
161. **During college**, what position do you/did you usually play?
- Goalie..... 1
- Forward..... 2
- Midfielder 3
- Defender 4
- Don't Know/Don't Remember 9
- Prefer not to answer 8
162. **During college**, do you/did you typically attend a soccer pre-season conditioning camp where you play on synthetic turf fields?
- No(165)..... 0
- Yes..... 1
- Don't Know/Don't Remember 9
- Prefer not to answer 8
163. Approximately how many days per year do you/did you spend playing soccer on synthetic turf fields for soccer conditioning camp during college? DAYS PER YEAR
164. Approximately how many hours per day do you/did you spend playing soccer on synthetic turf fields for soccer conditioning camp during college? HOURS PER DAY
165. Did you ever play competitive and/or recreational soccer while you were in **high school**?
- No(173)..... 0
- Yes..... 1
- Don't Know/Don't Remember 9
- Prefer not to answer 8



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166. In **high school**, how many years did you play soccer?
- 1 Year 1
- 2 Years..... 2
- 3 Years..... 3
- 4 Years..... 4
- Don't Know/Don't Remember 9
- Prefer not to answer 8
167. In **high school**, how many weeks per year did you usually spend playing soccer on synthetic turf fields in each season? _____ WEEKS PER YEAR
[CODE 99 IF DK/DR]
168. In **high school**, how many hours per week did you usually spend playing soccer on synthetic turf fields in each season? _____ HOURS PER WEEK
[CODE 99 IF DK/DR]
169. In **high school**, what position did you usually play?
- Goalie..... 1
- Forward 2
- Midfielder 3
- Defender 4
- Don't Know/Don't Remember 9
- Prefer not to answer 8
170. In **high school**, did you typically attend a soccer camp where you played on synthetic turf fields?
- No(173)..... 0
- Yes..... 1
- Don't Know/Don't Remember 9
- Prefer not to answer 8
171. Approximately how many days per year did you spend playing soccer on synthetic turf fields for soccer camp while in high school? _____ DAYS PER YEAR
172. Approximately how many hours per day did you spend playing soccer on synthetic turf fields for soccer camp during high school? _____ HOURS PER DAY
173. Did you ever play competitive and/or recreational soccer **before high school (i.e. youth/club teams)**?
- No[END OF SURVEY] . 0
- Yes..... 1
- Don't Know/Don't Remember 9
- Prefer not to answer 8



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174. **During youth/club soccer** (before high school), how many years did you play soccer?
- 1 Year 1
- 2 Years..... 2
- 3 Years..... 3
- 4 Years..... 4
- 5 Years..... 5
- 6 Years..... 6
- 7 Years or more 7
- Don't Know/Don't Remember 9
- Prefer not to answer 8
175. **During youth/club soccer** (before high school), how many weeks per year did you usually spend playing soccer on synthetic turf fields?
- ___ WEEKS PER YEAR
[CODE 99 IF DK/DR]
176. **During youth/club soccer** (before high school), how many hours per week did you usually spend playing soccer on synthetic turf fields?
- ___ HOURS PER WEEK
[CODE 99 IF DK/DR]
177. **During youth/club soccer** (before high school), what position did you usually play?
- Goalie..... 1
- Forward 2
- Midfielder 3
- Defender 4
- Multiple..... 5
- Don't Know..... 9
- Prefer not to answer 8

This concludes the survey. Thank you for your time!

If you would like to complete the survey again for yourself or another child, click here.

Learn more about the Synthetic Turf Exposure Study on OEHHA's website.

Connect with us on the study's Facebook page



Card 1. Water bottles

8 oz



16 oz



24 oz



32 oz



64 oz





Card 2. Crumb rubber amounts





Synthetic Turf Exposure Assessment Study

Object Palette Sheet

Date	___/___/___ MO DAY YR	Field ID	___
Event Number	___		
Notetaker 1	_____	Notetaker 2	_____
Player Position	_____	Player Jersey Number	___

Location: List locations associated with soccer player

Object and surface type: list items and types of objects (e.g. porous surface, etc) that are not obvious in the recording.

LOCATION	OBJECT and SURFACES	PALETTE DESIGNATION
Example: soccer field	Black crumb, plastic porous sit.	(Leave blank - transcriber only)



LOCATION	OBJECT and SURFACES	PALETTE DESIGNATION



Synthetic Turf Exposure Assessment Study

Taper's Log Time Sheet

Date	___ / ___ / ___ MO DAY YR	Field ID	___ - ___ - ___
Event Number	___ - ___	Video Camera Type	HD / Waterproof
Camera Serial #	___ - ___ - ___ - ___	SD Card Number	___ - ___ - ___
Time taping began	___ : ___ AM / PM	Time taping ended	___ : ___ AM / PM
Taper 1	_____	Taper 2	_____
Player Position	_____	Player Jersey Number	___ - ___

Tape Section	Counter time		Time (PST/PDT)		Comments
	Start	Stop	Start	Stop	

Running time as displayed on video camera: Pacific Standard Time

Start/Stop points typically refer to the Audio "MARKS" put on the tape

If "MARK" is missing indicate so in the "Comments"



~3 Defining features of participant being taped (i.e. red headband):

General comments:



S1.2. Population-Specific Exposure Parameter Estimates

				
WhileatsoccerPRACTI	WhileatsoccerPRACTI	WhileatsoccerGAMEo	WhileatsoccerGAMEo	WhileatsoccerGAMEo
CEonsyntheticurffields	CEonsyntheticurffields	nsyntheticurffields,wh	nsyntheticurffields,wh	nsyntheticurffields,wh
				
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OnasoccerGAMEDay	OnasoccerGAMEDay	OnasoccerGAMEDay	OnasoccerGAMEDay	OnasoccerGAMEDay
onsyntheticurffields,h	onsyntheticurffields,h	onsyntheticurffields,h	onsyntheticurffields,h	onsyntheticurffields,h
				
OnasoccerGAMEDay,	OnasoccerGAMEDay,	Ingeneral,howmanyti	Ingeneral,howmanyti	Howlongafterplaying
approximatelyhowmu	approximatelyhowmu	mesperweekdoyoudo	mesperdaydoyoudoes	occeronasyntheticur
				
Howlongafterplaying	Approximatelywhatpe	Approximatelywhatpe	Approximatelyhowma	Approximatelyhowma
socceronasyntheticur	centofyouryourchild'	centofyouryourchild'	snyhoursperdayhavey	onhoursperdayhaveyo
				
Approximatelyhowma	Approximatelyhowma	Approximatelyhowma	Approximatelyhowma	Approximatelyhowma
nyhoursperdayhavey	onhoursperdayhavey	onhoursperdayhavey	onhoursperdayhavey	onhoursperdayhaveyo
				
Approximatelyhowma	Approximatelyhowma	Approximatelyhowma	Approximatelyhowlon	Approximatelyhowlon
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S2. Supplemental Material for Appendix F.2. Quantification of Micro-level Activities from a Pre-existing Dataset of Children Playing on Turf/Playgrounds – by The University of Arizona

S2.1. Hands Data Summarized into EPA Age Categories

Table S2-1. Number of Children Playing on Turf Grouped by USEPA Age Categories and Gender

Gender	1 to <2 years	2 to <3 years	3 to <6 years	6 to <11 years	11 to <16 years	Total
Male	5	5	7	5	5	27
Female	3	2	10	13	1	29
Total	8	7	17	18	6	56

Table S2-2. Both Hands Contact Frequency (Event/Hour) While Playing on Turf by USEPA Age Groups (See Table S2-5 for Statistical Analysis Results)

Age Group	Distribution	Grass	Dietary	Non-Dietary	All Objects
<2 (n=8)	Mean	11.1	1.4	285.7	287.1
<2 (n=8)	SD	11.8	3.6	75.8	76.1
<2 (n=8)	Min	0.3	0.0	187.9	187.9
<2 (n=8)	p25	2.9	0.0	238.2	238.2
<2 (n=8)	Median	8.5	0.0	282.8	287.9
<2 (n=8)	p75	14.0	0.6	308.2	308.4
<2 (n=8)	p95	37.2	10.2	439.3	440.0
<2 (n=8)	p99	37.2	10.2	439.3	440.0
<2 (n=8)	Max	37.2	10.2	439.3	440.0
2 to <3 (n=7)	Mean	5.6	6.6	185.8	192.4
2 to <3 (n=7)	SD	10.6	9.8	43.4	42.8
2 to <3 (n=7)	Min	0.0	0.9	107.7	109.7
2 to <3 (n=7)	p25	0.0	0.9	171.5	181.5
2 to <3 (n=7)	Median	2.1	2.7	189.2	194.1
2 to <3 (n=7)	p75	3.2	8.8	227.4	228.3
2 to <3 (n=7)	p95	29.4	27.9	241.1	244.2



Age Group	Distribution	Grass	Dietary	Non-Dietary	All Objects
2 to <3 (n=7)	p99	29.4	27.9	241.1	244.2
2 to <3 (n=7)	Max	29.4	27.9	241.1	244.2
3 to <6 (n=17)	Mean	9.8	8.6	317.7	326.3
3 to <6 (n=17)	SD	17.2	12.6	183.6	179.7
3 to <6 (n=17)	Min	0.0	0.0	163.1	169.5
3 to <6 (n=17)	p25	0.0	0.0	206.7	213.4
3 to <6 (n=17)	Median	2.1	1.0	219.7	228.6
3 to <6 (n=17)	p75	17.4	17.2	403.7	403.7
3 to <6 (n=17)	p95	70.0	40.3	765.8	768.3
3 to <6 (n=17)	p99	70.0	40.3	765.8	768.3
3 to <6 (n=17)	Max	70.0	40.3	765.8	768.3
6 to <11 (n=18)	Mean	20.0	3.0	268.9	271.9
6 to <11 (n=18)	SD	58.2	5.6	98.7	97.0
6 to <11 (n=18)	Min	0.0	0.0	138.8	138.8
6 to <11 (n=18)	p25	0.0	0.0	192.3	202.1
6 to <11 (n=18)	Median	6.4	0.0	252.5	252.8
6 to <11 (n=18)	p75	11.3	3.4	304.6	304.6
6 to <11 (n=18)	p95	251.9	20.8	494.9	494.9
6 to <11 (n=18)	p99	251.9	20.8	494.9	494.9
6 to <11 (n=18)	Max	251.9	20.8	494.9	494.9
11 to <16 (n=6)	Mean	26.6	13.7	279.0	292.7
11 to <16 (n=6)	SD	23.8	16.4	88.4	93.0
11 to <16 (n=6)	Min	0.3	0.0	160.0	160.5
11 to <16 (n=6)	p25	2.6	0.5	234.9	238.9
11 to <16 (n=6)	Median	26.2	7.4	269.3	294.8
11 to <16 (n=6)	p75	45.0	26.5	325.2	351.7
11 to <16 (n=6)	p95	59.2	40.3	415.6	415.6



Age Group	Distribution	Grass	Dietary	Non-Dietary	All Objects
11 to <16 (n=6)	p99	59.2	40.3	415.6	415.6
11 to <16 (n=6)	Max	59.2	40.3	415.6	415.6

Table S2-3. Both Hands Hourly Contact Duration (Min/Hour) While Playing on Turf by USEPA Age Groups (See Table S2-5 For Statistical Analysis Results)

Age Group	Distribution	Grass	Dietary	Non-Dietary	All Objects
<2 (n=8)	Mean	0.9	0.7	29.6	36.4
<2 (n=8)	SD	1.6	1.7	14.0	15.6
<2 (n=8)	Min	0.0	0.0	15.6	26.8
<2 (n=8)	p25	0.1	0.0	22.7	28.2
<2 (n=8)	Median	0.5	0.0	26.9	29.6
<2 (n=8)	p75	0.6	0.4	29.9	38.1
<2 (n=8)	p95	4.8	4.9	62.2	72.4
<2 (n=8)	p99	4.8	4.9	62.2	72.4
<2 (n=8)	Max	4.8	4.9	62.2	72.4
2 to <3 (n=7)	Mean	0.8	3.2	36.6	41.6
2 to <3 (n=7)	SD	1.7	4.7	15.5	16.5
2 to <3 (n=7)	Min	0.0	0.1	18.9	22.4
2 to <3 (n=7)	p25	0.1	0.1	26.9	34.0
2 to <3 (n=7)	Median	0.2	0.2	32.4	35.2
2 to <3 (n=7)	p75	0.4	8.1	56.8	60.3
2 to <3 (n=7)	p95	4.6	11.7	59.7	68.7
2 to <3 (n=7)	p99	4.6	11.7	59.7	68.7
2 to <3 (n=7)	Max	4.6	11.7	59.7	68.7
3 to <6 (n=17)	Mean	0.7	2.3	29.0	34.5
3 to <6 (n=17)	SD	1.4	3.2	6.1	6.7
3 to <6 (n=17)	Min	0.0	0.0	20.8	23.2
3 to <6 (n=17)	p25	0.0	0.0	23.5	32.7
3 to <6 (n=17)	Median	0.1	0.2	28.5	34.7



Age Group	Distribution	Grass	Dietary	Non-Dietary	All Objects
3 to <6 (n=17)	p75	0.4	5.6	33.4	36.2
3 to <6 (n=17)	p95	4.6	8.2	44.3	55.9
3 to <6 (n=17)	p99	4.6	8.2	44.3	55.9
3 to <6 (n=17)	Max	4.6	8.2	44.3	55.9
6 to <11 (n=18)	Mean	1.1	1.0	34.4	39.8
6 to <11 (n=18)	SD	2.8	1.7	14.8	12.1
6 to <11 (n=18)	Min	0.0	0.0	14.7	30.5
6 to <11 (n=18)	p25	0.1	0.0	27.4	32.8
6 to <11 (n=18)	Median	0.3	0.0	33.2	35.9
6 to <11 (n=18)	p75	0.7	2.4	35.5	37.3
6 to <11 (n=18)	p95	12.0	5.5	65.3	67.3
6 to <11 (n=18)	p99	12.0	5.5	65.3	67.3
6 to <11 (n=18)	Max	12.0	5.5	65.3	67.3
11 to <16 (n=6)	Mean	1.4	2.7	38.2	43.9
11 to <16 (n=6)	SD	1.8	4.7	29.2	30.4
11 to <16 (n=6)	Min	0.0	0.0	20.9	22.9
11 to <16 (n=6)	p25	0.1	0.0	20.9	31.0
11 to <16 (n=6)	Median	0.6	1.0	27.6	34.0
11 to <16 (n=6)	p75	3.0	2.1	36.4	36.4
11 to <16 (n=6)	p95	4.2	12.1	96.0	105.1
11 to <16 (n=6)	p99	4.2	12.1	96.0	105.1
11 to <16 (n=6)	Max	4.2	12.1	96.0	105.1

Table S2-4. Both Hands Median Contact Duration (Second) While Playing on Turf by USEPA Age Groups (See Table S2-5 For Statistical Analysis Results)

Age Group	Distribution	Grass	Dietary	Non-Dietary	All Objects
<2	n*	8	3	8	8
<2	Mean	2.50	4.00	3.63	3.63



Age Group	Distribution	Grass	Dietary	Non-Dietary	All Objects
<2	SD	0.76	4.77	0.52	0.52
<2	Min	2.00	1.00	3.00	3.00
<2	p25	2.00	1.00	3.00	3.00
<2	Median	2.00	1.50	4.00	4.00
<2	p75	3.00	9.50	4.00	4.00
<2	p95	4.00	9.50	4.00	4.00
<2	p99	4.00	9.50	4.00	4.00
<2	Max	4.00	9.50	4.00	4.00
2 to <3	n*	5	7	7	7
2 to <3	Mean	3.50	8.64	3.43	3.43
2 to <3	SD	1.41	6.99	0.79	0.79
2 to <3	Min	2.00	1.00	2.00	2.00
2 to <3	p25	2.50	4.00	3.00	3.00
2 to <3	Median	3.00	7.00	4.00	4.00
2 to <3	p75	5.00	10.00	4.00	4.00
2 to <3	p95	5.00	23.00	4.00	4.00
2 to <3	p99	5.00	23.00	4.00	4.00
2 to <3	Max	5.00	23.00	4.00	4.00
3 to <6	n*	11	10	17	17
3 to <6	Mean	2.36	9.65	3.35	3.41
3 to <6	SD	2.04	4.74	0.93	0.94
3 to <6	Min	0.50	4.00	2.00	2.00
3 to <6	p25	1.00	6.00	3.00	3.00
3 to <6	Median	2.00	7.75	3.00	3.00
3 to <6	p75	3.00	14.00	4.00	4.00
3 to <6	p95	8.00	18.00	5.00	5.00
3 to <6	p99	8.00	18.00	5.00	5.00



Age Group	Distribution	Grass	Dietary	Non-Dietary	All Objects
3 to <6	Max	8.00	18.00	5.00	5.00
6 to <11	n*	13	7	18	18
6 to <11	Mean	3.04	7.29	3.14	3.19
6 to <11	SD	3.10	4.64	1.03	1.10
6 to <11	Min	1.00	2.00	1.00	1.00
6 to <11	p25	2.00	4.00	2.00	2.00
6 to <11	Median	2.00	5.00	3.00	3.00
6 to <11	p75	3.00	12.00	4.00	4.00
6 to <11	p95	13.00	14.00	5.00	5.00
6 to <11	p99	13.00	14.00	5.00	5.00
6 to <11	Max	13.00	14.00	5.00	5.00
11 to <16	n*	6	5	6	6
11 to <16	Mean	2.33	3.80	2.83	2.83
11 to <16	SD	0.52	2.36	1.17	1.17
11 to <16	Min	2.00	1.00	2.00	2.00
11 to <16	p25	2.00	2.50	2.00	2.00
11 to <16	Median	2.00	3.00	2.50	2.50
11 to <16	p75	3.00	6.00	3.00	3.00
11 to <16	p95	3.00	6.50	5.00	5.00
11 to <16	p99	3.00	6.50	5.00	5.00
11 to <16	Max	3.00	6.50	5.00	5.00

*Only participants who contacted object included in calculation of median contact duration.

Table S2-5. Statistical Analysis of Hand Contact Events by USEPA Age Groups

Activity Variables	Contact	p-value*
Hand contact frequency (event/hour)	Grass (n=56)	0.361
Hand contact frequency (event/hour)	Non-Dietary (n=56)	0.397
Hand contact frequency (event/hour)	Dietary (n=56)	0.644



Activity Variables	Contact	p-value*
Hand contact frequency (event/hour)	All objects (n=56)	0.058
Hourly hand contact duration (min/hour)	Grass (n=56)	0.252
Hourly hand contact duration (min/hour)	Non-Dietary (n=56)	0.132
Hourly hand contact duration (min/hour)	Dietary (n=56)	0.644
Hourly hand contact duration (min/hour)	All objects (n=56)	0.165
Median hand contact duration (second)	Grass (n=42)	0.286
Median hand contact duration (second)	Non-Dietary (n=56)	0.116
Median hand contact duration (second)	Dietary (n=28)	0.491
Median hand contact duration (second)	All objects (n=56)	0.165

*p-Value from Kruskal-Wallis Test

Table S2-6. Both Hands Contact Frequency (Event/Hour) While Playing on Turf by Younger (1-6 Years) and Older (7-12 Years) Children (See Table S2-9 for Statistical Analysis Results)

Age Group	Distribution	Grass	Dietary	Non-Dietary	All Objects
1-6 years (n=32)	Mean	9.2	6.4	280.8	287.2
1-6 years (n=32)	SD	14.5	10.6	147.8	145.6
1-6 years (n=32)	Min	0.0	0.0	107.7	109.7
1-6 years (n=32)	p25	0.6	0.0	192.1	203.1
1-6 years (n=32)	Median	3.2	0.9	223.3	228.4
1-6 years (n=32)	p75	14.0	8.8	307.9	308.4
1-6 years (n=32)	p95	37.2	27.9	680.3	680.3
1-6 years (n=32)	p99	70.0	40.3	765.8	768.3
1-6 years (n=32)	Max	70.0	40.3	765.8	768.3
7-12 years (n=24)	Mean	21.6	5.7	271.4	277.1
7-12 years (n=24)	SD	51.3	10.2	94.4	94.5
7-12 years (n=24)	Min	0.0	0.0	138.8	138.8
7-12 years (n=24)	p25	1.1	0.0	202.4	213.9
7-12 years (n=24)	Median	6.9	0.3	252.5	252.8



Age Group	Distribution	Grass	Dietary	Non-Dietary	All Objects
7-12 years (n=24)	p75	15.8	8.6	314.9	345.1
7-12 years (n=24)	p95	59.2	26.5	473.6	473.6
7-12 years (n=24)	p99	251.9	40.3	494.9	494.9
7-12 years (n=24)	Max	251.9	40.3	494.9	494.9

Table S2-7. Both Hands Hourly Contact Duration (Min/Hour) While Playing on Turf by Younger (1-6 Years) and Older (7-12 Years) Children (See Table S2-5 For Statistical Analysis Results)

Age Group	Distribution	Grass	Dietary	Non-Dietary	All Objects
1-6 years (n=32)	Mean	0.8	2.1	30.8	36.5
1-6 years (n=32)	SD	1.5	3.3	10.9	11.8
1-6 years (n=32)	Min	0.0	0.0	15.6	22.4
1-6 years (n=32)	p25	0.0	0.0	23.7	29.6
1-6 years (n=32)	Median	0.2	0.1	28.6	34.5
1-6 years (n=32)	p75	0.6	3.9	33.2	36.4
1-6 years (n=32)	p95	4.6	8.2	59.7	68.7
1-6 years (n=32)	p99	4.8	11.7	62.2	72.4
1-6 years (n=32)	Max	4.8	11.7	62.2	72.4
7-12 years (n=24)	Mean	1.2	1.4	35.4	40.8
7-12 years (n=24)	SD	2.5	2.7	18.7	17.7
7-12 years (n=24)	Min	0.0	0.0	14.7	22.9
7-12 years (n=24)	p25	0.1	0.0	21.0	32.3
7-12 years (n=24)	Median	0.3	0.0	33.0	35.6
7-12 years (n=24)	p75	0.9	2.2	35.7	37.2
7-12 years (n=24)	p95	4.2	5.5	65.3	67.3
7-12 years (n=24)	p99	12.0	12.1	96.0	105.1
7-12 years (n=24)	Max	12.0	12.1	96.0	105.1



Table S2-8. Both Hands Median Contact Duration (Second) While Playing on Turf by Younger (1-6 Years) and Older (7-12 Years) Children (See Table S2-5 For Statistical Analysis Results)

Age Group	Distribution	Grass	Dietary	Non-Dietary	All Objects
1-6 years	n*	24	20	32	32
1-6 years	Mean	2.65	8.45	3.44	3.47
1-6 years	SD	1.59	5.69	0.80	0.80
1-6 years	Min	0.50	1.00	2.00	2.00
1-6 years	p25	2.00	5.00	3.00	3.00
1-6 years	Median	2.00	7.25	3.50	4.00
1-6 years	p75	3.00	10.00	4.00	4.00
1-6 years	p95	5.00	20.50	5.00	5.00
1-6 years	p99	8.00	23.00	5.00	5.00
1-6 years	Max	8.00	23.00	5.00	5.00
7-12 years	n*	19	12	24	24
7-12 years	Mean	2.82	5.83	3.06	3.10
7-12 years	SD	2.57	4.12	1.05	1.10
7-12 years	Min	1.00	1.00	1.00	1.00
7-12 years	p25	2.00	2.75	2.00	2.00
7-12 years	Median	2.00	4.50	3.00	3.00
7-12 years	p75	3.00	8.25	4.00	4.00
7-12 years	p95	13.00	14.00	5.00	5.00
7-12 years	p99	13.00	14.00	5.00	5.00
7-12 years	Max	13.00	14.00	5.00	5.00

*Only participants who contacted object included in calculation of median contact duration

Table S2-9. Statistical Analysis of Hand Contact Events Younger (1-6 Years) and Older (7-12 Years) Children

Activity Variables	Contact	p-value*
Hand contact frequency (event/hour)	Grass (n=56)	0.318
Hand contact frequency (event/hour)	Non-Dietary (n=56)	0.581



Activity Variables	Contact	p-value*
Hand contact frequency (event/hour)	Dietary (n=56)	0.585
Hand contact frequency (event/hour)	All Objects (n=56)	0.584
Hourly hand contact duration (min/hour)	Grass (n=56)	0.295
Hourly hand contact duration (min/hour)	Non-Dietary (n=56)	0.264
Hourly hand contact duration (min/hour)	Dietary (n=56)	0.328
Hourly hand contact duration (min/hour)	All Objects (n=56)	0.191
Median hand contact duration (second)	Grass (n=42)	0.884
Median hand contact duration (second)	Non-Dietary (n=56)	0.061
Median hand contact duration (second)	Dietary (n=28)	0.092
Median hand contact duration (second)	All Objects (n=56)	0.069

*p-value from Kruskal-Wallis Test

Table S2-10. Mouthing Contact Frequency (Event/Hour) While Playing on Turf by USEPA Age Groups

Age Group	Distribution	Grass	Hands	Dietary	Non-Dietary	All Objects
<2 (n=8)	Mean	0.34	12.74	2.79	25.69	28.48
<2 (n=8)	SD	0.65	11.69	4.39	22.61	23.62
<2 (n=8)	Min	0.00	0.66	0.00	1.48	2.96
<2 (n=8)	Median	0.00	3.70	0.00	9.44	9.44
<2 (n=8)	p25	0.00	11.99	0.74	16.30	19.68
<2 (n=8)	p75	0.51	16.56	4.41	44.37	51.41
<2 (n=8)	p95	1.69	36.78	12.05	63.82	63.82
<2 (n=8)	p99	1.69	36.78	12.05	63.82	63.82
<2 (n=8)	Max	1.69	36.78	12.05	63.82	63.82
2 to <3 (n=7)	Mean	ND	10.33	28.11	15.78	43.89
2 to <3 (n=7)	SD	ND	5.22	36.10	8.21	30.77
2 to <3 (n=7)	Min	ND	3.96	0.00	5.29	14.03
2 to <3 (n=7)	Median	ND	5.85	0.00	6.68	15.35
2 to <3 (n=7)	p25	ND	9.58	2.65	14.03	29.12



Age Group	Distribution	Grass	Hands	Dietary	Non-Dietary	All Objects
2 to <3 (n=7)	p75	ND	15.84	74.00	23.35	79.28
2 to <3 (n=7)	p95	ND	18.53	80.19	26.47	86.87
2 to <3 (n=7)	p99	ND	18.53	80.19	26.47	86.87
2 to <3 (n=7)	Max	ND	18.53	80.19	26.47	86.87
3 to <6 (n=17)	Mean	0.22	9.99	20.47	27.50	47.97
3 to <6 (n=17)	SD	0.65	11.66	39.23	43.24	62.07
3 to <6 (n=17)	Min	0.00	0.00	0.00	0.00	0.68
3 to <6 (n=17)	Median	0.00	2.56	0.00	7.42	7.98
3 to <6 (n=17)	p25	0.00	6.89	1.74	10.89	23.70
3 to <6 (n=17)	p75	0.00	11.66	24.44	30.47	45.75
3 to <6 (n=17)	p95	2.49	41.04	159.12	185.14	205.09
3 to <6 (n=17)	p99	2.49	41.04	159.12	185.14	205.09
3 to <6 (n=17)	Max	2.49	41.04	159.12	185.14	205.09
6 to <11 (n=18)	Mean	ND	6.74	8.26	12.21	20.46
6 to <11 (n=18)	SD	ND	5.48	15.73	17.48	25.25
6 to <11 (n=18)	Min	ND	0.00	0.00	0.00	0.00
6 to <11 (n=18)	Median	ND	0.54	0.00	5.86	5.86
6 to <11 (n=18)	p25	ND	7.12	0.00	7.79	8.87
6 to <11 (n=18)	p75	ND	9.00	7.76	10.85	28.12
6 to <11 (n=18)	p95	ND	19.25	48.83	76.19	76.19
6 to <11 (n=18)	p99	ND	19.25	48.83	76.19	76.19
6 to <11 (n=18)	Max	ND	19.25	48.83	76.19	76.19
11 to <16 (n=6)	Mean	ND	31.22	19.15	38.08	57.24
11 to <16 (n=6)	SD	ND	29.72	27.42	34.06	58.80
11 to <16 (n=6)	Min	ND	1.23	0.00	2.47	5.01
11 to <16 (n=6)	Median	ND	4.01	1.00	4.01	11.73
11 to <16 (n=6)	p25	ND	27.12	9.02	38.14	42.53



Age Group	Distribution	Grass	Hands	Dietary	Non-Dietary	All Objects
11 to <16 (n=6)	p75	ND	47.70	23.44	57.40	80.84
11 to <16 (n=6)	p95	ND	80.11	72.43	88.34	160.77
11 to <16 (n=6)	p99	ND	80.11	72.43	88.34	160.77
11 to <16 (n=6)	Max	ND	80.11	72.43	88.34	160.77
p-value*	NA	ND	0.222	0.174	0.237	0.132

*p-value from Kruskal-Wallis Test

NA: not applicable; and ND: not determined

Table S2-11. Mouthing Hourly Contact Duration (Min/Hour) While Playing on Turf by USEPA Age Groups

Age Group	Distribution	Grass	Hands	Dietary	Non-Dietary	All Objects
<2 (n=8)	Mean	0.01	1.13	0.65	1.54	2.18
<2 (n=8)	SD	0.01	1.50	1.39	1.52	1.84
<2 (n=8)	Min	0.00	0.03	0.00	0.16	0.16
<2 (n=8)	Median	0.00	0.24	0.00	0.30	0.31
<2 (n=8)	p25	0.00	0.33	0.01	0.96	2.09
<2 (n=8)	p75	0.01	2.17	0.58	2.84	3.98
<2 (n=8)	p95	0.03	3.54	4.02	3.95	4.57
<2 (n=8)	p99	0.03	3.54	4.02	3.95	4.57
<2 (n=8)	Max	0.03	3.54	4.02	3.95	4.57
2 to <3 (n=7)	Mean	ND	0.48	0.97	0.63	1.60
2 to <3 (n=7)	SD	ND	0.58	1.29	0.64	1.08
2 to <3 (n=7)	Min	ND	0.09	0.00	0.13	0.51
2 to <3 (n=7)	Median	ND	0.15	0.00	0.19	0.67
2 to <3 (n=7)	p25	ND	0.23	0.28	0.33	1.39
2 to <3 (n=7)	p75	ND	0.51	1.71	0.99	2.04
2 to <3 (n=7)	p95	ND	1.75	3.45	1.92	3.65
2 to <3 (n=7)	p99	ND	1.75	3.45	1.92	3.65
2 to <3 (n=7)	Max	ND	1.75	3.45	1.92	3.65
3 to <6 (n=17)	Mean	0.01	0.27	2.24	2.79	5.02



Age Group	Distribution	Grass	Hands	Dietary	Non-Dietary	All Objects
3 to <6 (n=17)	SD	0.02	0.38	3.75	8.27	9.90
3 to <6 (n=17)	Min	0.00	0.00	0.00	0.00	0.05
3 to <6 (n=17)	Median	0.00	0.07	0.00	0.19	0.27
3 to <6 (n=17)	p25	0.00	0.17	0.09	0.36	0.64
3 to <6 (n=17)	p75	0.00	0.28	1.45	1.76	3.88
3 to <6 (n=17)	p95	0.10	1.59	10.53	34.71	39.65
3 to <6 (n=17)	p99	0.10	1.59	10.53	34.71	39.65
3 to <6 (n=17)	Max	0.10	1.59	10.53	34.71	39.65
6 to <11 (n=18)	Mean	ND	0.16	2.42	0.40	2.82
6 to <11 (n=18)	SD	ND	0.14	8.58	0.90	8.57
6 to <11 (n=18)	Min	ND	0.00	0.00	0.00	0.00
6 to <11 (n=18)	Median	ND	0.04	0.00	0.04	0.04
6 to <11 (n=18)	p25	ND	0.12	0.00	0.13	0.20
6 to <11 (n=18)	p75	ND	0.23	0.23	0.27	0.88
6 to <11 (n=18)	p95	ND	0.52	36.52	3.92	36.66
6 to <11 (n=18)	p99	ND	0.52	36.52	3.92	36.66
6 to <11 (n=18)	Max	ND	0.52	36.52	3.92	36.66
11 to <16 (n=6)	Mean	ND	0.96	1.21	1.14	2.35
11 to <16 (n=6)	SD	ND	0.89	1.89	1.08	2.63
11 to <16 (n=6)	Min	ND	0.02	0.00	0.05	0.30
11 to <16 (n=6)	Median	ND	0.15	0.15	0.15	0.60
11 to <16 (n=6)	p25	ND	0.79	0.54	0.92	1.18
11 to <16 (n=6)	p75	ND	1.75	1.06	2.07	3.77
11 to <16 (n=6)	p95	ND	2.25	4.99	2.71	7.06
11 to <16 (n=6)	p99	ND	2.25	4.99	2.71	7.06
11 to <16 (n=6)	Max	ND	2.25	4.99	2.71	7.06
p-value*	NA	ND	0.025	0.310	0.016	0.084

*p-value from Kruskal-Wallis Test

NA: not applicable; and ND: not determined



Table S2-12. Mouthing Contact Median Duration (Second) While Playing on Turf by USEPA Age Groups

Age Group	Distribution	Grass	Hands	Dietary	Non-Dietary	All Objects
<2	n	2	8	4	8	8
<2	Mean	1.00	3.69	6.88	3.44	2.63
<2	SD	0.00	3.83	5.81	3.90	2.15
<2	Min	1.00	1.00	1.00	1.00	1.00
<2	Median	1.00	1.00	2.25	1.00	1.00
<2	p25	1.00	2.50	6.25	2.00	2.00
<2	p75	1.00	4.75	11.50	4.25	3.75
<2	p95	1.00	12.00	14.00	12.00	6.50
<2	p99	1.00	12.00	14.00	12.00	6.50
<2	Max	1.00	12.00	14.00	12.00	6.50
2 to <3	n	0	7	5	7	7
2 to <3	Mean	ND	1.71	2.20	1.64	1.71
2 to <3	SD	ND	0.91	1.10	0.75	0.76
2 to <3	Min	ND	1.00	1.00	1.00	1.00
2 to <3	Median	ND	1.00	2.00	1.00	1.00
2 to <3	p25	ND	1.50	2.00	1.50	2.00
2 to <3	p75	ND	2.00	2.00	2.00	2.00
2 to <3	p95	ND	3.50	4.00	3.00	3.00
2 to <3	p99	ND	3.50	4.00	3.00	3.00
2 to <3	Max	ND	3.50	4.00	3.00	3.00
3 to <6	n	2	14	10	16	17
3 to <6	Mean	1.75	1.61	3.40	1.94	1.85
3 to <6	SD	1.06	1.13	2.49	1.25	1.09
3 to <6	Min	1.00	0.50	1.00	0.50	0.50
3 to <6	Median	1.00	1.00	2.00	1.00	1.00
3 to <6	p25	1.75	1.00	2.75	1.75	2.00
3 to <6	p75	2.50	2.00	4.00	2.50	2.00



Age Group	Distribution	Grass	Hands	Dietary	Non-Dietary	All Objects
3 to <6	p95	2.50	5.00	8.50	5.00	4.00
3 to <6	p99	2.50	5.00	8.50	5.00	4.00
3 to <6	Max	2.50	5.00	8.50	5.00	4.00
6 to <11	n	0	14	6	15	15
6 to <11	Mean	ND	1.29	21.92	1.27	5.27
6 to <11	SD	ND	1.07	49.53	1.10	15.18
6 to <11	Min	ND	1.00	1.00	0.00	0.00
6 to <11	Median	ND	1.00	1.00	1.00	1.00
6 to <11	p25	ND	1.00	1.75	1.00	1.00
6 to <11	p75	ND	1.00	3.00	1.00	2.00
6 to <11	p95	ND	5.00	123.00	5.00	60.00
6 to <11	p99	ND	5.00	123.00	5.00	60.00
6 to <11	Max	ND	5.00	123.00	5.00	60.00
11 to <16	n	0	6	5	6	6
11 to <16	Mean	ND	1.50	3.60	1.42	1.58
11 to <16	SD	ND	0.55	3.05	0.49	0.49
11 to <16	Min	ND	1.00	2.00	1.00	1.00
11 to <16	Median	ND	1.00	2.00	1.00	1.00
11 to <16	p25	ND	1.50	2.00	1.25	1.75
11 to <16	p75	ND	2.00	3.00	2.00	2.00
11 to <16	p95	ND	2.00	9.00	2.00	2.00
11 to <16	p99	ND	2.00	9.00	2.00	2.00
11 to <16	Max	ND	2.00	9.00	2.00	2.00
p-value*	NA	ND	0.079	0.604	0.110	0.521

*p-value from Kruskal-Wallis Test (Only participants who contacted object included in calculation)

NA: not applicable; and ND: not determined

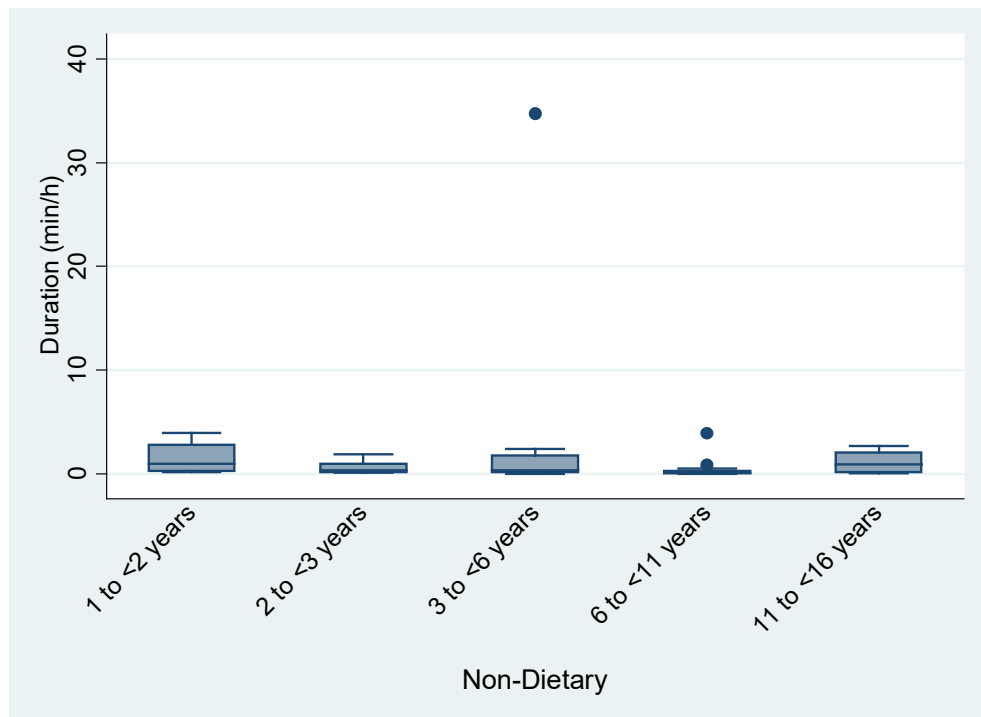


Figure S2-1. Mouthing Hourly Duration (Min/Hour) with Non-Dietary Objects by USEPA Age Groups

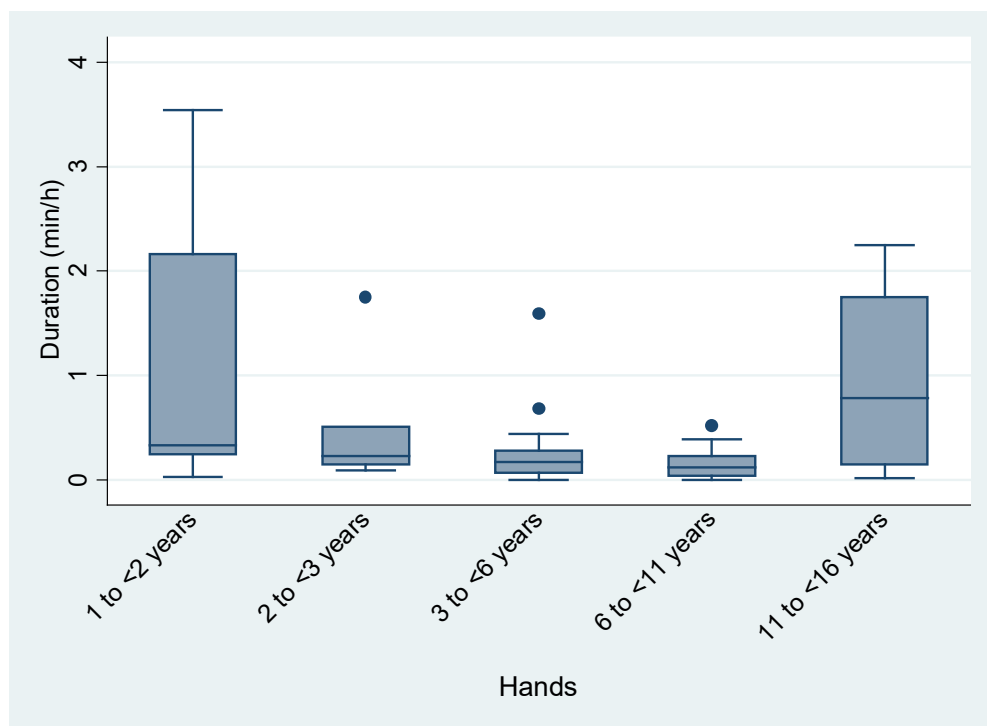


Figure S2-2. Mouthing Hourly Duration (Min/Hour) with Hands by USEPA Age Groups



Table S2-13. Mouthing Contact Frequency (Event/Hour) While Playing on Turf by Younger (1-6 Years) and Older (7-12 Years) Children

Age Group	Distribution	Grass	Hands	Dietary	Non-Dietary	All Objects
1-6 years (n=38)	Mean	0.17	10.00	17.58	21.74	39.32
1-6 years (n=38)	SD	0.53	9.83	31.78	31.33	46.04
1-6 years (n=38)	Min	0.00	0.00	0.00	0.00	0.00
1-6 years (n=38)	p25	0.00	3.25	0.00	6.68	9.00
1-6 years (n=38)	Median	0.00	8.06	1.89	13.67	23.53
1-6 years (n=38)	p75	0.00	15.67	24.44	26.24	53.12
1-6 years (n=38)	p95	1.69	36.78	80.19	63.82	189.59
1-6 years (n=38)	p99	2.49	41.04	159.12	185.14	205.09
1-6 years (n=38)	Max	2.49	41.04	159.12	185.14	205.09
7-12 years (n=18)	Mean	ND	15.14	9.03	22.53	31.56
7-12 years (n=18)	SD	ND	20.48	18.95	27.36	42.38
7-12 years (n=18)	Min	ND	0.00	0.00	0.00	0.00
7-12 years (n=18)	p25	ND	3.51	0.00	5.86	7.09
7-12 years (n=18)	Median	ND	7.14	0.00	9.37	10.68
7-12 years (n=18)	p75	ND	19.25	8.78	29.33	62.29
7-12 years (n=18)	p95	ND	80.11	72.43	88.34	160.77
7-12 years (n=18)	p99	ND	80.11	72.43	88.34	160.77
7-12 years (n=18)	Max	ND	80.11	72.43	88.34	160.77
p-value*	NA	ND	0.699	0.252	0.752	0.239

*p-value from Wilcoxon sum rank test

NA: not applicable; and ND: not determined



Table S2-14. Mouthing Hourly Contact Duration (Min/Hour) While Playing on Turf by Younger (1-6 Years) and Older (7-12 Years) Children

Age Group	Distribution	Grass	Hands	Dietary	Non-Dietary	All Objects
1-6 year (n=38)	Mean	0.00	0.47	2.41	1.71	4.12
1-6 year (n=38)	SD	0.02	0.82	6.32	5.59	8.71
1-6 year (n=38)	Min	0.00	0.00	0.00	0.00	0.00
1-6 year (n=38)	p25	0.00	0.10	0.00	0.17	0.29
1-6 year (n=38)	Median	0.00	0.21	0.09	0.32	1.13
1-6 year (n=38)	p75	0.00	0.39	1.45	1.67	3.65
1-6 year (n=38)	p95	0.03	3.53	10.53	3.95	36.66
1-6 year (n=38)	p99	0.10	3.54	36.52	34.71	39.65
1-6 year (n=38)	Max	0.10	3.54	36.52	34.71	39.65
7-12 years (n=18)	Mean	ND	0.43	0.51	0.72	1.23
7-12 years (n=18)	SD	ND	0.63	1.21	1.10	1.92
7-12 years (n=18)	Min	ND	0.00	0.00	0.00	0.00
7-12 years (n=18)	p25	ND	0.10	0.00	0.10	0.12
7-12 years (n=18)	Median	ND	0.19	0.00	0.20	0.31
7-12 years (n=18)	p75	ND	0.52	0.31	0.86	1.54
7-12 years (n=18)	p95	ND	2.25	4.99	3.92	7.06
7-12 years (n=18)	p99	ND	2.25	4.99	3.92	7.06
7-12 years (n=18)	Max	ND	2.25	4.99	3.92	7.06
p-value*	NA	ND	0.732	0.205	0.174	0.058

*p-value from Wilcoxon sum rank test

NA: not applicable; and ND: not determined



Table S2-15. Mouthing Contact Median Duration (Second) While Playing on Turf by Younger (1-6 Years) and Older (7-12) Children

Age Group	Distribution	Grass	Hands	Dietary	Non-Dietary	All Objects
1-6 years	n*	4	34	22	36	37
1-6 years	Mean	1.38	2.15	9.07	2.19	3.61
1-6 years	SD	0.75	2.21	25.65	2.16	9.63
1-6 years	Min	1.00	0.50	1.00	0.50	0.50
1-6 years	p25	1.00	1.00	2.00	1.00	1.00
1-6 years	Median	1.00	1.00	2.75	1.50	2.00
1-6 years	p75	1.75	2.00	4.00	2.00	2.00
1-6 years	p95	2.50	6.50	14.00	6.50	6.50
1-6 years	p99	2.50	12.00	123.00	12.00	60.00
1-6 years	Max	2.50	12.00	123.00	12.00	60.00
7-12 years	n*	0	15	8	16	16
7-12 years	Mean	ND	1.20	2.81	1.16	1.22
7-12 years	SD	ND	0.41	2.56	0.51	0.55
7-12 years	Min	ND	1.00	1.00	0.00	0.00
7-12 years	p25	ND	1.00	1.75	1.00	1.00
7-12 years	Median	ND	1.00	2.00	1.00	1.00
7-12 years	p75	ND	1.00	2.50	1.25	1.75
7-12 years	p95	ND	2.00	9.00	2.00	2.00
7-12 years	p99	ND	2.00	9.00	2.00	2.00
7-12 years	Max	ND	2.00	9.00	2.00	2.00
p-value*	NA	ND	0.079	0.377	0.030	0.026

*p-value from Wilcoxon sum rank test. Only participants who contacted object included in calculation of median contact duration.

NA: not applicable; and ND: not determined

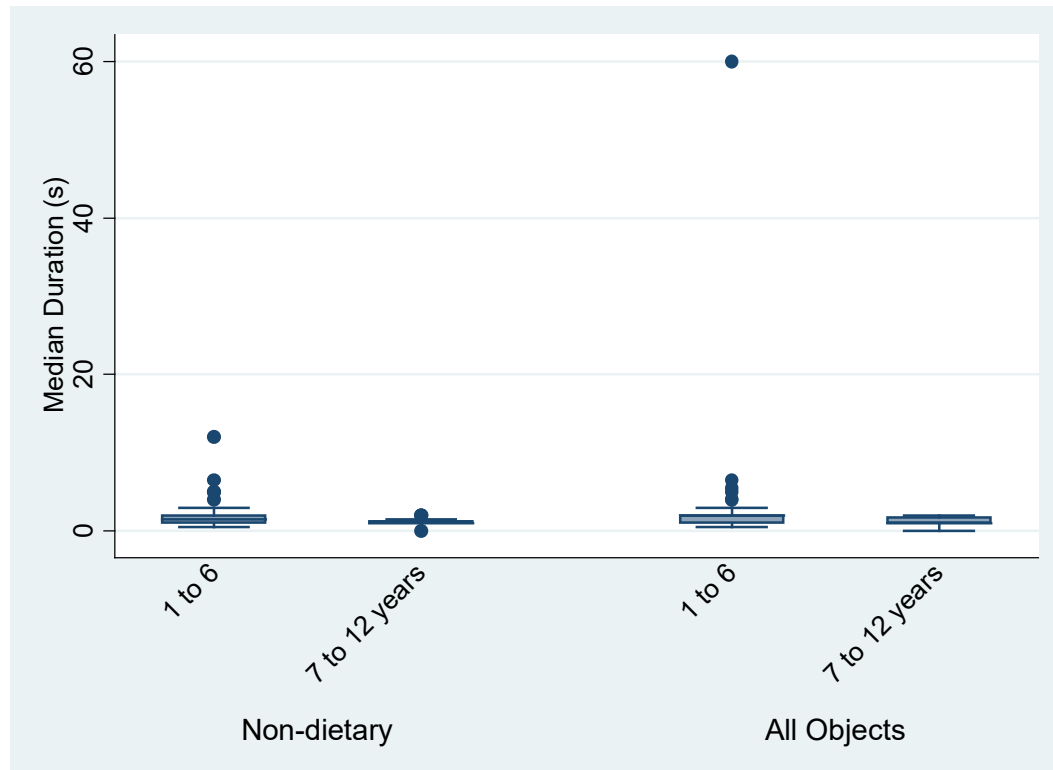


Figure S2-3. Median Mouthing Contact Duration (Second) of Younger and Older Children While Playing on Turf



S2.2. Mouthing Data Summarized into EPA Age Categories

Table S2-16. Number of Children Playing on Playground by USEPA Age Groups and Gender

Gender	1 to <2 years	2 to <3 years	3 to <6 years	6 to <11 years	11 to <16 years	Total
Male	3	4	4	0	0	11
Female	2	1	4	6	0	13
Total	5	5	8	6	0	24

Table S2-17. Both Hands Contact Frequency (Event/Hour) on Playground by USEPA Age Groups

Age Group	Distribution	Floors	Dietary	Non-Dietary	All Objects
<2 (n=5)	Mean	39.97	0.23	426.60	426.84
<2 (n=5)	SD	27.85	0.52	184.50	184.39
<2 (n=5)	Min	0.71	0.00	205.86	205.86
<2 (n=5)	p25	20.26	0.00	336.18	336.18
<2 (n=5)	Median	58.06	0.00	354.28	355.45
<2 (n=5)	p75	58.41	0.00	602.49	602.49
<2 (n=5)	p95	62.43	1.17	634.20	634.20
<2 (n=5)	p99	62.43	1.17	634.20	634.20
<2 (n=5)	Max	62.43	1.17	634.20	634.20
2 to <3 (n=5)	Mean	10.00	2.71	166.48	169.20
2 to <3 (n=5)	SD	10.37	4.66	107.28	108.58
2 to <3 (n=5)	Min	0.00	0.00	30.60	30.60
2 to <3 (n=5)	p25	0.00	0.00	80.59	80.59
2 to <3 (n=5)	Median	8.73	0.00	191.72	202.49
2 to <3 (n=5)	p75	19.48	2.80	253.65	256.45
2 to <3 (n=5)	p95	21.78	10.77	275.85	275.85
2 to <3 (n=5)	p99	21.78	10.77	275.85	275.85
2 to <3 (n=5)	Max	21.78	10.77	275.85	275.85
3 to <6 (n=8)	Mean	51.70	1.99	330.43	332.42
3 to <6 (n=8)	SD	75.65	5.61	170.99	170.52



Age Group	Distribution	Floors	Dietary	Non-Dietary	All Objects
3 to <6 (n=8)	Min	0.00	0.00	37.60	37.60
3 to <6 (n=8)	p25	0.00	0.00	222.59	222.59
3 to <6 (n=8)	Median	12.59	0.00	344.91	352.85
3 to <6 (n=8)	p75	96.03	0.00	451.80	451.80
3 to <6 (n=8)	p95	196.37	15.88	567.27	567.27
3 to <6 (n=8)	p99	196.37	15.88	567.27	567.27
3 to <6 (n=8)	Max	196.37	15.88	567.27	567.27
6 to <11 (n=6)	Mean	7.97	1.22	235.85	237.07
6 to <11 (n=6)	SD	7.13	1.89	38.45	38.32
6 to <11 (n=6)	Min	0.00	0.00	171.54	171.54
6 to <11 (n=6)	p25	0.00	0.00	205.12	208.83
6 to <11 (n=6)	Median	8.65	0.00	256.63	257.54
6 to <11 (n=6)	p75	13.23	3.62	259.97	261.77
6 to <11 (n=6)	p95	17.32	3.71	265.19	265.19
6 to <11 (n=6)	p99	17.32	3.71	265.19	265.19
6 to <11 (n=6)	Max	17.32	3.71	265.19	265.19
p-value*	Not applicable	0.245	0.714	0.051	0.055

*p-value from Kruskal-Wallis Test

Table S2-18. Both Hands Hourly Contact Duration (Min/Hour) on Playground by USEPA Age Groups

Age Group	Distribution	Floors	Dietary	Non-Dietary	All Objects
<2 (n=5)	Mean	3.16	0.00	29.74	29.74
<2 (n=5)	SD	4.05	0.01	3.66	3.67
<2 (n=5)	Min	0.01	0.00	24.90	24.90
<2 (n=5)	p25	0.78	0.00	26.87	26.87
<2 (n=5)	Median	1.65	0.00	31.56	31.56
<2 (n=5)	p75	3.28	0.00	31.86	31.88
<2 (n=5)	p95	10.07	0.02	33.51	33.51



Age Group	Distribution	Floors	Dietary	Non-Dietary	All Objects
<2 (n=5)	p99	10.07	0.02	33.51	33.51
<2 (n=5)	Max	10.07	0.02	33.51	33.51
2 to <3 (n=5)	Mean	0.47	0.80	31.87	32.67
2 to <3 (n=5)	SD	0.74	1.75	5.28	5.82
2 to <3 (n=5)	Min	0.00	0.00	22.98	22.98
2 to <3 (n=5)	p25	0.00	0.00	31.89	31.89
2 to <3 (n=5)	Median	0.25	0.00	33.31	34.48
2 to <3 (n=5)	p75	0.33	0.09	34.39	36.76
2 to <3 (n=5)	p95	1.76	3.93	36.76	37.24
2 to <3 (n=5)	p99	1.76	3.93	36.76	37.24
2 to <3 (n=5)	Max	1.76	3.93	36.76	37.24
3 to <6 (n=8)	Mean	3.09	0.15	32.63	32.77
3 to <6 (n=8)	SD	3.70	0.42	4.89	4.96
3 to <6 (n=8)	Min	0.00	0.00	23.64	23.64
3 to <6 (n=8)	p25	0.00	0.00	30.19	30.19
3 to <6 (n=8)	Median	1.61	0.00	33.24	33.35
3 to <6 (n=8)	p75	5.93	0.00	35.42	35.90
3 to <6 (n=8)	p95	9.67	1.18	39.67	39.67
3 to <6 (n=8)	p99	9.67	1.18	39.67	39.67
3 to <6 (n=8)	Max	9.67	1.18	39.67	39.67
6 to <11 (n=6)	Mean	0.68	0.86	34.93	35.79
6 to <11 (n=6)	SD	0.67	2.05	2.91	2.49
6 to <11 (n=6)	Min	0.00	0.00	31.66	31.83
6 to <11 (n=6)	p25	0.00	0.00	31.83	33.80
6 to <11 (n=6)	Median	0.64	0.00	35.20	36.65
6 to <11 (n=6)	p75	1.10	0.12	37.10	37.22
6 to <11 (n=6)	p95	1.70	5.04	38.59	38.59



Age Group	Distribution	Floors	Dietary	Non-Dietary	All Objects
6 to <11 (n=6)	p99	1.70	5.04	38.59	38.59
6 to <11 (n=6)	Max	1.70	5.04	38.59	38.59
p-value*	Not applicable	0.377	0.635	0.250	0.123

*p-value from Kruskal-Wallis Test

Table S2-19. Both Hands Median Contact Duration (Second) on Playground by USEPA Age Groups

Age Group	Distribution	Floors	Dietary	Non-Dietary	All Objects
<2	n	5	1	5	5
<2	Mean	2.60	1.00	3.50	3.50
<2	SD	1.95	ND	1.00	1.00
<2	Min	1.00	ND	2.00	2.00
<2	Median	2.00	ND	3.00	3.00
<2	p25	2.00	ND	4.00	4.00
<2	p75	2.00	ND	4.00	4.00
<2	p95	6.00	ND	4.50	4.50
<2	p99	6.00	ND	4.50	4.50
<2	Max	6.00	ND	4.50	4.50
2 to <3	n	3	2	5	5
2 to <3	Mean	3.00	8.00	5.30	5.30
2 to <3	SD	1.73	8.49	4.30	4.30
2 to <3	Min	1.00	2.00	1.00	1.00
2 to <3	Median	1.00	2.00	4.00	4.00
2 to <3	p25	4.00	8.00	4.00	4.00
2 to <3	p75	4.00	14.00	5.00	5.00
2 to <3	p95	4.00	14.00	12.50	12.50
2 to <3	p99	4.00	14.00	12.50	12.50
2 to <3	Max	4.00	14.00	12.50	12.50
3 to <6	n	5	1	8	8



Age Group	Distribution	Floors	Dietary	Non-Dietary	All Objects
3 to <6	Mean	4.70	2.50	3.50	3.50
3 to <6	SD	3.49	ND	1.85	1.85
3 to <6	Min	2.00	ND	1.00	1.00
3 to <6	Median	2.00	ND	2.00	2.00
3 to <6	p25	4.00	ND	3.50	3.50
3 to <6	p75	5.00	ND	5.00	5.00
3 to <6	p95	10.50	ND	6.00	6.00
3 to <6	p99	10.50	ND	6.00	6.00
3 to <6	Max	10.50	ND	6.00	6.00
6 to <11	n	4	2	6	6
6 to <11	Mean	2.75	25.50	3.58	3.75
6 to <11	SD	0.96	33.23	0.49	0.76
6 to <11	Min	2.00	2.00	3.00	3.00
6 to <11	Median	2.00	2.00	3.00	3.00
6 to <11	p25	2.50	25.50	3.75	3.75
6 to <11	p75	3.50	49.00	4.00	4.00
6 to <11	p95	4.00	49.00	4.00	5.00
6 to <11	p99	4.00	49.00	4.00	5.00
6 to <11	Max	4.00	49.00	4.00	5.00
p-value*	NA	0.587	0.527	0.778	0.825

*p-value from Kruskal-Wallis Test

NA: not applicable; and ND: not determined

Table S2-20. Both Hands Contact Frequency (Event/Hour) on While Playing on Playground by Younger (1-6 Years) and Older (7-12 Years) Children

Age Group	Distribution	Floors	Dietary	Non-Dietary	All Objects
1-6 years (n=21)	Mean	33.24	1.81	301.30	303.11
1-6 years (n=21)	SD	50.36	4.10	169.75	169.22
1-6 years (n=21)	Min	0.00	0.00	30.60	30.60



Age Group	Distribution	Floors	Dietary	Non-Dietary	All Objects
1-6 years (n=21)	p25	0.71	0.00	205.12	205.86
1-6 years (n=21)	Median	16.60	0.00	262.79	262.79
1-6 years (n=21)	p75	50.83	1.17	401.54	401.54
1-6 years (n=21)	p95	141.23	10.77	602.49	602.49
1-6 years (n=21)	p99	196.37	15.88	634.20	634.20
1-6 years (n=21)	Max	196.37	15.88	634.20	634.20
7-12 years (n=3)	Mean	4.41	ND	232.23	232.23
7-12 years (n=3)	SD	7.64	ND	52.63	52.63
7-12 years (n=3)	Min	0.00	ND	171.54	171.54
7-12 years (n=3)	p25	0.00	ND	171.54	171.54
7-12 years (n=3)	Median	0.00	ND	259.97	259.97
7-12 years (n=3)	p75	13.23	ND	265.19	265.19
7-12 years (n=3)	p95	13.23	ND	265.19	265.19
7-12 years (n=3)	p99	13.23	ND	265.19	265.19
7-12 years (n=3)	Max	13.23	ND	265.19	265.19
p-value*	NA	0.144	ND	0.513	0.458

*p-value from Wilcoxon sum rank test

NA: not applicable; and ND: not determined

Table S2-21. Both Hands Hourly Contact Duration (Min/Hour) While Playing on Playground by Younger (1-6 Years) and Older (7-12 Years) Children

Age Group	Distribution	Floors	Dietary	Non-Dietary	All Objects
1-6 years (n=21)	Mean	2.19	0.49	31.98	32.48
1-6 years (n=21)	SD	3.12	1.36	4.42	4.70
1-6 years (n=21)	Min	0.00	0.00	22.98	22.98
1-6 years (n=21)	p25	0.01	0.00	31.56	31.56
1-6 years (n=21)	Median	0.78	0.00	32.20	33.51
1-6 years (n=21)	p75	2.88	0.02	34.39	36.34
1-6 years (n=21)	p95	9.67	3.93	37.10	37.24



Age Group	Distribution	Floors	Dietary	Non-Dietary	All Objects
1-6 years (n=21)	p99	10.07	5.04	39.67	39.67
1-6 years (n=21)	Max	10.07	5.04	39.67	39.67
7-12 years (n=3)	Mean	0.30	ND	35.67	35.67
7-12 years (n=3)	SD	0.51	ND	3.47	3.47
7-12 years (n=3)	Min	0.00	ND	31.83	31.83
7-12 years (n=3)	p25	0.00	ND	31.83	31.83
7-12 years (n=3)	Median	0.00	ND	36.59	36.59
7-12 years (n=3)	p75	0.89	ND	38.59	38.59
7-12 years (n=3)	p95	0.89	ND	38.59	38.59
7-12 years (n=3)	p99	0.89	ND	38.59	38.59
7-12 years (n=3)	Max	0.89	ND	38.59	38.59
p-value*	NA	0.178	ND	0.206	0.316

*p-value from Wilcoxon sum rank test

NA: not applicable; and ND: not determined

Table S2-22. Both Hands Contact Median Duration (Second) While Playing on Playground by Younger (1-6 Years) and Older (7-12 Years) Children

Age Group	Distribution	Floors	Dietary	Non-Dietary	All Objects
1-6 years	n*	16	3	21	21
1-6 years	Mean	3.28	11.75	3.95	4.00
1-6 years	SD	2.39	18.89	2.39	2.40
1-6 years	Min	1.00	1.00	1.00	1.00
1-6 years	p25	2.00	2.00	3.00	3.00
1-6 years	Median	2.00	2.25	4.00	4.00
1-6 years	p75	4.00	14.00	4.00	4.50
1-6 years	p95	10.50	49.00	6.00	6.00
1-6 years	p99	10.50	49.00	12.50	12.50
1-6 years	Max	10.50	49.00	12.50	12.50
7-12 years	n*	2	0	3	3



Age Group	Distribution	Floors	Dietary	Non-Dietary	All Objects
7-12 years	Mean	4.00	ND	3.50	3.50
7-12 years	SD	4.00	ND	0.50	0.50
7-12 years	Min	4.00	ND	3.00	3.00
7-12 years	p25	4.00	ND	3.00	3.00
7-12 years	Median	4.00	ND	3.50	3.50
7-12 years	p75	4.00	ND	4.00	4.00
7-12 years	p95	4.00	ND	4.00	4.00
7-12 years	p99	4.00	ND	4.00	4.00
7-12 years	Max	4.00	ND	4.00	4.00
p-value*	NA	0.456	ND	0.622	0.623

*p-value from Wilcoxon sum rank test. Only children who contacted the object are included in the calculation.

NA: not applicable; and ND: not determined

Table S2-23. Mouthing contact frequency (event/hour) while on playground (n=24) by USEPA age groups

Age Group	Distribution	Floors	Hands	Dietary	Non-Dietary	All Objects
<2 (n=5)	Mean	0.5	26.6	6.4	27.2	33.6
<2 (n=5)	SD	1.0	18.6	9.3	14.8	18.9
<2 (n=5)	Min	0.0	9.2	0.0	5.0	5.0
<2 (n=5)	p25	0.0	9.2	0.0	24.4	24.4
<2 (n=5)	Median	0.0	24.4	0.0	30.0	41.5
<2 (n=5)	p75	0.0	46.2	11.5	30.7	46.2
<2 (n=5)	p95	2.3	46.2	20.5	46.2	51.1
<2 (n=5)	p99	2.3	46.2	20.5	46.2	51.1
<2 (n=5)	Max	2.3	46.2	20.5	46.2	51.1
2 to <3 (n=5)	Mean	ND	34.4	60.7	47.1	107.8
2 to <3 (n=5)	SD	ND	27.8	135.8	34.4	114.7
2 to <3 (n=5)	Min	ND	7.1	0.0	4.4	16.5
2 to <3 (n=5)	p25	ND	11.7	0.0	16.5	65.2



Age Group	Distribution	Floors	Hands	Dietary	Non-Dietary	All Objects
2 to <3 (n=5)	Median	ND	31.6	0.0	65.2	66.9
2 to <3 (n=5)	p75	ND	57.2	0.0	66.9	82.5
2 to <3 (n=5)	p95	ND	67.5	303.7	82.5	308.1
2 to <3 (n=5)	p99	ND	67.5	303.7	82.5	308.1
2 to <3 (n=5)	Max	ND	67.5	303.7	82.5	308.1
3 to <6 (n=8)	Mean	ND	10.8	86.5	34.8	121.4
3 to <6 (n=8)	SD	ND	10.3	161.2	74.8	163.2
3 to <6 (n=8)	Min	ND	2.9	0.0	0.0	0.0
3 to <6 (n=8)	p25	ND	3.6	0.0	0.0	1.5
3 to <6 (n=8)	Median	ND	7.3	0.0	6.7	17.9
3 to <6 (n=8)	p75	ND	17.9	156.7	23.5	276.6
3 to <6 (n=8)	p95	ND	25.4	379.0	218.2	379.0
3 to <6 (n=8)	p99	ND	25.4	379.0	218.2	379.0
3 to <6 (n=8)	Max	ND	25.4	379.0	218.2	379.0
6 to <11 (n=6)	Mean	ND	4.8	1.1	4.3	5.4
6 to <11 (n=6)	SD	ND	3.9	2.6	4.4	5.0
6 to <11 (n=6)	Min	ND	1.4	0.0	0.0	0.0
6 to <11 (n=6)	p25	ND	1.4	0.0	0.0	0.0
6 to <11 (n=6)	Median	ND	3.9	0.0	3.3	5.9
6 to <11 (n=6)	p75	ND	9.1	0.0	9.1	10.0
6 to <11 (n=6)	p95	ND	9.1	6.4	10.0	10.3
6 to <11 (n=6)	p99	ND	9.1	6.4	10.0	10.3
6 to <11 (n=6)	Max	ND	9.1	6.4	10.0	10.3
p-value*	NA	ND	0.118	0.833	0.036	0.041

*p-value from Kruskal-Wallis Test

NA: not applicable; and ND: not determined



Table S2-24. Mouthing Hourly Duration (Min/Hour) While on Playground by USEPA Age Groups

Age Group	Distribution	Floors	Hands	Dietary	Non-Dietary	All Objects
<2 (n=5)	Mean	0.0	3.1	0.3	2.7	2.9
<2 (n=5)	SD	0.0	2.6	0.4	2.0	1.9
<2 (n=5)	Min	0.0	0.1	0.0	0.3	0.3
<2 (n=5)	p25	0.0	0.1	0.0	0.8	1.7
<2 (n=5)	Median	0.0	4.1	0.0	3.1	3.4
<2 (n=5)	p75	0.0	5.0	0.3	4.1	4.1
<2 (n=5)	p95	0.0	5.0	1.0	5.0	5.0
<2 (n=5)	p99	0.0	5.0	1.0	5.0	5.0
<2 (n=5)	Max	0.0	5.0	1.0	5.0	5.0
2 to <3 (n=5)	Mean	ND	0.7	0.9	0.9	1.9
2 to <3 (n=5)	SD	ND	0.7	2.1	0.6	1.7
2 to <3 (n=5)	Min	ND	0.3	0.0	0.2	0.6
2 to <3 (n=5)	p25	ND	0.3	0.0	0.6	1.0
2 to <3 (n=5)	Median	ND	0.5	0.0	1.0	1.1
2 to <3 (n=5)	p75	ND	1.2	0.0	1.1	1.9
2 to <3 (n=5)	p95	ND	1.8	4.6	1.9	4.8
2 to <3 (n=5)	p99	ND	1.8	4.6	1.9	4.8
2 to <3 (n=5)	Max	ND	1.8	4.6	1.9	4.8
3 to <6 (n=8)	Mean	ND	0.3	1.8	2.8	4.6
3 to <6 (n=8)	SD	ND	0.2	4.0	7.0	7.6
3 to <6 (n=8)	Min	ND	0.1	0.0	0.0	0.0
3 to <6 (n=8)	p25	ND	0.2	0.0	0.0	0.0
3 to <6 (n=8)	Median	ND	0.3	0.0	0.2	0.4
3 to <6 (n=8)	p75	ND	0.4	1.6	1.0	8.1
3 to <6 (n=8)	p95	ND	0.5	11.4	20.0	20.0
3 to <6 (n=8)	p99	ND	0.5	11.4	20.0	20.0



Age Group	Distribution	Floors	Hands	Dietary	Non-Dietary	All Objects
3 to <6 (n=8)	Max	ND	0.5	11.4	20.0	20.0
6 to <11 (n=6)	Mean	ND	0.1	2.8	0.1	2.8
6 to <11 (n=6)	SD	ND	0.1	6.7	0.1	6.7
6 to <11 (n=6)	Min	ND	0.0	0.0	0.0	0.0
6 to <11 (n=6)	p25	ND	0.0	0.0	0.0	0.0
6 to <11 (n=6)	Median	ND	0.1	0.0	0.0	0.0
6 to <11 (n=6)	p75	ND	0.3	0.0	0.1	0.3
6 to <11 (n=6)	p95	ND	0.3	16.5	0.3	16.6
6 to <11 (n=6)	p99	ND	0.3	16.5	0.3	16.6
6 to <11 (n=6)	Max	ND	0.3	16.5	0.3	16.6
p-value*	NA	ND	0.189	0.961	0.017	0.183

*p-value from Kruskal-Wallis Test

NA: not applicable; and ND: not determined

Table S2-25. Mouthing Median Duration (Second) While on Playground by USEPA Age Groups

Age Group	Distribution	Floors	Hands	Dietary	Non-Dietary	All Objects
<2	n	1	3	2	4	5
<2	Mean	1.00	4.50	2.00	4.13	3.50
<2	SD	ND	3.04	1.41	2.59	2.65
<2	Min	ND	1.00	1.00	1.00	1.00
<2	p25	ND	1.00	1.00	2.00	1.00
<2	Median	ND	6.00	2.00	4.50	3.00
<2	p75	ND	6.50	3.00	6.25	6.00
<2	p95	ND	6.50	3.00	6.50	6.50
<2	p99	ND	6.50	3.00	6.50	6.50
<2	Max	ND	6.50	3.00	6.50	6.50
2 to <3	n	0	4	1	4	5
2 to <3	Mean	ND	1.25	1.00	1.25	1.20



Age Group	Distribution	Floors	Hands	Dietary	Non-Dietary	All Objects
2 to <3	SD	ND	0.50	ND	0.50	0.45
2 to <3	Min	ND	1.00	ND	1.00	1.00
2 to <3	p25	ND	1.00	ND	1.00	1.00
2 to <3	Median	ND	1.00	ND	1.00	1.00
2 to <3	p75	ND	1.50	ND	1.50	1.00
2 to <3	p95	ND	2.00	ND	2.00	2.00
2 to <3	p99	ND	2.00	ND	2.00	2.00
2 to <3	Max	ND	2.00	ND	2.00	2.00
3 to <6	n	0	4	2	5	6
3 to <6	Mean	ND	1.75	1.25	2.40	1.92
3 to <6	SD	ND	0.96	1.06	1.67	1.63
3 to <6	Min	ND	1.00	0.50	1.00	0.50
3 to <6	p25	ND	1.00	0.50	1.00	1.00
3 to <6	Median	ND	1.50	1.25	2.00	1.50
3 to <6	p75	ND	2.50	2.00	3.00	2.00
3 to <6	p95	ND	3.00	2.00	5.00	5.00
3 to <6	p99	ND	3.00	2.00	5.00	5.00
3 to <6	Max	ND	3.00	2.00	5.00	5.00
6 to <11	n	0	3	1	4	4
6 to <11	Mean	ND	1.17	146.00	1.00	30.38
6 to <11	SD	ND	0.29	ND	0.82	58.76
6 to <11	Min	ND	1.00	ND	0.00	0.00
6 to <11	p25	ND	1.00	ND	0.50	0.50
6 to <11	Median	ND	1.00	ND	1.00	1.50
6 to <11	p75	ND	1.50	ND	1.50	60.25
6 to <11	p95	ND	1.50	ND	2.00	118.50
6 to <11	p99	ND	1.50	ND	2.00	118.50



Age Group	Distribution	Floors	Hands	Dietary	Non-Dietary	All Objects
6 to <11	Max	ND	1.50	ND	2.00	118.50
p-value*	NA	ND	0.385	0.431	0.125	0.542

*p-value from Kruskal-Wallis Test

NA: not applicable; and ND: not determined

Table S2-26. Mouthing Contact Frequency (Event/Hour) While on Playground by Younger (1-6 Years) and Older (7-12 Years) Children

Age Group	Distribution	Floors	Hands	Dietary	Non-Dietary	All Objects
1-6 years (n=21)	Mean	0.11	19.64	49.26	31.75	81.01
1-6 years (n=21)	SD	0.50	20.31	119.10	49.09	119.24
1-6 years (n=21)	Min	0.00	1.39	0.00	0.00	0.00
1-6 years (n=21)	p25	0.00	4.31	0.00	3.85	10.03
1-6 years (n=21)	Median	0.00	9.80	0.00	16.45	25.42
1-6 years (n=21)	p75	0.00	25.42	6.42	30.68	66.91
1-6 years (n=21)	p95	0.00	67.50	313.43	82.50	334.99
1-6 years (n=21)	p99	2.30	67.50	378.95	218.18	378.95
1-6 years (n=21)	Max	2.30	67.50	378.95	218.18	378.95
7-12 years (n=3)	Mean	ND	ND	0.00	3.02	3.02
7-12 years (n=3)	SD	ND	ND	0.00	5.23	5.23
7-12 years (n=3)	Min	ND	ND	0.00	0.00	0.00
7-12 years (n=3)	p25	ND	ND	0.00	0.00	0.00
7-12 years (n=3)	Median	ND	ND	0.00	0.00	0.00
7-12 years (n=3)	p75	ND	ND	0.00	9.05	9.05
7-12 years (n=3)	p95	ND	ND	0.00	9.05	9.05
7-12 years (n=3)	p99	ND	ND	0.00	9.05	9.05
7-12 years (n=3)	Max	ND	ND	0.00	9.05	9.05
p-value*	NA	ND	ND	ND	0.072	0.032

*Significant (p < 0.05). Wilcoxon sum rank test

NA: not applicable; and ND: not determined

Table S2-27. Mouthing Contact Duration (Min/Hour) While on Playground by Younger (1-6 Years) and Older (7-12 Years) Children

Age Group	Distribution	Floors	Hands	Dietary	Non-Dietary	All Objects
1-6 years (n=21)	Mean	0.04	0.98	1.76	1.95	3.71
1-6 years (n=21)	SD	0.0	1.59	4.30	4.37	5.70
1-6 years (n=21)	Min	0.0	0.02	0.00	0.00	0.00
1-6 years (n=21)	p25	0.0	0.12	0.00	0.06	0.33
1-6 years (n=21)	Median	0.0	0.28	0.00	0.51	1.08



Age Group	Distribution	Floors	Hands	Dietary	Non-Dietary	All Objects
1-6 years (n=21)	p75	0.0	0.67	0.34	1.58	4.14
1-6 years (n=21)	p95	0.0	5.00	11.40	5.00	16.58
1-6 years (n=21)	p99	0.0	5.00	16.52	20.00	20.00
1-6 years (n=21)	Max	0.0	5.00	16.52	20.00	20.00
7-12 years (n=3)	Mean	ND	ND	0.00	0.00	0.00
7-12 years (n=3)	SD	ND	ND	0.00	0.00	0.00
7-12 years (n=3)	Min	ND	ND	0.00	0.00	0.00
7-12 years (n=3)	p25	ND	ND	0.00	0.00	0.00
7-12 years (n=3)	Median	ND	ND	0.00	0.00	0.00
7-12 years (n=3)	p75	ND	ND	0.00	0.00	0.00
7-12 years (n=3)	p95	ND	ND	0.00	0.00	0.00
7-12 years (n=3)	p99	ND	ND	0.00	0.00	0.00
7-12 years (n=3)	Max	ND	ND	0.00	0.00	0.00
p-value*	NA	ND	ND	0.301	0.017	0.012

* Significant ($p < 0.05$). Wilcoxon sum rank test

NA: not applicable; and ND: not determined

Table S2-28. Mouthing Median Contact Duration (Second) While On Playground (N=24) by Younger (1-6 Years) and Older (7-12 Years) Children

Age Group	Distribution	Floors	Hands	Dietary	Non-Dietary	All Objects
1-6 years	n*	1	14	6	16	19
1-6 years	Mean	1.00	2.07	25.58	2.34	8.24
1-6 years	SD	ND	1.87	59.00	1.89	26.76
1-6 years	Min	ND	1.00	0.50	1.00	0.50
1-6 years	p25	ND	1.00	1.00	1.00	1.00
1-6 years	Median	ND	1.00	1.50	1.50	1.00
1-6 years	p75	ND	2.00	3.00	3.00	3.00
1-6 years	p95	ND	6.50	146.00	6.50	118.50
1-6 years	p99	ND	6.50	146.00	6.50	118.50



Age Group	Distribution	Floors	Hands	Dietary	Non-Dietary	All Objects
1-6 years	Max	ND	6.50	146.00	6.50	118.50
7-12 years	n*	ND	0	0	1	1
7-12 years	Mean	ND	ND	0.00	0.00	0.00
7-12 years	SD	ND	ND	0.00	0.00	0.00
7-12 years	Min	ND	ND	0.00	0.00	0.00
7-12 years	p25	ND	ND	0.00	0.00	0.00
7-12 years	Median	ND	ND	0.00	0.00	0.00
7-12 years	p75	ND	ND	0.00	0.00	0.00
7-12 years	p95	ND	ND	0.00	0.00	0.00
7-12 years	p99	ND	ND	0.00	0.00	0.00
7-12 years	Max	ND	ND	0.00	0.00	0.00
P value*	NA	ND	ND	ND	0.082	0.083

*p-value from Wilcoxon sum rank test. Only children who contacted the object are included in the calculation.

NA: not applicable; and ND: not determined



S3. Supplemental Information for Appendix F.3. Quantification of Micro-level Activities from Recorded Data of Children Playing Soccer on Artificial Turf - by The University of Arizona

S3.1. Protocols and Scripts

S3.1.1. Translation protocol

Translation Protocol

ARTIFICIAL TURF STUDY

Using VIDEO-TRANSLATOR

University of Arizona

MEZCOPH - Environmental Health Sciences

Written 12/16/17 (adapted from Stanford Protocol)

Introduction

The primary objective of this project is to quantify activity patterns of soccer players relevant to potential exposure from black crumb in artificial soccer turf around the state of California. You will use the Video Translator -TE software developed in the University of Arizona College of Public Health to translate what you see in the videotapes into computer text files. Video Translator -TE software is a tool designed to quantify real-time, sequential micro-activity pattern data collected via videotaping.

The Video Translator -TE interface you will use for this project is an on-screen window containing four grids (palette), each comprising cells labeled with names of (a) location, (b) time, (c) gloves, and (d) contact surfaces relevant to people playing soccer. While monitoring a contact boundary (e.g., right hand, left hand, mouth) on the videotape, the Video Translator -TE translator collects data by activating (i.e., positioning the cursor over a cell and clicking the pointing device) the appropriate cell in each grid. The software couples grid activation with a computer clock that records (to fractions of a second), the total duration of each contact/activity event.

The Video Translator -TE output files will allow us to conduct a detailed analysis and summarize information about contact frequency and duration between player's body parts and surfaces that may be contaminated with the black crumb that is usually put on artificial turf. In addition, because the data collected are sequential, i.e., each line in the text file corresponds to a real-time activity in the videotape, we can use the data to reconstruct a player's activity sequence.

Similarly, another separate portion of this project is to analyze their macro-activities and intensity. For this portion, there is another palette with four grids with names of (a) location, (b) time, (c) activities, and (d) intensity. While monitoring the activities (e.g., running, walking, jumping) of the players on the video, intensity (highly, moderately, etc) needs to be selected as well.



PLEASE READ THIS PROTOCOL CAREFULLY - QUALITY ASSURANCE IS OF THE
UTMOST IMPORTANCE!!

STEP 1. Read the Video Translator -TE Manual

The attached Video Translator -TE manual contains all information about the Video Translator -TE software, including how to launch the program, enter output file header information, select a contact boundary, and decide on the proper grid cell selection for special circumstances (e.g., body part out of view, stopping the video, or touching two objects at once). Read the manual carefully and ask any questions you have to the Video Translator -TE prior to proceeding to training.

STEP 2. Receive Video Translator -TE Training

Before you translate actual videotapes from the field study, you must receive official training from one of the Video Translator -TE experts. The first step is to arrange a time with a Video Translator -TE trainer.

First the trainer will ask you to translate a 15 minute segment of videotape called “Training 0” while he or she watches you. The translation results from this initial session will not be analyzed: the “Training 0” is meant solely for you to get comfortable using the software, familiarize yourself with the grids, and ask the Video Translator -TE trainer any questions you may have regarding decision criteria or other issues. Video Translator -TE trainer will observe you and point out any errors you make so that you can become a reliable Video Translator -TE translator.

After this initial orientation, you must translate each of three 30-minute videos that have been selected specifically for training purposes. These tapes are labeled “Training 1”, “Training 2”, and “Training 3” and they must be translated in that order, one at a time so that the Video Translator -TE trainer can analyze your results and consult with you after each training session. The Video Translator -TE trainer will not be present while you translate these four training videos. After you complete “Training 1”, save your file under the name “<YOURINITIALS>_Train1.txt” (e.g., NLG_Train1.txt) on the Training folder designated on the desktop computer you are using, then notify the Video Translator -TE trainer that you have completed the first training. The Video Translator -TE trainer will then run a series of programs to analyze your output file compared to a “standard” file, assess your percent agreement with the standard file (based on total contact durations for each unique contact event in the file), and meet with you to discuss where any errors occurred (e.g., reaction time, misdesignation of an object type, etc.). If your agreement with the standard file is less than 90%, you will need to translate that video again. When the agreement is at least 90%, and the Video Translator -TE trainer is satisfied with the results, he or she will instruct you to proceed to “Training 2.” Repeat the steps above until you have completed all four training with at least 90% reliability.



Sideline	on						
Soccer_field	off						
Other_outdoor		Artificial_turf	Wood_structure	People	Clothes_towel	Other_food	Head_face
Vehicle		Black_crumb	Plast_structure	Wood_tool	Footwear	Sticky_food	Body_skin
Before_game/practice		Grass	Metal_structure	Plast_tool_appl	Shin_guards	Tap_water	Other_hand_s
Player_warming_up		Dirt	Fabric_structure	Metal_tool_appl	Gloves	Puddle_water	Mouth
During_game/practice		Plastic_rubber_mat	Porous_plast_struct	Paper_wrapper	Mth_guard_pacifier	Other_beverages	Hair
Snack_time/break		Asphalt	Fabric_toy	Vegetation	Bag_backpack	Water_bottle	Not_in_view
After_game/practice		Conc_rock_floor	Wood_toy	Animal	Soccer_ball	Food_cont	Nothing

The template shown above will be used for video translation in this study. For the training sessions, select the “Right Hand” as the contact boundary in Video Translator - TE (see manual), and focus only on the player's right hand during translation, clicking on grids corresponding to the activities of the right hand.

Video Translator - University of Arizona - College of Public Health ---- Basic Edition - [activity]

Video Translator Options Settings About



01:56 / 30:05

Undo < 1.00 >

RecordNum	Location	Activities	Intensity	Time	Duration
1	Soccer_field	Not_in_view	Resting	During...	29.6300
2	Soccer_field	Not_in_view	Resting	During...	3.7000
3	Soccer_field	Running	Moderately	During...	3.9900
4	Soccer_field	Resting_sta...	Resting	During...	2.0000
5	Soccer_field	Running	Moderately	During...	6.4000
6	Soccer_field	Walking	Lightly	During...	16.9400
7	Soccer_field	Running	Moderately	During...	1.3300

Sideline	Stretching	Running	Highly
Soccer_field	Push_ups	Walking	Moderately
Other_outdoor	Sit_ups	Resting_standing	Lightly
Vehicle	Jumping	Rest_sit_chair	Resting
Before_game/practice	Heading	Rest_sit_on_ground	
Player_warming_up	Diving	Fall_ground	
During_game/practice	Tackling_sliding	Not_in_view	
Snack_time/break			
After_game/practice			

The template shown above will also be used for video translation in this study. For the



training sessions, select the "override" and write down "Activity" as the contact boundary in Video Translator -TE (see manual), and focus only on the player's activities during translation, clicking on grids corresponding to the activities and intensity as shown above.

Decision Criteria

During translation, there will be occasions when it will not be clear what type of object the subject is contacting and sound judgment calls will be required. To reduce the number of these occasions, audio annotations that can be heard during translation will be conducted during videotaping. This will add specificity by the onsite note-taker as to the characteristics of objects and surfaces contacted (e.g., plush toy, plastic toy, etc.). The following guidelines are an attempt at guiding the decision process for the translator. However, there will probably be some scenarios not addressed here, in which case the translator should opt for the conservative choice, i.e., the object that is likely to contain a higher concentration.

The following guidelines should be used in translating videotapes, with the ultimate goal to assess black crumb exposure:

1. What to do when subject's body part is out of view?

Either click Not_In_View, or, if appropriate, deduce the object being contacted while the body part is out of view. For instance, assume the right hand is being translated, and imagine a goalie (goal keeper) is holding the ball with both hands. When the player's right hand is in view, it is clear to designate the object as hard surface and when the player's right hand disappears from camera view, it may be appropriate to deduce from context that the right hand is still contacting the ball. Many times it will be obvious or safe to assume the object contacted while the body part is out of view, but the translator should pause the video if the object contacted is not obvious from context.

2. What if the player's body part touches more than one object at a time?

Ideally, one would stratify the exposure boundary and record both contacts. If the entire hand is being translated, however, select the object that has the most surface area of contact with the hand.

3. What if an object does not obviously fit one of the categories and it is not on the object designation sheet?

Make an assumption and write it down so that it may be added to the object designation sheet. Then give the sheet to the coordinator so that they can update everyone's sheet. (CHECK assumption sheet attached)

4. What to do when the activity on the second palette is not in it?

Write down in the assumption lists, and discuss it with manager.

STEP 3. Consult with the Project Videotape Manager



After completing the Video Translator -TE training procedure, you will be considered qualified to proceed with translation of the field study videotapes. Consult with the Project Videotape Manager to receive specific instructions as to which videotapes you are responsible for, the body parts to focus on for each translation, and the order in which you should translate the videos.

STEP 4. Proceed with Translation of the Videos

You will be responsible for translating a number of videotapes from the field study. Again, quality of the collected data is extremely important. Because of this, random sections of the footage you translate will be checked by Video Translator -TE experts and possibly by the Quality Assurance Personnel. The sequential construct of the Video Translator -TE output file will allow in-house and quality assurance staff to go to a particular point of a section of video you translated and match your output file to a sequence translated by an expert. A Video Translator -TE expert should also be able to repeat a section of tape you translated, yielding at least a 90% agreement between the two output files. IF THE RELIABILITY IS LESS THAN 90% FOR A GIVEN VIDEOTAPE DURING RANDOM SPOT-CHECKS, YOU WILL NEED TO RECODE THE ENTIRE VIDEO AGAIN. To minimize repeated effort, you should translate the field study tapes carefully! Because videotape translation requires intense focus and your results may suffer if you fatigue, you must translate no more than 2 hours a day, and you should pause and take a break every 30 minutes to avoid fatigue.

STEP 5. Follow Data Management Procedures

Once the data has been gathered from videos, each file needs to be created and saved per participant. The name of the translator needs to be saved along with the video that he/she transcribed.



S3.1.2. Translation tips and Object Designation

S3.1.2.1. Translation Tips

ARTIFICIAL TURF STUDY

University of Arizona

MEZCOPH - Environmental Health Sciences

Written 12/16/17 (adapted from Stanford Protocol)

HOW TO REDUCE ERRORS:

1. **Preview the VIDEO segment** for the locations and objects involved.
2. **Read the taper's log** for palette designation and note time of "ON MARK" is located in video.
3. **Note any unusual object or location** not listed in the taper's log and determine the palette designation. **When in doubt, check with the project personnel.**
4. In general, **start translation with the mouth** since it is usually simplest body part to translate for.

S3.1.2.2. Object Designations:

Goal: To estimate the accumulation and transfer of black crumb used in artificial turf

Not_In_View: If it is obvious what the player is touching even though the body part being translated is out of view, choose the palette category corresponding to the object that you believe he/she is touching. Otherwise, choose *Not_In_View*.

Example: Player holding a water bottle (with back to you): *Water_bottle*.

Food_Cont: Any item used to contain, cook, transport, or consume food or beverage (unless it is treated as a toy). It doesn't matter what material the object is made of (e.g. ceramic, metal, plastic, etc).

Logic: Food containers are frequently washed and therefore less likely to have a large build-up of black crumb.

Examples: Baby bottle, Utensils, Bowls, Cups

Toys: Something that the adults and children treat as toys. It is NOT just anything that the child is playing with. **It is important that the ADULTS also treat the object as a toy for the child.**

Logic: Toys are not washed often and therefore likely to have more build-up of contaminant. Also, they have a very high frequency of object-to-hand and object-to-mouth contacts, thus leading to a large transfer of residue.



Structure: Something that is not moved or handled very often.

Logic: Walls and furniture tend to collect dust and chemical residues from the ambient air and they are not washed.

Metal_structure: Includes metal fences and glass materials (e.g. bench, fences, soccer pole).

Plastic_structure: It can be chairs, goalies, etc.

Tool/Appliance: Something that is often handled and actively used.

Logic: Tools and appliances tend to be mobile and have frequent object-to-skin contact. Therefore, they may pick up and transfer more residues than stationary objects.

Examples: Soccer cones, plastic bag, tape to hold shin guards

Food: Solid foods are divided between *Sticky_Food* and *Other_Food*.

Logic: Contact with sticky foods may affect the potential for picking up contaminants from other surfaces and artificial turf.

- *Sticky_Food:* foods that tend to form films on the body (e.g., ice-cream, syrup, watermelon, apple, etc).
- *Other_Food:* dry foods (e.g., cereal, crackers, bread, etc.)
- *Water or Beverage:* includes all edible liquids and water coming out of a tap (even sprinkler water; sodas).

Head/face: anything above the shoulders. (e.g., neck, face)

Clothes: No distinction is made between the participant's clothes or another person's clothes.

Footwear: includes soccer shoes, sandals, canvas shoes, leather shoes, plastic shoes, top of shoe, sole of shoe, etc.

Body_skin: any other part of the body (direct contact with the skin); note: no distinction made between participant's body or others.

Puddle_Water: includes standing water in a driveway, on soil, etc.

Paper/Wrapper: Includes all types of paper including food wrappers

Examples: photos, books, candy wrapper, tissue paper

Materials:

- *Porous Plastic:* includes styrofoam, synthetic leather, etc.
- *Fabric:* includes anything made of fibers (e.g. wallpaper, cloth toys, rope, etc).
- *Metal:* includes glass and ceramic.



S3.1.2.3. Location Designations:

Tips: The location of a player is determined by where the player's torso is, not where his/her appendages are.

Sideline: next to the field, or near the soccer field, it includes the bench

Field: Inside the lines of soccer field

Other outdoor: near bathrooms, break area, parking lot etc.

Vehicle: in the car

S3.1.2.4. Gloves

ON/OFF, usually goalies wear them all game, but not during breaks and other players when is cold. Shirts/sweaters sleeves that go over the hands and hold on thumbs were not considered gloves, but clothes.



S3.1.3. Protocol for transcription training on software usage

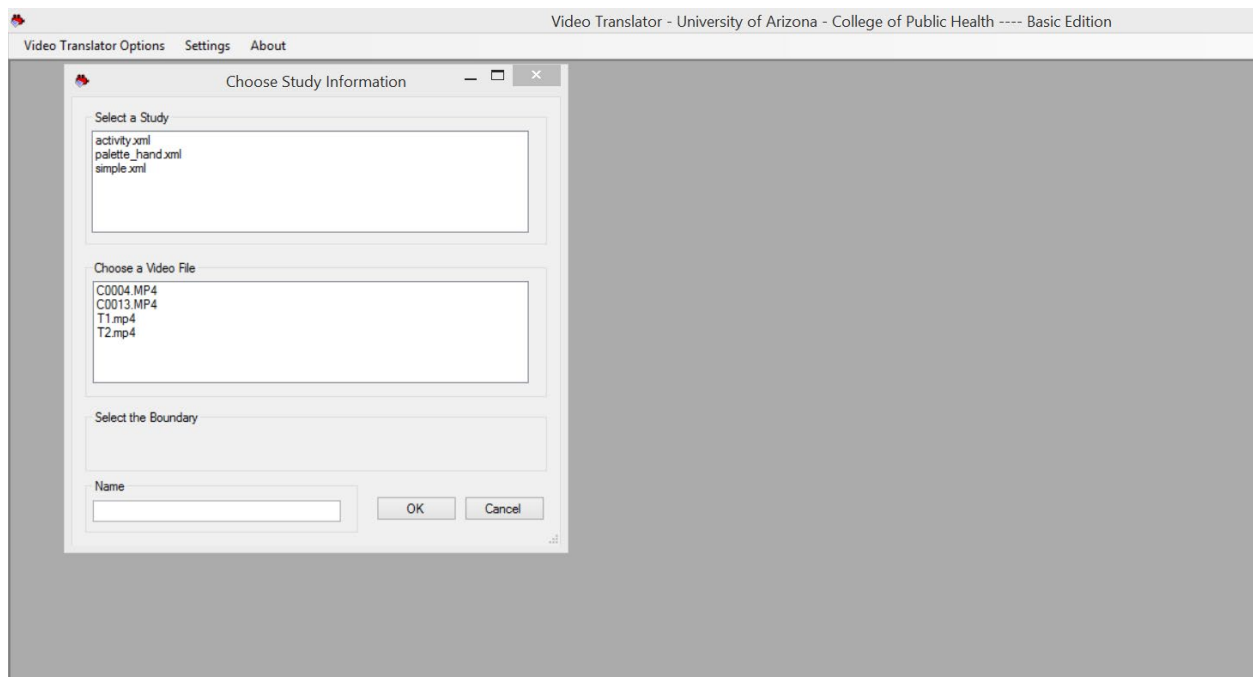
SOFTWARE MANUAL
The Video Translator -TE
University of Arizona
College of Public Health

STEP 1:

- Open Video Translator program by double clicking on icon below:



Once program is open right click on upper toolbar (left side) on "Video translator options" and select "Single form translate"



STEP 2:

- Choose the study information
- Select a study (select palette): Usually choose "SIMPLE.XML" for the object categories palette and "Activity.XML" for the activity/intensity palette.
- Chose video file: here you select the video that was assigned to you to translate
- Select boundary:



RHD = right hand

LHD = left hand

MTH = mouth

Override = select this option if you want to choose something else such as
"activity"

- NAME: finally write down the name of transcriber
- CLICK "OK"

STEP 3: begin transcribing

simple						
Sideline	on					
Soccer_field	off					
Other_outdoor	Artificial_turf	Wood_structure	People	Clothes_towel	Other_food	Head_face
Vehicle	Black_crumb	Plast_structure	Wood_tool	Footwear	Sticky_food	Body_skin
Before_game/practice	Grass	Metal_structure	Plast_tool_appl	Shin_guards	Tap_water	Other_hand_s
Player_warming_up	Dirt	Fabric_structure	Metal_tool_appl	Gloves	Puddle_water	Mouth
During_game/practice	Plastic_rubber_mat	Porous_plast_struct	Paper_wrapper	Mth_guard_pacifier	Other_beverages	Hair
Snack_time/break	Asphalt	Fabric_toy	Vegetation	Bag_backpack	Water_bottle	Not_in_view
After_game/practice	Conc_rock_floor	Wood_toy	Animal	Soccer_ball	Food_cont	Nothing

NOTE: always start with "NOT IN VIEW" until getting into section MARK by note-taker login sheet showing where transcription should start.

STEP 4:

Once the video is over and you have finished transcribing a window will open asking you to save or not. Please save and make sure it was saved in the correct file.



S3.1.4. QC/QA Protocol

QC/QA Protocol

ARTIFICIAL TURF STUDY

University of Arizona, College of Public Health

Written 10/13/17

Adapted from Stanford/CHAMCOS protocol

S3.1.4.1. Introduction

The objective of this protocol is to outline the steps to be taken by personnel in using inter-observer and intra-observer agreement as a means to maintain the consistency and quality of translations for this project. Inter-observer agreement will be determined through random checks conducted on about **10% of a translator's translated files**, by experienced researchers, to check for **at least a 90% agreement** in object, location, and activity designations between the translator and spot-checker. These checks will be hereafter referred to as spot-checks. Translators have been trained to use Video TE software to translate for the activity patterns of children. Spot-checkers are researchers who have played a leadership role in translator's training process and have had some experience in using the software program. The details of how these spot-checks are conducted and how the results from these spot-checks are processed are discussed below. The intra-observer agreement will be determined by randomly choosing video segments to be re-transcribed by the same translator.

S3.1.4.2. Procedure for Spot Check (Inter-Observer)

Step 1:

Spot-check will be done for at least **20 minutes of every 10 - 12 hours** of translated videos. Segments for spot-checking should be picked at random (e.g., throwing a die).

Be sure to read the assumptions sheets for each segment (assumptions sheets are attached at the end of this document). Assumption sheets contain specific problems and questions that a translator encountered during translation of that segment and the assumptions for the decisions made. **Include the word SPOT after the three-letter designation for the body part when saving the file.** *Follow the Translation Protocols on how to save files.* Start the translation at the beginning of the segment to be spot-checked. Be sure to exceed 10 minutes of translation to ensure that a full 10 minutes is captured.

Step 2: What to spot-check

Apply spot-check protocol for each of the three different translated body parts (right hand, left hand, and mouth) and the macro-activity patterns (walking, running, etc.) for each child.

Step 3: How to pass



In order to pass spot-check, there must be ***less than 10 percent discrepancy*** between the spot-checker's and the translator's translation files. The spot-checker will run a script in R studio to compare the files between the spot-checker and the translator. Output of the results will be printed and placed in a "Spot-check Folder". Remember that translations for the same body part, for the same segment of tape, are being compared.

Step 4: What to do if there is > 10% difference

If there is more than 10 percent discrepancy between the spot-checker's and the translator's translation files, the spot-checker and the translator will work together to discover where the discrepancy occurred. If it is agreed upon that in fact it is the translator who has made the error(s), try to find out what type of error(s) are occurring. Some possible errors are listed below.

1. ***Mis-designations***: Translator has designated something incorrectly (e.g., designated a "During the game" as "Before the game" or called a "Metal structure" a "Water bottle").
2. ***Lack of attention***: Translator is forgetting to change designations for location, activity, or object as the child changes their activity pattern (the translator is basically falling asleep and not paying attention).
3. ***"Not-in-View"***: There is difference in the time allotted to "Not-In-View" between the translator and the spot-checker. One person is being generous with the use of "Not-In-View" and does not think that they can make a guess as to what the body part is touching.
4. ***"Nothing"***: There is a difference in the time allotted to "Nothing" between the translator and the spot-checker. One person does not think that the body part is in contact with something else.

Note: If the spot-checker made the error(s), redo the 10 minutes and compare the files again.

Correcting Disagreements That Are Greater Than 10%

Rule 1: The errors that occur due to 3 and 4 can often be due to judgment calls, especially in the case where the percentage **disagreement is between 0-20%**. Here, neither the spot-checker nor the translator is wrong but some of the assumptions made should be discussed. It is **not necessary to correct the file in this case** where translation is very subjective. Both translator and spot-checker should sign and date the results.

If the error is greater than 20%, due to differences in "Nothing" and "Not-In-View", then it is probable that some assumptions being made by the translator can be corrected according to translation protocols.

Rule 2: In general, if the translator has made a mistake in location, activity, or object



designation due to mistake 1, then *sometimes* the file can be easily corrected. It will be done throughout the **entire file**. For example, if the translator has called a section of the “Artificial turf” “Soccer ball”, then replace “Artificial turf” with “Soccer ball” throughout the file. Remember that this can only be done if “Artificial turf” is not a legitimate designation anywhere in the file. The researcher in charge will make the necessary correction by using the “**Replace**” **function** on the output file in Microsoft Word. Save the file as a text only file. The spot-checker will discuss this mistake with the translator and both will sign and date the output results. The researcher in charge of translations will need to look at the output files for translation of other body parts from the same half hour section of videotape and other videotape sections of that child to see if the same mistake was made. Correct these files accordingly.

Rule 3: If the error in location, activity, or object designation is not easily corrected and this is likely to occur in the case of mistake 2, then the translator will have to **re-translate the file** after a full discussion and clarification with the spot-checker. An example of such a mistake is where the translator forgot to change location at certain sections throughout the file. It is difficult to accurately find these sections and correct them. Remember that the spot-checker and translator will need to sign and date all output results

Correcting and Saving Files

It is important to keep the original files (files that contain mistakes in translation) for future reference and for Quality Assurance purposes. **Save the original files with the word “copy”** at the end of the original file name and save it in a special folder called **(TURF_error)** on the hard drive of the computer.

A list will be compiled with all the file names that were corrected. If a segment of videos for a particular body part has been re-translated, then this file will need to be compared again with the output file created by the spot-checker to make sure the error has been resolved. **This second set of output results will include the word “redo”** and need to be signed and dated by the spot-checker and translator. These same rules apply if a spot-check has been redone by the spot-checker; put **“copy”** on the old spot-check and print new output results.

S3.1.4.3. Procedure for Intra-Observer Check

The same for procedure that will be conducted for the Spot check for inter-observer QC/QA will be conducted for intra-observer check. For the intra observer check, the randomly selected video will be review by same translator.

S3.1.4.4. Conclusion

Spot-checks are a means to check for inter-observer and intra-observer agreement on the translation of children’s micro-activity patterns using the Video TE software. This spot-check protocol by no means covers all the possible circumstances that can occur when a translator has been checked for errors in translation. However, this protocol will



serve to guide researchers on how to handle most errors, thereby maintaining the quality of translation. In correcting files manually, an effort will be made not to jeopardize the quality, consistency, and accuracy of translation.

Not only do spot-checks maintain the quality of translation (since translators are likely to stay alert during translations if they know that any of their files could be checked), but they also check for the effectiveness of our training program. Spot-checks also provide an additional means of communication and clarification between everyone on the project and are also meant to bring to light ways of making translations simple and effective.



S3.2. Data Summarized by Event Schedule (Moment/Time), Location, and Glove Use

S3.2.1. Data Summarized According To Event Moment/Time

S3.2.1.1. Activity Patterns During Games/Practice

Table S3-1. Both Hands Contact Frequency (Event/Hour) During Game/Practice (n=40)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial Turf	3.86	4.72	0.00	0.99	2.16	4.13	13.99	18.39	18.69
Body	11.66	9.86	1.29	4.25	9.48	14.38	33.75	41.19	42.39
Clothes	68.17	36.92	13.12	40.56	62.92	85.55	137.93	169.52	183.75
Field Structures	5.62	5.24	0.00	1.81	4.17	8.09	16.19	20.39	21.73
Footwear	4.99	5.84	0.00	1.64	3.44	5.90	12.66	26.63	34.16
Head/face/hair	29.10	26.01	3.38	11.29	19.39	38.07	80.75	104.19	112.86
Shin guards	1.00	2.35	0.00	0.00	0.00	0.79	4.05	10.21	11.92
Soccer ball	20.40	29.26	0.70	3.68	9.97	21.15	68.26	128.19	130.86
Water bottle	2.44	4.01	0.00	0.00	1.25	2.84	10.42	17.13	17.31
Dietary Objects	2.47	4.05	0.00	0.00	1.25	3.06	11.13	17.13	17.31
Non-dietary Objects	155.81	69.89	48.06	113.33	147.29	180.40	290.38	363.83	376.64
All Objects	158.29	70.10	48.06	114.74	148.23	182.51	290.47	365.59	378.46

Table S3-29. Both Hands Contact Duration (Min/Hour) During the Game/Practice (n=40)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial Turf	0.20	0.27	0.00	0.01	0.09	0.33	0.60	1.07	1.34
Body	0.92	1.35	0.02	0.12	0.32	0.83	3.61	5.02	5.81
Clothes	12.00	12.99	0.50	3.59	7.43	17.08	34.94	49.49	55.06
Field Structures	0.54	0.74	0.00	0.09	0.23	0.75	1.96	2.92	3.42
Footwear	0.44	0.54	0.00	0.07	0.23	0.59	1.85	2.00	2.03
Head/face/hair	1.02	1.48	0.04	0.32	0.66	1.28	2.17	6.56	9.24
Shin guards	0.09	0.32	0.00	0.00	0.00	0.02	0.40	1.38	1.97
Soccer ball	0.83	1.10	0.01	0.20	0.41	0.85	4.05	4.38	4.52
Water bottle	0.42	0.98	0.00	0.00	0.10	0.42	1.87	4.34	5.76



Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Dietary Objects	0.42	0.99	0.00	0.00	0.10	0.43	1.90	4.34	5.76
Non-dietary Objects	16.71	13.16	0.93	7.10	13.38	22.91	41.66	54.25	58.65
All Objects	17.13	13.20	1.42	7.35	13.54	23.01	41.67	54.33	58.72

Table S3-30. Both Hands Median Contact Duration (Second) During the Game/Practice

Objects	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial Turf	35	1.80	2.36	0.46	0.82	1.24	1.64	4.06	10.92	14.20
Body	40	1.40	1.01	0.45	0.80	1.15	1.48	2.56	5.05	6.52
Clothes	40	4.20	3.23	1.20	2.26	2.81	4.60	11.96	13.92	14.08
Field Structures	35	3.82	7.26	0.41	1.45	1.98	3.26	7.04	31.62	43.93
Footwear	38	3.81	3.57	0.82	1.58	2.37	5.42	10.44	15.19	15.34
Head/face/hair	40	1.36	0.50	0.60	1.05	1.17	1.62	2.27	2.81	3.09
Shin guards	12	2.75	1.76	0.90	1.58	2.10	3.52	5.79	6.57	6.76
Soccer ball	40	2.21	2.55	0.64	1.27	1.67	2.11	3.84	11.95	17.06
Water bottle	26	5.26	2.97	0.22	3.21	4.84	7.19	9.32	12.81	13.88
Dietary Objects	26	5.24	2.96	0.22	3.21	4.65	7.06	9.32	12.81	13.88
Non-dietary objects	40	2.38	1.37	1.16	1.44	1.88	2.99	4.14	7.23	7.73
All Objects	40	2.40	1.35	1.16	1.48	1.93	2.99	4.16	7.16	7.69

Table S3-31. Mouthing Contact Frequency (Event/Hour) During the Game/Practice (n=40)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Body skin	0.59	1.83	0	0	0	0	3.31	8	10.33
Clothes	8.77	16.41	0	0.9	3.94	12.88	22.36	70.96	99.87
Field structures	0.01	0.07	0	0	0	0	0	0.29	0.47
Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hands	8.53	6.12	0.94	3.6	7.49	11.48	19.59	27.14	27.56
Head/face/hair	0.03	0.16	0	0	0	0	0.02	0.74	0.91
Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA



Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	0.84
Water bottle	1.49	2.57	0	0	0.29	1.97	5.13	10.51	13.24
Dietary objects	1.57	2.55	0	0	0.63	2.09	5.13	10.51	13.24
Non-dietary objects	19.18	18.5	1.08	8.57	13.91	23.82	44.11	87.1	108.19
All objects	20.76	19.42	1.08	9.6	15.47	24.99	44.92	90.92	114.44

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-32. Hourly Mouthing Duration (Min/Hour) During the Game/Practice (n=40)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Body skin	0.01	0.05	0	0	0	0	0.08	0.22	0.27
Clothes	0.33	0.66	0	0.01	0.09	0.33	1.51	2.83	3.62
Field structures	0	0.01	0	0	0	0	0	0.02	0.04
Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hands	0.41	0.85	0.01	0.1	0.18	0.35	0.97	3.71	5.28
Head/face/hair	0	0	0	0	0	0	0	0.01	0.01
Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soccer ball	0	0	0	0	0	0	0	0	0
Water bottle	0.09	0.14	0	0	0.01	0.11	0.37	0.47	0.52
Dietary objects	0.09	0.14	0	0	0.02	0.15	0.37	0.47	0.52
Non-dietary objects	0.78	1.06	0.02	0.19	0.39	1	2.48	4.73	5.29
All objects	0.87	1.12	0.02	0.26	0.47	1	2.98	4.99	5.69

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-33. Median Mouthing Contact Duration (Second) During the Game/Practice

Objects	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Body skin	8	1.01	0.44	0.54	0.6	0.96	1.34	1.59	1.6	1.6



Objects	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Clothes	34	1.74	1.78	0.24	0.89	1.29	1.99	3.45	8.48	10.61
Field structures	1	5.18	ND	ND	ND	ND	ND	ND	ND	ND
Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hands	40	1.29	0.72	0.62	0.87	1.11	1.42	2.36	3.89	4.76
Head/face/hair	2	1.15	0.5	0.79	0.97	1.15	1.33	1.47	1.5	1.5
Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soccer ball	1	0.13	ND	ND	ND	ND	ND	ND	ND	ND
Water bottle	20	3.52	1.62	1.06	2.35	3.19	4.4	6.47	6.72	6.78
Dietary objects	22	3.56	1.6	1.06	2.4	3.19	4.55	6.41	6.71	6.78
Non-dietary objects	40	1.3	0.71	0.68	0.88	1.07	1.4	2.53	3.75	4.45
All objects	40	1.4	0.74	0.68	0.94	1.18	1.49	2.57	3.77	4.45

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-34. Frequency (Event/Hour) of Specific Actions During the Game/Practice (n=40)

Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Diving	0.53	1.76	0	0	0	0	2.11	7.99	10.11
Heading	0.39	0.7	0	0	0	0.58	2.31	2.36	2.38
Jumping	9.52	19.71	0	0.71	2.32	8.4	74.75	76.51	76.95
Slip or fall	2.17	3.44	0	0	0.81	2.21	7.52	14.4	14.98
Tackling or sliding	0.48	0.96	0	0	0	0.63	2.69	3.54	3.75

Table S3-35. Hourly Duration (Min/Hour) of Macro-Activities During the Game/Practice (n=40)

Macro-Activities	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Push ups	0	0	0	0	0	0	0	0.01	0.01
Rest Standing	14.95	7.13	3.89	10.07	13.85	18.26	26.3	33.33	34.11
Running	15.13	6.95	1.83	9.96	15.07	19.56	26.44	28.18	28.95
Sit on chair	2.57	5.83	0	0	0	0.44	19.37	21.97	23.57



Macro-Activities	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Sit on ground	0.82	1.18	0	0.01	0.37	0.9	3.31	4.52	4.73
Sit ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
Stretching	0.51	0.78	0	0	0.17	0.57	2.04	3.07	3.44
Walking	25.71	6.43	11.33	21.27	25.83	30.07	35.19	37.11	37.23

NA: not applicable, the activity was not observed

Table S3-36. Hourly Duration (Min/Hour) of Intensity During the Game/Practice (n=40)

Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
High	1.98	1.11	0.11	1.11	1.84	2.84	3.75	4.48	4.68
Moderate	13.75	5.73	3.86	9.62	13.84	17.47	23.43	25.36	26.06
Low	25.29	5.56	11.3	22.47	26.03	28.98	33.84	34.32	34.43
Resting	18.98	8.67	7.03	12.67	16.66	25.27	34.83	38.19	39.34

S3.2.1.2. Data Summarized When Participants Were Warming Up

Table S3-37. Both Hands Frequency (Event /Hour) During Warming Up (n=19)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial Turf	7.30	21.10	0.00	0.00	0.00	0.00	45.30	75.70	83.30
Body	37.50	60.50	0.00	0.30	5.90	42.00	176.10	189.10	192.30
Clothes	90.60	54.50	0.00	56.70	88.30	134.50	164.40	187.70	193.60
Field Structures	8.00	18.70	0.00	0.00	0.70	5.00	29.70	68.80	78.60
Footwear	20.10	30.80	0.00	0.00	0.00	39.00	73.50	90.70	94.90
Head/face/hair	27.00	34.40	0.00	2.70	20.70	38.90	69.90	129.70	144.60
Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soccer ball	17.70	65.90	0.00	0.00	0.00	4.30	55.10	236.10	281.40
Water bottle	2.20	6.90	0.00	0.00	0.00	0.00	10.10	25.20	28.90
Dietary Objects	2.20	6.90	0.00	0.00	0.00	0.00	10.10	25.20	28.90
Non-dietary Objects	212.80	1254.00	0.00	136.80	181.90	265.50	446.20	458.60	461.70
All Objects	214.90	124.40	0.00	136.80	181.90	265.50	446.20	458.60	461.70

NA: not applicable due to no hand contact with the object



Table S3-38. Both Hands Contact Duration (Min/Hour) During Warming Up (n=19)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial Turf	0.20	0.50	0.00	0.00	0.00	0.00	1.00	1.60	1.70
Body	1.20	2.20	0.00	0.00	0.10	1.20	5.80	7.30	7.70
Clothes	12.80	12.50	0.00	4.60	9.70	18.00	35.70	456.00	48.00
Field Structures	1.00	3.60	0.00	0.00	0.00	0.10	3.20	12.90	15.40
Footwear	1.00	1.70	0.00	0.00	0.00	1.30	4.70	5.00	5.10
Head/face/hair	0.70	0.80	0.00	0.00	0.50	0.80	2.20	2.40	2.50
Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soccer ball	0.40	1.30	0.00	0.00	0.00	0.10	1.30	4.70	5.50
Water bottle	0.20	0.60	0.00	0.00	0.00	0.00	1.50	2.00	2.10
Dietary Objects	0.20	0.60	0.00	0.00	0.00	0.00	1.50	2.00	2.10
Non-dietary Objects	17.30	12.30	0.00	11.60	15.30	21.80	41.00	47.40	49.00
All Objects	17.50	12.10	0.00	11.90	15.30	21.80	41.00	47.40	49.00

NA: not applicable due to no hand contact with the object

Table S3-39. Both Hands Contact Median Duration (Second) During Warming Up

Objects	n	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial Turf	4	3.30	5.10	0.60	0.70	0.70	3.30	9.40	10.60	11.00
Body	13	1.30	0.90	0.40	0.80	1.00	1.80	3.00	3.10	3.20
Clothes	16	6.00	5.90	1.10	2.30	4.60	7.20	14.50	23.20	25.40
Field Structures	9	2.80	2.90	0.70	0.80	1.90	2.70	7.90	8.80	9.00
Footwear	8	2.60	2.80	0.70	1.40	1.50	2.40	6.90	8.80	9.30
Head/face/hair	14	1.20	0.30	0.70	1.00	1.30	1.40	1.60	1.70	1.70
Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soccer ball	6	1.40	0.60	0.90	0.90	1.30	1.60	2.30	2.40	2.50
Water bottle	2	4.70	2.80	2.10	3.20	4.40	6.00	7.30	7.50	7.60
Dietary Objects	3	4.70	2.80	2.10	3.20	4.40	6.00	7.30	7.50	7.60
Non-dietary Objects	19	2.60	1.80	0.70	1.10	2.30	3.60	5.40	7.10	7.50
All Objects	19	2.60	1.80	0.80	1.10	2.30	3.60	5.40	7.10	7.50

NA: not applicable due to no hand contact with the object



Table S3-40. Mouthing Frequency (Event/Hour) While Warming Up (n=19)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Body skin	0.10	0.42	0.00	0.00	0.00	0.00	0.18	1.49	1.82
Clothes	8.75	16.31	0.00	0.00	0.00	12.20	35.83	59.65	65.60
Field structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hands	7.27	11.16	0.00	0.00	0.00	11.69	26.87	38.85	41.85
Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Water bottle	0.29	1.25	0.00	0.00	0.00	0.00	0.55	4.49	5.47
Dietary objects	0.29	1.25	0.00	0.00	0.00	0.00	0.55	4.49	5.47
Non-dietary objects	16.40	17.95	0.00	5.67	12.77	21.31	54.99	63.48	65.60
All objects	16.69	17.94	0.00	5.67	13.74	21.55	54.99	63.48	65.60

NA: not applicable due to no mouth contact with these objects

Table S3-41. Mouthing Hourly Duration (Min/Hour) While Warming Up (n=19)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Body skin	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.03	0.04
Clothes	0.17	0.28	0.00	0.00	0.00	0.21	0.76	0.95	0.99
Field structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hands	0.13	0.18	0.00	0.00	0.00	0.27	0.42	0.55	0.58
Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Water bottle	0.01	0.02	0.00	0.00	0.00	0.00	0.01	0.08	0.10
Dietary objects	0.01	0.02	0.00	0.00	0.00	0.00	0.01	0.08	0.10



Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Non-dietary objects	0.31	0.28	0	0.12	0.27	0.42	0.83	0.96	0.99
All objects	0.32	0.28	0	0.12	0.27	0.42	0.83	0.96	0.99

NA: not applicable due to no mouth contact with these objects

Table S3-42. Mouthing Median Duration (Second) While Warming Up

Objects	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Body skin	1	1.20	ND	ND	ND	ND	ND	ND	ND	ND
Clothes	8	1.30	0.90	0.70	0.80	0.90	1.30	2.80	3.10	3.20
Field structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hands	9	1.30	0.90	0.40	0.70	1.10	1.30	2.60	3.30	3.40
Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Water bottle	1	0.90	ND	ND	ND	ND	ND	ND	ND	ND
Dietary objects	1	0.90	ND	ND	ND	ND	ND	ND	ND	ND
Non-dietary objects	15	1.42	0.99	0.45	0.81	0.94	1.62	3.31	3.41	3.44
All objects	15	1.41	0.99	0.45	0.81	0.94	1.57	3.31	3.41	3.44

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-43. Frequency (Event/Hour) of Actions While Warming Up (n =16)

Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Diving	0.89	3.56	0	0	0	0	3.56	12.1	14.23
Heading	NA	NA	NA	NA	NA	NA	NA	NA	NA
Jumping	15.11	19.69	0	0	0	26.76	47.43	49.34	49.82
Slip or fall	5.56	22.24	0	0	0	0	22.24	75.6	88.94
Tackling or sliding	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA: not applicable due to these activities not observed.



Table S3-44. Hourly Duration (Min/Hour) of Macro-Activities While Warming Up (n =16)

Macro-activities	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Push ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
Rest Standing	11.62	8.26	0.97	4.79	11.95	16.44	23.65	25.02	25.36
Running	19.77	12.6	0	11.05	15.27	28.54	39.23	40.97	41.4
Sit on chair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sit on ground	0.49	0.83	0	0	0	0.89	2.15	2.46	2.54
Sit ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
Stretching	8.36	11.41	0	0	1.69	12.79	27.67	32.89	34.2
Walking	19.14	7.43	5.78	14.16	21.01	24.36	28.97	29.34	29.43

NA: not applicable due to these activities not observed.

Table S3-45. Hourly Duration (Min/Hour) of Intensity While Warming Up

Intensity	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
High	11	4.75	5.99	1.14	1.85	3.08	4.80	13.74	20.55	22.26
Moderate	16	3.66	2.60	0.98	1.57	3.62	4.04	8.11	10.54	11.15
Low	16	4.15	2.65	1.45	2.44	3.00	4.72	9.31	10.36	10.62
Resting	16	6.49	5.18	1.38	4.05	5.30	7.77	13.19	21.51	23.59

S3.2.1.3. Data Summarized for Participants on Before/After/Break Time

Table S3-46. Both Hands Frequency (Event /Hour) On Before/After/Break Time (n=40)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial Turf	4.30	13.00	0.00	0.00	0.00	3.40	15.40	54.90	79.40
Body	19.40	19.40	0.00	4.30	13.70	30.80	62.50	66.80	68.00
Clothes	111.10	58.20	31.80	67.10	100.00	129.00	225.80	286.60	309.50
Field Structures	17.90	23.60	0.00	4.10	9.60	18.70	61.60	99.00	115.80
Footwear	11.00	14.80	0.00	0.00	6.90	15.30	41.10	54.60	61.20
Head/face/hair	25.80	23.70	0.00	12.00	20.00	32.40	75.40	100.10	114.70
Shin guards	3.70	9.70	0.00	0.00	0.00	0.90	21.00	41.80	52.40
Soccer ball	16.40	20.80	0.00	0.00	3.60	32.20	57.00	69.70	76.00
Water bottle	49.40	60.90	0.00	14.90	31.70	52.80	146.90	263.70	324.00



Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Dietary Objects	49.60	61.00	0.00	14.50	32.30	52.80	146.90	263.70	324.00
Non-dietary Objects	227.30	81.70	80.10	181.00	205.80	280.10	382.20	433.20	451.00
All Objects	276.90	90.60	89.90	215.80	262.70	324.70	423.90	514.30	526.50

Table S3-47. Both Hands Hourly Duration (Min/Hour) on Before/After/Break Time (n=40)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial Turf	0.50	1.60	0.00	0.00	0.00	0.10	3.40	7.10	8.30
Body	2.90	4.40	0.00	0.10	0.60	3.80	11.60	16.20	18.40
Clothes	15.30	9.20	2.80	8.40	12.80	20.30	34.20	37.10	38.30
Field Structures	2.20	3.50	0.00	0.16	0.50	2.20	11.10	14.10	14.10
Footwear	1.40	2.60	0.00	0.00	0.40	1.80	6.80	10.60	11.10
Head/face/hair	1.00	1.30	0.00	0.30	0.60	1.20	2.80	6.20	7.00
Shin guards	0.40	0.90	0.00	0.00	0.00	0.00	1.80	4.10	5.00
Soccer ball	1.00	1.70	0.00	0.00	0.10	1.40	3.60	7.30	8.90
Water bottle	8.10	8.00	0.00	3.60	5.30	11.80	21.30	33.20	33.90
Dietary Objects	8.10	8.00	0.00	3.60	5.40	12.10	21.30	33.20	33.90
Non-dietary Objects	26.50	11.00	7.40	18.20	24.80	35.90	43.80	49.80	53.50
All Objects	34.60	11.30	12.70	27.20	33.30	42.00	52.90	59.30	59.70

Table S3-48. Both Hands Median Duration (Second) on Before/After/Break Time

Objects	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial Turf	14	5.60	12.30	0.50	1.00	2.00	2.60	24.00	42.50	47.20
Body	32	3.40	2.80	0.20	1.30	2.60	4.10	9.70	10.80	11.00
Clothes	40	4.60	1.80	2.10	3.30	4.20	5.90	7.30	9.60	10.80
Field Structures	33	4.70	3.60	1.10	2.70	3.40	6.30	9.60	17.00	20.00
Footwear	25	4.50	2.40	1.10	3.00	3.90	5.30	9.10	9.30	9.30
Head/face/hair	36	1.60	0.70	0.60	1.10	1.40	1.80	2.70	3.50	3.90
Shin guards	10	5.40	5.10	1.20	2.40	3.50	5.20	14.90	16.30	16.70



Objects	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Soccer ball	22	2.40	1.90	0.80	1.50	1.80	2.30	6.70	8.20	8.50
Water bottle	36	7.90	3.60	2.30	5.80	7.30	9.20	15.00	17.20	18.20
Dietary Objects	36	7.80	3.60	2.30	5.80	7.00	9.00	15.00	17.20	18.20
Non-dietary Objects	40	3.40	1.20	1.60	2.50	3.20	3.90	5.90	6.30	6.30
All Objects	40	3.80	1.30	2.00	2.80	3.50	4.60	6.10	6.30	6.40

Table S3-49. Mouthing Frequency (Event/Hour) on Before/After/Break Time (n=40)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Body skin	0.42	1.84	0	0	0	0	0.42	8.34	8.35
Clothes	10.96	21.81	0	0	5.74	11.05	53.58	98.34	113.14
Field structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hands	10.57	13.17	0	0	5.72	14.72	35.36	50.17	51.91
Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Water bottle	34.81	44.22	0	8.67	25.85	39.61	91.89	197.96	239.85
Dietary objects	35.59	43.82	0.00	9.31	25.85	39.61	91.89	197.96	239.85
Non-dietary objects	22.96	25.10	0.00	8.33	16.54	30.62	59.18	107.06	119.43
All objects	58.55	44.57	2.79	28.32	48.35	85.80	128.04	197.96	239.85

NA: not applicable due to no mouth contact with these objects

Table S3-50. Mouthing Hourly Duration (Min/Hour) on Before/After/Break Time (n=40)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Body skin	0.01	0.03	0	0	0	0	0	0.13	0.15
Clothes	0.27	0.5	0	0	0.11	0.26	1.71	2.01	2.02
Field structures	NA	NA	NA	NA	NA	NA	NA	NA	NA



Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hands	0.47	0.98	0	0	0.14	0.35	2.19	4.35	4.9
Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Water bottle	2.4	3.22	0	0.65	1.15	3.06	8.04	14.04	14.78
Dietary objects	2.45	3.20	0.00	0.65	1.25	3.06	8.04	14.04	14.78
Non-dietary objects	0.80	1.13	0.00	0.14	0.37	0.84	2.52	4.72	4.90
All objects	3.25	3.26	0.07	1.18	2.36	4.36	9.00	14.33	14.78

NA: not applicable due to no mouth contact with these objects

Table S3-51. Mouthing Median Duration (Second) on Before/After/Break Time

Objects	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Body skin	2	0.9	0.34	0.66	0.78	0.9	1.02	1.11	1.13	1.14
Clothes	25	1.59	0.95	0.57	0.89	1.27	1.86	3.24	4.43	4.74
Field structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hands	26	1.68	1.19	0.28	0.98	1.31	1.92	4.33	4.65	4.7
Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Water bottle	33	3.76	1.51	1.35	2.63	3.85	4.46	6.33	6.88	6.9
Dietary objects	35	3.66	1.53	1.35	2.50	3.70	4.43	6.25	6.88	6.90
Non-dietary objects	28	1.67	1.15	0.18	0.90	1.27	1.99	4.06	4.73	4.74
All objects	38	2.61	1.47	0.28	1.59	2.28	3.37	5.61	6.55	6.90

NA: not applicable due to no mouth contact with these objects



Table S3-52. Frequency (Event/Hour) of Actions on Before/After/Break Time (n=40)

Activities	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Diving	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heading	NA	NA	NA	NA	NA	NA	NA	NA	NA
Jumping	2.05	6.53	0	0	0	0	8.34	29.56	34.43
Slip or fall	0.7	2.26	0	0	0	0	4.95	9.81	11.48
Tackling or sliding	0.12	0.54	0	0	0	0	0.1	2.48	2.73

NA: not applicable due to these activities not observed

Table S3-53. Duration (Min/Hour) of Macro-Activities on Before/After/Break Time (n=40)

Macro-activities	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Push ups	0.02	0.1	0	0	0	0	0	0.37	0.61
Rest Standing	31.22	10.57	10.59	24.56	30.4	36.45	47.95	50.43	50.92
Running	3.1	4.23	0	0.35	1.69	3.62	12.4	16.65	17
Sit on chair	2.15	5.76	0	0	0	0.46	15.71	24.12	26.43
Sit on ground	3.14	6.19	0	0	0.02	2.99	14.01	25.44	26.5
Sit ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
Stretching	0.19	0.47	0	0	0	0	0.96	1.91	2.32
Walking	20.12	9.99	4	12.36	20.51	25.57	39.03	40.38	40.63

NA: not applicable due to sit-ups not observed

Table S3-54. Duration (Min/Hour) of Intensity on Before/After/Break Time (n=40)

Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
High	1.22	1.47	0.00	0.00	0.45	2.26	3.96	4.92	5.27
Moderate	2.66	3.28	0.00	0.42	1.76	3.92	9.63	13.55	14.13
Low	18.86	9.10	3.92	11.55	19.13	24.29	38.52	39.35	39.59
Resting	37.26	9.61	15.37	32.01	37.00	43.42	53.86	54.98	55.52

S3.2.1.4. Data Summarized by Other Combined Time (Warming Up and on Before/After/Break Time)

Table S3-55. Both Hands Frequency (Event/Hour) on Other Combined Time (n=40)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial Turf	5.5	14.3	0.0	0.0	0.0	4.8	23.9	64.7	74.8



Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Body	23.5	27.1	0.0	3.5	13.7	36.0	74.9	102.1	118.3
Clothes	110.0	58.1	29.9	68.1	98.6	139.9	225.8	286.7	309.5
Field Structures	16.0	21.2	0.0	3.4	8.5	18.3	45.7	89.7	100.5
Footwear	13.7	18.1	0.0	0.0	6.1	21.8	39.7	70.5	76.4
Head/face/hair	24.6	23.2	0.0	10.2	19.3	31.6	62.0	100.4	116.4
Shin guards	3.5	9.5	0.0	0.0	0.0	0.9	19.7	41.8	52.3
Soccer ball	20.1	30.8	0.0	0.0	6.3	32.0	60.8	129.9	164.3
Water bottle	43.2	61.8	0.0	9.6	25.1	41.6	146.9	263.7	324.0
Dietary Objects	43.40	61.80	0.00	9.60	25.10	41.60	146.90	263.70	324.00
Non-dietary Objects	230.90	87.60	80.10	191.20	206.40	272.20	383.90	446.00	451.00
All Objects	274.30	98.00	89.90	207.50	262.70	325.10	441.00	514.30	526.50

Table S3-56. Both Hands Hourly Duration (Min/Hour) on Other Combined Time (n=40)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial Turf	0.40	1.40	0.00	0.00	0.00	0.10	2.30	5.80	7.80
Body	2.80	4.30	0.00	0.10	0.70	3.90	11.30	16.20	18.50
Clothes	15.60	9.30	2.60	7.80	13.60	20.90	34.20	37.10	38.30
Field Structures	2.00	3.60	0.00	0.10	0.40	1.80	11.10	14.40	14.70
Footwear	1.30	2.20	0.00	0.00	0.40	1.70	5.80	9.10	11.10
Head/face/hair	0.90	1.20	0.00	0.30	0.60	0.90	2.70	5.30	6.70
Shin guards	0.30	0.90	0.00	0.00	0.00	0.00	1.80	3.90	4.70
Soccer ball	1.10	1.70	0.00	0.00	0.20	1.60	3.60	7.10	8.90
Water bottle	6.90	8.00	0.00	1.50	4.30	8.20	21.30	33.10	33.90
Dietary Objects	6.90	8.00	0.00	1.50	4.30	8.20	21.30	33.20	33.90
Non-dietary Objects	25.70	11.00	7.40	16.50	24.00	35.00	43.80	49.80	53.50
All Objects	32.70	12.20	13.30	22.80	30.00	41.10	52.90	59.30	59.70



Table S3-57. Both Hands Median Duration (Second) on Other Combined Time

Objects	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial Turf	15	2.50	4.30	0.50	0.70	1.10	2.20	6.70	16.00	18.20
Body	33	3.10	2.80	0.20	1.20	2.00	3.70	9.70	10.80	11.00
Clothes	40	4.60	1.90	1.40	3.30	4.50	5.80	7.30	9.60	10.80
Field Structures	33	4.40	3.60	0.90	2.40	3.40	6.20	9.60	17.00	20.00
Footwear	27	3.70	2.30	1.10	2.00	3.20	5.20	8.30	9.10	9.30
Head/face/hair	36	1.50	0.60	0.60	1.10	1.30	1.60	2.70	3.50	3.90
Shin guards	10	5.40	5.10	1.20	2.40	3.50	5.20	14.90	16.30	16.70
Soccer ball	26	2.10	1.50	0.80	1.40	1.70	2.30	3.90	7.40	8.50
Water bottle	37	7.70	3.60	2.10	5.10	7.20	9.10	14.10	17.20	18.20
Dietary Objects	37	7.60	3.60	2.10	5.10	6.80	8.90	14.10	17.20	18.20
Non-dietary Objects	40	3.10	1.20	1.30	2.40	2.90	3.60	5.70	6.00	6.30
All Objects	40	3.40	1.30	1.30	2.50	3.20	4.00	5.80	6.10	6.30

Table S3-58. Mouthing Frequency (Event/Hour) on Other Combined Time (n=40)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Body skin	0.30	1.40	0.00	0.00	0.00	0.00	1.70	6.60	8.40
Clothes	10.50	20.90	0.00	0.00	5.30	11.10	29.40	98.30	113.10
Field structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hands	9.90	11.00	0.00	0.00	6.80	13.50	29.40	41.10	46.20
Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Water bottle	29.30	42.50	0.00	5.60	22.70	31.90	79.60	198.00	239.90
Dietary objects	29.8	42.2	0.0	8.5	22.7	31.9	79.6	198.0	239.9
Non-dietary objects	11.8	20.8	0.0	0.0	6.4	11.5	29.4	98.3	113.1
All objects	41.6	44.8	0.0	17.1	29.6	47.0	122.1	198.0	239.9



NA: not applicable due to no mouth contact with these objects

Table S3-59. Mouthing Duration (Min/Hour) on Other Combined Time (n=40)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Body skin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.20
Clothes	0.30	0.40	0.00	0.00	0.10	0.30	1.10	1.90	2.00
Field structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hands	0.40	0.80	0.00	0.00	0.20	0.30	2.20	3.20	3.30
Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Water bottle	2.00	2.80	0.00	0.40	1.10	2.10	6.80	12.10	14.80
Dietary objects	2.0	2.7	0.0	0.4	1.1	2.1	6.8	12.1	14.8
Non-dietary objects	0.3	0.4	0.0	0.0	0.2	0.3	1.1	1.9	2.0
All objects	2.3	2.7	0.0	0.6	1.5	2.7	7.1	12.1	14.8

NA: not applicable due to no mouth contact with these objects

Table S3-60. Mouthing Median Duration (Second) on Other Combined Time

Objects	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Body skin	3	1.00	0.30	0.70	0.90	1.10	1.20	1.20	1.20	1.20
Clothes	25	1.50	0.90	0.70	0.90	1.30	1.80	3.20	4.40	4.70
Field structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hands	28	1.60	1.20	0.40	0.90	1.20	1.80	4.30	4.60	4.70
Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Water bottle	33	3.80	1.50	1.40	2.60	3.80	4.50	6.30	6.90	6.90
Dietary objects	35	3.7	1.5	1.4	2.5	3.7	4.4	6.2	6.9	6.9



Objects	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Non-dietary objects	29	1.8	2.0	0.2	0.9	1.2	1.9	4.1	9.5	11.3
All objects	38	3.0	1.6	0.7	1.7	2.6	4.1	5.9	6.6	6.9

NA: not applicable due to no mouth contact with these objects

Table S3-61. Frequency (Event/Hour) of Actions on Other Combined Time (n=40)

Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Diving	0.19	1.17	0	0	0	0	0	4.53	7.43
Heading	NA	NA	NA	NA	NA	NA	NA	NA	NA
Jumping	4.95	9.18	0	0	0	5.6	23.48	30.42	34.43
Slip or fall	1.86	7.57	0	0	0	0	7.4	32.8	46.43
Tackling or sliding	0.11	0.51	0	0	0	0	0.1	2.34	2.51

NA: not applicable due to heading not observed

Table S3-62. Duration (Min/Hour) of Macro-Activities on Other Combined Time (n=40)

Macro-activities	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Push ups	0.01	0.06	0	0	0	0	0	0.21	0.35
Rest Standing	27.96	11.44	10.59	17.59	26.39	36.22	46.73	50.43	50.92
Running	5.83	5.95	0	1.01	3.5	10.24	16.15	20.86	23.32
Sit on chair	1.99	5.72	0	0	0	0.22	15.27	24.12	26.43
Sit on ground	2.98	5.98	0	0	0.21	2.76	14.01	24.78	25.41
Sit ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
Stretching	1.7	4.53	0	0	0	0.81	12.86	18.93	19.85
Walking	19.34	9.33	4	12.36	17.6	24.94	39.03	40.38	40.63

NA: not applicable due to sit-ups not observed

Table S3-63. Duration (Min/Hour) of Intensity on Other Combined Time (n=40)

Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
High	1.73	1.90	0.00	0.00	1.32	2.67	5.33	6.72	6.91
Moderate	6.09	6.34	0.00	0.98	4.00	10.29	17.23	22.46	23.22
Low	18.74	8.94	4.00	11.55	18.45	23.78	38.52	39.35	39.59
Resting	33.43	11.91	14.73	22.43	34.95	42.00	52.46	54.87	55.52



S3.2.2. Data Summarized According to Location

S3.2.2.1. Data Summarized on the Field

Table S3-64. Both Hands Contact Frequency (Event/Hour) on the Field (n =40)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial Turf	4.40	5.30	0.00	1.10	2.61	5.00	18.50	19.60	20.10
Body	12.30	11.80	1.50	4.30	9.10	16.20	32.30	54.10	62.00
Clothes	70.80	35.40	13.60	49.40	65.70	89.70	137.00	170.40	180.10
Field Structures	6.20	5.30	0.00	2.10	5.20	8.20	15.60	21.60	22.80
Footwear	5.70	5.50	0.60	2.40	4.40	6.40	14.00	25.10	30.30
Head/face/hair	29.00	25.30	2.60	12.10	20.50	34.90	81.10	104.30	112.30
Shin guards	1.40	3.50	0.00	0.00	0.00	0.80	5.80	15.20	20.10
Soccer ball	22.10	31.00	0.00	3.00	9.10	27.80	90.60	125.10	128.50
Water bottle	2.40	2.70	0.00	0.00	1.70	4.00	7.00	9.50	10.00
Dietary Objects	2.40	2.80	0.00	0.00	1.70	4.00	7.00	10.00	10.90
Non-dietary Objects	162.90	70.10	66.40	116.30	150.90	183.80	299.30	354.90	368.30
All Objects	165.30	70.80	67.30	118.70	151.10	185.20	299.60	358.70	371.00

Table S3-65. Both Hands Hourly Contact Duration (Min/Hour) on the Field (n =40)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial Turf	0.20	0.40	0.00	0.00	0.10	0.30	0.80	1.80	2.40
Body	0.90	1.30	0.00	0.10	0.30	1.10	3.80	4.80	5.30
Clothes	11.70	12.00	1.30	4.70	8.40	13.50	35.30	49.50	55.10
Field Structures	0.60	0.80	0.00	0.10	0.30	1.00	2.10	2.80	3.10
Footwear	0.40	0.40	0.00	0.10	0.30	0.50	1.20	1.60	1.80
Head/face/hair	1.00	1.40	0.00	0.30	0.70	1.10	2.30	6.40	9.00
Shin guards	0.10	0.40	0.00	0.00	0.00	0.10	0.70	1.70	2.20
Soccer ball	0.90	1.10	0.00	0.14	0.50	1.2.	3.80	4.20	4.40
Water bottle	0.40	0.50	0.00	0.00	0.40	0.70	1.10	1.70	2.00
Dietary Objects	0.40	0.50	0.00	0.00	0.40	0.70	1.10	1.70	2.10
Non-dietary Objects	16.40	12.20	0.90	8.90	13.00	19.50	42.10	54.10	58.70



Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
All Objects	16.80	12.20	1.90	9.50	13.30	20.30	42.20	54.30	58.70

Table S3-66. Both Hands Contact Median Duration (Second) on the Field

Objects	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial Turf	35	1.50	1.20	0.20	0.80	1.10	1.60	4.40	5.00	5.10
Body	40	1.30	1.00	0.40	0.80	1.10	1.60	2.40	4.90	6.30
Clothes	40	4.40	3.60	1.60	2.40	3.20	4.70	9.50	17.70	19.60
Field Structures	39	3.60	3.80	0.40	1.60	2.40	4.40	8.40	18.00	20.00
Footwear	40	3.30	2.80	0.80	1.60	2.50	4.40	8.40	12.90	14.90
Head/face/hair	40	1.30	0.50	0.60	1.10	1.20	1.60	2.10	2.80	3.10
Shin guards	15	4.60	5.00	0.90	1.50	2.40	4.80	15.90	16.50	16.60
Soccer ball	40	2.00	1.60	0.60	1.20	1.60	2.00	3.90	8.10	10.60
Water bottle	24	8.20	5.10	2.10	4.90	7.00	10.00	17.10	22.10	23.50
Dietary Objects	25	7.90	5.20	1.60	4.10	6.70	10.00	17.00	22.00	23.50
Non-dietary Objects	40	2.30	1.30	1.20	1.60	2.00	2.90	4.10	6.80	6.90
All Objects	40	2.40	1.30	1.20	1.60	2.00	2.90	4.20	6.80	7.00

Table S3-67. Mouthing Contact Frequency (Event/Hour) on the Field (n =40)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Body skin	0.6	2.06	0	0	0	0	2.35	9.13	12.27
Clothes	8.37	15.96	0	1.19	3.57	10.34	24.78	70.01	96.81
Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hands	8.09	5.85	0.84	3.78	6.99	11.21	19.07	26	26.33
Head/face/hair	0.01	0.07	0	0	0	0	0	0.29	0.47
Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soccer ball	0.02	0.1	0	0	0	0	0	0.38	0.63
Water bottle	1.44	1.9	0	0	0.27	2.64	5.29	5.68	5.7



Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Dietary objects	1.64	1.94	0.00	0.00	0.80	2.73	5.64	6.02	6.23
Non-dietary objects	18.31	17.91	2.40	9.05	12.68	21.92	44.29	85.99	104.01
All objects	19.95	18.13	2.40	9.80	14.99	24.21	45.08	86.97	105.61

NA: not applicable due to no mouth contact with these objects

Table S3-68. Mouthing Hourly Contact Duration (Min/Hour) on the Field (n =40)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Body skin	0.01	0.05	0	0	0	0	0.05	0.24	0.31
Clothes	0.2	0.3	0	0.03	0.08	0.23	0.69	1.22	1.52
Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hands	0.26	0.29	0.01	0.09	0.16	0.31	0.85	1.1	1.21
Head/face/hair	0	0	0	0	0	0	0	0.01	0.01
Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soccer ball	0	0	0	0	0	0	0	0	0
Water bottle	0.09	0.13	0	0	0.01	0.16	0.36	0.41	0.41
Dietary objects	0.10	0.13	0.00	0.00	0.05	0.20	0.36	0.41	0.41
Non-dietary objects	0.51	0.43	0.03	0.19	0.37	0.70	1.39	1.63	1.63
All objects	0.61	0.47	0.03	0.24	0.42	0.88	1.45	1.68	1.72

NA: not applicable due to no mouth contact with these objects

Table S3-69. Mouthing Median Duration (Second) on the Field (n =40)

Objects	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Body skin	9	1.04	0.41	0.54	0.60	0.98	1.26	1.59	1.60	1.60
Clothes	35	1.56	1.67	0.24	0.88	1.28	1.66	2.61	7.95	10.61
Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hands	40	1.23	0.61	0.36	0.85	1.02	1.41	2.53	2.97	3.15



Objects	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Head/face/hair	1	1.50	ND	ND	ND	ND	ND	ND	ND	ND
Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soccer ball	1	0.13	ND	ND	ND	ND	ND	ND	ND	ND
Water bottle	20	3.53	1.37	0.93	2.73	3.52	4.34	5.59	5.70	5.73
Dietary objects	22	3.48	1.43	0.93	2.35	3.41	4.44	5.57	5.70	5.73
Non-dietary objects	40	1.15	0.46	0.61	0.87	1.03	1.21	1.98	2.70	2.82
All objects	40	1.26	0.51	0.61	0.90	1.19	1.39	2.11	2.83	2.98

NA: not applicable due to no mouth contact with these objects; NA: not determined

Table S3-70. Actions Frequencies (Event/Hour) on the Field (n =40)

Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Diving	0.62	1.94	0	0	0	0	3.65	8.43	11.12
Heading	0.37	0.68	0	0	0	0.51	2.24	2.3	2.34
Jumping	9.79	19.37	0	0.7	4.08	8.47	68.67	79.77	84.64
Slip or fall	2.6	4.39	0	0	0.84	2.28	13.54	17.7	19.53
Tackling or sliding	0.48	0.91	0	0	0	0.6	2.73	3.25	3.37

Table S3-71. Macro-Activities Duration (Min/Hour) on the Field (n =40)

Macro-activities	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Push ups	0	0.02	0	0	0	0	0	0.06	0.1
Rest Standing	16.11	6.2	5	12.56	15.66	18.62	29.8	31.3	31.67
Running	15.23	6.44	2.5	10.48	14.67	19.3	25.56	26.75	27
Sit on chair	0.51	2.06	0	0	0	0	2.14	9.46	10.26
Sit on ground	0.66	1.01	0	0.02	0.48	0.87	1.69	4.45	5.95
Sit ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
Stretching	0.69	1.37	0	0	0.24	0.6	3.2	6.14	6.89
Walking	26.46	6.04	13.65	21.9	27.19	30.54	33.8	36.91	37.28

NA: not applicable due to sit-ups not observed



Table S3-72. Intensity Duration (Min/Hour) on the Field (n=40)

Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
High	2.12	1.25	0.10	1.18	2.16	2.82	4.02	5.19	5.52
Moderate	13.86	5.30	4.18	10.47	13.88	17.92	22.16	22.75	22.83
Low	26.05	5.10	13.63	22.60	27.26	29.13	33.42	34.08	34.29
Resting	17.96	6.62	8.83	13.18	17.33	20.97	29.90	35.65	38.38

S3.2.2.2. Data Summarized off the Field

Table S3-73. Both Hands Contact Frequency (Event/Hour) off the Field (n =40)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial Turf	4.80	12.80	0.00	0.00	0.00	1.20	33.20	53.30	61.80
Body	19.00	19.20	0.00	0.00	13.60	33.80	56.20	61.90	62.80
Clothes	96.30	62.80	0.00	61.40	81.30	122.90	219.30	264.60	268.10
Field Structures	17.40	23.30	0.00	2.10	12.00	21.00	52.20	102.70	126.70
Footwear	12.80	21.80	0.00	0.00	1.70	17.00	45.40	87.40	105.30
Head/face/hair	25.70	27.50	0.00	6.10	21.40	34.50	82.80	109.50	119.40
Shin guards	0.70	1.90	0.00	0.00	0.00	0.00	5.60	7.60	8.00
Soccer ball	33.80	60.30	0.00	4.00	14.40	38.00	93.70	273.80	343.30
Water bottle	45.50	49.80	0.00	6.70	34.40	61.10	160.80	183.50	195.90
Dietary Objects	45.70	49.80	0.00	6.70	35.20	61.10	160.80	183.50	195.90
Non-dietary Objects	226.50	100.80	0.00	156.50	214.10	304.20	374.00	389.40	395.60
All Objects	272.30	118.50	0.00	206.30	279.20	335.20	437.40	528.80	575.20

Table S3-74. Both Hands Contact Duration (Min/Hour) off the Field (n =40)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial Turf	0.30	1.00	0.00	0.00	0.00	0.00	1.20	4.30	5.60
Body	2.70	3.80	0.00	0.00	1.00	3.10	9.80	15.10	17.00
Clothes	15.00	11.40	0.00	5.00	12.00	21.80	34.20	42.60	46.20
Field Structures	1.70	3.10	0.00	0.10	0.80	1.50	5.90	13.40	17.50
Footwear	2.40	5.40	0.00	0.00	0.10	1.50	9.80	23.70	24.90
Head/face/hair	1.10	1.60	0.00	0.20	0.70	1.40	2.90	7.30	7.60



Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Shin guards	0.10	0.30	0.00	0.00	0.00	0.00	0.60	1.20	1.20
Soccer ball	1.50	2.00	0.00	0.10	0.70	2.20	6.30	7.40	7.90
Water bottle	7.60	8.30	0.00	0.50	4.30	13.30	21.70	27.20	29.80
Dietary Objects	7.60	8.30	0.00	0.50	4.80	13.30	21.70	27.20	29.80
Non-dietary Objects	26.40	13.20	0.00	17.80	28.40	34.40	46.10	51.90	52.50
All Objects	34.10	14.20	0.00	25.30	35.80	42.90	53.20	59.20	59.70

Table S3-75. Both Hands Median Duration (Second) off the Field

Objects	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial Turf	10	3.00	3.30	0.60	1.30	1.60	2.60	9.20	11.00	11.50
Body	28	4.60	6.00	0.80	1.90	2.80	5.20	11.20	26.70	32.00
Clothes	37	4.90	2.60	0.80	3.50	4.50	6.10	10.40	12.10	12.20
Field Structures	30	3.90	2.60	1.40	2.30	2.90	5.20	7.40	11.70	13.40
Footwear	20	5.30	5.80	1.00	2.50	3.20	7.50	10.30	24.00	27.40
Head/face/hair	33	1.90	1.20	0.70	1.10	1.70	2.20	4.20	5.70	6.10
Shin guards	5	7.20	5.80	2.70	3.10	4.70	8.90	15.10	16.40	16.70
Soccer ball	31	2.30	1.40	0.60	1.50	1.90	2.80	4.80	6.20	6.60
Water bottle	32	6.60	3.30	0.20	4.50	6.10	8.30	13.30	14.10	14.20
Dietary Objects	33	6.60	3.30	0.20	4.50	6.00	8.30	13.20	14.10	14.20
Non-dietary Objects	38	3.30	1.30	1.00	2.40	3.10	4.10	5.50	6.20	6.50
All Objects	38	3.60	1.40	1.00	2.60	3.40	4.50	5.60	7.00	7.70

Table S3-76. Mouthing Contact Frequency (Event/Hour) off the Field (n =40)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Body skin	0.10	0.50	0.00	0.00	0.00	0.00	0.00	1.80	2.80
Clothes	14.00	29.00	0.00	0.00	4.80	15.40	47.70	131.70	153.80
Field structures	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.80	1.30
Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA



Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Hands	10.60	12.90	0.00	0.00	5.90	15.90	32.70	49.50	59.00
Head/face/hair	0.10	0.60	0.00	0.00	0.00	0.00	0.00	2.30	3.60
Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Water bottle	39.30	53.60	0.00	3.50	25.30	46.50	120.40	228.20	251.80
Dietary objects	39.4	53.6	0.0	3.5	25.3	46.5	120.4	228.2	251.8
Non-dietary objects	25.08	31.89	0.00	4.96	15.46	35.66	70.14	138.35	164.38
All objects	64.50	65.97	0.00	22.10	41.58	92.17	213.55	270.88	282.07

NA: not applicable due to no mouth contact with these objects

Table S3-77. Mouthing Hourly Duration (Min/Hour) off the Field (n =40)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Body skin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Clothes	0.60	1.20	0.00	0.00	0.10	0.50	2.40	5.10	6.60
Field structures	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10
Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hands	0.70	1.90	0.00	0.00	0.10	0.60	1.90	8.00	11.40
Head/face/hair	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Water bottle	2.80	4.80	0.00	0.20	1.20	2.90	11.10	21.20	25.30
Dietary objects	2.8	4.8	0.0	0.2	1.2	2.9	11.1	21.2	25.3
Non-dietary objects	1.30	2.34	0.00	0.07	0.35	1.43	4.64	10.19	12.03
All objects	4.05	5.21	0.00	0.94	2.19	5.43	14.63	22.06	25.71

NA: not applicable due to no mouth contact with these objects

Table S3-78. Mouthing Median Duration (Second) off the Field

Objects	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA



Objects	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Body skin	1	0.66	ND	ND	ND	ND	ND	ND	ND	ND
Clothes	22	1.99	1.78	0.72	0.93	1.35	2.34	3.43	7.8	8.96
Field structures	1	5.18	ND	ND	ND	ND	ND	ND	ND	ND
Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hands	25	1.96	1.92	0.2	0.86	1.14	2.5	5.9	7.62	8.06
Head/face/hair	1	0.79	ND	ND	ND	ND	ND	ND	ND	ND
Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Water bottle	31	3.61	1.79	0.99	2.61	3.19	4.14	5.92	9.28	10.69
Dietary objects	32	3.57	1.77	0.99	2.57	3.17	4.10	5.91	9.23	10.69
Non-dietary objects	24	1.70	1.24	0.20	0.87	1.28	2.40	3.31	5.43	6.25
All objects	33	2.69	1.57	0.81	1.53	2.32	3.06	6.00	7.05	7.58

NA: not applicable due to no mouth contact with these objects; ND: not determined

Table S3-79. Actions Frequencies (Event/Hour) off the Field (n =40)

Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Diving	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heading	NA	NA	NA	NA	NA	NA	NA	NA	NA
Jumping	3.65	9.05	0	0	0	0	22.51	35.12	39.55
Slip or fall	0.33	1.2	0	0	0	0	3.08	5.09	5.22
Tackling or sliding	0.13	0.81	0	0	0	0	0	3.14	5.06

NA: not applicable due to these actions not observed

Table S3-80. Macro-Activities Duration (Min/Hour) off the Field (n =40)

Activities	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Push ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
Resting standing	27.67	12.33	0.00	19.06	25.99	34.28	48.37	54.76	54.81
Running	5.23	8.00	0.00	0.79	2.68	3.94	25.40	31.48	31.60
Sit on chair	7.26	11.98	0.00	0.00	0.00	9.70	30.60	40.73	43.71
Sit on ground	4.14	6.97	0.00	0.00	0.00	6.76	18.73	26.26	29.61



Activities	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Sit ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
Stretching	1.01	2.44	0.00	0.00	0.00	0.51	8.08	9.50	10.16
Walking	14.59	9.29	2.84	6.06	11.85	19.54	29.00	35.98	36.96

NA: not applicable due to these actions not observed

Table S3-81. Intensity Duration (Min/Hour) off the Field (n =40)

Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
High	1.53	2.36	0.00	0.00	0.56	2.07	5.35	10.13	10.26
Moderate	5.57	7.85	0.00	0.89	2.60	5.72	22.43	31.08	31.60
Low	13.43	8.20	2.73	6.68	11.66	18.12	26.81	33.37	36.41
Resting	39.47	13.02	0.00	30.12	42.12	50.65	55.22	55.64	55.81

S3.2.3. Data Summarized If Participants Were Wearing Gloves or Not

S3.2.3.1. Data Summarized Gloves On

Table S3-82. Both Hands Contact Frequency (Event/Hour) While Wearing Gloves (n =21)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial Turf	6.20	8.00	0.00	0.00	2.30	9.20	21.70	25.30	26.20
Body	9.60	14.40	0.00	1.60	3.20	10.80	32.30	54.20	59.70
Clothes	63.20	46.70	6.40	36.60	47.70	84.30	151.70	177.40	183.90
Field Structures	7.70	10.20	0.00	1.20	3.40	8.20	23.10	38.70	42.60
Footwear	4.10	4.90	0.00	0.00	2.30	6.80	13.20	16.40	17.20
Head/face/hair	33.10	33.10	1.60	9.70	22.40	43.20	91.80	117.80	124.30
Shin guards	0.90	1.90	0.00	0.00	0.00	0.60	4.50	6.50	7.00
Soccer ball	38.60	43.70	0.00	5.70	15.00	54.00	108.50	138.00	145.40
Water bottle	4.20	5.00	0.00	0.00	1.50	8.90	12.00	12.90	13.10
Dietary Objects	4.3	5.1	0	0	1.5	8.9	13.1	13.1	13.1
Non-dietary Objects	184.7	83	63.8	125.3	169.7	247.8	316.5	361.3	372.6
All Objects	189	84.5	65.1	128.8	170.9	247.8	316.5	370.3	383.7



Table S3-83. Both Hands Hourly Contact Duration (Min/Hour) While Wearing Gloves (n =21)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial Turf	0.26	0.51	0.00	0.03	0.11	0.31	0.79	2.24	3.05
Body	1.25	1.72	0.03	0.16	0.39	2.03	4.56	6.25	6.99
Clothes	13.06	11.38	1.62	5.74	9.02	16.84	35.19	47.61	52.73
Field Structures	0.80	0.87	0.03	0.18	0.44	1.29	2.43	3.20	3.30
Footwear	0.57	0.57	0.01	0.16	0.30	0.86	1.85	1.98	1.98
Head/face/hair	1.01	1.36	0.03	0.35	0.65	1.25	2.15	6.09	8.57
Shin guards	0.12	0.34	0.00	0.00	0.00	0.08	0.66	1.51	
Soccer ball	0.87	0.97	0.01	0.22	0.57	1.19	3.50	3.89	4.09
Water bottle	1.22	1.25	0.00	0.42	0.89	1.76	2.74	5.48	6.77
Dietary Objects	1.22	1.25	0.00	0.42	0.91	1.76	2.74	5.48	6.77
Non-dietary Objects	18.70	11.73	5.40	11.13	15.02	22.65	42.63	52.64	56.91
All Objects	19.92	11.87	5.83	12.22	15.92	24.87	43.15	54.50	58.83

Table S3-84. Both Hands Contact Median Duration (Second) While Wearing Gloves

Objects	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial Turf	15	1.50	1.00	0.50	0.80	1.00	2.00	3.30	3.50	3.50
Body	18	1.50	1.00	0.40	0.80	1.20	2.00	3.90	3.90	3.90
Clothes	21	2.70	1.30	1.20	1.70	2.30	3.20	4.90	5.30	5.30
Field Structures	18	2.50	1.40	0.50	1.30	2.80	3.30	4.60	5.20	5.30
Footwear	13	2.40	1.40	0.90	1.60	1.70	3.70	4.80	5.30	5.40
Head/face/hair	21	1.30	0.70	0.60	1.00	1.10	1.60	2.30	3.20	3.40
Shin guards	6	2.20	1.20	0.90	1.50	1.90	2.80	3.90	4.10	4.20
Soccer ball	19	1.80	0.70	0.80	1.50	1.80	2.10	2.90	3.40	3.60
Water bottle	13	6.90	3.90	2.50	3.90	5.90	9.80	13.40	14.70	15.00
Dietary Objects	13	6.9	3.9	2.5	3.9	5.9	9.8	13.4	14.7	15
Non-dietary Objects	21	1.9	0.8	1.1	1.3	1.8	2.3	3.8	4.2	4.3
All Objects	21	1.9	0.9	1.1	1.3	1.8	2.3	3.8	4.2	4.4



Table S3-85. Mouthing Frequency (Event/Hour) While Wearing Gloves (n =21)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Body	2.33	7.74	0.00	0.00	0.00	0.00	12.39	29.68	34.00
Clothes	10.03	27.80	0.00	0.00	1.26	5.04	21.82	106.88	128.14
Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hands	4.93	7.49	0.00	0.00	1.88	5.76	19.36	25.50	27.04
Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Water bottle	2.05	2.11	0.00	0.00	1.89	4.13	4.81	5.61	5.81
Dietary Objects	2.50	2.20	0.00	0.00	3.11	4.53	5.64	5.78	5.81
Non-dietary Objects	21.94	31.98	0.00	6.46	9.68	27.64	61.54	126.78	143.09
All Objects	24.45	32.38	0.00	7.52	12.74	29.10	61.54	130.20	147.36

NA: not applicable due to no mouth contact with these objects

Table S3-86. Mouthing Hourly Duration (Min/Hour) While Wearing Gloves (n =21)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Body	0.06	0.21	0	0	0	0	0.36	0.78	0.89
Clothes	0.25	0.49	0	0	0.05	0.17	1.33	1.77	1.88
Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hands	0.26	0.6	0	0	0.03	0.25	0.87	2.31	2.67
Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Water bottle	0.13	0.14	0	0	0.14	0.23	0.34	0.42	0.44
Dietary Objects	0.16	0.17	0.00	0.00	0.14	0.25	0.44	0.56	0.59



Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Non-dietary Objects	0.66	0.94	0.00	0.17	0.27	0.92	2.13	3.66	4.04
All Objects	0.82	0.98	0.00	0.32	0.56	1.14	2.38	3.92	4.31

NA: not applicable due to no mouth contact with these objects

Table S3-87. Mouthing Median Duration (Second) While Wearing Gloves (n =21)

Objects	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial Turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Body	3	0.87	0.31	0.54	0.67	0.84	1.03	1.21	1.25	1.26
Clothes	15	2.02	2.47	0.62	1.00	1.34	1.58	5.71	9.63	10.61
Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hands	13	1.92	1.61	0.67	0.95	1.41	2.29	4.25	6.31	6.82
Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Water bottle	12	3.71	1.16	1.71	3.21	3.45	4.18	5.57	5.70	5.73
Dietary Objects	14	3.66	1.24	1.71	2.70	3.41	4.68	5.54	5.69	5.73
Non-dietary Objects	19	1.65	1.28	0.67	0.85	1.16	2.09	3.56	5.48	5.96
All Objects	19	1.83	1.11	0.77	1.08	1.34	2.25	4.01	4.57	4.70

NA: not applicable due to no mouth contact with these objects

S3.2.3.2. Data summarized Gloves Off

Table S3-88. Both Hands Contact Frequency (Event/Hour) While NOT Wearing Gloves (n=39)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial Turf	3.60	7.90	0.00	0.00	1.70	3.50	13.30	35.10	47.90
Body	14.90	11.70	0.00	5.20	14.50	18.30	35.80	49.50	54.40
Clothes	86.20	47.40	17.60	54.80	72.50	112.90	162.90	221.00	227.10
Field Structures	8.30	7.60	0.00	3.10	6.00	10.70	19.60	33.20	33.60
Footwear	6.90	7.60	0.00	2.00	5.00	8.90	17.20	34.10	36.20



Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Head/face/hair	28.30	22.80	0.00	12.50	21.10	36.40	75.40	88.70	94.90
Shin guards	1.30	3.40	0.00	0.00	0.00	0.80	6.00	15.20	18.80
Soccer ball	12.30	18.40	0.00	2.60	6.60	16.00	34.30	80.20	106.20
Water bottle	11.10	24.70	0.00	2.60	5.60	11.00	21.00	105.20	156.70
Dietary Objects	11.10	24.70	0.00	2.60	5.70	11.00	21.00	105.20	156.70
Non-dietary Objects	173.40	67.80	73.90	127.20	169.30	198.80	306.20	363.40	368.30
All Objects	184.60	77.90	80.70	133.30	169.30	210.40	374.30	3972.00	409.90

Table S3-89. Both Hands Hourly Contact Duration (Min/Hour) While NOT Wearing Gloves (n=39)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial Turf	0.30	0.90	0.00	0.00	0.10	0.20	1.00	3.80	5.50
Body	1.30	1.60	0.00	0.20	0.50	1.90	4.20	6.30	7.00
Clothes	16.50	14.30	1.80	6.50	10.40	20.30	47.80	51.70	52.70
Field Structures	0.90	1.10	0.00	0.20	0.40	1.20	3.50	4.30	4.50
Footwear	0.70	0.70	0.00	0.10	0.40	1.00	2.00	2.30	2.50
Head/face/hair	1.00	1.00	0.00	0.40	0.60	1.50	2.40	4.50	5.80
Shin guards	0.10	0.40	0.00	0.00	0.00	0.10	0.70	1.80	2.30
Soccer ball	0.60	0.80	0.00	0.10	0.30	0.80	1.80	3.50	3.60
Water bottle	1.90	4.00	0.00	0.40	0.90	2.00	6.00	17.70	24.30
Dietary Objects	1.90	4.00	0.00	0.40	0.90	2.00	6.00	17.70	24.30
Non-dietary Objects	22.40	1.60	6.20	12.50	17.90	26.60	54.90	57.50	57.90
All Objects	24.30	15.40	6.70	13.20	19.50	29.80	55.90	58.70	58.80

Table S3-90. Both Hands Contact Median Duration (Second) While NOT Wearing Gloves

Objects	n	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial Turf	27	1.60	1.20	0.50	0.90	1.30	1.60	4.40	5.00	5.10
Body	38	1.80	1.80	0.50	1.00	1.20	1.80	3.70	9.00	9.80
Clothes	39	4.70	2.60	1.90	3.00	3.90	5.30	9.30	12.60	13.60



Objects	n	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Field Structures	38	3.70	3.40	0.40	1.80	2.70	4.70	7.00	15.40	20.00
Footwear	35	4.00	3.50	1.00	1.80	2.80	5.00	11.20	15.20	15.30
Head/face/hair	38	1.40	0.60	0.60	1.10	1.20	1.60	2.60	3.30	3.50
Shin guards	12	5.20	4.80	1.30	2.30	3.80	5.50	14.50	16.30	16.70
Soccer ball	35	2.00	1.00	0.60	1.20	1.60	2.40	3.80	4.10	4.20
Water bottle	35	7.00	3.10	1.20	4.80	6.80	8.40	13.50	13.80	13.80
Dietary Objects	35	6.90	3.10	1.20	4.80	7.00	8.30	13.50	13.80	13.80
Non-dietary Objects	39	2.90	1.40	1.20	1.90	2.60	3.40	5.90	6.90	6.90
All Objects	39	3.00	1.40	1.20	2.00	2.70	3.40	6.10	6.90	6.90

Table S3-91. Mouthing Frequency (Event/Hour) While NOT Wearing Gloves (n =39)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Body	0.26	0.58	0.00	0.00	0.00	0.00	1.75	2.11	2.19
Clothes	9.62	16.01	0.00	1.32	4.90	11.86	27.44	71.92	92.76
Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hands	9.71	6.90	0.00	4.56	7.10	14.32	21.32	23.95	25.44
Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Water bottle	7.54	13.31	0.00	1.18	5.13	8.13	17.94	58.58	81.30
Dietary Objects	7.63	13.28	0.00	1.39	5.13	8.13	17.94	58.58	81.30
Non-dietary Objects	19.75	17.53	0.00	8.67	14.83	25.50	43.63	81.68	96.88
All Objects	27.38	21.05	4.84	13.08	22.71	32.30	64.34	96.07	105.13

NA: not applicable due to no mouth contact with these objects



Table S3-92. Mouthing Hourly Duration (Min/Hour) While NOT Wearing Gloves (n =39)

Objects	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Body	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.04	0.04
Clothes	0.43	1.08	0.00	0.03	0.15	0.37	1.42	4.67	6.61
Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hands	0.42	0.77	0.00	0.09	0.22	0.47	1.12	3.38	4.74
Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Water bottle	0.49	0.75	0.00	0.08	0.25	0.52	1.63	3.31	3.39
Dietary Objects	0.49	0.74	0.00	0.09	0.26	0.52	1.63	3.31	3.39
Non-dietary Objects	0.87	1.34	0.00	0.18	0.42	1.07	2.51	6.25	7.03
All Objects	1.36	1.55	0.09	0.41	0.99	1.51	3.89	6.81	7.03

NA: not applicable due to no mouth contact with these objects

Table S3-93. Mouthing Median Duration (Second) While NOT Wearing Gloves (n =39)

Objects	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Artificial Turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Body	8	1.04	0.43	0.58	0.60	1.05	1.31	1.59	1.60	1.60
Clothes	32	1.51	0.83	0.62	0.87	1.35	1.88	2.95	3.92	4.17
Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hands	36	1.30	0.79	0.54	0.89	1.06	1.41	2.69	4.21	4.76
Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Water bottle	33	3.65	1.34	1.72	2.59	3.55	4.37	5.82	6.53	6.83
Dietary Objects	33	3.60	1.35	1.72	2.59	3.41	4.34	5.81	6.52	6.83



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Objects	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Non-dietary Objects	39	1.36	0.73	0.74	0.87	1.10	1.59	2.62	3.90	4.45
All Objects	39	1.67	0.86	0.79	1.09	1.41	2.06	3.01	4.52	5.36

NA: not applicable due to no mouth contact with these objects



S3.3. Data Summarized by Age

S3.3.1. Data Summarized During the Whole Event by Age

Table S3-94. Frequency (Event/Hour) of Actions by Age, during the Whole Event

Age Group	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Slip or fall	1.77	1.71	0.00	0.71	1.28	2.71	4.23	4.29	4.31
2 <9 Years (n=7)	Jumping	1.52	3.44	0.00	0.00	0.00	0.72	6.89	8.75	9.22
2 <9 Years (n=7)	Diving	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Heading	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Tackling or sliding	0.10	0.26	0.00	0.00	0.00	0.00	0.48	0.64	0.68
9 <16 Years (n=18)	Slip or fall	1.48	2.02	0.00	0.20	0.70	1.34	5.43	6.56	6.84
9 <16 Years (n=18)	Jumping	5.65	5.65	0.00	0.69	3.01	8.89	14.24	18.23	19.23
9 <16 Years (n=18)	Diving	0.19	0.40	0.00	0.00	0.00	0.00	0.81	1.26	1.37
9 <16 Years (n=18)	Heading	0.28	0.60	0.00	0.00	0.00	0.00	1.47	1.97	2.10
9 <16 Years (n=18)	Tackling or sliding	0.33	0.67	0.00	0.00	0.00	0.41	2.08	2.15	2.17
≥16 Years (n=15)	Slip or fall	3.36	5.14	0.00	0.00	0.48	4.53	12.97	13.15	13.19
≥16 Years (n=15)	Jumping	18.59	27.34	0.66	3.58	5.79	10.23	68.85	74.01	75.30
≥16 Years (n=15)	Diving	1.25	2.73	0.00	0.00	0.00	1.26	5.74	9.06	9.89
≥16 Years (n=15)	Heading	0.57	0.69	0.00	0.00	0.46	0.83	1.94	2.00	2.02
≥16 Years (n=15)	Tackling or sliding	0.71	1.01	0.00	0.00	0.23	1.18	2.80	2.81	2.81
p value	Slip or fall	0.008*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Jumping	0.027*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Diving	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Heading	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Tackling or sliding	0.773	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

NA: not applicable due to the activities not observed; and ND: not determined

Table S3-95. Frequency of Hand to Object Contact (Event/Hour) by Age, during the Whole Event

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Artificial Turf	6.52	9.45	1.49	1.98	2.50	5.03	21.03	26.35	27.68



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Body	15.77	11.65	4.29	6.37	14.91	21.66	32.73	34.67	35.16
2 <9 Years (n=7)	Clothes	59.66	27.05	26.36	43.23	54.58	75.59	96.70	98.58	99.05
2 <9 Years (n=7)	Field Structures	6.05	4.10	1.52	3.46	5.36	7.47	12.14	13.32	13.62
2 <9 Years (n=7)	Footwear	3.46	2.12	1.34	1.97	2.28	4.85	6.45	6.86	6.96
2 <9 Years (n=7)	Head/face/hair	31.79	37.91	2.28	10.60	20.74	32.26	89.59	108.95	113.79
2 <9 Years (n=7)	Shin guards	0.16	0.42	0.00	0.00	0.00	0.00	0.77	1.03	1.10
2 <9 Years (n=7)	Soccer ball	15.33	7.96	6.56	8.56	17.71	18.54	25.99	28.28	28.85
2 <9 Years (n=7)	Water bottle	14.35	4.76	8.73	11.70	11.80	17.83	20.84	20.88	20.89
2 <9 Years (n=7)	Dietary Objects	14.35	4.76	8.73	11.70	11.80	17.83	20.84	20.88	20.89
2 <9 Years (n=7)	Non-dietary Objects	154.53	55.64	97.55	119.20	131.29	176.99	236.76	255.78	260.53
2 <9 Years (n=7)	All Objects	168.89	57.23	106.28	130.90	152.01	193.33	250.90	270.56	275.47
9 <16 Years (n=18)	Artificial Turf	3.45	4.25	0.00	0.90	1.52	3.98	14.32	14.47	14.51
9 <16 Years (n=18)	Body	12.53	10.78	1.52	5.06	7.78	16.18	30.49	39.32	41.53
9 <16 Years (n=18)	Clothes	90.84	41.07	17.63	65.83	88.52	105.21	163.87	178.61	182.29
9 <16 Years (n=18)	Field Structures	7.43	5.14	1.67	3.79	6.05	9.99	15.91	21.20	22.52
9 <16 Years (n=18)	Footwear	6.70	6.52	0.72	3.40	5.09	7.81	14.47	27.42	30.66
9 <16 Years (n=18)	Head/face/hair	32.61	25.90	3.35	12.29	25.72	48.76	78.92	86.22	88.05
9 <16 Years (n=18)	Shin guards	2.40	4.53	0.00	0.00	0.62	2.30	8.61	16.75	18.79
9 <16 Years (n=18)	Soccer ball	27.73	31.03	0.86	6.42	14.83	36.31	102.00	105.33	106.16
9 <16 Years (n=18)	Water bottle	5.58	4.03	0.00	3.47	4.57	7.88	11.56	16.23	17.40
9 <16 Years (n=18)	Dietary Objects	5.62	4.03	0.00	3.47	4.62	8.02	11.56	16.23	17.40
9 <16 Years (n=18)	Non-dietary Objects	195.05	62.87	118.82	153.39	173.59	208.93	305.70	330.66	336.90
9 <16 Years (n=18)	All Objects	200.67	65.57	121.40	158.17	182.29	215.68	311.00	345.64	354.30
≥16 Years (n=15)	Artificial Turf	4.67	5.36	0.00	1.54	2.46	5.28	14.66	16.88	17.43
≥16 Years (n=15)	Body	13.68	13.10	2.18	5.08	12.44	16.25	31.41	49.80	54.40



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=15)	Clothes	59.65	20.22	26.14	45.15	62.08	66.00	90.86	91.30	91.41
≥16 Years (n=15)	Field Structures	8.59	7.87	1.46	2.20	5.93	14.65	21.34	24.07	24.75
≥16 Years (n=15)	Footwear	7.09	4.91	0.73	2.03	8.64	11.42	12.27	12.79	12.92
≥16 Years (n=15)	Head/face/hair	21.01	11.23	5.89	13.90	19.08	28.29	39.21	44.77	46.16
≥16 Years (n=15)	Shin guards	0.52	1.02	0.00	0.00	0.00	0.19	2.47	2.88	2.98
≥16 Years (n=15)	Soccer ball	14.25	20.80	0.55	2.53	6.58	14.10	61.43	63.12	63.54
≥16 Years (n=15)	Water bottle	4.20	3.61	0.00	1.47	4.24	6.13	9.13	12.57	13.43
≥16 Years (n=15)	Dietary Objects	4.29	3.77	0.00	1.47	4.24	6.26	9.38	13.20	14.16
≥16 Years (n=15)	Non-dietary Objects	138.50	52.84	73.89	90.44	134.31	168.74	225.94	239.09	242.38
≥16 Years (n=15)	All Objects	142.79	53.18	80.69	94.43	139.33	170.45	229.84	240.66	243.37
p value	Artificial Turf	0.001*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.6863	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.035*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.040*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.8819	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.3115	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.1489	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.040*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.8607	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.837	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.3997	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.8059	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

ND: not determined



Table S3-96. Duration of Hand to Object Contact (Min/Hour) by Age, during the Whole Event

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Artificial Turf	0.58	1.09	0.04	0.09	0.19	0.30	2.23	2.89	3.05
2 <9 Years (n=7)	Body	2.08	2.58	0.12	0.27	0.82	3.03	6.10	6.81	6.99
2 <9 Years (n=7)	Clothes	9.51	7.07	1.62	4.81	5.84	14.91	19.13	19.59	19.70
2 <9 Years (n=7)	Field Structures	0.55	0.43	0.07	0.30	0.46	0.70	1.17	1.27	1.30
2 <9 Years (n=7)	Footwear	0.26	0.28	0.05	0.12	0.16	0.26	0.70	0.84	0.88
2 <9 Years (n=7)	Head/face/hair	1.70	3.06	0.03	0.29	0.51	1.11	6.43	8.14	8.57
2 <9 Years (n=7)	Shin guards	0.01	0.03	0.00	0.00	0.00	0.00	0.06	0.08	0.08
2 <9 Years (n=7)	Soccer ball	0.68	0.30	0.23	0.52	0.66	0.85	1.07	1.13	1.14
2 <9 Years (n=7)	Water bottle	3.08	1.73	1.67	2.16	2.64	3.08	5.78	6.57	6.77
2 <9 Years (n=7)	Dietary Objects	3.08	1.73	1.67	2.16	2.64	3.08	5.78	6.57	6.77
2 <9 Years (n=7)	Non-dietary Objects	16.68	6.60	7.34	11.52	18.66	21.69	23.66	24.20	24.33
2 <9 Years (n=7)	All Objects	19.75	6.95	9.15	14.50	23.78	24.70	26.50	26.87	26.96
9 <16 Years (n=18)	Artificial Turf	0.14	0.18	0.00	0.01	0.08	0.13	0.47	0.57	0.60
9 <16 Years (n=18)	Body	1.14	1.50	0.04	0.14	0.34	2.05	4.11	4.45	4.53
9 <16 Years (n=18)	Clothes	17.28	14.07	2.05	8.67	10.38	24.41	40.91	50.37	52.73
9 <16 Years (n=18)	Field Structures	0.70	0.76	0.09	0.18	0.35	1.06	2.40	2.40	2.40
9 <16 Years (n=18)	Footwear	0.67	0.61	0.01	0.21	0.41	0.87	1.85	1.95	1.98
9 <16 Years (n=18)	Head/face/hair	0.95	0.63	0.15	0.45	0.78	1.34	2.09	2.19	2.21
9 <16 Years (n=18)	Shin guards	0.24	0.47	0.00	0.00	0.02	0.19	1.08	1.70	1.85
9 <16 Years (n=18)	Soccer ball	1.28	1.22	0.01	0.40	0.92	1.57	3.63	4.00	4.09
9 <16 Years (n=18)	Water bottle	0.93	0.65	0.00	0.44	0.93	1.23	1.96	2.26	2.33
9 <16 Years (n=18)	Dietary Objects	0.94	0.65	0.00	0.44	0.93	1.25	1.96	2.26	2.33
9 <16 Years (n=18)	Non-dietary Objects	23.14	14.23	6.15	13.20	16.17	30.32	47.06	54.94	56.91
9 <16 Years (n=18)	All Objects	24.08	14.39	6.74	14.32	17.10	30.86	48.84	56.83	58.83
≥16 Years (n=15)	Artificial Turf	0.27	0.31	0.00	0.04	0.15	0.39	0.85	0.95	0.98
≥16 Years (n=15)	Body	1.00	1.49	0.03	0.18	0.46	0.64	4.13	4.89	5.08



Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=15)	Clothes	9.10	6.45	2.95	4.81	6.70	9.25	21.67	22.21	22.35
≥16 Years (n=15)	Field Structures	1.07	1.12	0.03	0.19	0.65	1.72	3.13	3.27	3.30
≥16 Years (n=15)	Footwear	0.57	0.60	0.02	0.16	0.39	0.75	1.66	1.91	1.97
≥16 Years (n=15)	Head/face/hair	0.73	0.60	0.18	0.36	0.49	0.86	1.75	2.07	2.15
≥16 Years (n=15)	Shin guards	0.03	0.05	0.00	0.00	0.00	0.01	0.12	0.16	0.17
≥16 Years (n=15)	Soccer ball	0.40	0.47	0.01	0.14	0.22	0.53	1.39	1.49	1.52
≥16 Years (n=15)	Water bottle	0.67	0.65	0.00	0.21	0.58	0.82	1.90	2.15	2.21
≥16 Years (n=15)	Dietary Objects	0.68	0.65	0.00	0.21	0.58	0.85	1.92	2.18	2.24
≥16 Years (n=15)	Non-dietary Objects	13.70	7.37	5.40	7.69	12.40	18.36	26.39	28.17	28.61
≥16 Years (n=15)	All Objects	14.38	7.40	5.83	8.14	12.79	18.67	26.72	28.27	28.66
p value	Artificial Turf	0.000*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.523	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.087	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.024*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.886	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.308	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.149	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.071	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.857	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.381	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.554	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

ND: not determined

Table S3-97. Median Duration of Hand to Object Contact (Second) by Age, during the Whole Event

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Artificial Turf	1.63	0.92	0.62	1.11	1.39	1.95	3.02	3.23	3.29



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Body	2.61	3.20	0.74	1.02	1.70	2.00	7.47	9.32	9.78
2 <9 Years (n=7)	Clothes	3.27	0.87	2.00	2.65	3.54	3.79	4.31	4.44	4.47
2 <9 Years (n=7)	Field Structures	2.88	1.40	1.33	2.37	2.55	2.87	4.98	5.65	5.82
2 <9 Years (n=7)	Footwear	2.90	1.69	1.14	1.72	1.94	4.19	5.23	5.39	5.43
2 <9 Years (n=7)	Head/face/hair	1.32	0.63	0.60	0.90	1.23	1.64	2.22	2.30	2.32
2 <9 Years (n=1)	Shin guards	4.16	ND	4.16	4.16	4.16	4.16	4.16	4.16	4.16
2 <9 Years (n=7)	Soccer ball	1.97	0.86	1.25	1.56	1.69	1.96	3.28	3.72	3.83
2 <9 Years (n=7)	Water bottle	7.65	3.49	3.90	5.74	6.33	9.03	12.97	13.63	13.79
2 <9 Years (n=7)	Dietary Objects	7.65	3.49	3.90	5.74	6.33	9.03	12.97	13.63	13.79
2 <9 Years (n=7)	Non-dietary Objects	2.23	0.38	1.72	1.94	2.26	2.51	2.68	2.73	2.74
2 <9 Years (n=7)	All Objects	2.45	0.41	1.87	2.18	2.40	2.77	2.96	2.99	2.99
9 <16 Years (n=16)	Artificial Turf	1.14	0.47	0.46	0.85	1.03	1.27	2.14	2.19	2.20
9 <16 Years (n=18)	Body	1.47	0.56	0.56	1.12	1.32	1.89	2.24	2.82	2.96
9 <16 Years (n=18)	Clothes	5.15	3.05	1.85	3.18	4.46	6.05	11.02	12.73	13.16
9 <16 Years (n=18)	Field Structures	3.82	4.39	0.41	1.64	2.58	4.21	8.20	17.61	19.96
9 <16 Years (n=18)	Footwear	4.16	3.54	0.99	1.83	2.92	5.14	10.22	14.31	15.34
9 <16 Years (n=18)	Head/face/hair	1.43	0.53	0.90	1.12	1.27	1.74	2.17	2.90	3.09
9 <16 Years (n=12)	Shin guards	5.04	4.88	0.90	1.80	3.76	5.46	14.53	16.26	16.70
9 <16 Years (n=18)	Soccer ball	1.89	0.77	0.64	1.39	1.79	2.15	3.05	3.63	3.77
9 <16 Years (n=18)	Water bottle	7.04	2.05	3.11	5.68	6.87	8.78	9.91	10.20	10.27
9 <16 Years (n=18)	Dietary Objects	6.97	2.03	3.11	5.46	6.74	8.30	9.91	10.20	10.27
9 <16 Years (n=18)	Non-dietary Objects	2.94	1.49	1.23	1.98	2.32	3.54	5.94	6.73	6.93
9 <16 Years (n=18)	All Objects	2.99	1.50	1.25	2.02	2.37	3.56	6.11	6.78	6.94
≥16 Years (n=12)	Artificial Turf	2.07	1.65	0.65	0.78	1.35	3.06	4.86	5.09	5.14
≥16 Years (n=15)	Body	1.57	1.48	0.53	0.85	1.15	1.48	3.93	5.84	6.32
≥16 Years (n=15)	Clothes	3.40	1.90	1.89	2.30	2.63	3.79	6.73	8.35	8.76
≥16 Years (n=15)	Field Structures	3.29	2.02	0.84	1.87	2.60	4.64	6.34	7.45	7.72



Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=15)	Footwear	3.58	3.86	0.89	1.29	2.35	3.73	10.66	14.07	14.93
≥16 Years (n=15)	Head/face/hair	1.26	0.21	0.99	1.14	1.18	1.35	1.60	1.61	1.61
≥16 Years (n=4)	Shin guards	2.03	0.57	1.48	1.58	2.00	2.46	2.60	2.63	2.64
≥16 Years (n=15)	Soccer ball	1.75	1.06	0.77	1.02	1.28	2.07	3.62	3.89	3.95
≥16 Years (n=13)	Water bottle	6.22	3.80	2.09	3.15	5.96	7.05	13.48	13.65	13.69
≥16 Years (n=13)	Dietary Objects	6.21	3.80	2.09	3.15	5.80	7.05	13.48	13.65	13.69
≥16 Years (n=15)	Non-dietary Objects	1.97	0.74	1.36	1.51	1.79	2.07	3.33	3.97	4.14
≥16 Years (n=15)	All Objects	2.05	0.74	1.36	1.59	1.81	2.15	3.35	4.02	4.19
p value	Artificial Turf	0.424	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.908	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.038*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.510	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.376	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.510	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.044*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.583	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.967	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.031*	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.423	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

ND: not determined

Table S3-98. Hourly Duration (Min/Hour) of Player Intensity by Age, during the Whole Event

Age Group	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	High	2.198571	1.164151	0.7	1.255	2.39	3.01	3.653	3.7466	3.77
2 <9 Years (n=7)	Moderate	10.53143	5.329873	4.55	6.45	9.48	13.705	17.736	19.0512	19.38
2 <9 Years (n=7)	Light	19.38143	6.846867	10.65	14.095	18.6	25.87	26.379	26.4678	26.49



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Age Group	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Resting	27.89143	8.794831	18.24	20.275	28.64	33	39.326	41.3132	41.81
9 <16 Years (n=18)	High	1.877895	1.006869	0.09	1.175	1.87	2.36	3.655	3.835	3.88
9 <16 Years (n=18)	Moderate	12.24526	4.07571	5.46	9.105	12.23	15.595	17.128	20.0656	20.8
9 <16 Years (n=18)	Light	25.17895	4.899464	14.07	22.245	23.98	28.145	33.048	34.0416	34.29
9 <16 Years (n=18)	Resting	20.69737	6.68657	12.08	17.065	18.56	23.13	30.896	37.7792	39.5
≥16 Years (n=15)	High	2.057143	0.921023	0.66	1.0975	2.285	2.9225	3.1245	3.1609	3.17
≥16 Years (n=15)	Moderate	13.88071	6.125983	3.75	11.7075	15.575	17.9675	21.5395	22.5639	22.82
≥16 Years (n=15)	Light	24.83286	3.919224	17.21	22.305	24.605	27.92	30.7115	30.7583	30.77
≥16 Years (n=15)	Resting	19.23	7.530575	10.86	13.3725	16.635	23.95	32.697	32.9154	32.97
p value*	High	0.732345	ND	ND	ND	ND	ND	ND	ND	ND
p value	Moderate	0.38744	ND	ND	ND	ND	ND	ND	ND	ND
p value	Light	0.157615	ND	ND	ND	ND	ND	ND	ND	ND
p value	Resting	0.054374	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Kruskal Wallis

ND: not determined

Table S3-99. Duration (Min/Hour) of Macro-Activities by Age, during the Whole Event

Age Group	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Sit on ground	2.17	3.41	0.38	0.42	0.56	1.83	7.45	9.29	9.75
2 <9 Years (n=7)	Rest Standing	19.81	4.93	15.02	16.85	17.89	21.62	27.40	28.54	28.82
2 <9 Years (n=7)	Running	11.60	6.72	2.47	7.64	10.98	14.80	20.97	22.51	22.90
2 <9 Years (n=7)	Stretching	0.24	0.19	0.00	0.07	0.34	0.39	0.40	0.41	0.41
2 <9 Years (n=7)	Walking	20.41	8.03	10.50	14.38	18.57	27.44	29.57	30.03	30.14
2 <9 Years (n=7)	Sit on chair	5.67	6.35	0.00	2.54	2.77	7.11	15.72	17.24	17.62
2 <9 Years (n=7)	Push ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Sit ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Sit on ground	1.04	1.16	0.00	0.11	0.79	1.51	3.09	4.20	4.48
9 <16 Years (n=18)	Rest Standing	17.49	3.85	9.19	15.26	16.76	19.39	23.06	26.33	27.15



Age Group	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
9 <16 Years (n=18)	Running	13.61	5.09	4.84	9.41	14.02	17.63	21.07	21.90	22.11
9 <16 Years (n=18)	Stretching	0.51	0.54	0.00	0.11	0.27	0.83	1.49	1.70	1.75
9 <16 Years (n=18)	Walking	25.66	5.48	14.10	22.37	24.21	28.27	34.03	36.63	37.28
9 <16 Years (n=18)	Sit on chair	1.47	2.98	0.00	0.00	0.00	0.11	7.94	8.43	8.55
9 <16 Years (n=18)	Push ups	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
9 <16 Years (n=18)	Sit ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Sit on ground	0.87	1.05	0.00	0.02	0.48	1.45	2.89	3.09	3.14
≥16 Years (n=15)	Rest Standing	15.83	7.39	6.98	9.64	14.89	19.94	27.07	31.41	32.50
≥16 Years (n=15)	Running	14.85	7.24	3.81	9.79	17.36	18.69	24.15	24.82	24.99
≥16 Years (n=15)	Stretching	1.34	1.96	0.00	0.11	0.41	1.25	5.42	5.77	5.86
≥16 Years (n=15)	Walking	24.94	5.32	16.09	21.09	25.29	28.57	32.88	33.42	33.56
≥16 Years (n=15)	Sit on chair	1.62	4.71	0.00	0.00	0.00	0.29	8.38	15.81	17.67
≥16 Years (n=15)	Push ups	0.01	0.03	0.00	0.00	0.00	0.00	0.04	0.09	0.10
≥16 Years (n=15)	Sit ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
p value	Sit on ground	0.338	ND	ND	ND	ND	ND	ND	ND	ND
p value	Rest Standing	0.253	ND	ND	ND	ND	ND	ND	ND	ND
p value	Running	0.059	ND	ND	ND	ND	ND	ND	ND	ND
p value	Stretching	0.025*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Walking	0.303	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on chair	0.396	ND	ND	ND	ND	ND	ND	ND	ND
p value	Push ups	0.493	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit ups	NA	NA	NA	NA	NA	NA	NA	NA	NA

*<0.05 (Kruskal Wallis)

NA: not applicable due to these activities not observed; and ND: not determined

Table S3-100. Mouthing Frequency (Event/Hour) by Age, during the Whole Event

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Body	0.25	0.65	0.00	0.00	0.00	0.00	1.20	1.62	1.72



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Clothes	19.75	37.57	1.34	2.62	5.04	11.20	77.64	98.94	104.27
2 <9 Years (n=7)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Hands	8.14	5.29	1.36	5.81	6.88	9.56	16.07	17.65	18.04
2 <9 Years (n=7)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Water bottle	9.94	4.96	3.60	6.89	9.20	12.75	16.92	17.42	17.54
2 <9 Years (n=7)	Dietary Objects	9.94	4.96	3.60	6.89	9.20	12.75	16.92	17.42	17.54
2 <9 Years (n=7)	Non-dietary Objects	20.33	37.30	2.00	3.46	5.04	12.06	77.64	98.94	104.27
2 <9 Years (n=7)	All Objects	30.28	36.78	8.65	10.79	13.38	28.57	87.78	106.54	111.23
9 <16 Years (n=18)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Body	0.93	2.42	0.00	0.00	0.00	0.37	4.80	8.90	9.93
9 <16 Years (n=18)	Clothes	6.06	7.34	0.00	1.34	3.31	8.29	17.27	26.46	28.76
9 <16 Years (n=18)	Field Structures	0.02	0.09	0.00	0.00	0.00	0.00	0.04	0.33	0.40
9 <16 Years (n=18)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Hands	10.35	6.88	2.06	6.61	8.34	13.58	25.50	25.92	26.03
9 <16 Years (n=18)	Head/face/hair	0.07	0.21	0.00	0.00	0.00	0.00	0.47	0.76	0.83
9 <16 Years (n=18)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Water bottle	4.83	4.52	0.00	1.93	3.63	5.16	12.67	16.78	17.81
9 <16 Years (n=18)	Dietary Objects	4.93	4.51	0.00	1.93	3.86	5.47	12.67	16.78	17.81
9 <16 Years (n=18)	Non-dietary Objects	9.01	10.08	0.00	3.13	6.19	12.02	19.56	39.98	45.08
9 <16 Years (n=18)	All Objects	13.94	10.77	2.13	5.41	15.27	16.33	27.13	44.60	48.96
≥16 Years (n=15)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Body	0.18	0.32	0.00	0.00	0.00	0.36	0.71	0.91	0.96
≥16 Years (n=15)	Clothes	7.98	7.96	0.00	0.79	6.71	12.37	21.24	23.50	24.06



Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=15)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Hands	7.32	4.32	0.71	4.00	7.34	10.30	13.65	14.81	15.10
≥16 Years (n=15)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Soccer ball	0.04	0.15	0.00	0.00	0.00	0.00	0.19	0.48	0.55
≥16 Years (n=15)	Water bottle	2.65	2.47	0.00	0.14	2.47	4.93	6.24	6.29	6.30
≥16 Years (n=15)	Dietary Objects	3.11	2.41	0.00	0.97	2.85	4.93	6.60	7.04	7.15
≥16 Years (n=15)	Non-dietary Objects	8.74	8.13	0.00	1.20	7.13	12.53	23.01	24.31	24.63
≥16 Years (n=15)	All Objects	11.86	9.13	0.00	5.91	10.69	15.71	26.02	29.95	30.93
p value	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.401	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.798	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.465	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.004*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.655	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.011*	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.315	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-101. Mouthing Duration (Min/Hour) by Age, during the Whole Event

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Body	0.01	0.02	0.00	0.00	0.00	0.00	0.03	0.04	0.04
2 <9 Years (n=7)	Clothes	0.44	0.62	0.03	0.04	0.17	0.59	1.43	1.59	1.63
2 <9 Years (n=7)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Hands	0.89	1.71	0.02	0.15	0.22	0.49	3.54	4.50	4.74
2 <9 Years (n=7)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Water bottle	0.95	1.07	0.14	0.34	0.46	1.11	2.66	3.07	3.17
2 <9 Years (n=7)	Dietary Objects	0.95	1.07	0.14	0.34	0.46	1.11	2.66	3.07	3.17
2 <9 Years (n=7)	Non-dietary Objects	0.49	0.59	0.03	0.17	0.24	0.61	1.43	1.59	1.63
2 <9 Years (n=7)	All Objects	1.45	1.14	0.28	0.47	1.71	1.90	3.01	3.34	3.42
9 <16 Years (n=18)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Body	0.02	0.06	0.00	0.00	0.00	0.01	0.13	0.23	0.25
9 <16 Years (n=18)	Clothes	0.24	0.28	0.00	0.03	0.10	0.47	0.72	0.78	0.79
9 <16 Years (n=18)	Field Structures	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.03
9 <16 Years (n=18)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Hands	0.39	0.32	0.05	0.15	0.30	0.53	0.91	1.07	1.11
9 <16 Years (n=18)	Head/face/hair	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
9 <16 Years (n=18)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Water bottle	0.29	0.27	0.00	0.11	0.26	0.35	0.70	1.02	1.10
9 <16 Years (n=18)	Dietary Objects	0.30	0.27	0.00	0.11	0.26	0.38	0.70	1.02	1.10
9 <16 Years (n=18)	Non-dietary Objects	0.30	0.30	0.00	0.07	0.17	0.51	0.83	0.86	0.87
9 <16 Years (n=18)	All Objects	0.60	0.36	0.03	0.25	0.60	0.83	1.14	1.21	1.23
≥16 Years (n=15)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Body	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=15)	Clothes	0.34	0.71	0.00	0.04	0.14	0.27	1.23	2.45	2.76
≥16 Years (n=15)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Hands	0.19	0.22	0.01	0.07	0.14	0.22	0.48	0.82	0.91
≥16 Years (n=15)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Soccer ball	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
≥16 Years (n=15)	Water bottle	0.15	0.16	0.00	0.01	0.11	0.24	0.42	0.43	0.43
≥16 Years (n=15)	Dietary Objects	0.18	0.16	0.00	0.05	0.11	0.32	0.42	0.43	0.43
≥16 Years (n=15)	Non-dietary Objects	0.35	0.72	0.00	0.06	0.14	0.36	1.24	2.48	2.79
≥16 Years (n=15)	All Objects	0.53	0.71	0.00	0.17	0.29	0.68	1.52	2.57	2.83
p value	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.418	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.751	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.322	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.083	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.575	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.006*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.752	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.011*	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.047*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

NA: not applicable due to no mouth contact with these objects; and ND: not determined



Table S3-102. Mouthing Median Duration (Second) by Age, during the Whole Event

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=0)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=1)	Body	1.59	ND	ND	ND	ND	ND	ND	ND	ND
2 <9 Years (n=7)	Clothes	1.32	0.50	0.66	0.98	1.35	1.60	2.00	2.05	2.06
2 <9 Years (n=0)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=0)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Hands	1.90	1.35	0.70	1.18	1.56	1.96	3.99	4.61	4.76
2 <9 Years (n=0)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=0)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=0)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Water bottle	3.53	2.00	1.71	2.16	2.60	4.62	6.52	6.77	6.83
2 <9 Years (n=7)	Dietary Objects	3.53	2.00	1.71	2.16	2.60	4.62	6.52	6.77	6.83
2 <9 Years (n=7)	Non-dietary Objects	1.65	0.67	0.66	1.20	1.86	2.10	2.37	2.45	2.47
2 <9 Years (n=7)	All Objects	2.52	1.48	0.95	1.78	2.30	2.62	4.75	5.41	5.58
9 <16 Years (n=0)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=5)	Body	1.00	0.44	0.58	0.60	0.98	1.26	1.53	1.59	1.60
9 <16 Years (n=18)	Clothes	1.69	0.96	0.62	1.00	1.40	1.92	3.55	4.04	4.17
9 <16 Years (n=1)	Field Structures	5.18	ND	ND	ND	ND	ND	ND	ND	ND
9 <16 Years (n=0)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=19)	Hands	1.36	0.52	0.66	1.07	1.23	1.55	2.37	2.49	2.52
9 <16 Years (n=2)	Head/face/hair	1.15	0.50	0.79	0.97	1.15	1.33	1.47	1.50	1.50
9 <16 Years (n=0)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=0)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Water bottle	3.61	1.05	2.11	2.71	3.32	4.27	5.35	5.75	5.85
9 <16 Years (n=18)	Dietary Objects	3.58	0.99	2.11	2.71	3.32	4.27	5.27	5.30	5.30
9 <16 Years (n=19)	Non-dietary Objects	1.33	0.60	0.62	0.88	1.20	1.74	2.54	2.59	2.61
9 <16 Years (n=19)	All Objects	2.05	1.08	0.87	1.35	2.01	2.49	3.36	4.92	5.30
≥16 Years (n=0)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=4)	Body	0.85	0.31	0.54	0.63	0.81	1.03	1.18	1.22	1.22
≥16 Years (n=11)	Clothes	2.03	2.87	0.62	0.87	1.36	1.47	6.13	9.71	10.61
≥16 Years (n=0)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=0)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=14)	Hands	1.06	0.62	0.66	0.84	0.90	1.03	1.84	2.92	3.18
≥16 Years (n=0)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=0)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=1)	Soccer ball	0.13	ND	ND	ND	ND	ND	ND	ND	ND
≥16 Years (n=10)	Water bottle	3.62	1.40	1.72	2.37	3.65	4.78	5.43	5.65	5.71
≥16 Years (n=12)	Dietary Objects	3.32	1.38	1.72	2.29	2.58	4.57	5.37	5.64	5.71
≥16 Years (n=14)	Non-dietary Objects	1.83	2.78	0.62	0.83	1.02	1.39	5.57	9.60	10.61
≥16 Years (n=14)	All Objects	2.02	1.51	0.62	1.13	1.46	2.50	4.97	5.59	5.74
p value	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.356	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.009*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.729	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.656	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.476	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.450	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

NA: not applicable due to no mouth contact with these objects; and ND: not determined



S3.3.2. Data Summarized According to Event Moment/Time and Age

S3.3.2.1. Activity Patterns by Age, during the Game/Practice

Table S3-103. Frequency (Event/Hour) of Actions by Age, during the Game/Practice

Age Group	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Diving	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Heading	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Jumping	1.69	3.81	0.00	0.00	0.00	0.79	7.63	9.71	10.23
2 <9 Years (n=7)	Slip or fall	2.40	2.12	0.00	0.98	2.16	3.45	5.47	5.73	5.79
2 <9 Years (n=7)	Tackling or sliding	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Diving	0.20	0.43	0.00	0.00	0.00	0.00	0.90	1.33	1.44
9 <16 Years (n=18)	Heading	0.31	0.66	0.00	0.00	0.00	0.00	1.52	2.17	2.33
9 <16 Years (n=18)	Jumping	5.59	5.95	0.00	0.76	3.18	9.24	15.03	19.49	20.61
9 <16 Years (n=18)	Slip or fall	1.48	2.12	0.00	0.00	0.72	1.53	5.73	6.91	7.21
9 <16 Years (n=18)	Tackling or sliding	0.36	0.79	0.00	0.00	0.00	0.23	2.35	2.60	2.66
≥16 Years (n=15)	Diving	1.24	2.87	0.00	0.00	0.00	0.48	6.58	9.40	10.11
≥16 Years (n=15)	Heading	0.69	0.83	0.00	0.00	0.56	1.08	2.33	2.37	2.38
≥16 Years (n=15)	Jumping	18.77	31.01	0.00	1.79	3.73	7.82	76.22	76.80	76.95
≥16 Years (n=15)	Slip or fall	2.98	5.08	0.00	0.00	0.58	2.47	14.01	14.79	14.98
≥16 Years (n=15)	Tackling or sliding	0.89	1.25	0.00	0.00	0.31	1.41	3.39	3.68	3.75
p value	Diving	0.029*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Heading	0.437	ND	ND	ND	ND	ND	ND	ND	ND
p value	Jumping	0.030*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Slip or fall	0.452	ND	ND	ND	ND	ND	ND	ND	ND
p value	Tackling or sliding	ND	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

NA: not applicable due to the activities not observed; and ND: not determined

Table S3-104. Frequency of Hand to Object Contact (Event/Hour) by Age, during Game/Practice

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Artificial Turf	4.41	3.62	0.92	1.67	3.01	6.42	9.60	10.52	10.75



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Body	13.12	10.50	3.16	5.23	12.54	16.12	28.47	32.46	33.46
2 <9 Years (n=7)	Clothes	53.58	29.50	25.08	31.51	40.70	72.90	95.95	99.58	100.49
2 <9 Years (n=7)	Field Structures	2.40	2.62	0.00	0.29	1.20	4.17	5.95	6.56	6.71
2 <9 Years (n=7)	Footwear	2.76	2.16	0.00	1.52	2.20	3.87	5.87	6.25	6.35
2 <9 Years (n=7)	Head/face/hair	35.11	38.83	3.38	7.85	20.74	46.56	93.08	108.90	112.86
2 <9 Years (n=7)	Shin guards	0.17	0.45	0.00	0.00	0.00	0.00	0.83	1.11	1.18
2 <9 Years (n=7)	Soccer ball	10.59	4.21	5.41	7.90	9.87	12.99	16.51	16.95	17.06
2 <9 Years (n=7)	Water bottle	6.79	7.51	0.00	0.99	3.58	12.34	17.17	17.28	17.31
2 <9 Years (n=7)	Dietary Objects	6.79	7.51	0.00	0.99	3.58	12.34	17.17	17.28	17.31
2 <9 Years (n=7)	Non-dietary Objects	137.93	54.33	56.96	117.18	118.49	163.50	213.20	225.60	228.70
2 <9 Years (n=7)	All Objects	144.72	56.26	56.96	118.16	135.33	176.07	218.05	229.43	232.28
9 <16 Years (n=18)	Artificial Turf	3.46	4.23	0.00	0.93	1.61	3.71	13.81	14.90	15.17
9 <16 Years (n=18)	Body	11.68	10.09	1.68	4.92	8.14	14.77	28.16	39.54	42.39
9 <16 Years (n=18)	Clothes	85.37	41.19	13.12	64.36	80.28	104.53	150.92	177.18	183.75
9 <16 Years (n=18)	Field Structures	5.83	4.36	0.00	3.60	4.69	8.31	11.83	17.01	18.30
9 <16 Years (n=18)	Footwear	6.10	7.51	0.00	2.01	5.41	6.10	14.71	30.27	34.16
9 <16 Years (n=18)	Head/face/hair	33.29	26.50	3.69	11.03	26.62	49.01	81.27	88.76	90.63
9 <16 Years (n=18)	Shin guards	1.62	3.16	0.00	0.00	0.00	1.93	7.97	11.13	11.92
9 <16 Years (n=18)	Soccer ball	28.26	34.92	0.74	5.22	13.35	36.02	107.96	120.81	124.02
9 <16 Years (n=18)	Water bottle	1.30	1.34	0.00	0.00	1.15	1.97	3.41	4.25	4.46
9 <16 Years (n=18)	Dietary Objects	1.34	1.38	0.00	0.00	1.15	2.09	3.41	4.25	4.46
9 <16 Years (n=18)	Non-dietary Objects	186.75	66.56	112.95	144.41	164.93	199.43	309.40	336.92	343.80
9 <16 Years (n=18)	All Objects	188.08	66.64	112.95	146.27	166.10	201.63	310.90	338.56	345.47
≥16 Years (n=15)	Artificial Turf	3.89	5.35	0.00	0.58	2.08	3.83	15.23	17.38	17.92
≥16 Years (n=15)	Body	10.78	9.94	1.29	3.19	9.88	12.78	27.69	36.99	39.31



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=15)	Clothes	51.36	22.70	16.15	37.16	44.69	62.47	85.79	94.63	96.84
≥16 Years (n=15)	Field Structures	6.84	6.74	0.00	2.00	4.19	9.87	18.06	21.00	21.73
≥16 Years (n=15)	Footwear	4.44	3.90	0.75	1.67	3.01	6.79	10.32	13.94	14.84
≥16 Years (n=15)	Head/face/hair	19.38	11.28	3.80	12.01	15.50	28.33	38.34	39.77	40.13
≥16 Years (n=15)	Shin guards	0.54	1.17	0.00	0.00	0.00	0.22	2.94	3.68	3.87
≥16 Years (n=15)	Soccer ball	12.88	17.22	0.70	2.69	7.95	15.47	41.74	60.61	65.33
≥16 Years (n=15)	Water bottle	1.78	2.68	0.00	0.00	1.11	2.23	5.78	9.22	10.08
≥16 Years (n=15)	Dietary Objects	1.83	2.86	0.00	0.00	1.11	2.23	6.05	9.87	10.83
≥16 Years (n=15)	Non-dietary Objects	117.70	44.69	48.06	82.64	107.93	146.16	184.78	186.59	187.04
≥16 Years (n=15)	All Objects	119.53	45.75	48.06	82.73	109.15	146.53	189.41	196.17	197.86
p value	Artificial Turf	0.016*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.209	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.505	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.924	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.422	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.137	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.432	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.029	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.013*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.008*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.435	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.618	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

ND: not determined



Table S3-105. Duration of Hand to Object Contact (Min/Hour) by Age, during Game/Practice

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Artificial Turf	0.39	0.46	0.01	0.09	0.33	0.43	1.09	1.29	1.34
2 <9 Years (n=7)	Body	1.04	1.30	0.05	0.13	0.67	1.34	3.08	3.50	3.60
2 <9 Years (n=7)	Clothes	8.05	9.05	1.27	2.03	3.85	12.84	21.29	21.43	21.47
2 <9 Years (n=7)	Field Structures	0.12	0.18	0.00	0.01	0.02	0.17	0.39	0.47	0.49
2 <9 Years (n=7)	Footwear	0.20	0.31	0.00	0.03	0.05	0.20	0.68	0.84	0.88
2 <9 Years (n=7)	Head/face/hair	1.83	3.31	0.04	0.23	0.52	1.29	6.98	8.79	9.24
2 <9 Years (n=7)	Shin guards	0.01	0.03	0.00	0.00	0.00	0.00	0.06	0.08	0.08
2 <9 Years (n=7)	Soccer ball	0.45	0.18	0.25	0.34	0.40	0.55	0.71	0.75	0.76
2 <9 Years (n=7)	Water bottle	1.41	2.05	0.00	0.22	0.55	1.56	4.67	5.54	5.76
2 <9 Years (n=7)	Dietary Objects	1.41	2.05	0.00	0.22	0.55	1.56	4.67	5.54	5.76
2 <9 Years (n=7)	Non-dietary Objects	13.42	9.01	2.17	5.86	14.26	20.56	24.27	24.61	24.69
2 <9 Years (n=7)	All Objects	14.83	9.90	2.17	6.08	18.39	22.16	26.05	26.65	26.80
9 <16 Years (n=18)	Artificial Turf	0.14	0.18	0.00	0.02	0.06	0.14	0.49	0.62	0.65
9 <16 Years (n=18)	Body	0.87	1.20	0.04	0.15	0.26	0.97	3.57	3.75	3.79
9 <16 Years (n=18)	Clothes	16.93	15.18	1.58	7.52	10.02	25.46	42.21	52.49	55.06
9 <16 Years (n=18)	Field Structures	0.45	0.49	0.00	0.13	0.26	0.58	1.40	1.53	1.56
9 <16 Years (n=18)	Footwear	0.60	0.66	0.00	0.10	0.37	0.83	1.96	2.02	2.03
9 <16 Years (n=18)	Head/face/hair	0.96	0.63	0.16	0.48	0.88	1.31	2.16	2.16	2.16
9 <16 Years (n=18)	Shin guards	0.17	0.46	0.00	0.00	0.00	0.08	0.61	1.70	1.97
9 <16 Years (n=18)	Soccer ball	1.23	1.35	0.01	0.32	0.72	1.59	4.05	4.15	4.17
9 <16 Years (n=18)	Water bottle	0.19	0.24	0.00	0.00	0.10	0.31	0.65	0.76	0.79
9 <16 Years (n=18)	Dietary Objects	0.19	0.24	0.00	0.00	0.10	0.31	0.65	0.76	0.79
9 <16 Years (n=18)	Non-dietary Objects	22.05	15.22	4.77	10.93	14.89	29.51	48.50	56.62	58.65
9 <16 Years (n=18)	All Objects	22.24	15.18	4.77	11.01	15.32	29.55	48.60	56.70	58.72
≥16 Years (n=15)	Artificial Turf	0.19	0.21	0.00	0.02	0.09	0.38	0.52	0.58	0.60
≥16 Years (n=15)	Body	0.93	1.63	0.02	0.09	0.42	0.67	4.17	5.48	5.81



Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=15)	Clothes	8.22	7.69	0.53	3.30	6.23	7.52	22.50	26.00	26.88
≥16 Years (n=15)	Field Structures	0.88	1.03	0.00	0.09	0.40	1.35	2.58	3.25	3.42
≥16 Years (n=15)	Footwear	0.32	0.35	0.02	0.12	0.23	0.32	1.09	1.13	1.14
≥16 Years (n=15)	Head/face/hair	0.66	0.64	0.09	0.28	0.42	0.83	1.92	2.27	2.36
≥16 Years (n=15)	Shin guards	0.02	0.04	0.00	0.00	0.00	0.01	0.11	0.12	0.12
≥16 Years (n=15)	Soccer ball	0.40	0.42	0.01	0.07	0.25	0.65	1.13	1.31	1.36
≥16 Years (n=15)	Water bottle	0.23	0.49	0.00	0.00	0.08	0.17	1.04	1.70	1.86
≥16 Years (n=15)	Dietary Objects	0.23	0.50	0.00	0.00	0.08	0.17	1.05	1.72	1.89
≥16 Years (n=15)	Non-dietary Objects	11.90	8.42	2.78	5.80	7.84	17.89	25.50	29.37	30.34
≥16 Years (n=15)	All Objects	12.13	8.54	2.97	5.82	7.84	17.91	25.53	29.43	30.41
p value	Artificial Turf	0.060	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.142	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.292	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.902	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.173	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.087	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.409	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.028*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.086	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.067	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.423	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.395	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

ND: not determined

Table S3-106. Median Duration of Hand to Object Contact (Second) by Age, during Game/Practice

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Artificial Turf	3.49	4.85	0.48	1.07	1.39	3.11	11.09	13.57	14.20



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Body	1.22	0.65	0.71	0.73	1.12	1.38	2.23	2.45	2.51
2 <9 Years (n=7)	Clothes	2.57	0.90	1.77	1.98	2.24	3.02	3.92	3.99	4.01
2 <9 Years (n=5)	Field Structures	1.20	0.36	0.71	0.96	1.33	1.39	1.56	1.59	1.60
2 <9 Years (n=6)	Footwear	2.06	1.72	0.82	1.01	1.69	1.90	4.55	5.25	5.43
2 <9 Years (n=7)	Head/face/hair	1.45	0.74	0.60	0.88	1.16	2.13	2.33	2.36	2.37
2 <9 Years (n=1)	Shin guards	4.16	ND	ND	ND	ND	ND	ND	ND	ND
2 <9 Years (n=7)	Soccer ball	2.19	0.95	1.29	1.52	1.99	2.59	3.63	3.79	3.83
2 <9 Years (n=5)	Water bottle	6.32	2.14	3.90	4.32	6.65	8.29	8.42	8.45	8.45
2 <9 Years (n=5)	Dietary Objects	6.32	2.14	3.90	4.32	6.65	8.29	8.42	8.45	8.45
2 <9 Years (n=7)	Non-dietary Objects	1.83	0.50	1.16	1.44	1.81	2.24	2.40	2.45	2.46
2 <9 Years (n=7)	All Objects	1.93	0.52	1.16	1.56	2.02	2.35	2.50	2.50	2.51
9 <16 Years (n=18)	Artificial Turf	1.13	0.49	0.46	0.85	1.03	1.27	2.22	2.27	2.29
9 <16 Years (n=18)	Body	1.42	0.59	0.56	1.12	1.28	1.51	2.57	2.71	2.74
9 <16 Years (n=18)	Clothes	5.40	3.72	1.59	2.77	4.54	6.43	13.71	14.01	14.08
9 <16 Years (n=17)	Field Structures	2.82	2.18	0.41	1.63	1.98	2.72	6.74	6.75	6.75
9 <16 Years (n=17)	Footwear	4.08	3.68	0.99	1.72	2.57	5.27	10.50	14.37	15.34
9 <16 Years (n=18)	Head/face/hair	1.43	0.54	0.93	1.12	1.25	1.79	2.17	2.90	3.09
9 <16 Years (n=7)	Shin guards	2.98	2.18	0.90	1.48	1.93	4.15	6.23	6.65	6.76
9 <16 Years (n=18)	Soccer ball	2.48	3.57	0.64	1.37	1.64	2.07	4.27	14.50	17.06
9 <16 Years (n=12)	Water bottle	6.39	3.19	1.09	5.06	6.08	7.48	11.53	13.41	13.88
9 <16 Years (n=12)	Dietary Objects	6.34	3.20	1.09	4.79	6.08	7.31	11.53	13.41	13.88
9 <16 Years (n=18)	Non-dietary Objects	2.97	1.72	1.17	1.85	2.28	3.48	6.58	7.50	7.73
9 <16 Years (n=18)	All Objects	2.97	1.70	1.17	1.85	2.29	3.50	6.46	7.44	7.69
≥16 Years (n=12)	Artificial Turf	1.76	1.29	0.65	0.82	1.36	2.18	4.05	4.47	4.57
≥16 Years (n=15)	Body	1.46	1.54	0.45	0.72	1.02	1.37	3.64	5.95	6.52
≥16 Years (n=15)	Clothes	3.38	2.75	1.20	2.03	2.37	3.38	8.11	11.12	11.87
≥16 Years (n=15)	Field Structures	6.14	11.53	0.44	1.81	2.21	4.20	22.21	39.59	43.93



Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=15)	Footwear	4.22	3.96	0.89	1.14	2.86	5.83	10.44	14.03	14.93
≥16 Years (n=15)	Head/face/hair	1.22	0.25	0.87	1.07	1.16	1.34	1.62	1.63	1.63
≥16 Years (n=4)	Shin guards	2.00	0.55	1.48	1.58	1.94	2.37	2.59	2.63	2.64
≥16 Years (n=15)	Soccer ball	1.86	1.10	0.77	1.03	1.62	2.07	3.83	3.93	3.95
≥16 Years (n=13)	Water bottle	3.17	1.91	0.22	2.51	2.74	3.39	6.12	7.12	7.36
≥16 Years (n=13)	Dietary Objects	3.17	1.91	0.22	2.51	2.74	3.39	6.12	7.12	7.36
≥16 Years (n=15)	Non-dietary Objects	1.85	0.69	1.25	1.41	1.50	1.88	3.22	3.36	3.40
≥16 Years (n=15)	All Objects	1.86	0.67	1.28	1.43	1.54	1.90	3.20	3.32	3.35
p value	Artificial Turf	0.012*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.012*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.624	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.113	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.239	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.043*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.535	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.700	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.048*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.031*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.334	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.270	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

ND: not determined

Table S3-107. Hourly Duration (Min/Hour) of Player Intensity by Age, during Game/Practice

Age Group	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	High	1.85	1.12	0.40	1.03	1.55	2.88	3.11	3.19	3.21
2 <9 Years (n=7)	Moderate	12.19	6.36	4.52	8.18	10.88	15.10	21.30	22.97	23.39
2 <9 Years (n=7)	Light	22.37	7.91	11.30	16.68	23.14	27.50	31.95	33.45	33.82



Age Group	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Resting	23.58	10.03	10.58	15.20	27.50	30.11	34.82	36.08	36.40
9 <16 Years (n=18)	High	1.99	1.14	0.11	1.19	1.78	2.53	3.83	4.51	4.68
9 <16 Years (n=18)	Moderate	13.46	4.75	5.69	10.16	13.89	16.18	19.64	23.34	24.27
9 <16 Years (n=18)	Light	26.09	5.11	14.13	23.08	26.30	29.29	33.26	33.98	34.16
9 <16 Years (n=18)	Resting	18.46	7.47	9.07	13.66	16.30	21.72	29.41	37.35	39.34
≥16 Years (n=15)	High	2.04	1.14	0.24	1.17	2.57	2.79	3.34	4.00	4.16
≥16 Years (n=15)	Moderate	14.91	6.75	3.86	11.89	16.21	18.67	24.18	25.68	26.06
≥16 Years (n=15)	Light	25.67	4.70	17.02	22.66	26.25	27.79	32.71	34.09	34.43
≥16 Years (n=15)	Resting	17.38	9.34	7.03	10.20	13.71	23.71	33.06	34.41	34.75
p value*	High	0.947	ND	ND	ND	ND	ND	ND	ND	ND
p value	Moderate	0.497	ND	ND	ND	ND	ND	ND	ND	ND
p value	Light	0.576	ND	ND	ND	ND	ND	ND	ND	ND
p value	Resting	0.303	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Kruskal Wallis
ND: not determined

Table S3-108. Duration (Min/Hour) of Macro-Activities by Age, during Game/Practice

Age Group	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Push ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Rest Standing	16.16	10.20	6.84	9.10	10.76	21.60	31.40	33.57	34.11
2 <9 Years (n=7)	Running	13.05	7.90	1.83	9.65	11.69	16.07	24.34	26.00	26.41
2 <9 Years (n=7)	Sit on chair	6.05	9.22	0.00	0.00	0.00	11.44	19.43	19.45	19.46
2 <9 Years (n=7)	Sit on ground	0.88	0.99	0.00	0.22	0.65	1.15	2.41	2.72	2.80
2 <9 Years (n=7)	Stretching	0.09	0.16	0.00	0.00	0.00	0.11	0.35	0.40	0.41
2 <9 Years (n=7)	Walking	23.65	9.34	11.33	16.71	23.25	30.32	35.47	36.64	36.93
9 <16 Years (n=18)	Push ups	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
9 <16 Years (n=18)	Rest Standing	15.42	4.35	7.36	13.31	15.76	17.34	22.27	25.25	25.99
9 <16 Years (n=18)	Running	15.00	5.79	5.08	10.08	15.40	18.92	23.90	25.32	25.68
9 <16 Years (n=18)	Sit on chair	1.61	3.30	0.00	0.00	0.00	0.00	8.52	9.19	9.36



Age Group	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
9 <16 Years (n=18)	Sit on ground	0.78	1.26	0.00	0.01	0.24	0.74	3.41	4.47	4.73
9 <16 Years (n=18)	Stretching	0.54	0.61	0.00	0.11	0.32	0.88	1.64	1.94	2.02
9 <16 Years (n=18)	Walking	26.41	5.80	14.10	22.68	25.67	31.17	34.40	36.66	37.23
≥16 Years (n=15)	Push ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Rest Standing	13.73	8.69	3.89	6.66	11.06	20.66	27.23	31.13	32.10
≥16 Years (n=15)	Running	16.35	8.11	4.09	10.44	18.63	21.86	27.67	28.69	28.95
≥16 Years (n=15)	Sit on chair	2.12	6.30	0.00	0.00	0.00	0.11	11.23	21.10	23.57
≥16 Years (n=15)	Sit on ground	0.83	1.24	0.00	0.02	0.21	1.17	3.09	3.98	4.20
≥16 Years (n=15)	Stretching	0.67	1.08	0.00	0.00	0.16	0.68	2.82	3.32	3.44
≥16 Years (n=15)	Walking	25.78	5.86	15.96	21.40	27.50	28.61	35.00	35.08	35.10
p value	Push ups	0.052	ND	ND	ND	ND	ND	ND	ND	ND
p value	Rest Standing	0.612	ND	ND	ND	ND	ND	ND	ND	ND
p value	Running	0.094	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on chair	0.905	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on ground	0.487	ND	ND	ND	ND	ND	ND	ND	ND
p value	Stretching	0.731	ND	ND	ND	ND	ND	ND	ND	ND
p value	Walking	0.280	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

NA: not applicable due to these activities not observed; and ND: not determined

Table S3-109. Mouthing Frequency (Event/Hour) by Age, during Game/Practice

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	All Objects	23.64	37.92	0.00	5.05	7.60	20.84	84.21	101.73	106.11
2 <9 Years (n=7)	Body	0.47	1.23	0.00	0.00	0.00	0.00	2.28	3.06	3.26
2 <9 Years (n=7)	Clothes	18.98	36.28	0.00	2.08	4.34	12.27	75.87	95.07	99.87
2 <9 Years (n=7)	Dietary Objects	4.04	4.71	0.00	0.39	3.72	5.27	11.14	12.82	13.24
2 <9 Years (n=7)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Hands	7.21	3.85	1.08	5.21	7.50	9.68	11.78	12.04	12.10
2 <9 Years (n=7)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Non-dietary Objects	19.60	36.00	0.00	2.61	4.67	13.73	75.87	95.07	99.87
2 <9 Years (n=7)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Water bottle	4.04	4.71	0.00	0.39	3.72	5.27	11.14	12.82	13.24
9 <16 Years (n=18)	All Objects	9.83	9.30	0.94	3.44	6.40	13.60	20.24	36.70	40.81
9 <16 Years (n=18)	Body	0.99	2.52	0.00	0.00	0.00	0.43	4.95	9.25	10.33
9 <16 Years (n=18)	Clothes	5.60	6.51	0.00	1.06	3.19	7.84	16.83	21.11	22.18
9 <16 Years (n=18)	Dietary Objects	1.03	1.54	0.00	0.00	0.66	1.36	4.85	5.03	5.07
9 <16 Years (n=18)	Field Structures	0.02	0.11	0.00	0.00	0.00	0.00	0.05	0.39	0.47
9 <16 Years (n=18)	Hands	10.52	7.54	2.02	4.82	9.32	12.64	26.60	27.37	27.56
9 <16 Years (n=18)	Head/face/hair	0.07	0.23	0.00	0.00	0.00	0.00	0.51	0.83	0.91
9 <16 Years (n=18)	Non-dietary Objects	8.80	9.34	0.00	3.20	5.85	12.51	19.46	36.54	40.81
9 <16 Years (n=18)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Water bottle	0.93	1.53	0.00	0.00	0.00	1.12	4.85	5.03	5.07
≥16 Years (n=15)	All Objects	9.77	8.47	0.00	2.50	9.02	13.74	24.81	26.14	26.47
≥16 Years (n=15)	Body	0.09	0.24	0.00	0.00	0.00	0.00	0.64	0.70	0.72
≥16 Years (n=15)	Clothes	7.96	8.35	0.00	0.78	6.45	12.95	22.45	25.09	25.75
≥16 Years (n=15)	Dietary Objects	1.07	1.44	0.00	0.00	0.29	2.05	3.68	3.70	3.71
≥16 Years (n=15)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Hands	6.49	3.92	0.94	2.91	6.09	9.42	12.45	13.38	13.61
≥16 Years (n=15)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Non-dietary Objects	8.70	8.37	0.00	1.10	6.57	12.95	23.97	25.97	26.47
≥16 Years (n=15)	Soccer ball	0.06	0.22	0.00	0.00	0.00	0.00	0.29	0.73	0.84
≥16 Years (n=15)	Water bottle	0.98	1.46	0.00	0.00	0.00	1.88	3.68	3.70	3.71
p value	All Objects	0.965	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.583	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.535	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.839	ND	ND	ND	ND	ND	ND	ND	ND



Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Field Structures	0.575	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.297	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.575	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.192	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.575	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.132	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-110. Mouthing Duration (Min/Hour) by Age, during Game/Practice

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	All Objects	0.73	0.87	0.00	0.20	0.33	1.18	2.01	2.03	2.04
2 <9 Years (n=7)	Body	0.01	0.03	0.00	0.00	0.00	0.00	0.06	0.08	0.08
2 <9 Years (n=7)	Clothes	0.49	0.73	0.00	0.04	0.09	0.84	1.57	1.59	1.59
2 <9 Years (n=7)	Dietary Objects	0.22	0.21	0.00	0.04	0.18	0.38	0.48	0.51	0.52
2 <9 Years (n=7)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Hands	0.98	1.92	0.02	0.12	0.14	0.59	3.97	5.02	5.28
2 <9 Years (n=7)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Non-dietary Objects	0.51	0.71	0.00	0.07	0.16	0.84	1.57	1.59	1.59
2 <9 Years (n=7)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Water bottle	0.22	0.21	0.00	0.04	0.18	0.38	0.48	0.51	0.52
9 <16 Years (n=18)	All Objects	0.37	0.32	0.03	0.09	0.23	0.63	0.87	0.90	0.91
9 <16 Years (n=18)	Body	0.02	0.07	0.00	0.00	0.00	0.01	0.14	0.24	0.27
9 <16 Years (n=18)	Clothes	0.23	0.30	0.00	0.02	0.07	0.38	0.76	0.85	0.87
9 <16 Years (n=18)	Dietary Objects	0.07	0.11	0.00	0.00	0.02	0.09	0.33	0.36	0.37
9 <16 Years (n=18)	Field Structures	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.03	0.04
9 <16 Years (n=18)	Hands	0.40	0.36	0.03	0.15	0.32	0.57	0.99	1.21	1.26
9 <16 Years (n=18)	Head/face/hair	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
9 <16 Years (n=18)	Non-dietary Objects	0.30	0.31	0.00	0.06	0.14	0.55	0.79	0.89	0.91



Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
9 <16 Years (n=18)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Water bottle	0.06	0.11	0.00	0.00	0.00	0.07	0.33	0.36	0.37
≥16 Years (n=15)	All Objects	0.44	0.95	0.00	0.07	0.23	0.35	1.54	3.26	3.69
≥16 Years (n=15)	Body	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
≥16 Years (n=15)	Clothes	0.38	0.94	0.00	0.02	0.13	0.23	1.51	3.20	3.62
≥16 Years (n=15)	Dietary Objects	0.05	0.08	0.00	0.00	0.01	0.06	0.20	0.23	0.24
≥16 Years (n=15)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Hands	0.14	0.12	0.01	0.05	0.11	0.21	0.32	0.42	0.44
≥16 Years (n=15)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Non-dietary Objects	0.39	0.94	0.00	0.06	0.13	0.24	1.52	3.22	3.64
≥16 Years (n=15)	Soccer ball	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
≥16 Years (n=15)	Water bottle	0.05	0.08	0.00	0.00	0.00	0.06	0.20	0.23	0.24
p value	All Objects	0.429	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.622	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.560	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.965	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.575	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.032*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.575	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.156	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.575	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.109	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-111. Mouthing Median Duration (Second) by Age, during the Whole Event

Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years	All Objects	7	2.03	0.76	0.96	1.45	2.29	2.63	2.72	2.72	2.72
2 <9 Years	Body	1	1.59	ND	ND	ND	ND	ND	ND	ND	ND



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Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years	Clothes	6	1.38	1.00	0.24	0.96	1.01	1.76	2.80	3.01	3.06
2 <9 Years	Dietary Objects	5	3.59	1.32	2.38	2.53	3.08	4.63	5.19	5.30	5.33
2 <9 Years	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Hands	7	1.84	1.34	0.77	1.18	1.42	1.79	3.89	4.59	4.76
2 <9 Years	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Non-dietary Objects	7	1.51	0.97	0.24	1.02	1.40	1.89	2.80	3.01	3.06
2 <9 Years	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Water bottle	5	3.59	1.32	2.38	2.53	3.08	4.63	5.19	5.30	5.33
9 <16 Years	All Objects	19	1.76	1.14	0.65	0.94	1.34	2.11	3.26	4.90	5.30
9 <16 Years	Body	5	1.00	0.44	0.58	0.60	0.95	1.26	1.53	1.59	1.60
9 <16 Years	Clothes	17	1.68	0.97	0.47	0.89	1.39	2.09	3.07	3.95	4.17
9 <16 Years	Dietary Objects	10	3.95	1.86	1.06	3.02	3.79	5.06	6.63	6.75	6.78
9 <16 Years	Field Structures	1	5.18	ND	ND	ND	ND	ND	ND	ND	ND
9 <16 Years	Hands	19	1.37	0.50	0.72	1.05	1.23	1.51	2.37	2.49	2.52
9 <16 Years	Head/face/hair	2	1.15	0.50	0.79	0.97	1.15	1.33	1.47	1.50	1.50
9 <16 Years	Non-dietary Objects	19	1.36	0.68	0.62	0.88	1.12	1.84	2.61	2.95	3.03
9 <16 Years	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Water bottle	9	3.80	1.90	1.06	2.99	3.33	4.32	6.65	6.75	6.78
≥16 Years	All Objects	14	1.35	1.08	0.13	0.86	1.21	1.42	3.00	4.19	4.48
≥16 Years	Body	2	0.75	0.31	0.54	0.64	0.75	0.86	0.95	0.96	0.97
≥16 Years	Clothes	11	2.03	2.87	0.61	0.86	1.30	1.49	6.28	9.74	10.61
≥16 Years	Dietary Objects	7	2.98	1.41	1.49	2.14	2.48	3.43	5.09	5.60	5.73
≥16 Years	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years	Hands	14	0.90	0.22	0.62	0.80	0.85	0.95	1.30	1.44	1.48
≥16 Years	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years	Non-dietary Objects	14	1.83	2.80	0.13	0.76	1.21	1.35	5.75	9.64	10.61
≥16 Years	Soccer ball	1	0.13	ND	ND	ND	ND	ND	ND	ND	ND



Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years	Water bottle	6	3.06	1.53	1.49	2.06	2.77	3.51	5.20	5.62	5.73
p value	All Objects	ND	0.209	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.122	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.407	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.699	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.002*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.492	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.708	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

S3.3.2.2. Activity Patterns by Age, when Participants Were Warming Up

Table S3-112. Frequency (Event/Hour) of Actions by Age, during Warm Up

Age Group	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=2)	Diving	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=2)	Jumping	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=2)	Slip or fall	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=2)	Diving	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=2)	Jumping	15.54	26.92	0.00	0.00	0.00	23.32	41.97	45.70	46.63
9 <16 Years (n=2)	Slip or fall	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=12)	Diving	1.29	4.29	0.00	0.00	0.00	0.00	7.12	12.81	14.23
≥16 Years (n=12)	Jumping	17.74	19.58	0.00	0.00	17.06	30.18	48.04	49.46	49.82
≥16 Years (n=12)	Slip or fall	8.09	26.82	0.00	0.00	0.00	0.00	44.47	80.05	88.94
p value	Diving	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Jumping	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Slip or fall	ND	ND	ND	ND	ND	ND	ND	ND	ND

NA: not applicable due to the activities not observed; and ND: not determined



Table S3-113. Frequency of Hand to Object Contact (Event/Hour) by Age, during Warm Up

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=3)	Artificial Turf	0.43	0.75	0.00	0.00	0.00	0.65	1.17	1.27	1.30
2 <9 Years (n=3)	Body	0.43	0.75	0.00	0.00	0.00	0.65	1.17	1.27	1.30
2 <9 Years (n=3)	Clothes	28.56	49.46	0.00	0.00	0.00	42.84	77.10	83.96	85.67
2 <9 Years (n=3)	Field Structures	1.73	3.00	0.00	0.00	0.00	2.60	4.67	5.09	5.19
2 <9 Years (n=3)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=3)	Head/face/hair	49.94	82.04	0.00	2.60	5.19	74.91	130.69	141.84	144.63
2 <9 Years (n=3)	Soccer ball	2.60	4.50	0.00	0.00	0.00	3.90	7.01	7.63	7.79
2 <9 Years (n=3)	Water bottle	9.64	16.70	0.00	0.00	0.00	14.47	26.04	28.35	28.93
2 <9 Years (n=3)	Dietary Objects	9.64	16.70	0.00	0.00	0.00	14.47	26.04	28.35	28.93
2 <9 Years (n=3)	Non-dietary Objects	83.69	74.95	0.00	53.22	106.44	125.54	140.81	143.87	144.63
2 <9 Years (n=3)	All Objects	93.33	87.52	0.00	53.22	106.44	140.00	166.85	172.22	173.56
9 <16 Years (n=2)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=2)	Body	16.76	24.97	0.00	2.41	4.81	25.14	41.40	44.65	45.46
9 <16 Years (n=2)	Clothes	127.11	31.89	90.92	115.14	139.36	145.21	149.89	150.83	151.06
9 <16 Years (n=2)	Field Structures	6.41	11.10	0.00	0.00	0.00	9.61	17.30	18.84	19.22
9 <16 Years (n=2)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=2)	Head/face/hair	14.88	15.11	0.00	7.21	14.42	22.32	28.63	29.89	30.21
9 <16 Years (n=2)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=2)	Water bottle	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=2)	Dietary Objects	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=2)	Non-dietary Objects	166.75	26.32	136.37	158.82	181.27	181.94	182.48	182.58	182.61
9 <16 Years (n=2)	All Objects	166.75	26.32	136.37	158.82	181.27	181.94	182.48	182.58	182.61
≥16 Years (n=13)	Artificial Turf	10.88	25.37	0.00	0.00	0.00	2.15	58.72	78.36	83.27
≥16 Years (n=13)	Body	51.99	69.40	0.00	4.91	18.52	75.18	181.85	190.24	192.34



Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=13)	Clothes	96.95	50.04	39.28	61.06	82.23	128.34	174.68	189.78	193.55
≥16 Years (n=13)	Field Structures	9.95	22.40	0.00	0.00	2.53	4.98	46.95	72.24	78.56
≥16 Years (n=13)	Footwear	30.15	33.72	0.00	0.00	16.64	53.90	81.09	92.16	94.93
≥16 Years (n=13)	Head/face/hair	24.37	19.37	0.00	5.20	24.98	41.21	49.15	55.17	56.68
≥16 Years (n=13)	Soccer ball	25.94	80.58	0.00	0.00	0.00	4.96	134.95	252.12	281.41
≥16 Years (n=13)	Water bottle	0.82	2.08	0.00	0.00	0.00	0.00	4.73	6.39	6.81
≥16 Years (n=13)	Dietary Objects	0.82	2.08	0.00	0.00	0.00	0.00	4.73	6.39	6.81
≥16 Years (n=13)	Non-dietary Objects	256.53	126.30	107.45	155.81	225.86	334.53	451.68	459.66	461.66
≥16 Years (n=13)	All Objects	257.34	125.51	107.45	155.81	225.86	334.53	451.68	459.66	461.66
p value*	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.620	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.620	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.449	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.055	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.772	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.101	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Kruskal Wallis

NA: not applicable due to no contact to these objects; and ND: not determined

Table S3-114. Duration of Hand to Object Contact (Min/Hour) by Age, during Warm Up

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=3)	Artificial Turf	0.01	0.01	0.00	0.00	0.00	0.01	0.02	0.02	0.02
2 <9 Years (n=3)	Body	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.01
2 <9 Years (n=3)	Clothes	3.49	6.04	0.00	0.00	0.00	5.24	9.42	10.26	10.47



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=3)	Field Structures	0.34	0.58	0.00	0.00	0.00	0.51	0.91	0.99	1.01
2 <9 Years (n=3)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=3)	Head/face/hair	0.67	1.11	0.00	0.04	0.07	1.01	1.76	1.91	1.95
2 <9 Years (n=3)	Soccer ball	0.10	0.17	0.00	0.00	0.00	0.15	0.26	0.28	0.29
2 <9 Years (n=3)	Water bottle	0.71	1.22	0.00	0.00	0.00	1.06	1.91	2.08	2.12
2 <9 Years (n=3)	Dietary Objects	0.71	1.22	0.00	0.00	0.00	1.06	1.91	2.08	2.12
2 <9 Years (n=3)	Non-dietary Objects	4.60	6.36	0.00	0.98	1.95	6.91	10.87	11.66	11.86
2 <9 Years (n=3)	All Objects	5.31	6.03	0.00	2.04	4.07	7.97	11.08	11.70	11.86
9 <16 Years (n=2)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=2)	Body	0.23	0.31	0.00	0.05	0.10	0.34	0.53	0.57	0.58
9 <16 Years (n=2)	Clothes	15.09	11.52	1.83	11.27	20.71	21.72	22.52	22.68	22.72
9 <16 Years (n=2)	Field Structures	0.25	0.44	0.00	0.00	0.00	0.38	0.68	0.74	0.76
9 <16 Years (n=2)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=2)	Head/face/hair	0.32	0.35	0.00	0.13	0.25	0.48	0.66	0.69	0.70
9 <16 Years (n=2)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=2)	Water bottle	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=2)	Dietary Objects	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=2)	Non-dietary Objects	15.92	11.73	2.41	12.18	21.94	22.68	23.27	23.39	23.42
9 <16 Years (n=2)	All Objects	15.92	11.73	2.41	12.18	21.94	22.68	23.27	23.39	23.42
≥16 Years (n=13)	Artificial Turf	0.26	0.55	0.00	0.00	0.00	0.13	1.28	1.65	1.74
≥16 Years (n=13)	Body	1.68	2.50	0.00	0.04	0.64	1.75	6.47	7.42	7.66
≥16 Years (n=13)	Clothes	14.49	13.49	3.92	5.30	9.67	17.33	40.07	46.44	48.03
≥16 Years (n=13)	Field Structures	1.37	4.42	0.00	0.00	0.05	0.07	7.36	13.78	15.38
≥16 Years (n=13)	Footwear	1.52	1.87	0.00	0.00	0.76	2.74	4.85	5.05	5.10
≥16 Years (n=13)	Head/face/hair	0.77	0.81	0.00	0.10	0.68	0.85	2.30	2.44	2.48
≥16 Years (n=13)	Soccer ball	0.54	1.58	0.00	0.00	0.00	0.12	2.82	5.00	5.54
≥16 Years (n=13)	Water bottle	0.12	0.40	0.00	0.00	0.00	0.00	0.68	1.24	1.38



Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=13)	Dietary Objects	0.12	0.40	0.00	0.00	0.00	0.00	0.68	1.24	1.38
≥16 Years (n=13)	Non-dietary Objects	20.87	12.00	10.53	13.68	15.62	22.78	43.83	48.00	49.04
≥16 Years (n=13)	All Objects	20.99	11.90	11.54	13.68	15.62	22.81	43.83	48.00	49.04
p value*	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.620	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.620	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.449	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.069	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.871	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.217	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Kruskal Wallis

NA: not applicable due to no contact to these objects; and ND: not determined

Table S3-115. Median Duration of Hand to Object Contact (Second) by Age, during Warm Up

Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years	Artificial Turf	1	0.78	ND	ND	ND	ND	ND	ND	ND	ND
2 <9 Years	Body	1	0.42	ND	ND	ND	ND	ND	ND	ND	ND
2 <9 Years	Clothes	1	5.38	ND	ND	ND	ND	ND	ND	ND	ND
2 <9 Years	Field Structures	1	9.01	ND	ND	ND	ND	ND	ND	ND	ND
2 <9 Years	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Head/face/hair	2	0.69	0.01	0.68	0.69	0.69	0.69	0.69	0.69	0.69
2 <9 Years	Soccer ball	1	2.47	ND	ND	ND	ND	ND	ND	ND	ND
2 <9 Years	Water bottle	1	4.40	ND	ND	ND	ND	ND	ND	ND	ND
2 <9 Years	Dietary Objects	1	4.40	ND	ND	ND	ND	ND	ND	ND	ND



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Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years	Non-dietary Objects	2	2.58	2.68	0.68	1.63	2.58	3.53	4.29	4.44	4.48
2 <9 Years	All Objects	2	2.66	2.57	0.85	1.75	2.66	3.57	4.30	4.44	4.48
9 <16 Years	Artificial Turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Body	2	1.02	0.35	0.77	0.89	1.02	1.14	1.24	1.26	1.26
9 <16 Years	Clothes	2	4.81	3.68	1.15	2.95	4.75	6.63	8.14	8.44	8.52
9 <16 Years	Field Structures	1	2.00	ND	ND	ND	ND	ND	ND	ND	ND
9 <16 Years	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Head/face/hair	2	1.13	0.36	0.88	1.01	1.13	1.26	1.36	1.38	1.38
9 <16 Years	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Water bottle	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Dietary Objects	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Non-dietary Objects	2	3.15	2.04	0.92	2.26	3.59	4.26	4.79	4.89	4.92
9 <16 Years	All Objects	2	3.15	2.04	0.92	2.26	3.59	4.26	4.79	4.89	4.92
≥16 Years	Artificial Turf	3	4.10	5.94	0.62	0.67	0.71	5.83	9.93	10.75	10.95
≥16 Years	Body	11	1.45	0.99	0.44	0.77	0.98	2.00	3.06	3.13	3.15
≥16 Years	Clothes	13	6.39	6.66	1.23	2.28	4.26	7.21	17.38	23.76	25.36
≥16 Years	Field Structures	8	2.02	2.04	0.73	0.79	0.91	2.30	5.25	6.12	6.34
≥16 Years	Footwear	8	2.61	2.77	0.73	1.44	1.52	2.42	6.94	8.84	9.31
≥16 Years	Head/face/hair	11	1.32	0.22	0.95	1.18	1.33	1.45	1.63	1.66	1.67
≥16 Years	Soccer ball	5	1.19	0.33	0.89	0.90	1.06	1.48	1.58	1.60	1.61
≥16 Years	Water bottle	2	4.84	3.88	2.09	3.46	4.84	6.21	7.30	7.52	7.58
≥16 Years	Dietary Objects	2	4.84	3.88	2.09	3.46	4.84	6.21	7.30	7.52	7.58
≥16 Years	Non-dietary Objects	13	2.41	1.81	0.94	1.24	2.10	2.56	5.47	7.10	7.50
≥16 Years	All Objects	13	2.42	1.81	0.94	1.24	2.15	2.56	5.44	7.09	7.50
p value*	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.655	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.655	ND	ND	ND	ND	ND	ND	ND	ND



Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.860	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.254	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.936	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Kruskal Wallis

NA: not applicable due to no contact with these objects; and ND: not determined

Table S3-116. Hourly Duration (Min/Hour) of Player Intensity by Age, during Warm Up

Age Group	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=2)	High	9.48	13.40	0.00	4.74	9.48	14.21	18.00	18.76	18.95
2 <9 Years (n=2)	Moderate	30.31	15.68	19.22	24.77	30.31	35.86	40.29	41.18	41.40
2 <9 Years (n=2)	Light	10.45	6.60	5.78	8.11	10.45	12.78	14.64	15.02	15.11
2 <9 Years (n=2)	Resting	9.77	4.32	6.71	8.24	9.77	11.29	12.51	12.76	12.82
9 <16 Years (n=3)	High	4.12	6.36	0.00	0.46	0.91	6.18	10.40	11.24	11.45
9 <16 Years (n=3)	Moderate	18.64	6.60	11.12	16.21	21.30	22.40	23.28	23.46	23.50
9 <16 Years (n=3)	Light	20.62	0.46	20.09	20.48	20.86	20.88	20.90	20.90	20.90
9 <16 Years (n=3)	Resting	16.62	11.93	4.19	10.95	17.70	22.84	26.95	27.77	27.98
≥16 Years (n=11)	High	3.82	4.29	0.00	0.26	1.21	7.88	10.01	10.06	10.07
≥16 Years (n=11)	Moderate	23.24	11.31	7.50	15.80	22.94	34.31	37.62	38.32	38.50
≥16 Years (n=11)	Light	21.84	8.67	10.57	15.44	20.73	27.78	34.03	37.71	38.63
≥16 Years (n=11)	Resting	11.11	8.21	0.97	3.54	11.26	16.29	23.42	23.69	23.76
p value*	High	0.949	ND	ND	ND	ND	ND	ND	ND	ND
p value	Moderate	0.607	ND	ND	ND	ND	ND	ND	ND	ND
p value	Light	0.218	ND	ND	ND	ND	ND	ND	ND	ND
p value	Resting	0.519	ND	ND	ND	ND	ND	ND	ND	ND



*p value from Kruskal Wallis
ND: not determined

Table S3-117. Duration (Min/Hour) of Macro-Activities by Age, during Warm Up

Age Group	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=2)	Rest Standing	9.15	3.45	6.71	7.93	9.15	10.37	11.35	11.54	11.59
2 <9 Years (n=2)	Running	39.79	2.28	38.18	38.99	39.79	40.60	41.24	41.37	41.40
2 <9 Years (n=2)	Sit on ground	0.62	0.87	0.00	0.31	0.62	0.92	1.17	1.22	1.23
2 <9 Years (n=2)	Stretching	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=2)	Walking	10.45	6.60	5.78	8.11	10.45	12.78	14.64	15.02	15.11
9 <16 Years (n=2)	Rest Standing	17.93	10.89	5.43	14.22	23.01	24.19	25.13	25.31	25.36
9 <16 Years (n=2)	Running	10.29	1.53	9.18	9.42	9.65	10.84	11.79	11.98	12.03
9 <16 Years (n=2)	Sit on ground	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=2)	Stretching	8.29	13.77	0.00	0.34	0.68	12.43	21.83	23.71	24.18
9 <16 Years (n=2)	Walking	23.18	2.31	21.21	21.91	22.61	24.17	25.41	25.66	25.72
≥16 Years (n=12)	Rest Standing	10.34	7.90	0.97	2.53	12.30	14.77	22.08	22.88	23.08
≥16 Years (n=12)	Running	18.72	11.35	0.00	12.80	15.35	25.78	34.78	37.76	38.50
≥16 Years (n=12)	Sit on ground	0.60	0.94	0.00	0.00	0.00	1.03	2.28	2.49	2.54
≥16 Years (n=12)	Stretching	9.89	11.87	0.00	0.05	7.50	15.52	29.85	33.33	34.20
≥16 Years (n=12)	Walking	19.62	7.56	8.06	13.56	20.80	24.73	29.12	29.37	29.43
p value	Rest Standing	0.253	ND	ND	ND	ND	ND	ND	ND	ND
p value	Running	0.170	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on ground	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Stretching	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Walking	0.049*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

NA: not applicable due to these activities not observed; and ND: not determined

Table S3-118. Mouthing Frequency (Event/Hour) by Age, during Warm Up

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=2)	All Objects	2.54	4.39	0.00	0.00	0.00	3.81	6.85	7.46	7.61
2 <9 Years (n=2)	Body	NA	NA	NA	NA	NA	NA	NA	NA	NA



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=2)	Clothes	2.54	4.39	0.00	0.00	0.00	3.81	6.85	7.46	7.61
2 <9 Years (n=2)	Dietary Objects	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=2)	Hands	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=2)	Non-dietary Objects	2.54	4.39	0.00	0.00	0.00	3.81	6.85	7.46	7.61
2 <9 Years (n=2)	Water bottle	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=3)	All Objects	24.53	31.38	0.00	0.00	16.26	40.79	60.64	64.61	65.60
9 <16 Years (n=3)	Body	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=3)	Clothes	24.53	31.38	0.00	0.00	16.26	40.79	60.64	64.61	65.60
9 <16 Years (n=3)	Dietary Objects	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=3)	Hands	6.30	12.60	0.00	0.00	0.00	6.30	21.42	24.44	25.20
9 <16 Years (n=3)	Non-dietary Objects	24.53	31.38	0.00	0.00	16.26	40.79	60.64	64.61	65.60
9 <16 Years (n=3)	Water bottle	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=11)	All Objects	6.11	6.46	0.00	0.00	5.07	12.08	15.55	17.32	17.76
≥16 Years (n=11)	Body	0.15	0.53	0.00	0.00	0.00	0.00	0.82	1.62	1.82
≥16 Years (n=11)	Clothes	5.04	6.86	0.00	0.00	0.00	12.08	15.55	17.32	17.76
≥16 Years (n=11)	Dietary Objects	0.46	1.58	0.00	0.00	0.00	0.00	2.46	4.87	5.47
≥16 Years (n=11)	Hands	9.40	11.87	0.00	0.00	5.84	12.86	28.27	39.13	41.85
≥16 Years (n=11)	Non-dietary Objects	5.65	6.56	0.00	0.00	3.22	12.08	15.55	17.32	17.76
≥16 Years (n=11)	Water bottle	0.46	1.58	0.00	0.00	0.00	0.00	2.46	4.87	5.47
p value	All Objects	0.832	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.747	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.557	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.747	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.914	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.604	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.163	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

NA: not applicable due to no mouth contact with these objects; and ND: not determined



Table S3-119. Mouthing Duration (Min/Hour) by Age, during Warm Up

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=2)	All Objects	0.14	0.24	0.00	0.00	0.00	0.21	0.37	0.40	0.41
2 <9 Years (n=2)	Body	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=2)	Clothes	0.14	0.24	0.00	0.00	0.00	0.21	0.37	0.40	0.41
2 <9 Years (n=2)	Dietary Objects	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=2)	Hands	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=2)	Non-dietary Objects	0.14	0.24	0.00	0.00	0.00	0.21	0.37	0.40	0.41
2 <9 Years (n=2)	Water bottle	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=3)	All Objects	0.43	0.51	0.00	0.00	0.37	0.80	0.95	0.98	0.99
9 <16 Years (n=3)	Body	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=3)	Clothes	0.43	0.51	0.00	0.00	0.37	0.80	0.95	0.98	0.99
9 <16 Years (n=3)	Dietary Objects	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=3)	Hands	0.07	0.14	0.00	0.00	0.00	0.07	0.23	0.26	0.27
9 <16 Years (n=3)	Non-dietary Objects	0.43	0.51	0.00	0.00	0.37	0.80	0.95	0.98	0.99
9 <16 Years (n=3)	Water bottle	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=11)	All Objects	0.12	0.14	0.00	0.00	0.10	0.20	0.34	0.40	0.42
≥16 Years (n=11)	Body	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.04	0.04
≥16 Years (n=11)	Clothes	0.09	0.14	0.00	0.00	0.00	0.18	0.32	0.40	0.42
≥16 Years (n=11)	Dietary Objects	0.01	0.03	0.00	0.00	0.00	0.00	0.04	0.09	0.10
≥16 Years (n=11)	Hands	0.18	0.19	0.00	0.00	0.13	0.30	0.48	0.56	0.58
≥16 Years (n=11)	Non-dietary Objects	0.12	0.14	0.00	0.00	0.05	0.20	0.34	0.40	0.42
≥16 Years (n=11)	Water bottle	0.01	0.03	0.00	0.00	0.00	0.00	0.04	0.09	0.10
p value*	All Objects	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.747	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.605	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.747	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.402	ND	ND	ND	ND	ND	ND	ND	ND



Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Non-dietary Objects	0.724	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.111	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Kruskal Wallis

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-120. Mouthing Median Duration (Second) by Age, during Warm Up

Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years	All Objects	1	3.25	ND	ND	ND	ND	ND	ND	ND	ND
2 <9 Years	Body	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Clothes	1	3.25	ND	ND	ND	ND	ND	ND	ND	ND
2 <9 Years	Dietary Objects	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Hands	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Non-dietary Objects	1	3.25	ND	ND	ND	ND	ND	ND	ND	ND
2 <9 Years	Water bottle	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	All Objects	3	1.25	0.82	0.67	0.96	1.25	1.54	1.77	1.82	1.83
9 <16 Years	Body	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Clothes	2	1.25	0.82	0.67	0.96	1.25	1.54	1.77	1.82	1.83
9 <16 Years	Dietary Objects	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Hands	1	0.45	ND	ND	ND	ND	ND	ND	ND	ND
9 <16 Years	Non-dietary Objects	3	1.25	0.82	0.67	0.96	1.25	1.54	1.77	1.82	1.83
9 <16 Years	Water bottle	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years	All Objects	11	1.22	0.78	0.75	0.85	0.91	1.12	2.42	2.85	2.96
≥16 Years	Body	1	1.22	ND	ND	ND	ND	ND	ND	ND	ND
≥16 Years	Clothes	5	0.90	0.16	0.75	0.83	0.87	0.91	1.12	1.16	1.17
≥16 Years	Dietary Objects	1	0.93	ND	ND	ND	ND	ND	ND	ND	ND
≥16 Years	Hands	8	1.36	0.89	0.71	0.83	1.17	1.36	2.75	3.30	3.44
≥16 Years	Non-dietary Objects	11	1.24	0.78	0.75	0.85	0.91	1.20	2.44	2.85	2.96
≥16 Years	Water bottle	1	0.93	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.241	ND	ND	ND	ND	ND	ND	ND	ND



Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Body	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.311	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.283	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

S3.3.2.3. Activity Patterns by Age, on Break/After/Before Game

Table S3-121. Frequency (Event/Hour) of Actions by Age, on Break/After/Before Game

Age Group	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=3)	Jumping	1.09	2.88	0.00	0.00	0.00	0.00	5.34	7.17	7.63
2 <9 Years (n=3)	Slip or fall	0.23	0.61	0.00	0.00	0.00	0.00	1.13	1.52	1.62
2 <9 Years (n=3)	Tackling or sliding	0.30	0.79	0.00	0.00	0.00	0.00	1.46	1.96	2.08
9 <16 Years (n=8)	Jumping	3.61	9.11	0.00	0.00	0.00	0.00	23.18	32.18	34.43
9 <16 Years (n=8)	Slip or fall	1.39	3.15	0.00	0.00	0.00	0.00	7.62	10.71	11.48
9 <16 Years (n=8)	Tackling or sliding	0.14	0.63	0.00	0.00	0.00	0.00	0.27	2.24	2.73
≥16 Years (n=2)	Jumping	0.40	1.50	0.00	0.00	0.00	0.00	1.97	4.89	5.62
≥16 Years (n=2)	Slip or fall	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=2)	Tackling or sliding	NA	NA	NA	NA	NA	NA	NA	NA	NA
p value*	Jumping	0.516	ND	ND	ND	ND	ND	ND	ND	ND
p value	Slip or fall	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Tackling or sliding	ND	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Kruskal Wallis

NA: not applicable due to the activities not observed; and ND: not determined

Table S3-122. Frequency of Hand to Object Contact (Event/Hour) by Age, on Break/After/Before Game

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Artificial Turf	13.27	29.31	0.00	0.00	0.88	6.31	57.96	75.10	79.38



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Body	26.69	14.21	6.38	17.81	28.23	37.74	40.11	40.92	41.12
2 <9 Years (n=7)	Clothes	67.37	30.04	31.75	44.79	56.26	96.94	100.03	100.09	100.11
2 <9 Years (n=7)	Field Structures	13.55	14.16	0.00	4.96	9.56	16.51	35.22	40.92	42.34
2 <9 Years (n=7)	Footwear	4.94	4.32	0.00	2.09	3.19	7.44	11.02	12.08	12.35
2 <9 Years (n=7)	Head/face/hair	29.46	38.70	0.00	11.60	17.56	25.41	89.30	109.60	114.67
2 <9 Years (n=7)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Soccer ball	21.95	21.51	0.00	1.97	27.10	32.88	50.06	55.52	56.88
2 <9 Years (n=7)	Water bottle	49.87	43.56	25.50	26.36	26.70	49.33	117.15	139.82	145.49
2 <9 Years (n=7)	Dietary Objects	49.87	43.56	25.50	26.36	26.70	49.33	117.15	139.82	145.49
2 <9 Years (n=7)	Non-dietary Objects	195.91	78.39	129.33	148.00	181.09	201.65	315.32	352.38	361.64
2 <9 Years (n=7)	All Objects	245.77	78.39	178.44	201.38	221.55	254.20	368.94	401.20	409.27
9 <16 Years (n=18)	Artificial Turf	2.53	4.48	0.00	0.00	0.00	3.29	9.65	15.24	16.63
9 <16 Years (n=18)	Body	19.80	23.43	0.00	0.00	13.32	32.32	65.25	67.48	68.04
9 <16 Years (n=18)	Clothes	129.28	69.12	40.49	79.72	119.81	143.86	256.73	298.97	309.53
9 <16 Years (n=18)	Field Structures	18.79	20.14	0.00	3.86	10.50	32.62	47.15	67.56	72.66
9 <16 Years (n=18)	Footwear	12.42	15.63	0.00	0.00	8.84	15.78	37.50	56.48	61.23
9 <16 Years (n=18)	Head/face/hair	24.77	21.19	0.00	8.44	19.19	33.71	63.25	72.91	75.33
9 <16 Years (n=18)	Shin guards	7.09	13.12	0.00	0.00	0.00	6.71	28.05	47.51	52.37
9 <16 Years (n=18)	Soccer ball	23.91	22.52	0.00	1.60	22.69	39.49	61.56	73.09	75.97
9 <16 Years (n=18)	Water bottle	58.71	78.80	0.00	14.69	33.26	55.36	184.85	296.15	323.97
9 <16 Years (n=18)	Dietary Objects	58.78	78.78	0.00	14.69	34.54	55.36	184.85	296.15	323.97
9 <16 Years (n=18)	Non-dietary Objects	250.45	80.39	97.17	204.05	220.80	288.34	388.00	438.42	451.02
9 <16 Years (n=18)	All Objects	309.23	92.41	210.10	242.56	283.35	349.19	498.36	520.83	526.45
≥16 Years (n=15)	Artificial Turf	2.32	5.26	0.00	0.00	0.00	0.00	14.29	15.15	15.36
≥16 Years (n=15)	Body	15.24	15.28	0.00	4.97	10.49	18.37	45.79	48.64	49.35



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=15)	Clothes	108.23	40.02	59.51	81.90	104.03	121.48	181.45	195.49	199.00
≥16 Years (n=15)	Field Structures	18.90	31.71	0.00	3.65	9.00	12.18	80.22	108.70	115.82
≥16 Years (n=15)	Footwear	12.26	16.98	0.00	0.00	3.43	16.54	42.11	43.80	44.22
≥16 Years (n=15)	Head/face/hair	25.23	19.18	0.00	14.38	21.71	29.17	56.04	72.98	77.21
≥16 Years (n=15)	Shin guards	0.98	3.67	0.00	0.00	0.00	0.00	4.80	11.94	13.72
≥16 Years (n=15)	Soccer ball	3.34	9.84	0.00	0.00	0.00	0.00	18.29	32.96	36.63
≥16 Years (n=15)	Water bottle	36.53	36.73	0.00	10.75	29.68	55.51	91.88	124.22	132.31
≥16 Years (n=15)	Dietary Objects	37.12	37.37	0.00	10.75	29.68	55.51	97.24	125.30	132.31
≥16 Years (n=15)	Non-dietary Objects	211.56	81.65	80.12	168.84	194.85	262.11	338.93	391.95	405.21
≥16 Years (n=15)	All Objects	248.68	84.18	89.93	192.53	226.47	317.25	362.07	396.58	405.21
p value	Artificial Turf	0.860	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.041*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.849	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.334	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.606	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.926	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.066*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.292	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.670	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.011*	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.026*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

NA: not applicable due to no contact with the object; and ND: not determined



Table S3-123. Duration of Hand to Object Contact (Min/Hour) by Age, on Break/After/Before Game

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Artificial Turf	1.24	3.12	0.00	0.00	0.02	0.18	5.90	7.83	8.31
2 <9 Years (n=7)	Body	4.44	4.38	0.38	0.63	3.22	7.33	10.31	11.33	11.58
2 <9 Years (n=7)	Clothes	12.32	10.09	2.75	7.37	8.45	13.37	27.58	32.39	33.59
2 <9 Years (n=7)	Field Structures	1.44	1.64	0.00	0.28	1.02	1.90	3.90	4.55	4.71
2 <9 Years (n=7)	Footwear	0.42	0.33	0.00	0.16	0.49	0.64	0.84	0.86	0.87
2 <9 Years (n=7)	Head/face/hair	1.49	2.48	0.00	0.31	0.42	1.20	5.29	6.67	7.01
2 <9 Years (n=7)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Soccer ball	0.95	0.94	0.00	0.05	0.91	1.71	2.12	2.18	2.20
2 <9 Years (n=7)	Water bottle	9.75	6.20	3.43	5.80	8.28	12.12	19.07	20.41	20.74
2 <9 Years (n=7)	Dietary Objects	9.75	6.20	3.43	5.80	8.28	12.12	19.07	20.41	20.74
2 <9 Years (n=7)	Non-dietary Objects	24.19	8.01	14.97	18.18	23.78	28.75	35.47	36.46	36.71
2 <9 Years (n=7)	All Objects	33.94	7.72	22.04	30.22	33.44	38.67	43.52	44.17	44.33
9 <16 Years (n=18)	Artificial Turf	0.08	0.18	0.00	0.00	0.00	0.07	0.43	0.65	0.70
9 <16 Years (n=18)	Body	3.56	5.40	0.00	0.00	0.56	5.93	13.21	17.40	18.45
9 <16 Years (n=18)	Clothes	17.12	9.43	4.17	10.48	16.72	21.38	35.56	37.78	38.33
9 <16 Years (n=18)	Field Structures	2.63	3.95	0.00	0.15	0.46	4.41	11.25	13.39	13.93
9 <16 Years (n=18)	Footwear	1.36	2.54	0.00	0.00	0.19	1.85	3.25	9.55	11.12
9 <16 Years (n=18)	Head/face/hair	0.79	0.78	0.00	0.26	0.52	1.17	2.10	2.54	2.65
9 <16 Years (n=18)	Shin guards	0.71	1.29	0.00	0.00	0.00	0.85	2.83	4.59	5.03
9 <16 Years (n=18)	Soccer ball	1.67	2.23	0.00	0.04	0.99	2.13	5.22	8.15	8.88
9 <16 Years (n=18)	Water bottle	9.18	10.01	0.00	2.50	5.10	13.77	32.15	33.57	33.92
9 <16 Years (n=18)	Dietary Objects	9.19	10.01	0.00	2.50	5.10	13.77	32.15	33.57	33.92
9 <16 Years (n=18)	Non-dietary Objects	28.92	13.25	7.38	16.97	30.17	38.95	44.87	51.77	53.50
9 <16 Years (n=18)	All Objects	38.11	12.98	12.69	29.50	39.77	44.50	58.71	59.50	59.70
≥16 Years (n=15)	Artificial Turf	0.79	1.65	0.00	0.00	0.00	0.00	3.95	4.85	5.08
≥16 Years (n=15)	Body	1.10	1.89	0.00	0.23	0.63	1.11	3.63	6.66	7.42



Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=15)	Clothes	14.45	8.60	5.79	8.90	10.58	17.95	30.02	33.35	34.18
≥16 Years (n=15)	Field Structures	1.91	3.76	0.00	0.12	0.52	1.20	8.09	12.93	14.14
≥16 Years (n=15)	Footwear	2.04	3.15	0.00	0.00	0.35	2.30	7.77	9.39	9.79
≥16 Years (n=15)	Head/face/hair	0.98	1.24	0.00	0.40	0.70	1.00	2.64	4.58	5.06
≥16 Years (n=15)	Shin guards	0.07	0.25	0.00	0.00	0.00	0.00	0.33	0.81	0.93
≥16 Years (n=15)	Soccer ball	0.11	0.28	0.00	0.00	0.00	0.00	0.69	0.87	0.91
≥16 Years (n=15)	Water bottle	5.86	5.25	0.00	1.87	4.72	7.21	15.25	16.07	16.28
≥16 Years (n=15)	Dietary Objects	5.91	5.31	0.00	1.87	4.72	7.21	15.25	16.07	16.28
≥16 Years (n=15)	Non-dietary Objects	24.27	8.62	10.87	18.84	24.44	30.70	36.18	36.22	36.23
≥16 Years (n=15)	All Objects	30.17	9.10	15.67	25.80	28.91	35.46	43.94	49.46	50.84
p value	Artificial Turf	0.857	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.452	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.912	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.437	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.549	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.925	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.077	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.625	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.009*	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.320	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

NA: not applicable due to no contact with the object; and ND: not determined

Table S3-124. Median Duration of Hand to Object Contact (Second) by Age, on Break/After/Before Game

Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years	Artificial Turf	4	1.32	0.45	1.05	1.07	1.13	1.38	1.87	1.97	1.99



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Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years	Body	7	4.23	3.65	1.10	1.63	3.28	5.47	9.89	10.80	11.03
2 <9 Years	Clothes	7	4.66	2.10	2.15	3.44	3.87	5.98	7.60	7.71	7.73
2 <9 Years	Field Structures	6	4.42	2.60	2.37	2.76	3.11	5.68	8.20	8.67	8.78
2 <9 Years	Footwear	6	5.27	2.41	3.20	3.45	4.46	6.41	8.67	9.18	9.30
2 <9 Years	Head/face/hair	6	1.66	0.76	0.65	1.25	1.50	2.19	2.61	2.68	2.70
2 <9 Years	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Soccer ball	5	1.56	0.23	1.20	1.54	1.58	1.67	1.80	1.82	1.83
2 <9 Years	Water bottle	7	8.22	3.52	4.07	6.18	7.19	10.07	13.33	13.70	13.79
2 <9 Years	Dietary Objects	7	8.22	3.52	4.07	6.18	7.19	10.07	13.33	13.70	13.79
2 <9 Years	Non-dietary Objects	7	3.18	1.06	2.19	2.59	2.73	3.40	4.82	5.23	5.33
2 <9 Years	All Objects	7	3.73	1.23	2.32	3.06	3.42	4.21	5.56	5.76	5.81
9 <16 Years	Artificial Turf	7	1.65	1.05	0.47	0.64	2.03	2.43	2.85	2.90	2.91
9 <16 Years	Body	12	3.74	3.02	0.99	1.41	3.17	4.98	9.66	10.08	10.18
9 <16 Years	Clothes	18	4.37	1.33	2.43	3.31	4.26	5.38	6.29	6.75	6.87
9 <16 Years	Field Structures	14	4.99	4.64	1.07	2.51	3.93	6.12	11.74	18.32	19.96
9 <16 Years	Footwear	11	2.97	1.39	1.12	2.11	2.73	3.84	5.18	5.30	5.33
9 <16 Years	Head/face/hair	16	1.46	0.78	0.58	1.03	1.25	1.63	2.88	3.70	3.91
9 <16 Years	Shin guards	9	5.74	5.36	1.23	2.28	3.79	5.39	15.12	16.38	16.70
9 <16 Years	Soccer ball	14	2.54	1.91	1.06	1.54	1.95	2.46	5.65	7.94	8.52
9 <16 Years	Water bottle	18	7.17	2.48	3.07	5.44	7.13	8.92	11.33	11.38	11.39
9 <16 Years	Dietary Objects	18	7.14	2.45	3.07	5.44	7.13	8.82	11.33	11.38	11.39
9 <16 Years	Non-dietary Objects	18	3.23	0.99	1.61	2.55	2.96	3.63	4.69	5.49	5.70
9 <16 Years	All Objects	18	3.60	1.15	1.97	2.66	3.35	4.08	5.44	5.76	5.83
≥16 Years	Artificial Turf	3	20.41	23.61	2.48	7.03	11.58	29.37	43.61	46.46	47.17
≥16 Years	Body	13	2.46	1.86	0.16	1.12	1.75	3.99	5.16	6.21	6.47
≥16 Years	Clothes	15	4.93	2.21	2.67	3.33	4.45	6.16	8.14	10.25	10.78
≥16 Years	Field Structures	13	4.46	2.68	1.69	2.60	3.44	6.21	8.52	10.29	10.73



Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years	Footwear	8	6.38	2.13	3.87	4.63	6.12	8.13	9.04	9.12	9.13
≥16 Years	Head/face/hair	14	1.63	0.54	1.05	1.16	1.45	2.02	2.49	2.72	2.77
≥16 Years	Shin guards	1	2.75	ND	ND	ND	ND	ND	ND	ND	ND
≥16 Years	Soccer ball	3	3.28	3.19	0.82	1.48	2.14	4.51	6.41	6.79	6.88
≥16 Years	Water bottle	11	8.74	5.15	2.27	5.51	7.55	11.64	16.81	17.89	18.16
≥16 Years	Dietary Objects	11	8.58	5.21	2.27	5.36	6.76	11.64	16.81	17.89	18.16
≥16 Years	Non-dietary Objects	15	3.85	1.54	2.04	2.58	3.35	5.26	6.27	6.28	6.29
≥16 Years	All Objects	15	4.13	1.43	2.45	2.94	3.65	5.37	6.29	6.34	6.35
p value*	Artificial Turf	ND	0.335	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.576	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.996	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.072	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.439	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.087	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	0.565	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.222	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.559	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.602	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.854	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Kruskal Wallis

NA: not applicable due to no contact with these objects; and ND: not determined

Table S3-125. Hourly Duration (Min/Hour) of Player Intensity by Age, on Break/After/Before Game

Age Group	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	High	2.92	1.64	0.52	1.79	3.51	3.78	4.87	5.19	5.27
2 <9 Years (n=7)	Moderate	6.77	5.34	0.81	2.72	4.87	11.06	13.69	14.04	14.13
2 <9 Years (n=7)	Light	10.83	3.66	3.92	10.02	10.98	12.97	14.83	14.91	14.93



Age Group	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Resting	39.49	7.78	31.10	34.72	37.54	42.10	50.89	53.49	54.14
9 <16 Years (n=18)	High	0.97	1.09	0.00	0.00	0.38	1.78	2.72	2.77	2.78
9 <16 Years (n=18)	Moderate	2.28	2.00	0.00	0.74	1.98	3.64	5.29	7.03	7.47
9 <16 Years (n=18)	Light	19.66	10.78	4.04	12.16	19.32	24.73	39.04	39.48	39.59
9 <16 Years (n=18)	Resting	37.09	12.13	15.37	29.40	39.56	46.13	54.02	55.22	55.52
≥16 Years (n=15)	High	0.70	1.29	0.00	0.00	0.06	0.56	3.08	4.12	4.38
≥16 Years (n=15)	Moderate	1.12	1.29	0.00	0.00	0.82	2.09	3.08	3.89	4.09
≥16 Years (n=15)	Light	21.80	6.03	8.29	19.09	23.24	24.90	30.55	30.68	30.71
≥16 Years (n=15)	Resting	36.39	6.48	27.15	32.49	35.46	37.77	48.26	50.39	50.92
p value*	High	0.008	ND	ND	ND	ND	ND	ND	ND	ND
p value	Moderate	0.010	ND	ND	ND	ND	ND	ND	ND	ND
p value	Light	0.010	ND	ND	ND	ND	ND	ND	ND	ND
p value	Resting	0.667	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Kruskal Wallis
ND: not determined

Table S3-126. Duration (Min/Hour) of Macro-Activities by Age, on Break/After/Before Game

Age Group	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Push ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Rest Standing	24.28	8.24	14.00	17.82	23.74	30.08	34.59	36.04	36.40
2 <9 Years (n=7)	Running	8.77	6.62	1.09	2.98	9.02	14.15	16.73	16.95	17.00
2 <9 Years (n=7)	Sit on chair	10.27	10.73	0.00	0.56	8.41	17.98	24.65	26.07	26.43
2 <9 Years (n=7)	Sit on ground	5.32	9.64	0.00	0.63	1.08	4.20	20.66	25.33	26.50
2 <9 Years (n=7)	Stretching	0.44	0.57	0.00	0.00	0.00	0.93	1.16	1.24	1.26
2 <9 Years (n=7)	Walking	10.86	3.97	4.01	9.84	10.55	12.77	15.82	16.16	16.24
9 <16 Years (n=15)	Push ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=15)	Rest Standing	32.45	12.37	10.59	23.18	33.47	44.29	48.04	49.34	49.67
9 <16 Years (n=15)	Running	2.46	2.60	0.00	0.57	1.89	3.30	5.73	9.61	10.58



Age Group	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
9 <16 Years (n=15)	Sit on chair	0.28	0.99	0.00	0.00	0.00	0.00	1.45	3.68	4.24
9 <16 Years (n=15)	Sit on ground	3.77	6.40	0.00	0.00	0.18	4.72	14.53	21.94	23.79
9 <16 Years (n=15)	Stretching	0.03	0.11	0.00	0.00	0.00	0.00	0.17	0.39	0.45
9 <16 Years (n=15)	Walking	20.88	11.41	4.00	12.74	21.27	25.10	40.05	40.51	40.63
≥16 Years (n=15)	Push ups	0.044	0.16	0	0	0	0	0.2135	0.5307	0.61
≥16 Years (n=15)	Rest Standing	33.01	7.78	24.15	27.60	32.47	34.14	48.26	50.39	50.92
≥16 Years (n=15)	Running	1.12	1.42	0.00	0.00	0.70	1.76	3.48	4.58	4.86
≥16 Years (n=15)	Sit on chair	0.62	1.33	0.00	0.00	0.00	0.18	3.62	3.82	3.87
≥16 Years (n=15)	Sit on ground	1.20	2.89	0.00	0.00	0.00	0.00	7.80	8.39	8.54
≥16 Years (n=15)	Stretching	0.28	0.65	0.00	0.00	0.00	0.00	1.42	2.14	2.32
≥16 Years (n=15)	Walking	23.71	7.13	8.29	20.53	24.44	29.43	32.21	32.55	32.63
p value	Push ups	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Rest Standing	0.007*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Running	0.126	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on chair	0.042*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on ground	0.159	ND	ND	ND	ND	ND	ND	ND	ND
p value	Stretching	0.009*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Walking	0.003*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

NA: not applicable due to these activities not observed; and ND: not determined

Table S3-127. Mouthing Frequency (Event/Hour) by Age, on Break/After/Before Game

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Body	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Clothes	21.87	40.45	0.00	4.95	8.68	10.69	82.70	107.05	113.14
2 <9 Years (n=7)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Hands	14.02	13.33	0.00	4.07	12.15	21.58	33.06	34.39	34.72



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Water bottle	29.84	17.35	8.38	21.41	27.28	33.74	55.73	61.50	62.94
2 <9 Years (n=7)	Dietary Objects	29.84	17.35	8.38	21.41	27.28	33.74	55.73	61.50	62.94
2 <9 Years (n=7)	Non-dietary Objects	22.81	39.92	4.08	6.19	8.68	10.69	82.70	107.05	113.14
2 <9 Years (n=7)	All Objects	52.65	34.54	25.93	32.45	32.97	61.61	107.44	118.70	121.52
9 <16 Years (n=18)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Body	0.44	1.92	0.00	0.00	0.00	0.00	0.83	6.85	8.35
9 <16 Years (n=18)	Clothes	7.84	16.94	0.00	0.00	4.23	9.31	18.05	63.75	75.18
9 <16 Years (n=18)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Hands	7.91	8.62	0.00	0.00	5.59	12.52	23.06	24.66	25.06
9 <16 Years (n=18)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Water bottle	45.24	57.24	0.00	13.83	28.02	49.43	143.19	220.52	239.85
9 <16 Years (n=18)	Dietary Objects	45.24	57.24	0.00	13.83	28.02	49.43	143.19	220.52	239.85
9 <16 Years (n=18)	Non-dietary Objects	9.66	17.16	0.00	0.00	4.93	11.10	26.92	65.53	75.18
9 <16 Years (n=18)	All Objects	54.91	57.41	0.00	26.94	29.60	74.53	143.19	220.52	239.85
≥16 Years (n=15)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Body	0.59	2.22	0.00	0.00	0.00	0.00	2.91	7.24	8.32
≥16 Years (n=15)	Clothes	9.73	13.95	0.00	0.00	5.81	11.32	31.88	48.33	52.44
≥16 Years (n=15)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Hands	12.46	17.75	0.00	0.00	4.19	18.35	49.02	51.33	51.91
≥16 Years (n=15)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA



Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=15)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Water bottle	23.13	29.53	0.00	0.00	10.01	33.13	81.35	88.08	89.76
≥16 Years (n=15)	Dietary Objects	25.36	28.60	0.00	6.70	12.57	35.92	81.35	88.08	89.76
≥16 Years (n=15)	Non-dietary Objects	10.88	14.81	0.00	0.00	5.81	14.87	37.29	49.41	52.44
≥16 Years (n=15)	All Objects	36.23	33.48	0.00	11.41	23.54	52.15	94.81	103.83	106.08
p value*	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.395	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.470	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.267	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.331	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.440	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.244	ND	ND	ND	ND	ND	ND	ND	ND

P value from Kruskal Wallis

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-128. Mouthing Duration (Min/Hour) by Age, on Break/After/Before Game

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Body	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Clothes	0.36	0.60	0.00	0.09	0.10	0.28	1.28	1.62	1.70
2 <9 Years (n=7)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Hands	0.95	1.35	0.00	0.04	0.47	1.30	3.09	3.42	3.50
2 <9 Years (n=7)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Water bottle	3.17	4.47	0.57	0.86	1.14	2.94	10.32	12.38	12.89
2 <9 Years (n=7)	Dietary Objects	3.17	4.47	0.57	0.86	1.14	2.94	10.32	12.38	12.89
2 <9 Years (n=7)	Non-dietary Objects	0.51	0.60	0.08	0.16	0.26	0.62	1.47	1.65	1.70
2 <9 Years (n=7)	All Objects	3.68	4.43	0.75	1.29	1.77	3.77	10.78	12.68	13.15
9 <16 Years (n=18)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Body	0.01	0.03	0.00	0.00	0.00	0.00	0.01	0.12	0.15
9 <16 Years (n=18)	Clothes	0.24	0.46	0.00	0.00	0.07	0.26	0.74	1.74	1.99
9 <16 Years (n=18)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Hands	0.20	0.29	0.00	0.00	0.15	0.30	0.49	1.11	1.26
9 <16 Years (n=18)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Water bottle	2.77	3.45	0.00	0.99	2.09	2.88	8.49	13.52	14.78
9 <16 Years (n=18)	Dietary Objects	2.77	3.45	0.00	0.99	2.09	2.88	8.49	13.52	14.78
9 <16 Years (n=18)	Non-dietary Objects	0.26	0.46	0.00	0.00	0.11	0.26	0.79	1.75	1.99
9 <16 Years (n=18)	All Objects	3.03	3.40	0.00	1.26	2.37	3.44	8.49	13.52	14.78
≥16 Years (n=15)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Body	0.01	0.02	0.00	0.00	0.00	0.00	0.03	0.08	0.09
≥16 Years (n=15)	Clothes	0.28	0.52	0.00	0.00	0.13	0.25	1.01	1.82	2.02
≥16 Years (n=15)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Hands	0.59	1.30	0.00	0.00	0.10	0.41	2.67	4.45	4.90



Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=15)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Water bottle	1.52	2.01	0.00	0.00	0.70	2.59	5.05	5.65	5.80
≥16 Years (n=15)	Dietary Objects	1.64	1.96	0.00	0.32	0.70	2.83	5.05	5.65	5.80
≥16 Years (n=15)	Non-dietary Objects	0.34	0.59	0.00	0.00	0.13	0.25	1.57	1.93	2.02
≥16 Years (n=15)	All Objects	1.99	2.12	0.00	0.46	0.84	4.07	5.13	5.86	6.04
p value*	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.395	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.267	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.173	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.684	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.295	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.377	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Kruskal Wallis

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-129. Mouthing Median Duration (Second) by Age, on Break/After/Before Game

Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years	Artificial Turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Body	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Clothes	6	1.28	0.73	0.66	0.76	0.98	1.67	2.31	2.44	2.47



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Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Hands	6	2.12	1.72	0.60	0.86	1.41	3.28	4.48	4.65	4.70
2 <9 Years	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Water bottle	7	3.55	2.07	1.35	2.16	2.60	4.86	6.52	6.77	6.83
2 <9 Years	Dietary Objects	7	3.55	2.07	1.35	2.16	2.60	4.86	6.52	6.77	6.83
2 <9 Years	Non-dietary Objects	7	2.81	3.84	0.66	0.79	1.10	2.54	8.87	10.80	11.29
2 <9 Years	All Objects	7	2.74	1.68	0.88	1.74	2.11	3.45	5.27	5.69	5.79
9 <16 Years	Artificial Turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Body	1	1.14	ND	ND	ND	ND	ND	ND	ND	ND
9 <16 Years	Clothes	10	2.05	1.22	0.83	1.22	1.58	2.33	4.16	4.63	4.74
9 <16 Years	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Hands	11	1.33	0.61	0.28	0.93	1.33	1.84	2.08	2.13	2.14
9 <16 Years	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Water bottle	17	3.87	1.38	1.92	2.69	4.00	4.40	6.06	6.73	6.90
9 <16 Years	Dietary Objects	17	3.87	1.38	1.92	2.69	4.00	4.40	6.06	6.73	6.90
9 <16 Years	Non-dietary Objects	15	1.70	1.13	0.18	1.20	1.36	2.01	3.43	4.48	4.74
9 <16 Years	All Objects	19	3.43	1.58	1.27	2.40	3.12	4.34	6.00	6.72	6.90
≥16 Years	Artificial Turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years	Body	1	0.66	ND	ND	ND	ND	ND	ND	ND	ND
≥16 Years	Clothes	9	1.29	0.55	0.57	0.89	1.20	1.51	2.12	2.29	2.33
≥16 Years	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA



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Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years	Hands	9	1.82	1.32	0.90	1.03	1.29	1.41	4.19	4.44	4.50
≥16 Years	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years	Water bottle	9	3.72	1.44	1.46	2.93	3.85	4.46	5.63	5.92	6.00
≥16 Years	Dietary Objects	11	3.41	1.46	1.46	2.06	3.70	4.26	5.54	5.91	6.00
≥16 Years	Non-dietary Objects	12	1.35	0.79	0.57	0.84	1.20	1.51	2.61	3.03	3.14
≥16 Years	All Objects	14	2.77	1.65	0.72	1.64	2.82	3.80	5.45	5.89	6.00
p value*	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.940	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.641	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.202	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.524	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.358	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Kruskal Wallis

NA: not applicable due to no mouth contact with these objects; and ND: not determined



S3.3.2.4. Activity Patterns by Age, Any Time but during the Game/Practice

Table S3-130. Frequency (Event/Hour) of Actions by Age, Any Time but during the Game/Practice

Age Group	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Diving	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Jumping	1.04	2.76	0.00	0.00	0.00	0.00	5.11	6.86	7.30
2 <9 Years (n=7)	Slip or fall	0.23	0.61	0.00	0.00	0.00	0.00	1.13	1.52	1.62
2 <9 Years (n=7)	Tackling or sliding	0.30	0.79	0.00	0.00	0.00	0.00	1.46	1.96	2.08
9 <16 Years (n=18)	Diving	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Jumping	4.47	10.17	0.00	0.00	0.00	0.00	24.55	32.45	34.43
9 <16 Years (n=18)	Slip or fall	1.39	3.15	0.00	0.00	0.00	0.00	7.62	10.71	11.48
9 <16 Years (n=18)	Tackling or sliding	0.13	0.58	0.00	0.00	0.00	0.00	0.25	2.06	2.51
≥16 Years (n=15)	Diving	0.53	1.99	0.00	0.00	0.00	0.00	2.60	6.46	7.43
≥16 Years (n=15)	Jumping	7.57	9.50	0.00	0.00	0.00	15.05	22.54	23.82	24.14
≥16 Years (n=15)	Slip or fall	3.32	12.41	0.00	0.00	0.00	0.00	16.25	40.39	46.43
≥16 Years (n=15)	Tackling or sliding	NA	NA	NA	NA	NA	NA	NA	NA	NA
p value*	Diving	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Jumping	0.275	ND	ND	ND	ND	ND	ND	ND	ND
p value	Slip or fall	0.584	ND	ND	ND	ND	ND	ND	ND	ND
p value	Tackling or sliding	ND	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Kruskal Wallis

NA: not applicable due to the activities not observed; and ND: not determined

Table S3-131. Frequency of Hand to Object Contact (Event/Hour) by Age, Any Time but during the Game/Practice

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Artificial Turf	12.71	27.55	0.00	0.33	0.88	6.31	54.77	70.81	74.82
2 <9 Years (n=7)	Body	24.39	14.66	6.38	11.24	26.60	37.74	39.21	39.71	39.83
2 <9 Years (n=7)	Clothes	69.06	30.25	29.93	44.23	71.03	96.94	100.03	100.09	100.11
2 <9 Years (n=7)	Field Structures	12.45	13.34	0.00	4.96	9.56	13.91	33.34	38.59	39.90
2 <9 Years (n=7)	Footwear	4.64	4.28	0.00	1.40	3.19	7.44	10.52	11.42	11.64



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Head/face/hair	27.87	39.62	0.00	11.40	17.56	19.16	87.69	110.65	116.39
2 <9 Years (n=7)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Soccer ball	22.07	21.16	0.00	2.93	27.10	32.34	49.73	55.45	56.88
2 <9 Years (n=7)	Water bottle	45.94	44.57	25.41	25.53	26.34	36.63	115.81	139.55	145.49
2 <9 Years (n=7)	Dietary Objects	45.94	44.57	25.41	25.53	26.34	36.63	115.81	139.55	145.49
2 <9 Years (n=7)	Non-dietary Objects	190.75	76.87	125.11	138.31	181.09	201.65	306.58	340.64	349.16
2 <9 Years (n=7)	All Objects	236.69	80.95	150.53	190.32	221.55	254.20	359.45	388.47	395.72
9 <16 Years (n=18)	Artificial Turf	2.52	4.49	0.00	0.00	0.00	3.29	9.65	15.24	16.63
9 <16 Years (n=18)	Body	19.54	23.39	0.00	0.00	10.13	32.32	65.25	67.48	68.04
9 <16 Years (n=18)	Clothes	129.22	69.07	40.49	79.72	122.51	142.12	256.73	298.97	309.53
9 <16 Years (n=18)	Field Structures	18.91	20.11	0.00	3.86	13.32	32.62	47.15	67.56	72.66
9 <16 Years (n=18)	Footwear	12.21	15.70	0.00	0.00	8.84	15.78	37.50	56.48	61.23
9 <16 Years (n=18)	Head/face/hair	24.32	21.04	0.00	8.44	17.93	32.40	63.25	72.91	75.33
9 <16 Years (n=18)	Shin guards	7.02	13.04	0.00	0.00	0.00	6.71	28.05	47.51	52.37
9 <16 Years (n=18)	Soccer ball	23.71	22.37	0.00	1.50	22.69	38.57	61.56	73.09	75.97
9 <16 Years (n=18)	Water bottle	58.31	78.69	0.00	14.69	33.26	55.36	184.85	296.15	323.97
9 <16 Years (n=18)	Dietary Objects	58.37	78.67	0.00	14.69	34.54	55.36	184.85	296.15	323.97
9 <16 Years (n=18)	Non-dietary Objects	249.21	80.66	97.17	201.53	220.80	283.63	388.00	438.42	451.02
9 <16 Years (n=18)	All Objects	307.59	93.39	198.51	242.56	280.75	349.19	498.36	520.83	526.45
≥16 Years (n=15)	Artificial Turf	6.07	13.78	0.00	0.00	0.00	4.00	31.73	45.36	48.77
≥16 Years (n=15)	Body	28.48	35.90	0.00	4.43	13.47	28.61	91.32	112.86	118.25
≥16 Years (n=15)	Clothes	104.34	40.05	55.69	77.38	90.12	133.46	172.32	172.78	172.90
≥16 Years (n=15)	Field Structures	13.80	26.06	0.00	3.27	4.58	9.60	53.77	91.17	100.52
≥16 Years (n=15)	Footwear	20.13	23.31	0.00	0.00	14.86	34.38	51.80	71.48	76.40
≥16 Years (n=15)	Head/face/hair	23.32	16.44	0.00	10.76	22.53	31.25	48.95	59.62	62.29



Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=15)	Shin guards	0.49	1.82	0.00	0.00	0.00	0.00	2.38	5.92	6.81
≥16 Years (n=15)	Soccer ball	14.36	43.42	0.00	0.00	0.82	3.05	67.65	144.99	164.32
≥16 Years (n=15)	Water bottle	21.46	33.40	0.00	5.85	11.94	23.66	65.54	118.96	132.31
≥16 Years (n=15)	Dietary Objects	21.70	33.48	0.00	5.85	11.94	23.66	67.80	119.41	132.31
≥16 Years (n=15)	Non-dietary Objects	226.15	99.47	80.12	153.30	198.34	273.80	396.63	429.86	438.17
≥16 Years (n=15)	All Objects	247.85	102.75	89.93	165.24	233.68	316.41	412.68	433.07	438.17
p value	Artificial Turf	0.792	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.103	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.457	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.338	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.416	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.888	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.101	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.341	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.544	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.0101*	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.061	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

NA: not applicable due to no contact with the object; and ND: not determined

Table S3-132. Duration of Hand to Object Contact (Min/Hour) by Age, Any Time but during the Game/Practice

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Artificial Turf	1.17	2.94	0.00	0.01	0.02	0.18	5.56	7.38	7.83
2 <9 Years (n=7)	Body	3.86	4.09	0.38	0.60	3.22	5.50	10.06	10.99	11.22
2 <9 Years (n=7)	Clothes	12.49	10.02	2.59	7.79	8.93	13.37	27.58	32.39	33.59
2 <9 Years (n=7)	Field Structures	1.39	1.55	0.00	0.28	1.01	1.87	3.69	4.29	4.44



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2 <9 Years (n=7)	Footwear	0.40	0.34	0.00	0.10	0.49	0.61	0.83	0.86	0.87
2 <9 Years (n=7)	Head/face/hair	1.36	2.39	0.00	0.31	0.42	0.88	5.03	6.38	6.72
2 <9 Years (n=7)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Soccer ball	0.95	0.91	0.00	0.10	0.91	1.71	2.07	2.12	2.13
2 <9 Years (n=7)	Water bottle	8.57	5.74	3.43	5.76	7.62	8.35	17.12	20.02	20.74
2 <9 Years (n=7)	Dietary Objects	8.57	5.74	3.43	5.76	7.62	8.35	17.12	20.02	20.74
2 <9 Years (n=7)	Non-dietary Objects	23.36	8.18	14.97	16.57	23.78	27.48	34.94	36.36	36.71
2 <9 Years (n=7)	All Objects	31.94	8.48	22.04	24.91	32.18	37.59	42.87	44.04	44.33
9 <16 Years (n=18)	Artificial Turf	0.08	0.18	0.00	0.00	0.00	0.07	0.43	0.65	0.70
9 <16 Years (n=18)	Body	3.52	5.36	0.00	0.00	0.37	5.93	13.21	17.40	18.45
9 <16 Years (n=18)	Clothes	17.31	9.27	4.17	11.99	16.72	21.38	35.56	37.78	38.33
9 <16 Years (n=18)	Field Structures	2.61	3.95	0.00	0.15	0.45	4.41	11.25	13.39	13.93
9 <16 Years (n=18)	Footwear	1.35	2.54	0.00	0.00	0.19	1.80	3.25	9.55	11.12
9 <16 Years (n=18)	Head/face/hair	0.77	0.77	0.00	0.26	0.52	1.00	2.10	2.54	2.65
9 <16 Years (n=18)	Shin guards	0.69	1.23	0.00	0.00	0.00	0.85	2.80	4.32	4.70
9 <16 Years (n=18)	Soccer ball	1.65	2.20	0.00	0.04	0.99	2.13	4.84	8.07	8.88
9 <16 Years (n=18)	Water bottle	9.09	9.94	0.00	2.50	5.10	13.77	32.15	33.57	33.92
9 <16 Years (n=18)	Dietary Objects	9.10	9.94	0.00	2.50	5.10	13.77	32.15	33.57	33.92
9 <16 Years (n=18)	Non-dietary Objects	28.97	12.91	7.38	17.65	29.59	38.69	44.87	51.77	53.50
9 <16 Years (n=18)	All Objects	38.07	12.49	13.31	29.50	39.77	44.50	58.71	59.50	59.70
≥16 Years (n=15)	Artificial Turf	0.53	1.02	0.00	0.00	0.00	0.23	2.47	2.69	2.75
≥16 Years (n=15)	Body	1.24	1.94	0.00	0.18	0.63	0.93	5.51	6.14	6.30
≥16 Years (n=15)	Clothes	14.89	9.16	6.32	7.44	12.47	21.33	29.31	33.21	34.18
≥16 Years (n=15)	Field Structures	1.52	3.83	0.00	0.10	0.35	0.64	6.49	13.02	14.65
≥16 Years (n=15)	Footwear	1.71	2.26	0.00	0.00	0.93	1.72	5.79	5.83	5.84
≥16 Years (n=15)	Head/face/hair	0.79	0.79	0.00	0.33	0.67	0.88	2.04	2.95	3.18
≥16 Years (n=15)	Shin guards	0.03	0.12	0.00	0.00	0.00	0.00	0.16	0.40	0.46
≥16 Years (n=15)	Soccer ball	0.32	0.87	0.00	0.00	0.02	0.08	1.64	2.92	3.24



≥16 Years (n=15)	Water bottle	3.13	3.73	0.00	1.07	2.74	3.31	8.42	13.44	14.69
≥16 Years (n=15)	Dietary Objects	3.15	3.74	0.00	1.07	2.74	3.31	8.56	13.46	14.69
≥16 Years (n=15)	Non-dietary Objects	22.52	8.39	10.62	16.28	20.88	28.83	35.93	36.11	36.15
≥16 Years (n=15)	All Objects	25.67	10.13	15.67	18.66	23.56	28.86	42.83	49.24	50.84
p value	Artificial Turf	0.871	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.274	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.600	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.351	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.369	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.877	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.012*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.504	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.007*	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.352	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

NA: not applicable due to no contact with the object; and ND: not determined

Table S3-133. Median Duration of Hand to Object Contact (Second) by Age, Any Time but during the Game/Practice

Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years	Artificial Turf	5	1.21	0.46	0.78	1.05	1.08	1.18	1.83	1.96	1.99
2 <9 Years	Body	7	4.22	3.65	1.10	1.63	3.28	5.45	9.88	10.80	11.03
2 <9 Years	Clothes	7	4.79	2.04	2.15	3.61	4.49	5.98	7.60	7.71	7.73
2 <9 Years	Field Structures	6	4.42	2.60	2.37	2.76	3.11	5.68	8.20	8.67	8.78
2 <9 Years	Footwear	6	5.27	2.41	3.20	3.45	4.46	6.41	8.67	9.18	9.30
2 <9 Years	Head/face/hair	6	1.61	0.76	0.65	1.15	1.45	2.11	2.59	2.68	2.70
2 <9 Years	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Soccer ball	5	1.59	0.24	1.20	1.54	1.67	1.72	1.81	1.83	1.83



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Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years	Water bottle	7	8.22	3.52	4.07	6.18	7.16	10.07	13.33	13.70	13.79
2 <9 Years	Dietary Objects	7	8.22	3.52	4.07	6.18	7.16	10.07	13.33	13.70	13.79
2 <9 Years	Non-dietary Objects	7	3.27	1.02	2.19	2.66	3.16	3.45	4.82	5.23	5.33
2 <9 Years	All Objects	7	3.77	1.22	2.32	3.06	3.38	4.36	5.56	5.76	5.81
9 <16 Years	Artificial Turf	7	1.65	1.05	0.47	0.64	2.03	2.43	2.85	2.90	2.91
9 <16 Years	Body	12	3.72	3.03	0.99	1.41	3.17	4.98	9.66	10.08	10.18
9 <16 Years	Clothes	18	4.42	1.31	2.43	3.31	4.38	5.38	6.28	6.72	6.83
9 <16 Years	Field Structures	14	4.69	4.56	1.07	2.51	3.66	4.83	10.87	18.14	19.96
9 <16 Years	Footwear	11	2.97	1.39	1.12	2.11	2.73	3.84	5.18	5.30	5.33
9 <16 Years	Head/face/hair	16	1.40	0.75	0.58	1.00	1.10	1.63	2.38	3.61	3.91
9 <16 Years	Shin guards	9	5.74	5.36	1.23	2.28	3.79	5.39	15.12	16.38	16.70
9 <16 Years	Soccer ball	14	2.54	1.91	1.06	1.54	1.95	2.46	5.65	7.94	8.52
9 <16 Years	Water bottle	18	7.17	2.48	3.07	5.44	7.13	8.92	11.33	11.38	11.39
9 <16 Years	Dietary Objects	18	7.14	2.45	3.07	5.44	7.13	8.82	11.33	11.38	11.39
9 <16 Years	Non-dietary Objects	18	3.26	0.99	1.61	2.55	3.23	3.63	4.69	5.49	5.70
9 <16 Years	All Objects	18	3.63	1.13	1.97	2.73	3.42	4.08	5.44	5.76	5.83
≥16 Years	Artificial Turf	4	5.52	8.51	0.67	0.70	1.60	6.42	15.87	17.76	18.23
≥16 Years	Body	14	1.85	1.66	0.16	0.93	1.25	2.23	4.48	6.07	6.47
≥16 Years	Clothes	15	4.82	2.46	1.38	2.85	5.22	6.03	8.14	10.25	10.78
≥16 Years	Field Structures	13	4.04	2.93	0.91	1.82	3.10	6.21	8.52	10.29	10.73
≥16 Years	Footwear	10	3.67	2.89	1.11	1.49	2.38	5.96	8.19	8.60	8.70
≥16 Years	Head/face/hair	14	1.49	0.47	1.06	1.20	1.37	1.54	2.38	2.69	2.77
≥16 Years	Shin guards	1	2.75	ND	ND	ND	ND	ND	ND	ND	ND
≥16 Years	Soccer ball	7	1.51	0.66	0.82	0.98	1.48	1.87	2.44	2.54	2.57
≥16 Years	Water bottle	12	8.06	5.12	2.09	4.46	7.15	9.67	16.67	17.86	18.16
≥16 Years	Dietary Objects	12	7.92	5.15	2.09	4.46	6.56	9.67	16.67	17.86	18.16
≥16 Years	Non-dietary Objects	15	2.90	1.52	1.29	1.98	2.50	3.15	5.90	6.19	6.26



Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years	All Objects	15	2.99	1.51	1.29	2.14	2.66	3.16	5.97	6.20	6.26
p value*	Artificial Turf	ND	0.403	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.203	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.845	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.951	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.585	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.087	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	0.120	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.858	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.664	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.602	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.884	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Kruskal Wallis

NA: not applicable due to no contact to the object; and ND: not determined

Table S3-134. Hourly Duration (Min/Hour) of Player Intensity by Age, Any Time but during the Game/Practice

Age Group	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	High	2.98	1.68	0.50	1.79	3.62	3.94	4.87	5.19	5.27
2 <9 Years (n=7)	Moderate	7.07	5.05	0.81	3.78	4.87	11.06	13.69	14.04	14.13
2 <9 Years (n=7)	Light	10.84	3.64	4.00	10.02	10.98	12.97	14.84	14.92	14.94
2 <9 Years (n=7)	Resting	39.11	7.28	31.10	34.47	37.18	42.10	49.66	51.84	52.39
9 <16 Years (n=18)	High	1.01	1.12	0.00	0.00	0.38	2.10	2.72	2.77	2.78
9 <16 Years (n=18)	Moderate	2.76	2.98	0.00	0.74	2.29	4.00	5.84	11.54	12.97
9 <16 Years (n=18)	Light	19.68	10.57	4.04	12.16	19.32	24.15	39.04	39.48	39.59
9 <16 Years (n=18)	Resting	36.55	12.07	15.37	29.40	37.64	46.13	54.02	55.22	55.52
≥16 Years (n=15)	High	2.10	2.45	0.00	0.07	1.14	3.24	6.59	6.85	6.91
≥16 Years (n=15)	Moderate	10.11	7.90	0.00	1.92	10.51	15.70	21.95	22.97	23.22



Age Group	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=15)	Light	21.42	6.03	8.29	18.20	20.99	24.93	30.10	31.91	32.36
≥16 Years (n=15)	Resting	26.37	10.69	14.73	18.01	23.83	33.13	44.02	49.54	50.92
p value*	High	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Moderate	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Light	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Resting	1.000	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Kruskal Wallis

ND: not determined

Table S3-135. Duration (Min/Hour) of Macro-Activities by Age, Any Time but during the Game/Practice

Age Group	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Push ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Rest Standing	24.16	8.28	14.00	17.66	23.23	30.08	34.59	36.04	36.40
2 <9 Years (n=7)	Running	9.16	6.22	1.09	4.36	9.02	14.15	16.73	16.95	17.00
2 <9 Years (n=7)	Sit on chair	10.15	10.71	0.00	0.56	8.04	17.75	24.65	26.07	26.43
2 <9 Years (n=7)	Sit on ground	5.16	9.24	0.00	0.63	1.08	4.20	19.89	24.31	25.41
2 <9 Years (n=7)	Stretching	0.44	0.57	0.00	0.00	0.00	0.93	1.16	1.24	1.26
2 <9 Years (n=7)	Walking	10.87	3.94	4.08	9.84	10.55	12.77	15.80	16.13	16.21
9 <16 Years (n=18)	Push ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Rest Standing	32.33	11.74	10.59	23.18	33.47	43.70	46.89	49.11	49.67
9 <16 Years (n=18)	Running	2.56	2.54	0.00	0.57	2.34	3.50	5.69	9.29	10.19
9 <16 Years (n=18)	Sit on chair	0.28	0.99	0.00	0.00	0.00	0.00	1.37	3.67	4.24
9 <16 Years (n=18)	Sit on ground	3.75	6.40	0.00	0.00	0.18	4.72	14.53	21.94	23.79
9 <16 Years (n=18)	Stretching	0.15	0.44	0.00	0.00	0.00	0.00	0.60	1.65	1.91
9 <16 Years (n=18)	Walking	20.80	10.96	4.00	12.74	21.27	25.10	40.05	40.51	40.63
≥16 Years (n=15)	Push ups	0.03	0.09	0.00	0.00	0.00	0.00	0.12	0.30	0.35
≥16 Years (n=15)	Rest Standing	23.94	10.83	11.99	16.75	20.76	28.81	41.62	49.06	50.92
≥16 Years (n=15)	Running	8.60	7.03	0.00	1.56	9.70	13.00	18.11	22.28	23.32



Age Group	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=15)	Sit on chair	0.22	0.44	0.00	0.00	0.00	0.08	1.20	1.23	1.24
≥16 Years (n=15)	Sit on ground	0.85	1.72	0.00	0.00	0.00	0.74	4.32	5.50	5.80
≥16 Years (n=15)	Stretching	4.42	6.98	0.00	0.00	0.42	4.83	18.32	19.54	19.85
≥16 Years (n=15)	Walking	21.59	6.34	8.29	17.16	23.49	26.02	29.82	29.88	29.90
p value	Push ups	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Rest Standing	0.012*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Running	0.040*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on chair	0.099	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on ground	0.087	ND	ND	ND	ND	ND	ND	ND	ND
p value	Stretching	0.011*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Walking	ND	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

NA: not applicable due to these activities not observed; and ND: not determined

Table S3-136. Mouthing Frequency (Event/Hour) by Age, Any Time but during the Game/Practice

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Body	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Clothes	21.58	40.55	0.00	4.89	8.68	9.72	82.11	106.93	113.14
2 <9 Years (n=7)	Hands	12.84	13.16	0.00	4.07	7.29	20.66	31.96	32.92	33.16
2 <9 Years (n=7)	Water bottle	25.08	9.80	8.38	21.41	26.05	29.70	37.06	38.52	38.89
2 <9 Years (n=7)	Dietary Objects	25.08	9.80	8.38	21.41	26.05	29.70	37.06	38.52	38.89
2 <9 Years (n=7)	Non-dietary Objects	22.46	40.05	3.80	6.08	8.68	9.72	82.11	106.93	113.14
2 <9 Years (n=7)	All Objects	47.54	33.55	25.93	30.60	32.97	45.57	99.65	117.15	121.52
9 <16 Years (n=18)	Body	0.44	1.92	0.00	0.00	0.00	0.00	0.83	6.85	8.35
9 <16 Years (n=18)	Clothes	8.53	17.00	0.00	0.00	4.23	11.08	20.65	64.27	75.18
9 <16 Years (n=18)	Hands	7.70	8.47	0.00	0.00	5.59	11.78	23.08	24.66	25.06
9 <16 Years (n=18)	Water bottle	44.26	56.85	0.00	13.83	28.02	45.19	143.19	220.52	239.85
9 <16 Years (n=18)	Dietary Objects	44.26	56.85	0.00	13.83	28.02	45.19	143.19	220.52	239.85



Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
9 <16 Years (n=18)	Non-dietary Objects	10.33	17.15	0.00	0.00	4.93	11.44	26.92	65.53	75.18
9 <16 Years (n=18)	All Objects	54.59	56.94	0.00	26.94	29.60	72.15	143.19	220.52	239.85
≥16 Years (n=15)	Body	0.38	1.06	0.00	0.00	0.00	0.00	2.33	3.47	3.76
≥16 Years (n=15)	Clothes	7.56	8.40	0.00	0.00	5.25	11.65	20.67	25.76	27.03
≥16 Years (n=15)	Hands	11.42	13.04	0.00	2.81	7.71	15.05	34.92	43.94	46.19
≥16 Years (n=15)	Water bottle	11.03	14.05	0.00	0.00	5.48	15.37	36.81	44.50	46.42
≥16 Years (n=15)	Dietary Objects	12.58	13.43	0.00	2.79	8.77	17.94	36.81	44.50	46.42
≥16 Years (n=15)	Non-dietary Objects	8.45	8.82	0.00	0.39	5.25	15.17	22.92	26.21	27.03
≥16 Years (n=15)	All Objects	21.03	16.91	0.00	7.52	17.13	33.33	47.28	48.56	48.88
p value	Body	0.416	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.480	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.526	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.011*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.615	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.024*	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.039*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-137. Mouthing Duration (Min/Hour) by Age, Any Time but during the Game/Practice

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Body	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Clothes	0.37	0.60	0.00	0.09	0.10	0.32	1.29	1.62	1.70
2 <9 Years (n=7)	Hands	0.89	1.31	0.00	0.04	0.24	1.30	2.97	3.27	3.34
2 <9 Years (n=7)	Water bottle	2.24	2.32	0.57	0.86	1.14	2.79	5.94	6.56	6.72
2 <9 Years (n=7)	Dietary Objects	2.24	2.32	0.57	0.86	1.14	2.79	5.94	6.56	6.72
2 <9 Years (n=7)	Non-dietary Objects	0.51	0.59	0.08	0.15	0.30	0.61	1.46	1.65	1.70
2 <9 Years (n=7)	All Objects	2.76	2.36	0.75	1.29	1.64	3.65	6.44	6.93	7.05



Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
9 <16 Years (n=18)	Body	0.01	0.03	0.00	0.00	0.00	0.00	0.01	0.12	0.15
9 <16 Years (n=18)	Clothes	0.25	0.46	0.00	0.00	0.07	0.30	0.74	1.74	1.99
9 <16 Years (n=18)	Hands	0.19	0.29	0.00	0.00	0.19	0.29	0.43	1.09	1.26
9 <16 Years (n=18)	Water bottle	2.73	3.44	0.00	0.99	2.04	2.88	8.49	13.52	14.78
9 <16 Years (n=18)	Dietary Objects	2.73	3.44	0.00	0.99	2.04	2.88	8.49	13.52	14.78
9 <16 Years (n=18)	Non-dietary Objects	0.27	0.46	0.00	0.00	0.14	0.30	0.79	1.75	1.99
9 <16 Years (n=18)	All Objects	2.99	3.38	0.00	1.26	2.25	3.44	8.49	13.52	14.78
≥16 Years (n=15)	Body	0.01	0.01	0.00	0.00	0.00	0.00	0.03	0.04	0.04
≥16 Years (n=15)	Clothes	0.19	0.28	0.00	0.00	0.09	0.25	0.61	0.95	1.04
≥16 Years (n=15)	Hands	0.42	0.78	0.00	0.07	0.19	0.25	1.85	2.66	2.86
≥16 Years (n=15)	Water bottle	0.79	1.29	0.00	0.00	0.39	0.63	2.95	4.30	4.64
≥16 Years (n=15)	Dietary Objects	0.87	1.27	0.00	0.18	0.39	0.91	2.95	4.30	4.64
≥16 Years (n=15)	Non-dietary Objects	0.24	0.33	0.00	0.01	0.15	0.28	0.95	1.02	1.04
≥16 Years (n=15)	All Objects	1.11	1.35	0.00	0.32	0.54	1.69	3.44	4.40	4.64
p value	Body	0.394	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.480	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.427	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.011*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.620	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.021*	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.027*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-138. Mouthing Median Duration (Second) by Age, Any Time but during the Game/Practice

Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years	Body	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Clothes	6	1.36	0.73	0.66	0.76	1.24	1.80	2.31	2.44	2.47



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Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years	Hands	6	2.12	1.72	0.60	0.86	1.41	3.28	4.48	4.65	4.70
2 <9 Years	Water bottle	7	3.55	2.07	1.35	2.16	2.60	4.86	6.52	6.77	6.83
2 <9 Years	Dietary Objects	7	3.55	2.07	1.35	2.16	2.60	4.86	6.52	6.77	6.83
2 <9 Years	Non-dietary Objects	7	2.89	3.81	0.66	0.79	1.62	2.54	8.87	10.80	11.29
2 <9 Years	All Objects	7	2.73	1.67	0.88	1.74	2.11	3.43	5.26	5.68	5.79
9 <16 Years	Body	1	1.14	ND	ND	ND	ND	ND	ND	ND	ND
9 <16 Years	Clothes	10	1.98	1.23	0.83	1.21	1.58	2.22	4.16	4.63	4.74
9 <16 Years	Hands	11	1.34	0.60	0.36	0.93	1.33	1.84	2.08	2.13	2.14
9 <16 Years	Water bottle	17	3.87	1.38	1.92	2.69	4.00	4.40	6.06	6.73	6.90
9 <16 Years	Dietary Objects	7	3.87	1.38	1.92	2.69	4.00	4.40	6.06	6.73	6.90
9 <16 Years	Non-dietary Objects	12	1.64	1.13	0.18	1.15	1.36	1.85	3.43	4.48	4.74
9 <16 Years	All Objects	18	3.37	1.61	1.27	2.26	2.87	4.34	6.00	6.72	6.90
≥16 Years	Body	2	0.94	0.40	0.66	0.80	0.94	1.08	1.19	1.22	1.22
≥16 Years	Clothes	9	1.19	0.44	0.83	0.84	0.91	1.51	1.87	1.89	1.90
≥16 Years	Hands	11	1.60	1.24	0.72	0.96	1.10	1.37	4.04	4.41	4.50
≥16 Years	Water bottle	9	3.68	1.47	1.46	2.59	3.85	4.46	5.63	5.92	6.00
≥16 Years	Dietary Objects	11	3.38	1.48	1.46	2.06	3.70	4.26	5.54	5.91	6.00
≥16 Years	Non-dietary Objects	10	1.28	0.61	0.72	0.85	1.05	1.44	2.36	2.38	2.39
≥16 Years	All Objects	13	2.61	1.66	0.72	1.50	1.82	3.40	5.45	5.89	6.00
p value*	Body	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.839	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.631	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.296	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.455	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.269	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Kruskal Wallis

NA: not applicable due to no mouth contact with these objects; and ND: not determined



S3.3.3. Data Summarized According to Location and Age

S3.3.3.1. Activity Patterns by Age, On Field

Table S3-139. Frequency (Event/Hour) of Actions by Age, On Field

Age Group	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Diving	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Heading	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Jumping	1.99	4.62	0.00	0.00	0.00	0.78	9.13	11.73	12.38
2 <9 Years (n=7)	Slip or fall	2.42	2.42	0.00	0.89	1.59	3.41	6.11	6.60	6.72
2 <9 Years (n=7)	Tackling or sliding	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Diving	0.20	0.42	0.00	0.00	0.00	0.00	0.88	1.31	1.42
9 <16 Years (n=18)	Heading	0.31	0.67	0.00	0.00	0.00	0.00	1.49	2.17	2.34
9 <16 Years (n=18)	Jumping	4.81	4.25	0.00	0.74	3.55	8.21	10.26	13.45	14.25
9 <16 Years (n=18)	Slip or fall	1.52	2.06	0.00	0.29	0.70	1.43	5.75	6.85	7.12
9 <16 Years (n=18)	Tackling or sliding	0.40	0.79	0.00	0.00	0.00	0.59	2.31	2.63	2.71
≥16 Years (n=15)	Diving	1.49	3.13	0.00	0.00	0.00	1.40	6.63	10.22	11.12
≥16 Years (n=15)	Heading	0.62	0.79	0.00	0.00	0.48	0.86	2.24	2.25	2.25
≥16 Years (n=15)	Jumping	20.46	29.98	0.68	4.02	6.59	12.70	76.52	83.02	84.64
≥16 Years (n=15)	Slip or fall	4.15	6.70	0.00	0.00	0.57	4.99	16.48	18.92	19.53
≥16 Years (n=15)	Tackling or sliding	0.82	1.16	0.00	0.00	0.23	1.30	3.16	3.33	3.37
p value	Diving	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Heading	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Jumping	0.035*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Slip or fall	0.009*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Tackling or sliding	ND	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

NA: not applicable due to the activities not observed; and ND: not determined

Table S3-140. Frequency of Hand to Object Contact (Event/Hour) by Age, On Field

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Artificial Turf	5.93	6.00	1.71	2.67	2.85	6.41	15.25	18.11	18.82
2 <9 Years (n=7)	Body	11.68	10.05	2.44	5.24	8.76	14.17	27.05	30.83	31.77



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Clothes	55.67	20.19	22.14	49.06	52.92	64.09	81.93	87.05	88.33
2 <9 Years (n=7)	Field Structures	4.51	4.15	0.00	1.72	3.26	6.35	10.52	11.84	12.17
2 <9 Years (n=7)	Footwear	3.48	2.53	1.10	2.25	2.60	3.74	7.48	8.42	8.66
2 <9 Years (n=7)	Head/face/hair	32.28	37.36	2.60	11.57	17.91	34.98	89.48	107.77	112.34
2 <9 Years (n=7)	Shin guards	0.17	0.45	0.00	0.00	0.00	0.00	0.83	1.11	1.18
2 <9 Years (n=7)	Soccer ball	15.14	8.07	4.78	8.78	15.47	20.67	25.30	26.53	26.84
2 <9 Years (n=7)	Water bottle	2.34	2.00	0.00	0.98	2.19	3.61	4.92	4.97	4.98
2 <9 Years (n=7)	Dietary Objects	2.34	2.00	0.00	0.98	2.19	3.61	4.92	4.97	4.98
2 <9 Years (n=7)	Non-dietary Objects	142.86	48.87	87.25	115.11	135.28	153.84	214.99	234.69	239.62
2 <9 Years (n=7)	All Objects	145.20	49.95	87.25	118.48	137.47	155.06	219.21	239.52	244.60
9 <16 Years (n=18)	Artificial Turf	2.96	3.77	0.00	0.73	1.53	3.44	10.20	14.06	15.03
9 <16 Years (n=18)	Body	11.65	9.88	1.53	4.94	8.06	16.34	27.95	38.99	41.75
9 <16 Years (n=18)	Clothes	84.73	42.33	13.63	61.13	80.43	103.78	157.80	175.66	180.12
9 <16 Years (n=18)	Field Structures	6.43	5.39	1.60	2.37	4.97	9.02	14.51	21.13	22.79
9 <16 Years (n=18)	Footwear	5.51	6.33	0.72	2.46	4.83	5.50	11.61	26.55	30.29
9 <16 Years (n=18)	Head/face/hair	32.84	26.69	3.36	11.78	27.12	48.42	81.70	89.81	91.84
9 <16 Years (n=18)	Shin guards	2.30	4.82	0.00	0.00	0.23	2.36	8.84	17.82	20.07
9 <16 Years (n=18)	Soccer ball	28.20	33.65	0.94	6.37	11.25	34.45	105.98	116.97	119.72
9 <16 Years (n=18)	Water bottle	2.41	2.75	0.00	0.00	2.20	4.13	7.08	8.38	8.70
9 <16 Years (n=18)	Dietary Objects	2.44	2.75	0.00	0.00	2.20	4.13	7.08	8.38	8.70
9 <16 Years (n=18)	Non-dietary Objects	185.80	66.38	102.20	142.59	172.05	199.54	302.90	327.84	334.08
9 <16 Years (n=18)	All Objects	188.24	67.34	102.20	145.24	175.48	201.30	305.42	332.73	339.56
≥16 Years (n=15)	Artificial Turf	5.23	6.09	0.00	1.75	2.62	7.13	15.66	19.23	20.12
≥16 Years (n=15)	Body	13.46	15.24	1.75	4.16	10.94	16.06	34.61	56.52	62.00
≥16 Years (n=15)	Clothes	58.70	23.72	29.55	37.67	58.52	66.58	95.29	95.82	95.95



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=15)	Field Structures	6.72	5.74	0.57	2.60	5.61	9.86	16.93	19.27	19.86
≥16 Years (n=15)	Footwear	6.85	5.30	0.60	2.15	6.72	9.75	14.97	16.59	16.99
≥16 Years (n=15)	Head/face/hair	21.29	10.72	6.57	13.74	20.50	29.11	37.89	42.65	43.84
≥16 Years (n=15)	Shin guards	0.65	1.35	0.00	0.00	0.00	0.20	3.01	4.15	4.43
≥16 Years (n=15)	Soccer ball	15.52	28.35	0.00	1.49	3.80	7.79	78.85	86.99	89.03
≥16 Years (n=15)	Water bottle	2.27	3.08	0.00	0.00	0.72	3.59	7.35	9.52	10.06
≥16 Years (n=15)	Dietary Objects	2.33	3.25	0.00	0.00	0.72	3.59	7.64	10.25	10.90
≥16 Years (n=15)	Non-dietary Objects	136.99	63.41	66.35	88.78	133.01	150.00	244.08	279.92	288.88
≥16 Years (n=15)	All Objects	139.31	63.80	67.25	93.43	137.85	150.38	244.08	279.92	288.88
p value	Artificial Turf	0.794	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.042*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.6816	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.1369	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.7992	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.1959	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.4516	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.047*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.7122	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.3115	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.9845	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.9891	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

ND: not determined

Table S3-141. Duration of Hand to Object Contact (Min/Hour) by Age, On Field

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Artificial Turf	0.52	0.84	0.05	0.11	0.31	0.33	1.78	2.28	2.40
2 <9 Years (n=7)	Body	0.75	0.88	0.04	0.15	0.60	0.91	2.13	2.45	2.53



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Clothes	7.95	6.30	1.25	4.36	5.50	10.12	17.58	19.49	19.97
2 <9 Years (n=7)	Field Structures	0.40	0.42	0.00	0.10	0.35	0.49	1.02	1.20	1.25
2 <9 Years (n=7)	Footwear	0.22	0.25	0.01	0.07	0.17	0.25	0.61	0.71	0.73
2 <9 Years (n=7)	Head/face/hair	1.66	3.25	0.03	0.26	0.52	0.78	6.54	8.52	9.01
2 <9 Years (n=7)	Shin guards	0.01	0.03	0.00	0.00	0.00	0.00	0.06	0.08	0.08
2 <9 Years (n=7)	Soccer ball	0.66	0.51	0.16	0.49	0.51	0.62	1.44	1.70	1.76
2 <9 Years (n=7)	Water bottle	0.43	0.34	0.00	0.19	0.43	0.70	0.81	0.83	0.83
2 <9 Years (n=7)	Dietary Objects	0.43	0.34	0.00	0.19	0.43	0.70	0.81	0.83	0.83
2 <9 Years (n=7)	Non-dietary Objects	13.00	5.61	6.89	8.80	12.51	16.17	20.93	21.53	21.68
2 <9 Years (n=7)	All Objects	13.43	5.59	7.31	9.53	12.51	16.55	21.42	21.92	22.05
9 <16 Years (n=18)	Artificial Turf	0.09	0.12	0.00	0.01	0.04	0.13	0.33	0.44	0.47
9 <16 Years (n=18)	Body	0.85	1.15	0.04	0.15	0.25	1.13	3.55	3.73	3.77
9 <16 Years (n=18)	Clothes	16.56	14.69	1.83	7.65	10.62	22.00	42.19	52.51	55.09
9 <16 Years (n=18)	Field Structures	0.59	0.73	0.05	0.13	0.24	0.60	2.14	2.36	2.41
9 <16 Years (n=18)	Footwear	0.41	0.39	0.01	0.22	0.29	0.47	0.90	1.60	1.77
9 <16 Years (n=18)	Head/face/hair	0.93	0.66	0.16	0.40	0.74	1.32	2.18	2.28	2.30
9 <16 Years (n=18)	Shin guards	0.23	0.53	0.00	0.00	0.02	0.10	1.01	1.92	2.15
9 <16 Years (n=18)	Soccer ball	1.25	1.22	0.01	0.40	0.97	1.54	3.77	3.83	3.84
9 <16 Years (n=18)	Water bottle	0.41	0.45	0.00	0.00	0.33	0.84	1.06	1.15	1.17
9 <16 Years (n=18)	Dietary Objects	0.41	0.45	0.00	0.00	0.33	0.84	1.06	1.15	1.17
9 <16 Years (n=18)	Non-dietary Objects	21.58	14.74	4.95	11.45	14.68	27.92	48.02	56.59	58.73
9 <16 Years (n=18)	All Objects	21.99	14.68	4.95	11.72	15.58	28.41	48.55	56.69	58.73
≥16 Years (n=15)	Artificial Turf	0.28	0.31	0.00	0.04	0.16	0.43	0.86	0.96	0.98
≥16 Years (n=15)	Body	0.92	1.65	0.03	0.08	0.25	0.61	4.53	5.15	5.31
≥16 Years (n=15)	Clothes	7.81	5.45	1.84	4.19	6.22	9.16	18.35	20.97	21.63
≥16 Years (n=15)	Field Structures	0.85	0.93	0.01	0.12	0.57	1.16	2.47	3.00	3.13
≥16 Years (n=15)	Footwear	0.44	0.42	0.01	0.14	0.31	0.51	1.29	1.41	1.44



Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=15)	Head/face/hair	0.73	0.59	0.22	0.34	0.47	0.91	1.80	2.18	2.27
≥16 Years (n=15)	Shin guards	0.03	0.06	0.00	0.00	0.00	0.01	0.15	0.17	0.17
≥16 Years (n=15)	Soccer ball	0.40	0.67	0.00	0.08	0.14	0.24	1.78	2.16	2.25
≥16 Years (n=15)	Water bottle	0.37	0.55	0.00	0.00	0.12	0.50	1.19	1.85	2.02
≥16 Years (n=15)	Dietary Objects	0.38	0.56	0.00	0.00	0.12	0.50	1.20	1.89	2.06
≥16 Years (n=15)	Non-dietary Objects	11.86	6.60	4.53	6.01	10.76	16.37	22.12	24.36	24.92
≥16 Years (n=15)	All Objects	12.23	6.85	4.53	6.31	11.49	16.37	23.64	25.06	25.41
p value*	Artificial Turf	0.578	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.088	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.760	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.141	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.870	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.172	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.423	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.091	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.320	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.852	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.826	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Kruskal Wallis

ND: not determined

Table S3-142. Median Duration of Hand to Object Contact (Second) by Age, On Field

Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years	Artificial Turf	7	1.76	1.22	0.62	1.08	1.39	1.95	3.66	4.10	4.21
2 <9 Years	Body	7	1.15	0.43	0.74	0.87	0.94	1.43	1.78	1.80	1.81
2 <9 Years	Clothes	7	3.18	0.94	1.83	2.53	3.20	3.91	4.30	4.36	4.38
2 <9 Years	Field Structures	6	4.99	5.13	1.33	1.72	3.00	5.63	12.66	14.36	14.78
2 <9 Years	Footwear	7	2.73	1.85	0.82	1.36	1.80	4.19	5.23	5.39	5.43



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Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years	Head/face/hair	7	1.30	0.66	0.60	0.89	1.11	1.60	2.28	2.37	2.40
2 <9 Years	Shin guards	1	4.16	ND	ND	ND	ND	ND	ND	ND	ND
2 <9 Years	Soccer ball	7	1.87	0.89	1.38	1.41	1.50	1.77	3.28	3.72	3.83
2 <9 Years	Water bottle	5	10.09	4.47	5.35	8.29	9.42	9.98	15.94	17.13	17.43
2 <9 Years	Dietary Objects	5	10.09	4.47	5.35	8.29	9.42	9.98	15.94	17.13	17.43
2 <9 Years	Non-dietary Objects	7	1.94	0.35	1.49	1.68	1.97	2.15	2.40	2.47	2.48
2 <9 Years	All Objects	7	1.97	0.33	1.52	1.74	1.97	2.15	2.42	2.49	2.50
9 <16 Years	Artificial Turf	16	1.04	0.46	0.18	0.81	1.03	1.24	1.74	2.11	2.20
9 <16 Years	Body	18	1.28	0.49	0.56	1.03	1.20	1.52	1.99	2.35	2.44
9 <16 Years	Clothes	18	5.66	4.56	1.69	3.09	4.00	6.19	15.15	18.70	19.59
9 <16 Years	Field Structures	18	3.64	4.30	0.41	1.69	2.66	3.82	7.71	17.51	19.96
9 <16 Years	Footwear	18	3.51	2.27	0.99	1.75	2.92	4.48	7.42	9.20	9.65
9 <16 Years	Head/face/hair	18	1.40	0.52	0.89	1.12	1.25	1.56	2.17	2.90	3.09
9 <16 Years	Shin guards	10	5.66	5.92	0.90	1.56	2.79	7.20	16.18	16.56	16.65
9 <16 Years	Soccer ball	18	2.27	2.13	0.64	1.33	1.73	2.13	4.45	9.34	10.56
9 <16 Years	Water bottle	11	8.99	5.66	3.75	6.13	7.05	9.79	18.48	22.46	23.45
9 <16 Years	Dietary Objects	11	8.27	5.83	1.58	5.58	6.43	9.32	17.92	22.35	23.45
9 <16 Years	Non-dietary Objects	18	2.84	1.58	1.18	1.88	2.26	3.24	6.70	6.89	6.94
9 <16 Years	All Objects	18	2.87	1.58	1.18	1.91	2.28	3.29	6.70	6.91	6.96
≥16 Years	Artificial Turf	12	2.10	1.68	0.65	0.78	1.44	3.06	4.95	5.11	5.14
≥16 Years	Body	15	1.48	1.50	0.45	0.77	0.92	1.49	3.90	5.83	6.32
≥16 Years	Clothes	15	3.28	2.08	1.59	2.11	2.47	3.31	7.15	8.66	9.03
≥16 Years	Field Structures	15	2.98	2.13	0.55	1.40	2.28	4.13	6.61	7.50	7.72
≥16 Years	Footwear	15	3.42	3.88	0.89	1.47	2.00	2.70	10.66	14.07	14.93
≥16 Years	Head/face/hair	15	1.26	0.21	0.99	1.13	1.18	1.32	1.62	1.63	1.63
≥16 Years	Shin guards	4	2.03	0.57	1.48	1.58	2.00	2.46	2.60	2.63	2.64
≥16 Years	Soccer ball	14	1.55	0.92	0.77	1.00	1.13	1.88	3.03	3.90	4.11



Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years	Water bottle	9	6.14	4.60	2.09	2.87	4.13	7.05	13.82	15.12	15.45
≥16 Years	Dietary Objects	9	6.14	4.60	2.09	2.87	4.13	7.05	13.82	15.12	15.45
≥16 Years	Non-dietary Objects	15	1.85	0.75	1.24	1.49	1.61	1.79	3.30	3.86	4.00
≥16 Years	All Objects	15	1.88	0.76	1.24	1.53	1.64	1.81	3.33	3.92	4.07
p value	Artificial Turf	ND	0.680	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.028*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.795	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.623	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.461	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.253	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	0.221	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	0.026*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.388	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.733	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.230	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.541	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

ND: not determined

Table S3-143. Hourly Duration (Min/Hour) of Player Intensity by Age, On Field

Age Group	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	High	2.85	1.74	0.73	1.47	2.80	3.99	5.06	5.43	5.52
2 <9 Years (n=7)	Moderate	13.42	7.07	4.78	8.50	11.70	18.93	22.48	22.60	22.63
2 <9 Years (n=7)	Light	22.47	6.12	13.63	17.69	25.45	27.44	27.86	27.96	27.98
2 <9 Years (n=7)	Resting	21.25	8.77	13.19	16.01	18.86	23.17	35.03	37.71	38.38
9 <16 Years (n=18)	High	1.87	1.10	0.10	1.12	1.80	2.47	3.75	4.49	4.67
9 <16 Years (n=18)	Moderate	13.12	3.78	7.07	10.58	12.90	15.37	18.47	20.20	20.63
9 <16 Years (n=18)	Light	27.05	4.38	19.68	23.30	27.81	29.24	32.91	34.01	34.29
9 <16 Years (n=18)	Resting	17.97	5.42	10.30	15.30	17.36	18.65	28.65	30.83	31.38



Age Group	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=15)	High	2.10	1.11	0.31	1.13	2.40	2.97	3.34	3.56	3.61
≥16 Years (n=15)	Moderate	15.09	6.24	4.18	12.21	16.40	19.87	22.03	22.67	22.83
≥16 Years (n=15)	Light	26.50	5.07	15.46	23.67	26.65	29.97	33.52	33.70	33.74
≥16 Years (n=15)	Resting	16.31	6.82	8.83	10.07	13.87	21.31	26.45	29.15	29.82
p value*	High	0.282	ND	ND	ND	ND	ND	ND	ND	ND
p value	Moderate	0.423	ND	ND	ND	ND	ND	ND	ND	ND
p value	Light	0.194	ND	ND	ND	ND	ND	ND	ND	ND
p value	Resting	0.358	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Kruskal Wallis

ND: not determined

Table S3-144. Duration (Min/Hour) of Macro-Activities by Age, On Field

Age Group	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Push ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Rest Standing	19.23	6.90	12.44	14.47	18.36	21.62	29.60	31.26	31.67
2 <9 Years (n=7)	Running	15.02	9.00	2.50	10.11	14.30	20.57	26.81	26.96	27.00
2 <9 Years (n=7)	Sit on chair	0.26	0.69	0.00	0.00	0.00	0.00	1.27	1.71	1.82
2 <9 Years (n=7)	Sit on ground	1.38	2.02	0.42	0.47	0.62	0.88	4.43	5.65	5.95
2 <9 Years (n=7)	Stretching	0.30	0.25	0.00	0.10	0.40	0.44	0.60	0.64	0.65
2 <9 Years (n=7)	Walking	23.66	7.37	13.65	17.57	26.44	29.37	31.18	31.58	31.68
9 <16 Years (n=18)	Push ups	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
9 <16 Years (n=18)	Rest Standing	16.24	4.78	8.77	14.62	16.34	16.88	22.93	29.15	30.71
9 <16 Years (n=18)	Running	14.73	4.75	7.60	10.94	14.56	17.83	22.13	23.10	23.34
9 <16 Years (n=18)	Sit on chair	0.54	2.35	0.00	0.00	0.00	0.00	1.03	8.41	10.26
9 <16 Years (n=18)	Sit on ground	0.49	0.50	0.00	0.01	0.46	0.77	1.26	1.58	1.66
9 <16 Years (n=18)	Stretching	0.31	0.39	0.00	0.00	0.13	0.49	0.97	1.27	1.34
9 <16 Years (n=18)	Walking	27.49	5.13	19.92	22.84	27.49	31.50	34.00	36.62	37.28
≥16 Years (n=15)	Push ups	0.01	0.03	0.00	0.00	0.00	0.00	0.04	0.09	0.10
≥16 Years (n=15)	Rest Standing	14.38	7.29	5.00	8.13	13.10	19.73	25.66	28.93	29.75



Age Group	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=15)	Running	16.02	7.40	4.48	10.27	18.31	21.64	25.19	25.45	25.52
≥16 Years (n=15)	Sit on chair	0.59	2.19	0.00	0.00	0.00	0.00	2.87	7.14	8.21
≥16 Years (n=15)	Sit on ground	0.52	0.69	0.00	0.02	0.17	0.68	1.82	2.05	2.11
≥16 Years (n=15)	Stretching	1.39	2.13	0.00	0.06	0.36	1.27	5.64	6.64	6.89
≥16 Years (n=15)	Walking	26.47	6.50	13.73	21.14	27.85	31.00	34.60	35.98	36.32
p value*	Push ups	0.832	ND	ND	ND	ND	ND	ND	ND	ND
p value	Rest Standing	0.253	ND	ND	ND	ND	ND	ND	ND	ND
p value	Running	0.057	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on chair	0.338	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on ground	0.473	ND	ND	ND	ND	ND	ND	ND	ND
p value	Stretching	0.773	ND	ND	ND	ND	ND	ND	ND	ND
p value	Walking	0.791	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Kruskal Wallis

NA: not applicable due to these activities not observed; and ND: not determined

Table S3-145. Mouthing Frequency (Event/Hour) by Age, On Field

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Body	0.28	0.73	0.00	0.00	0.00	0.00	1.36	1.82	1.94
2 <9 Years (n=7)	Clothes	16.62	35.41	0.80	1.72	4.63	5.34	69.42	91.33	96.81
2 <9 Years (n=7)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Hands	5.29	2.61	1.60	3.69	4.40	7.49	8.39	8.60	8.65
2 <9 Years (n=7)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Water bottle	0.99	1.68	0.00	0.00	0.00	1.19	3.66	4.36	4.54
2 <9 Years (n=7)	Dietary Objects	0.99	1.68	0.00	0.00	0.00	1.19	3.66	4.36	4.54
2 <9 Years (n=7)	Non-dietary Objects	17.07	35.24	0.80	2.30	4.63	6.32	69.91	91.43	96.81



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	All Objects	18.05	35.62	0.80	2.30	5.40	8.59	72.39	93.21	98.41
9 <16 Years (n=18)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Body	1.07	2.92	0.00	0.00	0.00	0.39	5.03	10.82	12.27
9 <16 Years (n=18)	Clothes	5.68	7.37	0.00	1.36	2.31	7.19	18.35	26.13	28.08
9 <16 Years (n=18)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Hands	10.05	6.99	2.11	6.52	7.51	11.99	25.57	26.18	26.33
9 <16 Years (n=18)	Head/face/hair	0.02	0.11	0.00	0.00	0.00	0.00	0.05	0.39	0.47
9 <16 Years (n=18)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Water bottle	1.76	2.10	0.00	0.00	0.82	3.12	5.65	5.69	5.70
9 <16 Years (n=18)	Dietary Objects	1.86	2.06	0.00	0.00	1.03	3.12	5.65	5.69	5.70
9 <16 Years (n=18)	Non-dietary Objects	8.78	10.33	0.00	2.50	5.70	12.10	20.82	40.50	45.42
9 <16 Years (n=18)	All Objects	10.64	10.52	0.94	2.88	9.16	15.30	21.56	40.65	45.42
≥16 Years (n=15)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Body	0.13	0.26	0.00	0.00	0.00	0.00	0.64	0.65	0.65
≥16 Years (n=15)	Clothes	7.90	7.92	0.00	0.90	6.57	12.84	21.00	23.89	24.61
≥16 Years (n=15)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Hands	6.83	4.52	0.84	2.98	6.45	10.39	13.75	14.96	15.26
≥16 Years (n=15)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Soccer ball	0.05	0.17	0.00	0.00	0.00	0.00	0.22	0.55	0.63
≥16 Years (n=15)	Water bottle	1.24	1.75	0.00	0.00	0.27	1.96	4.62	5.14	5.27
≥16 Years (n=15)	Dietary Objects	1.67	1.96	0.00	0.00	1.22	2.58	4.96	5.98	6.23
≥16 Years (n=15)	Non-dietary Objects	8.74	8.05	0.00	1.35	7.60	12.96	22.65	24.73	25.25
≥16 Years (n=15)	All Objects	10.41	8.23	0.00	3.66	10.31	13.46	23.17	24.83	25.25



Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value*	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.841	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.697	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.186	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.678	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.583	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.800	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.746	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Kruskal Wallis

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-146. Mouthing Duration (Min/Hour) by Age, On Field

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Body	0.01	0.02	0.00	0.00	0.00	0.00	0.04	0.05	0.05
2 <9 Years (n=7)	Clothes	0.28	0.55	0.00	0.03	0.07	0.17	1.12	1.44	1.52
2 <9 Years (n=7)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Hands	0.17	0.21	0.03	0.06	0.10	0.16	0.50	0.60	0.63
2 <9 Years (n=7)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Water bottle	0.07	0.11	0.00	0.00	0.00	0.08	0.24	0.29	0.30
2 <9 Years (n=7)	Dietary Objects	0.07	0.11	0.00	0.00	0.00	0.08	0.24	0.29	0.30



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Non-dietary Objects	0.30	0.54	0.00	0.04	0.14	0.19	1.13	1.44	1.52
2 <9 Years (n=7)	All Objects	0.37	0.58	0.00	0.04	0.14	0.37	1.29	1.55	1.62
9 <16 Years (n=18)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Body	0.03	0.07	0.00	0.00	0.00	0.01	0.14	0.28	0.31
9 <16 Years (n=18)	Clothes	0.18	0.25	0.00	0.03	0.06	0.25	0.63	0.68	0.69
9 <16 Years (n=18)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Hands	0.36	0.32	0.05	0.14	0.27	0.41	0.89	1.15	1.21
9 <16 Years (n=18)	Head/face/hair	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
9 <16 Years (n=18)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=18)	Water bottle	0.12	0.15	0.00	0.00	0.01	0.21	0.41	0.41	0.41
9 <16 Years (n=18)	Dietary Objects	0.13	0.15	0.00	0.00	0.06	0.22	0.41	0.41	0.41
9 <16 Years (n=18)	Non-dietary Objects	0.25	0.27	0.00	0.05	0.09	0.39	0.73	0.84	0.87
9 <16 Years (n=18)	All Objects	0.37	0.34	0.03	0.08	0.23	0.60	0.98	1.00	1.01
≥16 Years (n=15)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Body	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
≥16 Years (n=15)	Clothes	0.19	0.20	0.00	0.04	0.15	0.25	0.51	0.69	0.74
≥16 Years (n=15)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Hands	0.18	0.23	0.01	0.07	0.11	0.21	0.51	0.84	0.92
≥16 Years (n=15)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Soccer ball	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
≥16 Years (n=15)	Water bottle	0.07	0.10	0.00	0.00	0.02	0.07	0.27	0.28	0.28
≥16 Years (n=15)	Dietary Objects	0.09	0.11	0.00	0.00	0.05	0.12	0.28	0.29	0.29
≥16 Years (n=15)	Non-dietary Objects	0.21	0.21	0.00	0.06	0.15	0.33	0.52	0.72	0.77



Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=15)	All Objects	0.30	0.25	0.00	0.10	0.23	0.41	0.71	0.76	0.77
p value	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.932	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.560	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.037*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.719	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.609	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.789	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.686	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-147. Mouthing Median Duration (Second) by Age, On Field

Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years	Artificial Turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Body	1	1.59	ND	ND	ND	ND	ND	ND	ND	ND
2 <9 Years	Clothes	7	1.03	0.59	0.24	0.64	0.94	1.36	1.81	1.96	2.00
2 <9 Years	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Hands	7	1.21	0.75	0.36	0.82	0.96	1.42	2.31	2.62	2.69
2 <9 Years	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Water bottle	3	3.86	1.31	2.81	3.13	3.44	4.39	5.14	5.29	5.33



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Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years	Dietary Objects	3	3.86	1.31	2.81	3.13	3.44	4.39	5.14	5.29	5.33
2 <9 Years	Non-dietary Objects	7	1.15	0.73	0.24	0.64	0.94	1.74	2.09	2.12	2.13
2 <9 Years	All Objects	7	1.28	0.86	0.24	0.64	0.94	2.03	2.32	2.39	2.41
9 <16 Years	Artificial Turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Body	5	1.00	0.44	0.58	0.60	0.98	1.26	1.53	1.59	1.60
9 <16 Years	Clothes	17	1.50	0.62	0.62	1.19	1.39	1.76	2.59	2.76	2.80
9 <16 Years	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Hands	19	1.35	0.54	0.52	1.01	1.18	1.65	2.37	2.49	2.52
9 <16 Years	Head/face/hair	1	1.50	ND	ND	ND	ND	ND	ND	ND	ND
9 <16 Years	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Water bottle	10	3.55	1.18	1.06	3.30	3.74	4.21	4.92	5.19	5.26
9 <16 Years	Dietary Objects	11	3.71	1.24	1.06	3.33	3.84	4.39	5.28	5.30	5.30
9 <16 Years	Non-dietary Objects	18	1.24	0.52	0.58	0.88	1.14	1.56	2.07	2.44	2.53
9 <16 Years	All Objects	19	1.75	1.13	0.58	0.98	1.42	1.98	3.36	4.92	5.30
≥16 Years	Artificial Turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years	Body	3	0.91	0.35	0.54	0.75	0.97	1.10	1.20	1.22	1.22
≥16 Years	Clothes	11	2.00	2.87	0.61	0.89	1.28	1.37	6.13	9.71	10.61
≥16 Years	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years	Hands	14	1.07	0.63	0.62	0.84	0.90	1.00	2.02	2.92	3.15
≥16 Years	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years	Soccer ball	1	0.13	ND	ND	ND	ND	ND	ND	ND	ND
≥16 Years	Water bottle	7	3.37	1.79	0.93	2.23	3.26	4.59	5.69	5.72	5.73
≥16 Years	Dietary Objects	8	3.01	1.76	0.93	2.00	2.30	3.84	5.68	5.72	5.73



Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years	Non-dietary Objects	12	1.82	2.78	0.61	0.82	1.05	1.35	5.57	9.60	10.61
≥16 Years	All Objects	12	1.50	1.02	0.61	0.93	1.21	1.51	3.15	4.22	4.48
p value*	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.380	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.072	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.835	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.122	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.300	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.576	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Kruskal Wallis

NA: not applicable due to no mouth contact with these objects; and ND: not determined

S3.3.3.2. Activity Patterns by Age, Off Field

Table S3-148. Frequency (Event/Hour) of Actions by Age, Off Field

Age Group	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Jumping	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Slip or fall	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Tackling or sliding	0.72	1.91	0.00	0.00	0.00	0.00	3.54	4.76	5.06
9 <16 Years (n=17)	Jumping	6.83	12.24	0.00	0.00	0.00	11.75	29.64	37.57	39.55
9 <16 Years (n=17)	Slip or fall	0.56	1.63	0.00	0.00	0.00	0.00	4.92	5.16	5.22
9 <16 Years (n=17)	Tackling or sliding	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Jumping	1.40	4.09	0.00	0.00	0.00	0.00	7.23	13.69	15.31
≥16 Years (n=15)	Slip or fall	0.21	0.77	0.00	0.00	0.00	0.00	1.01	2.51	2.88



Age Group	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=15)	Tackling or sliding	NA	NA	NA	NA	NA	NA	NA	NA	NA
p value*	Jumping	0.260	ND	ND	ND	ND	ND	ND	ND	ND
p value	Slip or fall	0.631	ND	ND	ND	ND	ND	ND	ND	ND
p value	Tackling or sliding	ND	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Kruskal Wallis

NA: not applicable due to the activities not observed; and ND: not determined

Table S3-149. Frequency of Hand to Object Contact (Event/Hour) by Age, Off Field

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Artificial Turf	8.96	23.31	0.00	0.00	0.00	0.44	43.54	58.16	61.82
2 <9 Years (n=7)	Body	29.78	16.15	9.07	17.35	33.04	38.00	51.07	54.75	55.67
2 <9 Years (n=7)	Clothes	76.62	56.77	11.99	42.13	66.07	98.73	161.97	173.63	176.54
2 <9 Years (n=7)	Field Structures	13.12	8.83	0.00	7.80	12.85	19.89	22.70	23.42	23.60
2 <9 Years (n=7)	Footwear	3.00	5.50	0.00	0.00	0.00	3.05	11.76	14.29	14.92
2 <9 Years (n=7)	Head/face/hair	32.98	40.59	0.00	9.02	23.98	34.76	95.92	114.68	119.37
2 <9 Years (n=7)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Soccer ball	24.48	28.45	0.00	5.98	14.90	32.98	69.12	76.68	78.57
2 <9 Years (n=7)	Water bottle	74.86	39.24	49.68	52.94	59.00	74.47	136.22	155.68	160.55
2 <9 Years (n=7)	Dietary Objects	74.86	39.24	49.68	52.94	59.00	74.47	136.22	155.68	160.55
2 <9 Years (n=7)	Non-dietary Objects	213.03	96.49	118.93	147.14	176.99	273.96	349.48	352.37	353.09
2 <9 Years (n=7)	All Objects	287.89	92.24	174.73	237.35	259.43	336.92	421.08	430.24	432.53
9 <16 Years (n=17)	Artificial Turf	4.67	8.84	0.00	0.00	0.00	5.63	22.46	30.52	32.54
9 <16 Years (n=17)	Body	16.75	21.21	0.00	0.00	7.23	35.65	53.19	59.06	60.53
9 <16 Years (n=17)	Clothes	119.78	69.37	0.00	78.19	105.57	136.43	260.28	266.51	268.07
9 <16 Years (n=17)	Field Structures	16.20	15.42	0.00	1.05	14.33	23.67	42.92	49.38	50.99
9 <16 Years (n=17)	Footwear	13.30	16.09	0.00	0.00	5.30	26.13	38.83	42.94	43.97
9 <16 Years (n=17)	Head/face/hair	24.63	24.24	0.00	5.96	20.27	36.33	70.12	79.30	81.59
9 <16 Years (n=17)	Shin guards	1.48	2.68	0.00	0.00	0.00	1.89	7.09	7.80	7.98



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
9 <16 Years (n=17)	Soccer ball	33.01	41.27	0.00	1.57	23.13	48.77	97.43	147.79	160.38
9 <16 Years (n=17)	Water bottle	51.01	62.07	0.00	5.85	20.62	75.62	168.09	190.37	195.94
9 <16 Years (n=17)	Dietary Objects	51.09	62.02	0.00	5.85	20.62	75.62	168.09	190.37	195.94
9 <16 Years (n=17)	Non-dietary Objects	242.20	111.08	0.00	189.65	218.84	329.72	381.69	392.82	395.60
9 <16 Years (n=17)	All Objects	293.28	137.57	0.00	231.51	306.42	371.38	471.46	554.43	575.17
≥16 Years (n=15)	Artificial Turf	2.93	10.53	0.00	0.00	0.00	0.00	14.85	34.57	39.50
≥16 Years (n=15)	Body	16.63	17.25	0.00	4.61	13.44	24.01	44.46	59.15	62.82
≥16 Years (n=15)	Clothes	75.88	48.32	0.00	54.90	69.86	99.28	144.72	177.61	185.83
≥16 Years (n=15)	Field Structures	21.05	34.85	0.00	1.73	8.33	16.62	85.55	118.49	126.72
≥16 Years (n=15)	Footwear	17.12	31.07	0.00	0.00	2.31	10.91	74.61	99.19	105.33
≥16 Years (n=15)	Head/face/hair	23.38	25.36	0.00	6.07	18.09	28.99	66.67	88.05	93.40
≥16 Years (n=15)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Soccer ball	39.57	89.20	0.00	6.37	13.57	22.93	165.93	307.83	343.30
≥16 Years (n=15)	Water bottle	23.85	22.43	0.00	0.76	29.12	35.03	55.84	72.20	76.29
≥16 Years (n=15)	Dietary Objects	24.26	22.64	0.00	0.76	29.12	36.51	55.84	72.20	76.29
≥16 Years (n=15)	Non-dietary Objects	213.14	93.01	20.71	150.74	232.03	284.33	320.21	338.68	343.30
≥16 Years (n=15)	All Objects	237.40	101.46	20.71	160.63	256.41	300.29	365.79	408.83	419.59
p value	Artificial Turf	0.021*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.925	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.511	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.409	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.488	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.810	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.166	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.348	ND	ND	ND	ND	ND	ND	ND	ND



Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Dietary Objects	0.882	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.051	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.146	ND	ND	ND	ND	ND	ND	ND	ND

* <0.05 (Kruskal Wallis)

NA: not applicable due to no contact with the object; and ND: not determined

Table S3-150. Duration of Hand to Object Contact (Min/Hour) by Age, Off Field

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Artificial Turf	0.80	2.10	0.00	0.00	0.00	0.02	3.91	5.24	5.57
2 <9 Years (n=7)	Body	5.32	5.83	0.68	1.19	3.11	7.07	14.23	16.42	16.97
2 <9 Years (n=7)	Clothes	12.74	9.83	3.05	6.90	10.22	14.87	27.97	31.49	32.37
2 <9 Years (n=7)	Field Structures	1.21	1.13	0.00	0.41	1.26	1.49	2.83	3.28	3.39
2 <9 Years (n=7)	Footwear	0.30	0.49	0.00	0.00	0.00	0.52	1.05	1.08	1.09
2 <9 Years (n=7)	Head/face/hair	1.62	2.46	0.00	0.29	0.69	1.58	5.57	6.63	6.90
2 <9 Years (n=7)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Soccer ball	1.00	0.92	0.00	0.35	0.68	1.61	2.28	2.38	2.40
2 <9 Years (n=7)	Water bottle	15.49	6.31	6.64	10.58	16.35	20.72	22.50	22.80	22.88
2 <9 Years (n=7)	Dietary Objects	15.49	6.31	6.64	10.58	16.35	20.72	22.50	22.80	22.88
2 <9 Years (n=7)	Non-dietary Objects	25.89	9.82	14.18	18.88	25.28	30.87	39.32	41.67	42.26
2 <9 Years (n=7)	All Objects	41.38	5.77	35.53	36.69	39.39	46.24	48.88	48.90	48.90
9 <16 Years (n=17)	Artificial Turf	0.33	0.59	0.00	0.00	0.00	0.27	1.24	1.93	2.10
9 <16 Years (n=17)	Body	2.38	3.60	0.00	0.00	0.25	2.99	9.91	11.62	12.05
9 <16 Years (n=17)	Clothes	16.94	11.50	0.00	4.79	19.41	22.87	34.35	36.35	36.85
9 <16 Years (n=17)	Field Structures	1.58	2.09	0.00	0.06	0.60	2.33	5.93	6.62	6.79
9 <16 Years (n=17)	Footwear	2.56	5.23	0.00	0.00	0.27	2.61	8.34	19.16	21.86
9 <16 Years (n=17)	Head/face/hair	0.94	0.80	0.00	0.20	0.79	1.56	2.13	2.23	2.26
9 <16 Years (n=17)	Shin guards	0.20	0.39	0.00	0.00	0.00	0.19	1.10	1.21	1.24
9 <16 Years (n=17)	Soccer ball	1.94	2.21	0.00	0.04	1.52	2.59	6.27	6.45	6.49
9 <16 Years (n=17)	Water bottle	8.04	9.48	0.00	0.77	2.48	16.78	21.71	28.17	29.78



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
9 <16 Years (n=17)	Dietary Objects	8.05	9.47	0.00	0.77	2.56	16.78	21.71	28.17	29.78
9 <16 Years (n=17)	Non-dietary Objects	28.13	14.95	0.00	18.32	31.83	39.79	46.37	50.09	51.02
9 <16 Years (n=17)	All Objects	36.17	16.30	0.00	28.84	38.68	46.04	58.52	59.45	59.68
≥16 Years (n=15)	Artificial Turf	0.08	0.29	0.00	0.00	0.00	0.00	0.39	0.93	1.07
≥16 Years (n=15)	Body	1.75	1.96	0.00	0.23	0.96	2.63	5.63	5.78	5.82
≥16 Years (n=15)	Clothes	13.51	12.33	0.00	5.32	10.28	19.07	32.57	43.43	46.15
≥16 Years (n=15)	Field Structures	2.20	4.54	0.00	0.07	0.92	1.37	8.66	15.70	17.46
≥16 Years (n=15)	Footwear	3.11	6.84	0.00	0.00	0.04	1.37	14.19	22.72	24.85
≥16 Years (n=15)	Head/face/hair	1.06	1.95	0.00	0.14	0.42	1.15	3.63	6.81	7.61
≥16 Years (n=15)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Soccer ball	1.22	2.08	0.00	0.10	0.65	0.84	4.36	7.22	7.93
≥16 Years (n=15)	Water bottle	3.13	3.31	0.00	0.01	2.79	5.49	8.05	9.55	9.93
≥16 Years (n=15)	Dietary Objects	3.17	3.33	0.00	0.01	2.79	5.62	8.05	9.55	9.93
≥16 Years (n=15)	Non-dietary Objects	24.49	12.70	2.69	17.88	25.58	29.72	42.60	50.53	52.51
≥16 Years (n=15)	All Objects	27.66	12.20	2.69	20.84	27.28	35.04	43.32	50.80	52.67
p value	Artificial Turf	0.005*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.731	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.536	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.409	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.574	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.742	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.214	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.031*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.088	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.896	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.116	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)



NA: not applicable due to no contact with the object; and ND: not determined

Table S3-151. Median Duration of Hand to Object Contact (Second) by Age, Off Field

Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years	Artificial Turf	2	2.32	0.28	2.12	2.22	2.32	2.41	2.49	2.51	2.51
2 <9 Years	Body	7	4.41	3.75	1.18	2.20	2.88	5.10	10.12	11.78	12.19
2 <9 Years	Clothes	7	5.70	3.81	2.24	2.99	4.69	7.50	11.41	11.89	12.01
2 <9 Years	Field Structures	6	3.62	1.38	2.28	2.46	3.40	4.43	5.41	5.64	5.70
2 <9 Years	Footwear	3	3.26	0.11	3.20	3.20	3.20	3.30	3.37	3.39	3.39
2 <9 Years	Head/face/hair	6	1.87	0.98	0.65	1.25	1.87	2.24	3.16	3.40	3.45
2 <9 Years	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Soccer ball	6	2.20	1.07	0.64	1.83	2.06	2.67	3.57	3.76	3.81
2 <9 Years	Water bottle	7	8.12	3.61	3.90	5.71	6.38	10.66	12.97	13.63	13.79
2 <9 Years	Dietary Objects	7	8.12	3.61	3.90	5.71	6.38	10.66	12.97	13.63	13.79
2 <9 Years	Non-dietary Objects	7	3.49	1.74	1.91	2.30	2.64	4.38	6.12	6.45	6.54
2 <9 Years	All Objects	7	4.18	1.90	2.63	2.93	3.49	4.77	7.15	7.61	7.73
9 <16 Years	Artificial Turf	7	3.81	3.93	1.15	1.45	1.56	4.77	10.10	11.21	11.49
9 <16 Years	Body	9	3.52	1.45	1.36	2.47	3.33	4.85	5.40	5.42	5.42
9 <16 Years	Clothes	16	4.83	2.46	1.74	3.65	4.22	5.24	8.77	11.54	12.23
9 <16 Years	Field Structures	12	4.39	3.48	1.35	2.58	2.62	6.98	9.82	12.67	13.38
9 <16 Years	Footwear	9	5.80	7.97	1.12	2.05	2.84	4.95	19.28	25.78	27.40
9 <16 Years	Head/face/hair	13	2.08	1.58	0.83	1.08	1.53	2.12	5.34	5.97	6.12
9 <16 Years	Shin guards	5	7.22	5.83	2.71	3.13	4.68	8.88	15.13	16.38	16.70
9 <16 Years	Soccer ball	12	2.50	1.51	1.11	1.68	1.90	2.64	5.11	6.27	6.56
9 <16 Years	Water bottle	15	6.59	2.71	2.77	4.67	6.26	8.16	10.49	12.38	12.85
9 <16 Years	Dietary Objects	15	6.58	2.69	2.77	4.67	6.26	8.16	10.47	12.31	12.78
9 <16 Years	Non-dietary Objects	16	3.45	1.07	1.58	2.76	3.29	4.07	5.19	5.38	5.42
9 <16 Years	All Objects	16	3.77	1.02	2.11	3.11	3.74	4.65	5.21	5.44	5.50
≥16 Years	Artificial Turf	2	0.93	0.46	0.61	0.77	0.93	1.09	1.22	1.25	1.26



Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years	Body	12	5.64	9.15	0.78	1.23	2.35	4.64	20.75	29.79	32.05
≥16 Years	Clothes	14	4.55	2.12	0.82	2.69	4.79	6.14	7.07	7.48	7.58
≥16 Years	Field Structures	12	3.61	1.77	1.67	2.00	3.12	4.96	6.25	6.27	6.28
≥16 Years	Footwear	8	5.60	3.04	0.97	3.26	7.44	7.98	8.29	8.34	8.35
≥16 Years	Head/face/hair	14	1.70	0.73	0.97	1.20	1.59	1.79	2.83	3.55	3.73
≥16 Years	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years	Soccer ball	13	2.06	1.38	0.83	1.13	1.53	2.60	4.38	5.29	5.52
≥16 Years	Water bottle	10	5.67	3.89	0.22	3.03	5.29	7.45	11.61	13.68	14.20
≥16 Years	Dietary Objects	10	5.50	3.82	0.22	3.03	5.29	6.28	11.61	13.68	14.20
≥16 Years	Non-dietary Objects	15	3.05	1.33	0.97	2.10	2.90	3.87	4.96	5.54	5.69
≥16 Years	All Objects	15	3.20	1.37	0.97	2.27	3.01	4.23	5.37	5.53	5.57
p value*	Artificial Turf	ND	0.265	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.929	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.558	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.544	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.116	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	0.637	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.332	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.976	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.233	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.580	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Kruskal Wallis

NA: not applicable due to no contact with the object; and ND: not determined

Table S3-152. Hourly Duration (Min/Hour) of Player Intensity by Age, Off Field

Age Group	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	High	0.72	0.88	0.00	0.23	0.35	0.84	2.12	2.45	2.53



Age Group	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Moderate	1.22	0.92	0.26	0.46	0.94	1.96	2.42	2.49	2.51
2 <9 Years (n=7)	Light	8.29	4.84	3.69	4.34	7.74	10.52	15.34	16.60	16.92
2 <9 Years (n=7)	Resting	49.77	5.49	40.36	46.90	50.82	53.80	55.68	55.78	55.81
9 <16 Years (n=18)	High	2.10	3.24	0.00	0.00	0.68	2.86	9.98	10.20	10.26
9 <16 Years (n=18)	Moderate	8.43	9.85	0.21	2.62	3.75	8.45	30.43	31.37	31.60
9 <16 Years (n=18)	Light	14.51	8.82	4.16	8.27	11.20	19.06	29.60	35.05	36.41
9 <16 Years (n=18)	Resting	34.96	14.16	0.00	26.38	36.04	46.06	51.70	52.39	52.56
≥16 Years (n=15)	High	1.20	1.15	0.00	0.11	0.70	2.15	2.89	2.90	2.90
≥16 Years (n=15)	Moderate	4.08	5.38	0.00	0.70	2.14	4.17	13.63	17.58	18.57
≥16 Years (n=15)	Light	14.60	8.15	2.73	6.28	17.23	18.15	25.63	26.43	26.63
≥16 Years (n=15)	Resting	40.13	11.55	23.13	30.21	39.33	51.12	54.86	55.13	55.20
p value	High	0.856	ND	ND	ND	ND	ND	ND	ND	ND
p value	Moderate	0.009	ND	ND	ND	ND	ND	ND	ND	ND
p value	Light	0.142	ND	ND	ND	ND	ND	ND	ND	ND
p value	Resting	0.024*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

ND: not determined

Table S3-153. Duration (Min/Hour) of Macro-Activities by Age, Off Field

Age Group	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Rest Standing	23.47	12.57	12.27	14.43	20.51	27.58	42.76	46.56	47.51
2 <9 Years (n=7)	Running	1.63	1.31	0.08	0.36	2.11	2.69	3.03	3.09	3.10
2 <9 Years (n=7)	Sit on chair	21.50	15.35	0.00	9.70	28.43	29.49	39.60	42.89	43.71
2 <9 Years (n=7)	Sit on ground	4.99	7.88	0.00	0.06	0.17	6.91	17.54	20.15	20.80
2 <9 Years (n=7)	Stretching	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Walking	8.40	4.87	3.74	4.40	7.90	10.68	15.50	16.71	17.01
9 <16 Years (n=17)	Rest Standing	27.88	12.13	0.00	23.02	26.63	35.95	46.87	47.51	47.67
9 <16 Years (n=17)	Running	7.77	10.25	0.26	1.60	3.74	6.50	31.33	31.55	31.60
9 <16 Years (n=17)	Sit on chair	3.39	7.11	0.00	0.00	0.00	0.40	19.35	21.13	21.58



Age Group	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
9 <16 Years (n=17)	Sit on ground	3.37	4.32	0.00	0.00	0.15	7.11	10.98	11.89	12.12
9 <16 Years (n=17)	Stretching	1.26	2.65	0.00	0.00	0.00	1.15	8.10	8.36	8.42
9 <16 Years (n=17)	Walking	16.13	10.38	5.79	7.47	10.87	23.90	34.78	36.52	36.96
≥16 Years (n=15)	Rest Standing	29.50	12.87	12.04	19.82	27.57	34.31	54.72	54.79	54.81
≥16 Years (n=15)	Running	3.76	5.54	0.00	0.65	2.45	3.40	14.75	18.89	19.92
≥16 Years (n=15)	Sit on chair	5.11	10.48	0.00	0.00	0.00	5.31	25.73	33.83	35.86
≥16 Years (n=15)	Sit on ground	4.71	9.36	0.00	0.00	0.00	1.92	22.39	28.17	29.61
≥16 Years (n=15)	Stretching	1.20	2.74	0.00	0.00	0.00	0.87	5.79	9.29	10.16
≥16 Years (n=15)	Walking	15.69	8.66	2.84	6.55	18.24	22.97	26.37	27.76	28.11
p value	Rest Standing	0.071	ND	ND	ND	ND	ND	ND	ND	ND
p value	Running	0.157	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on chair	0.607	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on ground	0.440	ND	ND	ND	ND	ND	ND	ND	ND
p value	Stretching	0.102	ND	ND	ND	ND	ND	ND	ND	ND
p value	Walking	0.006*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

NA: not applicable due to the activity not observed; and ND: not determined

Table S3-154. Mouthing Frequency (Event/Hour) by Age, Off Field

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Body	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Clothes	33.52	53.99	1.75	6.89	14.07	25.65	117.06	146.44	153.78
2 <9 Years (n=7)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Hands	15.82	14.01	0.00	5.31	11.60	27.64	33.04	33.18	33.22
2 <9 Years (n=7)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Water bottle	47.98	24.00	26.22	37.16	43.49	46.12	83.78	96.43	99.59
2 <9 Years (n=7)	Dietary Objects	47.98	24.00	26.22	37.16	43.49	46.12	83.78	96.43	99.59
2 <9 Years (n=7)	Non-dietary Objects	34.19	53.56	3.50	8.34	14.07	25.65	117.06	146.44	153.78
2 <9 Years (n=7)	All Objects	82.16	58.28	29.72	46.03	60.97	98.11	173.19	191.60	196.20
9 <16 Years (n=16)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=16)	Body	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=16)	Clothes	6.41	10.58	0.00	0.00	0.00	6.26	24.32	36.51	39.56
9 <16 Years (n=16)	Field Structures	0.08	0.32	0.00	0.00	0.00	0.00	0.26	1.11	1.32
9 <16 Years (n=16)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=16)	Hands	10.28	9.60	0.00	0.00	7.69	16.40	26.12	26.32	26.37
9 <16 Years (n=16)	Head/face/hair	0.21	0.88	0.00	0.00	0.00	0.00	0.73	3.05	3.63
9 <16 Years (n=16)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=16)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=16)	Water bottle	46.21	65.38	0.00	2.33	24.35	65.93	137.14	228.88	251.82
9 <16 Years (n=16)	Dietary Objects	46.21	65.38	0.00	2.33	24.35	65.93	137.14	228.88	251.82
9 <16 Years (n=16)	Non-dietary Objects	7.02	10.42	0.00	0.00	4.66	6.26	24.32	36.51	39.56
9 <16 Years (n=16)	All Objects	53.23	65.14	0.00	10.89	28.41	102.31	137.14	228.88	251.82
≥16 Years (n=15)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Body	0.20	0.75	0.00	0.00	0.00	0.00	0.98	2.44	2.80
≥16 Years (n=15)	Clothes	13.37	25.00	0.00	0.00	3.28	17.28	50.52	85.32	94.02
≥16 Years (n=15)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Hands	8.49	15.74	0.00	0.00	3.60	8.23	34.32	54.10	59.04
≥16 Years (n=15)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA



Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=15)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Water bottle	26.70	48.80	0.00	2.13	10.70	25.09	101.32	170.70	188.04
≥16 Years (n=15)	Dietary Objects	26.90	48.69	0.00	4.23	10.70	25.09	101.32	170.70	188.04
≥16 Years (n=15)	Non-dietary Objects	13.57	25.07	0.00	0.00	3.28	17.28	50.52	85.32	94.02
≥16 Years (n=15)	All Objects	40.47	72.64	0.00	8.58	19.08	28.48	147.14	255.08	282.07
p value	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.539	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.072	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.539	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.249	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.424	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.081	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.090	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.079	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.035*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-155. Mouthing Duration (Min/Hour) by Age, Off Field

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Body	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Clothes	0.83	1.05	0.05	0.12	0.34	1.39	2.37	2.39	2.39
2 <9 Years (n=7)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Hands	2.32	4.10	0.00	0.05	0.60	2.09	8.67	10.83	11.37



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=7)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=7)	Water bottle	5.45	8.77	1.16	1.65	1.97	3.24	18.82	23.96	25.25
2 <9 Years (n=7)	Dietary Objects	5.45	8.77	1.16	1.65	1.97	3.24	18.82	23.96	25.25
2 <9 Years (n=7)	Non-dietary Objects	0.94	0.98	0.17	0.28	0.46	1.49	2.37	2.39	2.39
2 <9 Years (n=7)	All Objects	6.39	8.65	1.50	1.84	4.36	4.73	19.49	24.47	25.71
9 <16 Years (n=16)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=16)	Body	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=16)	Clothes	0.37	0.67	0.00	0.00	0.00	0.53	1.49	2.29	2.49
9 <16 Years (n=16)	Field Structures	0.01	0.03	0.00	0.00	0.00	0.00	0.02	0.09	0.11
9 <16 Years (n=16)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=16)	Hands	0.38	0.54	0.00	0.00	0.19	0.34	1.52	1.57	1.58
9 <16 Years (n=16)	Head/face/hair	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.04	0.05
9 <16 Years (n=16)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=16)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=16)	Water bottle	2.63	3.70	0.00	0.15	1.14	4.40	7.50	13.04	14.42
9 <16 Years (n=16)	Dietary Objects	2.63	3.70	0.00	0.15	1.14	4.40	7.50	13.04	14.42
9 <16 Years (n=16)	Non-dietary Objects	0.39	0.69	0.00	0.00	0.07	0.53	1.51	2.39	2.61
9 <16 Years (n=16)	All Objects	3.02	3.64	0.00	0.60	1.56	5.26	7.77	13.09	14.42
≥16 Years (n=15)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Body	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.03	0.03
≥16 Years (n=15)	Clothes	0.69	1.75	0.00	0.00	0.07	0.28	3.22	5.94	6.62
≥16 Years (n=15)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Hands	0.26	0.47	0.00	0.00	0.04	0.32	1.03	1.54	1.67
≥16 Years (n=15)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA



Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=15)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=15)	Water bottle	1.54	2.75	0.00	0.08	0.75	1.35	5.96	9.57	10.47
≥16 Years (n=15)	Dietary Objects	1.55	2.74	0.00	0.17	0.75	1.35	5.96	9.57	10.47
≥16 Years (n=15)	Non-dietary Objects	0.69	1.76	0.00	0.00	0.07	0.28	3.23	5.97	6.65
≥16 Years (n=15)	All Objects	2.25	3.33	0.00	0.57	0.87	2.50	8.55	11.20	11.86
p value*	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.539	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.161	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.539	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.252	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.424	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.092	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.099	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.065	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.127	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Kruskal Wallis

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-156. Mouthing Median Duration (Second) by Age, Off Field

Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years	Artificial Turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Body	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Clothes	7	1.60	0.89	0.72	0.93	1.25	2.16	2.88	3.03	3.06
2 <9 Years	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA



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Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years	Hands	5	3.01	2.16	0.54	1.90	2.52	3.83	5.76	6.15	6.25
2 <9 Years	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Water bottle	7	4.02	3.27	1.35	2.16	2.60	4.60	9.22	10.39	10.69
2 <9 Years	Dietary Objects	7	4.02	3.27	1.35	2.16	2.60	4.60	9.22	10.39	10.69
2 <9 Years	Non-dietary Objects	7	3.02	3.74	0.72	1.03	1.86	2.60	8.82	10.79	11.29
2 <9 Years	All Objects	7	3.31	2.42	1.05	1.81	2.51	4.19	7.04	7.47	7.58
9 <16 Years	Artificial Turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Body	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Clothes	8	2.92	2.65	0.83	1.27	2.16	3.37	7.03	8.57	8.96
9 <16 Years	Field Structures	1	5.18	ND	ND	ND	ND	ND	ND	ND	ND
9 <16 Years	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Hands	12	1.69	2.09	0.20	0.81	1.07	1.42	5.00	7.45	8.06
9 <16 Years	Head/face/hair	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
9 <16 Years	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Water bottle	14	3.38	1.03	2.11	2.72	3.12	3.78	5.23	5.72	5.85
9 <16 Years	Dietary Objects	14	3.38	1.03	2.11	2.72	3.12	3.78	5.23	5.72	5.85
9 <16 Years	Non-dietary Objects	10	2.64	2.46	0.79	1.23	1.66	3.31	6.58	8.48	8.96
9 <16 Years	All Objects	14	2.98	0.98	1.68	2.35	2.80	3.32	4.26	5.53	5.85
≥16 Years	Artificial Turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years	Body	1	0.66	ND	ND	ND	ND	ND	ND	ND	ND
≥16 Years	Clothes	7	1.30	0.49	0.81	0.86	1.20	1.71	1.92	1.95	1.96
≥16 Years	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years	Hands	8	1.72	1.45	0.35	0.90	1.17	1.86	4.13	4.43	4.50



Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years	Water bottle	10	3.63	1.37	0.99	3.03	3.81	4.36	5.36	5.87	6.00
≥16 Years	Dietary Objects	11	3.52	1.34	0.99	2.71	3.70	4.26	5.29	5.86	6.00
≥16 Years	Non-dietary Objects	7	1.27	0.45	0.81	0.86	1.20	1.69	1.81	1.81	1.82
≥16 Years	All Objects	12	2.94	1.52	1.17	1.72	2.73	4.06	5.22	5.84	6.00
p value*	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.193	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.313	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.621	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.744	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.348	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.807	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Kruskal Wallis

NA: not applicable due to no mouth contact with these objects; and ND: not determined

S3.3.4. Data Summarized if Participants Were Wearing Gloves or Not and by Age

S3.3.4.1. Activity Patterns by Age, with Gloves On

Table S3-157. Frequency of Hand to Object Contact (Event/Hour) by Age, with Gloves On

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=3)	Artificial Turf	9.78	10.43	2.15	3.84	5.52	13.60	20.06	21.35	21.67



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=3)	Body	6.17	4.38	2.15	3.84	5.52	8.18	10.30	10.72	10.83
2 <9 Years (n=3)	Clothes	46.28	16.92	27.37	39.44	51.50	55.74	59.12	59.80	59.97
2 <9 Years (n=3)	Field Structures	6.89	0.95	6.25	6.35	6.44	7.21	7.83	7.95	7.98
2 <9 Years (n=3)	Footwear	3.75	3.47	0.00	2.21	4.42	5.63	6.60	6.79	6.84
2 <9 Years (n=3)	Head/face/hair	54.42	60.97	12.14	19.48	26.82	75.57	114.56	122.36	124.31
2 <9 Years (n=3)	Shin guards	0.37	0.64	0.00	0.00	0.00	0.55	0.99	1.08	1.10
2 <9 Years (n=3)	Soccer ball	11.30	3.23	9.20	9.45	9.69	12.36	14.49	14.91	15.02
2 <9 Years (n=3)	Water bottle	9.37	5.37	3.22	7.50	11.77	12.45	12.99	13.09	13.12
2 <9 Years (n=3)	Dietary Objects	9.37	5.37	3.22	7.50	11.77	12.45	12.99	13.09	13.12
2 <9 Years (n=3)	Non-dietary Objects	178.95	79.49	117.00	134.14	151.28	209.93	256.85	266.23	268.58
2 <9 Years (n=3)	All Objects	188.32	81.87	128.78	141.64	154.50	218.10	268.97	279.15	281.69
9 <16 Years (n=11)	Artificial Turf	3.42	5.17	0.00	0.00	1.60	3.70	12.87	15.81	16.55
9 <16 Years (n=11)	Body	9.17	17.19	0.00	1.07	3.17	7.61	35.87	54.92	59.68
9 <16 Years (n=11)	Clothes	60.66	48.32	6.40	28.98	43.60	94.18	136.13	148.62	151.74
9 <16 Years (n=11)	Field Structures	6.48	7.95	0.00	1.61	3.32	8.92	20.60	22.61	23.11
9 <16 Years (n=11)	Footwear	3.98	4.03	0.00	0.00	4.12	7.22	9.78	10.35	10.49
9 <16 Years (n=11)	Head/face/hair	34.04	30.71	1.61	10.10	27.55	56.83	82.13	89.86	91.79
9 <16 Years (n=11)	Shin guards	0.57	1.25	0.00	0.00	0.00	0.32	2.82	3.78	4.02
9 <16 Years (n=11)	Soccer ball	49.12	41.90	2.14	9.58	45.89	75.74	111.99	114.75	115.44
9 <16 Years (n=11)	Water bottle	3.21	4.43	0.00	0.00	0.54	6.57	10.18	11.22	11.48
9 <16 Years (n=11)	Dietary Objects	3.21	4.43	0.00	0.00	0.54	6.57	10.18	11.22	11.48
9 <16 Years (n=11)	Non-dietary Objects	188.93	75.12	81.63	139.00	169.67	240.99	306.21	314.47	316.54
9 <16 Years (n=11)	All Objects	192.14	76.64	81.63	139.26	170.93	246.73	310.65	315.36	316.54
≥16 Years (n=7)	Artificial Turf	8.56	9.32	0.00	1.02	8.21	11.72	21.91	25.35	26.21
≥16 Years (n=7)	Body	11.64	13.57	0.00	1.38	2.45	22.01	30.42	31.89	32.26
≥16 Years (n=7)	Clothes	73.32	55.57	13.90	40.78	58.98	87.49	155.91	178.26	183.85



Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=7)	Field Structures	9.76	15.20	0.00	1.12	2.61	10.42	33.63	40.83	42.63
≥16 Years (n=7)	Footwear	3.95	6.40	0.00	0.00	0.82	4.84	14.24	16.59	17.18
≥16 Years (n=7)	Head/face/hair	20.08	15.23	3.27	7.59	20.74	29.09	40.98	42.76	43.20
≥16 Years (n=7)	Shin guards	1.64	2.90	0.00	0.00	0.00	2.24	6.27	6.88	7.03
≥16 Years (n=7)	Soccer ball	29.42	43.02	0.00	0.58	4.07	53.95	92.21	92.71	92.84
≥16 Years (n=7)	Water bottle	3.27	4.41	0.00	0.00	1.49	4.68	9.99	11.62	12.02
≥16 Years (n=7)	Dietary Objects	3.42	4.77	0.00	0.00	1.49	4.68	10.76	12.64	13.11
≥16 Years (n=7)	Non-dietary Objects	169.58	85.43	63.78	105.72	175.87	228.36	273.86	278.20	279.29
≥16 Years (n=7)	All Objects	173.01	85.77	65.10	107.10	181.13	234.92	274.91	279.61	280.78
p value*	Artificial Turf	0.284	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.906	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.793	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.659	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.912	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.505	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.927	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.232	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.142	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.142	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.851	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.904	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Kruskal Wallis

ND: not determined

Table S3-158. Duration of Hand to Object Contact (Min/Hour) by Age, with Gloves On

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=3)	Artificial Turf	0.89	1.26	0.02	0.17	0.31	1.33	2.14	2.30	2.34
2 <9 Years (n=3)	Body	0.29	0.25	0.03	0.17	0.31	0.42	0.50	0.52	0.52
2 <9 Years (n=3)	Clothes	3.58	1.79	1.57	2.87	4.17	4.59	4.93	4.99	5.01



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=3)	Field Structures	0.44	0.12	0.31	0.39	0.46	0.50	0.53	0.54	0.54
2 <9 Years (n=3)	Footwear	0.15	0.15	0.00	0.08	0.16	0.23	0.29	0.30	0.30
2 <9 Years (n=3)	Head/face/hair	3.44	5.16	0.41	0.46	0.51	4.95	8.50	9.21	9.39
2 <9 Years (n=3)	Shin guards	0.03	0.05	0.00	0.00	0.00	0.04	0.07	0.08	0.08
2 <9 Years (n=3)	Soccer ball	0.61	0.12	0.47	0.57	0.67	0.68	0.68	0.68	0.68
2 <9 Years (n=3)	Water bottle	1.39	0.66	0.63	1.18	1.73	1.78	1.81	1.82	1.82
2 <9 Years (n=3)	Dietary Objects	1.39	0.66	0.63	1.18	1.73	1.78	1.81	1.82	1.82
2 <9 Years (n=3)	Non-dietary Objects	12.05	8.21	7.27	7.31	7.34	14.44	20.11	21.25	21.53
2 <9 Years (n=3)	All Objects	13.44	8.53	7.90	8.53	9.15	16.21	21.85	22.98	23.26
9 <16 Years (n=11)	Artificial Turf	0.11	0.16	0.00	0.00	0.03	0.16	0.39	0.49	0.52
9 <16 Years (n=11)	Body	1.47	4.35	0.00	0.01	0.15	0.28	7.55	13.16	14.56
9 <16 Years (n=11)	Clothes	6.26	7.11	0.46	1.70	3.38	7.09	18.68	23.52	24.73
9 <16 Years (n=11)	Field Structures	0.56	0.91	0.00	0.05	0.12	0.57	2.28	2.68	2.78
9 <16 Years (n=11)	Footwear	0.19	0.24	0.00	0.00	0.13	0.32	0.58	0.73	0.77
9 <16 Years (n=11)	Head/face/hair	0.91	0.81	0.02	0.24	0.80	1.43	2.18	2.39	2.44
9 <16 Years (n=11)	Shin guards	0.02	0.05	0.00	0.00	0.00	0.01	0.11	0.17	0.18
9 <16 Years (n=11)	Soccer ball	2.22	2.04	0.03	0.40	2.03	3.11	5.58	5.72	5.75
9 <16 Years (n=11)	Water bottle	0.56	0.80	0.00	0.00	0.11	1.09	1.89	2.00	2.03
9 <16 Years (n=11)	Dietary Objects	0.56	0.80	0.00	0.00	0.11	1.09	1.89	2.00	2.03
9 <16 Years (n=11)	Non-dietary Objects	13.19	10.78	3.91	9.09	10.13	10.83	31.76	41.26	43.63
9 <16 Years (n=11)	All Objects	13.76	11.08	3.91	9.50	10.54	12.11	32.48	42.56	45.08
≥16 Years (n=7)	Artificial Turf	0.34	0.61	0.00	0.01	0.11	0.30	1.29	1.60	1.68
≥16 Years (n=7)	Body	1.69	3.55	0.00	0.02	0.46	0.82	7.11	9.17	9.68
≥16 Years (n=7)	Clothes	7.69	6.55	0.43	3.45	7.86	9.34	17.08	19.40	19.98
≥16 Years (n=7)	Field Structures	1.94	3.93	0.00	0.03	0.03	1.41	8.09	10.16	10.68
≥16 Years (n=7)	Footwear	0.15	0.23	0.00	0.00	0.02	0.21	0.52	0.60	0.62
≥16 Years (n=7)	Head/face/hair	1.05	1.37	0.06	0.17	0.46	1.30	3.20	3.77	3.91



Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=7)	Shin guards	0.06	0.11	0.00	0.00	0.00	0.07	0.25	0.28	0.29
≥16 Years (n=7)	Soccer ball	0.71	0.96	0.00	0.02	0.19	1.24	2.16	2.26	2.29
≥16 Years (n=7)	Water bottle	0.50	0.91	0.00	0.00	0.08	0.47	1.91	2.39	2.51
≥16 Years (n=7)	Dietary Objects	0.51	0.93	0.00	0.00	0.08	0.47	1.95	2.44	2.56
≥16 Years (n=7)	Non-dietary Objects	14.08	10.49	1.83	6.21	15.22	19.31	28.29	30.03	30.47
≥16 Years (n=7)	All Objects	14.59	10.83	1.83	6.43	15.50	20.74	29.05	30.19	30.47
p value*	Artificial Turf	0.315	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.646	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.664	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.717	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.841	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.706	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.939	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.176	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.211	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.211	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.780	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.869	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Kruskal Wallis

ND: not determined

Table S3-159. Median Duration of Hand to Object Contact (Second) by Age, with Gloves On

Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years	Artificial Turf	3	2.02	1.39	0.48	1.43	2.39	2.78	3.10	3.16	3.18
2 <9 Years	Body	3	1.19	0.64	0.83	0.83	0.83	1.38	1.82	1.91	1.93
2 <9 Years	Clothes	3	2.21	0.36	1.80	2.08	2.36	2.42	2.47	2.48	2.48
2 <9 Years	Field Structures	3	2.23	0.99	1.33	1.70	2.06	2.68	3.17	3.27	3.29
2 <9 Years	Footwear	2	1.72	0.11	1.65	1.69	1.72	1.76	1.79	1.80	1.80



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Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years	Head/face/hair	3	1.65	0.83	0.71	1.34	1.97	2.12	2.24	2.27	2.27
2 <9 Years	Shin guards	1	4.16	ND	ND	ND	ND	ND	ND	ND	ND
2 <9 Years	Soccer ball	3	2.38	1.05	1.58	1.79	1.99	2.78	3.42	3.54	3.58
2 <9 Years	Water bottle	3	9.01	5.22	5.89	5.99	6.10	10.56	14.13	14.85	15.03
2 <9 Years	Dietary Objects	3	9.01	5.22	5.89	5.99	6.10	10.56	14.13	14.85	15.03
2 <9 Years	Non-dietary Objects	3	1.99	0.65	1.26	1.76	2.26	2.36	2.44	2.45	2.46
2 <9 Years	All Objects	3	2.08	0.71	1.27	1.83	2.40	2.48	2.55	2.57	2.57
9 <16 Years	Artificial Turf	7	1.34	0.68	0.74	0.94	1.20	1.39	2.39	2.68	2.75
9 <16 Years	Body	9	1.60	1.02	0.39	1.11	1.29	2.05	3.21	3.75	3.88
9 <16 Years	Clothes	11	3.00	1.34	1.40	1.99	2.38	3.88	5.11	5.27	5.30
9 <16 Years	Field Structures	9	2.61	1.23	0.69	1.49	2.86	3.14	4.22	4.45	4.51
9 <16 Years	Footwear	7	2.51	1.56	1.50	1.60	1.69	2.91	4.99	5.31	5.38
9 <16 Years	Head/face/hair	11	1.28	0.77	0.62	0.99	1.09	1.33	2.50	3.25	3.44
9 <16 Years	Shin guards	3	2.04	1.04	0.90	1.59	2.28	2.61	2.88	2.93	2.94
9 <16 Years	Soccer ball	11	1.81	0.54	0.90	1.54	1.78	2.12	2.60	2.74	2.78
9 <16 Years	Water bottle	6	8.41	2.81	5.13	6.20	8.47	10.05	11.80	12.25	12.36
9 <16 Years	Dietary Objects	6	8.41	2.81	5.13	6.20	8.47	10.05	11.80	12.25	12.36
9 <16 Years	Non-dietary Objects	11	2.05	0.83	1.22	1.64	1.83	2.17	3.35	4.11	4.30
9 <16 Years	All Objects	11	2.07	0.84	1.25	1.64	1.86	2.19	3.42	4.17	4.36
≥16 Years	Artificial Turf	5	1.30	1.25	0.57	0.72	0.82	0.88	3.00	3.43	3.54
≥16 Years	Body	6	1.57	1.26	0.50	0.76	1.16	1.86	3.43	3.80	3.89
≥16 Years	Clothes	7	2.33	1.48	1.17	1.27	1.67	3.08	4.56	4.72	4.76
≥16 Years	Field Structures	6	2.49	1.93	0.55	1.02	1.98	3.82	5.04	5.27	5.32
≥16 Years	Footwear	4	2.70	1.65	0.89	1.56	2.73	3.87	4.33	4.42	4.45
≥16 Years	Head/face/hair	7	1.19	0.41	0.67	0.90	1.14	1.48	1.73	1.73	1.74
≥16 Years	Shin guards	2	1.54	0.09	1.48	1.51	1.54	1.58	1.60	1.61	1.61
≥16 Years	Soccer ball	5	1.60	0.80	0.75	1.02	1.49	1.99	2.60	2.72	2.75



Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years	Water bottle	4	3.10	0.67	2.52	2.57	2.99	3.52	3.84	3.90	3.92
≥16 Years	Dietary Objects	4	3.10	0.67	2.52	2.57	2.99	3.52	3.84	3.90	3.92
≥16 Years	Non-dietary Objects	7	1.66	0.99	1.06	1.16	1.24	1.60	3.24	3.68	3.80
≥16 Years	All Objects	7	1.68	0.98	1.12	1.16	1.26	1.62	3.24	3.68	3.80
p value*	Artificial Turf	ND	0.616	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.671	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.282	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.875	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.890	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.597	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	0.361	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.021*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.021*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.169	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.163	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

ND: not determined

Table S3-160. Mouthing Frequency (Event/Hour) by Age, with Gloves On

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=3)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=3)	Body	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=3)	Clothes	45.47	71.60	3.23	4.14	5.04	66.59	115.83	125.68	128.14
2 <9 Years (n=3)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=3)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=3)	Hands	6.90	7.54	0.00	2.88	5.76	10.36	14.03	14.77	14.95
2 <9 Years (n=3)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=3)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=3)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=3)	Water bottle	3.70	0.53	3.23	3.42	3.60	3.94	4.20	4.26	4.27
2 <9 Years (n=3)	Dietary Objects	3.70	0.53	3.23	3.42	3.60	3.94	4.20	4.26	4.27
2 <9 Years (n=3)	Non-dietary Objects	46.55	70.67	5.04	5.75	6.46	67.30	115.97	125.71	128.14
2 <9 Years (n=3)	All Objects	50.25	71.15	8.65	9.17	9.69	71.05	120.14	129.96	132.41
9 <16 Years (n=11)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=11)	Body	3.87	10.14	0.00	0.00	0.00	0.00	22.11	31.62	34.00
9 <16 Years (n=11)	Clothes	3.28	6.08	0.00	0.00	0.98	2.74	13.78	19.73	21.22
9 <16 Years (n=11)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=11)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=11)	Hands	6.49	8.84	0.00	0.00	2.52	10.21	22.82	26.20	27.04
9 <16 Years (n=11)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=11)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=11)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=11)	Water bottle	1.91	2.33	0.00	0.00	0.32	4.23	5.21	5.69	5.81
9 <16 Years (n=11)	Dietary Objects	2.38	2.48	0.00	0.00	1.87	4.58	5.72	5.79	5.81
9 <16 Years (n=11)	Non-dietary Objects	14.44	18.43	0.00	1.72	7.62	18.29	47.64	58.76	61.54
9 <16 Years (n=11)	All Objects	16.82	18.44	0.00	5.36	9.17	22.56	50.13	59.26	61.54
≥16 Years (n=4)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=4)	Body	0.44	0.77	0.00	0.00	0.00	0.55	1.60	1.83	1.89
≥16 Years (n=4)	Clothes	5.81	8.60	0.00	0.30	1.80	7.69	18.73	21.20	21.82
≥16 Years (n=4)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=4)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=4)	Hands	0.82	1.14	0.00	0.00	0.40	1.10	2.48	2.82	2.91
≥16 Years (n=4)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=4)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=4)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA



Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=4)	Water bottle	1.52	1.93	0.00	0.00	0.95	2.27	4.21	4.69	4.81
≥16 Years (n=4)	Dietary Objects	2.16	2.18	0.00	0.36	1.67	4.06	4.80	4.81	4.81
≥16 Years (n=4)	Non-dietary Objects	7.41	9.63	0.00	0.30	4.19	10.30	21.38	24.06	24.73
≥16 Years (n=4)	All Objects	9.56	9.91	0.00	1.50	8.98	12.91	22.95	25.54	26.19
p value*	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.152	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.284	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.378	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.773	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.576	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.566	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Kruskal Wallis

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-161. Mouthing Median Duration (Second) by Age, with Gloves On

Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years	Artificial Turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Body	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Clothes	3	1.38	0.46	0.93	1.15	1.37	1.61	1.81	1.85	1.86
2 <9 Years	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Hands	2	1.52	0.97	0.84	1.18	1.52	1.86	2.14	2.19	2.21
2 <9 Years	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA



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Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Water bottle	3	2.58	0.87	1.71	2.16	2.60	3.02	3.36	3.43	3.44
2 <9 Years	Dietary Objects	3	2.58	0.87	1.71	2.16	2.60	3.02	3.36	3.43	3.44
2 <9 Years	Non-dietary Objects	3	1.82	0.87	0.93	1.39	1.86	2.26	2.59	2.66	2.67
2 <9 Years	All Objects	3	1.78	0.84	0.94	1.36	1.78	2.20	2.53	2.59	2.61
9 <16 Years	Artificial Turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Body	2	1.11	0.22	0.95	1.03	1.11	1.18	1.24	1.26	1.26
9 <16 Years	Clothes	8	1.49	0.92	0.62	0.96	1.32	1.49	2.96	3.48	3.61
9 <16 Years	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Hands	8	2.31	1.95	0.67	1.11	1.98	2.39	5.32	6.52	6.82
9 <16 Years	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Water bottle	6	3.91	1.01	2.99	3.30	3.42	4.56	5.31	5.41	5.43
9 <16 Years	Dietary Objects	7	4.11	1.06	2.99	3.33	3.46	5.12	5.40	5.43	5.43
9 <16 Years	Non-dietary Objects	10	1.15	0.35	0.70	0.89	1.21	1.27	1.64	1.86	1.92
9 <16 Years	All Objects	11	1.81	1.41	0.76	1.04	1.30	1.64	4.49	5.14	5.30
≥16 Years	Artificial Turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years	Body	2	0.63	0.13	0.54	0.58	0.63	0.67	0.71	0.72	0.72
≥16 Years	Clothes	4	3.54	4.71	1.03	1.15	1.26	3.66	9.22	10.33	10.61
≥16 Years	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years	Hands	3	1.18	0.33	0.81	1.06	1.32	1.36	1.40	1.41	1.41
≥16 Years	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA



Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years	Water bottle	3	4.42	1.15	3.60	3.77	3.93	4.83	5.55	5.69	5.73
≥16 Years	Dietary Objects	4	3.68	1.52	2.48	2.55	3.25	4.38	5.46	5.68	5.73
≥16 Years	Non-dietary Objects	4	3.34	4.85	0.79	0.82	0.98	3.49	9.18	10.32	10.61
≥16 Years	All Objects	4	2.34	2.25	1.03	1.10	1.32	2.56	5.08	5.59	5.71
p value*	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.121	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.892	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.484	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.076	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.268	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.518	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.837	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Kruskal Wallis

NA: not applicable due to no mouth contact with these objects; and ND: not determined

S3.3.4.2. Activity Patterns by Age, with Gloves Off

Table S3-162. Frequency of Hand to Object Contact (Event/Hour) by Age, with Gloves Off

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=6)	Artificial Turf	10.08	18.53	1.49	1.82	2.48	4.07	37.02	45.68	47.85
2 <9 Years (n=6)	Body	20.69	13.34	5.36	9.14	20.99	32.60	34.98	35.12	35.16
2 <9 Years (n=6)	Clothes	63.01	37.40	22.97	38.66	53.48	82.05	114.91	121.23	122.81
2 <9 Years (n=6)	Field Structures	9.08	11.76	1.52	2.95	4.65	7.73	26.58	31.35	32.54



Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=6)	Footwear	2.60	2.39	0.00	1.45	2.04	2.99	6.03	6.77	6.96
2 <9 Years (n=6)	Head/face/hair	28.67	27.24	2.28	11.21	24.55	32.68	67.14	76.21	78.48
2 <9 Years (n=6)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=6)	Soccer ball	15.71	9.88	1.91	9.35	17.74	20.53	27.00	28.48	28.85
2 <9 Years (n=6)	Water bottle	16.52	5.33	8.73	12.75	18.40	20.85	21.02	21.05	21.06
2 <9 Years (n=6)	Dietary Objects	16.52	5.33	8.73	12.75	18.40	20.85	21.02	21.05	21.06
2 <9 Years (n=6)	Non-dietary Objects	158.79	51.16	97.55	123.87	151.99	190.39	224.21	231.66	233.52
2 <9 Years (n=6)	All Objects	175.31	54.93	106.28	137.77	172.79	207.67	244.03	252.47	254.58
9 <16 Years (n=19)	Artificial Turf	2.70	3.49	0.00	0.47	1.42	3.51	8.51	13.14	14.30
9 <16 Years (n=19)	Body	13.86	9.95	2.82	5.60	12.06	18.59	28.80	38.98	41.53
9 <16 Years (n=19)	Clothes	109.18	52.80	17.63	76.28	92.87	137.93	212.76	224.20	227.06
9 <16 Years (n=19)	Field Structures	6.87	4.30	0.00	4.22	6.05	9.57	15.25	15.86	16.01
9 <16 Years (n=19)	Footwear	8.32	9.43	0.00	3.34	5.44	8.44	31.21	35.18	36.17
9 <16 Years (n=19)	Head/face/hair	30.96	27.09	0.00	9.09	22.74	48.67	77.00	91.35	94.94
9 <16 Years (n=19)	Shin guards	2.47	4.67	0.00	0.00	0.43	2.23	10.21	17.07	18.79
9 <16 Years (n=19)	Soccer ball	16.65	24.57	0.00	4.10	7.15	17.74	44.73	93.87	106.16
9 <16 Years (n=19)	Water bottle	14.01	34.92	0.00	3.21	5.06	9.39	34.59	132.30	156.73
9 <16 Years (n=19)	Dietary Objects	14.06	34.91	0.00	3.21	5.12	9.39	34.59	132.30	156.73
9 <16 Years (n=19)	Non-dietary Objects	204.17	75.41	99.11	159.52	190.81	233.63	356.74	366.00	368.32
9 <16 Years (n=19)	All Objects	218.24	89.75	104.23	162.84	195.87	252.85	379.81	403.89	409.91
≥16 Years (n=14)	Artificial Turf	2.11	3.55	0.00	0.00	0.73	2.25	7.68	12.07	13.17
≥16 Years (n=14)	Body	13.76	13.20	0.00	4.53	13.52	15.56	31.64	49.85	54.40
≥16 Years (n=14)	Clothes	65.04	25.76	34.80	51.04	61.22	70.86	107.25	130.79	136.67
≥16 Years (n=14)	Field Structures	9.79	9.14	0.74	2.32	7.15	14.62	23.53	31.56	33.57
≥16 Years (n=14)	Footwear	6.87	5.70	0.00	1.83	6.10	11.75	14.98	15.52	15.66



Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=14)	Head/face/hair	24.56	14.02	5.18	14.55	19.40	30.05	48.96	53.12	54.16
≥16 Years (n=14)	Shin guards	0.18	0.59	0.00	0.00	0.00	0.00	0.98	1.96	2.20
≥16 Years (n=14)	Soccer ball	4.80	4.57	0.00	1.08	3.88	6.82	12.24	15.56	16.39
≥16 Years (n=14)	Water bottle	4.83	4.60	0.00	1.47	4.57	6.52	12.89	15.58	16.25
≥16 Years (n=14)	Dietary Objects	4.87	4.61	0.00	1.47	4.57	6.52	12.89	15.58	16.25
≥16 Years (n=14)	Non-dietary Objects	137.93	41.55	73.89	103.65	140.28	165.36	200.83	213.84	217.09
≥16 Years (n=14)	All Objects	142.81	43.18	80.69	105.32	143.64	165.93	209.95	220.03	222.55
p value	Artificial Turf	0.159	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.388	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.007*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.812	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.153	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.970	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.051	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.006*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.007*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.023*	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.024*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

NA: not applicable due to no contact with the object; and ND: not determined

Table S3-163. Duration of Hand to Object Contact (Min/Hour) by Age, with Gloves Off

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=6)	Artificial Turf	1.03	2.17	0.04	0.10	0.15	0.26	4.17	5.20	5.46
2 <9 Years (n=6)	Body	2.55	2.60	0.17	0.63	1.93	3.53	6.25	6.84	6.99
2 <9 Years (n=6)	Clothes	11.66	9.43	1.79	5.55	8.93	16.36	24.73	26.58	27.04
2 <9 Years (n=6)	Field Structures	1.00	1.43	0.07	0.21	0.55	0.81	3.11	3.70	3.85



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=6)	Footwear	0.26	0.34	0.00	0.06	0.12	0.36	0.77	0.86	0.88
2 <9 Years (n=6)	Head/face/hair	1.43	2.21	0.03	0.25	0.53	1.27	4.73	5.61	5.83
2 <9 Years (n=6)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=6)	Soccer ball	0.64	0.39	0.13	0.34	0.73	0.87	1.08	1.13	1.14
2 <9 Years (n=6)	Water bottle	3.92	1.95	2.19	2.53	3.05	5.32	6.56	6.73	6.77
2 <9 Years (n=6)	Dietary Objects	3.92	1.95	2.19	2.53	3.05	5.32	6.56	6.73	6.77
2 <9 Years (n=6)	Non-dietary Objects	19.32	7.22	9.57	14.76	19.52	23.34	28.23	29.27	29.53
2 <9 Years (n=6)	All Objects	23.24	7.17	13.03	18.33	25.87	26.80	30.53	31.48	31.72
9 <16 Years (n=19)	Artificial Turf	0.13	0.24	0.00	0.01	0.03	0.13	0.50	0.90	1.00
9 <16 Years (n=19)	Body	1.12	1.41	0.07	0.14	0.43	1.81	3.86	4.96	5.23
9 <16 Years (n=19)	Clothes	21.08	15.95	2.05	9.46	14.58	32.68	50.31	52.25	52.73
9 <16 Years (n=19)	Field Structures	0.67	0.86	0.00	0.19	0.36	0.65	2.07	3.18	3.46
9 <16 Years (n=19)	Footwear	0.81	0.75	0.00	0.18	0.71	1.22	2.03	2.38	2.47
9 <16 Years (n=19)	Head/face/hair	0.94	0.69	0.00	0.45	0.61	1.36	2.14	2.38	2.44
9 <16 Years (n=19)	Shin guards	0.27	0.56	0.00	0.00	0.02	0.24	1.12	2.06	2.29
9 <16 Years (n=19)	Soccer ball	0.84	1.02	0.00	0.13	0.53	0.95	3.31	3.53	3.58
9 <16 Years (n=19)	Water bottle	2.23	5.41	0.00	0.52	0.93	1.70	4.78	20.42	24.33
9 <16 Years (n=19)	Dietary Objects	2.23	5.41	0.00	0.52	0.93	1.70	4.78	20.42	24.33
9 <16 Years (n=19)	Non-dietary Objects	27.11	16.27	6.15	14.93	23.04	36.59	57.01	57.71	57.88
9 <16 Years (n=19)	All Objects	29.34	17.43	6.74	15.89	23.04	43.08	58.57	58.78	58.83
≥16 Years (n=14)	Artificial Turf	0.20	0.33	0.00	0.00	0.02	0.29	0.85	0.95	0.98
≥16 Years (n=14)	Body	0.91	1.25	0.00	0.15	0.44	0.67	3.68	3.77	3.79
≥16 Years (n=14)	Clothes	12.41	12.32	3.24	5.30	7.36	11.68	36.28	44.19	46.17
≥16 Years (n=14)	Field Structures	1.08	1.22	0.02	0.23	0.67	1.51	3.12	4.25	4.53
≥16 Years (n=14)	Footwear	0.63	0.69	0.00	0.16	0.42	0.89	2.00	2.05	2.06
≥16 Years (n=14)	Head/face/hair	0.88	0.69	0.08	0.41	0.51	1.54	1.88	2.29	2.39
≥16 Years (n=14)	Shin guards	0.01	0.05	0.00	0.00	0.00	0.00	0.07	0.15	0.17



Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=14)	Soccer ball	0.19	0.17	0.00	0.03	0.17	0.26	0.49	0.54	0.55
≥16 Years (n=14)	Water bottle	0.63	0.55	0.00	0.26	0.58	0.90	1.65	1.72	1.74
≥16 Years (n=14)	Dietary Objects	0.64	0.56	0.00	0.26	0.58	0.94	1.65	1.72	1.74
≥16 Years (n=14)	Non-dietary Objects	17.23	13.21	6.43	9.14	13.04	17.57	41.48	52.07	54.72
≥16 Years (n=14)	All Objects	17.87	13.04	7.43	10.24	13.54	18.84	41.73	52.12	54.72
p value	Artificial Turf	0.185	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.279	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.053	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.595	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.219	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.792	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.026*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.001*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.001*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.085	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.059	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

NA: not applicable due to no contact with the object; and ND: not determined

Table S3-164. Median Duration of Hand to Object Contact (Second) by Age, with Gloves Off

Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years	Artificial Turf	6	1.70	1.14	0.88	1.14	1.36	1.48	3.36	3.86	3.98
2 <9 Years	Body	6	2.82	3.45	0.74	1.11	1.70	1.98	7.86	9.40	9.78
2 <9 Years	Clothes	6	3.70	0.73	2.83	3.20	3.59	4.26	4.61	4.64	4.65
2 <9 Years	Field Structures	6	3.52	1.64	2.37	2.60	2.87	3.57	5.98	6.58	6.73
2 <9 Years	Footwear	5	3.38	1.82	1.14	1.94	3.62	4.75	5.29	5.40	5.43
2 <9 Years	Head/face/hair	6	1.24	0.68	0.60	0.82	1.15	1.30	2.20	2.44	2.50



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Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Soccer ball	6	2.02	1.07	1.25	1.49	1.66	1.87	3.60	4.04	4.15
2 <9 Years	Water bottle	6	8.49	4.00	3.90	5.22	8.68	11.05	13.11	13.66	13.79
2 <9 Years	Dietary Objects	6	8.49	4.00	3.90	5.22	8.68	11.05	13.11	13.66	13.79
2 <9 Years	Non-dietary Objects	6	2.46	0.54	1.72	2.10	2.55	2.71	3.09	3.19	3.21
2 <9 Years	All Objects	6	2.68	0.57	1.87	2.31	2.80	2.97	3.32	3.40	3.42
9 <16 Years	Artificial Turf	13	1.16	0.52	0.46	0.82	1.02	1.36	2.16	2.19	2.20
9 <16 Years	Body	19	1.45	0.55	0.56	1.12	1.50	1.78	2.04	2.78	2.96
9 <16 Years	Clothes	19	5.47	3.11	1.85	3.43	4.20	7.00	11.06	13.13	13.65
9 <16 Years	Field Structures	17	4.05	4.52	0.40	1.66	2.59	5.78	8.88	17.75	19.96
9 <16 Years	Footwear	17	4.16	3.64	0.99	2.05	2.85	4.92	10.50	14.37	15.34
9 <16 Years	Head/face/hair	17	1.48	0.60	0.90	1.15	1.28	1.74	2.27	3.23	3.47
9 <16 Years	Shin guards	10	5.73	5.08	1.26	2.25	4.44	5.61	14.93	16.34	16.70
9 <16 Years	Soccer ball	16	2.06	0.95	0.64	1.42	2.03	2.49	3.76	3.77	3.77
9 <16 Years	Water bottle	17	6.70	1.87	3.11	5.31	6.77	8.28	9.14	9.41	9.48
9 <16 Years	Dietary Objects	17	6.63	1.84	3.11	5.27	6.72	8.28	9.14	9.41	9.48
9 <16 Years	Non-dietary Objects	19	3.44	1.68	1.23	2.26	3.05	4.07	6.92	6.93	6.93
9 <16 Years	All Objects	19	3.55	1.71	1.25	2.32	3.18	4.62	6.92	6.94	6.94
≥16 Years	Artificial Turf	8	2.45	1.76	0.74	1.16	1.78	3.58	4.97	5.11	5.14
≥16 Years	Body	13	1.72	1.88	0.53	0.85	1.12	1.55	4.69	7.07	7.66
≥16 Years	Clothes	14	4.13	2.01	1.89	2.74	3.39	5.41	7.44	8.49	8.76
≥16 Years	Field Structures	14	3.43	1.98	1.30	1.80	2.96	4.67	6.34	7.45	7.72
≥16 Years	Footwear	14	3.95	4.07	0.95	1.46	2.42	4.38	11.32	14.20	14.93
≥16 Years	Head/face/hair	14	1.39	0.49	0.99	1.13	1.25	1.50	2.11	2.76	2.92
≥16 Years	Shin guards	2	2.52	0.17	2.40	2.46	2.52	2.58	2.63	2.64	2.64
≥16 Years	Soccer ball	13	1.78	1.11	0.79	1.01	1.28	2.21	3.67	3.90	3.95
≥16 Years	Water bottle	12	6.56	3.99	1.16	3.82	6.56	7.97	13.50	13.65	13.69



Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years	Dietary Objects	12	6.42	3.98	1.16	3.82	6.20	7.40	13.50	13.65	13.69
≥16 Years	Non-dietary Objects	14	2.47	0.99	1.58	1.78	2.10	2.99	4.31	4.57	4.64
≥16 Years	All Objects	14	2.49	0.87	1.59	1.81	2.29	2.99	4.04	4.16	4.19
p value*	Artificial Turf	ND	0.113	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.445	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.290	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.788	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.819	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.500	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	0.390	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	0.380	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.640	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.589	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.136	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.133	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Kruskal Wallis

NA: not applicable due to no contact with the object; and ND: not determined

Table S3-165. Mouthing Frequency (Event/Hour) by Age, with Gloves Off

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=6)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=6)	Body	0.29	0.70	0.00	0.00	0.00	0.00	1.29	1.63	1.72
2 <9 Years (n=6)	Clothes	20.16	35.96	1.34	1.98	4.81	13.35	73.45	88.90	92.76
2 <9 Years (n=6)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=6)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=6)	Hands	9.00	6.07	1.36	4.81	9.18	11.97	16.57	17.75	18.04
2 <9 Years (n=6)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=6)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=6)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=6)	Water bottle	12.29	4.48	6.82	8.69	12.75	15.58	17.06	17.44	17.54
2 <9 Years (n=6)	Dietary Objects	12.29	4.48	6.82	8.69	12.75	15.58	17.06	17.44	17.54
2 <9 Years (n=6)	Non-dietary Objects	20.56	35.77	1.73	2.18	5.67	13.78	73.45	88.90	92.76
2 <9 Years (n=6)	All Objects	32.84	34.46	9.55	13.36	20.71	30.81	84.01	97.60	101.00
9 <16 Years (n=19)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=19)	Body	0.30	0.67	0.00	0.00	0.00	0.00	2.01	2.15	2.19
9 <16 Years (n=19)	Clothes	7.54	9.89	0.00	1.64	4.28	8.29	27.44	35.82	37.92
9 <16 Years (n=19)	Field Structures	0.02	0.09	0.00	0.00	0.00	0.00	0.04	0.33	0.40
9 <16 Years (n=19)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=19)	Hands	9.99	7.27	0.00	5.08	7.10	14.58	21.90	24.73	25.44
9 <16 Years (n=19)	Head/face/hair	0.10	0.36	0.00	0.00	0.00	0.00	0.54	1.33	1.53
9 <16 Years (n=19)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=19)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=19)	Water bottle	9.68	18.22	0.00	1.81	4.68	8.84	27.49	70.54	81.30
9 <16 Years (n=19)	Dietary Objects	9.68	18.22	0.00	1.81	4.68	8.84	27.49	70.54	81.30
9 <16 Years (n=19)	Non-dietary Objects	7.99	9.75	0.00	1.83	4.68	8.88	27.44	35.82	37.92
9 <16 Years (n=19)	All Objects	17.67	19.19	2.13	5.55	10.71	22.15	47.27	74.49	81.30
≥16 Years (n=13)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=13)	Body	0.18	0.41	0.00	0.00	0.00	0.00	0.87	1.31	1.42
≥16 Years (n=13)	Clothes	7.92	7.48	0.00	0.33	6.76	12.37	18.96	23.04	24.06
≥16 Years (n=13)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=13)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=13)	Hands	9.64	7.18	0.00	4.95	7.34	14.24	21.03	21.25	21.30
≥16 Years (n=13)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=13)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=13)	Soccer ball	0.04	0.15	0.00	0.00	0.00	0.00	0.19	0.48	0.55
≥16 Years (n=13)	Water bottle	2.61	2.65	0.00	0.00	2.06	5.41	6.24	6.29	6.30



Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=13)	Dietary Objects	2.85	2.66	0.00	0.14	2.61	5.41	6.60	7.04	7.15
≥16 Years (n=13)	Non-dietary Objects	8.31	7.62	0.00	1.31	6.76	12.54	19.70	23.64	24.63
≥16 Years (n=13)	All Objects	11.16	8.82	0.00	5.50	9.35	16.31	26.02	29.95	30.93
p value	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.969	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.785	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.977	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.002*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.003*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.816	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.110	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-166. Mouthing Duration (Min/Hour) by Age, with Gloves Off

Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=6)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=6)	Body	0.01	0.02	0.00	0.00	0.00	0.00	0.03	0.04	0.04
2 <9 Years (n=6)	Clothes	0.46	0.63	0.03	0.03	0.12	0.78	1.38	1.48	1.51
2 <9 Years (n=6)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=6)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=6)	Hands	1.03	1.84	0.02	0.08	0.32	0.66	3.74	4.54	4.74
2 <9 Years (n=6)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=6)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA



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Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years (n=6)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years (n=6)	Water bottle	1.16	1.06	0.25	0.58	0.78	1.30	2.74	3.08	3.17
2 <9 Years (n=6)	Dietary Objects	1.16	1.06	0.25	0.58	0.78	1.30	2.74	3.08	3.17
2 <9 Years (n=6)	Non-dietary Objects	0.51	0.60	0.03	0.08	0.25	0.79	1.38	1.48	1.51
2 <9 Years (n=6)	All Objects	1.67	1.08	0.28	1.05	1.72	1.95	3.07	3.35	3.42
9 <16 Years (n=19)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=19)	Body	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.04	0.04
9 <16 Years (n=19)	Clothes	0.29	0.38	0.00	0.02	0.12	0.47	0.85	1.30	1.41
9 <16 Years (n=19)	Field Structures	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.03
9 <16 Years (n=19)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=19)	Hands	0.36	0.33	0.00	0.09	0.26	0.54	0.97	1.08	1.11
9 <16 Years (n=19)	Head/face/hair	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.02	0.02
9 <16 Years (n=19)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=19)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years (n=19)	Water bottle	0.52	0.77	0.00	0.11	0.29	0.56	1.54	3.02	3.39
9 <16 Years (n=19)	Dietary Objects	0.52	0.77	0.00	0.11	0.29	0.56	1.54	3.02	3.39
9 <16 Years (n=19)	Non-dietary Objects	0.30	0.38	0.00	0.03	0.12	0.47	0.89	1.31	1.41
9 <16 Years (n=19)	All Objects	0.82	0.82	0.03	0.26	0.63	0.96	2.35	3.18	3.39
≥16 Years (n=13)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=13)	Body	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
≥16 Years (n=13)	Clothes	0.61	1.73	0.00	0.01	0.16	0.30	2.57	5.80	6.61
≥16 Years (n=13)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=13)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=13)	Hands	0.25	0.31	0.00	0.08	0.14	0.27	0.77	1.09	1.17
≥16 Years (n=13)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=13)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years (n=13)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA



Age Group	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years (n=13)	Water bottle	0.16	0.18	0.00	0.00	0.11	0.24	0.47	0.51	0.52
≥16 Years (n=13)	Dietary Objects	0.17	0.18	0.00	0.01	0.11	0.32	0.47	0.51	0.52
≥16 Years (n=13)	Non-dietary Objects	0.63	1.73	0.00	0.02	0.16	0.36	2.61	5.82	6.62
≥16 Years (n=13)	All Objects	0.80	1.70	0.00	0.17	0.26	0.67	2.95	5.89	6.62
p value	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.980	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.838	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.545	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.003*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.005*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.580	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.018*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Kruskal Wallis)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-167. Mouthing Median Duration (Second) by Age, with Gloves Off

Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years	Artificial Turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Body	1	1.59	ND	ND	ND	ND	ND	ND	ND	ND
2 <9 Years	Clothes	6	1.23	0.49	0.66	0.95	1.20	1.35	1.89	2.03	2.06
2 <9 Years	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Hands	6	1.82	1.50	0.54	1.07	1.48	1.68	4.00	4.61	4.76
2 <9 Years	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA



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Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
2 <9 Years	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2 <9 Years	Water bottle	6	3.83	2.01	1.95	2.43	3.00	5.19	6.57	6.78	6.83
2 <9 Years	Dietary Objects	6	3.83	2.01	1.95	2.43	3.00	5.19	6.57	6.78	6.83
2 <9 Years	Non-dietary Objects	6	1.44	0.70	0.66	0.95	1.27	1.92	2.37	2.45	2.47
2 <9 Years	All Objects	6	2.64	1.58	0.95	1.90	2.35	2.72	4.89	5.44	5.58
9 <16 Years	Artificial Turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Body	4	0.98	0.49	0.58	0.60	0.87	1.25	1.53	1.59	1.60
9 <16 Years	Clothes	16	1.75	1.01	0.62	0.90	1.52	2.10	3.58	4.05	4.17
9 <16 Years	Field Structures	1	5.18	ND	ND	ND	ND	ND	ND	ND	ND
9 <16 Years	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Hands	17	1.28	0.47	0.66	1.06	1.21	1.41	2.11	2.44	2.52
9 <16 Years	Head/face/hair	2	1.15	0.50	0.79	0.97	1.15	1.33	1.47	1.50	1.50
9 <16 Years	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 <16 Years	Water bottle	17	3.65	1.09	2.11	2.68	3.95	4.23	5.38	5.75	5.85
9 <16 Years	Dietary Objects	17	3.65	1.09	2.11	2.68	3.95	4.23	5.38	5.75	5.85
9 <16 Years	Non-dietary Objects	17	1.42	0.62	0.62	0.87	1.39	1.87	2.60	2.61	2.61
9 <16 Years	All Objects	19	2.45	1.09	0.87	1.94	2.48	2.84	3.59	5.39	5.85
≥16 Years	Artificial Turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years	Body	3	0.93	0.32	0.59	0.78	0.97	1.10	1.20	1.22	1.22
≥16 Years	Clothes	10	1.31	0.58	0.62	0.87	1.28	1.61	2.16	2.48	2.56
≥16 Years	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years	Hands	13	1.08	0.65	0.66	0.84	0.91	1.04	1.95	2.94	3.18
≥16 Years	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
≥16 Years	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA



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Age Group	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
≥16 Years	Soccer ball	1	0.13	ND	ND	ND	ND	ND	ND	ND	ND
≥16 Years	Water bottle	9	3.53	1.43	1.72	2.29	3.70	4.46	5.50	5.72	5.78
≥16 Years	Dietary Objects	10	3.40	1.42	1.72	2.28	3.14	4.36	5.47	5.71	5.78
≥16 Years	Non-dietary Objects	11	1.22	0.51	0.62	0.84	1.16	1.52	1.97	2.20	2.26
≥16 Years	All Objects	13	2.15	1.49	0.62	1.13	1.68	2.50	4.99	5.62	5.78
p value*	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.547	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.504	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.067	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.850	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.702	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.685	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.408	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Kruskal Wallis

NA: not applicable due to no mouth contact with these objects; and ND: not determined



S3.4. Data Summarized by Gender

S3.4.1. Data Summarized During the Whole Event by Gender

Table S3-168. Frequency (Event/Hour) of Actions by Gender, during the Whole Event

Gender	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Slip or fall	1.95	3.39	0.00	0.00	0.58	1.40	7.47	12.05	13.19
Female (n=19)	Jumping	15.08	24.25	0.00	0.98	5.39	11.04	66.36	73.51	75.30
Female (n=19)	Diving	0.71	2.26	0.00	0.00	0.00	0.37	2.22	8.36	9.89
Female (n=19)	Heading	0.27	0.51	0.00	0.00	0.00	0.48	1.14	1.75	1.90
Female (n=19)	Tackling or sliding	0.08	0.33	0.00	0.00	0.00	0.00	0.14	1.17	1.43
Male (n=21)	Slip or fall	2.40	3.57	0.00	0.40	0.84	3.31	11.22	12.52	12.85
Male (n=21)	Jumping	4.37	5.08	0.00	0.66	2.35	6.41	12.33	17.85	19.23
Male (n=21)	Diving	0.36	0.95	0.00	0.00	0.00	0.00	2.38	3.28	3.51
Male (n=21)	Heading	0.38	0.70	0.00	0.00	0.00	0.45	2.02	2.08	2.10
Male (n=21)	Tackling or sliding	0.74	0.94	0.00	0.00	0.45	0.68	2.80	2.81	2.81
p value*	Slip or fall	0.440	ND	ND	ND	ND	ND	ND	ND	ND
p value	Jumping	0.175	ND	ND	ND	ND	ND	ND	ND	ND
p value	Diving	0.461	ND	ND	ND	ND	ND	ND	ND	ND
p value	Heading	0.960	ND	ND	ND	ND	ND	ND	ND	ND
p value	Tackling or sliding	ND	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

ND: not determined

Table S3-169. Frequency of Hand to Object Contact (Event/Hour) by Gender, during the Whole Event

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Artificial Turf	5.23	7.63	0.00	0.69	1.67	4.88	18.46	25.84	27.68
Female (n=19)	Body	15.68	13.24	2.18	6.48	14.91	17.76	42.82	52.08	54.40
Female (n=19)	Clothes	75.69	44.31	26.36	46.24	65.35	88.13	163.87	178.61	182.29
Female (n=19)	Field Structures	9.10	5.42	1.46	4.89	8.00	12.70	18.27	19.25	19.50
Female (n=19)	Footwear	6.42	6.93	0.73	1.75	5.09	7.84	14.69	27.47	30.66



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Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Head/face/hair	40.68	27.60	7.00	20.73	31.55	50.39	90.62	109.16	113.79
Female (n=19)	Shin guards	1.30	4.31	0.00	0.00	0.00	0.13	4.74	15.98	18.79
Female (n=19)	Soccer ball	27.51	32.78	0.55	5.89	14.83	37.23	102.00	105.33	106.16
Female (n=19)	Water bottle	8.32	5.30	1.37	4.68	6.81	11.27	17.73	20.11	20.71
Female (n=19)	Dietary Objects	8.41	5.32	1.37	4.84	6.81	11.27	17.73	20.11	20.71
Female (n=19)	Non-dietary Objects	193.54	74.23	73.89	141.63	187.35	238.81	305.70	330.66	336.90
Female (n=19)	All Objects	201.95	75.46	80.69	152.87	196.38	249.22	311.00	345.64	354.30
Male (n=21)	Artificial Turf	3.68	3.26	0.00	1.52	2.66	4.73	10.68	12.67	13.17
Male (n=21)	Body	11.52	9.66	1.52	4.44	8.63	15.04	29.26	33.98	35.16
Male (n=21)	Clothes	73.36	26.80	17.63	59.09	72.48	91.21	115.37	117.01	117.42
Male (n=21)	Field Structures	6.23	6.32	1.52	2.44	3.62	6.34	22.52	24.30	24.75
Male (n=21)	Footwear	6.13	3.93	0.72	2.58	5.00	9.52	11.92	12.52	12.67
Male (n=21)	Head/face/hair	17.30	14.75	2.28	9.05	12.70	20.74	35.52	62.82	69.64
Male (n=21)	Shin guards	1.39	2.12	0.00	0.00	0.61	1.90	5.67	7.12	7.48
Male (n=21)	Soccer ball	14.81	14.33	0.86	5.34	10.56	17.76	36.64	55.56	60.29
Male (n=21)	Water bottle	5.11	5.05	0.00	1.77	3.68	6.34	11.80	19.07	20.89
Male (n=21)	Dietary Objects	5.12	5.05	0.00	1.77	3.68	6.34	11.80	19.07	20.89
Male (n=21)	Non-dietary Objects	145.21	39.30	76.57	118.82	150.98	173.55	181.29	230.16	242.38
Male (n=21)	All Objects	150.33	40.02	81.36	125.31	153.71	177.05	193.57	233.41	243.37
p value	Artificial Turf	0.481	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.208	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.469	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.039*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.630	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.000*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.078	ND	ND	ND	ND	ND	ND	ND	ND



Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Soccer ball	0.592	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.024*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.022*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.023*	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.019*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-170. Duration of Hand to Object Contact (Min/Hour) by Gender, during the Whole Event

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Artificial Turf	0.31	0.68	0.00	0.01	0.11	0.31	0.71	2.58	3.05
Female (n=19)	Body	1.43	1.92	0.03	0.17	0.54	2.04	5.27	6.65	6.99
Female (n=19)	Clothes	13.11	13.88	1.62	5.65	7.79	12.13	40.91	50.37	52.73
Female (n=19)	Field Structures	0.87	0.85	0.05	0.20	0.53	1.34	2.46	2.92	3.04
Female (n=19)	Footwear	0.54	0.55	0.02	0.13	0.25	0.83	1.71	1.81	1.84
Female (n=19)	Head/face/hair	1.56	1.81	0.15	0.69	1.19	1.70	2.85	7.43	8.57
Female (n=19)	Shin guards	0.05	0.15	0.00	0.00	0.00	0.01	0.17	0.55	0.64
Female (n=19)	Soccer ball	1.18	1.26	0.01	0.24	0.85	1.49	3.63	4.00	4.09
Female (n=19)	Water bottle	1.68	1.51	0.19	0.76	1.29	2.07	3.79	6.17	6.77
Female (n=19)	Dietary Objects	1.69	1.51	0.19	0.78	1.32	2.08	3.79	6.17	6.77
Female (n=19)	Non-dietary Objects	19.98	13.65	6.43	12.66	15.47	20.76	47.06	54.94	56.91
Female (n=19)	All Objects	21.67	13.78	7.47	13.99	16.79	23.81	48.84	56.83	58.83
Male (n=21)	Artificial Turf	0.22	0.27	0.00	0.04	0.11	0.31	0.78	0.94	0.98
Male (n=21)	Body	1.10	1.55	0.04	0.17	0.34	0.64	4.06	4.44	4.53
Male (n=21)	Clothes	13.01	8.90	2.05	6.11	10.38	17.81	32.18	32.37	32.42
Male (n=21)	Field Structures	0.75	0.90	0.03	0.16	0.35	1.15	2.40	3.12	3.30
Male (n=21)	Footwear	0.59	0.60	0.01	0.16	0.35	0.86	1.97	1.98	1.98
Male (n=21)	Head/face/hair	0.50	0.35	0.03	0.28	0.43	0.69	1.16	1.42	1.48



Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Male (n=21)	Shin guards	0.19	0.44	0.00	0.00	0.02	0.09	0.99	1.68	1.85
Male (n=21)	Soccer ball	0.58	0.46	0.01	0.18	0.47	0.79	1.50	1.52	1.52
Male (n=21)	Water bottle	0.80	0.78	0.00	0.31	0.59	1.04	2.49	2.61	2.64
Male (n=21)	Dietary Objects	0.80	0.78	0.00	0.32	0.59	1.04	2.49	2.61	2.64
Male (n=21)	Non-dietary Objects	17.55	9.89	5.40	9.92	13.46	24.33	35.17	39.02	39.98
Male (n=21)	All Objects	18.35	9.91	5.83	11.09	15.49	25.50	36.21	39.54	40.37
p value	Artificial Turf	0.684	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.715	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.469	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.456	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.607	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.000*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.047*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.261	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.016*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.016*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.768	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.520	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-171. Median Duration of Hand to Object Contact (Second) by Gender, during the Whole Event

Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female	Artificial Turf	15	1.82	1.20	0.46	0.90	1.51	2.39	3.85	4.42	4.57
Female	Body	19	2.13	2.25	0.56	1.12	1.26	1.95	6.67	9.16	9.78
Female	Clothes	19	4.09	2.16	1.89	2.74	3.44	4.78	7.86	10.19	10.78
Female	Field Structures	19	2.65	1.89	0.41	1.54	2.06	3.05	6.76	6.86	6.89
Female	Footwear	19	4.54	4.39	1.14	1.66	2.49	6.07	14.97	15.26	15.34



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Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female	Head/face/hair	19	1.34	0.33	0.92	1.15	1.27	1.48	1.84	2.23	2.32
Female	Shin guards	5	2.32	1.47	0.90	1.43	1.93	2.64	4.27	4.59	4.68
Female	Soccer ball	19	2.00	0.93	0.77	1.37	1.69	2.83	3.49	3.76	3.83
Female	Water bottle	19	7.28	2.63	2.90	6.14	6.76	9.00	11.27	12.93	13.35
Female	Dietary Objects	19	7.23	2.61	2.90	6.06	6.70	8.75	11.27	12.93	13.35
Female	Non-dietary Objects	19	2.35	1.02	1.31	1.79	2.09	2.51	3.80	5.42	5.83
Female	All Objects	19	2.46	1.05	1.34	1.85	2.17	2.77	3.82	5.58	6.01
Male	Artificial Turf	20	1.31	1.02	0.62	0.79	1.00	1.34	2.53	4.62	5.14
Male	Body	21	1.31	0.49	0.53	0.90	1.25	1.59	2.07	2.14	2.16
Male	Clothes	21	4.32	2.89	1.85	2.45	3.29	4.66	9.18	12.36	13.16
Male	Field Structures	21	4.21	4.05	0.84	2.18	2.74	4.77	7.72	17.51	19.96
Male	Footwear	21	3.01	1.93	0.89	1.69	2.44	4.03	5.43	7.77	8.36
Male	Head/face/hair	21	1.36	0.56	0.60	1.09	1.16	1.69	2.06	2.88	3.09
Male	Shin guards	12	5.10	4.80	1.26	2.11	3.73	5.46	14.53	16.26	16.70
Male	Soccer ball	21	1.73	0.82	0.64	1.19	1.58	1.99	3.77	3.92	3.95
Male	Water bottle	19	6.46	3.31	2.09	4.26	6.03	7.58	13.70	13.78	13.79
Male	Dietary Objects	19	6.45	3.32	2.09	4.26	6.03	7.58	13.70	13.78	13.79
Male	Non-dietary Objects	21	2.60	1.35	1.23	1.63	2.11	3.36	4.14	6.37	6.93
Male	All Objects	21	2.67	1.34	1.25	1.70	2.19	3.36	4.19	6.39	6.94
p value*	Artificial Turf	ND	0.093	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.405	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.688	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.105	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.469	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.573	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	0.195	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	0.405	ND	ND	ND	ND	ND	ND	ND	ND



Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Water bottle	ND	0.284	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.297	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.768	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.789	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum
ND: not determined

Table S3-172. Hourly Duration (Min/Hour) of Player Intensity by Gender, during the Whole Event

Gender	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	High	2.207368	0.993813	0.09	1.37	2.39	2.935	3.655	3.835	3.88
Female (n=19)	Moderate	11.99789	4.040746	3.79	9.44	12.23	15.575	16.687	18.1054	18.46
Female (n=19)	Light	24.29211	5.194043	11.48	22.125	25.62	27.495	30.903	32.5086	32.91
Female (n=19)	Resting	21.50263	7.516416	10.86	17.065	19.57	23.38	34.358	40.3196	41.81
Male (n=21)	High	1.80619	0.965103	0.56	0.98	1.64	2.42	3.38	3.692	3.77
Male (n=21)	Moderate	12.9881	5.952601	3.75	8.18	13.51	16.72	20.85	22.426	22.82
Male (n=21)	Light	23.8181	5.52523	10.65	21.11	23.98	26.49	30.95	33.622	34.29
Male (n=21)	Resting	21.38857	8.2439	11.97	15.98	18.24	28.64	32.97	38.194	39.5
p value*	High	0.119375	ND	ND	ND	ND	ND	ND	ND	ND
p value	Moderate	0.591904	ND	ND	ND	ND	ND	ND	ND	ND
p value	Light	0.687781	ND	ND	ND	ND	ND	ND	ND	ND
p value	Resting	0.55531	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum
ND: not determined

Table S3-173. Duration (Min/Hour) of Macro-Activities by Age, during the Whole Event

Gender	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Sit on ground	1.14	2.16	0.00	0.13	0.56	1.33	2.40	8.28	9.75
Female (n=19)	Rest Standing	18.23	5.88	8.92	15.66	17.48	20.22	29.19	31.84	32.50
Female (n=19)	Running	13.46	4.58	5.89	9.89	13.67	17.69	19.09	20.58	20.95
Female (n=19)	Stretching	1.15	1.73	0.00	0.14	0.44	1.10	5.26	5.74	5.86



Gender	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Walking	24.08	5.84	11.43	20.10	26.01	27.44	32.63	33.43	33.63
Female (n=19)	Sit on chair	1.49	4.06	0.00	0.00	0.00	0.73	4.79	15.06	17.62
Female (n=19)	Push ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Sit ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Sit on ground	1.21	1.28	0.00	0.11	0.54	1.82	3.14	4.21	4.48
Male (n=21)	Rest Standing	16.48	5.22	6.98	14.66	15.71	19.16	24.14	26.55	27.15
Male (n=21)	Running	13.90	7.37	2.47	8.99	14.02	19.17	23.70	24.73	24.99
Male (n=21)	Stretching	0.39	0.45	0.00	0.00	0.34	0.42	1.28	1.42	1.46
Male (n=21)	Walking	24.85	6.41	10.50	21.78	24.21	28.59	33.67	36.56	37.28
Male (n=21)	Sit on chair	2.94	4.85	0.00	0.00	0.00	4.51	11.29	16.39	17.67
Male (n=21)	Push ups	0.01	0.02	0.00	0.00	0.00	0.00	0.01	0.08	0.10
Male (n=21)	Sit ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
p value*	Sit on ground	0.378	ND	ND	ND	ND	ND	ND	ND	ND
p value	Rest Standing	0.320	ND	ND	ND	ND	ND	ND	ND	ND
p value	Running	0.893	ND	ND	ND	ND	ND	ND	ND	ND
p value	Stretching	0.173	ND	ND	ND	ND	ND	ND	ND	ND
p value	Walking	0.708	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on chair	0.609	ND	ND	ND	ND	ND	ND	ND	ND
p value	Push ups	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit ups	ND	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to these activities not observed; and ND: not determined

Table S3-174. Mouthing Frequency (Event/Hour) by Gender, during the Whole Event

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Body	0.84	2.28	0.00	0.00	0.00	0.56	2.78	8.50	9.93
Female (n=19)	Clothes	5.95	8.30	0.00	1.15	2.51	7.04	24.53	27.91	28.76
Female (n=19)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA



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Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Hands	10.33	6.15	1.72	6.56	9.25	14.15	18.78	24.11	25.44
Female (n=19)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Shinguards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Soccer ball	0.03	0.13	0.00	0.00	0.00	0.00	0.05	0.45	0.55
Female (n=19)	Water bottle	6.69	4.81	0.54	3.42	4.98	9.61	15.71	17.39	17.81
Female (n=19)	Dietary Objects	6.79	4.76	0.54	3.59	5.29	9.61	15.71	17.39	17.81
Female (n=19)	Non-dietary Objects	8.25	11.01	0.00	1.40	4.18	10.03	26.68	41.40	45.08
Female (n=19)	All Objects	15.03	11.65	0.54	6.13	13.38	19.90	32.73	45.71	48.96
Male (n=21)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Body	0.28	0.94	0.00	0.00	0.00	0.00	0.96	3.58	4.23
Male (n=21)	Clothes	12.00	21.96	0.00	2.73	6.23	12.89	19.72	87.36	104.27
Male (n=21)	Field Structures	0.02	0.09	0.00	0.00	0.00	0.00	0.00	0.32	0.40
Male (n=21)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Hands	7.62	5.42	0.71	3.90	7.10	9.14	12.87	23.40	26.03
Male (n=21)	Head/face/hair	0.06	0.20	0.00	0.00	0.00	0.00	0.43	0.75	0.83
Male (n=21)	Shinguards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Water bottle	3.40	4.00	0.00	0.40	2.14	4.68	6.95	15.42	17.54
Male (n=21)	Dietary Objects	3.70	3.92	0.00	1.28	2.82	4.68	7.15	15.46	17.54
Male (n=21)	Non-dietary Objects	13.30	21.63	0.00	4.26	8.46	12.89	22.13	87.84	104.27
Male (n=21)	All Objects	17.00	22.97	0.00	7.24	12.89	16.09	33.05	95.59	111.23
p value	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.144	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.119	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND



Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Hands	0.124	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.185	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shinguards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.011*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.016*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.159	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.748	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-175. Mouthing Duration (Min/Hour) by Gender, during the Whole Event

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Body	0.02	0.06	0.00	0.00	0.00	0.01	0.06	0.21	0.25
Female (n=19)	Clothes	0.14	0.16	0.00	0.03	0.10	0.18	0.39	0.53	0.57
Female (n=19)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Hands	0.56	1.06	0.02	0.14	0.24	0.40	1.47	4.09	4.74
Female (n=19)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Soccer ball	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Female (n=19)	Water bottle	0.56	0.72	0.04	0.22	0.34	0.54	1.63	2.86	3.17
Female (n=19)	Dietary Objects	0.57	0.72	0.04	0.22	0.37	0.57	1.63	2.86	3.17
Female (n=19)	Non-dietary Objects	0.20	0.21	0.00	0.07	0.15	0.31	0.45	0.79	0.87
Female (n=19)	All Objects	0.78	0.76	0.04	0.27	0.62	0.80	1.88	3.11	3.42
Male (n=21)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Body	0.01	0.03	0.00	0.00	0.00	0.00	0.02	0.10	0.12
Male (n=21)	Clothes	0.46	0.68	0.00	0.03	0.17	0.69	1.63	2.53	2.76



Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Male (n=21)	Field Structures	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.03
Male (n=21)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Hands	0.27	0.27	0.01	0.08	0.17	0.27	0.84	0.88	0.89
Male (n=21)	Head/face/hair	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
Male (n=21)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Water bottle	0.18	0.19	0.00	0.02	0.12	0.25	0.43	0.69	0.76
Male (n=21)	Dietary Objects	0.19	0.19	0.00	0.08	0.12	0.29	0.43	0.69	0.76
Male (n=21)	Non-dietary Objects	0.48	0.67	0.00	0.10	0.20	0.71	1.63	2.56	2.79
Male (n=21)	All Objects	0.67	0.73	0.00	0.18	0.38	0.85	2.06	2.68	2.83
p value	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.221	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.139	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.223	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.003*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.004*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.222	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.473	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-176. Mouthing Median Duration (Second) by Gender, during the Whole Event

Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female	Artificial turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA



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Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female	Body	7	0.93	0.39	0.54	0.59	0.97	1.10	1.48	1.57	1.59
Female	Clothes	16	2.13	2.44	0.62	1.13	1.35	1.65	5.78	9.64	10.61
Female	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Hands	19	1.48	0.99	0.66	0.99	1.12	1.41	3.34	4.48	4.76
Female	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Soccer ball	1	0.13	ND	ND	ND	ND	ND	ND	ND	ND
Female	Water bottle	19	3.94	1.44	2.11	2.62	3.70	4.99	5.95	6.66	6.83
Female	Dietary Objects	19	3.91	1.41	2.11	2.62	3.70	4.99	5.90	6.65	6.83
Female	Non-dietary Objects	19	1.81	2.33	0.62	0.88	1.21	1.49	4.09	9.30	10.61
Female	All Objects	19	2.65	1.55	0.90	1.52	2.41	2.97	5.59	5.71	5.74
Male	Artificial turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Body	3	1.17	0.48	0.66	0.96	1.26	1.43	1.57	1.59	1.60
Male	Clothes	21	1.40	0.61	0.62	0.86	1.41	1.86	2.54	2.57	2.58
Male	Field Structures	1	5.18	ND	ND	ND	ND	ND	ND	ND	ND
Male	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Hands	22	1.24	0.55	0.66	0.84	1.07	1.56	2.21	2.46	2.52
Male	Head/face/hair	2	1.15	0.50	0.79	0.97	1.15	1.33	1.47	1.50	1.50
Male	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Water bottle	17	3.19	1.10	1.71	2.31	3.14	3.96	4.99	5.21	5.26
Male	Dietary Objects	19	3.04	1.07	1.71	2.30	2.72	3.82	4.95	5.20	5.26
Male	Non-dietary Objects	22	1.34	0.61	0.62	0.86	1.22	1.83	2.54	2.59	2.61
Male	All Objects	21	1.63	0.69	0.62	1.08	1.46	2.17	2.84	3.08	3.14
p value	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.267	ND	ND	ND	ND	ND	ND	ND	ND



Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Clothes	ND	0.814	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.436	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.133	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.042*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.964	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.028*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

S3.4.2. Data Summarized According to Event Moment/Time and Gender

S3.4.2.1. Activity Patterns by Gender, during the Game/Practice

Table S3-177. Frequency (Event/Hour) of Actions by Gender, during the Game/Practice

Gender	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Diving	0.74	2.31	0.00	0.00	0.00	0.40	2.31	8.55	10.11
Female (n=19)	Heading	0.33	0.61	0.00	0.00	0.00	0.56	1.38	2.12	2.31
Female (n=19)	Jumping	15.63	27.14	0.00	0.71	3.18	10.13	75.94	76.75	76.95
Female (n=19)	Slip or fall	2.14	3.48	0.00	0.00	0.68	1.97	7.84	12.35	13.48
Female (n=19)	Tackling or sliding	0.09	0.40	0.00	0.00	0.00	0.00	0.17	1.42	1.73
Male (n=21)	Diving	0.35	1.09	0.00	0.00	0.00	0.00	1.98	4.14	4.68
Male (n=21)	Heading	0.44	0.79	0.00	0.00	0.00	0.62	2.33	2.37	2.38
Male (n=21)	Jumping	3.98	5.16	0.00	0.72	1.86	4.68	13.70	19.23	20.61
Male (n=21)	Slip or fall	2.19	3.49	0.00	0.00	0.89	2.32	6.34	13.25	14.98
Male (n=21)	Tackling or sliding	0.83	1.17	0.00	0.00	0.45	0.90	3.20	3.64	3.75
p value*	Diving	0.373	ND	ND	ND	ND	ND	ND	ND	ND



Gender	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Heading	0.920	ND	ND	ND	ND	ND	ND	ND	ND
p value	Jumping	0.370	ND	ND	ND	ND	ND	ND	ND	ND
p value	Slip or fall	0.668	ND	ND	ND	ND	ND	ND	ND	ND
p value	Tackling or sliding	ND	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum
ND: not determined

Table S3-178. Frequency of Hand to Object Contact (Event/Hour) by Gender, during the Game/Practice

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Artificial Turf	4.57	5.57	0.00	0.77	2.20	5.01	15.45	17.43	17.92
Female (n=19)	Body	13.44	10.88	2.24	7.09	10.88	15.45	39.62	41.84	42.39
Female (n=19)	Clothes	68.11	44.26	23.84	38.15	61.71	78.38	150.92	177.18	183.75
Female (n=19)	Field Structures	7.16	5.98	0.00	2.89	6.75	9.59	16.65	20.71	21.73
Female (n=19)	Footwear	5.46	7.38	0.75	2.12	2.99	5.63	12.07	29.74	34.16
Female (n=19)	Head/face/hair	41.64	28.59	7.29	19.87	37.38	51.98	92.85	108.86	112.86
Female (n=19)	Shin guards	0.90	2.80	0.00	0.00	0.00	0.00	4.31	10.40	11.92
Female (n=19)	Soccer ball	28.34	36.57	0.75	4.02	9.23	38.71	107.96	120.81	124.02
Female (n=19)	Water bottle	2.45	4.20	0.00	0.00	1.21	2.43	10.76	15.62	16.84
Female (n=19)	Dietary Objects	2.51	4.29	0.00	0.00	1.21	2.63	11.43	15.76	16.84
Female (n=19)	Non-dietary Objects	181.24	78.67	48.06	126.18	179.95	216.05	309.40	336.92	343.80
Female (n=19)	All Objects	183.76	78.32	48.06	134.60	180.87	219.43	310.90	338.56	345.47
Male (n=21)	Artificial Turf	3.06	3.14	0.00	1.12	2.12	3.45	6.92	12.41	13.78
Male (n=21)	Body	9.97	8.81	1.29	3.36	8.14	13.33	26.58	32.08	33.46
Male (n=21)	Clothes	67.72	30.22	13.12	46.77	65.60	86.10	117.17	117.94	118.13
Male (n=21)	Field Structures	4.16	4.09	0.00	1.87	3.51	4.90	9.64	16.57	18.30
Male (n=21)	Footwear	4.46	3.96	0.00	1.49	3.94	6.35	12.55	14.38	14.84
Male (n=21)	Head/face/hair	17.07	15.01	3.38	9.72	12.24	20.74	35.71	62.45	69.13
Male (n=21)	Shin guards	1.07	1.92	0.00	0.00	0.00	1.18	3.87	6.80	7.53



Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Male (n=21)	Soccer ball	12.04	9.51	0.70	3.94	10.06	17.06	29.04	33.17	34.20
Male (n=21)	Water bottle	2.41	3.93	0.00	0.00	1.29	3.02	7.84	15.42	17.31
Male (n=21)	Dietary Objects	2.42	3.93	0.00	0.00	1.29	3.02	7.84	15.42	17.31
Male (n=21)	Non-dietary Objects	129.42	35.96	56.96	112.33	143.20	154.63	177.02	182.26	183.57
Male (n=21)	All Objects	131.84	37.35	56.96	112.95	145.34	158.20	184.86	184.86	184.86
p value	Artificial Turf	0.892	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.208	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.520	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.067	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.766	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.000*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.278	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.573	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.836	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.836	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.017*	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.023*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-179. Duration of Hand to Object Contact (Min/Hour) by Gender, during the Game/Practice

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Artificial Turf	0.24	0.33	0.00	0.01	0.12	0.40	0.59	1.19	1.34
Female (n=19)	Body	1.07	1.54	0.03	0.19	0.53	0.83	3.82	5.41	5.81
Female (n=19)	Clothes	12.26	14.87	1.27	3.08	6.86	11.50	42.21	52.49	55.06
Female (n=19)	Field Structures	0.65	0.89	0.00	0.12	0.24	0.83	2.10	3.16	3.42
Female (n=19)	Footwear	0.48	0.59	0.02	0.09	0.26	0.69	1.85	1.93	1.95
Female (n=19)	Head/face/hair	1.58	1.97	0.16	0.68	1.10	1.78	3.05	8.00	9.24



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Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Shin guards	0.03	0.11	0.00	0.00	0.00	0.00	0.16	0.40	0.46
Female (n=19)	Soccer ball	1.18	1.36	0.02	0.27	0.66	1.59	4.05	4.15	4.17
Female (n=19)	Water bottle	0.54	1.34	0.00	0.00	0.10	0.41	2.25	5.06	5.76
Female (n=19)	Dietary Objects	0.54	1.34	0.00	0.00	0.10	0.42	2.28	5.06	5.76
Female (n=19)	Non-dietary Objects	18.41	14.78	3.91	10.52	14.26	18.95	48.50	56.62	58.65
Female (n=19)	All Objects	18.95	14.73	3.91	10.66	14.84	19.60	48.60	56.70	58.72
Male (n=21)	Artificial Turf	0.16	0.20	0.00	0.02	0.06	0.23	0.60	0.64	0.65
Male (n=21)	Body	0.78	1.17	0.02	0.10	0.21	0.59	3.54	3.74	3.79
Male (n=21)	Clothes	12.39	10.48	0.53	4.67	8.54	20.14	33.52	33.98	34.10
Male (n=21)	Field Structures	0.45	0.58	0.00	0.07	0.16	0.49	1.38	1.98	2.13
Male (n=21)	Footwear	0.39	0.50	0.00	0.05	0.22	0.41	1.14	1.85	2.03
Male (n=21)	Head/face/hair	0.49	0.38	0.04	0.22	0.39	0.66	1.25	1.41	1.45
Male (n=21)	Shin guards	0.14	0.43	0.00	0.00	0.00	0.09	0.40	1.66	1.97
Male (n=21)	Soccer ball	0.46	0.40	0.01	0.18	0.39	0.62	1.29	1.35	1.37
Male (n=21)	Water bottle	0.30	0.50	0.00	0.00	0.09	0.41	1.00	1.90	2.12
Male (n=21)	Dietary Objects	0.30	0.50	0.00	0.00	0.09	0.41	1.00	1.90	2.12
Male (n=21)	Non-dietary Objects	15.71	11.21	2.17	6.78	11.01	23.28	35.33	38.99	39.90
Male (n=21)	All Objects	16.01	11.34	2.17	7.21	11.01	23.69	35.41	39.13	40.06
p value	Artificial Turf	0.839	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.316	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.668	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.464	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.645	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.001*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.216	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.126	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	1.000	ND	ND	ND	ND	ND	ND	ND	ND



Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Dietary Objects	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.649	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.626	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-180. Median Duration of Hand to Object Contact (Second) by Gender, during the Game/Practice

Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female	Artificial Turf	15	2.68	3.43	0.46	0.90	1.39	3.06	7.46	12.85	14.20
Female	Body	19	1.56	1.31	0.56	1.02	1.13	1.71	2.91	5.80	6.52
Female	Clothes	19	3.97	2.94	1.91	2.25	2.64	4.52	8.97	12.73	13.67
Female	Field Structures	17	4.75	10.25	0.41	1.39	1.67	3.09	14.19	37.99	43.93
Female	Footwear	19	4.75	4.50	0.82	1.57	2.84	6.95	14.97	15.26	15.34
Female	Head/face/hair	19	1.33	0.35	0.94	1.15	1.24	1.48	1.84	2.26	2.37
Female	Shin guards	4	1.79	0.72	0.90	1.50	1.81	2.11	2.53	2.62	2.64
Female	Soccer ball	19	2.85	3.58	0.77	1.39	1.73	3.01	5.15	14.68	17.06
Female	Water bottle	12	5.55	3.55	1.09	2.68	5.23	7.38	10.89	13.28	13.88
Female	Dietary Objects	12	5.53	3.54	1.09	2.68	5.23	7.24	10.89	13.28	13.88
Female	Non-dietary Objects	19	2.24	1.20	1.16	1.44	1.87	2.53	3.64	5.89	6.45
Female	All Objects	19	2.25	1.16	1.16	1.58	1.88	2.54	3.63	5.78	6.32
Male	Artificial Turf	20	1.14	0.50	0.48	0.80	1.04	1.36	2.29	2.37	2.39
Male	Body	21	1.26	0.63	0.45	0.79	1.26	1.37	2.55	2.71	2.74
Male	Clothes	21	4.40	3.54	1.20	2.33	2.90	4.78	11.87	13.64	14.08
Male	Field Structures	18	2.94	2.21	0.44	1.61	2.09	3.83	6.88	7.55	7.72
Male	Footwear	19	2.88	2.03	0.89	1.73	1.96	3.62	6.18	7.65	8.02
Male	Head/face/hair	21	1.39	0.61	0.60	1.02	1.14	1.82	2.26	2.92	3.09
Male	Shin guards	7	3.23	1.96	1.26	1.58	2.79	4.37	6.14	6.64	6.76
Male	Soccer ball	21	1.63	0.68	0.64	1.21	1.48	1.99	2.15	3.59	3.95



Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Male	Water bottle	14	5.02	2.47	0.22	3.52	4.84	6.18	8.75	9.44	9.62
Male	Dietary Objects	14	4.99	2.46	0.22	3.52	4.65	6.18	8.75	9.44	9.62
Male	Non-dietary Objects	21	2.50	1.53	1.17	1.44	1.97	3.36	4.02	6.99	7.73
Male	All Objects	21	2.54	1.52	1.17	1.45	2.02	3.35	4.05	6.96	7.69
p value*	Artificial Turf	ND	0.074	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.768	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.768	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.568	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.563	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.537	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	0.368	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	0.178	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.980	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.980	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.708	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.668	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

ND: not determined

Table S3-181. Hourly Duration (Min/Hour) of Player Intensity by Gender, during the Game/Practice

Gender	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	High	2.17	1.17	0.11	1.34	2.54	2.85	3.83	4.51	4.68
Female (n=19)	Moderate	13.16	4.35	3.86	10.79	13.63	16.66	18.93	19.09	19.13
Female (n=19)	Light	25.35	5.21	15.31	22.45	27.12	28.41	32.74	34.09	34.43
Female (n=19)	Resting	19.33	7.98	7.03	13.66	18.86	23.20	32.58	35.64	36.40
Male (n=21)	High	1.82	1.06	0.30	0.88	1.73	2.65	3.21	3.97	4.16
Male (n=21)	Moderate	14.27	6.80	4.52	8.96	14.24	18.43	24.27	25.70	26.06
Male (n=21)	Light	25.25	5.99	11.30	22.99	25.38	29.58	33.82	34.09	34.16



Gender	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Male (n=21)	Resting	18.67	9.44	7.18	11.54	15.06	27.31	34.75	38.42	39.34
p value*	High	0.364	ND	ND	ND	ND	ND	ND	ND	ND
p value	Moderate	0.649	ND	ND	ND	ND	ND	ND	ND	ND
p value	Light	0.936	ND	ND	ND	ND	ND	ND	ND	ND
p value	Resting	0.579	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

ND: not determined

Table S3-182. Duration (Min/Hour) of Macro-Activities by Age, during the Game/Practice

Gender	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Push ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Rest Standing	16.71	8.04	4.36	11.56	16.37	21.29	32.30	33.75	34.11
Female (n=19)	Running	14.97	5.14	6.00	11.17	14.74	19.03	22.40	23.44	23.70
Female (n=19)	Sit on chair	1.34	4.52	0.00	0.00	0.00	0.00	6.08	16.78	19.46
Female (n=19)	Sit on ground	0.60	0.55	0.00	0.02	0.57	0.77	1.54	1.75	1.80
Female (n=19)	Stretching	0.85	0.95	0.00	0.18	0.47	1.25	2.58	3.27	3.44
Female (n=19)	Walking	25.08	6.08	15.30	20.21	25.98	29.11	33.47	34.77	35.10
Male (n=21)	Push ups	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Male (n=21)	Rest Standing	13.36	5.95	3.89	7.87	13.10	16.78	25.07	25.81	25.99
Male (n=21)	Running	15.27	8.39	1.83	9.90	15.61	21.07	26.98	28.56	28.95
Male (n=21)	Sit on chair	3.68	6.72	0.00	0.00	0.00	5.05	19.37	22.73	23.57
Male (n=21)	Sit on ground	1.01	1.54	0.00	0.01	0.12	1.78	4.20	4.62	4.73
Male (n=21)	Stretching	0.20	0.39	0.00	0.00	0.00	0.19	0.85	1.45	1.60
Male (n=21)	Walking	26.28	6.84	11.33	23.07	25.67	30.22	36.93	37.17	37.23
p value*	Push ups	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Rest Standing	0.187	ND	ND	ND	ND	ND	ND	ND	ND
p value	Running	0.957	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on chair	0.113	ND	ND	ND	ND	ND	ND	ND	ND



Gender	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Sit on ground	0.785	ND	ND	ND	ND	ND	ND	ND	ND
p value	Stretching	0.002*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Walking	0.533	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to the activity not observed; and ND: not determined

Table S3-183. Mouthing Frequency (Event/Hour) by Gender, during the Game/Practice

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	All Objects	9.11	10.02	0.00	2.61	6.40	9.72	27.90	38.23	40.81
Female (n=19)	Body	0.96	2.44	0.00	0.00	0.00	0.66	3.97	9.06	10.33
Female (n=19)	Clothes	5.41	7.67	0.00	0.87	1.42	5.34	22.54	25.11	25.75
Female (n=19)	Dietary Objects	1.32	1.66	0.00	0.00	0.66	2.16	4.34	4.73	4.83
Female (n=19)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Hands	9.88	6.26	2.02	6.21	9.54	12.04	19.96	25.18	26.49
Female (n=19)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Non-dietary Objects	7.80	10.42	0.00	1.13	4.29	8.90	27.90	38.23	40.81
Female (n=19)	Soccer ball	0.04	0.19	0.00	0.00	0.00	0.00	0.08	0.69	0.84
Female (n=19)	Water bottle	1.21	1.67	0.00	0.00	0.60	1.84	4.34	4.73	4.83
Male (n=21)	All Objects	15.04	22.43	0.00	4.11	10.88	14.64	33.11	91.51	106.11
Male (n=21)	Body	0.25	0.96	0.00	0.00	0.00	0.00	0.91	3.66	4.35
Male (n=21)	Clothes	11.81	21.25	0.00	0.94	5.70	13.31	20.68	84.03	99.87
Male (n=21)	Dietary Objects	1.80	3.18	0.00	0.00	0.58	1.86	6.24	11.84	13.24
Male (n=21)	Field Structures	0.02	0.10	0.00	0.00	0.00	0.00	0.00	0.38	0.47
Male (n=21)	Hands	7.30	5.86	0.94	3.49	6.29	9.32	13.61	24.77	27.56
Male (n=21)	Head/face/hair	0.07	0.22	0.00	0.00	0.00	0.00	0.47	0.82	0.91
Male (n=21)	Non-dietary Objects	13.24	20.84	0.00	3.69	8.70	13.43	22.62	84.42	99.87
Male (n=21)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Water bottle	1.74	3.20	0.00	0.00	0.00	1.86	6.24	11.84	13.24
p value*	All Objects	0.255	ND	ND	ND	ND	ND	ND	ND	ND



Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Body	0.108	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.227	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.932	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.368	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.138	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.185	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.122	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.317	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.988	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-184. Mouthing Duration (Min/Hour) by Gender, during the Game/Practice

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	All Objects	0.25	0.19	0.00	0.10	0.21	0.39	0.48	0.67	0.72
Female (n=19)	Body	0.02	0.06	0.00	0.00	0.00	0.01	0.10	0.24	0.27
Female (n=19)	Clothes	0.11	0.13	0.00	0.02	0.07	0.13	0.37	0.39	0.39
Female (n=19)	Dietary Objects	0.09	0.13	0.00	0.00	0.02	0.13	0.37	0.39	0.40
Female (n=19)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Hands	0.56	1.18	0.03	0.11	0.25	0.35	1.66	4.56	5.28
Female (n=19)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Non-dietary Objects	0.16	0.18	0.00	0.03	0.13	0.21	0.43	0.66	0.72
Female (n=19)	Soccer ball	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Female (n=19)	Water bottle	0.08	0.13	0.00	0.00	0.02	0.07	0.37	0.39	0.40
Male (n=21)	All Objects	0.64	0.91	0.00	0.09	0.26	0.84	2.04	3.36	3.69
Male (n=21)	Body	0.01	0.03	0.00	0.00	0.00	0.00	0.02	0.11	0.13
Male (n=21)	Clothes	0.52	0.86	0.00	0.01	0.16	0.75	1.59	3.21	3.62
Male (n=21)	Dietary Objects	0.09	0.14	0.00	0.00	0.02	0.15	0.36	0.49	0.52
Male (n=21)	Field Structures	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.03	0.04



Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Male (n=21)	Hands	0.27	0.31	0.01	0.06	0.14	0.26	0.92	0.95	0.96
Male (n=21)	Head/face/hair	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
Male (n=21)	Non-dietary Objects	0.55	0.85	0.00	0.08	0.20	0.76	1.59	3.23	3.64
Male (n=21)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Water bottle	0.09	0.15	0.00	0.00	0.00	0.15	0.36	0.49	0.52
p value*	All Objects	0.378	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.112	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.142	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.831	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.368	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.244	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.185	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.115	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.977	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-185. Mouthing Median Duration (Second) by Gender, during the Game/Practice

Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female	All Objects	10	1.77	1.33	0.13	0.99	1.31	2.05	4.61	5.17	5.30
Female	Body	2	0.87	0.40	0.54	0.58	0.78	0.96	1.43	1.56	1.59
Female	Clothes	10	2.00	2.47	0.24	0.96	1.27	1.65	5.78	9.64	10.61
Female	Dietary Objects	7	3.60	1.81	1.06	2.20	3.26	4.97	6.09	6.38	6.45
Female	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Hands	10	1.36	0.91	0.66	0.90	1.06	1.41	2.59	4.33	4.76
Female	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Non-dietary Objects	10	1.58	2.37	0.13	0.78	1.21	1.31	3.44	9.17	10.61



Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female	Soccer ball	1	0.13	ND	ND	ND	ND	ND	ND	ND	ND
Female	Water bottle	6	3.43	1.81	1.06	2.03	3.12	4.55	6.13	6.39	6.45
Male	All Objects	30	1.58	0.77	0.61	0.92	1.34	2.11	2.89	3.00	3.03
Male	Body	6	1.43	0.24	1.26	1.34	1.43	1.51	1.58	1.60	1.60
Male	Clothes	24	1.51	0.79	0.47	0.85	1.30	2.04	2.84	3.02	3.06
Male	Dietary Objects	15	3.51	1.45	1.99	2.43	3.12	3.93	6.05	6.63	6.78
Male	Field Structures	1	5.18	ND	ND	ND	ND	ND	ND	ND	ND
Male	Hands	30	1.23	0.51	0.62	0.81	1.16	1.42	2.02	2.42	2.52
Male	Head/face/hair	10	1.15	0.50	0.79	0.97	1.15	1.33	1.47	1.50	1.50
Male	Non-dietary Objects	30	1.51	0.77	0.61	0.91	1.28	1.97	3.03	3.06	3.06
Male	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Water bottle	10	3.61	1.49	1.99	2.55	3.23	4.09	6.13	6.65	6.78
p value*	All Objects	ND	0.916	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.143	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.959	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.725	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.244	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.739	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

S3.4.2.2. Activity Patterns by Gender, when Participants Were Warming Up

Table S3-186. Frequency (Event/Hour) of Actions by Gender, during Warm Up

Gender	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=9)	Diving	NA	NA	NA	NA	NA	NA	NA	NA	NA



Gender	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=9)	Jumping	12.42	17.30	0.00	0.00	0.00	21.60	39.23	47.70	49.82
Female (n=9)	Slip or fall	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=7)	Diving	2.03	5.38	0.00	0.00	0.00	0.00	9.96	13.38	14.23
Male (n=7)	Jumping	18.56	23.36	0.00	0.00	0.00	41.64	46.52	46.61	46.63
Male (n=7)	Slip or fall	12.71	33.62	0.00	0.00	0.00	0.00	62.26	83.60	88.94
p value*	Diving	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Jumping	0.816	ND	ND	ND	ND	ND	ND	ND	ND
p value	Slip or fall	ND	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to activities not observed; and ND: not determined

Table S3-187. Frequency of Hand to Object Contact (Event/Hour) by Gender, during Warm Up

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=10)	Artificial Turf	0.13	0.41	0.00	0.00	0.00	0.00	0.71	1.18	1.30
Female (n=10)	Body	35.41	64.98	0.00	0.33	4.69	25.80	155.94	185.06	192.34
Female (n=10)	Clothes	80.94	58.42	0.00	56.65	70.91	134.71	156.82	158.76	159.24
Female (n=10)	Field Structures	4.24	6.41	0.00	0.00	2.64	5.03	14.44	19.76	21.09
Female (n=10)	Footwear	21.29	35.51	0.00	0.00	0.00	37.82	82.03	92.35	94.93
Female (n=10)	Head/face/hair	37.84	41.83	0.00	9.33	31.67	42.45	105.05	136.71	144.63
Female (n=10)	Soccer ball	1.80	3.04	0.00	0.00	0.00	2.92	7.13	7.66	7.79
Female (n=10)	Water bottle	3.57	9.16	0.00	0.00	0.00	0.00	18.98	26.94	28.93
Female (n=10)	Dietary Objects	3.57	9.16	0.00	0.00	0.00	0.00	18.98	26.94	28.93
Female (n=10)	Non-dietary Objects	184.65	126.04	0.00	110.24	153.19	252.03	382.19	431.25	443.51
Female (n=10)	All Objects	188.23	124.96	0.00	111.94	167.66	252.03	382.19	431.25	443.51
Male (n=8)	Artificial Turf	16.31	30.17	0.00	0.00	0.00	16.11	67.65	80.15	83.27
Male (n=8)	Body	40.18	58.63	0.00	3.61	17.39	49.87	134.70	165.55	173.26
Male (n=8)	Clothes	102.63	50.28	39.28	79.02	97.39	124.71	174.58	189.76	193.55



Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Male (n=8)	Field Structures	12.68	27.43	0.00	0.00	0.00	7.57	57.79	74.41	78.56
Male (n=8)	Footwear	18.62	26.07	0.00	0.00	7.56	25.09	61.41	68.10	69.77
Male (n=8)	Head/face/hair	13.56	15.97	0.00	0.00	8.13	23.96	36.95	41.23	42.30
Male (n=8)	Soccer ball	37.63	98.64	0.00	0.00	0.00	7.15	188.21	262.77	281.41
Male (n=8)	Water bottle	0.38	1.07	0.00	0.00	0.00	0.00	1.96	2.81	3.02
Male (n=8)	Dietary Objects	0.38	1.07	0.00	0.00	0.00	0.00	1.96	2.81	3.02
Male (n=8)	Non-dietary Objects	247.89	123.43	136.37	171.45	206.48	280.45	445.80	458.49	461.66
Male (n=8)	All Objects	248.26	123.26	136.37	171.45	207.99	280.45	445.80	458.49	461.66
p value*	Artificial Turf	0.143	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.686	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.450	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.602	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.884	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.090	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.597	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.632	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.632	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.203	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.203	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

ND: not determined

Table S3-188. Duration of Hand to Object Contact (Min/Hour) by Gender, during Warm Up

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=10)	Artificial Turf	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.02	0.02
Female (n=10)	Body	1.45	2.77	0.00	0.00	0.05	0.90	6.68	7.46	7.66
Female (n=10)	Clothes	9.03	7.18	0.00	4.26	9.67	11.30	20.15	22.21	22.72
Female (n=10)	Field Structures	0.21	0.37	0.00	0.00	0.06	0.08	0.92	0.99	1.01



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Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=10)	Footwear	0.93	1.73	0.00	0.00	0.00	1.04	4.06	4.89	5.10
Female (n=10)	Head/face/hair	0.82	0.81	0.00	0.21	0.65	0.96	2.24	2.43	2.48
Female (n=10)	Soccer ball	0.06	0.10	0.00	0.00	0.00	0.08	0.23	0.28	0.29
Female (n=10)	Water bottle	0.35	0.76	0.00	0.00	0.00	0.00	1.79	2.05	2.12
Female (n=10)	Dietary Objects	0.35	0.76	0.00	0.00	0.00	0.00	1.79	2.05	2.12
Female (n=10)	Non-dietary Objects	12.56	7.04	0.00	10.86	14.50	15.76	20.81	22.90	23.42
Female (n=10)	All Objects	12.91	6.67	0.00	11.87	14.50	15.76	20.81	22.90	23.42
Male (n=8)	Artificial Turf	0.39	0.64	0.00	0.00	0.00	0.61	1.45	1.68	1.74
Male (n=8)	Body	0.78	1.04	0.00	0.04	0.34	1.24	2.41	2.87	2.99
Male (n=8)	Clothes	17.41	16.36	1.83	5.07	12.76	23.92	42.96	47.02	48.03
Male (n=8)	Field Structures	2.02	5.40	0.00	0.00	0.00	0.23	10.26	14.36	15.38
Male (n=8)	Footwear	1.11	1.71	0.00	0.00	0.26	1.44	3.97	4.51	4.64
Male (n=8)	Head/face/hair	0.50	0.75	0.00	0.00	0.15	0.78	1.68	2.06	2.16
Male (n=8)	Soccer ball	0.78	1.94	0.00	0.00	0.00	0.21	3.81	5.19	5.54
Male (n=8)	Water bottle	0.01	0.04	0.00	0.00	0.00	0.00	0.07	0.10	0.11
Male (n=8)	Dietary Objects	0.01	0.04	0.00	0.00	0.00	0.00	0.07	0.10	0.11
Male (n=8)	Non-dietary Objects	23.30	15.23	2.41	12.88	21.62	30.33	45.73	48.38	49.04
Male (n=8)	All Objects	23.31	15.23	2.41	12.88	21.62	30.41	45.73	48.38	49.04
p value*	Artificial Turf	0.143	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.653	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.351	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.506	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.807	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.284	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.672	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.632	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.632	ND	ND	ND	ND	ND	ND	ND	ND



Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Non-dietary Objects	0.146	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.203	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

ND: not determined

Table S3-189. Median Duration of Hand to Object Contact (Second) by Gender, during Warm Up

Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female	Artificial Turf	1	0.78	ND	ND	ND	ND	ND	ND	ND	ND
Female	Body	7	1.35	1.03	0.42	0.60	0.79	1.95	2.82	3.09	3.15
Female	Clothes	8	5.24	2.93	1.23	3.96	5.07	6.27	9.44	10.58	10.86
Female	Field Structures	6	2.66	3.20	0.73	0.78	1.41	2.50	7.43	8.69	9.01
Female	Footwear	4	1.97	0.57	1.45	1.49	1.94	2.42	2.51	2.53	2.54
Female	Head/face/hair	9	1.15	0.34	0.68	0.95	1.15	1.38	1.57	1.65	1.67
Female	Soccer ball	3	1.85	0.54	1.48	1.54	1.61	2.04	2.38	2.45	2.47
Female	Water bottle	2	5.99	2.25	4.40	5.19	5.99	6.78	7.42	7.55	7.58
Female	Dietary Objects	2	5.99	2.25	4.40	5.19	5.99	6.78	7.42	7.55	7.58
Female	Non-dietary Objects	9	2.44	1.12	0.68	1.86	2.45	2.63	4.12	4.41	4.48
Female	All Objects	9	2.47	1.08	0.85	1.95	2.45	2.63	4.12	4.41	4.48
Male	Artificial Turf	3	4.10	5.94	0.62	0.67	0.71	5.83	9.93	10.75	10.95
Male	Body	6	1.24	0.87	0.53	0.82	0.98	1.20	2.52	2.86	2.94
Male	Clothes	8	6.81	8.03	1.15	1.99	3.71	8.46	19.46	24.18	25.36
Male	Field Structures	3	3.06	2.90	0.84	1.42	2.00	4.17	5.91	6.25	6.34
Male	Footwear	4	3.25	4.06	0.73	1.25	1.47	3.47	8.14	9.08	9.31
Male	Head/face/hair	5	1.30	0.26	0.88	1.27	1.30	1.46	1.55	1.57	1.57
Male	Soccer ball	3	0.95	0.09	0.89	0.90	0.90	0.98	1.04	1.05	1.06
Male	Water bottle	1	2.09	ND	ND	ND	ND	ND	ND	ND	ND
Male	Dietary Objects	1	2.09	ND	ND	ND	ND	ND	ND	ND	ND
Male	Non-dietary Objects	8	2.70	2.47	0.92	1.02	1.21	4.09	6.60	7.32	7.50



Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Male	All Objects	8	2.69	2.46	0.92	1.02	1.21	4.05	6.60	7.32	7.50
p value*	Artificial Turf	ND	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.836	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.721	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.714	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.686	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.518	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	0.100	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.667	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.667	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.673	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.673	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

ND: not determined

Table S3-190. Hourly Duration (Min/Hour) of Player Intensity by Gender, during Warm Up

Gender	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=9)	High	5.90	6.62	0.00	0.00	3.34	9.94	15.40	18.24	18.95
Female (n=9)	Moderate	22.72	10.08	11.12	17.07	19.22	23.37	39.54	41.03	41.40
Female (n=9)	Light	20.52	9.37	5.78	15.11	20.73	22.46	34.41	37.79	38.63
Female (n=9)	Resting	10.86	8.72	0.97	4.09	11.26	16.19	23.34	27.05	27.98
Male (n=7)	High	2.89	4.34	0.00	0.26	0.91	3.69	9.87	11.13	11.45
Male (n=7)	Moderate	23.95	12.62	7.50	14.78	23.50	34.31	37.73	38.35	38.50
Male (n=7)	Light	19.75	7.21	10.57	14.91	20.09	24.17	28.84	29.31	29.43
Male (n=7)	Resting	13.41	8.43	2.98	7.02	12.30	20.39	23.56	23.72	23.76
p value*	High	0.519	ND	ND	ND	ND	ND	ND	ND	ND
p value	Moderate	0.837	ND	ND	ND	ND	ND	ND	ND	ND
p value	Light	0.758	ND	ND	ND	ND	ND	ND	ND	ND



Gender	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Resting	0.536	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

ND: not determined

Table S3-191. Duration (Min/Hour) of Macro-Activities by Age, during Warm Up

Gender	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=9)	Rest Standing	10.11	7.98	0.97	2.86	11.59	14.65	21.17	24.52	25.36
Female (n=9)	Running	21.63	11.20	11.52	14.08	15.35	23.85	40.11	41.14	41.40
Female (n=9)	Sit on ground	0.28	0.55	0.00	0.00	0.00	0.00	1.25	1.27	1.27
Female (n=9)	Stretching	8.97	13.85	0.00	0.00	0.00	20.96	30.72	33.50	34.20
Female (n=9)	Walking	18.64	7.65	5.78	15.11	20.80	23.76	26.88	28.42	28.81
Male (n=7)	Rest Standing	13.56	8.82	2.19	6.63	12.30	22.04	23.06	23.08	23.08
Male (n=7)	Running	17.39	14.76	0.00	7.41	9.65	29.38	36.27	38.05	38.50
Male (n=7)	Sit on ground	0.76	1.09	0.00	0.00	0.00	1.40	2.38	2.51	2.54
Male (n=7)	Stretching	7.56	8.27	0.00	1.69	7.50	8.94	19.95	23.33	24.18
Male (n=7)	Walking	19.78	7.69	9.54	13.56	21.21	25.59	28.32	29.21	29.43
p value*	Rest Standing	0.536	ND	ND	ND	ND	ND	ND	ND	ND
p value	Running	0.351	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on ground	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Stretching	0.415	ND	ND	ND	ND	ND	ND	ND	ND
p value	Walking	0.606	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

ND: not determined

Table S3-192. Mouthing Frequency (Event/Hour) by Gender, during Warm Up

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=10)	All Objects	11.15	19.13	0.00	0.00	7.30	12.20	41.68	60.82	65.60
Female (n=10)	Body	0.17	0.55	0.00	0.00	0.00	0.00	0.91	1.64	1.82
Female (n=10)	Clothes	10.49	19.40	0.00	0.00	0.00	12.20	41.68	60.82	65.60
Female (n=10)	Dietary Objects	0.50	1.65	0.00	0.00	0.00	0.00	2.74	4.92	5.47
Female (n=10)	Hands	6.99	12.48	0.00	0.00	0.00	8.41	27.14	38.91	41.85



Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=10)	Non-dietary Objects	10.65	19.31	0.00	0.00	1.82	12.20	41.68	60.82	65.60
Female (n=10)	Water bottle	0.50	1.65	0.00	0.00	0.00	0.00	2.74	4.92	5.47
Male (n=8)	All Objects	7.05	11.34	0.00	0.00	2.31	7.58	25.95	31.21	32.52
Male (n=8)	Body	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=8)	Clothes	6.36	11.61	0.00	0.00	0.00	6.90	25.95	31.21	32.52
Male (n=8)	Dietary Objects	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=8)	Hands	7.64	9.89	0.00	0.00	2.31	14.91	22.39	24.64	25.20
Male (n=8)	Non-dietary Objects	7.05	11.34	0.00	0.00	2.31	7.58	25.95	31.21	32.52
Male (n=8)	Water bottle	NA	NA	NA	NA	NA	NA	NA	NA	NA
p value*	All Objects	0.694	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.456	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.748	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.456	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.755	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.827	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.456	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-193. Mouthing Duration (Min/Hour) by Gender, during Warm Up

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=10)	All Objects	0.19	0.24	0.00	0.00	0.14	0.32	0.58	0.71	0.74
Female (n=10)	Body	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.04	0.04
Female (n=10)	Clothes	0.18	0.25	0.00	0.00	0.00	0.32	0.58	0.71	0.74
Female (n=10)	Dietary Objects	0.01	0.03	0.00	0.00	0.00	0.00	0.05	0.09	0.10
Female (n=10)	Hands	0.14	0.20	0.00	0.00	0.00	0.27	0.46	0.56	0.58
Female (n=10)	Non-dietary Objects	0.18	0.25	0.00	0.00	0.04	0.32	0.58	0.71	0.74
Female (n=10)	Water bottle	0.01	0.03	0.00	0.00	0.00	0.00	0.05	0.09	0.10
Male (n=8)	All Objects	0.19	0.34	0.00	0.00	0.03	0.20	0.74	0.94	0.99



Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Male (n=8)	Body	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=8)	Clothes	0.15	0.34	0.00	0.00	0.00	0.09	0.71	0.93	0.99
Male (n=8)	Dietary Objects	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=8)	Hands	0.12	0.15	0.00	0.00	0.05	0.20	0.35	0.39	0.40
Male (n=8)	Non-dietary Objects	0.19	0.34	0.00	0.00	0.03	0.20	0.74	0.94	0.99
Male (n=8)	Water bottle	NA	NA	NA	NA	NA	NA	NA	NA	NA
p value*	All Objects	0.760	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.456	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.613	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.456	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.827	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.456	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-194. Mouthing Median Duration (Second) by Gender, during Warm Up

Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female	All Objects	8	1.32	0.96	0.67	0.88	0.99	1.15	2.73	3.15	3.25
Female	Body	1	1.22	ND	ND	ND	ND	ND	ND	ND	ND
Female	Clothes	5	1.37	1.06	0.67	0.87	0.91	1.17	2.83	3.17	3.25
Female	Dietary Objects	1	0.93	ND	ND	ND	ND	ND	ND	ND	ND
Female	Hands	5	1.56	1.09	0.72	0.87	1.33	1.46	3.04	3.36	3.44
Female	Non-dietary Objects	8	1.35	0.95	0.67	0.88	1.04	1.21	2.74	3.15	3.25
Female	Water bottle	1	0.93	ND	ND	ND	ND	ND	ND	ND	ND
Male	All Objects	7	1.59	1.04	0.75	0.81	1.33	2.11	2.79	2.93	2.96
Male	Body	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Clothes	3	1.14	0.60	0.75	0.79	0.83	1.33	1.73	1.81	1.83
Male	Dietary Objects	0	NA	NA	NA	NA	NA	NA	NA	NA	NA



Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Male	Hands	4	0.88	0.36	0.45	0.64	0.91	1.14	1.21	1.22	1.23
Male	Non-dietary Objects	7	1.59	1.04	0.75	0.81	1.33	2.11	2.79	2.93	2.96
Male	Water bottle	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
p value*	All Objects	ND	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.786	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.190	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

S3.4.2.3. Activity Patterns by Gender, on Break/After/Before Game

Table S3-195. Frequency (Event/Hour) of Actions by Gender, on Break/After/Before Game

Gender	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Jumping	1.85	5.30	0.00	0.00	0.00	0.00	9.06	19.36	21.93
Female (n=19)	Slip or fall	0.16	0.68	0.00	0.00	0.00	0.00	0.30	2.43	2.96
Female (n=19)	Tackling or sliding	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Jumping	2.22	7.61	0.00	0.00	0.00	0.00	6.73	28.89	34.43
Male (n=21)	Slip or fall	1.20	2.99	0.00	0.00	0.00	0.00	7.19	10.62	11.48
Male (n=21)	Tackling or sliding	0.23	0.73	0.00	0.00	0.00	0.00	2.08	2.60	2.73
p value*	Jumping	0.89595	ND	ND	ND	ND	ND	ND	ND	ND
p value	Slip or fall	0.18693	ND	ND	ND	ND	ND	ND	ND	ND
p value	Tackling or sliding	ND	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to the activity not observed; and ND: not determined



Table S3-196. Frequency of Hand to Object Contact (Event/Hour) by Gender, on Break/After/Before Game

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Artificial Turf	5.46	18.37	0.00	0.00	0.00	0.00	22.90	68.09	79.38
Female (n=19)	Body	14.72	14.44	0.00	0.00	11.90	26.11	38.65	40.63	41.12
Female (n=19)	Clothes	121.55	73.54	31.75	62.73	119.60	148.85	256.73	298.97	309.53
Female (n=19)	Field Structures	18.39	17.87	0.00	8.18	11.03	29.11	45.99	58.04	61.05
Female (n=19)	Footwear	7.06	10.39	0.00	0.00	1.55	12.97	18.68	36.51	40.97
Female (n=19)	Head/face/hair	35.43	27.17	0.00	18.23	30.09	44.48	80.96	107.93	114.67
Female (n=19)	Shin guards	3.03	12.01	0.00	0.00	0.00	0.00	9.84	43.87	52.37
Female (n=19)	Soccer ball	15.20	18.50	0.00	0.00	0.00	35.21	42.94	44.04	44.32
Female (n=19)	Water bottle	69.47	70.89	11.64	37.12	47.63	68.30	163.58	291.89	323.97
Female (n=19)	Dietary Objects	69.97	70.88	11.64	37.76	47.63	72.43	163.58	291.89	323.97
Female (n=19)	Non-dietary Objects	234.34	89.80	97.17	182.39	205.61	288.89	370.58	434.93	451.02
Female (n=19)	All Objects	304.31	101.04	178.44	220.77	296.67	335.11	498.36	520.83	526.45
Male (n=21)	Artificial Turf	3.32	4.68	0.00	0.00	0.88	4.64	13.72	15.03	15.36
Male (n=21)	Body	23.66	22.58	0.00	6.34	14.01	37.76	64.94	67.42	68.04
Male (n=21)	Clothes	101.61	39.18	53.89	70.67	97.26	117.21	143.92	208.40	224.52
Male (n=21)	Field Structures	17.47	28.27	0.00	2.58	9.56	15.26	72.66	107.19	115.82
Male (n=21)	Footwear	14.67	17.40	0.00	0.00	7.00	19.82	44.22	57.83	61.23
Male (n=21)	Head/face/hair	16.99	16.27	0.00	6.66	14.17	20.72	35.02	67.27	75.33
Male (n=21)	Shin guards	4.33	7.34	0.00	0.00	0.00	6.61	20.79	24.44	25.35
Male (n=21)	Soccer ball	17.42	23.05	0.00	0.00	6.80	27.10	59.96	72.77	75.97
Male (n=21)	Water bottle	31.24	44.51	0.00	6.80	19.82	30.11	145.49	164.61	169.39
Male (n=21)	Dietary Objects	31.24	44.51	0.00	6.80	19.82	30.11	145.49	164.61	169.39
Male (n=21)	Non-dietary Objects	220.93	75.33	80.12	181.09	207.24	253.24	381.00	400.37	405.21
Male (n=21)	All Objects	252.17	74.02	89.93	210.10	233.58	283.35	387.81	401.73	405.21



Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Artificial Turf	0.185	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.226	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.503	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.400	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.164	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.005*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.057	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.691	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.001*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.001*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.708	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.113	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-197. Duration of Hand to Object Contact (Min/Hour) by Gender, on Break/After/Before Game

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Artificial Turf	0.50	1.90	0.00	0.00	0.00	0.00	1.46	6.94	8.31
Female (n=19)	Body	2.20	3.48	0.00	0.00	0.42	2.54	7.84	10.83	11.58
Female (n=19)	Clothes	16.34	11.00	2.75	7.78	11.63	22.86	35.56	37.78	38.33
Female (n=19)	Field Structures	2.03	2.84	0.00	0.27	0.87	3.16	6.03	9.97	10.95
Female (n=19)	Footwear	0.79	1.44	0.00	0.00	0.09	1.09	2.57	5.28	5.95
Female (n=19)	Head/face/hair	1.55	1.74	0.00	0.58	1.10	1.62	5.26	6.66	7.01
Female (n=19)	Shin guards	0.11	0.37	0.00	0.00	0.00	0.00	0.66	1.37	1.55
Female (n=19)	Soccer ball	0.89	1.37	0.00	0.00	0.00	1.36	3.33	4.51	4.81
Female (n=19)	Water bottle	11.86	8.91	1.36	5.33	9.07	15.48	32.15	33.57	33.92
Female (n=19)	Dietary Objects	11.91	8.91	1.36	5.41	9.07	15.48	32.15	33.57	33.92
Female (n=19)	Non-dietary Objects	25.71	12.60	7.38	16.71	24.26	35.28	44.87	51.77	53.50



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Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	All Objects	37.62	13.00	13.31	27.71	39.34	45.72	58.71	59.50	59.70
Male (n=21)	Artificial Turf	0.57	1.37	0.00	0.00	0.01	0.11	3.34	4.73	5.08
Male (n=21)	Body	3.44	5.11	0.00	0.38	0.81	4.72	12.63	17.29	18.45
Male (n=21)	Clothes	14.45	7.39	4.17	8.63	13.57	19.40	24.34	31.74	33.59
Male (n=21)	Field Structures	2.29	4.14	0.00	0.09	0.45	1.79	13.93	14.10	14.14
Male (n=21)	Footwear	2.02	3.21	0.00	0.00	0.70	2.33	9.79	10.85	11.12
Male (n=21)	Head/face/hair	0.46	0.43	0.00	0.21	0.34	0.58	1.13	1.65	1.78
Male (n=21)	Shin guards	0.59	1.23	0.00	0.00	0.00	0.59	2.59	4.54	5.03
Male (n=21)	Soccer ball	1.10	2.02	0.00	0.00	0.12	1.50	3.57	7.82	8.88
Male (n=21)	Water bottle	4.72	5.32	0.00	0.39	3.97	6.51	15.53	19.70	20.74
Male (n=21)	Dietary Objects	4.72	5.32	0.00	0.39	3.97	6.51	15.53	19.70	20.74
Male (n=21)	Non-dietary Objects	27.14	9.61	12.69	21.28	25.56	36.23	41.15	43.29	43.82
Male (n=21)	All Objects	31.87	8.96	12.69	27.21	29.93	39.38	44.33	44.69	44.78
p value	Artificial Turf	0.185	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.191	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.893	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.635	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.133	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.001*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.048*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.649	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.001*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.001*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.503	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.169	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined



Table S3-198. Median Duration of Hand to Object Contact (Second) by Gender, on Break/After/Before Game

Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female	Artificial Turf	3	2.53	0.48	1.99	2.34	2.69	2.80	2.89	2.91	2.91
Female	Body	12	3.88	2.91	1.10	1.40	3.43	4.38	8.94	10.61	11.03
Female	Clothes	19	4.47	1.50	2.15	3.34	4.26	5.38	6.95	7.58	7.73
Female	Field Structures	16	3.81	1.94	1.07	2.37	3.20	5.63	6.80	6.94	6.98
Female	Footwear	10	4.57	2.21	1.29	3.34	3.82	5.33	8.19	8.69	8.82
Female	Head/face/hair	18	1.59	0.63	0.58	1.04	1.51	2.03	2.63	2.69	2.70
Female	Shin guards	2	2.95	2.44	1.23	2.09	2.95	3.81	4.50	4.64	4.68
Female	Soccer ball	9	1.91	0.71	0.82	1.54	1.90	2.34	2.91	3.21	3.28
Female	Water bottle	19	7.91	2.83	3.07	6.36	7.55	9.25	12.52	14.37	14.83
Female	Dietary Objects	19	7.79	2.85	3.07	6.34	7.19	9.00	12.52	14.37	14.83
Female	Non-dietary Objects	19	3.46	1.21	1.92	2.55	3.35	4.02	5.90	6.19	6.26
Female	All Objects	19	4.04	1.25	1.97	3.30	3.68	5.08	6.27	6.34	6.35
Male	Artificial Turf	11	6.41	13.88	0.47	0.90	1.18	2.32	29.37	43.61	47.17
Male	Body	20	3.06	2.78	0.16	1.20	1.99	3.78	9.36	10.02	10.18
Male	Clothes	21	4.75	2.04	2.43	3.32	3.87	6.17	7.30	10.08	10.78
Male	Field Structures	17	5.54	4.58	1.77	2.75	3.93	6.71	12.57	18.48	19.96
Male	Footwear	15	4.41	2.53	1.12	2.41	4.09	5.59	9.19	9.28	9.30
Male	Head/face/hair	18	1.52	0.76	0.65	1.10	1.25	1.62	2.94	3.72	3.91
Male	Shin guards	8	6.06	5.57	1.64	2.63	3.48	7.23	15.32	16.42	16.70
Male	Soccer ball	14	2.77	2.34	1.06	1.53	1.67	2.49	7.54	8.32	8.52
Male	Water bottle	17	7.80	4.46	2.27	4.61	6.77	8.30	15.99	17.73	18.16
Male	Dietary Objects	17	7.80	4.46	2.27	4.61	6.77	8.30	15.99	17.73	18.16
Male	Non-dietary Objects	21	3.41	1.28	1.61	2.55	2.96	3.54	5.70	6.17	6.29
Male	All Objects	21	3.59	1.25	2.25	2.67	3.23	3.81	5.83	6.05	6.10
p value*	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.255	ND	ND	ND	ND	ND	ND	ND	ND



Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Clothes	ND	0.872	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.345	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.765	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.767	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	0.533	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	0.794	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.471	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.552	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.728	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.196	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

ND: not determined

Table S3-199. Hourly Duration (Min/Hour) of Player Intensity by Gender, on Break/After/Before Game

Gender	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	High	0.78	1.10	0.00	0.00	0.26	1.40	2.75	3.36	3.51
Female (n=19)	Moderate	1.59	1.67	0.00	0.18	1.03	2.80	4.19	4.88	5.05
Female (n=19)	Light	18.93	10.93	3.92	10.64	19.32	24.76	38.61	39.39	39.59
Female (n=19)	Resting	38.69	12.14	15.37	31.89	37.64	48.88	54.28	55.27	55.52
Male (n=21)	High	1.61	1.67	0.00	0.00	1.37	2.71	4.38	5.09	5.27
Male (n=21)	Moderate	3.62	4.05	0.00	1.16	2.29	4.28	12.65	13.83	14.13
Male (n=21)	Light	18.80	7.34	9.74	11.58	18.94	23.39	25.94	36.37	38.98
Male (n=21)	Resting	35.97	6.61	21.02	32.21	36.61	40.89	45.98	46.78	46.98
p value*	High	0.156	ND	ND	ND	ND	ND	ND	ND	ND
p value	Moderate	0.068	ND	ND	ND	ND	ND	ND	ND	ND
p value	Light	0.979	ND	ND	ND	ND	ND	ND	ND	ND
p value	Resting	0.38	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

ND: not determined



Table S3-200. Duration (Min/Hour) of Macro-Activities by Age, on Break/After/Before Game

Gender	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Push ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Rest Standing	31.57	12.35	10.59	23.95	30.06	41.40	49.80	50.70	50.92
Female (n=19)	Running	1.72	1.74	0.00	0.16	1.26	2.93	4.89	5.13	5.19
Female (n=19)	Sit on chair	2.96	5.82	0.00	0.00	0.00	3.68	15.96	19.59	20.50
Female (n=19)	Sit on ground	3.65	7.86	0.00	0.00	0.00	2.61	24.06	26.01	26.50
Female (n=19)	Stretching	0.09	0.25	0.00	0.00	0.00	0.00	0.64	0.87	0.93
Female (n=19)	Walking	19.96	11.66	4.00	10.68	21.27	29.08	40.05	40.51	40.63
Male (n=21)	Push ups	0.03	0.13	0.00	0.00	0.00	0.00	0.00	0.49	0.61
Male (n=21)	Rest Standing	30.89	8.98	13.13	25.55	30.41	36.40	45.18	46.03	46.24
Male (n=21)	Running	4.34	5.36	0.00	0.77	1.91	5.03	16.10	16.82	17.00
Male (n=21)	Sit on chair	1.42	5.74	0.00	0.00	0.00	0.00	1.14	21.37	26.43
Male (n=21)	Sit on ground	2.68	4.33	0.00	0.00	0.18	3.85	12.81	13.36	13.50
Male (n=21)	Stretching	0.28	0.60	0.00	0.00	0.00	0.00	1.26	2.11	2.32
Male (n=21)	Walking	20.27	8.49	9.34	12.41	19.74	25.42	36.19	38.42	38.98
p value*	Push ups	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Rest Standing	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Running	0.182	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on chair	0.179	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on ground	0.534	ND	ND	ND	ND	ND	ND	ND	ND
p value	Stretching	0.438	ND	ND	ND	ND	ND	ND	ND	ND
p value	Walking	0.810	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to the activity not observed; and ND: not determined

Table S3-201. Mouthing Frequency (Event/Hour) by Gender, on Break/After/Before Game

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA



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Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Body	0.44	1.92	0.00	0.00	0.00	0.00	0.83	6.85	8.35
Female (n=19)	Clothes	8.01	17.16	0.00	0.00	0.00	10.83	22.21	64.59	75.18
Female (n=19)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Hands	10.95	14.15	0.00	0.00	4.80	18.42	35.99	45.17	47.46
Female (n=19)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Water bottle	57.13	55.13	6.07	27.65	41.75	70.76	143.19	220.52	239.85
Female (n=19)	Dietary Objects	57.13	55.13	6.07	27.65	41.75	70.76	143.19	220.52	239.85
Female (n=19)	Non-dietary Objects	10.59	17.33	0.00	0.00	4.96	13.99	26.92	65.53	75.18
Female (n=19)	All Objects	67.72	54.59	6.07	31.44	54.06	88.77	143.19	220.52	239.85
Male (n=21)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Body	0.40	1.82	0.00	0.00	0.00	0.00	0.00	6.66	8.32
Male (n=21)	Clothes	13.62	25.43	0.00	4.23	6.25	11.02	52.44	101.00	113.14
Male (n=21)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Hands	10.23	12.56	0.00	1.85	5.85	12.50	29.17	47.36	51.91
Male (n=21)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Water bottle	14.61	13.31	0.00	0.00	16.52	25.36	33.52	37.82	38.89
Male (n=21)	Dietary Objects	16.10	13.02	0.00	3.12	16.52	25.36	36.30	38.37	38.89
Male (n=21)	Non-dietary Objects	14.02	25.61	0.00	4.23	6.25	11.02	52.44	101.00	113.14
Male (n=21)	All Objects	30.11	28.55	0.00	11.70	26.33	29.60	88.74	114.96	121.52
p value	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	ND	ND	ND	ND	ND	ND	ND	ND



Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Clothes	0.201	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.729	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.000*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.000*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.631	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.003*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-202. Mouthing Duration (Min/Hour) by Gender, on Break/After/Before Game

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Body	0.01	0.03	0.00	0.00	0.00	0.00	0.01	0.12	0.15
Female (n=19)	Clothes	0.24	0.47	0.00	0.00	0.00	0.26	0.74	1.74	1.99
Female (n=19)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Hands	0.62	1.32	0.00	0.00	0.05	0.39	3.64	4.65	4.90
Female (n=19)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Water bottle	4.17	3.93	0.45	1.66	3.13	4.70	13.08	14.44	14.78
Female (n=19)	Dietary Objects	4.17	3.93	0.45	1.66	3.13	4.70	13.08	14.44	14.78
Female (n=19)	Non-dietary Objects	0.36	0.54	0.00	0.00	0.15	0.43	1.40	1.87	1.99
Female (n=19)	All Objects	4.53	3.85	0.45	2.07	4.08	5.08	13.31	14.49	14.78



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Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Male (n=21)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Body	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.07	0.09
Male (n=21)	Clothes	0.30	0.53	0.00	0.06	0.13	0.27	1.70	1.96	2.02
Male (n=21)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Hands	0.33	0.52	0.00	0.02	0.15	0.33	1.47	1.99	2.12
Male (n=21)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Water bottle	0.81	0.84	0.00	0.00	0.73	1.14	2.10	2.84	3.03
Male (n=21)	Dietary Objects	0.89	0.84	0.00	0.16	0.73	1.15	2.10	2.84	3.03
Male (n=21)	Non-dietary Objects	0.31	0.53	0.00	0.06	0.13	0.27	1.70	1.96	2.02
Male (n=21)	All Objects	1.20	1.05	0.00	0.44	0.87	1.62	3.03	3.75	3.93
p value	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.310	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.515	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.000*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.000*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.923	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.000*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no mouth contact with these objects; and ND: not determined



Table S3-203. Mouthing Median Duration (Second) by Gender, on Break/After/Before Game

Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female	Artificial Turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Body	1	1.14	ND	ND	ND	ND	ND	ND	ND	ND
Female	Clothes	9	2.09	1.30	0.89	1.19	1.44	2.47	4.22	4.64	4.74
Female	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Hands	10	1.80	1.33	0.59	1.07	1.31	1.66	4.25	4.61	4.70
Female	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Water bottle	19	4.03	1.38	1.92	2.81	4.05	4.77	6.08	6.68	6.83
Female	Dietary Objects	19	4.03	1.38	1.92	2.81	4.05	4.77	6.08	6.68	6.83
Female	Non-dietary Objects	15	2.63	3.00	0.18	1.17	1.35	3.16	7.69	10.57	11.29
Female	All Objects	19	3.57	1.36	1.37	2.75	3.09	4.31	5.86	5.97	6.00
Male	Artificial Turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Body	1	0.66	ND	ND	ND	ND	ND	ND	ND	ND
Male	Clothes	16	1.31	0.57	0.57	0.84	1.23	1.73	2.30	2.34	2.35
Male	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Hands	16	1.61	1.13	0.28	0.95	1.28	2.01	4.00	4.40	4.50
Male	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Water bottle	14	3.39	1.66	1.35	2.07	2.98	4.30	6.13	6.74	6.90
Male	Dietary Objects	16	3.22	1.62	1.35	2.00	2.72	4.10	6.01	6.72	6.90
Male	Non-dietary Objects	19	1.29	0.58	0.57	0.81	1.23	1.73	2.30	2.34	2.35
Male	All Objects	21	2.58	1.73	0.72	1.45	1.77	3.23	5.84	6.69	6.90



Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.121	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.816	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.186	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.071	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.205	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.015*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

S3.4.2.4. Activity Patterns by Gender, Any Time but during the Game/Practice

Table S3-204. Frequency (Event/Hour) of Actions by Gender, Any Time but during the Game/Practice

Gender	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Diving	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Jumping	4.90	7.98	0.00	0.00	0.00	9.72	21.71	21.89	21.93
Female (n=19)	Slip or fall	0.16	0.68	0.00	0.00	0.00	0.00	0.30	2.43	2.96
Female (n=19)	Tackling or sliding	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Diving	0.35	1.62	0.00	0.00	0.00	0.00	0.00	5.94	7.43
Male (n=21)	Jumping	5.00	10.35	0.00	0.00	0.00	0.00	24.14	32.37	34.43
Male (n=21)	Slip or fall	3.41	10.30	0.00	0.00	0.00	0.00	11.48	39.44	46.43
Male (n=21)	Tackling or sliding	0.22	0.69	0.00	0.00	0.00	0.00	2.08	2.42	2.51
p value*	Diving	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Jumping	0.783	ND	ND	ND	ND	ND	ND	ND	ND



Gender	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Slip or fall	0.098	ND	ND	ND	ND	ND	ND	ND	ND
p value	Tackling or sliding	ND	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to these activities not observed; and ND: not determined

Table S3-205. Frequency of Hand to Object Contact (Event/Hour) by Gender, Any Time but during the Game/Practice

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Artificial Turf	5.26	17.34	0.00	0.00	0.00	0.00	22.45	64.35	74.82
Female (n=19)	Body	22.15	30.56	0.00	0.00	9.07	31.80	79.19	110.44	118.25
Female (n=19)	Clothes	118.57	73.25	29.93	68.49	108.75	148.85	256.73	298.97	309.53
Female (n=19)	Field Structures	15.59	15.24	0.00	4.57	8.10	23.76	40.34	43.52	44.32
Female (n=19)	Footwear	11.67	19.51	0.00	0.00	1.50	14.47	42.11	69.54	76.40
Female (n=19)	Head/face/hair	33.54	26.59	0.00	16.62	31.33	43.05	67.70	106.65	116.39
Female (n=19)	Shin guards	3.03	12.01	0.00	0.00	0.00	0.00	9.84	43.87	52.37
Female (n=19)	Soccer ball	14.26	17.08	0.00	0.00	3.09	29.78	41.28	43.71	44.32
Female (n=19)	Water bottle	58.37	74.85	5.02	21.49	29.59	56.53	163.58	291.89	323.97
Female (n=19)	Dietary Objects	58.62	74.76	5.02	21.49	33.07	56.53	163.58	291.89	323.97
Female (n=19)	Non-dietary Objects	236.31	98.35	97.17	160.56	205.61	300.89	381.94	437.20	451.02
Female (n=19)	All Objects	294.93	114.44	142.90	198.05	291.52	363.55	498.36	520.83	526.45
Male (n=21)	Artificial Turf	5.81	11.20	0.00	0.00	1.49	6.61	22.55	43.53	48.77
Male (n=21)	Body	24.75	24.15	0.00	6.38	14.12	37.72	68.04	75.06	76.82
Male (n=21)	Clothes	102.22	40.09	53.89	68.25	97.26	116.88	154.25	210.47	224.52
Male (n=21)	Field Structures	16.35	25.80	0.00	2.60	8.96	14.18	72.66	94.95	100.52
Male (n=21)	Footwear	15.46	17.04	0.00	0.00	7.90	28.33	38.56	56.70	61.23
Male (n=21)	Head/face/hair	16.49	16.39	0.00	6.66	13.08	22.38	31.02	66.47	75.33
Male (n=21)	Shin guards	3.93	6.89	0.00	0.00	0.00	6.61	19.42	24.16	25.35
Male (n=21)	Soccer ball	25.48	39.01	0.00	0.00	11.17	31.61	75.97	146.65	164.32



Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Male (n=21)	Water bottle	29.56	44.59	0.00	6.80	19.82	26.70	145.49	164.61	169.39
Male (n=21)	Dietary Objects	29.56	44.59	0.00	6.80	19.82	26.70	145.49	164.61	169.39
Male (n=21)	Non-dietary Objects	226.03	78.75	80.12	196.05	207.24	259.35	381.00	426.74	438.17
Male (n=21)	All Objects	255.58	78.47	89.93	207.79	260.60	280.75	387.81	428.10	438.17
p value	Artificial Turf	0.185	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.342	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.688	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.497	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.363	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.006*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.057	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.472	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.021*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.020*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.768	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.270	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-206. Duration of Hand to Object Contact (Min/Hour) by Gender, Any Time but during the Game/Practice

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Artificial Turf	0.47	1.79	0.00	0.00	0.00	0.00	1.41	6.55	7.83
Female (n=19)	Body	2.11	3.21	0.00	0.00	0.37	3.57	7.55	10.49	11.22
Female (n=19)	Clothes	15.67	10.76	2.59	7.54	12.51	21.38	35.56	37.78	38.33
Female (n=19)	Field Structures	1.79	2.78	0.00	0.15	0.42	2.02	6.03	9.97	10.95
Female (n=19)	Footwear	0.78	1.32	0.00	0.00	0.12	1.35	2.29	4.77	5.39
Female (n=19)	Head/face/hair	1.35	1.55	0.00	0.59	0.82	1.53	3.53	6.08	6.72



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Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Shin guards	0.11	0.37	0.00	0.00	0.00	0.00	0.66	1.37	1.55
Female (n=19)	Soccer ball	0.86	1.29	0.00	0.00	0.08	1.36	3.28	4.17	4.39
Female (n=19)	Water bottle	9.71	9.47	1.01	3.76	5.56	13.35	32.15	33.57	33.92
Female (n=19)	Dietary Objects	9.73	9.46	1.01	3.76	5.71	13.35	32.15	33.57	33.92
Female (n=19)	Non-dietary Objects	24.22	12.55	7.38	15.14	19.02	32.77	44.87	51.77	53.50
Female (n=19)	All Objects	33.96	15.08	13.31	21.27	32.18	44.64	58.71	59.50	59.70
Male (n=21)	Artificial Turf	0.40	0.85	0.00	0.00	0.02	0.24	2.32	2.66	2.75
Male (n=21)	Body	3.39	5.08	0.00	0.37	0.81	4.72	12.63	17.29	18.45
Male (n=21)	Clothes	15.58	8.02	4.17	8.45	14.21	20.48	26.69	32.21	33.59
Male (n=21)	Field Structures	2.22	4.23	0.00	0.09	0.44	1.69	13.93	14.51	14.65
Male (n=21)	Footwear	1.79	2.74	0.00	0.00	0.87	2.13	5.84	10.06	11.12
Male (n=21)	Head/face/hair	0.46	0.45	0.00	0.18	0.32	0.61	1.43	1.71	1.78
Male (n=21)	Shin guards	0.55	1.17	0.00	0.00	0.00	0.46	2.59	4.28	4.70
Male (n=21)	Soccer ball	1.25	2.06	0.00	0.00	0.59	1.80	3.57	7.82	8.88
Male (n=21)	Water bottle	4.38	5.34	0.00	0.39	3.23	4.42	15.53	19.70	20.74
Male (n=21)	Dietary Objects	4.38	5.34	0.00	0.39	3.23	4.42	15.53	19.70	20.74
Male (n=21)	Non-dietary Objects	27.10	9.44	14.33	18.08	25.07	35.81	41.15	43.29	43.82
Male (n=21)	All Objects	31.48	9.13	15.67	25.07	29.93	38.52	44.33	44.69	44.78
p value	Artificial Turf	0.185	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.187	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.748	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.860	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.181	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.003*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.052	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.533	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.011*	ND	ND	ND	ND	ND	ND	ND	ND



Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Dietary Objects	0.011*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.294	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.776	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-207. Median Duration of Hand to Object Contact (Second) by Gender, Any Time but during the Game/Practice

Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female	Artificial Turf	4	2.09	0.96	0.78	1.69	2.34	2.75	2.88	2.90	2.91
Female	Body	13	3.25	3.03	0.44	1.25	1.95	3.70	8.72	10.57	11.03
Female	Clothes	19	4.52	1.71	1.38	3.31	4.49	5.63	6.92	7.57	7.73
Female	Field Structures	16	3.53	2.05	0.91	2.24	2.82	4.74	6.80	6.94	6.98
Female	Footwear	12	3.45	1.81	1.29	2.23	3.26	4.15	6.28	7.20	7.44
Female	Head/face/hair	18	1.43	0.55	0.58	1.04	1.29	1.74	2.32	2.62	2.70
Female	Shin guards	2	2.95	2.44	1.23	2.09	2.95	3.81	4.50	4.64	4.68
Female	Soccer ball	11	1.85	0.65	0.82	1.51	1.72	2.17	2.82	3.19	3.28
Female	Water bottle	19	7.83	2.64	3.07	6.36	7.55	9.25	12.37	13.15	13.35
Female	Dietary Objects	19	7.71	2.66	3.07	6.34	7.16	9.00	12.37	13.15	13.35
Female	Non-dietary Objects	19	3.19	1.12	1.52	2.55	2.91	3.68	4.74	5.96	6.26
Female	All Objects	19	3.61	1.31	1.59	2.73	3.35	4.66	5.48	6.11	6.26
Male	Artificial Turf	12	2.61	4.96	0.47	0.70	1.06	2.06	9.57	16.50	18.23
Male	Body	20	2.99	2.78	0.16	1.16	1.93	3.50	9.36	10.02	10.18
Male	Clothes	21	4.72	2.04	1.91	3.34	4.38	5.92	7.30	10.08	10.78
Male	Field Structures	17	5.23	4.58	1.13	2.75	3.66	6.19	12.57	18.48	19.96
Male	Footwear	15	3.93	2.68	1.11	1.93	3.03	5.51	8.88	9.22	9.30
Male	Head/face/hair	18	1.51	0.75	0.65	1.12	1.32	1.58	2.94	3.72	3.91
Male	Shin guards	8	6.06	5.57	1.64	2.63	3.48	7.23	15.32	16.42	16.70
Male	Soccer ball	15	2.25	1.91	0.90	1.28	1.66	2.32	5.43	7.90	8.52



Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Male	Water bottle	18	7.48	4.53	2.09	4.20	6.60	8.20	15.86	17.70	18.16
Male	Dietary Objects	18	7.48	4.53	2.09	4.20	6.60	8.20	15.86	17.70	18.16
Male	Non-dietary Objects	21	3.08	1.27	1.29	2.19	2.91	3.42	5.70	5.71	5.71
Male	All Objects	21	3.26	1.30	1.29	2.32	3.12	3.72	5.81	5.83	5.83
p value*	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.785	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.936	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.276	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.943	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.767	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	0.533	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	0.878	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.343	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.408	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.611	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.390	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

ND: not determined

Table S3-208. Hourly Duration (Min/Hour) of Player Intensity by Gender, Any Time but during the Game/Practice

Gender	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	High	1.84	2.21	0.00	0.00	1.29	2.32	6.46	6.82	6.91
Female (n=19)	Moderate	19.07	10.67	4.00	11.25	19.32	24.35	38.61	39.39	39.59
Female (n=19)	Light	5.62	6.07	0.00	0.80	3.41	9.94	16.55	20.32	21.26
Female (n=19)	Resting	33.48	15.18	14.73	18.41	36.68	46.68	54.02	55.22	55.52
Male (n=21)	High	1.64	1.61	0.00	0.00	1.34	2.71	3.94	5.00	5.27
Male (n=21)	Moderate	18.45	7.29	9.74	11.58	17.32	23.62	25.15	36.21	38.98
Male (n=21)	Light	6.52	6.69	0.00	1.44	4.27	12.65	17.02	21.98	23.22



Gender	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Male (n=21)	Resting	33.39	8.32	17.57	27.97	34.85	40.30	45.98	46.78	46.98
p value*	High	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Moderate	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Light	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Resting	1.000	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum
ND: not determined

Table S3-209. Duration (Min/Hour) of Macro-Activities by Age, Any Time but during the Game/Practice

Gender	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Push ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Rest Standing	26.93	13.45	10.59	16.61	21.84	36.02	49.80	50.70	50.92
Female (n=19)	Running	4.91	4.52	0.00	0.94	3.38	8.47	11.19	14.48	15.30
Female (n=19)	Sit on chair	2.65	5.76	0.00	0.00	0.00	1.21	15.54	19.51	20.50
Female (n=19)	Sit on ground	3.59	7.68	0.00	0.00	0.00	2.37	23.95	25.12	25.41
Female (n=19)	Stretching	2.64	6.35	0.00	0.00	0.00	0.04	17.73	19.43	19.85
Female (n=19)	Walking	19.13	10.72	4.00	11.60	17.07	24.84	40.05	40.51	40.63
Male (n=21)	Push ups	0.02	0.08	0.00	0.00	0.00	0.00	0.00	0.28	0.35
Male (n=21)	Rest Standing	28.89	9.53	14.00	21.66	29.33	36.22	45.18	46.03	46.24
Male (n=21)	Running	6.66	7.01	0.00	1.20	3.89	12.20	17.00	22.06	23.32
Male (n=21)	Sit on chair	1.39	5.75	0.00	0.00	0.00	0.00	1.12	21.37	26.43
Male (n=21)	Sit on ground	2.43	4.01	0.00	0.00	0.88	3.52	12.81	13.36	13.50
Male (n=21)	Stretching	0.84	1.43	0.00	0.00	0.00	0.94	4.64	4.84	4.89
Male (n=21)	Walking	19.53	8.14	9.34	12.41	17.75	24.78	31.80	37.54	38.98
p value*	Push ups	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Rest Standing	0.379	ND	ND	ND	ND	ND	ND	ND	ND
p value	Running	0.755	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on chair	0.179	ND	ND	ND	ND	ND	ND	ND	ND



Gender	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Sit on ground	0.589	ND	ND	ND	ND	ND	ND	ND	ND
p value	Stretching	0.249	ND	ND	ND	ND	ND	ND	ND	ND
p value	Walking	0.768	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to the activity not observed; and ND: not determined

Table S3-210. Mouthing Frequency (Event/Hour) by Gender, Any Time but during the Game/Practice

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Body	0.52	1.93	0.00	0.00	0.00	0.00	2.24	7.13	8.35
Female (n=19)	Clothes	8.47	17.24	0.00	0.00	0.00	11.27	23.04	64.75	75.18
Female (n=19)	Hands	10.06	10.88	0.00	0.00	7.29	17.94	29.28	32.38	33.16
Female (n=19)	Water bottle	46.73	55.80	1.97	18.38	31.32	47.53	143.19	220.52	239.85
Female (n=19)	Dietary Objects	46.73	55.80	1.97	18.38	31.32	47.53	143.19	220.52	239.85
Female (n=19)	Non-dietary Objects	10.92	17.24	0.00	0.00	4.74	15.51	26.92	65.53	75.18
Female (n=19)	All Objects	57.65	55.62	1.97	29.21	42.52	72.15	143.19	220.52	239.85
Male (n=21)	Body	0.18	0.82	0.00	0.00	0.00	0.00	0.00	3.01	3.76
Male (n=21)	Clothes	12.28	24.03	0.00	2.43	7.41	11.02	27.03	95.92	113.14
Male (n=21)	Hands	9.76	11.38	0.00	1.85	6.29	11.02	29.17	42.79	46.19
Male (n=21)	Water bottle	13.48	12.84	0.00	0.00	12.15	24.66	33.52	37.82	38.89
Male (n=21)	Dietary Objects	14.51	12.21	0.00	2.62	12.15	24.66	33.52	37.82	38.89
Male (n=21)	Non-dietary Objects	12.58	24.03	0.00	4.23	7.41	11.02	27.03	95.92	113.14
Male (n=21)	All Objects	27.09	25.70	0.00	13.10	25.93	29.60	48.62	106.94	121.52
p value	Body	0.514	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.310	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.967	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.002*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.003*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.795	ND	ND	ND	ND	ND	ND	ND	ND



Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	All Objects	0.008*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-211. Mouthing Duration (Min/Hour) by Gender, Any Time but during the Game/Practice

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Body	0.01	0.03	0.00	0.00	0.00	0.00	0.04	0.13	0.15
Female (n=19)	Clothes	0.25	0.47	0.00	0.00	0.00	0.35	0.74	1.74	1.99
Female (n=19)	Hands	0.50	0.97	0.00	0.00	0.19	0.27	2.91	3.25	3.34
Female (n=19)	Water bottle	3.29	3.50	0.15	1.10	2.04	4.18	8.49	13.52	14.78
Female (n=19)	Dietary Objects	3.29	3.50	0.15	1.10	2.04	4.18	8.49	13.52	14.78
Female (n=19)	Non-dietary Objects	0.35	0.50	0.00	0.00	0.20	0.48	1.01	1.79	1.99
Female (n=19)	All Objects	3.63	3.44	0.15	1.53	2.72	4.50	8.49	13.52	14.78
Male (n=21)	Body	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.03	0.04
Male (n=21)	Clothes	0.26	0.40	0.00	0.06	0.10	0.27	1.04	1.57	1.70
Male (n=21)	Hands	0.31	0.50	0.00	0.02	0.19	0.31	1.31	1.96	2.12
Male (n=21)	Water bottle	0.77	0.84	0.00	0.00	0.57	1.14	2.10	2.84	3.03
Male (n=21)	Dietary Objects	0.82	0.82	0.00	0.14	0.67	1.14	2.10	2.84	3.03
Male (n=21)	Non-dietary Objects	0.26	0.40	0.00	0.06	0.17	0.30	1.04	1.57	1.70
Male (n=21)	All Objects	1.08	0.88	0.00	0.36	0.84	1.62	2.41	2.91	3.03
p value	Body	0.514	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.487	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.794	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.001*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.001*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.859	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.001*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined



Table S3-212. Mouthing Median Duration (Second) by Gender, Any Time but during the Game/Practice

Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female	Body	2	1.18	0.06	1.14	1.16	1.18	1.20	1.22	1.22	1.22
Female	Clothes	9	2.02	1.33	0.87	1.01	1.62	2.47	4.22	4.64	4.74
Female	Hands	12	1.63	1.24	0.59	0.85	1.27	1.64	4.08	4.57	4.70
Female	Water bottle	19	4.02	1.40	1.92	2.67	4.05	4.77	6.08	6.68	6.83
Female	Dietary Objects	19	4.02	1.40	1.92	2.67	4.05	4.77	6.08	6.68	6.83
Female	Non-dietary Objects	13	2.44	2.91	0.18	1.01	1.25	2.33	7.36	10.50	11.29
Female	All Objects	19	3.42	1.46	1.37	2.38	3.09	4.31	5.86	5.97	6.00
Male	Body	1	0.66	ND	ND	ND	ND	ND	ND	ND	ND
Male	Clothes	16	1.29	0.52	0.66	0.84	1.23	1.73	1.98	2.27	2.35
Male	Hands	16	1.59	1.13	0.36	0.96	1.15	2.01	4.00	4.40	4.50
Male	Water bottle	14	3.39	1.66	1.35	2.07	2.98	4.30	6.13	6.74	6.90
Male	Dietary Objects	16	3.22	1.62	1.35	2.00	2.72	4.10	6.01	6.72	6.90
Male	Non-dietary Objects	16	1.31	0.58	0.66	0.83	1.23	1.74	2.36	2.38	2.39
Male	All Objects	19	2.56	1.72	0.72	1.43	1.82	2.97	5.84	6.69	6.90
p value	Body	ND	0.667	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.095	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.982	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.212	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.082	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.249	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.027*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no mouth contact with these objects; and ND: not determined



S3.4.3. Data Summarized According to Location and Gender

S3.4.3.1. Activity Patterns by Gender, On Field

Table S3-213. Frequency (Event/Hour) of Actions by Gender, On Field

Gender	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Diving	0.79	2.54	0.00	0.00	0.00	0.40	2.39	9.37	11.12
Female (n=19)	Heading	0.32	0.60	0.00	0.00	0.00	0.52	1.43	2.09	2.25
Female (n=19)	Jumping	16.18	26.69	0.00	1.05	6.39	10.98	73.40	82.39	84.64
Female (n=19)	Slip or fall	2.14	3.72	0.00	0.00	0.65	1.84	7.89	13.44	14.83
Female (n=19)	Tackling or sliding	0.09	0.39	0.00	0.00	0.00	0.00	0.17	1.39	1.69
Male (n=21)	Diving	0.46	1.22	0.00	0.00	0.00	0.00	3.62	4.09	4.21
Male (n=21)	Heading	0.41	0.76	0.00	0.00	0.00	0.45	2.24	2.32	2.34
Male (n=21)	Jumping	4.01	4.04	0.00	0.68	2.61	6.72	9.82	12.96	13.74
Male (n=21)	Slip or fall	3.01	4.98	0.00	0.58	0.93	2.71	13.47	18.32	19.53
Male (n=21)	Tackling or sliding	0.83	1.09	0.00	0.00	0.58	0.91	3.05	3.31	3.37
p value*	Diving	0.461	ND	ND	ND	ND	ND	ND	ND	ND
p value	Heading	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Jumping	0.158	ND	ND	ND	ND	ND	ND	ND	ND
p value	Slip or fall	0.474	ND	ND	ND	ND	ND	ND	ND	ND
p value	Tackling or sliding	0.001*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-214. Frequency of Hand to Object Contact (Event/Hour) by Gender, On Field

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Artificial Turf	4.77	6.39	0.00	0.59	1.85	4.81	18.95	19.89	20.12
Female (n=19)	Body	15.05	14.34	2.52	6.75	12.28	16.54	43.78	58.36	62.00
Female (n=19)	Clothes	72.17	43.50	22.14	45.79	61.97	85.97	157.80	175.66	180.12
Female (n=19)	Field Structures	7.80	5.34	0.57	3.95	6.02	11.21	15.80	19.05	19.86
Female (n=19)	Footwear	5.86	6.92	0.60	2.03	2.77	6.80	15.52	27.34	30.29
Female (n=19)	Head/face/hair	41.43	27.57	7.48	22.90	33.80	49.47	93.89	108.65	112.34
Female (n=19)	Shin guards	1.33	4.61	0.00	0.00	0.00	0.00	5.07	17.07	20.07



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Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Soccer ball	27.82	36.46	0.00	2.78	7.75	36.27	105.98	116.97	119.72
Female (n=19)	Water bottle	2.52	2.88	0.00	0.00	2.19	4.23	7.22	9.49	10.06
Female (n=19)	Dietary Objects	2.58	3.01	0.00	0.00	2.19	4.23	7.30	10.18	10.90
Female (n=19)	Non-dietary Objects	187.62	75.18	66.35	138.80	180.37	229.79	302.90	327.84	334.08
Female (n=19)	All Objects	190.20	76.14	67.25	141.40	181.79	232.28	305.42	332.73	339.56
Male (n=21)	Artificial Turf	3.83	3.71	0.00	1.17	2.62	4.90	12.71	13.15	13.26
Male (n=21)	Body	9.79	8.47	1.53	3.38	7.90	14.98	26.42	30.70	31.77
Male (n=21)	Clothes	69.06	27.55	13.63	55.07	67.00	89.08	115.55	117.05	117.42
Male (n=21)	Field Structures	4.73	4.85	0.00	1.91	2.82	6.17	10.98	20.43	22.79
Male (n=21)	Footwear	5.41	3.96	0.72	2.60	4.71	5.76	12.23	16.04	16.99
Male (n=21)	Head/face/hair	17.18	14.71	2.60	9.69	12.39	18.59	35.52	62.94	69.79
Male (n=21)	Shin guards	1.37	2.16	0.00	0.00	0.23	2.21	5.69	7.21	7.59
Male (n=21)	Soccer ball	15.74	19.33	0.94	5.36	10.51	19.64	35.14	78.25	89.03
Male (n=21)	Water bottle	2.19	2.58	0.00	0.00	1.51	3.78	5.89	8.14	8.70
Male (n=21)	Dietary Objects	2.20	2.57	0.00	0.00	1.51	3.78	5.89	8.14	8.70
Male (n=21)	Non-dietary Objects	137.30	45.27	71.14	113.96	132.12	154.36	173.59	265.82	288.88
Male (n=21)	All Objects	139.50	45.64	71.14	113.96	132.39	158.94	182.29	267.56	288.88
p value	Artificial Turf	0.704	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.124	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.573	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.078	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.588	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.000*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.066	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.872	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.748	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.802	ND	ND	ND	ND	ND	ND	ND	ND



Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Non-dietary Objects	0.016*	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.017*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-215. Duration of Hand to Object Contact (Min/Hour) by Gender, On Field

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Artificial Turf	0.28	0.54	0.00	0.01	0.11	0.32	0.66	2.05	2.40
Female (n=19)	Body	1.03	1.44	0.03	0.18	0.48	1.15	4.23	5.09	5.31
Female (n=19)	Clothes	12.58	14.73	1.25	4.25	7.16	11.91	42.19	52.51	55.09
Female (n=19)	Field Structures	0.74	0.84	0.01	0.17	0.35	1.20	2.21	2.95	3.13
Female (n=19)	Footwear	0.41	0.45	0.01	0.09	0.28	0.54	1.27	1.67	1.77
Female (n=19)	Head/face/hair	1.55	1.92	0.16	0.67	1.09	1.69	2.97	7.80	9.01
Female (n=19)	Shin guards	0.04	0.16	0.00	0.00	0.00	0.00	0.19	0.59	0.69
Female (n=19)	Soccer ball	1.13	1.31	0.00	0.14	0.56	1.67	3.77	3.83	3.84
Female (n=19)	Water bottle	0.46	0.53	0.00	0.00	0.44	0.77	1.11	1.84	2.02
Female (n=19)	Dietary Objects	0.46	0.54	0.00	0.00	0.45	0.77	1.12	1.87	2.06
Female (n=19)	Non-dietary Objects	18.49	14.71	4.53	10.08	14.14	19.17	48.02	56.59	58.73
Female (n=19)	All Objects	18.95	14.66	4.53	10.90	14.59	19.60	48.55	56.69	58.73
Male (n=21)	Artificial Turf	0.19	0.26	0.00	0.03	0.08	0.17	0.79	0.94	0.98
Male (n=21)	Body	0.71	1.14	0.03	0.08	0.18	0.65	3.52	3.72	3.77
Male (n=21)	Clothes	11.45	8.19	1.84	5.99	9.49	14.52	27.78	31.40	32.30
Male (n=21)	Field Structures	0.56	0.71	0.00	0.11	0.24	0.70	2.12	2.35	2.41
Male (n=21)	Footwear	0.37	0.32	0.01	0.18	0.31	0.41	0.79	1.31	1.44
Male (n=21)	Head/face/hair	0.47	0.32	0.03	0.24	0.34	0.69	0.83	1.34	1.47
Male (n=21)	Shin guards	0.19	0.49	0.00	0.00	0.02	0.09	0.88	1.90	2.15
Male (n=21)	Soccer ball	0.60	0.57	0.01	0.14	0.48	0.68	1.50	2.10	2.25
Male (n=21)	Water bottle	0.35	0.40	0.00	0.00	0.33	0.52	1.05	1.15	1.17
Male (n=21)	Dietary Objects	0.35	0.40	0.00	0.00	0.33	0.52	1.05	1.15	1.17



Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Male (n=21)	Non-dietary Objects	15.04	8.75	4.95	9.06	12.45	21.09	34.13	35.07	35.30
Male (n=21)	All Objects	15.39	8.84	4.95	9.79	12.51	21.42	34.13	35.91	36.35
p value	Artificial Turf	0.849	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.167	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.409	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.416	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.725	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.000*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.034*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.490	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.520	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.587	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.611	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.490	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-216. Median Duration of Hand to Object Contact (Second) by Gender, On Field

Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female	Artificial Turf	15	1.85	1.38	0.18	0.88	1.51	2.39	4.37	4.68	4.75
Female	Body	19	1.56	1.28	0.56	0.94	1.15	1.76	2.96	5.65	6.32
Female	Clothes	19	4.23	3.00	1.83	2.57	3.20	4.77	8.65	13.45	14.65
Female	Field Structures	19	3.20	3.40	0.41	1.06	2.06	3.66	7.19	13.27	14.78
Female	Footwear	19	3.82	3.59	0.82	1.57	2.46	4.75	10.18	13.98	14.93
Female	Head/face/hair	19	1.32	0.34	0.92	1.13	1.27	1.46	1.71	2.26	2.40
Female	Shin guards	4	1.73	0.74	0.90	1.30	1.68	2.11	2.53	2.62	2.64
Female	Soccer ball	18	2.21	2.23	0.77	1.22	1.49	2.27	4.84	9.42	10.56
Female	Water bottle	12	9.24	6.14	2.87	5.05	6.84	11.62	20.14	22.79	23.45



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Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female	Dietary Objects	12	9.19	6.17	2.87	5.05	6.57	11.62	20.14	22.79	23.45
Female	Non-dietary Objects	19	2.24	1.22	1.30	1.61	1.82	2.36	3.68	6.08	6.67
Female	All Objects	19	2.26	1.21	1.31	1.61	1.85	2.39	3.68	6.08	6.67
Male	Artificial Turf	20	1.26	1.00	0.62	0.79	0.99	1.30	2.53	4.62	5.14
Male	Body	21	1.12	0.44	0.45	0.79	0.96	1.38	1.87	1.93	1.94
Male	Clothes	21	4.54	4.07	1.59	2.36	3.22	4.53	9.21	17.51	19.59
Male	Field Structures	20	4.00	4.14	0.55	2.03	2.80	4.58	8.33	17.64	19.96
Male	Footwear	21	2.92	1.91	0.89	1.69	2.44	4.32	5.43	7.77	8.36
Male	Head/face/hair	21	1.35	0.56	0.60	1.09	1.18	1.55	2.06	2.88	3.09
Male	Shin guards	11	5.63	5.55	1.26	1.94	3.31	6.60	16.13	16.55	16.65
Male	Soccer ball	21	1.74	0.84	0.64	1.23	1.58	1.99	3.77	4.05	4.11
Male	Water bottle	13	7.06	3.77	2.09	4.63	7.09	8.62	12.60	14.88	15.45
Male	Dietary Objects	13	6.64	3.91	1.58	3.15	7.05	8.36	12.34	14.83	15.45
Male	Non-dietary Objects	21	2.43	1.33	1.18	1.58	2.07	3.06	4.00	6.35	6.94
Male	All Objects	21	2.46	1.33	1.18	1.67	2.07	3.06	4.07	6.38	6.96
p value*	Artificial Turf	ND	0.149	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.247	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.768	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.224	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.810	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.555	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	0.104	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	0.989	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.551	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.376	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.630	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.592	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum



ND: not determined

Table S3-217. Hourly Duration (Min/Hour) of Player Intensity by Gender, On Field

Gender	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	High	2.39	1.15	0.10	1.45	2.47	3.04	4.06	4.55	4.67
Female (n=19)	Moderate	13.24	4.32	4.18	11.10	13.57	15.84	19.19	19.94	20.13
Female (n=19)	Light	25.90	5.14	13.63	23.08	27.58	28.92	32.09	32.63	32.76
Female (n=19)	Resting	18.47	7.27	9.12	14.42	18.23	20.22	30.68	36.84	38.38
Male (n=21)	High	1.88	1.31	0.31	0.99	1.45	2.53	3.99	5.21	5.52
Male (n=21)	Moderate	14.42	6.10	4.43	9.27	15.17	20.63	22.63	22.79	22.83
Male (n=21)	Light	26.20	5.20	15.18	21.97	26.85	29.26	33.74	34.18	34.29
Male (n=21)	Resting	17.50	6.11	8.83	13.15	15.98	21.48	28.35	30.77	31.38
p value*	High	0.123	ND	ND	ND	ND	ND	ND	ND	ND
p value	Moderate	0.436	ND	ND	ND	ND	ND	ND	ND	ND
p value	Light	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Resting	0.503	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

ND: not determined

Table S3-218. Duration (Min/Hour) of Macro-Activities by Age, On Field

Gender	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Push ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Rest Standing	17.06	6.72	7.32	13.70	16.87	19.53	29.94	31.32	31.67
Female (n=19)	Running	14.89	4.86	6.54	11.72	14.56	18.52	21.95	23.06	23.34
Female (n=19)	Sit on chair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Sit on ground	0.74	1.32	0.00	0.02	0.51	0.78	1.69	5.10	5.95
Female (n=19)	Stretching	1.14	1.86	0.00	0.15	0.48	0.93	5.15	6.54	6.89
Female (n=19)	Walking	25.70	6.25	13.65	21.79	26.88	30.31	33.19	33.44	33.50
Male (n=21)	Push ups	0.01	0.02	0.00	0.00	0.00	0.00	0.01	0.08	0.10
Male (n=21)	Rest Standing	15.26	5.72	5.00	12.44	14.43	16.63	24.78	29.52	30.71
Male (n=21)	Running	15.54	7.71	2.50	9.63	14.78	22.00	26.35	26.87	27.00



Gender	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Male (n=21)	Sit on chair	0.97	2.80	0.00	0.00	0.00	0.00	8.21	9.85	10.26
Male (n=21)	Sit on ground	0.58	0.63	0.00	0.03	0.45	0.89	1.67	2.02	2.11
Male (n=21)	Stretching	0.27	0.38	0.00	0.00	0.13	0.41	1.21	1.27	1.29
Male (n=21)	Walking	27.15	5.92	14.96	21.97	28.93	30.31	36.32	37.09	37.28
p value*	Push ups	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Rest Standing	0.255	ND	ND	ND	ND	ND	ND	ND	ND
p value	Running	0.830	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on chair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on ground	0.828	ND	ND	ND	ND	ND	ND	ND	ND
p value	Stretching	0.034*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Walking	0.473	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to these activities not observed; and ND: not determined

Table S3-219. Mouthing Frequency (Event/Hour) by Gender, On Field

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Body	1.00	2.81	0.00	0.00	0.00	0.64	3.25	10.47	12.27
Female (n=19)	Clothes	5.70	8.36	0.00	1.07	1.50	5.98	24.96	27.46	28.08
Female (n=19)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Hands	9.88	5.95	1.94	6.76	8.65	11.99	19.41	24.27	25.49
Female (n=19)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Soccer ball	0.03	0.14	0.00	0.00	0.00	0.00	0.06	0.52	0.63
Female (n=19)	Water bottle	1.54	1.89	0.00	0.00	0.53	2.76	4.66	5.49	5.70
Female (n=19)	Dietary Objects	1.65	1.86	0.00	0.00	0.82	2.76	4.66	5.49	5.70
Female (n=19)	Non-dietary Objects	8.15	11.22	0.00	1.31	3.76	8.54	27.27	41.79	45.42
Female (n=19)	All Objects	9.79	11.00	0.00	3.12	5.12	12.12	27.27	41.79	45.42



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Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Male (n=21)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Body	0.24	0.93	0.00	0.00	0.00	0.00	0.78	3.54	4.23
Male (n=21)	Clothes	10.79	20.51	0.00	2.23	4.63	11.94	19.05	81.26	96.81
Male (n=21)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Hands	6.47	5.40	0.84	3.12	6.13	7.49	12.94	23.65	26.33
Male (n=21)	Head/face/hair	0.02	0.10	0.00	0.00	0.00	0.00	0.00	0.38	0.47
Male (n=21)	Shin guards	-	-	-	-	-	-	-	-	-
Male (n=21)	Soccer ball	-	-	-	-	-	-	-	-	-
Male (n=21)	Water bottle	1.35	1.94	0.00	0.00	0.00	1.98	5.27	5.57	5.64
Male (n=21)	Dietary Objects	1.64	2.06	0.00	0.00	0.77	2.45	5.64	6.11	6.23
Male (n=21)	Non-dietary Objects	12.09	20.24	0.00	2.68	8.43	12.25	21.25	81.70	96.81
Male (n=21)	All Objects	13.73	20.59	0.00	2.68	11.81	14.99	22.05	83.14	98.41
p value	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.054	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.222	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.022*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.717	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.798	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.279	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.490	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no mouth contact with these objects; and ND: not determined



Table S3-220. Mouthing Duration (Min/Hour) by Gender, On Field

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Body	0.02	0.07	0.00	0.00	0.00	0.01	0.08	0.26	0.31
Female (n=19)	Clothes	0.13	0.16	0.00	0.02	0.06	0.16	0.42	0.52	0.55
Female (n=19)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Hands	0.34	0.33	0.02	0.12	0.25	0.35	0.95	1.16	1.21
Female (n=19)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Soccer ball	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Female (n=19)	Water bottle	0.10	0.14	0.00	0.00	0.01	0.21	0.31	0.39	0.41
Female (n=19)	Dietary Objects	0.11	0.13	0.00	0.00	0.04	0.22	0.31	0.39	0.41
Female (n=19)	Non-dietary Objects	0.18	0.22	0.00	0.03	0.14	0.28	0.46	0.79	0.87
Female (n=19)	All Objects	0.29	0.25	0.00	0.09	0.21	0.47	0.64	0.83	0.87
Male (n=21)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Body	0.01	0.03	0.00	0.00	0.00	0.00	0.02	0.10	0.12
Male (n=21)	Clothes	0.27	0.38	0.00	0.03	0.08	0.39	0.74	1.36	1.52
Male (n=21)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Hands	0.19	0.23	0.01	0.06	0.11	0.17	0.77	0.83	0.85
Male (n=21)	Head/face/hair	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Male (n=21)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=21)	Water bottle	0.08	0.13	0.00	0.00	0.00	0.09	0.36	0.40	0.41
Male (n=21)	Dietary Objects	0.09	0.13	0.00	0.00	0.06	0.10	0.36	0.40	0.41
Male (n=21)	Non-dietary Objects	0.30	0.37	0.00	0.05	0.16	0.39	0.77	1.37	1.52
Male (n=21)	All Objects	0.39	0.43	0.00	0.05	0.23	0.67	1.01	1.50	1.62
p value	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND



Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Body	0.112	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.254	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.048*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.739	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.744	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.356	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.871	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-221. Mouthing Median Duration (Second) by Gender, On Field

Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female	Artificial Turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Body	7	0.93	0.39	0.54	0.59	0.97	1.10	1.48	1.57	1.59
Female	Clothes	16	1.93	2.39	0.24	1.14	1.33	1.65	4.75	9.44	10.61
Female	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Hands	19	1.35	0.67	0.66	0.96	1.06	1.41	2.74	3.07	3.15
Female	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Soccer ball	1	0.13	ND	ND	ND	ND	ND	ND	ND	ND
Female	Water bottle	10	3.46	1.62	0.93	2.92	3.46	4.33	5.67	5.72	5.73
Female	Dietary Objects	11	3.63	1.63	0.93	3.04	3.64	4.90	5.66	5.72	5.73
Female	Non-dietary Objects	17	1.65	2.35	0.24	0.73	1.11	1.46	3.82	9.25	10.61



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Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female	All Objects	18	1.80	1.32	0.24	0.92	1.53	2.04	4.61	5.17	5.30
Male	Artificial Turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Body	2	1.43	0.24	1.26	1.34	1.43	1.51	1.58	1.60	1.60
Male	Clothes	19	1.26	0.54	0.56	0.82	1.24	1.57	2.05	2.44	2.53
Male	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Hands	21	1.11	0.53	0.36	0.75	0.91	1.41	2.01	2.42	2.52
Male	Head/face/hair	1	1.50	ND	ND	ND	ND	ND	ND	ND	ND
Male	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Water bottle	10	3.60	1.16	1.97	2.71	3.52	4.21	5.30	5.32	5.33
Male	Dietary Objects	11	3.33	1.26	1.97	2.21	3.38	4.14	5.29	5.32	5.33
Male	Non-dietary Objects	20	1.21	0.54	0.56	0.82	1.09	1.47	2.02	2.43	2.53
Male	All Objects	20	1.38	0.68	0.56	0.89	1.21	1.54	2.51	3.02	3.14
p value*	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.111	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.441	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.145	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.971	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.562	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.964	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.409	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum



NA: not applicable due to no mouth contact with these objects; and ND: not determined

S3.4.3.2. Activity Patterns by Gender, Off Field

Table S3-222. Frequency (Event/Hour) of Actions by Gender, Off Field

Gender	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Jumping	4.19	10.42	0.00	0.00	0.00	0.00	23.67	36.37	39.55
Female (n=19)	Slip or fall	0.41	1.27	0.00	0.00	0.00	0.00	3.08	4.51	4.87
Female (n=19)	Tackling or sliding	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=20)	Jumping	3.14	7.77	0.00	0.00	0.00	0.00	18.35	25.98	27.89
Male (n=20)	Slip or fall	0.26	1.17	0.00	0.00	0.00	0.00	0.26	4.23	5.22
Male (n=20)	Tackling or sliding	0.25	1.13	0.00	0.00	0.00	0.00	0.25	4.10	5.06
p value*	Jumping	0.921	ND	ND	ND	ND	ND	ND	ND	ND
p value	Slip or fall	0.584	ND	ND	ND	ND	ND	ND	ND	ND
p value	Tackling or sliding	ND	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to the activity not observed; and ND: not determined

Table S3-223. Frequency of Hand to Object Contact (Event/Hour) by Gender, Off Field

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Artificial Turf	6.39	15.91	0.00	0.00	0.00	0.79	35.47	56.55	61.82
Female (n=19)	Body	14.59	16.79	0.00	0.00	9.57	24.87	42.18	52.97	55.67
Female (n=19)	Clothes	114.28	70.84	11.99	66.69	94.63	131.52	259.82	266.42	268.07
Female (n=19)	Field Structures	21.15	16.98	0.00	9.87	18.94	28.65	52.23	61.15	63.38
Female (n=19)	Footwear	12.87	17.93	0.00	0.00	4.62	16.95	45.38	55.53	58.07
Female (n=19)	Head/face/hair	36.35	32.29	0.00	11.44	29.88	48.40	96.00	114.70	119.37
Female (n=19)	Shin guards	0.29	1.24	0.00	0.00	0.00	0.00	0.54	4.44	5.42
Female (n=19)	Soccer ball	28.54	26.07	0.00	10.10	20.40	42.66	72.02	83.46	86.32
Female (n=19)	Water bottle	58.04	47.54	12.20	30.44	44.83	61.08	166.46	190.04	195.94
Female (n=19)	Dietary Objects	58.41	47.31	13.56	31.81	44.83	61.08	166.46	190.04	195.94
Female (n=19)	Non-dietary Objects	247.10	90.51	112.37	181.54	222.51	326.49	373.97	378.19	379.24



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Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	All Objects	305.51	111.81	149.31	221.38	312.72	365.42	465.36	553.21	575.17
Male (n=20)	Artificial Turf	3.32	9.04	0.00	0.00	0.00	1.16	12.55	34.11	39.50
Male (n=20)	Body	23.28	20.85	0.00	7.95	16.08	40.93	60.64	62.38	62.82
Male (n=20)	Clothes	79.16	50.06	0.00	49.91	73.89	117.87	164.13	174.06	176.54
Male (n=20)	Field Structures	13.82	28.03	0.00	0.00	5.81	14.63	35.29	108.43	126.72
Male (n=20)	Footwear	12.77	25.42	0.00	0.00	0.00	11.32	46.54	93.57	105.33
Male (n=20)	Head/face/hair	15.54	17.34	0.00	1.73	8.98	25.40	42.54	62.98	68.09
Male (n=20)	Shin guards	1.06	2.40	0.00	0.00	0.00	0.00	6.98	7.78	7.98
Male (n=20)	Soccer ball	38.87	81.13	0.00	1.13	9.80	29.63	169.53	308.55	343.30
Male (n=20)	Water bottle	33.67	50.24	0.00	0.00	6.67	56.82	152.37	158.91	160.55
Male (n=20)	Dietary Objects	33.67	50.24	0.00	0.00	6.67	56.82	152.37	158.91	160.55
Male (n=20)	Non-dietary Objects	206.99	108.38	0.00	144.14	206.83	284.54	355.22	387.52	395.60
Male (n=20)	All Objects	240.66	118.61	0.00	171.92	267.97	301.35	420.24	430.07	432.53
p value	Artificial Turf	0.929	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.168	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.140	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.018*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.464	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.014*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.356	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.214	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.012*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.011*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.296	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.149	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined



Table S3-224. Duration of Hand to Object Contact (Min/Hour) by Gender, Off Field

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Artificial Turf	0.41	1.29	0.00	0.00	0.00	0.01	1.51	4.76	5.57
Female (n=19)	Body	2.23	4.17	0.00	0.00	0.39	2.32	8.73	15.32	16.97
Female (n=19)	Clothes	15.80	9.77	3.05	7.52	15.03	22.65	33.80	33.89	33.91
Female (n=19)	Field Structures	1.84	1.86	0.00	0.68	1.33	2.12	5.88	6.61	6.79
Female (n=19)	Footwear	2.31	5.16	0.00	0.00	0.10	1.80	8.67	19.22	21.86
Female (n=19)	Head/face/hair	1.63	2.12	0.00	0.34	0.96	1.78	6.97	7.48	7.61
Female (n=19)	Shin guards	0.03	0.14	0.00	0.00	0.00	0.00	0.06	0.48	0.59
Female (n=19)	Soccer ball	1.85	1.93	0.00	0.36	1.69	2.50	6.26	6.44	6.49
Female (n=19)	Water bottle	10.50	8.18	1.27	3.85	7.28	16.78	22.43	28.31	29.78
Female (n=19)	Dietary Objects	10.54	8.15	1.27	3.85	7.28	16.78	22.43	28.31	29.78
Female (n=19)	Non-dietary Objects	27.91	9.91	9.38	20.56	29.27	32.67	43.33	49.48	51.02
Female (n=19)	All Objects	38.44	12.18	18.12	31.21	38.28	47.02	58.45	59.43	59.68
Male (n=20)	Artificial Turf	0.24	0.55	0.00	0.00	0.00	0.09	1.14	1.91	2.10
Male (n=20)	Body	3.10	3.37	0.00	0.57	2.34	5.50	9.66	11.57	12.05
Male (n=20)	Clothes	14.15	12.97	0.00	4.69	9.73	20.27	37.32	44.38	46.15
Male (n=20)	Field Structures	1.63	3.93	0.00	0.00	0.29	1.04	5.04	14.98	17.46
Male (n=20)	Footwear	2.38	5.78	0.00	0.00	0.00	1.18	9.27	21.73	24.85
Male (n=20)	Head/face/hair	0.60	0.66	0.00	0.03	0.34	0.91	1.77	2.04	2.11
Male (n=20)	Shin guards	0.15	0.36	0.00	0.00	0.00	0.00	1.09	1.21	1.24
Male (n=20)	Soccer ball	1.19	2.03	0.00	0.02	0.46	1.25	5.52	7.45	7.93
Male (n=20)	Water bottle	4.87	7.66	0.00	0.00	0.46	6.71	20.42	22.39	22.88
Male (n=20)	Dietary Objects	4.87	7.66	0.00	0.00	0.46	6.71	20.42	22.39	22.88
Male (n=20)	Non-dietary Objects	25.01	15.78	0.00	12.62	24.89	38.24	45.90	51.19	52.51
Male (n=20)	All Objects	29.89	15.04	0.00	23.33	33.73	38.47	49.09	51.95	52.67
p value	Artificial Turf	0.764	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.136	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.407	ND	ND	ND	ND	ND	ND	ND	ND



Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Field Structures	0.022*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.570	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.041*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.356	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.096	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.005*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.005*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.607	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.107	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-225. Median Duration of Hand to Object Contact (Second) by Gender, Off Field

Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female	Artificial Turf	5	1.68	0.78	0.61	1.40	1.56	2.12	2.58	2.67	2.69
Female	Body	12	3.44	3.11	0.78	1.66	2.50	3.70	8.47	11.45	12.19
Female	Clothes	19	4.42	2.08	1.80	2.68	3.91	5.29	7.83	9.56	9.99
Female	Field Structures	17	3.89	2.96	1.35	2.12	2.76	4.55	8.26	12.36	13.38
Female	Footwear	11	6.47	7.43	0.97	2.87	3.39	7.62	18.38	25.59	27.40
Female	Head/face/hair	18	1.96	1.34	0.83	1.13	1.60	2.00	4.09	5.72	6.12
Female	Shin guards	1	4.68	ND	ND	ND	ND	ND	ND	ND	ND
Female	Soccer ball	16	2.85	1.57	0.83	1.75	2.10	3.80	5.78	6.40	6.56
Female	Water bottle	19	7.23	3.39	2.77	4.78	6.59	9.27	12.98	13.95	14.20
Female	Dietary Objects	19	7.13	3.39	2.77	4.78	6.38	9.27	12.92	13.94	14.20
Female	Non-dietary Objects	19	3.40	1.19	2.05	2.44	3.29	3.98	5.27	6.28	6.54
Female	All Objects	19	3.80	1.36	2.24	2.78	3.64	4.57	5.51	7.28	7.73
Male	Artificial Turf	4.13	4.20	1.15	1.32	2.01	5.76	10.33	11.26	11.49	5.14
Male	Body	5.43	7.44	0.99	2.05	3.33	5.25	15.10	28.66	32.05	2.16



Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Male	Clothes	5.40	3.03	0.82	3.80	4.85	6.53	12.04	12.20	12.23	13.16
Male	Field Structures	4.02	2.05	1.57	2.59	3.12	5.70	7.39	7.44	7.45	19.96
Male	Footwear	3.98	2.73	1.12	2.14	3.03	5.57	8.27	8.33	8.35	8.36
Male	Head/face/hair	1.82	1.00	0.65	1.22	1.68	2.18	3.08	4.55	4.92	3.09
Male	Shin guards	7.85	6.53	2.71	3.02	6.00	10.83	15.52	16.46	16.70	16.70
Male	Soccer ball	1.65	0.71	0.64	1.15	1.52	2.13	2.88	2.90	2.91	3.95
Male	Water bottle	5.78	3.15	0.22	4.61	5.38	6.03	10.50	13.14	13.79	13.79
Male	Dietary Objects	5.78	3.15	0.22	4.61	5.38	6.03	10.50	13.14	13.79	13.79
Male	Non-dietary Objects	3.22	1.39	0.97	2.23	3.11	4.30	5.45	5.64	5.69	6.93
Male	All Objects	3.47	1.36	0.97	2.54	3.34	4.35	5.59	5.76	5.81	6.94
p value	Artificial Turf	ND	0.662	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.397	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.313	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.536	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.503	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.817	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	0.012*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.195	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.195	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.708	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.563	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-226. Hourly Duration (Min/Hour) of Player Intensity by Gender, Off Field

Gender	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	High	1.54	2.40	0.00	0.17	0.58	2.23	3.98	9.00	10.26
Female (n=19)	Moderate	4.57	5.20	0.21	1.48	2.66	5.30	12.03	19.65	21.56



Gender	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Light	15.51	9.16	3.69	7.31	17.76	21.16	27.61	34.65	36.41
Female (n=19)	Resting	38.38	11.72	19.69	28.90	36.74	50.65	54.74	55.24	55.37
Male (n=21)	High	1.51	2.38	0.00	0.00	0.43	1.98	5.09	8.96	9.93
Male (n=21)	Moderate	6.53	9.78	0.00	0.71	2.14	5.81	30.29	31.34	31.60
Male (n=21)	Light	11.45	6.81	2.73	6.28	9.96	15.35	24.03	27.53	28.40
Male (n=21)	Resting	40.52	14.37	0.00	34.93	45.67	49.89	55.23	55.69	55.81
p value*	High	0.648	ND	ND	ND	ND	ND	ND	ND	ND
p value	Moderate	0.687	ND	ND	ND	ND	ND	ND	ND	ND
p value	Light	0.152	ND	ND	ND	ND	ND	ND	ND	ND
p value	Resting	0.444	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

ND: not determined

Table S3-227. Duration (Min/Hour) of Macro-Activities by Age, Off Field

Gender	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Rest Standing	28.01	12.11	12.27	18.75	27.14	34.97	48.37	53.41	54.67
Female (n=19)	Running	4.47	5.81	0.08	1.03	3.05	3.94	13.24	22.45	24.75
Female (n=19)	Sit on chair	6.48	12.03	0.00	0.00	0.00	6.85	30.44	41.06	43.71
Female (n=19)	Sit on ground	3.69	5.81	0.00	0.00	0.11	5.42	12.99	19.24	20.80
Female (n=19)	Stretching	1.38	2.95	0.00	0.00	0.00	0.78	8.59	9.85	10.16
Female (n=19)	Walking	15.87	9.62	3.82	6.45	18.25	22.28	29.00	35.37	36.96
Male (n=20)	Rest Standing	27.35	12.84	0.00	21.13	24.26	32.66	47.88	53.42	54.81
Male (n=20)	Running	5.94	9.74	0.00	0.83	2.16	4.26	31.30	31.54	31.60
Male (n=20)	Sit on chair	8.00	12.20	0.00	0.00	0.00	15.68	30.30	34.75	35.86
Male (n=20)	Sit on ground	4.57	8.05	0.00	0.00	0.00	7.61	19.06	27.50	29.61
Male (n=20)	Stretching	0.66	1.85	0.00	0.00	0.00	0.05	2.55	6.94	8.04
Male (n=20)	Walking	13.37	9.04	2.84	6.08	9.55	18.26	28.70	33.25	34.39
p value*	Rest Standing	0.857	ND	ND	ND	ND	ND	ND	ND	ND
p value	Running	0.574	ND	ND	ND	ND	ND	ND	ND	ND



Gender	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Sit on chair	0.733	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on ground	0.833	ND	ND	ND	ND	ND	ND	ND	ND
p value	Stretching	0.400	ND	ND	ND	ND	ND	ND	ND	ND
p value	Walking	0.478	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to these activities not observed; and ND: not determined

Table S3-228. Mouthing Frequency (Event/Hour) by Gender, Off Field

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Body	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Clothes	7.59	11.32	0.00	0.00	1.75	10.56	28.34	37.32	39.56
Female (n=19)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Hands	9.61	10.70	0.00	0.00	5.38	12.91	27.06	31.99	33.22
Female (n=19)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Water bottle	50.17	58.32	0.00	15.31	28.41	64.27	114.81	224.42	251.82
Female (n=19)	Dietary Objects	50.17	58.32	0.00	15.31	28.41	64.27	114.81	224.42	251.82
Female (n=19)	Non-dietary Objects	8.12	11.08	0.00	0.00	5.38	10.56	28.34	37.32	39.56
Female (n=19)	All Objects	58.29	59.95	0.00	21.29	31.28	88.40	132.73	228.00	251.82
Male (n=19)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=19)	Body	0.15	0.64	0.00	0.00	0.00	0.00	0.28	2.30	2.80
Male (n=19)	Clothes	20.35	38.88	0.00	0.00	6.56	18.21	100.00	143.02	153.78
Male (n=19)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=19)	Footwear	0.07	0.30	0.00	0.00	0.00	0.00	0.13	1.08	1.32
Male (n=19)	Hands	11.67	14.95	0.00	0.00	7.69	18.14	35.26	54.28	59.04
Male (n=19)	Head/face/hair	0.19	0.83	0.00	0.00	0.00	0.00	0.36	2.98	3.63



Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Male (n=19)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=19)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=19)	Water bottle	28.53	47.55	0.00	0.00	7.26	42.96	116.43	173.72	188.04
Male (n=19)	Dietary Objects	28.67	47.46	0.00	0.66	7.26	42.96	116.43	173.72	188.04
Male (n=19)	Non-dietary Objects	20.76	38.78	0.00	0.00	6.56	18.87	100.00	143.02	153.78
Male (n=19)	All Objects	49.44	74.36	0.00	6.77	25.64	57.67	204.79	266.61	282.07
p value	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.343	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.324	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.343	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.929	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.343	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.033*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.034*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.369	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.136	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-229. Mouthing Duration (Min/Hour) by Gender, Off Field

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Body	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Clothes	0.22	0.32	0.00	0.00	0.05	0.37	0.85	0.86	0.86
Female (n=19)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA



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Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Hands	0.81	2.58	0.00	0.00	0.05	0.46	2.30	9.56	11.37
Female (n=19)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Water bottle	4.09	6.06	0.00	0.87	2.02	4.11	15.50	23.30	25.25
Female (n=19)	Dietary Objects	4.09	6.06	0.00	0.87	2.02	4.11	15.50	23.30	25.25
Female (n=19)	Non-dietary Objects	0.27	0.32	0.00	0.00	0.17	0.50	0.85	0.86	0.86
Female (n=19)	All Objects	4.36	6.12	0.00	0.91	2.75	4.87	15.55	23.68	25.71
Male (n=19)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=19)	Body	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.03
Male (n=19)	Clothes	0.92	1.64	0.00	0.00	0.13	1.32	2.90	5.88	6.62
Male (n=19)	Field Structures	0.01	0.03	0.00	0.00	0.00	0.00	0.01	0.09	0.11
Male (n=19)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=19)	Hands	0.58	0.78	0.00	0.00	0.20	1.09	1.87	2.27	2.37
Male (n=19)	Head/face/hair	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.04	0.05
Male (n=19)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=19)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=19)	Water bottle	1.41	2.61	0.00	0.00	0.30	1.43	6.24	9.62	10.47
Male (n=19)	Dietary Objects	1.42	2.60	0.00	0.04	0.30	1.43	6.24	9.62	10.47
Male (n=19)	Non-dietary Objects	0.93	1.65	0.00	0.00	0.13	1.32	3.01	5.92	6.65
Male (n=19)	All Objects	2.35	3.13	0.00	0.22	1.21	3.52	7.27	10.94	11.86
p value	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.343	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.255	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.343	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.522	ND	ND	ND	ND	ND	ND	ND	ND



Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Head/face/hair	0.343	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.008*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.008*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.454	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.079	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-230. Mouthing Median Duration (Second) by Gender, Off Field

Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female	Artificial turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Body	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Clothes	10	2.29	2.48	0.81	1.09	1.27	2.25	6.47	8.46	8.96
Female	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Hands	13	1.65	1.64	0.20	0.80	1.14	1.68	4.56	5.91	6.25
Female	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Water bottle	18	4.08	2.07	2.11	2.65	3.49	4.55	6.70	9.89	10.69
Female	Dietary Objects	18	4.08	2.07	2.11	2.65	3.49	4.55	6.70	9.89	10.69
Female	Non-dietary Objects	11	3.16	3.56	0.81	1.23	1.59	2.79	10.12	11.05	11.29
Female	All Objects	18	3.65	1.67	1.52	2.61	2.84	4.55	6.23	7.31	7.58
Male	Artificial turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Body	1	0.66	ND	ND	ND	ND	ND	ND	ND	ND
Male	Clothes	12	1.73	0.94	0.72	0.87	1.61	2.20	3.19	3.32	3.35
Male	Field Structures	1	5.18	ND	ND	ND	ND	ND	ND	ND	ND



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Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Male	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Hands	12	2.29	2.20	0.54	1.01	1.20	2.83	6.10	7.67	8.06
Male	Head/face/hair	1	0.79	ND	ND	ND	ND	ND	ND	ND	ND
Male	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Water bottle	13	2.95	1.08	0.99	2.37	3.15	3.41	4.33	4.78	4.90
Male	Dietary Objects	14	2.92	1.04	0.99	2.40	3.10	3.39	4.28	4.77	4.90
Male	Non-dietary Objects	13	1.67	0.98	0.72	0.83	1.40	1.86	3.30	3.59	3.66
Male	All Objects	15	2.29	0.90	1.05	1.70	2.27	3.06	3.56	3.86	3.93
p value	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.361	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.974	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.361	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.437	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.361	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.183	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.135	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.361	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.012*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no mouth contact with these objects; and ND: not determined



S3.4.4. Data Summarized if Participants Were Wearing Gloves or Not and by Gender

S3.4.4.1. Activity Patterns by Gender, with Gloves On

Table S3-231. Frequency of Hand to Object Contact (Event/Hour) by Gender, with Gloves On

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=9)	Artificial Turf	9.47	10.26	0.00	0.00	9.18	16.55	24.39	25.85	26.21
Female (n=9)	Body	9.83	10.33	0.00	1.64	7.75	12.06	26.52	31.11	32.26
Female (n=9)	Clothes	53.67	42.17	14.23	27.69	43.60	58.98	124.74	146.34	151.74
Female (n=9)	Field Structures	11.06	13.08	0.00	3.32	7.98	12.64	32.81	40.67	42.63
Female (n=9)	Footwear	4.52	4.12	0.00	0.00	4.59	7.37	9.92	10.38	10.49
Female (n=9)	Head/face/hair	47.72	42.30	5.46	12.06	35.80	72.46	111.30	121.71	124.31
Female (n=9)	Shin guards	0.63	1.38	0.00	0.00	0.00	0.00	3.06	3.83	4.02
Female (n=9)	Soccer ball	53.20	50.02	0.00	7.76	45.89	97.49	112.68	114.89	115.44
Female (n=9)	Water bottle	5.35	5.52	0.00	0.00	5.27	8.88	12.68	13.03	13.12
Female (n=9)	Dietary Objects	5.47	5.70	0.00	0.00	5.27	8.88	13.12	13.12	13.12
Female (n=9)	Non-dietary Objects	216.90	66.27	146.33	152.88	195.52	268.58	308.27	314.89	316.54
Female (n=9)	All Objects	222.37	67.10	146.33	161.74	208.63	281.69	311.82	315.60	316.54
Male (n=12)	Artificial Turf	3.47	3.57	0.00	1.36	2.23	4.91	9.85	11.46	11.86
Male (n=12)	Body	9.37	17.34	0.00	1.48	2.51	6.01	41.22	55.99	59.68
Male (n=12)	Clothes	69.70	50.94	6.40	36.79	55.74	97.41	149.02	176.88	183.85
Male (n=12)	Field Structures	5.06	6.84	0.00	1.05	2.38	6.30	17.76	22.04	23.11
Male (n=12)	Footwear	3.50	5.15	0.00	0.00	0.95	4.92	12.15	16.17	17.18
Male (n=12)	Head/face/hair	20.73	15.79	1.61	9.32	17.59	27.87	47.30	51.31	52.31
Male (n=12)	Shin guards	1.10	2.27	0.00	0.00	0.00	0.75	5.63	6.75	7.03
Male (n=12)	Soccer ball	25.12	27.97	0.00	5.32	13.21	44.60	70.52	86.69	90.73
Male (n=12)	Water bottle	3.18	4.25	0.00	0.00	1.38	4.14	11.61	11.74	11.77
Male (n=12)	Dietary Objects	3.18	4.25	0.00	0.00	1.38	4.14	11.61	11.74	11.77



Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Male (n=12)	Non-dietary Objects	154.17	73.30	63.78	108.16	138.29	193.86	269.34	277.30	279.29
Male (n=12)	All Objects	157.35	73.93	65.10	111.35	141.64	199.93	270.01	278.63	280.78
p value	Artificial Turf	0.590	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.455	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.382	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.145	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.421	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.219	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.624	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.355	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.584	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.584	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.049*	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.049*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-232. Duration of Hand to Object Contact (Min/Hour) by Gender, with Gloves On

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=9)	Artificial Turf	0.58	0.85	0.00	0.00	0.25	0.52	2.08	2.29	2.34
Female (n=9)	Body	1.38	3.13	0.00	0.02	0.28	0.54	6.26	9.00	9.68
Female (n=9)	Clothes	6.15	6.45	0.84	1.57	3.38	7.86	17.04	19.39	19.98
Female (n=9)	Field Structures	1.68	3.43	0.00	0.11	0.54	0.79	7.22	9.99	10.68
Female (n=9)	Footwear	0.20	0.21	0.00	0.00	0.14	0.31	0.50	0.60	0.62
Female (n=9)	Head/face/hair	2.23	2.94	0.10	0.22	1.55	1.91	7.20	8.95	9.39
Female (n=9)	Shin guards	0.02	0.06	0.00	0.00	0.00	0.00	0.12	0.17	0.18
Female (n=9)	Soccer ball	2.22	2.28	0.00	0.38	1.84	3.99	5.61	5.72	5.75
Female (n=9)	Water bottle	0.95	1.04	0.00	0.00	0.51	1.75	2.32	2.47	2.51



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Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=9)	Dietary Objects	0.95	1.05	0.00	0.00	0.51	1.75	2.35	2.52	2.56
Female (n=9)	Non-dietary Objects	16.46	7.75	7.54	10.13	15.22	21.53	27.56	29.89	30.47
Female (n=9)	All Objects	17.42	7.85	7.54	11.89	15.73	23.26	28.58	30.09	30.47
Male (n=12)	Artificial Turf	0.09	0.10	0.00	0.02	0.07	0.15	0.25	0.30	0.31
Male (n=12)	Body	1.36	4.16	0.00	0.01	0.14	0.35	6.84	13.02	14.56
Male (n=12)	Clothes	6.50	6.55	0.43	2.75	5.48	7.90	16.80	23.14	24.73
Male (n=12)	Field Structures	0.50	0.87	0.00	0.02	0.11	0.37	2.22	2.67	2.78
Male (n=12)	Footwear	0.15	0.23	0.00	0.00	0.03	0.20	0.56	0.73	0.77
Male (n=12)	Head/face/hair	0.63	0.66	0.02	0.25	0.44	0.84	1.67	2.29	2.44
Male (n=12)	Shin guards	0.04	0.09	0.00	0.00	0.00	0.04	0.21	0.27	0.29
Male (n=12)	Soccer ball	0.94	0.94	0.00	0.19	0.55	2.06	2.26	2.28	2.29
Male (n=12)	Water bottle	0.45	0.62	0.00	0.00	0.13	0.65	1.62	1.78	1.82
Male (n=12)	Dietary Objects	0.45	0.62	0.00	0.00	0.13	0.65	1.62	1.78	1.82
Male (n=12)	Non-dietary Objects	10.97	11.00	1.83	6.43	9.09	10.68	28.11	40.53	43.63
Male (n=12)	All Objects	11.42	11.29	1.83	6.90	9.50	10.72	28.81	41.83	45.08
p value	Artificial Turf	0.541	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.476	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.917	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.213	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.559	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.169	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.624	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.413	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.584	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.584	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.058	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.028*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)



ND: not determined

Table S3-233. Median Duration of Hand to Object Contact (Second) by Gender, with Gloves On

Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female	Artificial Turf	5	2.02	1.26	0.82	1.03	1.54	3.18	3.46	3.52	3.54
Female	Body	7	1.72	1.10	0.66	1.01	1.37	2.06	3.34	3.78	3.89
Female	Clothes	9	2.90	1.43	1.40	1.92	2.35	4.09	5.09	5.26	5.30
Female	Field Structures	8	2.93	1.44	0.69	2.44	2.87	3.51	4.92	5.24	5.32
Female	Footwear	6	2.45	1.27	1.58	1.63	1.69	3.19	4.26	4.41	4.45
Female	Head/face/hair	9	1.27	0.53	0.62	0.98	1.11	1.71	2.06	2.23	2.27
Female	Shin guards	2	1.92	1.44	0.90	1.41	1.92	2.43	2.84	2.92	2.94
Female	Soccer ball	8	2.04	0.91	0.75	1.41	2.05	2.52	3.30	3.52	3.58
Female	Water bottle	5	5.35	3.02	2.52	2.58	5.89	5.90	9.06	9.69	9.85
Female	Dietary Objects	5	5.35	3.02	2.52	2.58	5.89	5.90	9.06	9.69	9.85
Female	Non-dietary Objects	9	2.01	0.82	1.06	1.48	1.93	2.39	3.26	3.69	3.80
Female	All Objects	9	2.05	0.82	1.13	1.48	1.93	2.48	3.30	3.70	3.80
Male	Artificial Turf	10	1.18	0.77	0.48	0.73	0.87	1.23	2.59	2.72	2.75
Male	Body	11	1.39	0.99	0.39	0.85	1.11	1.61	3.05	3.72	3.88
Male	Clothes	12	2.49	1.24	1.17	1.59	2.21	3.06	4.71	4.88	4.93
Male	Field Structures	10	2.17	1.33	0.55	1.22	1.70	3.07	4.18	4.45	4.51
Male	Footwear	7	2.45	1.64	0.89	1.60	1.78	2.94	4.99	5.31	5.38
Male	Head/face/hair	12	1.33	0.77	0.66	0.90	1.12	1.49	2.63	3.28	3.44
Male	Shin guards	4	2.38	1.23	1.48	1.58	1.94	2.75	3.87	4.10	4.16
Male	Soccer ball	11	1.70	0.50	0.90	1.54	1.65	1.98	2.37	2.67	2.75
Male	Water bottle	8	7.89	4.20	3.39	4.82	6.60	10.68	14.09	14.84	15.03
Male	Dietary Objects	8	7.89	4.20	3.39	4.82	6.60	10.68	14.09	14.84	15.03
Male	Non-dietary Objects	12	1.83	0.89	1.12	1.25	1.60	2.11	3.20	4.08	4.30
Male	All Objects	12	1.86	0.90	1.12	1.27	1.62	2.14	3.28	4.14	4.36
p value*	Artificial Turf	ND	0.129	ND	ND	ND	ND	ND	ND	ND	ND



Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Body	ND	0.479	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.508	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.315	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.945	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.917	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	0.800	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	0.492	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.222	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.222	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.464	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.464	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

ND: not determined

Table S3-234. Mouthing Frequency (Event/Hour) by Gender, with Gloves On

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=9)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=9)	Body	3.59	10.70	0.00	0.00	0.00	0.00	19.55	31.11	34.00
Female (n=9)	Clothes	2.46	3.42	0.00	0.00	0.99	2.99	8.66	9.29	9.45
Female (n=9)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=9)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=9)	Hands	2.48	6.00	0.00	0.00	0.00	1.71	11.70	17.83	19.36
Female (n=9)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=9)	Shinguards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=9)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=9)	Water bottle	2.34	2.27	0.00	0.00	2.50	4.21	5.36	5.72	5.81
Female (n=9)	Dietary Objects	2.90	2.33	0.00	0.47	3.17	4.74	5.73	5.79	5.81
Female (n=9)	Non-dietary Objects	13.40	20.01	0.00	1.39	6.35	10.76	50.17	59.27	61.54
Female (n=9)	All Objects	16.30	19.32	0.00	6.45	9.17	12.35	52.21	59.67	61.54



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Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Male (n=9)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=9)	Body	1.19	3.72	0.00	0.00	0.00	0.00	6.56	11.22	12.39
Male (n=9)	Clothes	16.90	37.76	0.00	0.98	2.39	13.13	74.98	117.51	128.14
Male (n=9)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=9)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=9)	Hands	7.16	8.26	0.00	1.75	3.14	10.74	21.00	25.83	27.04
Male (n=9)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=9)	Shinguards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=9)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=9)	Water bottle	1.79	2.03	0.00	0.00	0.63	3.87	4.50	4.68	4.72
Male (n=9)	Dietary Objects	2.14	2.13	0.00	0.00	1.45	4.20	4.75	4.77	4.78
Male (n=9)	Non-dietary Objects	20.30	36.86	0.00	2.78	7.17	20.05	76.44	117.80	128.14
Male (n=9)	All Objects	22.45	37.84	0.00	2.78	11.94	23.42	80.35	122.00	132.41
p value	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.878	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.213	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.033*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shinguards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.634	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.451	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.751	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.999	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no mouth contact with these objects; and ND: not determined



Table S3-235. Mouthing Duration (Min/Hour) by Gender, with Gloves On

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=9)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=9)	Body	0.09	0.28	0.00	0.00	0.00	0.00	0.50	0.81	0.89
Female (n=9)	Clothes	0.08	0.09	0.00	0.00	0.04	0.16	0.21	0.21	0.21
Female (n=9)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=9)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=9)	Hands	0.09	0.22	0.00	0.00	0.00	0.03	0.43	0.64	0.69
Female (n=9)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=9)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=9)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=9)	Water bottle	0.15	0.15	0.00	0.00	0.15	0.22	0.39	0.43	0.44
Female (n=9)	Dietary Objects	0.21	0.20	0.00	0.04	0.17	0.30	0.52	0.58	0.59
Female (n=9)	Non-dietary Objects	0.32	0.43	0.00	0.06	0.19	0.26	1.12	1.18	1.20
Female (n=9)	All Objects	0.53	0.41	0.00	0.26	0.46	0.58	1.23	1.25	1.25
Male (n=9)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=9)	Body	0.03	0.11	0.00	0.00	0.00	0.00	0.19	0.33	0.36
Male (n=9)	Clothes	0.40	0.65	0.00	0.03	0.05	0.48	1.61	1.83	1.88
Male (n=9)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=9)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=9)	Hands	0.42	0.79	0.00	0.03	0.15	0.29	1.77	2.49	2.67
Male (n=9)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=9)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=9)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=9)	Water bottle	0.11	0.13	0.00	0.00	0.04	0.20	0.31	0.33	0.34
Male (n=9)	Dietary Objects	0.12	0.13	0.00	0.00	0.06	0.24	0.31	0.33	0.34
Male (n=9)	Non-dietary Objects	0.46	0.63	0.00	0.04	0.17	0.62	1.63	1.83	1.88
Male (n=9)	All Objects	0.58	0.72	0.00	0.04	0.31	0.82	1.89	2.08	2.13
p value	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND



Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Body	0.878	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.413	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.039*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.660	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.451	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.888	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.647	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-236. Mouthing Median Duration (Second) by Gender, with Gloves On

Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female	Artificial turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Body	2	0.74	0.30	0.54	0.64	0.74	0.85	0.93	0.95	0.95
Female	Clothes	6	3.03	3.86	0.62	0.99	1.20	3.05	8.86	10.26	10.61
Female	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Hands	4	1.66	0.81	0.67	1.15	1.80	2.31	2.34	2.35	2.35
Female	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Water bottle	6	3.99	1.31	2.60	3.06	3.61	5.06	5.66	5.71	5.73
Female	Dietary Objects	7	4.18	1.29	2.60	3.13	3.93	5.37	5.64	5.71	5.73
Female	Non-dietary Objects	8	2.48	3.35	0.70	0.84	1.13	2.11	7.83	10.05	10.61



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Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female	All Objects	9	2.51	1.94	0.86	1.03	1.27	3.68	5.55	5.68	5.71
Male	Artificial turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Body	2	0.99	0.38	0.72	0.86	0.99	1.13	1.23	1.25	1.26
Male	Clothes	9	1.34	0.32	0.93	1.19	1.34	1.41	1.82	1.85	1.86
Male	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Hands	9	2.04	1.89	0.81	0.95	1.41	2.21	5.11	6.48	6.82
Male	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Water bottle	6	3.42	1.02	1.71	3.39	3.45	3.57	4.59	4.86	4.93
Male	Dietary Objects	7	3.14	1.02	1.71	2.53	3.38	3.45	4.49	4.84	4.93
Male	Non-dietary Objects	9	1.17	0.32	0.76	0.93	1.17	1.27	1.63	1.81	1.86
Male	All Objects	9	1.34	0.38	0.76	1.12	1.34	1.51	1.88	1.93	1.94
p value*	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.667	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.955	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.999	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.818	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.165	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.743	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.666	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum



NA: not applicable due to no mouth contact with these objects; and ND: not determined

S3.4.4.2. Activity Patterns by Gender, with Gloves Off

Table S3-237. Frequency of Hand to Object Contact (Event/Hour) by Gender, with Gloves Off

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Artificial Turf	4.48	11.01	0.00	0.00	1.42	3.00	17.65	41.81	47.85
Female (n=19)	Body	17.23	13.67	3.25	6.90	15.26	19.72	42.82	52.08	54.40
Female (n=19)	Clothes	86.89	58.99	22.97	48.10	62.98	100.93	212.76	224.20	227.06
Female (n=19)	Field Structures	10.62	7.44	1.46	5.24	8.84	15.17	19.57	29.95	32.54
Female (n=19)	Footwear	6.00	7.30	0.00	1.53	3.25	7.79	16.22	27.77	30.66
Female (n=19)	Head/face/hair	40.74	23.38	4.65	24.23	33.11	54.30	80.13	91.98	94.94
Female (n=19)	Shin guards	1.21	4.31	0.00	0.00	0.00	0.00	4.39	15.91	18.79
Female (n=19)	Soccer ball	16.00	24.75	0.00	2.91	6.09	17.05	44.73	93.87	106.16
Female (n=19)	Water bottle	8.83	6.58	0.00	5.09	6.58	11.77	21.02	21.05	21.06
Female (n=19)	Dietary Objects	8.89	6.55	0.00	5.09	6.58	11.77	21.02	21.05	21.06
Female (n=19)	Non-dietary Objects	192.87	85.25	73.89	126.96	190.81	225.31	356.74	366.00	368.32
Female (n=19)	All Objects	201.76	86.45	80.69	142.39	195.87	238.78	374.28	376.03	376.47
Male (n=20)	Artificial Turf	2.81	3.15	0.00	0.80	2.23	3.49	8.14	12.16	13.17
Male (n=20)	Body	12.64	9.19	0.00	4.65	12.25	16.63	27.78	33.68	35.16
Male (n=20)	Clothes	85.61	34.54	17.63	62.84	88.77	115.88	137.00	141.99	143.24
Male (n=20)	Field Structures	6.02	7.18	0.00	2.38	4.49	6.70	12.20	29.30	33.57
Male (n=20)	Footwear	7.79	7.99	0.00	3.06	5.70	9.95	16.69	32.27	36.17
Male (n=20)	Head/face/hair	16.50	14.94	0.00	8.79	12.66	20.48	31.55	62.02	69.64
Male (n=20)	Shin guards	1.32	2.47	0.00	0.00	0.00	1.47	5.85	8.58	9.26
Male (n=20)	Soccer ball	8.69	8.25	0.00	1.99	7.11	12.68	21.82	27.44	28.85
Male (n=20)	Water bottle	13.26	34.25	0.00	1.38	4.33	10.15	27.68	130.92	156.73
Male (n=20)	Dietary Objects	13.28	34.25	0.00	1.38	4.34	10.15	27.68	130.92	156.73



Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Male (n=20)	Non-dietary Objects	154.93	39.69	91.90	128.50	159.52	175.09	199.13	242.37	253.18
Male (n=20)	All Objects	168.21	66.99	91.90	132.00	162.84	187.20	222.25	372.38	409.91
p value	Artificial Turf	0.347	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.270	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.380	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.010*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.255	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.000*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.203	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.633	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.129	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.144	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.175	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.175	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-238. Duration of Hand to Object Contact (Min/Hour) by Gender, with Gloves Off

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Artificial Turf	0.38	1.24	0.00	0.00	0.04	0.17	0.94	4.56	5.46
Female (n=19)	Body	1.44	1.79	0.04	0.14	0.62	2.04	4.11	6.41	6.99
Female (n=19)	Clothes	14.90	16.16	1.79	6.06	8.71	13.51	50.31	52.25	52.73
Female (n=19)	Field Structures	0.97	1.08	0.05	0.25	0.46	1.33	3.50	3.78	3.85
Female (n=19)	Footwear	0.58	0.69	0.00	0.11	0.21	0.93	1.90	2.36	2.47
Female (n=19)	Head/face/hair	1.50	1.24	0.12	0.70	1.43	1.73	2.78	5.22	5.83
Female (n=19)	Shin guards	0.05	0.15	0.00	0.00	0.00	0.00	0.17	0.55	0.64
Female (n=19)	Soccer ball	0.78	1.05	0.00	0.09	0.29	1.03	3.31	3.53	3.58
Female (n=19)	Water bottle	1.80	1.82	0.00	0.67	1.29	2.02	6.02	6.62	6.77



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Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Dietary Objects	1.81	1.82	0.00	0.67	1.32	2.02	6.02	6.62	6.77
Female (n=19)	Non-dietary Objects	21.49	16.17	6.43	12.72	16.17	21.71	57.01	57.71	57.88
Female (n=19)	All Objects	23.30	16.31	7.47	13.95	16.81	25.87	58.57	58.78	58.83
Male (n=20)	Artificial Turf	0.22	0.33	0.00	0.01	0.07	0.20	0.98	1.00	1.00
Male (n=20)	Body	1.09	1.51	0.00	0.17	0.39	1.25	4.09	5.00	5.23
Male (n=20)	Clothes	18.05	12.51	2.05	9.34	14.63	28.02	37.82	44.50	46.17
Male (n=20)	Field Structures	0.77	1.10	0.00	0.17	0.37	0.76	2.47	4.12	4.53
Male (n=20)	Footwear	0.74	0.71	0.00	0.20	0.45	1.18	1.98	2.04	2.06
Male (n=20)	Head/face/hair	0.52	0.43	0.00	0.28	0.43	0.57	1.48	1.53	1.54
Male (n=20)	Shin guards	0.23	0.54	0.00	0.00	0.00	0.14	1.06	2.04	2.29
Male (n=20)	Soccer ball	0.38	0.32	0.00	0.10	0.31	0.65	0.90	0.96	0.97
Male (n=20)	Water bottle	2.02	5.32	0.00	0.13	0.60	1.58	3.72	20.21	24.33
Male (n=20)	Dietary Objects	2.02	5.32	0.00	0.13	0.61	1.58	3.72	20.21	24.33
Male (n=20)	Non-dietary Objects	23.20	13.39	6.15	12.32	22.01	30.74	46.03	52.98	54.72
Male (n=20)	All Objects	25.22	14.83	6.74	12.90	22.89	35.10	52.29	54.23	54.72
p value	Artificial Turf	0.458	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.663	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.158	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.305	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.332	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.000*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.149	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.353	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.106	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.106	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.496	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.725	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)



ND: not determined

Table S3-239. Median Duration of Hand to Object Contact (Second) by Gender, with Gloves Off

Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female	Artificial Turf	12	1.88	1.28	0.46	0.89	1.51	2.30	4.25	4.50	4.57
Female	Body	19	2.20	2.41	0.56	1.09	1.26	1.95	7.87	9.40	9.78
Female	Clothes	19	4.30	2.11	1.89	3.00	3.57	4.75	8.20	10.26	10.78
Female	Field Structures	19	2.77	2.01	0.40	1.44	1.92	3.05	6.76	6.86	6.89
Female	Footwear	17	4.88	4.56	1.14	1.94	2.82	7.05	15.01	15.27	15.34
Female	Head/face/hair	19	1.37	0.36	1.03	1.16	1.28	1.46	1.98	2.40	2.50
Female	Shin guards	4	2.66	1.43	1.43	1.78	2.27	3.15	4.37	4.61	4.68
Female	Soccer ball	18	1.98	1.07	0.79	1.14	1.61	2.78	3.82	4.09	4.15
Female	Water bottle	18	7.55	2.64	3.11	6.33	6.86	9.03	11.40	12.96	13.35
Female	Dietary Objects	18	7.40	2.65	3.11	6.12	6.71	8.91	11.40	12.96	13.35
Female	Non-dietary Objects	19	2.62	1.06	1.58	1.85	2.28	2.89	4.55	5.57	5.83
Female	All Objects	19	2.74	1.08	1.64	1.92	2.45	3.13	4.57	5.73	6.01
Male	Artificial Turf	15	1.40	1.10	0.66	0.87	1.15	1.34	3.03	4.72	5.14
Male	Body	19	1.31	0.47	0.53	0.94	1.23	1.65	1.95	2.05	2.07
Male	Clothes	20	5.11	2.94	1.85	3.12	4.32	6.28	9.40	12.80	13.65
Male	Field Structures	19	4.71	4.13	1.64	2.56	3.66	5.57	8.95	17.76	19.96
Male	Footwear	18	3.12	1.93	0.95	1.73	2.62	4.02	5.87	7.86	8.36
Male	Head/face/hair	19	1.45	0.72	0.60	1.06	1.18	1.70	2.97	3.37	3.47
Male	Shin guards	8	6.46	5.41	1.26	3.08	4.79	7.45	15.32	16.42	16.70
Male	Soccer ball	17	1.93	0.97	0.64	1.21	1.88	2.21	3.81	3.92	3.95
Male	Water bottle	17	6.33	3.51	1.16	4.61	5.56	8.02	13.71	13.78	13.79
Male	Dietary Objects	17	6.32	3.52	1.16	4.61	5.31	8.02	13.71	13.78	13.79
Male	Non-dietary Objects	20	3.25	1.62	1.23	1.95	3.08	3.84	6.91	6.93	6.93
Male	All Objects	20	3.32	1.61	1.25	2.16	3.08	4.02	6.91	6.94	6.94
p value*	Artificial Turf	ND	0.167	ND	ND	ND	ND	ND	ND	ND	ND



Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Body	ND	0.418	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.478	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.030	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.424	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.583	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	0.214	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	0.909	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.219	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.273	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.204	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.283	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

ND: not determined

Table S3-240. Mouthing Frequency (Event/Hour) by Gender, with Gloves Off

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Body	0.41	0.73	0.00	0.00	0.00	0.56	2.01	2.15	2.19
Female (n=19)	Clothes	6.75	9.74	0.00	1.30	3.65	7.04	25.45	35.43	37.92
Female (n=19)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Hands	12.12	7.58	0.00	6.56	12.14	18.97	21.90	24.73	25.44
Female (n=19)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Shinguards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Soccer ball	0.03	0.13	0.00	0.00	0.00	0.00	0.05	0.45	0.55
Female (n=19)	Water bottle	7.49	5.92	0.00	3.39	5.58	10.66	16.20	20.45	21.51
Female (n=19)	Dietary Objects	7.49	5.92	0.00	3.39	5.58	10.66	16.20	20.45	21.51
Female (n=19)	Non-dietary Objects	7.33	9.72	0.00	1.51	4.12	7.90	25.96	35.53	37.92
Female (n=19)	All Objects	14.81	11.21	0.54	5.59	12.03	21.83	32.19	41.23	43.49



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Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Male (n=19)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=19)	Body	0.11	0.35	0.00	0.00	0.00	0.00	0.81	1.30	1.42
Male (n=19)	Clothes	12.34	20.17	0.00	2.58	6.38	13.74	29.59	80.13	92.76
Male (n=19)	Field Structures	0.02	0.09	0.00	0.00	0.00	0.00	0.02	0.32	0.40
Male (n=19)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=19)	Hands	7.43	5.44	0.00	4.07	6.36	11.31	15.51	20.14	21.30
Male (n=19)	Head/face/hair	0.10	0.35	0.00	0.00	0.00	0.00	0.49	1.32	1.53
Male (n=19)	Shinguards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=19)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=19)	Water bottle	7.59	17.92	0.00	0.00	2.48	6.53	20.73	69.19	81.30
Male (n=19)	Dietary Objects	7.76	17.87	0.00	0.30	2.61	6.90	20.73	69.19	81.30
Male (n=19)	Non-dietary Objects	12.61	20.10	0.00	2.58	6.59	13.74	29.59	80.13	92.76
Male (n=19)	All Objects	20.37	26.15	0.00	6.36	11.80	18.62	82.29	97.26	101.00
p value	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.107	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.172	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.048*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shinguards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.065	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.081	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.201	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.967	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no mouth contact with these objects; and ND: not determined



Table S3-241. Mouthing Duration (Min/Hour) by Gender, with Gloves Off

Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female (n=19)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Body	0.01	0.01	0.00	0.00	0.00	0.01	0.04	0.04	0.04
Female (n=19)	Clothes	0.16	0.18	0.00	0.02	0.12	0.20	0.41	0.67	0.73
Female (n=19)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Hands	0.61	1.06	0.00	0.11	0.27	0.58	1.53	4.10	4.74
Female (n=19)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female (n=19)	Water bottle	0.61	0.73	0.00	0.22	0.41	0.70	1.63	2.86	3.17
Female (n=19)	Dietary Objects	0.61	0.73	0.00	0.22	0.41	0.70	1.63	2.86	3.17
Female (n=19)	Non-dietary Objects	0.18	0.19	0.00	0.02	0.15	0.25	0.48	0.68	0.73
Female (n=19)	All Objects	0.80	0.78	0.04	0.27	0.69	0.94	1.88	3.11	3.42
Male (n=19)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=19)	Body	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02
Male (n=19)	Clothes	0.70	1.47	0.00	0.03	0.18	0.72	1.77	5.64	6.61
Male (n=19)	Field Structures	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.03
Male (n=19)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=19)	Hands	0.24	0.25	0.00	0.08	0.15	0.32	0.73	0.80	0.82
Male (n=19)	Head/face/hair	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02
Male (n=19)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=19)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male (n=19)	Water bottle	0.37	0.75	0.00	0.00	0.11	0.33	0.95	2.90	3.39
Male (n=19)	Dietary Objects	0.38	0.75	0.00	0.02	0.11	0.37	0.95	2.90	3.39
Male (n=19)	Non-dietary Objects	0.70	1.47	0.00	0.03	0.18	0.74	1.77	5.65	6.62
Male (n=19)	All Objects	1.08	1.58	0.00	0.18	0.45	1.19	3.55	6.01	6.62
p value	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND



Gender	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Body	0.098	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.180	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.129	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.023*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.032*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.249	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.633	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-242. Mouthing Median Duration (Second) by Gender, with Gloves Off

Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female	Artificial turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Body	6	1.02	0.39	0.58	0.69	1.05	1.20	1.50	1.57	1.59
Female	Clothes	15	1.61	0.95	0.62	1.11	1.35	1.66	3.62	4.06	4.17
Female	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Hands	18	1.41	1.00	0.66	0.94	1.07	1.37	3.42	4.49	4.76
Female	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Female	Water bottle	18	3.97	1.47	2.11	2.61	4.12	4.93	5.99	6.67	6.83
Female	Dietary Objects	18	3.97	1.47	2.11	2.61	4.12	4.93	5.99	6.67	6.83
Female	Non-dietary Objects	16	1.29	0.50	0.62	0.91	1.30	1.59	2.02	2.38	2.47



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Gender	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Female	All Objects	19	2.80	1.53	0.94	1.94	2.50	2.97	5.78	5.83	5.85
Male	Artificial turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Body	2	1.09	0.71	0.59	0.84	1.09	1.35	1.55	1.59	1.60
Male	Clothes	17	1.43	0.72	0.62	0.83	1.30	1.94	2.59	2.60	2.60
Male	Field Structures	1	5.18	ND	ND	ND	ND	ND	ND	ND	ND
Male	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Hands	18	1.18	0.52	0.54	0.85	1.06	1.50	2.09	2.43	2.52
Male	Head/face/hair	2	1.15	0.50	0.79	0.97	1.15	1.33	1.47	1.50	1.50
Male	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Male	Water bottle	14	3.24	1.08	1.72	2.44	3.10	3.98	5.03	5.21	5.26
Male	Dietary Objects	15	3.16	1.08	1.72	2.32	3.06	3.97	5.01	5.21	5.26
Male	Non-dietary Objects	18	1.42	0.67	0.62	0.82	1.37	1.89	2.60	2.61	2.61
Male	All Objects	19	1.96	0.84	0.62	1.29	2.16	2.55	3.30	3.33	3.33
p value*	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.857	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.682	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.584	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.145	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.999	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.721	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.096	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum



NA: not applicable due to no mouth contact with these objects; and ND: not determined



S3.5. Data Summarized by Players' Position

S3.5.1. Data Summarized During the Whole Event by Players' Position

Table S3-243. Frequency (Event/Hour) of Actions by Players' Position, during the Whole Event

Position	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Slip or fall	4.70	5.54	0.00	0.21	2.31	9.49	13.04	13.16	13.19
Goalie (n=10)	Jumping	14.00	22.35	0.00	1.96	9.37	11.09	50.07	70.25	75.30
Goalie (n=10)	Diving	1.65	3.15	0.00	0.00	0.00	1.97	7.02	9.32	9.89
Goalie (n=10)	Heading	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Tackling or sliding	0.58	1.01	0.00	0.00	0.00	0.47	2.47	2.73	2.80
Other (n=30)	Slip or fall	1.35	1.89	0.00	0.00	0.65	1.38	5.33	6.42	6.84
Other (n=30)	Jumping	7.94	16.05	0.00	0.60	2.97	7.19	41.99	65.31	65.37
Other (n=30)	Diving	0.15	0.42	0.00	0.00	0.00	0.00	1.09	1.59	1.68
Other (n=30)	Heading	0.44	0.67	0.00	0.00	0.00	0.70	1.97	2.08	2.10
Other (n=30)	Tackling or sliding	0.37	0.70	0.00	0.00	0.00	0.56	1.84	2.62	2.81
p value*	Slip or fall	0.432	ND	ND	ND	ND	ND	ND	ND	ND
p value	Jumping	0.125	ND	ND	ND	ND	ND	ND	ND	ND
p value	Diving	0.157	ND	ND	ND	ND	ND	ND	ND	ND
p value	Heading	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Tackling or sliding	ND	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to the activity not observed; and ND: not determined

Table S3-244. Frequency of Hand to Object Contact (Event/Hour) by Players' Position, during the Whole Event

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Artificial Turf	8.04	8.57	0.00	3.25	5.49	9.59	23.07	26.76	27.68
Goalie (n=10)	Body	8.33	5.67	2.18	3.88	6.80	13.44	16.40	16.50	16.52
Goalie (n=10)	Clothes	67.09	27.26	26.14	59.31	65.39	84.27	101.83	112.66	115.37
Goalie (n=10)	Field Structures	6.78	4.93	1.67	2.45	5.71	9.90	14.47	15.03	15.17
Goalie (n=10)	Footwear	4.13	3.22	0.73	1.56	4.32	5.20	8.98	10.92	11.41



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Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Head/face/hair	26.65	33.71	5.89	9.17	13.23	20.61	87.16	108.46	113.79
Goalie (n=10)	Shin guards	1.06	1.88	0.00	0.00	0.00	1.04	4.46	5.43	5.67
Goalie (n=10)	Soccer ball	28.46	23.67	5.34	10.39	15.15	52.26	62.08	63.25	63.54
Goalie (n=10)	Water bottle	7.20	5.06	0.99	3.13	5.03	11.56	14.26	14.80	14.94
Goalie (n=10)	Dietary Objects	7.29	5.14	0.99	3.25	5.03	11.56	14.59	14.87	14.94
Goalie (n=10)	Non-dietary Objects	168.26	56.96	76.57	126.86	169.10	189.95	252.36	258.90	260.53
Goalie (n=10)	All Objects	175.56	58.59	81.36	135.01	176.80	200.23	261.03	272.58	275.47
Other (n=30)	Artificial Turf	3.21	3.93	0.00	1.09	1.89	3.62	13.79	14.45	14.51
Other (n=30)	Body	15.22	12.52	1.52	5.34	12.44	19.02	38.66	50.67	54.40
Other (n=30)	Clothes	76.93	38.21	17.63	50.38	66.35	91.36	156.85	176.35	182.29
Other (n=30)	Field Structures	7.86	6.39	1.46	3.49	5.93	10.48	21.16	24.10	24.75
Other (n=30)	Footwear	6.98	5.93	0.72	2.48	5.30	9.44	12.81	25.52	30.66
Other (n=30)	Head/face/hair	28.99	21.38	2.28	13.90	23.39	34.87	74.18	85.11	88.05
Other (n=30)	Shin guards	1.45	3.67	0.00	0.00	0.00	1.01	6.23	15.51	18.79
Other (n=30)	Soccer ball	18.30	25.75	0.55	3.17	9.01	18.92	73.16	104.82	106.16
Other (n=30)	Water bottle	6.44	5.52	0.00	3.46	5.35	8.52	19.22	20.84	20.89
Other (n=30)	Dietary Objects	6.48	5.52	0.00	3.46	5.35	8.59	19.22	20.84	20.89
Other (n=30)	Non-dietary Objects	168.14	65.43	73.89	124.42	160.99	180.80	299.64	326.85	336.90
Other (n=30)	All Objects	174.61	67.01	80.69	133.14	165.08	193.45	305.32	340.35	354.30
p value*	Artificial Turf	0.793	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.134	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.528	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.701	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.673	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.187	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.651	ND	ND	ND	ND	ND	ND	ND	ND



Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Water bottle	0.717	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.651	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.842	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.779	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum
ND: not determined

Table S3-245. Duration of Hand to Object Contact (Min/Hour) by Players' Position, during the Whole Event

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Artificial Turf	0.48	0.92	0.00	0.09	0.16	0.30	1.95	2.83	3.05
Goalie (n=10)	Body	0.93	1.39	0.03	0.18	0.37	0.78	3.41	4.31	4.53
Goalie (n=10)	Clothes	14.68	11.29	1.62	5.46	11.91	21.13	32.31	32.40	32.42
Goalie (n=10)	Field Structures	0.54	0.49	0.03	0.19	0.41	0.82	1.34	1.36	1.37
Goalie (n=10)	Footwear	0.29	0.30	0.02	0.12	0.20	0.28	0.84	0.86	0.86
Goalie (n=10)	Head/face/hair	1.42	2.56	0.18	0.37	0.49	0.85	5.55	7.97	8.57
Goalie (n=10)	Shin guards	0.08	0.12	0.00	0.00	0.00	0.09	0.31	0.34	0.35
Goalie (n=10)	Soccer ball	1.25	1.07	0.47	0.60	0.91	1.40	2.93	3.86	4.09
Goalie (n=10)	Water bottle	1.22	0.97	0.05	0.40	0.99	2.11	2.53	2.67	2.70
Goalie (n=10)	Dietary Objects	1.22	0.97	0.05	0.40	0.99	2.14	2.53	2.67	2.70
Goalie (n=10)	Non-dietary Objects	21.08	11.09	5.40	15.42	20.76	26.81	37.82	39.55	39.98
Goalie (n=10)	All Objects	22.30	10.97	5.83	15.89	23.12	27.49	38.50	40.00	40.37
Other (n=30)	Artificial Turf	0.19	0.24	0.00	0.02	0.10	0.30	0.65	0.92	0.98
Other (n=30)	Body	1.36	1.82	0.04	0.14	0.42	2.05	4.62	6.44	6.99
Other (n=30)	Clothes	12.52	11.55	2.05	5.91	8.66	15.67	37.51	48.92	52.73
Other (n=30)	Field Structures	0.89	0.95	0.05	0.19	0.44	1.51	2.75	3.22	3.30
Other (n=30)	Footwear	0.66	0.61	0.01	0.17	0.45	0.88	1.91	1.98	1.98
Other (n=30)	Head/face/hair	0.87	0.63	0.03	0.36	0.74	1.37	2.12	2.19	2.21
Other (n=30)	Shin guards	0.14	0.39	0.00	0.00	0.00	0.07	0.83	1.60	1.85



Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Other (n=30)	Soccer ball	0.74	0.92	0.01	0.16	0.40	0.92	2.76	3.56	3.58
Other (n=30)	Water bottle	1.22	1.35	0.00	0.47	0.81	1.72	3.09	5.81	6.77
Other (n=30)	Dietary Objects	1.22	1.35	0.00	0.47	0.83	1.72	3.09	5.81	6.77
Other (n=30)	Non-dietary Objects	17.91	12.01	6.15	10.32	13.93	22.00	44.39	53.74	56.91
Other (n=30)	All Objects	19.13	12.22	6.65	12.08	15.11	24.46	45.56	55.61	58.83
p value*	Artificial Turf	0.947	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.791	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.612	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.522	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.520	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.651	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.986	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.696	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.469	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.696	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.286	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

ND: not determined

Table S3-246. Median Duration of Hand to Object Contact (Second) by Players' Position, during the Whole Event

Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie	Artificial Turf	9	1.30	0.93	0.46	0.81	0.88	1.20	2.93	3.22	3.29
Goalie	Body	10	1.36	0.66	0.70	0.99	1.13	1.51	2.50	2.87	2.96
Goalie	Clothes	10	4.67	3.67	1.89	2.31	3.49	4.59	11.37	12.80	13.16
Goalie	Field Structures	10	4.25	5.70	0.84	1.70	2.36	3.29	13.60	18.69	19.96
Goalie	Footwear	10	3.15	2.58	0.89	1.78	2.37	2.96	7.74	9.27	9.65
Goalie	Head/face/hair	10	1.63	0.41	1.12	1.32	1.65	1.92	2.21	2.30	2.32



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Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie	Shin guards	4	6.41	6.95	1.48	2.85	3.73	7.29	14.82	16.32	16.70
Goalie	Soccer ball	10	2.21	1.02	0.77	1.84	2.00	2.67	3.81	3.83	3.83
Goalie	Water bottle	10	5.66	1.85	2.90	3.94	6.35	6.94	7.62	7.94	8.02
Goalie	Dietary Objects	10	5.63	1.85	2.90	3.86	6.35	6.94	7.62	7.94	8.02
Goalie	Non-dietary Objects	10	2.78	1.69	1.36	1.66	2.29	3.02	5.66	6.68	6.93
Goalie	All Objects	10	2.84	1.67	1.36	1.74	2.38	3.09	5.69	6.69	6.94
Other	Artificial Turf	26	1.61	1.17	0.62	0.86	1.30	1.72	4.31	5.00	5.14
Other	Body	30	1.81	1.83	0.53	1.00	1.30	1.92	4.66	8.78	9.78
Other	Clothes	30	4.05	2.09	1.85	2.60	3.35	4.73	8.21	10.19	10.78
Other	Field Structures	30	3.21	2.01	0.41	1.84	2.56	4.64	6.82	7.48	7.72
Other	Footwear	30	3.93	3.62	0.95	1.63	2.65	4.98	11.97	15.22	15.34
Other	Head/face/hair	30	1.26	0.44	0.60	1.05	1.17	1.31	1.87	2.75	3.09
Other	Shin guards	13	3.63	3.18	0.90	1.61	2.40	4.68	8.51	11.91	12.76
Other	Soccer ball	30	1.74	0.80	0.64	1.19	1.53	2.05	3.34	3.81	3.95
Other	Water bottle	28	7.31	3.20	2.09	5.32	6.77	9.16	13.57	13.77	13.79
Other	Dietary Objects	28	7.27	3.20	2.09	5.32	6.72	9.16	13.57	13.77	13.79
Other	Non-dietary Objects	30	2.38	1.01	1.23	1.73	2.06	2.86	3.93	5.34	5.83
Other	All Objects	30	2.47	1.01	1.25	1.81	2.17	2.97	3.99	5.48	6.01
p value*	Artificial Turf	ND	0.294	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.450	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.939	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.818	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.236	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.005*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	0.549	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	0.244	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.360	ND	ND	ND	ND	ND	ND	ND	ND



Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Dietary Objects	ND	0.230	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.590	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.770	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-247. Hourly Duration (Min/Hour) of Player Intensity by Players' Position, during the Whole Event

Position	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	High	1.03	0.82	0.09	0.67	0.92	1.05	2.28	3.00	3.18
Goalie (n=10)	Moderate	7.30	3.97	3.75	4.68	5.49	10.70	13.33	13.67	13.76
Goalie (n=10)	Light	22.90	5.87	11.48	21.48	24.95	26.43	28.59	28.72	28.75
Goalie (n=10)	Resting	28.78	8.48	16.53	23.12	29.01	32.87	40.77	41.60	41.81
Other (n=30)	High	2.32	0.82	0.99	1.70	2.33	2.98	3.71	3.85	3.88
Other (n=30)	Moderate	14.26	4.18	6.94	11.64	14.62	16.44	20.83	22.25	22.82
Other (n=30)	Light	24.43	5.16	10.65	21.76	23.98	27.52	32.03	33.89	34.29
Other (n=30)	Resting	19.00	5.91	10.86	14.53	18.27	21.03	31.33	33.22	33.53
p value	High	0.000*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Moderate	0.000*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Light	0.770	ND	ND	ND	ND	ND	ND	ND	ND
p value	Resting	0.002*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-248. Duration (Min/Hour) of Macro-Activities by Age, during the Whole Event

Position	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Sit on ground	2.31	3.04	0.00	0.36	1.03	3.09	7.38	9.28	9.75
Goalie (n=10)	Rest Standing	22.50	5.98	15.07	17.22	22.81	26.40	30.84	32.17	32.50
Goalie (n=10)	Running	7.64	4.70	2.47	4.24	6.08	11.15	14.96	15.58	15.73
Goalie (n=10)	Stretching	0.40	0.56	0.00	0.00	0.15	0.65	1.32	1.66	1.75
Goalie (n=10)	Walking	23.10	6.45	11.43	19.65	25.11	28.02	29.72	30.06	30.14



Position	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Sit on chair	3.52	5.62	0.00	0.00	1.18	4.08	13.26	16.79	17.67
Goalie (n=10)	Push ups	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
Goalie (n=10)	Sit ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=30)	Sit on ground	0.80	0.75	0.00	0.10	0.55	1.43	1.97	2.57	2.76
Other (n=30)	Rest Standing	15.58	4.22	6.98	13.45	16.24	17.87	21.43	23.33	23.62
Other (n=30)	Running	15.71	5.18	7.46	10.30	16.60	18.87	23.66	24.62	24.99
Other (n=30)	Stretching	0.87	1.42	0.00	0.13	0.39	0.92	4.27	5.67	5.86
Other (n=30)	Walking	24.95	5.99	10.50	21.43	24.34	28.51	33.65	36.23	37.28
Other (n=30)	Sit on chair	1.83	4.09	0.00	0.00	0.00	0.92	10.06	15.78	17.62
Other (n=30)	Push ups	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.07	0.10
Other (n=30)	Sit ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
p value	Sit on ground	0.044*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Rest Standing	0.267	ND	ND	ND	ND	ND	ND	ND	ND
p value	Running	0.002*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Stretching	0.000*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Walking	0.226	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on chair	0.395	ND	ND	ND	ND	ND	ND	ND	ND
p value	Push ups	0.457	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit ups	ND	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to these activities not observed; and ND: not determined

Table S3-249. Mouthing Frequency (Event/Hour) by Players' Position, during the Whole Event

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Body	0.37	0.67	0.00	0.00	0.00	0.59	1.53	1.90	1.99
Goalie (n=10)	Clothes	5.03	5.85	0.41	2.12	2.76	4.85	15.41	18.86	19.72
Goalie (n=10)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA



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Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Hands	7.31	3.71	0.71	5.78	6.91	9.22	12.51	13.65	13.94
Goalie (n=10)	Head/face/hair	0.08	0.26	0.00	0.00	0.00	0.00	0.46	0.76	0.83
Goalie (n=10)	Shinguards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Water bottle	5.09	4.32	0.00	1.77	4.14	8.15	11.74	12.03	12.10
Goalie (n=10)	Dietary Objects	5.40	4.08	0.96	2.14	4.46	8.15	11.74	12.03	12.10
Goalie (n=10)	Non-dietary Objects	6.45	6.14	0.71	3.52	4.22	6.56	17.09	21.12	22.13
Goalie (n=10)	All Objects	11.86	5.86	4.55	6.43	12.35	15.42	19.72	22.42	23.09
Other (n=30)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=30)	Body	0.61	1.95	0.00	0.00	0.00	0.00	3.10	8.28	9.93
Other (n=30)	Clothes	10.49	19.22	0.00	1.30	5.23	12.65	26.65	82.37	104.27
Other (n=30)	Field Structures	0.01	0.07	0.00	0.00	0.00	0.00	0.00	0.28	0.40
Other (n=30)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=30)	Hands	9.44	6.39	1.36	5.51	7.66	12.52	22.11	25.86	26.03
Other (n=30)	Head/face/hair	0.01	0.08	0.00	0.00	0.00	0.00	0.00	0.31	0.43
Other (n=30)	Shinguards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=30)	Soccer ball	0.02	0.10	0.00	0.00	0.00	0.00	0.00	0.39	0.55
Other (n=30)	Water bottle	4.92	4.83	0.00	1.83	3.75	6.28	16.61	17.73	17.81
Other (n=30)	Dietary Objects	5.09	4.77	0.00	2.21	3.88	6.69	16.61	17.73	17.81
Other (n=30)	Non-dietary Objects	12.38	19.64	0.00	2.03	7.83	13.16	35.88	87.10	104.27
Other (n=30)	All Objects	17.47	20.75	0.00	6.74	13.50	21.62	41.80	93.17	111.23
p value*	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.622	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.542	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND



Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Hands	0.450	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.094	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shinguards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.888	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.719	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.373	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.548	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-250. Mouthing Duration (Min/Hour) by Players' Position, during the Whole Event

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Body	0.01	0.01	0.00	0.00	0.00	0.01	0.02	0.02	0.02
Goalie (n=10)	Clothes	0.42	0.85	0.01	0.06	0.12	0.17	1.83	2.57	2.76
Goalie (n=10)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Hands	0.21	0.08	0.01	0.18	0.23	0.26	0.29	0.30	0.30
Goalie (n=10)	Head/face/hair	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
Goalie (n=10)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Water bottle	0.29	0.23	0.00	0.13	0.22	0.44	0.64	0.66	0.66
Goalie (n=10)	Dietary Objects	0.30	0.22	0.04	0.13	0.25	0.44	0.64	0.66	0.66
Goalie (n=10)	Non-dietary Objects	0.45	0.84	0.04	0.11	0.15	0.17	1.85	2.60	2.79
Goalie (n=10)	All Objects	0.75	0.78	0.16	0.31	0.56	0.78	2.01	2.67	2.83
Other (n=30)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=30)	Body	0.01	0.05	0.00	0.00	0.00	0.00	0.08	0.21	0.25



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Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Other (n=30)	Clothes	0.27	0.37	0.00	0.03	0.13	0.37	0.89	1.44	1.63
Other (n=30)	Field Structures	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.03
Other (n=30)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=30)	Hands	0.47	0.87	0.02	0.09	0.20	0.56	1.02	3.69	4.74
Other (n=30)	Head/face/hair	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Other (n=30)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=30)	Soccer ball	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other (n=30)	Water bottle	0.38	0.62	0.00	0.09	0.24	0.40	1.30	2.67	3.17
Other (n=30)	Dietary Objects	0.40	0.62	0.00	0.09	0.25	0.41	1.30	2.67	3.17
Other (n=30)	Non-dietary Objects	0.32	0.37	0.00	0.03	0.21	0.40	0.93	1.44	1.63
Other (n=30)	All Objects	0.71	0.74	0.00	0.24	0.57	0.84	1.91	3.03	3.42
p value*	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.578	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.766	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.963	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.673	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.639	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.938	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.803	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined



Table S3-251. Mouthing Median Duration (Second) by Players' Position, during the Whole Event

Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie	Artificial turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Body	3	0.94	0.57	0.58	0.62	0.66	1.13	1.50	1.58	1.60
Goalie	Clothes	10	2.73	2.90	1.05	1.45	1.71	1.92	7.71	10.03	10.61
Goalie	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Hands	10	1.30	0.50	0.81	0.96	1.09	1.60	2.12	2.19	2.21
Goalie	Head/face/hair	1	0.79	ND	ND	ND	ND	ND	ND	ND	ND
Goalie	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Water bottle	9	3.44	1.34	1.71	2.40	3.60	4.00	5.39	5.65	5.71
Goalie	Dietary Objects	10	3.24	1.32	1.71	2.42	2.58	3.98	5.35	5.64	5.71
Goalie	Non-dietary Objects	10	2.32	2.96	0.67	0.95	1.58	1.91	6.79	9.84	10.61
Goalie	All Objects	10	2.19	1.35	0.96	1.47	1.90	2.37	4.27	5.45	5.74
Other	Artificial turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	Body	7	1.02	0.37	0.54	0.78	0.98	1.24	1.49	1.57	1.59
Other	Clothes	26	1.34	0.69	0.62	0.87	1.23	1.41	2.57	3.22	3.44
Other	Field Structures	1	5.18	ND	ND	ND	ND	ND	ND	ND	ND
Other	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	Hands	30	1.37	0.87	0.66	0.90	1.10	1.41	2.89	4.30	4.76
Other	Head/face/hair	1	1.50	ND	ND	ND	ND	ND	ND	ND	ND
Other	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	Soccer ball	1	0.13	ND	ND	ND	ND	ND	ND	ND	ND
Other	Water bottle	26	3.65	1.35	1.72	2.63	3.32	4.43	5.83	6.59	6.83
Other	Dietary Objects	27	3.57	1.33	1.72	2.61	3.28	4.40	5.65	6.56	6.83
Other	Non-dietary Objects	30	1.27	0.58	0.62	0.87	1.17	1.47	2.51	2.59	2.61
Other	All Objects	30	2.10	1.28	0.62	1.13	1.77	2.66	4.97	5.50	5.58



Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.011*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.818	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.670	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.389	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.286	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.740	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

S3.5.2. Data Summarized According to Event Moment/Time and Players' Position

S3.5.2.1. Activity Patterns by Players' Position, during the Game/Practice

Table S3-252. Frequency (Event/Hour) of Actions by Players' Position, during the Game/Practice

Position	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Diving	1.63	3.31	0.00	0.00	0.00	0.79	7.67	9.62	10.11
Goalie (n=10)	Heading	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Jumping	13.59	23.08	0.00	2.31	5.59	10.18	51.60	71.88	76.95
Goalie (n=10)	Slip or fall	3.95	5.61	0.00	0.32	1.38	4.13	14.31	14.85	14.98
Goalie (n=10)	Tackling or sliding	0.72	1.29	0.00	0.00	0.00	0.59	3.11	3.62	3.75
Other (n=30)	Diving	0.17	0.47	0.00	0.00	0.00	0.00	1.16	1.82	1.98
Other (n=30)	Heading	0.52	0.77	0.00	0.00	0.00	0.78	2.32	2.37	2.38
Other (n=30)	Jumping	8.16	18.69	0.00	0.65	1.77	7.82	47.56	75.50	75.83
Other (n=30)	Slip or fall	1.57	2.17	0.00	0.00	0.70	2.06	6.09	6.96	7.21



Position	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Other (n=30)	Tackling or sliding	0.40	0.83	0.00	0.00	0.00	0.47	2.24	3.04	3.20
p value*	Diving	0.264	ND	ND	ND	ND	ND	ND	ND	ND
p value	Heading	0.464	ND	ND	ND	ND	ND	ND	ND	ND
p value	Jumping	0.114	ND	ND	ND	ND	ND	ND	ND	ND
p value	Slip or fall	0.634	ND	ND	ND	ND	ND	ND	ND	ND
p value	Tackling or sliding	ND	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

ND: not determined

Table S3-253. Frequency of Hand to Object Contact (Event/Hour) by Players' Position, during the Game/Practice

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Artificial Turf	6.24	6.08	0.00	1.48	4.69	9.58	16.06	17.55	17.92
Goalie (n=10)	Body	6.77	4.92	1.29	2.53	5.65	11.27	13.37	13.91	14.04
Goalie (n=10)	Clothes	63.12	28.30	16.15	57.39	64.16	75.53	99.59	114.42	118.13
Goalie (n=10)	Field Structures	4.78	3.51	0.00	2.16	3.93	7.70	9.71	10.61	10.83
Goalie (n=10)	Footwear	3.99	4.20	0.75	1.54	2.77	4.43	11.06	14.08	14.84
Goalie (n=10)	Head/face/hair	27.04	33.61	3.80	9.93	13.68	21.13	87.74	107.84	112.86
Goalie (n=10)	Shin guards	0.84	1.51	0.00	0.00	0.00	0.89	3.64	3.82	3.87
Goalie (n=10)	Soccer ball	25.19	22.18	1.49	10.09	16.42	32.91	63.13	64.89	65.33
Goalie (n=10)	Water bottle	2.61	2.84	0.00	1.19	1.92	3.02	7.15	9.50	10.08
Goalie (n=10)	Dietary Objects	2.71	3.06	0.00	1.19	2.03	3.02	7.57	10.18	10.83
Goalie (n=10)	Non-dietary Objects	153.90	44.52	75.54	123.13	154.31	183.11	209.95	224.95	228.70
Goalie (n=10)	All Objects	156.60	45.31	78.86	124.89	156.21	184.08	216.79	229.18	232.28
Other (n=30)	Artificial Turf	2.96	3.54	0.00	1.04	1.89	3.39	10.63	14.73	15.17
Other (n=30)	Body	13.23	10.63	1.68	5.69	9.88	16.50	36.68	41.50	42.39
Other (n=30)	Clothes	69.50	39.83	13.12	40.27	62.42	86.11	142.85	173.17	183.75
Other (n=30)	Field Structures	5.85	5.72	0.00	1.68	4.18	7.96	17.30	20.74	21.73
Other (n=30)	Footwear	5.25	6.25	0.00	1.89	4.37	6.20	11.23	27.89	34.16



Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Other (n=30)	Head/face/hair	29.30	22.77	3.38	12.24	24.09	39.44	75.24	87.61	90.63
Other (n=30)	Shin guards	1.04	2.58	0.00	0.00	0.00	0.63	5.70	10.65	11.92
Other (n=30)	Soccer ball	17.98	28.60	0.70	2.69	8.94	16.94	76.21	118.85	124.02
Other (n=30)	Water bottle	2.37	4.37	0.00	0.00	0.99	2.70	12.79	17.17	17.31
Other (n=30)	Dietary Objects	2.39	4.37	0.00	0.00	0.99	2.88	12.79	17.17	17.31
Other (n=30)	Non-dietary Objects	154.08	71.01	48.06	112.49	146.59	176.01	297.48	332.72	343.80
Other (n=30)	All Objects	156.47	71.13	48.06	113.41	148.18	180.01	298.29	334.33	345.47
p value	Artificial Turf	0.690	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.049*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.724	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.876	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.862	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.379	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.939	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.151	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.161	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.151	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.612	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.678	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-254. Duration of Hand to Object Contact (Min/Hour) by Players' Position, during the Game/Practice

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Artificial Turf	0.31	0.41	0.00	0.04	0.19	0.32	1.03	1.28	1.34
Goalie (n=10)	Body	0.65	1.06	0.02	0.12	0.24	0.75	2.33	3.30	3.54
Goalie (n=10)	Clothes	14.51	12.87	0.53	4.60	10.57	24.41	33.84	34.05	34.10
Goalie (n=10)	Field Structures	0.31	0.32	0.00	0.09	0.22	0.44	0.84	0.94	0.97



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Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Footwear	0.26	0.30	0.03	0.06	0.14	0.26	0.81	0.90	0.92
Goalie (n=10)	Head/face/hair	1.48	2.77	0.09	0.38	0.52	0.84	5.91	8.57	9.24
Goalie (n=10)	Shin guards	0.04	0.07	0.00	0.00	0.00	0.06	0.16	0.18	0.19
Goalie (n=10)	Soccer ball	1.07	1.12	0.04	0.54	0.74	1.27	2.84	3.80	4.04
Goalie (n=10)	Water bottle	0.37	0.55	0.00	0.09	0.18	0.38	1.27	1.74	1.86
Goalie (n=10)	Dietary Objects	0.37	0.56	0.00	0.09	0.18	0.38	1.29	1.77	1.89
Goalie (n=10)	Non-dietary Objects	19.63	12.26	2.78	11.32	18.29	28.01	37.84	39.49	39.90
Goalie (n=10)	All Objects	20.00	12.23	2.97	11.49	18.56	28.53	37.97	39.64	40.06
Other (n=30)	Artificial Turf	0.16	0.19	0.00	0.01	0.06	0.34	0.49	0.57	0.60
Other (n=30)	Body	1.01	1.43	0.03	0.13	0.35	1.01	3.70	5.22	5.81
Other (n=30)	Clothes	11.60	12.62	1.53	3.67	7.04	15.55	38.01	50.92	55.06
Other (n=30)	Field Structures	0.62	0.82	0.00	0.08	0.23	1.07	2.05	3.05	3.42
Other (n=30)	Footwear	0.49	0.59	0.00	0.10	0.29	0.75	1.90	2.01	2.03
Other (n=30)	Head/face/hair	0.85	0.66	0.04	0.31	0.68	1.24	2.16	2.30	2.36
Other (n=30)	Shin guards	0.11	0.37	0.00	0.00	0.00	0.02	0.43	1.53	1.97
Other (n=30)	Soccer ball	0.72	1.01	0.01	0.15	0.34	0.71	2.87	4.02	4.17
Other (n=30)	Water bottle	0.43	1.10	0.00	0.00	0.08	0.41	1.62	4.70	5.76
Other (n=30)	Dietary Objects	0.43	1.10	0.00	0.00	0.08	0.41	1.62	4.70	5.76
Other (n=30)	Non-dietary Objects	16.11	13.23	2.17	7.25	12.29	22.51	44.67	55.38	58.65
Other (n=30)	All Objects	16.54	13.30	2.17	7.40	12.56	22.67	44.72	55.46	58.72
p value*	Artificial Turf	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.522	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.656	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.595	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.862	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.827	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	1.000	ND	ND	ND	ND	ND	ND	ND	ND



Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Soccer ball	0.173	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.146	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.178	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.379	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum
ND: not determined

Table S3-255. Median Duration of Hand to Object Contact (Second) by Players' Position, during the Game/Practice

Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie	Artificial Turf	9	1.45	1.05	0.46	0.82	1.20	1.50	3.26	3.72	3.84
Goalie	Body	10	1.16	0.30	0.70	0.88	1.22	1.36	1.53	1.58	1.59
Goalie	Clothes	10	4.67	4.14	1.20	2.41	3.08	4.30	12.32	13.73	14.08
Goalie	Field Structures	9	1.79	0.90	0.44	1.33	1.63	2.36	3.14	3.37	3.43
Goalie	Footwear	10	3.07	2.62	0.89	1.78	2.01	2.96	7.74	9.27	9.65
Goalie	Head/face/hair	10	1.62	0.46	0.96	1.26	1.69	1.94	2.23	2.34	2.37
Goalie	Shin guards	3	2.98	1.37	1.48	2.40	3.31	3.73	4.07	4.14	4.16
Goalie	Soccer ball	10	2.00	0.83	0.77	1.59	1.94	1.99	3.39	3.74	3.83
Goalie	Water bottle	9	5.13	2.78	1.09	3.15	5.42	6.65	9.08	9.51	9.62
Goalie	Dietary Objects	9	5.09	2.78	1.09	3.15	4.99	6.65	9.08	9.51	9.62
Goalie	Non-dietary Objects	10	2.75	1.94	1.25	1.53	2.24	2.82	6.06	7.40	7.73
Goalie	All Objects	10	2.77	1.92	1.28	1.58	2.24	2.83	6.05	7.36	7.69
Other	Artificial Turf	26	1.92	2.68	0.48	0.84	1.25	1.69	4.31	11.79	14.20
Other	Body	30	1.48	1.15	0.45	0.80	1.12	1.78	2.66	5.43	6.52
Other	Clothes	30	4.04	2.94	1.59	2.24	2.76	4.72	10.33	13.15	13.67
Other	Field Structures	26	4.52	8.34	0.41	1.55	2.10	5.56	7.48	34.88	43.93
Other	Footwear	28	4.08	3.86	0.82	1.57	2.73	5.69	12.51	15.23	15.34
Other	Head/face/hair	30	1.28	0.49	0.60	1.02	1.16	1.32	2.13	2.85	3.09



Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Other	Shin guards	9	2.67	1.94	0.90	1.61	1.93	2.64	6.05	6.62	6.76
Other	Soccer ball	30	2.28	2.92	0.64	1.19	1.55	2.14	3.87	13.26	17.06
Other	Water bottle	17	5.33	3.14	0.22	3.63	4.32	7.36	9.54	13.01	13.88
Other	Dietary Objects	17	5.32	3.13	0.22	3.63	4.32	7.19	9.54	13.01	13.88
Other	Non-dietary Objects	30	2.25	1.15	1.16	1.45	1.86	2.99	3.79	5.72	6.45
Other	All Objects	30	2.28	1.12	1.16	1.46	1.89	2.99	3.83	5.64	6.32
p value	Artificial Turf	ND	0.130	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.988	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.794	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.210	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.409	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.033*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	0.727	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.842	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.958	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.678	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.612	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-256. Hourly Duration (Min/Hour) of Player Intensity by Players' Position, during the Game/Practice

Position	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	High	1.03	0.93	0.11	0.45	0.86	1.11	2.55	3.21	3.37
Goalie (n=10)	Moderate	8.09	4.51	3.86	4.97	6.20	12.11	14.82	15.20	15.30
Goalie (n=10)	Light	24.12	5.85	14.13	20.73	26.31	28.64	29.84	30.02	30.06
Goalie (n=10)	Resting	26.77	9.09	14.10	18.78	27.41	34.10	38.02	39.08	39.34
Other (n=30)	High	2.30	0.99	0.24	1.56	2.53	2.86	3.97	4.53	4.68



Position	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Other (n=30)	Moderate	15.63	4.80	7.04	11.97	15.73	18.31	23.87	25.54	26.06
Other (n=30)	Light	25.69	5.51	11.30	22.51	26.03	28.69	34.01	34.35	34.43
Other (n=30)	Resting	16.38	6.89	7.03	10.87	14.85	20.97	28.73	30.54	31.13
p value*	High	0.001	ND	ND	ND	ND	ND	ND	ND	ND
p value	Moderate	0.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Light	0.678	ND	ND	ND	ND	ND	ND	ND	ND
p value	Resting	0.003	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

ND: not determined

Table S3-257. Duration (Min/Hour) of Macro-Activities by Age, during the Game/Practice

Position	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Push ups	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
Goalie (n=10)	Rest Standing	21.07	7.96	10.93	14.68	19.31	25.76	33.21	33.93	34.11
Goalie (n=10)	Running	8.50	5.40	1.83	5.08	6.47	12.80	16.72	17.44	17.62
Goalie (n=10)	Sit on chair	3.71	7.56	0.00	0.00	0.00	3.79	16.76	22.21	23.57
Goalie (n=10)	Sit on ground	1.44	1.90	0.00	0.04	0.28	2.82	4.49	4.68	4.73
Goalie (n=10)	Stretching	0.44	0.64	0.00	0.00	0.17	0.67	1.49	1.91	2.02
Goalie (n=10)	Walking	24.37	6.53	14.10	19.62	26.10	29.90	31.23	31.89	32.05
Other (n=30)	Push ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=30)	Rest Standing	12.92	5.62	3.89	7.84	12.96	17.00	21.78	23.81	24.61
Other (n=30)	Running	17.34	5.97	7.58	11.73	18.38	20.98	26.72	28.38	28.95
Other (n=30)	Sit on chair	2.19	5.23	0.00	0.00	0.00	0.11	14.87	19.43	19.46
Other (n=30)	Sit on ground	0.61	0.76	0.00	0.00	0.40	0.74	2.18	2.71	2.80
Other (n=30)	Stretching	0.53	0.83	0.00	0.00	0.17	0.50	2.08	3.16	3.44
Other (n=30)	Walking	26.16	6.45	11.33	22.27	25.15	31.41	36.11	37.14	37.23
p value	Push ups	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Rest Standing	0.423	ND	ND	ND	ND	ND	ND	ND	ND



Position	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Running	0.004*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on chair	0.706	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on ground	0.060	ND	ND	ND	ND	ND	ND	ND	ND
p value	Stretching	0.000*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Walking	0.836	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to the activity not observed; and ND: not determined

Table S3-258. Mouthing Frequency (Event/Hour) by Players' Position, during the Game/Practice

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	All Objects	8.17	6.14	3.19	4.18	6.75	9.19	18.05	22.74	23.91
Goalie (n=10)	Body	0.33	0.78	0.00	0.00	0.00	0.00	1.74	2.28	2.41
Goalie (n=10)	Clothes	4.84	6.25	0.46	0.84	3.21	4.43	15.87	19.72	20.68
Goalie (n=10)	Dietary Objects	1.86	1.88	0.00	0.20	1.10	3.46	4.59	4.78	4.83
Goalie (n=10)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Hands	7.67	4.57	0.94	4.42	7.41	9.42	14.68	16.46	16.90
Goalie (n=10)	Head/face/hair	0.09	0.29	0.00	0.00	0.00	0.00	0.50	0.83	0.91
Goalie (n=10)	Non-dietary Objects	6.31	6.33	0.73	3.21	3.99	6.10	17.34	21.56	22.62
Goalie (n=10)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Water bottle	1.73	1.96	0.00	0.00	0.85	3.46	4.59	4.78	4.83
Other (n=30)	All Objects	13.58	20.05	0.00	2.17	8.12	14.44	37.35	87.17	106.11
Other (n=30)	Body	0.67	2.07	0.00	0.00	0.00	0.00	3.86	8.60	10.33
Other (n=30)	Clothes	10.08	18.51	0.00	1.01	4.35	13.23	24.14	78.38	99.87
Other (n=30)	Dietary Objects	1.48	2.76	0.00	0.00	0.29	1.74	5.71	11.21	13.24
Other (n=30)	Field Structures	0.02	0.09	0.00	0.00	0.00	0.00	0.00	0.33	0.47
Other (n=30)	Hands	8.81	6.59	1.08	3.47	7.83	11.63	23.22	27.25	27.56
Other (n=30)	Head/face/hair	0.02	0.09	0.00	0.00	0.00	0.00	0.00	0.33	0.47
Other (n=30)	Non-dietary Objects	12.10	18.87	0.00	1.46	7.08	13.40	34.36	82.74	99.87



Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Other (n=30)	Soccer ball	0.03	0.15	0.00	0.00	0.00	0.00	0.00	0.60	0.84
Other (n=30)	Water bottle	1.41	2.77	0.00	0.00	0.00	1.37	5.71	11.21	13.24
p value*	All Objects	0.651	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.542	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.252	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.603	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.866	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.426	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.603	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.376	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-259. Mouthing Duration (Min/Hour) by Players' Position, during the Game/Practice

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	All Objects	0.64	1.09	0.09	0.13	0.30	0.43	2.38	3.43	3.69
Goalie (n=10)	Body	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.02	0.02
Goalie (n=10)	Clothes	0.50	1.12	0.01	0.06	0.09	0.15	2.33	3.36	3.62
Goalie (n=10)	Dietary Objects	0.11	0.12	0.00	0.01	0.06	0.18	0.31	0.36	0.37
Goalie (n=10)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Hands	0.21	0.10	0.01	0.15	0.23	0.28	0.33	0.34	0.34
Goalie (n=10)	Head/face/hair	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
Goalie (n=10)	Non-dietary Objects	0.52	1.12	0.04	0.08	0.11	0.16	2.35	3.38	3.64
Goalie (n=10)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Water bottle	0.11	0.13	0.00	0.00	0.06	0.18	0.31	0.36	0.37
Other (n=30)	All Objects	0.40	0.51	0.00	0.09	0.22	0.42	1.48	2.01	2.04



Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Other (n=30)	Body	0.02	0.06	0.00	0.00	0.00	0.00	0.11	0.23	0.27
Other (n=30)	Clothes	0.27	0.42	0.00	0.01	0.10	0.36	1.22	1.57	1.59
Other (n=30)	Dietary Objects	0.08	0.14	0.00	0.00	0.01	0.09	0.38	0.49	0.52
Other (n=30)	Field Structures	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.03	0.04
Other (n=30)	Hands	0.48	0.97	0.02	0.07	0.15	0.48	1.13	4.11	5.28
Other (n=30)	Head/face/hair	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Other (n=30)	Non-dietary Objects	0.31	0.42	0.00	0.03	0.17	0.37	1.24	1.57	1.59
Other (n=30)	Soccer ball	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other (n=30)	Water bottle	0.08	0.14	0.00	0.00	0.00	0.07	0.38	0.49	0.52
p value*	All Objects	0.542	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.695	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.279	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.603	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.938	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.925	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.603	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.341	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-260. Mouthing Median Duration (Second) by Players' Position, during the Game/Practice

Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie	All Objects	10	2.03	1.09	0.79	1.37	1.87	2.35	3.78	4.34	4.48
Goalie	Body	2	1.09	0.72	0.58	0.83	1.09	1.34	1.55	1.59	1.60
Goalie	Clothes	10	2.74	2.91	0.84	1.37	1.86	2.07	7.71	10.03	10.61
Goalie	Dietary Objects	7	3.55	1.00	2.48	2.90	3.33	3.96	5.02	5.27	5.33



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Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Hands	10	1.24	0.39	0.81	0.96	1.19	1.38	1.88	1.99	2.02
Goalie	Head/face/hair	1	0.79	ND	ND	ND	ND	ND	ND	ND	ND
Goalie	Non-dietary Objects	10	2.30	2.96	0.67	0.89	1.62	1.91	6.73	9.83	10.61
Goalie	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Water bottle	6	3.73	0.97	2.53	3.28	3.47	4.14	5.07	5.28	5.33
Other	All Objects	30	1.54	1.05	0.13	0.90	1.28	1.72	2.98	4.71	5.30
Other	Body	6	0.98	0.40	0.54	0.69	0.96	1.19	1.51	1.57	1.59
Other	Clothes	24	1.33	0.78	0.24	0.85	1.17	1.46	2.80	3.00	3.06
Other	Dietary Objects	15	3.56	1.85	1.06	2.14	3.08	4.97	6.55	6.73	6.78
Other	Field Structures	1	5.18	ND	ND	ND	ND	ND	ND	ND	ND
Other	Hands	30	1.31	0.81	0.62	0.85	1.05	1.42	2.44	4.11	4.76
Other	Head/face/hair	1	1.50	ND	ND	ND	ND	ND	ND	ND	ND
Other	Non-dietary Objects	30	1.25	0.73	0.13	0.88	1.06	1.31	2.91	3.05	3.06
Other	Soccer ball	1	0.13	ND	ND	ND	ND	ND	ND	ND	ND
Other	Water bottle	14	3.44	1.85	1.06	2.06	3.04	4.54	6.57	6.74	6.78
p value	All Objects	ND	0.180	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.857	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.042*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.581	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.542	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.256	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.353	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no mouth contact with these objects; and ND: not determined



S3.5.2.2. Activity Patterns by Players' Position, when Participants Were Warming Up

Table S3-261. Frequency (Event/Hour) of Actions by Players' Position, during Warm Up

Position	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=3)	Diving	4.74	8.22	0.00	0.00	0.00	7.12	12.81	13.95	14.23
Goalie (n=3)	Jumping	15.42	26.70	0.00	0.00	0.00	23.13	41.63	45.33	46.25
Goalie (n=3)	Slip or fall	29.65	51.35	0.00	0.00	0.00	44.47	80.05	87.16	88.94
Other (n=13)	Diving	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=13)	Jumping	15.04	19.13	0.00	0.00	0.00	23.34	47.91	49.44	49.82
Other (n=13)	Slip or fall	NA	NA	NA	NA	NA	NA	NA	NA	NA
p value*	Diving	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Jumping	0.252	ND	ND	ND	ND	ND	ND	ND	ND
p value	Slip or fall	ND	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to activities not observed; and ND: not determined

Table S3-262. Frequency of Hand to Object Contact (Event/Hour) by Players' Position, during Warm Up

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=3)	Artificial Turf	12.88	22.30	0.00	0.00	0.00	19.32	34.77	37.86	38.63
Goalie (n=3)	Body	1.84	3.19	0.00	0.00	0.00	2.76	4.97	5.41	5.52
Goalie (n=3)	Clothes	84.69	77.18	0.00	51.50	103.00	127.03	146.25	150.10	151.06
Goalie (n=3)	Field Structures	1.23	2.12	0.00	0.00	0.00	1.84	3.31	3.61	3.68
Goalie (n=3)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=3)	Head/face/hair	58.89	75.59	1.84	16.03	30.21	87.42	133.19	142.34	144.63
Goalie (n=3)	Soccer ball	93.80	162.47	0.00	0.00	0.00	140.71	253.27	275.78	281.41
Goalie (n=3)	Water bottle	9.64	16.70	0.00	0.00	0.00	14.47	26.04	28.35	28.93
Goalie (n=3)	Dietary Objects	9.64	16.70	0.00	0.00	0.00	14.47	26.04	28.35	28.93
Goalie (n=3)	Non-dietary Objects	262.52	173.43	144.63	162.95	181.27	321.47	433.62	456.05	461.66
Goalie (n=3)	All Objects	272.16	164.15	173.56	177.42	181.27	321.47	433.62	456.05	461.66
Other (n=15)	Artificial Turf	6.21	21.43	0.00	0.00	0.00	0.00	31.00	72.82	83.27



Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Other (n=15)	Body	44.66	64.12	0.00	2.18	7.78	54.28	178.98	189.67	192.34
Other (n=15)	Clothes	91.75	52.42	0.00	58.86	85.67	129.60	169.53	188.75	193.55
Other (n=15)	Field Structures	9.35	20.32	0.00	0.00	1.38	5.76	38.33	70.51	78.56
Other (n=15)	Footwear	24.12	32.39	0.00	0.00	1.94	47.83	77.32	91.41	94.93
Other (n=15)	Head/face/hair	20.68	19.03	0.00	2.60	18.37	36.99	47.10	54.76	56.68
Other (n=15)	Soccer ball	2.51	4.39	0.00	0.00	0.00	4.20	9.99	14.09	15.11
Other (n=15)	Water bottle	0.66	1.87	0.00	0.00	0.00	0.00	4.16	6.28	6.81
Other (n=15)	Dietary Objects	0.66	1.87	0.00	0.00	0.00	0.00	4.16	6.28	6.81
Other (n=15)	Non-dietary Objects	202.80	119.02	0.00	127.50	182.61	255.39	424.50	439.71	443.51
Other (n=15)	All Objects	203.46	118.68	0.00	130.90	182.61	255.39	424.50	439.71	443.51
p value*	Artificial Turf	0.120	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.362	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.376	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.475	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.193	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.574	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.498	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no contact with the object; and ND: not determined

Table S3-263. Duration of Hand to Object Contact (Min/Hour) by Players' Position, during Warm Up

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=3)	Artificial Turf	0.17	0.29	0.00	0.00	0.00	0.26	0.46	0.50	0.51
Goalie (n=3)	Body	0.02	0.03	0.00	0.00	0.00	0.03	0.05	0.05	0.05



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Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=3)	Clothes	9.34	11.88	0.00	2.66	5.31	14.02	20.98	22.37	22.72
Goalie (n=3)	Field Structures	0.02	0.03	0.00	0.00	0.00	0.03	0.05	0.05	0.05
Goalie (n=3)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=3)	Head/face/hair	0.90	0.97	0.04	0.37	0.70	1.33	1.83	1.93	1.95
Goalie (n=3)	Soccer ball	1.85	3.20	0.00	0.00	0.00	2.77	4.99	5.43	5.54
Goalie (n=3)	Water bottle	0.71	1.22	0.00	0.00	0.00	1.06	1.91	2.08	2.12
Goalie (n=3)	Dietary Objects	0.71	1.22	0.00	0.00	0.00	1.06	1.91	2.08	2.12
Goalie (n=3)	Non-dietary Objects	12.90	10.74	1.95	7.64	13.32	18.37	22.41	23.22	23.42
Goalie (n=3)	All Objects	13.60	9.68	4.07	8.70	13.32	18.37	22.41	23.22	23.42
Other (n=15)	Artificial Turf	0.18	0.49	0.00	0.00	0.00	0.00	1.15	1.62	1.74
Other (n=15)	Body	1.38	2.30	0.00	0.02	0.10	1.27	6.14	7.36	7.66
Other (n=15)	Clothes	13.44	12.89	0.00	4.81	10.29	17.65	37.89	46.00	48.03
Other (n=15)	Field Structures	1.21	3.93	0.00	0.00	0.05	0.42	5.32	13.37	15.38
Other (n=15)	Footwear	1.21	1.77	0.00	0.00	0.05	2.05	4.78	5.04	5.10
Other (n=15)	Head/face/hair	0.64	0.77	0.00	0.04	0.49	0.80	2.26	2.44	2.48
Other (n=15)	Soccer ball	0.08	0.16	0.00	0.00	0.00	0.09	0.38	0.55	0.59
Other (n=15)	Water bottle	0.10	0.36	0.00	0.00	0.00	0.00	0.49	1.20	1.38
Other (n=15)	Dietary Objects	0.10	0.36	0.00	0.00	0.00	0.00	0.49	1.20	1.38
Other (n=15)	Non-dietary Objects	18.22	12.76	0.00	11.70	15.34	21.62	42.41	47.71	49.04
Other (n=15)	All Objects	18.32	12.71	0.00	11.89	15.34	21.62	42.41	47.71	49.04
p value*	Artificial Turf	0.094	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.678	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.362	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.342	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.721	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND



Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Water bottle	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.193	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.654	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.738	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no contact with the object; and ND: not determined

Table S3-264. Median Duration of Hand to Object Contact (Second) by Players' Position, during Warm Up

Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie	Artificial Turf	1	0.71	ND	ND	ND	ND	ND	ND	ND	ND
Goalie	Body	1	0.53	ND	ND	ND	ND	ND	ND	ND	ND
Goalie	Clothes	2	3.08	2.37	1.41	2.24	3.08	3.92	4.58	4.72	4.75
Goalie	Field Structures	1	0.84	ND	ND	ND	ND	ND	ND	ND	ND
Goalie	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Head/face/hair	3	1.12	0.38	0.68	0.99	1.30	1.34	1.37	1.38	1.38
Goalie	Soccer ball	1	0.90	ND	ND	ND	ND	ND	ND	ND	ND
Goalie	Water bottle	1	4.40	ND	ND	ND	ND	ND	ND	ND	ND
Goalie	Dietary Objects	1	4.40	ND	ND	ND	ND	ND	ND	ND	ND
Goalie	Non-dietary Objects	3	1.74	1.61	0.68	0.81	0.94	2.27	3.33	3.54	3.59
Goalie	All Objects	3	1.79	1.56	0.85	0.90	0.94	2.27	3.33	3.54	3.59
Other	Artificial Turf	3	4.12	5.92	0.62	0.70	0.78	5.86	9.93	10.75	10.95
Other	Body	12	1.37	0.93	0.42	0.77	0.98	1.89	3.04	3.13	3.15
Other	Clothes	14	6.45	6.18	1.15	2.59	4.95	8.03	15.93	23.47	25.36
Other	Field Structures	8	3.04	3.03	0.73	0.87	1.95	3.61	8.07	8.82	9.01
Other	Footwear	8	2.61	2.77	0.73	1.44	1.52	2.42	6.94	8.84	9.31
Other	Head/face/hair	11	1.23	0.31	0.69	1.01	1.27	1.44	1.62	1.66	1.67
Other	Soccer ball	5	1.50	0.62	0.89	1.06	1.48	1.61	2.29	2.43	2.47
Other	Water bottle	2	4.84	3.88	2.09	3.46	4.84	6.21	7.30	7.52	7.58



Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Other	Dietary Objects	2	4.84	3.88	2.09	3.46	4.84	6.21	7.30	7.52	7.58
Other	Non-dietary Objects	14	2.74	1.87	0.92	1.31	2.40	3.52	5.82	7.17	7.50
Other	All Objects	14	2.74	1.86	0.92	1.31	2.40	3.47	5.82	7.17	7.50
p value*	Artificial Turf	ND	0.462	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.500	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.667	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.659	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.667	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.244	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.244	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to no contact with the object; and ND: not determined

Table S3-265. Hourly Duration (Min/Hour) of Player Intensity by Players' Position, during Warm Up

Position	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=3)	High	0.17	0.30	0.00	0.00	0.00	0.26	0.47	0.51	0.52
Goalie (n=3)	Moderate	20.26	18.36	8.26	9.69	11.12	26.26	38.37	40.79	41.40
Goalie (n=3)	Light	18.05	11.12	5.78	13.34	20.90	24.19	26.81	27.34	27.47
Goalie (n=3)	Resting	21.52	7.82	12.82	18.29	23.76	25.87	27.56	27.90	27.98
Other (n=13)	High	5.60	5.97	0.00	0.91	3.34	9.94	14.45	18.05	18.95
Other (n=13)	Moderate	23.95	9.43	7.50	18.08	22.94	32.69	37.44	38.29	38.50
Other (n=13)	Light	20.68	7.92	10.57	15.11	20.68	22.46	33.11	37.53	38.63
Other (n=13)	Resting	9.77	7.08	0.97	4.09	9.84	16.19	19.85	22.43	23.08
p value	High	0.076	ND	ND	ND	ND	ND	ND	ND	ND



Position	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Moderate	0.611	ND	ND	ND	ND	ND	ND	ND	ND
p value	Light	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Resting	0.040*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-266. Duration (Min/Hour) of Macro-Activities by Age, during Warm Up

Position	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=3)	Rest Standing	19.34	7.05	11.59	16.33	21.07	23.22	24.93	25.27	25.36
Goalie (n=3)	Running	19.69	19.07	5.64	8.84	12.03	26.72	38.46	40.81	41.40
Goalie (n=3)	Sit on ground	1.26	1.27	0.00	0.62	1.23	1.89	2.41	2.51	2.54
Goalie (n=3)	Stretching	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=3)	Walking	17.95	10.64	5.78	14.20	22.61	24.04	25.18	25.40	25.46
Other (n=13)	Rest Standing	9.84	7.65	0.97	2.86	7.82	14.65	23.04	23.07	23.08
Other (n=13)	Running	19.79	11.74	0.00	11.52	15.35	27.70	38.31	38.46	38.50
Other (n=13)	Sit on ground	0.31	0.65	0.00	0.00	0.00	0.00	1.57	1.93	2.02
Other (n=13)	Stretching	10.28	11.88	0.00	0.10	7.50	20.96	28.97	33.15	34.20
Other (n=13)	Walking	19.42	7.06	8.06	15.11	20.80	23.99	29.06	29.36	29.43
p value*	Rest Standing	0.900	ND	ND	ND	ND	ND	ND	ND	ND
p value	Running	0.141	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on ground	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Stretching	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Walking	ND	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to the activity not observed; and ND: not determined

Table S3-267. Mouthing Frequency (Event/Hour) by Players' Position, during Warm Up

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=3)	All Objects	4.58	7.93	0.00	0.00	0.00	6.87	12.37	13.47	13.74
Goalie (n=3)	Body	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=3)	Clothes	4.58	7.93	0.00	0.00	0.00	6.87	12.37	13.47	13.74



Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=3)	Dietary Objects	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=3)	Hands	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=3)	Non-dietary Objects	4.58	7.93	0.00	0.00	0.00	6.87	12.37	13.47	13.74
Goalie (n=3)	Water bottle	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=15)	All Objects	10.33	17.18	0.00	0.00	5.07	12.08	40.79	60.64	65.60
Other (n=15)	Body	0.11	0.46	0.00	0.00	0.00	0.00	0.46	1.55	1.82
Other (n=15)	Clothes	9.53	17.51	0.00	0.00	0.00	12.08	40.79	60.64	65.60
Other (n=15)	Dietary Objects	0.34	1.37	0.00	0.00	0.00	0.00	1.37	4.65	5.47
Other (n=15)	Hands	8.63	11.70	0.00	0.00	5.22	12.86	29.36	39.35	41.85
Other (n=15)	Non-dietary Objects	9.99	17.30	0.00	0.00	3.22	12.08	40.79	60.64	65.60
Other (n=15)	Water bottle	0.34	1.37	0.00	0.00	0.00	0.00	1.37	4.65	5.47
p value*	All Objects	0.773	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.773	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.487	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.773	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.852	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.679	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-268. Mouthing Duration (Min/Hour) by Players' Position, during Warm Up

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=3)	All Objects	0.06	0.10	0.00	0.00	0.00	0.09	0.16	0.18	0.18
Goalie (n=3)	Body	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=3)	Clothes	0.06	0.10	0.00	0.00	0.00	0.09	0.16	0.18	0.18
Goalie (n=3)	Dietary Objects	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=3)	Hands	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=3)	Non-dietary Objects	0.06	0.10	0.00	0.00	0.00	0.09	0.16	0.18	0.18



Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=3)	Water bottle	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=15)	All Objects	0.22	0.30	0.00	0.00	0.10	0.31	0.80	0.95	0.99
Other (n=15)	Body	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.03	0.04
Other (n=15)	Clothes	0.19	0.30	0.00	0.00	0.00	0.28	0.80	0.95	0.99
Other (n=15)	Dietary Objects	0.01	0.03	0.00	0.00	0.00	0.00	0.03	0.09	0.10
Other (n=15)	Hands	0.15	0.18	0.00	0.00	0.09	0.27	0.45	0.55	0.58
Other (n=15)	Non-dietary Objects	0.21	0.30	0.00	0.00	0.05	0.31	0.80	0.95	0.99
Other (n=15)	Water bottle	0.01	0.03	0.00	0.00	0.00	0.00	0.03	0.09	0.10
p value*	All Objects	0.773	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.773	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.773	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.575	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.375	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-269. Mouthing Median Duration (Second) by Players' Position, during Warm Up

Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie	All Objects	1	0.75	ND	ND	ND	ND	ND	ND	ND	ND
Goalie	Body	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Clothes	1	0.75	ND	ND	ND	ND	ND	ND	ND	ND
Goalie	Dietary Objects	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Hands	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Non-dietary Objects	1	0.75	ND	ND	ND	ND	ND	ND	ND	ND
Goalie	Water bottle	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	All Objects	14	1.51	0.97	0.67	0.87	1.08	1.83	3.13	3.23	3.25



Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Other	Body	1	1.22	ND	ND	ND	ND	ND	ND	ND	ND
Other	Clothes	7	1.36	0.91	0.67	0.85	0.91	1.50	2.82	3.16	3.25
Other	Dietary Objects	1	0.93	ND	ND	ND	ND	ND	ND	ND	ND
Other	Hands	9	1.26	0.88	0.45	0.72	1.12	1.33	2.65	3.28	3.44
Other	Non-dietary Objects	14	1.52	0.96	0.67	0.87	1.17	1.83	3.13	3.23	3.25
Other	Water bottle	1	0.93	ND	ND	ND	ND	ND	ND	ND	ND
p value*	All Objects	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.400	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.559	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.400	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.500	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.400	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

S3.5.2.3. Activity Patterns by Players' Position, on Break/After/Before Game

Table S3-270. Frequency (Event/Hour) of Actions by Players' Position, on Break/After/Before Game

Position	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Jumping	6.40	12.09	0.00	0.00	0.00	5.72	28.81	33.31	34.43
Goalie (n=10)	Slip or fall	1.15	3.63	0.00	0.00	0.00	0.00	6.31	10.45	11.48
Goalie (n=10)	Tackling or sliding	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=30)	Jumping	0.59	1.82	0.00	0.00	0.00	0.00	5.55	6.41	6.73
Other (n=30)	Slip or fall	0.55	1.63	0.00	0.00	0.00	0.00	3.99	6.51	7.19
Other (n=30)	Tackling or sliding	0.16	0.62	0.00	0.00	0.00	0.00	1.14	2.54	2.73
p value*	Jumping	0.892	ND	ND	ND	ND	ND	ND	ND	ND
p value	Slip or fall	0.325	ND	ND	ND	ND	ND	ND	ND	ND
p value	Tackling or sliding	ND	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum



NA: not applicable due to the activity not observed; and ND: not determined

Table S3-271. Frequency of Hand to Object Contact (Event/Hour) by Players' Position, on Break/After/Before Game

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Artificial Turf	9.14	24.84	0.00	0.00	0.00	2.38	47.65	73.04	79.38
Goalie (n=10)	Body	19.58	17.13	0.00	2.82	20.78	33.89	41.11	43.33	43.88
Goalie (n=10)	Clothes	94.83	43.76	31.75	60.10	94.58	124.81	155.23	168.65	172.00
Goalie (n=10)	Field Structures	15.45	16.84	0.00	1.88	10.94	23.42	43.43	44.14	44.32
Goalie (n=10)	Footwear	5.83	11.31	0.00	0.00	0.00	8.33	24.73	32.83	34.86
Goalie (n=10)	Head/face/hair	21.54	35.08	0.00	5.49	8.72	13.97	83.01	108.34	114.67
Goalie (n=10)	Shin guards	3.42	8.19	0.00	0.00	0.00	0.00	17.94	23.87	25.35
Goalie (n=10)	Soccer ball	20.94	23.50	0.00	0.00	12.17	41.60	52.92	58.55	59.96
Goalie (n=10)	Water bottle	51.13	52.52	0.00	11.79	31.94	76.09	139.56	144.30	145.49
Goalie (n=10)	Dietary Objects	51.13	52.52	0.00	11.79	31.94	76.09	139.56	144.30	145.49
Goalie (n=10)	Non-dietary Objects	232.25	99.49	80.12	195.51	213.25	284.16	385.60	401.29	405.21
Goalie (n=10)	All Objects	283.39	94.54	89.93	233.97	285.75	328.75	407.44	408.90	409.27
Other (n=30)	Artificial Turf	2.73	4.89	0.00	0.00	0.00	3.40	14.62	16.26	16.63
Other (n=30)	Body	19.35	20.43	0.00	4.97	12.96	26.80	63.78	67.14	68.04
Other (n=30)	Clothes	116.50	61.94	35.69	72.93	104.43	136.81	239.01	292.52	309.53
Other (n=30)	Field Structures	18.73	25.67	0.00	5.16	9.58	17.78	67.44	103.30	115.82
Other (n=30)	Footwear	12.79	15.60	0.00	0.39	7.18	15.99	42.76	56.30	61.23
Other (n=30)	Head/face/hair	27.16	19.17	0.00	15.72	21.71	32.40	69.29	76.66	77.21
Other (n=30)	Shin guards	3.81	10.31	0.00	0.00	0.00	2.66	17.61	43.21	52.37
Other (n=30)	Soccer ball	14.84	20.00	0.00	0.00	3.57	26.95	49.71	70.43	75.97
Other (n=30)	Water bottle	48.82	64.28	0.00	16.12	31.69	50.28	158.76	279.14	323.97
Other (n=30)	Dietary Objects	49.14	64.38	0.00	16.12	32.33	50.28	158.76	279.14	323.97
Other (n=30)	Non-dietary Objects	225.64	76.80	97.17	180.75	204.05	275.12	368.68	430.71	451.02
Other (n=30)	All Objects	274.78	90.87	169.00	210.49	242.56	317.25	461.44	517.40	526.45
p value	Artificial Turf	0.408	ND	ND	ND	ND	ND	ND	ND	ND



Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Body	0.432	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.975	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.000*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.741	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.656	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.821	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.975	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.395	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.038*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.913	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.414	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-272. Duration of Hand to Object Contact (Min/Hour) by Players' Position, on Break/After/Before Game

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Artificial Turf	0.85	2.62	0.00	0.00	0.00	0.08	4.62	7.57	8.31
Goalie (n=10)	Body	3.57	5.76	0.00	0.03	1.01	4.35	13.36	17.43	18.45
Goalie (n=10)	Clothes	16.50	8.70	2.75	10.91	16.47	20.43	28.82	33.11	34.18
Goalie (n=10)	Field Structures	1.61	2.05	0.00	0.08	0.46	3.62	4.62	4.69	4.71
Goalie (n=10)	Footwear	0.53	0.94	0.00	0.00	0.00	0.59	2.27	2.36	2.38
Goalie (n=10)	Head/face/hair	1.17	2.14	0.00	0.11	0.35	1.06	4.71	6.55	7.01
Goalie (n=10)	Shin guards	0.43	0.93	0.00	0.00	0.00	0.00	2.20	2.51	2.59
Goalie (n=10)	Soccer ball	2.06	2.91	0.00	0.00	0.93	2.84	7.05	8.51	8.88
Goalie (n=10)	Water bottle	8.23	7.48	0.00	1.85	6.63	13.34	19.62	20.52	20.74
Goalie (n=10)	Dietary Objects	8.23	7.48	0.00	1.85	6.63	13.34	19.62	20.52	20.74
Goalie (n=10)	Non-dietary Objects	31.68	9.51	14.41	30.77	34.97	37.96	40.11	40.94	41.15
Goalie (n=10)	All Objects	39.91	9.76	15.67	37.12	42.33	44.35	49.75	50.62	50.84



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Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Other (n=30)	Artificial Turf	0.43	1.17	0.00	0.00	0.00	0.08	3.04	4.58	5.08
Other (n=30)	Body	2.62	3.94	0.00	0.23	0.60	3.02	11.21	12.33	12.63
Other (n=30)	Clothes	14.96	9.48	4.17	8.00	11.55	20.05	34.50	37.44	38.33
Other (n=30)	Field Structures	2.35	3.93	0.00	0.22	0.72	1.95	12.59	14.08	14.14
Other (n=30)	Footwear	1.74	2.87	0.00	0.02	0.60	1.90	8.39	10.73	11.12
Other (n=30)	Head/face/hair	0.92	0.99	0.00	0.35	0.59	1.12	2.38	4.36	5.06
Other (n=30)	Shin guards	0.34	0.97	0.00	0.00	0.00	0.10	1.35	4.02	5.03
Other (n=30)	Soccer ball	0.65	0.92	0.00	0.00	0.09	0.97	2.30	3.22	3.57
Other (n=30)	Water bottle	8.08	8.31	0.00	3.77	5.33	10.88	24.90	33.35	33.92
Other (n=30)	Dietary Objects	8.11	8.32	0.00	3.77	5.41	11.07	24.90	33.35	33.92
Other (n=30)	Non-dietary Objects	24.72	11.06	7.38	18.11	24.02	30.70	43.87	50.72	53.50
Other (n=30)	All Objects	32.83	11.36	12.69	27.17	29.89	39.37	55.91	59.38	59.70
p value	Artificial Turf	0.408	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.414	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.975	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.000*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.687	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.067	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.886	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.975	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.456	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.317	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.650	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined



Table S3-273. Median Duration of Hand to Object Contact (Second) by Players' Position, on Break/After/Before Game

Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie	Artificial Turf	3	1.59	0.73	0.75	1.37	1.99	2.01	2.03	2.03	2.03
Goalie	Body	8	3.91	3.96	0.16	0.99	2.19	6.27	9.88	10.12	10.18
Goalie	Clothes	10	5.36	1.84	2.15	4.18	6.20	6.61	7.10	7.26	7.30
Goalie	Field Structures	8	5.24	6.13	1.79	2.45	2.91	4.19	15.23	19.02	19.96
Goalie	Footwear	3	2.67	0.46	2.39	2.41	2.44	2.82	3.12	3.18	3.20
Goalie	Head/face/hair	8	2.17	0.93	1.16	1.54	2.02	2.66	3.51	3.83	3.91
Goalie	Shin guards	2	9.93	9.57	3.16	6.54	9.93	13.31	16.02	16.56	16.70
Goalie	Soccer ball	6	3.62	2.58	1.36	2.19	2.81	3.90	7.41	8.30	8.52
Goalie	Water bottle	9	6.53	1.57	3.83	6.03	6.59	7.49	8.44	8.94	9.06
Goalie	Dietary Objects	9	6.53	1.57	3.83	6.03	6.59	7.49	8.44	8.94	9.06
Goalie	Non-dietary Objects	10	4.03	1.35	2.54	2.86	3.63	5.14	6.01	6.21	6.26
Goalie	All Objects	10	4.29	1.35	2.69	3.28	3.82	5.64	6.07	6.22	6.26
Other	Artificial Turf	11	6.66	13.79	0.47	1.06	2.16	2.80	29.37	43.61	47.17
Other	Body	24	3.19	2.39	0.95	1.40	2.59	3.99	7.11	10.16	11.03
Other	Clothes	30	4.37	1.73	2.43	3.32	3.83	4.95	7.20	9.90	10.78
Other	Field Structures	25	4.52	2.51	1.07	2.73	3.93	6.28	8.67	10.26	10.73
Other	Footwear	22	4.72	2.41	1.12	3.34	4.21	5.92	9.12	9.27	9.30
Other	Head/face/hair	28	1.38	0.49	0.58	1.06	1.29	1.73	2.23	2.59	2.70
Other	Shin guards	8	4.32	3.71	1.23	2.12	3.27	4.85	10.18	12.25	12.76
Other	Soccer ball	16	1.97	1.38	0.82	1.49	1.62	1.92	3.59	6.22	6.88
Other	Water bottle	27	8.29	4.03	2.27	5.73	7.81	10.40	15.27	17.46	18.16
Other	Dietary Objects	27	8.21	4.04	2.27	5.59	7.55	10.40	15.27	17.46	18.16
Other	Non-dietary Objects	30	3.24	1.14	1.61	2.51	2.93	3.58	5.71	6.16	6.29
Other	All Objects	30	3.65	1.21	1.97	2.66	3.39	4.37	5.91	6.28	6.35
p value	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.083	ND	ND	ND	ND	ND	ND	ND	ND



Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Clothes	ND	0.368	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.067	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.067	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	0.400	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	0.263	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.048*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.015*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.550	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.914	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-274. Hourly Duration (Min/Hour) of Player Intensity by Players' Position, on Break/After/Before Game

Position	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	High	1.36	1.75	0.00	0.00	0.33	2.52	4.18	4.34	4.38
Goalie (n=10)	Moderate	2.10	1.44	0.00	1.23	2.04	2.44	4.42	4.78	4.87
Goalie (n=10)	Light	14.48	7.25	3.92	8.79	13.01	21.80	23.07	23.33	23.39
Goalie (n=10)	Resting	42.06	8.15	32.13	35.44	41.23	49.69	52.76	53.86	54.14
Other (n=30)	High	1.17	1.39	0.00	0.00	0.52	2.11	3.57	4.79	5.27
Other (n=30)	Moderate	2.85	3.70	0.00	0.09	1.59	4.07	11.22	13.70	14.13
Other (n=30)	Light	20.32	9.28	4.04	13.03	19.43	25.06	38.76	39.41	39.59
Other (n=30)	Resting	35.66	9.65	15.37	30.37	36.44	41.05	50.76	55.04	55.52
p value*	High	0.885	ND	ND	ND	ND	ND	ND	ND	ND
p value	Moderate	0.742	ND	ND	ND	ND	ND	ND	ND	ND
p value	Light	0.072	ND	ND	ND	ND	ND	ND	ND	ND
p value	Resting	0.095	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

ND: not determined



Table S3-275. Duration (Min/Hour) of Macro-Activities by Age, on Break/After/Before Game

Position	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Push ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Rest Standing	34.62	12.78	14.00	24.61	35.29	44.73	49.54	50.64	50.92
Goalie (n=10)	Running	2.34	2.53	0.00	0.98	1.77	2.25	6.48	8.51	9.02
Goalie (n=10)	Sit on chair	3.60	8.44	0.00	0.00	0.00	0.85	18.32	24.81	26.43
Goalie (n=10)	Sit on ground	4.31	8.75	0.00	0.00	0.09	2.25	20.34	25.27	26.50
Goalie (n=10)	Stretching	0.05	0.14	0.00	0.00	0.00	0.00	0.25	0.41	0.45
Goalie (n=10)	Walking	14.89	7.52	4.01	8.86	13.17	22.85	23.30	23.37	23.39
Other (n=30)	Push ups	0.02	0.11	0.00	0.00	0.00	0.00	0.00	0.43	0.61
Other (n=30)	Rest Standing	30.08	9.71	10.59	24.75	30.05	35.41	46.72	48.85	49.67
Other (n=30)	Running	3.35	4.67	0.00	0.08	1.54	4.73	14.35	16.74	17.00
Other (n=30)	Sit on chair	1.67	4.64	0.00	0.00	0.00	0.18	10.41	19.04	20.50
Other (n=30)	Sit on ground	2.75	5.22	0.00	0.00	0.02	3.52	11.27	20.81	23.79
Other (n=30)	Stretching	0.24	0.53	0.00	0.00	0.00	0.00	1.12	2.01	2.32
Other (n=30)	Walking	21.86	10.20	4.00	13.55	21.41	29.43	39.53	40.44	40.63
p value*	Push ups	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Rest Standing	0.444	ND	ND	ND	ND	ND	ND	ND	ND
p value	Running	0.973	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on chair	0.054	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on ground	0.736	ND	ND	ND	ND	ND	ND	ND	ND
p value	Stretching	0.259	ND	ND	ND	ND	ND	ND	ND	ND
p value	Walking	0.863	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to the activity not observed; and ND: not determined

Table S3-276. Mouthing Frequency (Event/Hour) by Players' Position, on Break/After/Before Game

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA



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Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Body	0.83	2.63	0.00	0.00	0.00	0.00	4.58	7.57	8.32
Goalie (n=10)	Clothes	6.89	6.92	0.00	0.00	8.09	10.70	16.47	19.94	20.81
Goalie (n=10)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Hands	8.02	9.97	0.00	0.00	5.20	10.46	25.41	28.42	29.17
Goalie (n=10)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Water bottle	30.09	26.09	0.00	10.70	31.05	41.04	68.45	82.87	86.48
Goalie (n=10)	Dietary Objects	30.95	25.11	0.00	10.70	31.05	41.04	68.45	82.87	86.48
Goalie (n=10)	Non-dietary Objects	8.61	8.29	0.00	4.26	8.09	10.70	21.05	27.51	29.13
Goalie (n=10)	All Objects	39.56	22.80	8.76	27.94	38.68	48.07	72.41	87.51	91.28
Other (n=30)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=30)	Body	0.28	1.52	0.00	0.00	0.00	0.00	0.00	5.93	8.35
Other (n=30)	Clothes	12.31	24.84	0.00	0.00	5.32	10.99	64.95	102.13	113.14
Other (n=30)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=30)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=30)	Hands	11.43	14.13	0.00	0.00	6.07	16.18	41.73	50.62	51.91
Other (n=30)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=30)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=30)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=30)	Water bottle	36.38	49.08	0.00	8.66	25.01	33.90	113.24	208.70	239.85
Other (n=30)	Dietary Objects	37.13	48.75	0.00	9.75	25.01	35.92	113.24	208.70	239.85
Other (n=30)	Non-dietary Objects	13.65	24.80	0.00	0.00	5.74	11.69	64.95	102.13	113.14
Other (n=30)	All Objects	50.78	52.00	0.00	20.61	29.59	76.27	127.53	208.70	239.85
p value*	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.457	ND	ND	ND	ND	ND	ND	ND	ND



Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Clothes	0.885	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.576	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.695	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.673	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.788	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.864	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-277. Mouthing Duration (Min/Hour) by Players' Position, on Break/After/Before Game

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Body	0.01	0.03	0.00	0.00	0.00	0.00	0.05	0.08	0.09
Goalie (n=10)	Clothes	0.21	0.20	0.00	0.00	0.25	0.32	0.48	0.58	0.60
Goalie (n=10)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Hands	0.34	0.65	0.00	0.00	0.12	0.31	1.36	1.97	2.12
Goalie (n=10)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Water bottle	1.80	1.67	0.00	0.89	1.45	2.02	4.70	4.74	4.75
Goalie (n=10)	Dietary Objects	1.83	1.64	0.00	0.89	1.45	2.02	4.70	4.74	4.75
Goalie (n=10)	Non-dietary Objects	0.25	0.18	0.00	0.17	0.25	0.32	0.53	0.59	0.60



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Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	All Objects	2.08	1.57	0.44	0.97	1.70	2.40	4.78	4.88	4.90
Other (n=30)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=30)	Body	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.11	0.15
Other (n=30)	Clothes	0.30	0.56	0.00	0.00	0.10	0.25	1.86	2.01	2.02
Other (n=30)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=30)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=30)	Hands	0.51	1.08	0.00	0.00	0.14	0.38	2.59	4.49	4.90
Other (n=30)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=30)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=30)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=30)	Water bottle	2.60	3.59	0.00	0.60	1.14	3.11	10.60	14.23	14.78
Other (n=30)	Dietary Objects	2.65	3.57	0.00	0.60	1.15	3.11	10.60	14.23	14.78
Other (n=30)	Non-dietary Objects	0.36	0.60	0.00	0.00	0.11	0.25	1.86	2.01	2.02
Other (n=30)	All Objects	3.01	3.57	0.00	0.76	1.76	4.04	10.74	14.31	14.78
p value*	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.457	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.553	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.690	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.925	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.975	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.261	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.963	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum



NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-278. Mouthing Median Duration (Second) by Players' Position, on Break/After/Before Game

Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie	Artificial Turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Body	1	0.66	ND	ND	ND	ND	ND	ND	ND	ND
Goalie	Clothes	6	2.05	1.35	1.00	1.47	1.61	1.82	4.02	4.60	4.74
Goalie	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Hands	6	1.85	1.14	0.59	1.12	1.79	2.11	3.41	3.74	3.83
Goalie	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Water bottle	8	3.61	1.79	1.35	2.28	3.30	5.10	5.90	5.98	6.00
Goalie	Dietary Objects	9	3.41	1.77	1.35	1.92	2.60	4.90	5.89	5.97	6.00
Goalie	Non-dietary Objects	9	2.14	1.26	0.72	1.50	1.78	2.24	4.21	4.64	4.74
Goalie	All Objects	10	3.10	1.83	0.72	1.76	2.54	4.45	5.87	5.97	6.00
Other	Artificial Turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	Body	1	1.14	ND	ND	ND	ND	ND	ND	ND	ND
Other	Clothes	19	1.45	0.78	0.57	0.85	1.20	2.05	2.56	3.26	3.44
Other	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	Hands	20	1.63	1.23	0.28	1.00	1.26	1.64	4.51	4.66	4.70
Other	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	Water bottle	25	3.81	1.45	1.46	2.69	3.85	4.40	6.64	6.88	6.90
Other	Dietary Objects	26	3.75	1.46	1.46	2.65	3.77	4.36	6.59	6.88	6.90
Other	Non-dietary Objects	25	1.75	2.35	0.18	0.84	1.20	1.54	3.55	9.74	11.29



Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Other	All Objects	30	3.07	1.56	0.88	1.74	2.83	4.08	5.83	6.61	6.90
p value*	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.667	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.176	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.494	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.606	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.403	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.055	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.987	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

S3.5.2.4. Activity Patterns by Players' Position, Any Time but during the Game/Practice

Table S3-279. Frequency (Event/Hour) of Actions by Players' Position, Any Time but during the Game/Practice

Position	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Diving	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Jumping	0.74	2.35	0.00	0.00	0.00	0.00	4.09	6.76	7.43
Goalie (n=10)	Slip or fall	8.78	13.04	0.00	0.00	0.00	18.27	29.80	33.50	34.43
Goalie (n=10)	Tackling or sliding	5.79	14.73	0.00	0.00	0.00	0.00	30.70	43.28	46.43
Other (n=30)	Diving	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=30)	Jumping	3.68	7.34	0.00	0.00	0.00	0.00	20.01	22.94	23.45
Other (n=30)	Slip or fall	0.55	1.63	0.00	0.00	0.00	0.00	3.99	6.51	7.19
Other (n=30)	Tackling or sliding	0.15	0.58	0.00	0.00	0.00	0.00	1.14	2.39	2.51



Position	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value*	Diving	0.497	ND	ND	ND	ND	ND	ND	ND	ND
p value	Jumping	0.211	ND	ND	ND	ND	ND	ND	ND	ND
p value	Slip or fall	0.158	ND	ND	ND	ND	ND	ND	ND	ND
p value	Tackling or sliding	ND	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to these activities not observed; and ND: not determined

Table S3-280. Frequency of Hand to Object Contact (Event/Hour) by Players' Position, Any Time but during the Game/Practice

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Artificial Turf	10.94	23.57	0.00	0.00	0.00	7.45	51.30	70.12	74.82
Goalie (n=10)	Body	17.17	14.80	0.00	2.82	17.40	28.54	36.70	37.52	37.72
Goalie (n=10)	Clothes	93.55	43.35	29.93	60.10	94.58	120.08	155.23	168.65	172.00
Goalie (n=10)	Field Structures	15.20	16.40	0.00	2.04	10.57	23.42	42.33	43.92	44.32
Goalie (n=10)	Footwear	5.76	11.27	0.00	0.00	0.00	8.33	24.41	32.77	34.86
Goalie (n=10)	Head/face/hair	21.66	35.67	0.00	4.04	8.72	15.00	83.96	109.90	116.39
Goalie (n=10)	Shin guards	3.42	8.19	0.00	0.00	0.00	0.00	17.94	23.87	25.35
Goalie (n=10)	Soccer ball	37.01	49.84	0.00	0.41	30.36	43.02	117.36	154.93	164.32
Goalie (n=10)	Water bottle	50.29	52.04	0.00	11.79	31.94	70.28	139.56	144.30	145.49
Goalie (n=10)	Dietary Objects	50.29	52.04	0.00	11.79	31.94	70.28	139.56	144.30	145.49
Goalie (n=10)	Non-dietary Objects	234.04	104.66	80.12	195.51	211.96	284.16	398.12	430.16	438.17
Goalie (n=10)	All Objects	284.33	97.84	89.93	233.97	280.77	328.75	419.07	434.35	438.17
Other (n=30)	Artificial Turf	3.75	9.35	0.00	0.00	0.00	4.33	12.89	39.45	48.77
Other (n=30)	Body	25.63	29.96	0.00	4.25	12.13	38.23	75.93	106.24	118.25
Other (n=30)	Clothes	115.47	61.83	34.57	72.11	99.97	140.42	239.01	292.52	309.53
Other (n=30)	Field Structures	16.26	22.79	0.00	4.02	8.53	17.45	59.09	92.44	100.52
Other (n=30)	Footwear	16.29	19.32	0.00	1.48	8.37	28.18	51.03	72.00	76.40
Other (n=30)	Head/face/hair	25.57	18.04	0.00	14.41	22.25	32.13	62.12	71.55	75.33



Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Other (n=30)	Shin guards	3.53	10.08	0.00	0.00	0.00	2.66	13.75	42.81	52.37
Other (n=30)	Soccer ball	14.53	19.29	0.00	0.00	4.48	25.69	49.71	70.43	75.97
Other (n=30)	Water bottle	40.90	65.36	0.00	9.31	25.05	32.47	158.76	279.14	323.97
Other (n=30)	Dietary Objects	41.05	65.33	0.00	9.31	25.05	34.17	158.76	279.14	323.97
Other (n=30)	Non-dietary Objects	229.87	83.14	97.17	184.83	204.05	268.53	377.97	430.71	451.02
Other (n=30)	All Objects	270.92	99.45	142.90	200.57	251.77	316.41	461.44	517.40	526.45
p value	Artificial Turf	0.432	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.346	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.563	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.000*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.499	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.866	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.853	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.563	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.323	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.055	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.988	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.528	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-281. Duration of Hand to Object Contact (Min/Hour) by Players' Position, Any Time but during the Game/Practice

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Artificial Turf	0.84	2.46	0.00	0.00	0.00	0.11	4.44	7.15	7.83
Goalie (n=10)	Body	3.50	5.80	0.00	0.03	0.66	4.35	13.36	17.43	18.45
Goalie (n=10)	Clothes	16.23	9.00	2.59	9.74	16.47	20.49	28.82	33.11	34.18
Goalie (n=10)	Field Structures	1.58	2.01	0.00	0.07	0.44	3.62	4.47	4.49	4.50
Goalie (n=10)	Footwear	0.52	0.94	0.00	0.00	0.00	0.55	2.27	2.36	2.38



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Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Head/face/hair	1.13	2.06	0.00	0.08	0.35	1.03	4.55	6.29	6.72
Goalie (n=10)	Shin guards	0.43	0.93	0.00	0.00	0.00	0.00	2.20	2.51	2.59
Goalie (n=10)	Soccer ball	2.34	2.80	0.00	0.02	1.84	3.22	6.86	8.48	8.88
Goalie (n=10)	Water bottle	8.04	7.25	0.00	1.85	6.43	13.34	18.91	20.37	20.74
Goalie (n=10)	Dietary Objects	8.04	7.25	0.00	1.85	6.43	13.34	18.91	20.37	20.74
Goalie (n=10)	Non-dietary Objects	30.11	9.71	14.41	24.54	32.30	37.94	40.11	40.94	41.15
Goalie (n=10)	All Objects	38.14	10.90	15.67	36.65	41.40	44.35	48.78	50.43	50.84
Other (n=30)	Artificial Turf	0.30	0.73	0.00	0.00	0.00	0.08	2.23	2.63	2.75
Other (n=30)	Body	2.54	3.75	0.00	0.18	0.67	3.61	10.71	12.22	12.63
Other (n=30)	Clothes	15.42	9.53	4.17	7.33	13.35	22.01	34.50	37.44	38.33
Other (n=30)	Field Structures	2.16	3.98	0.00	0.16	0.43	1.77	12.59	14.44	14.65
Other (n=30)	Footwear	1.57	2.46	0.00	0.08	0.68	1.70	5.80	9.59	11.12
Other (n=30)	Head/face/hair	0.80	0.75	0.00	0.33	0.64	0.89	2.38	3.03	3.18
Other (n=30)	Shin guards	0.31	0.91	0.00	0.00	0.00	0.10	1.35	3.79	4.70
Other (n=30)	Soccer ball	0.64	0.91	0.00	0.00	0.10	0.97	2.27	3.22	3.57
Other (n=30)	Water bottle	6.54	8.26	0.00	1.82	4.17	7.44	24.68	33.35	33.92
Other (n=30)	Dietary Objects	6.55	8.26	0.00	1.82	4.17	7.44	24.68	33.35	33.92
Other (n=30)	Non-dietary Objects	24.27	11.14	7.38	16.24	22.10	32.38	43.87	50.72	53.50
Other (n=30)	All Objects	30.83	12.25	13.31	22.18	28.86	38.13	55.91	59.38	59.70
p value	Artificial Turf	0.432	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.612	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.463	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.000*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.415	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.148	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.886	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.463	ND	ND	ND	ND	ND	ND	ND	ND



Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Water bottle	0.415	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.341	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.802	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-282. Median Duration of Hand to Object Contact (Second) by Players' Position, Any Time but during the Game/Practice

Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie	Artificial Turf	4	1.37	0.74	0.71	0.74	1.37	2.00	2.03	2.03	2.03
Goalie	Body	8	3.90	3.97	0.16	0.97	2.19	6.27	9.88	10.12	10.18
Goalie	Clothes	10	5.28	1.97	1.91	4.18	6.20	6.61	7.09	7.26	7.30
Goalie	Field Structures	8	5.16	6.18	1.13	2.45	2.91	4.19	15.23	19.02	19.96
Goalie	Footwear	3	2.67	0.46	2.39	2.41	2.44	2.82	3.12	3.18	3.20
Goalie	Head/face/hair	8	2.09	0.90	1.20	1.54	1.84	2.38	3.51	3.83	3.91
Goalie	Shin guards	2	9.93	9.57	3.16	6.54	9.93	13.31	16.02	16.56	16.70
Goalie	Soccer ball	7	3.24	2.57	0.90	1.75	2.34	3.69	7.19	8.25	8.52
Goalie	Water bottle	9	6.53	1.57	3.83	6.03	6.59	7.49	8.44	8.94	9.06
Goalie	Dietary Objects	9	6.53	1.57	3.83	6.03	6.59	7.49	8.44	8.94	9.06
Goalie	Non-dietary Objects	10	3.88	1.57	1.29	2.79	3.63	5.14	6.01	6.21	6.26
Goalie	All Objects	10	4.14	1.59	1.29	3.27	3.82	5.64	6.07	6.22	6.26
Other	Artificial Turf	12	2.85	4.92	0.47	0.75	1.13	2.54	9.81	16.55	18.23
Other	Body	25	2.83	2.42	0.44	1.26	1.95	3.42	7.04	10.11	11.03
Other	Clothes	30	4.40	1.81	1.38	3.30	4.32	5.16	7.02	9.90	10.78
Other	Field Structures	25	4.16	2.49	0.91	2.37	3.66	6.19	8.42	10.26	10.73
Other	Footwear	24	3.85	2.42	1.11	1.74	3.36	5.31	8.51	9.16	9.30
Other	Head/face/hair	28	1.29	0.43	0.58	1.05	1.20	1.43	1.99	2.54	2.70
Other	Shin guards	8	4.32	3.71	1.23	2.12	3.27	4.85	10.18	12.25	12.76



Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Other	Soccer ball	19	1.65	0.47	0.82	1.42	1.61	1.87	2.50	2.55	2.57
Other	Water bottle	28	8.02	4.04	2.09	5.00	7.68	9.94	14.87	17.43	18.16
Other	Dietary Objects	28	7.94	4.05	2.09	5.00	7.16	9.94	14.87	17.43	18.16
Other	Non-dietary Objects	30	2.89	0.94	1.52	2.24	2.77	3.32	4.37	5.32	5.71
Other	All Objects	30	3.19	1.12	1.59	2.35	2.89	3.71	5.38	5.69	5.81
p value	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.083	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.475	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.024*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.953	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.050*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	0.400	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	0.355	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.130	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.003*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.757	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.590	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-283. Hourly Duration (Min/Hour) of Player Intensity by Players' Position, Any Time but during the Game/Practice

Position	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	High	1.17	1.46	0.00	0.00	0.32	2.32	3.39	3.83	3.94
Goalie (n=10)	Moderate	2.73	1.74	0.00	1.44	2.79	3.76	5.12	5.29	5.33
Goalie (n=10)	Light	15.05	7.39	4.00	9.72	13.01	22.52	23.87	24.18	24.26
Goalie (n=10)	Resting	41.06	8.12	27.97	35.44	41.23	46.80	51.73	52.26	52.39
Other (n=30)	High	1.92	2.01	0.00	0.07	1.35	2.75	5.90	6.77	6.91
Other (n=30)	Moderate	7.21	6.92	0.00	0.87	4.36	12.46	19.35	22.65	23.22



Position	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Other (n=30)	Light	19.97	9.18	4.04	13.39	19.08	24.76	38.76	39.41	39.59
Other (n=30)	Resting	30.89	11.98	14.73	20.35	30.62	39.14	50.76	55.04	55.52
p value*	High	0.990	ND	ND	ND	ND	ND	ND	ND	ND
p value	Moderate	0.990	ND	ND	ND	ND	ND	ND	ND	ND
p value	Light	0.990	ND	ND	ND	ND	ND	ND	ND	ND
p value	Resting	0.990	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

ND: not determined

Table S3-284. Duration (Min/Hour) of Macro-Activities by Age, Any Time but during the Game/Practice

Position	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Push ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Rest Standing	33.52	12.63	14.00	23.05	35.04	43.86	48.34	50.40	50.92
Goalie (n=10)	Running	2.88	2.56	0.00	0.98	2.85	3.56	6.71	8.56	9.02
Goalie (n=10)	Sit on chair	3.50	8.44	0.00	0.00	0.00	0.41	18.15	24.77	26.43
Goalie (n=10)	Sit on ground	4.28	8.39	0.00	0.00	0.53	2.00	19.74	24.28	25.41
Goalie (n=10)	Stretching	0.05	0.14	0.00	0.00	0.00	0.00	0.25	0.41	0.45
Goalie (n=10)	Walking	15.29	7.43	4.08	10.24	13.17	23.06	23.86	24.16	24.24
Other (n=30)	Push ups	0.01	0.06	0.00	0.00	0.00	0.00	0.00	0.25	0.35
Other (n=30)	Rest Standing	26.11	10.60	10.59	17.07	24.05	33.25	46.43	48.77	49.67
Other (n=30)	Running	6.81	6.45	0.00	1.12	5.11	10.72	16.60	21.49	23.32
Other (n=30)	Sit on chair	1.48	4.56	0.00	0.00	0.00	0.08	10.15	18.90	20.50
Other (n=30)	Sit on ground	2.54	5.05	0.00	0.00	0.13	3.27	10.58	20.81	23.79
Other (n=30)	Stretching	2.25	5.13	0.00	0.00	0.00	1.18	15.30	19.17	19.85
Other (n=30)	Walking	20.69	9.61	4.00	14.74	17.97	26.02	39.53	40.44	40.63
p value	Push ups	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Rest Standing	0.756	ND	ND	ND	ND	ND	ND	ND	ND
p value	Running	0.115	ND	ND	ND	ND	ND	ND	ND	ND



Position	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Sit on chair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on ground	0.766	ND	ND	ND	ND	ND	ND	ND	ND
p value	Stretching	0.184	ND	ND	ND	ND	ND	ND	ND	ND
p value	Walking	0.036*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to the activity not observed; and ND: not determined

Table S3-285. Mouthing Frequency (Event/Hour) by Players' Position, Any Time but during the Game/Practice

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Body	0.38	1.19	0.00	0.00	0.00	0.00	2.07	3.42	3.76
Goalie (n=10)	Clothes	6.50	6.11	0.00	0.00	8.09	10.70	14.34	16.42	16.94
Goalie (n=10)	Hands	6.82	8.95	0.00	0.00	4.93	9.25	21.00	27.54	29.17
Goalie (n=10)	Water bottle	28.93	23.86	0.00	10.70	30.06	41.04	63.13	74.07	76.81
Goalie (n=10)	Dietary Objects	29.79	22.84	0.00	10.70	30.06	41.04	63.13	74.07	76.81
Goalie (n=10)	Non-dietary Objects	7.69	6.17	0.00	3.92	8.09	10.70	16.41	19.84	20.70
Goalie (n=10)	All Objects	37.47	20.99	8.76	22.41	37.55	48.07	66.80	78.22	81.08
Other (n=30)	Body	0.33	1.54	0.00	0.00	0.00	0.00	0.86	6.38	8.35
Other (n=30)	Clothes	11.80	23.85	0.00	0.00	5.03	11.34	53.51	102.13	113.14
Other (n=30)	Hands	10.93	11.56	0.00	0.46	8.32	16.79	31.22	42.41	46.19
Other (n=30)	Water bottle	29.39	47.43	0.00	5.36	19.82	28.38	101.96	208.70	239.85
Other (n=30)	Dietary Objects	29.82	47.23	0.00	6.37	19.92	28.38	101.96	208.70	239.85
Other (n=30)	Non-dietary Objects	13.16	23.75	0.00	0.00	5.25	13.87	53.51	102.13	113.14
Other (n=30)	All Objects	42.99	50.52	0.00	14.99	29.04	44.94	127.53	208.70	239.85
p value*	Body	0.432	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.923	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.303	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.324	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.267	ND	ND	ND	ND	ND	ND	ND	ND



Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Non-dietary Objects	0.975	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.482	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-286. Mouthing Duration (Min/Hour) by Players' Position, Any Time but during the Game/Practice

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Body	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.04	0.04
Goalie (n=10)	Clothes	0.20	0.20	0.00	0.00	0.24	0.29	0.47	0.57	0.60
Goalie (n=10)	Hands	0.32	0.65	0.00	0.00	0.12	0.27	1.31	1.96	2.12
Goalie (n=10)	Water bottle	1.74	1.57	0.00	0.89	1.40	2.02	4.45	4.60	4.64
Goalie (n=10)	Dietary Objects	1.77	1.54	0.00	0.89	1.40	2.02	4.45	4.60	4.64
Goalie (n=10)	Non-dietary Objects	0.24	0.17	0.00	0.16	0.25	0.30	0.47	0.57	0.60
Goalie (n=10)	All Objects	2.00	1.49	0.30	0.97	1.63	2.40	4.51	4.61	4.64
Other (n=30)	Body	0.01	0.03	0.00	0.00	0.00	0.00	0.02	0.12	0.15
Other (n=30)	Clothes	0.27	0.48	0.00	0.00	0.09	0.31	1.40	1.91	1.99
Other (n=30)	Hands	0.42	0.80	0.00	0.01	0.20	0.31	2.16	3.20	3.34
Other (n=30)	Water bottle	2.04	3.08	0.00	0.38	0.94	2.10	7.31	12.75	14.78
Other (n=30)	Dietary Objects	2.07	3.06	0.00	0.38	1.06	2.10	7.31	12.75	14.78
Other (n=30)	Non-dietary Objects	0.33	0.51	0.00	0.00	0.10	0.35	1.40	1.91	1.99
Other (n=30)	All Objects	2.39	3.06	0.00	0.52	1.35	2.78	7.46	12.75	14.78
p value*	Body	0.432	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.822	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.466	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.638	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.595	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.528	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.673	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum



ND: not determined

Table S3-287. Mouthing Median Duration (Second) by Players' Position, Any Time but during the Game/Practice

Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie	Body	1	0.66	ND	ND	ND	ND	ND	ND	ND	ND
Goalie	Clothes	6	2.02	1.38	0.84	1.47	1.61	1.82	4.02	4.60	4.74
Goalie	Hands	6	1.85	1.14	0.59	1.12	1.79	2.11	3.41	3.74	3.83
Goalie	Water bottle	8	3.61	1.79	1.35	2.28	3.30	5.10	5.90	5.98	6.00
Goalie	Dietary Objects	9	3.41	1.77	1.35	1.92	2.60	4.90	5.89	5.97	6.00
Goalie	Non-dietary Objects	8	2.14	1.26	0.72	1.50	1.78	2.24	4.21	4.64	4.74
Goalie	All Objects	10	3.10	1.83	0.72	1.76	2.54	4.45	5.87	5.97	6.00
Other	Body	2	1.18	0.06	1.14	1.16	1.18	1.20	1.22	1.22	1.22
Other	Clothes	19	1.40	0.74	0.66	0.85	1.19	1.82	2.56	3.26	3.44
Other	Hands	22	1.54	1.18	0.36	0.89	1.15	1.57	4.46	4.66	4.70
Other	Water bottle	25	3.80	1.46	1.46	2.64	3.85	4.40	6.64	6.88	6.90
Other	Dietary Objects	27	3.73	1.47	1.46	2.63	3.77	4.36	6.59	6.88	6.90
Other	Non-dietary Objects	21	1.70	2.27	0.18	0.84	1.19	1.62	2.39	9.51	11.29
Other	All Objects	28	2.95	1.59	0.88	1.73	2.62	4.04	5.83	6.61	6.90
p value*	Body	ND	0.667	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.246	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.395	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.636	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.424	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.067	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.858	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined



S3.5.3. Data Summarized According to Location and Players' Position

S3.5.3.1. Activity Patterns by Players' Position, On Field

Table S3-288. Frequency (Event/Hour) of Actions by Players' Position, On Field

Position	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Diving	1.98	3.59	0.00	0.00	0.00	2.92	8.01	10.50	11.12
Goalie (n=10)	Heading	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Jumping	14.21	25.20	0.00	2.22	7.88	11.56	52.73	78.26	84.64
Goalie (n=10)	Slip or fall	5.77	7.32	0.00	0.28	2.01	11.27	17.42	19.11	19.53
Goalie (n=10)	Tackling or sliding	0.77	1.25	0.00	0.00	0.00	0.86	3.07	3.31	3.37
Other (n=30)	Diving	0.16	0.45	0.00	0.00	0.00	0.00	1.14	1.74	1.87
Other (n=30)	Heading	0.49	0.75	0.00	0.00	0.00	0.74	2.25	2.31	2.34
Other (n=30)	Jumping	8.32	17.27	0.00	0.67	3.38	6.72	44.08	71.09	72.15
Other (n=30)	Slip or fall	1.54	2.16	0.00	0.00	0.68	1.58	6.39	7.00	7.12
Other (n=30)	Tackling or sliding	0.38	0.76	0.00	0.00	0.00	0.55	2.00	2.82	3.05
p value*	Diving	0.148	ND	ND	ND	ND	ND	ND	ND	ND
p value	Heading	0.707	ND	ND	ND	ND	ND	ND	ND	ND
p value	Jumping	0.150	ND	ND	ND	ND	ND	ND	ND	ND
p value	Slip or fall	0.488	ND	ND	ND	ND	ND	ND	ND	ND
p value	Tackling or sliding	ND	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to the activity not observed; and ND: not determined

Table S3-289. Frequency of Hand to Object Contact (Event/Hour) by Players' Position, On Field

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Artificial Turf	7.52	7.39	0.00	1.46	5.39	11.57	19.54	20.00	20.12
Goalie (n=10)	Body	7.72	6.00	1.75	2.73	5.72	13.41	16.11	16.15	16.16
Goalie (n=10)	Clothes	63.85	29.42	22.14	41.85	62.25	79.77	106.28	113.70	115.55
Goalie (n=10)	Field Structures	6.58	4.44	1.67	2.60	6.42	10.04	12.95	13.46	13.59
Goalie (n=10)	Footwear	4.29	4.71	0.84	1.72	3.29	4.52	11.60	15.91	16.99
Goalie (n=10)	Head/face/hair	26.66	33.32	6.57	9.35	11.67	22.06	86.58	107.19	112.34



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Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Shin guards	1.13	2.12	0.00	0.00	0.00	0.89	5.12	5.58	5.69
Goalie (n=10)	Soccer ball	32.68	30.40	5.36	8.79	19.78	52.53	81.98	87.62	89.03
Goalie (n=10)	Water bottle	3.14	3.37	0.00	0.00	2.82	5.01	8.10	9.67	10.06
Goalie (n=10)	Dietary Objects	3.25	3.54	0.00	0.07	2.82	5.01	8.56	10.43	10.90
Goalie (n=10)	Non-dietary Objects	167.63	63.13	87.21	120.68	165.59	193.51	266.71	284.45	288.88
Goalie (n=10)	All Objects	170.89	63.38	92.90	122.23	169.23	202.04	268.95	284.89	288.88
Other (n=30)	Artificial Turf	3.20	3.65	0.00	1.14	2.20	3.40	11.64	14.52	15.03
Other (n=30)	Body	13.82	12.88	1.53	5.70	9.51	16.81	37.26	56.13	62.00
Other (n=30)	Clothes	72.76	37.58	13.63	48.63	66.39	90.90	146.66	172.93	180.12
Other (n=30)	Field Structures	6.06	5.57	0.00	1.96	4.60	6.67	17.83	21.94	22.79
Other (n=30)	Footwear	6.07	5.74	0.60	2.44	4.94	8.42	13.14	25.53	30.29
Other (n=30)	Head/face/hair	29.38	21.84	2.60	13.74	24.72	35.31	75.72	88.57	91.84
Other (n=30)	Shin guards	1.42	3.87	0.00	0.00	0.00	0.70	5.70	16.45	20.07
Other (n=30)	Soccer ball	17.74	28.08	0.00	2.44	7.47	21.19	74.90	115.29	119.72
Other (n=30)	Water bottle	2.08	2.44	0.00	0.00	1.21	3.37	6.45	8.18	8.70
Other (n=30)	Dietary Objects	2.09	2.45	0.00	0.00	1.21	3.50	6.45	8.18	8.70
Other (n=30)	Non-dietary Objects	159.06	67.35	66.35	117.75	147.51	173.21	298.57	324.03	334.08
Other (n=30)	All Objects	161.15	68.18	67.25	120.39	147.77	180.59	299.78	328.56	339.56
p value	Artificial Turf	0.378	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.083	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.634	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.000*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.612	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.788	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.488	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.548	ND	ND	ND	ND	ND	ND	ND	ND



Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Dietary Objects	0.131	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.450	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.528	ND	ND	ND	ND	ND	ND	ND	ND

* <0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-290. Duration of Hand to Object Contact (Min/Hour) by Players' Position, On Field

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Artificial Turf	0.37	0.72	0.00	0.04	0.15	0.28	1.47	2.21	2.40
Goalie (n=10)	Body	0.70	1.15	0.03	0.09	0.18	0.51	2.83	3.38	3.52
Goalie (n=10)	Clothes	12.55	10.34	1.25	4.74	9.85	15.74	30.27	31.89	32.30
Goalie (n=10)	Field Structures	0.53	0.46	0.03	0.17	0.42	0.84	1.25	1.25	1.25
Goalie (n=10)	Footwear	0.23	0.22	0.03	0.09	0.20	0.26	0.57	0.75	0.79
Goalie (n=10)	Head/face/hair	1.46	2.70	0.22	0.33	0.49	0.90	5.77	8.36	9.01
Goalie (n=10)	Shin guards	0.06	0.11	0.00	0.00	0.00	0.06	0.26	0.33	0.35
Goalie (n=10)	Soccer ball	1.31	1.04	0.37	0.59	1.02	1.50	3.08	3.62	3.76
Goalie (n=10)	Water bottle	0.57	0.65	0.00	0.00	0.47	0.87	1.58	1.93	2.02
Goalie (n=10)	Dietary Objects	0.57	0.66	0.00	0.00	0.47	0.87	1.61	1.97	2.06
Goalie (n=10)	Non-dietary Objects	18.32	9.99	5.92	11.85	17.79	20.26	34.77	35.19	35.30
Goalie (n=10)	All Objects	18.89	10.11	6.42	12.08	17.79	22.00	35.35	36.15	36.35
Other (n=30)	Artificial Turf	0.19	0.25	0.00	0.02	0.07	0.31	0.66	0.92	0.98
Other (n=30)	Body	0.91	1.34	0.04	0.13	0.36	1.11	3.96	4.96	5.31
Other (n=30)	Clothes	11.80	12.17	1.83	4.92	8.20	12.34	38.19	50.93	55.09
Other (n=30)	Field Structures	0.69	0.85	0.00	0.12	0.28	1.06	2.28	2.92	3.13
Other (n=30)	Footwear	0.44	0.41	0.01	0.19	0.32	0.53	1.34	1.67	1.77
Other (n=30)	Head/face/hair	0.83	0.63	0.03	0.34	0.72	1.14	2.23	2.29	2.30
Other (n=30)	Shin guards	0.14	0.43	0.00	0.00	0.00	0.04	0.79	1.78	2.15
Other (n=30)	Soccer ball	0.70	0.98	0.00	0.11	0.32	0.77	2.79	3.76	3.84



Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Other (n=30)	Water bottle	0.34	0.38	0.00	0.00	0.23	0.62	1.00	1.12	1.17
Other (n=30)	Dietary Objects	0.35	0.38	0.00	0.00	0.23	0.62	1.00	1.12	1.17
Other (n=30)	Non-dietary Objects	16.13	12.60	4.53	9.25	12.48	18.90	44.60	55.28	58.73
Other (n=30)	All Objects	16.48	12.58	4.53	9.96	12.94	18.97	44.93	55.45	58.73
p value	Artificial Turf	0.369	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.325	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.685	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.001*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.753	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.315	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.733	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.488	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.435	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.708	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.803	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-291. Median Duration of Hand to Object Contact (Second) by Players' Position, On Field

Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie	Artificial Turf	9	1.40	1.19	0.46	0.81	0.88	1.20	3.48	4.07	4.21
Goalie	Body	10	1.14	0.57	0.64	0.77	1.00	1.14	2.15	2.38	2.44
Goalie	Clothes	10	5.15	5.53	1.74	2.18	3.27	4.36	14.92	18.65	19.59
Goalie	Field Structures	10	4.44	5.68	0.55	1.80	2.86	3.52	13.81	18.73	19.96
Goalie	Footwear	10	3.10	2.61	0.89	1.78	2.13	2.96	7.74	9.27	9.65
Goalie	Head/face/hair	10	1.63	0.42	1.13	1.26	1.59	1.93	2.25	2.37	2.40
Goalie	Shin guards	3	2.98	1.37	1.48	2.40	3.31	3.73	4.07	4.14	4.16



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Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie	Soccer ball	10	2.20	1.02	0.77	1.78	2.02	2.64	3.81	3.83	3.83
Goalie	Water bottle	7	7.30	3.77	2.87	4.15	7.71	9.55	11.79	12.27	12.39
Goalie	Dietary Objects	7	6.49	4.06	1.58	3.01	7.14	9.13	11.67	12.25	12.39
Goalie	Non-dietary Objects	10	2.60	1.65	1.24	1.62	2.24	2.83	5.19	6.59	6.94
Goalie	All Objects	10	2.61	1.64	1.24	1.66	2.24	2.84	5.20	6.61	6.96
Other	Artificial Turf	26	1.55	1.22	0.18	0.85	1.26	1.60	4.45	5.05	5.14
Other	Body	30	1.39	1.05	0.45	0.87	1.16	1.64	2.30	5.24	6.32
Other	Clothes	30	4.15	2.70	1.59	2.48	3.21	4.79	8.56	13.02	14.65
Other	Field Structures	29	3.33	2.94	0.41	1.52	2.33	4.51	7.17	12.81	14.78
Other	Footwear	30	3.43	2.94	0.82	1.55	2.53	4.56	7.83	13.02	14.93
Other	Head/face/hair	30	1.24	0.44	0.60	1.03	1.16	1.27	1.79	2.75	3.09
Other	Shin guards	12	4.99	5.56	0.90	1.56	2.34	5.99	16.08	16.53	16.65
Other	Soccer ball	30	1.88	1.80	0.64	1.19	1.42	1.74	3.58	8.76	10.56
Other	Water bottle	18	8.43	5.55	2.09	5.18	6.84	10.06	18.33	22.43	23.45
Other	Dietary Objects	18	8.40	5.56	2.09	5.18	6.57	10.06	18.33	22.43	23.45
Other	Non-dietary Objects	30	2.25	1.13	1.18	1.60	1.79	2.73	3.86	5.90	6.67
Other	All Objects	30	2.28	1.13	1.18	1.62	1.82	2.74	3.93	5.92	6.67
p value	Artificial Turf	ND	0.615	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.331	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.818	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.776	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.532	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.590	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	0.945	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.907	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.002*	ND	ND	ND	ND	ND	ND	ND	ND



Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Non-dietary Objects	ND	0.812	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.548	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-292. Hourly Duration (Min/Hour) of Player Intensity by Players' Position, On Field

Position	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	High	0.89	0.63	0.10	0.43	0.76	1.15	1.89	2.16	2.23
Goalie (n=10)	Moderate	8.41	3.95	4.18	5.21	7.38	11.71	14.25	14.70	14.81
Goalie (n=10)	Light	26.28	5.72	13.63	25.42	28.11	29.15	31.78	33.35	33.74
Goalie (n=10)	Resting	24.42	7.24	15.33	18.68	22.80	29.17	35.23	37.75	38.38
Other (n=30)	High	2.54	1.12	0.97	1.54	2.49	3.15	4.36	5.27	5.52
Other (n=30)	Moderate	15.68	4.39	7.07	11.91	15.65	18.92	22.41	22.77	22.83
Other (n=30)	Light	25.98	4.99	15.18	22.47	26.65	29.02	33.11	34.03	34.29
Other (n=30)	Resting	15.81	4.84	8.83	12.71	15.38	18.70	24.25	27.27	28.35
p value	High	0.000*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Moderate	0.000*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Light	0.634	ND	ND	ND	ND	ND	ND	ND	ND
p value	Resting	0.001*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-293. Duration (Min/Hour) of Macro-Activities by Age, On Field

Players' Position	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Push ups	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
Goalie (n=10)	Rest Standing	21.93	6.95	13.84	15.35	21.04	28.51	31.24	31.58	31.67
Goalie (n=10)	Running	8.88	4.68	2.50	5.97	7.85	12.72	15.68	16.71	16.97
Goalie (n=10)	Sit on chair	0.82	2.60	0.00	0.00	0.00	0.00	4.52	7.47	8.21
Goalie (n=10)	Sit on ground	1.03	1.82	0.00	0.03	0.37	1.07	4.02	5.56	5.95
Goalie (n=10)	Stretching	0.25	0.36	0.00	0.00	0.07	0.36	0.89	0.92	0.93



Players' Position	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Walking	26.52	6.35	13.65	22.20	29.31	30.20	32.77	33.49	33.67
Other (n=30)	Push ups	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.07	0.10
Other (n=30)	Rest Standing	14.18	4.60	5.00	11.40	14.62	16.88	21.11	23.05	23.45
Other (n=30)	Running	17.35	5.52	7.60	12.63	17.62	21.64	25.98	26.81	27.00
Other (n=30)	Sit on chair	0.40	1.89	0.00	0.00	0.00	0.00	1.00	7.81	10.26
Other (n=30)	Sit on ground	0.53	0.53	0.00	0.02	0.50	0.82	1.47	1.98	2.11
Other (n=30)	Stretching	0.83	1.54	0.00	0.07	0.30	0.63	4.13	6.33	6.89
Other (n=30)	Walking	26.44	6.05	13.73	22.01	26.60	30.92	35.11	37.00	37.28
p value	Push ups	0.316	ND	ND	ND	ND	ND	ND	ND	ND
p value	Rest Standing	0.900	ND	ND	ND	ND	ND	ND	ND	ND
p value	Running	0.005*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on chair	0.457	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on ground	0.044*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Stretching	0.000*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Walking	0.130	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-294. Mouthing Frequency (Event/Hour) by Players' Position, On Field

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Body	0.30	0.73	0.00	0.00	0.00	0.00	1.59	2.12	2.25
Goalie (n=10)	Clothes	4.93	5.66	0.54	1.71	3.22	4.42	15.04	18.25	19.05
Goalie (n=10)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Hands	6.50	4.40	0.84	3.61	5.17	9.98	13.04	14.03	14.28
Goalie (n=10)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA



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Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Water bottle	1.06	1.83	0.00	0.00	0.00	0.82	4.50	4.64	4.68
Goalie (n=10)	Dietary Objects	1.31	1.97	0.00	0.00	0.00	2.72	4.50	4.64	4.68
Goalie (n=10)	Non-dietary Objects	6.29	6.02	0.85	3.18	3.77	7.48	16.60	20.32	21.25
Goalie (n=10)	All Objects	7.60	6.41	2.68	3.58	4.45	10.21	18.71	20.74	21.25
Other (n=30)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=30)	Body	0.70	2.34	0.00	0.00	0.00	0.00	3.20	9.94	12.27
Other (n=30)	Clothes	9.52	18.09	0.00	1.12	4.15	11.69	26.52	76.88	96.81
Other (n=30)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=30)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=30)	Hands	8.62	6.23	1.60	4.65	7.46	10.97	22.45	26.09	26.33
Other (n=30)	Head/face/hair	0.02	0.09	0.00	0.00	0.00	0.00	0.00	0.33	0.47
Other (n=30)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=30)	Soccer ball	0.02	0.12	0.00	0.00	0.00	0.00	0.00	0.45	0.63
Other (n=30)	Water bottle	1.57	1.93	0.00	0.00	0.68	2.68	5.47	5.68	5.70
Other (n=30)	Dietary Objects	1.75	1.95	0.00	0.00	1.32	2.68	5.67	6.08	6.23
Other (n=30)	Non-dietary Objects	11.53	18.64	0.00	1.41	6.57	13.17	36.34	81.91	96.81
Other (n=30)	All Objects	13.28	18.75	0.00	2.25	10.28	14.92	36.34	83.04	98.41
p value*	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.881	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.839	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.331	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.433	ND	ND	ND	ND	ND	ND	ND	ND



Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Dietary Objects	0.603	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.441	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.673	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-295. Mouthing Duration (Min/Hour) by Players' Position, On Field

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Body	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.02	0.02
Goalie (n=10)	Clothes	0.21	0.27	0.02	0.07	0.08	0.16	0.72	0.74	0.74
Goalie (n=10)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Hands	0.18	0.12	0.01	0.10	0.14	0.29	0.34	0.34	0.34
Goalie (n=10)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=10)	Water bottle	0.07	0.11	0.00	0.00	0.00	0.07	0.28	0.29	0.29
Goalie (n=10)	Dietary Objects	0.08	0.12	0.00	0.00	0.00	0.12	0.28	0.29	0.29
Goalie (n=10)	Non-dietary Objects	0.24	0.27	0.04	0.08	0.14	0.16	0.74	0.76	0.77
Goalie (n=10)	All Objects	0.31	0.33	0.04	0.08	0.19	0.38	0.90	0.99	1.01
Other (n=30)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=30)	Body	0.02	0.06	0.00	0.00	0.00	0.00	0.09	0.25	0.31
Other (n=30)	Clothes	0.20	0.31	0.00	0.02	0.07	0.25	0.61	1.26	1.52
Other (n=30)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=30)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=30)	Hands	0.29	0.32	0.02	0.08	0.16	0.35	0.89	1.13	1.21
Other (n=30)	Head/face/hair	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Other (n=30)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA



Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Other (n=30)	Soccer ball	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other (n=30)	Water bottle	0.10	0.13	0.00	0.00	0.03	0.17	0.39	0.41	0.41
Other (n=30)	Dietary Objects	0.11	0.14	0.00	0.00	0.06	0.21	0.39	0.41	0.41
Other (n=30)	Non-dietary Objects	0.25	0.33	0.00	0.03	0.14	0.36	0.76	1.33	1.52
Other (n=30)	All Objects	0.36	0.37	0.00	0.06	0.22	0.58	0.93	1.43	1.62
p value*	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.389	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.755	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.463	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.359	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	1.000	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-296. Mouthing Median Duration (Second) by Players' Position, On Field

Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie	Artificial Turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Body	2	1.09	0.72	0.58	0.83	1.09	1.34	1.55	1.59	1.60
Goalie	Clothes	10	2.56	2.85	1.19	1.38	1.71	1.98	6.89	9.86	10.61
Goalie	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Hands	10	1.22	0.40	0.81	0.91	1.11	1.42	1.86	1.98	2.01



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Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Water bottle	4	4.05	0.91	3.26	3.51	3.80	4.33	5.13	5.29	5.33
Goalie	Dietary Objects	4	3.64	1.40	1.97	2.94	3.63	4.33	5.13	5.29	5.33
Goalie	Non-dietary Objects	10	2.28	2.97	0.58	0.92	1.42	1.97	6.79	9.84	10.61
Goalie	All Objects	10	1.83	1.14	0.58	1.18	1.54	2.34	3.58	4.30	4.48
Other	Artificial Turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	Body	7	1.02	0.37	0.54	0.78	0.98	1.24	1.49	1.57	1.59
Other	Clothes	25	1.17	0.58	0.24	0.77	1.22	1.35	2.37	2.74	2.80
Other	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	Hands	30	1.23	0.67	0.36	0.84	1.00	1.41	2.62	3.02	3.15
Other	Head/face/hair	1	1.50	ND	ND	ND	ND	ND	ND	ND	ND
Other	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	Soccer ball	1	0.13	ND	ND	ND	ND	ND	ND	ND	ND
Other	Water bottle	16	3.41	1.46	0.93	2.44	3.41	4.34	5.62	5.71	5.73
Other	Dietary Objects	18	3.44	1.48	0.93	2.35	3.41	4.44	5.61	5.71	5.73
Other	Non-dietary Objects	27	1.09	0.48	0.24	0.75	1.01	1.30	1.90	2.39	2.53
Other	All Objects	28	1.49	1.01	0.24	0.90	1.23	1.81	3.13	4.72	5.30
p value*	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.889	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.002*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.469	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND



Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.494	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.343	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.967	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.334	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

S3.5.3.2. Activity Patterns by Players' Position, Off Field

Table S3-297. Frequency (Event/Hour) of Actions by Players' Position, Off Field

Position	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=9)	Jumping	8.45	14.44	0.00	0.00	0.00	12.09	34.30	38.50	39.55
Goalie (n=9)	Slip or fall	0.52	1.65	0.00	0.00	0.00	0.00	2.87	4.75	5.22
Goalie (n=9)	Tackling or sliding	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=30)	Jumping	2.00	5.75	0.00	0.00	0.00	0.00	16.83	20.77	21.91
Other (n=30)	Slip or fall	0.27	1.03	0.00	0.00	0.00	0.00	1.73	4.31	4.87
Other (n=30)	Tackling or sliding	0.17	0.94	0.00	0.00	0.00	0.00	0.00	3.64	5.06
p value*	Jumping	0.728	ND	ND	ND	ND	ND	ND	ND	ND
p value	Slip or fall	0.798	ND	ND	ND	ND	ND	ND	ND	ND
p value	Tackling or sliding	0.546	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to the activity not observed; and ND: not determined

Table S3-298. Frequency of Hand to Object Contact (Event/Hour) by Players' Position, Off Field

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Artificial Turf	7.88	19.32	0.00	0.00	0.00	4.40	39.01	57.26	61.82
Goalie (n=10)	Body	11.77	11.35	0.00	1.15	12.37	16.56	28.87	34.32	35.68
Goalie (n=10)	Clothes	74.90	39.31	6.90	47.84	77.75	91.28	132.34	138.28	139.76
Goalie (n=10)	Field Structures	8.46	10.63	0.00	0.19	5.81	11.06	26.72	31.65	32.88



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Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Footwear	2.85	5.12	0.00	0.00	0.00	4.17	11.79	14.29	14.92
Goalie (n=10)	Head/face/hair	24.65	36.17	0.00	6.94	11.37	21.79	87.85	113.07	119.37
Goalie (n=10)	Shin guards	0.37	1.17	0.00	0.00	0.00	0.00	2.04	3.38	3.71
Goalie (n=10)	Soccer ball	20.01	29.70	0.00	0.38	5.45	33.43	70.48	83.15	86.32
Goalie (n=10)	Water bottle	37.90	51.87	0.00	3.52	15.84	48.78	128.90	154.22	160.55
Goalie (n=10)	Dietary Objects	37.90	51.87	0.00	3.52	15.84	48.78	128.90	154.22	160.55
Goalie (n=10)	Non-dietary Objects	172.79	104.74	20.71	119.01	140.98	220.67	337.41	340.33	341.06
Goalie (n=10)	All Objects	210.69	122.82	20.71	142.34	190.38	304.41	375.97	390.67	394.35
Other (n=29)	Artificial Turf	3.76	9.85	0.00	0.00	0.00	0.88	27.80	37.55	39.50
Other (n=29)	Body	21.55	20.87	0.00	0.00	14.09	40.32	58.59	62.18	62.82
Other (n=29)	Clothes	103.64	68.12	0.00	61.57	94.63	126.42	241.30	265.50	268.07
Other (n=29)	Field Structures	20.47	25.74	0.00	4.62	13.96	23.60	58.42	108.98	126.72
Other (n=29)	Footwear	16.26	24.27	0.00	0.00	4.62	27.71	52.43	92.10	105.33
Other (n=29)	Head/face/hair	26.03	24.58	0.00	6.14	25.34	37.45	76.19	90.09	93.40
Other (n=29)	Shin guards	0.79	2.15	0.00	0.00	0.00	0.00	6.33	7.69	7.98
Other (n=29)	Soccer ball	38.60	67.56	0.00	6.93	14.94	34.20	127.66	292.08	343.30
Other (n=29)	Water bottle	48.17	49.80	0.00	12.20	36.94	63.15	158.68	186.77	195.94
Other (n=29)	Dietary Objects	48.42	49.70	0.00	13.17	37.45	63.15	158.68	186.77	195.94
Other (n=29)	Non-dietary Objects	245.06	94.25	0.00	179.12	262.16	307.78	376.90	391.02	395.60
Other (n=29)	All Objects	293.48	111.25	0.00	236.32	280.13	336.82	446.18	541.01	575.17
p value	Artificial Turf	0.475	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.327	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.393	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.000*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.321	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.059	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.597	ND	ND	ND	ND	ND	ND	ND	ND



Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Soccer ball	0.411	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.534	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.562	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.109	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.010*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-299. Duration of Hand to Object Contact (Min/Hour) by Players' Position, Off Field

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	Artificial Turf	0.79	1.80	0.00	0.00	0.00	0.19	4.01	5.26	5.57
Goalie (n=10)	Body	1.78	1.79	0.00	0.06	1.94	2.56	4.42	5.28	5.49
Goalie (n=10)	Clothes	17.93	14.91	0.10	5.68	18.79	22.30	41.97	45.31	46.15
Goalie (n=10)	Field Structures	0.62	0.88	0.00	0.01	0.29	0.76	2.18	2.61	2.72
Goalie (n=10)	Footwear	0.33	0.55	0.00	0.00	0.00	0.68	1.22	1.40	1.45
Goalie (n=10)	Head/face/hair	1.23	2.11	0.00	0.13	0.34	1.13	4.81	6.48	6.90
Goalie (n=10)	Shin guards	0.11	0.34	0.00	0.00	0.00	0.00	0.59	0.98	1.08
Goalie (n=10)	Soccer ball	1.50	2.59	0.00	0.01	0.21	1.14	6.37	6.47	6.49
Goalie (n=10)	Water bottle	5.92	8.57	0.00	0.30	1.32	8.45	21.24	22.55	22.88
Goalie (n=10)	Dietary Objects	5.92	8.57	0.00	0.30	1.32	8.45	21.24	22.55	22.88
Goalie (n=10)	Non-dietary Objects	27.03	15.98	2.69	17.30	29.49	32.58	49.38	51.88	52.51
Goalie (n=10)	All Objects	32.95	17.17	2.69	30.31	35.60	44.58	51.90	52.52	52.67
Other (n=29)	Artificial Turf	0.16	0.37	0.00	0.00	0.00	0.02	1.07	1.08	1.09
Other (n=29)	Body	2.99	4.21	0.00	0.00	0.90	5.53	11.04	15.59	16.97
Other (n=29)	Clothes	13.93	10.04	0.00	4.81	11.87	21.39	33.22	33.88	33.91
Other (n=29)	Field Structures	2.12	3.44	0.00	0.22	1.16	2.62	6.39	14.47	17.46
Other (n=29)	Footwear	3.05	6.14	0.00	0.00	0.13	2.76	16.50	24.01	24.85
Other (n=29)	Head/face/hair	1.06	1.45	0.00	0.18	0.70	1.48	2.31	6.17	7.61



Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Other (n=29)	Shin guards	0.08	0.26	0.00	0.00	0.00	0.00	0.50	1.06	1.24
Other (n=29)	Soccer ball	1.51	1.79	0.00	0.19	0.75	2.26	4.71	7.22	7.93
Other (n=29)	Water bottle	8.20	8.30	0.00	0.80	6.60	15.49	21.08	27.49	29.78
Other (n=29)	Dietary Objects	8.22	8.29	0.00	0.80	6.60	15.49	21.08	27.49	29.78
Other (n=29)	Non-dietary Objects	26.21	12.36	0.00	18.06	26.81	35.69	42.39	48.63	51.02
Other (n=29)	All Objects	34.43	13.38	0.00	24.51	35.83	42.05	55.91	59.30	59.68
p value	Artificial Turf	0.475	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.596	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.411	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.000*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.186	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.937	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.597	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.411	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.534	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.687	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.113	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.125	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-300. Median Duration of Hand to Object Contact (Second) by Players' Position, Off Field

Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie	Artificial Turf	3	1.59	0.49	1.15	1.33	1.51	1.81	2.06	2.11	2.12
Goalie	Body	7	7.43	10.99	0.99	2.20	3.77	5.39	24.06	30.45	32.05
Goalie	Clothes	10	6.03	3.78	0.82	3.80	5.38	7.35	12.13	12.21	12.23
Goalie	Field Structures	7	2.78	1.02	1.57	2.20	2.62	3.15	4.25	4.49	4.55
Goalie	Footwear	3	2.67	0.53	2.14	2.40	2.66	2.93	3.15	3.19	3.20



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Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie	Head/face/hair	9	2.11	1.61	0.97	1.25	1.68	2.06	4.81	5.86	6.12
Goalie	Shin guards	1	16.70	ND	ND	ND	ND	ND	ND	ND	ND
Goalie	Soccer ball	7	2.23	1.21	0.85	1.40	1.70	3.22	3.81	3.81	3.81
Goalie	Water bottle	8	5.21	1.95	2.77	3.27	5.80	6.44	7.52	7.92	8.02
Goalie	Dietary Objects	8	5.21	1.95	2.77	3.27	5.80	6.44	7.52	7.92	8.02
Goalie	Non-dietary Objects	10	3.62	1.39	0.97	2.76	3.67	4.58	5.30	5.40	5.42
Goalie	All Objects	10	3.78	1.49	0.97	3.12	3.67	4.94	5.67	5.78	5.81
Other	Artificial Turf	7	3.55	3.74	0.61	1.37	2.04	3.73	9.86	11.16	11.49
Other	Body	21	3.62	2.87	0.78	1.95	2.81	4.92	9.46	11.64	12.19
Other	Clothes	27	4.48	1.93	1.74	3.10	4.50	5.29	7.55	9.45	9.99
Other	Field Structures	23	4.30	2.80	1.35	2.32	3.47	5.96	7.44	12.08	13.38
Other	Footwear	17	5.82	6.21	0.97	2.64	3.39	7.80	12.97	24.51	27.40
Other	Head/face/hair	24	1.81	1.01	0.65	1.10	1.62	2.17	3.69	4.65	4.92
Other	Shin guards	4	4.85	2.82	2.71	3.02	3.90	5.73	8.25	8.75	8.88
Other	Soccer ball	24	2.28	1.42	0.64	1.51	1.94	2.60	5.31	6.32	6.56
Other	Water bottle	24	7.11	3.57	0.22	4.70	6.31	9.16	13.65	14.10	14.20
Other	Dietary Objects	24	7.04	3.57	0.22	4.70	6.16	9.16	13.64	14.10	14.20
Other	Non-dietary Objects	28	3.20	1.25	1.40	2.25	2.90	3.83	5.49	6.31	6.54
Other	All Objects	28	3.58	1.32	1.50	2.63	3.41	4.25	5.46	7.15	7.73
p value*	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.302	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.293	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.630	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.060	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.257	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	0.254	ND	ND	ND	ND	ND	ND	ND	ND



Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Water bottle	ND	0.078	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.796	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.311	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.301	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum
ND: not determined

Table S3-301. Hourly Duration (Min/Hour) of Player Intensity by Players' Position, Off Field

Position	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=10)	High	1.63	3.14	0.00	0.04	0.34	1.71	6.65	9.54	10.26
Goalie (n=10)	Moderate	2.51	1.92	0.46	0.96	2.18	3.05	5.74	5.96	6.01
Goalie (n=10)	Light	9.44	6.72	2.73	5.13	6.68	11.07	21.32	23.30	23.80
Goalie (n=10)	Resting	46.41	10.13	25.45	46.32	51.01	52.09	54.63	54.66	54.67
Other (n=30)	High	1.49	2.10	0.00	0.00	0.58	2.53	4.22	8.50	9.93
Other (n=30)	Moderate	6.63	8.83	0.00	0.94	2.61	8.94	26.76	31.21	31.60
Other (n=30)	Light	14.80	8.31	3.69	8.09	14.83	18.18	27.69	34.17	36.41
Other (n=30)	Resting	37.08	13.18	0.00	29.18	39.02	47.42	55.30	55.69	55.81
p value	High	0.671	ND	ND	ND	ND	ND	ND	ND	ND
p value	Moderate	0.437	ND	ND	ND	ND	ND	ND	ND	ND
p value	Light	0.077	ND	ND	ND	ND	ND	ND	ND	ND
p value	Resting	0.043*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)
ND: not determined

Table S3-302. Duration (Min/Hour) of Macro-Activities by Age, Off Field

Position	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=9)	Rest Standing	29.58	13.01	15.90	21.38	25.05	35.45	51.52	54.04	54.67
Goalie (n=9)	Running	2.45	1.99	0.48	0.91	1.93	2.82	5.91	6.04	6.07
Goalie (n=9)	Sit on chair	11.03	13.58	0.00	0.00	5.43	17.87	33.23	35.33	35.86
Goalie (n=9)	Sit on ground	5.85	8.00	0.00	0.00	1.37	8.35	19.77	20.59	20.80



Position	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=9)	Stretching	1.01	2.64	0.00	0.00	0.00	0.16	5.29	7.79	8.42
Goalie (n=9)	Walking	9.82	7.53	2.84	5.20	6.51	11.27	23.23	25.97	26.66
Other (n=30)	Rest Standing	27.01	12.25	0.00	18.97	27.14	33.00	47.20	52.77	54.81
Other (n=30)	Running	6.18	9.05	0.00	0.88	3.05	4.06	28.67	31.51	31.60
Other (n=30)	Sit on chair	5.96	11.35	0.00	0.00	0.00	6.57	28.75	39.58	43.71
Other (n=30)	Sit on ground	3.55	6.63	0.00	0.00	0.00	4.79	13.82	25.51	29.61
Other (n=30)	Stretching	1.01	2.41	0.00	0.00	0.00	0.59	6.20	9.57	10.16
Other (n=30)	Walking	16.23	9.38	3.74	8.61	17.01	24.50	31.99	36.24	36.96
p value*	Rest Standing	0.260	ND	ND	ND	ND	ND	ND	ND	ND
p value	Running	0.580	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on chair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on ground	0.059	ND	ND	ND	ND	ND	ND	ND	ND
p value	Stretching	0.788	ND	ND	ND	ND	ND	ND	ND	ND
p value	Walking	0.421	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to these activities not observed; and ND: not determined

Table S3-303. Mouthing Frequency (Event/Hour) by Players' Position, Off Field

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=9)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=9)	Body	0.31	0.93	0.00	0.00	0.00	0.00	1.68	2.58	2.80
Goalie (n=9)	Clothes	5.02	7.03	0.00	0.00	2.90	5.70	16.95	20.20	21.01
Goalie (n=9)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=9)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=9)	Hands	11.01	10.40	0.00	5.38	10.89	11.60	27.98	31.69	32.62
Goalie (n=9)	Head/face/hair	0.40	1.21	0.00	0.00	0.00	0.00	2.18	3.34	3.63
Goalie (n=9)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=9)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=9)	Water bottle	32.90	38.99	0.00	7.26	8.76	43.49	96.91	96.92	96.92



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Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=9)	Dietary Objects	33.21	38.70	2.33	7.26	8.76	43.49	96.91	96.92	96.92
Goalie (n=9)	Non-dietary Objects	6.65	7.22	0.00	3.63	5.38	5.80	18.63	22.77	23.81
Goalie (n=9)	All Objects	39.86	38.89	6.98	8.76	26.61	54.36	102.48	102.58	102.60
Other (n=29)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=29)	Body	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=29)	Clothes	16.75	32.58	0.00	0.00	6.26	19.86	72.24	137.05	153.78
Other (n=29)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=29)	Footwear	0.05	0.25	0.00	0.00	0.00	0.00	0.00	0.95	1.32
Other (n=29)	Hands	10.52	13.71	0.00	0.00	5.42	16.40	30.48	51.81	59.04
Other (n=29)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=29)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=29)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=29)	Water bottle	41.35	57.85	0.00	2.90	26.22	46.90	156.21	233.96	251.82
Other (n=29)	Dietary Objects	41.35	57.85	0.00	2.90	26.22	46.90	156.21	233.96	251.82
Other (n=29)	Non-dietary Objects	16.86	32.55	0.00	0.00	6.26	19.86	72.24	137.05	153.78
Other (n=29)	All Objects	58.21	73.33	0.00	11.54	28.61	74.49	229.57	273.60	282.07
p value*	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.392	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.620	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.528	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.083	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.890	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	1.000	ND	ND	ND	ND	ND	ND	ND	ND



Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Non-dietary Objects	0.778	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.705	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-304. Mouthing Duration (Min/Hour) by Players' Position, Off Field

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=9)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=9)	Body	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.03	0.03
Goalie (n=9)	Clothes	0.89	2.17	0.00	0.00	0.05	0.34	4.31	6.16	6.62
Goalie (n=9)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=9)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=9)	Hands	0.46	0.74	0.00	0.05	0.20	0.40	1.66	2.23	2.37
Goalie (n=9)	Head/face/hair	0.01	0.02	0.00	0.00	0.00	0.00	0.03	0.05	0.05
Goalie (n=9)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=9)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=9)	Water bottle	1.72	2.08	0.00	0.55	0.85	1.60	5.30	5.32	5.32
Goalie (n=9)	Dietary Objects	1.74	2.07	0.12	0.55	0.85	1.60	5.30	5.32	5.32
Goalie (n=9)	Non-dietary Objects	0.93	2.16	0.00	0.05	0.17	0.34	4.33	6.19	6.65
Goalie (n=9)	All Objects	2.67	2.65	0.31	0.60	1.50	5.50	6.50	6.71	6.76
Other (n=29)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=29)	Body	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=29)	Clothes	0.48	0.76	0.00	0.00	0.13	0.53	2.36	2.46	2.49
Other (n=29)	Field Structures	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.08	0.11
Other (n=29)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=29)	Hands	0.77	2.12	0.00	0.00	0.08	0.66	1.75	8.69	11.37
Other (n=29)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=29)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=29)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA



Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Other (n=29)	Water bottle	3.07	5.36	0.00	0.15	1.51	3.04	12.84	22.22	25.25
Other (n=29)	Dietary Objects	3.07	5.36	0.00	0.15	1.51	3.04	12.84	22.22	25.25
Other (n=29)	Non-dietary Objects	0.50	0.77	0.00	0.00	0.13	0.66	2.36	2.55	2.61
Other (n=29)	All Objects	3.57	5.43	0.00	0.68	1.56	4.36	13.40	22.55	25.71
p value*	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.343	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.775	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.620	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.551	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.083	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.809	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.918	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.725	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.959	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-305. Mouthing Median Duration (Second) by Players' Position, Off Field

Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie	Artificial turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Body	1	0.66	ND	ND	ND	ND	ND	ND	ND	ND
Goalie	Clothes	5	3.05	3.33	1.05	1.40	1.86	1.96	7.56	8.68	8.96
Goalie	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Hands	7	1.59	1.16	0.59	1.02	1.07	1.80	3.44	3.75	3.83
Goalie	Head/face/hair	1	0.79	ND	ND	ND	ND	ND	ND	ND	ND



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Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Water bottle	8	3.40	1.56	1.35	2.33	3.26	4.18	5.61	5.92	6.00
Goalie	Dietary Objects	9	3.30	1.49	1.35	2.40	2.60	3.95	5.56	5.91	6.00
Goalie	Non-dietary Objects	7	2.69	2.80	0.79	1.59	1.86	2.03	6.91	8.55	8.96
Goalie	All Objects	9	2.84	1.41	1.68	1.78	2.33	3.33	5.17	5.83	6.00
Other	Artificial turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	Body	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	Clothes	17	1.68	0.98	0.72	0.83	1.25	2.47	3.36	3.42	3.44
Other	Field Structures	1	5.18	ND	ND	ND	ND	ND	ND	ND	ND
Other	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	Hands	18	2.11	2.15	0.20	0.83	1.31	2.35	6.52	7.75	8.06
Other	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	Water bottle	23	3.68	1.89	0.99	2.75	3.19	4.14	5.84	9.62	10.69
Other	Dietary Objects	23	3.68	1.89	0.99	2.75	3.19	4.14	5.84	9.62	10.69
Other	Non-dietary Objects	17	2.21	2.54	0.72	0.83	1.25	2.92	5.19	10.07	11.29
Other	All Objects	24	3.10	1.58	1.05	2.31	2.73	3.39	5.84	7.18	7.58
p value*	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.283	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.883	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND



Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.774	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.564	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.383	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.538	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

S3.5.4. Data Summarized if Participants Were Wearing Gloves or Not and by Players' Position

S3.5.4.1. Activity Patterns by Players' Position, with Gloves On

Table S3-306. Frequency of Hand to Object Contact (Event/Hour) by Players' Position, with Gloves On

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=8)	Artificial Turf	9.97	9.44	0.00	3.93	6.87	14.31	24.62	25.89	26.21
Goalie (n=8)	Body	4.19	3.52	1.12	1.63	2.51	6.08	9.75	10.61	10.83
Goalie (n=8)	Clothes	40.24	27.94	6.40	24.00	32.27	59.23	79.96	88.58	90.73
Goalie (n=8)	Field Structures	3.97	3.12	0.00	1.91	2.97	6.68	8.12	8.18	8.19
Goalie (n=8)	Footwear	4.46	5.91	0.00	0.00	2.62	6.51	13.56	16.46	17.18
Goalie (n=8)	Head/face/hair	22.67	41.20	3.27	5.52	8.93	12.31	85.28	116.50	124.31
Goalie (n=8)	Shin guards	0.70	1.58	0.00	0.00	0.00	0.28	3.30	4.24	4.48
Goalie (n=8)	Soccer ball	51.79	38.08	9.20	15.30	48.61	91.26	95.86	97.16	97.49
Goalie (n=8)	Water bottle	6.42	5.64	0.00	1.12	6.48	11.83	12.74	13.04	13.12
Goalie (n=8)	Dietary Objects	6.56	5.81	0.00	1.12	6.48	12.11	13.12	13.12	13.12
Goalie (n=8)	Non-dietary Objects	159.99	81.14	63.78	108.16	137.07	213.79	275.54	278.54	279.29
Goalie (n=8)	All Objects	166.55	83.26	67.87	111.35	145.26	226.67	281.37	281.63	281.69
Other (n=13)	Artificial Turf	3.62	5.35	0.00	0.00	2.03	2.68	13.57	15.95	16.55
Other (n=13)	Body	12.88	17.56	0.00	0.54	6.05	17.90	43.23	56.39	59.68
Other (n=13)	Clothes	76.73	51.66	14.23	43.60	51.50	117.44	164.58	180.00	183.85
Other (n=13)	Field Structures	9.89	12.34	0.00	1.07	4.44	13.39	30.92	40.29	42.63



Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Other (n=13)	Footwear	3.62	3.93	0.00	0.00	2.30	7.37	9.63	10.32	10.49
Other (n=13)	Head/face/hair	38.22	25.36	1.61	22.38	28.81	52.31	80.19	89.47	91.79
Other (n=13)	Shin guards	1.02	2.14	0.00	0.00	0.00	0.63	5.22	6.67	7.03
Other (n=13)	Soccer ball	28.14	40.58	0.00	2.14	7.76	45.89	111.29	114.61	115.44
Other (n=13)	Water bottle	2.69	3.82	0.00	0.00	0.54	4.27	9.92	11.17	11.48
Other (n=13)	Dietary Objects	2.69	3.82	0.00	0.00	0.54	4.27	9.92	11.17	11.48
Other (n=13)	Non-dietary Objects	194.02	72.26	65.10	151.28	175.87	247.82	304.14	314.06	316.54
Other (n=13)	All Objects	196.70	73.51	65.10	152.69	181.13	247.82	309.47	315.13	316.54
p value	Artificial Turf	0.079	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.587	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.089	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.491	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.999	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.030*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.820	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.089	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.127	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.127	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.336	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.414	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-307. Duration of Hand to Object Contact (Min/Hour) by Players' Position, with Gloves On

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=8)	Artificial Turf	0.45	0.78	0.00	0.09	0.20	0.33	1.66	2.20	2.34
Goalie (n=8)	Body	0.22	0.21	0.01	0.02	0.21	0.35	0.50	0.52	0.52
Goalie (n=8)	Clothes	5.78	6.60	0.43	1.29	3.78	7.04	16.60	19.30	19.98



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Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=8)	Field Structures	0.27	0.29	0.00	0.03	0.15	0.48	0.69	0.75	0.77
Goalie (n=8)	Footwear	0.12	0.13	0.00	0.00	0.09	0.20	0.29	0.30	0.30
Goalie (n=8)	Head/face/hair	1.39	3.24	0.06	0.14	0.24	0.42	6.28	8.77	9.39
Goalie (n=8)	Shin guards	0.03	0.05	0.00	0.00	0.00	0.02	0.12	0.14	0.14
Goalie (n=8)	Soccer ball	1.98	1.70	0.47	0.67	1.94	2.17	4.54	5.51	5.75
Goalie (n=8)	Water bottle	1.04	1.01	0.00	0.06	1.08	1.77	2.27	2.46	2.51
Goalie (n=8)	Dietary Objects	1.05	1.03	0.00	0.06	1.08	1.77	2.30	2.51	2.56
Goalie (n=8)	Non-dietary Objects	11.78	7.71	2.20	6.48	10.34	16.95	22.61	23.07	23.19
Goalie (n=8)	All Objects	12.83	8.33	2.63	7.84	11.22	17.44	24.88	25.58	25.75
Other (n=13)	Artificial Turf	0.21	0.47	0.00	0.00	0.02	0.13	0.98	1.54	1.68
Other (n=13)	Body	2.08	4.58	0.00	0.01	0.18	0.54	11.63	13.97	14.56
Other (n=13)	Clothes	6.71	6.43	0.84	1.83	5.73	7.86	17.47	23.28	24.73
Other (n=13)	Field Structures	1.46	2.92	0.00	0.02	0.31	1.77	5.94	9.73	10.68
Other (n=13)	Footwear	0.21	0.26	0.00	0.00	0.13	0.32	0.68	0.75	0.77
Other (n=13)	Head/face/hair	1.27	1.06	0.02	0.46	1.04	1.67	3.03	3.73	3.91
Other (n=13)	Shin guards	0.04	0.09	0.00	0.00	0.00	0.02	0.22	0.28	0.29
Other (n=13)	Soccer ball	1.19	1.74	0.00	0.03	0.38	1.95	4.55	5.23	5.40
Other (n=13)	Water bottle	0.43	0.65	0.00	0.00	0.11	0.63	1.69	1.96	2.03
Other (n=13)	Dietary Objects	0.43	0.65	0.00	0.00	0.11	0.63	1.69	1.96	2.03
Other (n=13)	Non-dietary Objects	14.27	11.26	1.83	8.92	10.22	15.22	35.73	42.05	43.63
Other (n=13)	All Objects	14.70	11.47	1.83	9.36	10.22	15.73	36.31	43.33	45.08
p value*	Artificial Turf	0.115	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.828	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.547	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.637	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.602	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.064	ND	ND	ND	ND	ND	ND	ND	ND



Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Shin guards	0.820	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.065	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.219	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.219	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.916	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.972	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

ND: not determined

Table S3-308. Median Duration of Hand to Object Contact (Second) by Players' Position, with Gloves On

Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie	Artificial Turf	7	1.42	0.97	0.72	0.78	0.88	1.79	2.94	3.13	3.18
Goalie	Body	8	0.95	0.50	0.39	0.62	0.85	1.20	1.69	1.88	1.93
Goalie	Clothes	8	3.01	1.49	1.20	1.77	2.74	4.20	5.03	5.25	5.30
Goalie	Field Structures	7	2.15	1.09	0.55	1.26	2.75	2.95	3.24	3.28	3.29
Goalie	Footwear	5	1.52	0.37	0.89	1.50	1.65	1.78	1.79	1.80	1.80
Goalie	Head/face/hair	8	1.42	0.50	0.84	1.09	1.33	1.66	2.17	2.25	2.27
Goalie	Shin guards	2	2.82	1.89	1.48	2.15	2.82	3.49	4.02	4.13	4.16
Goalie	Soccer ball	8	1.92	0.85	0.75	1.59	1.98	2.06	3.12	3.48	3.58
Goalie	Water bottle	6	4.63	1.52	2.58	3.52	4.90	5.89	6.05	6.09	6.10
Goalie	Dietary Objects	6	4.63	1.52	2.58	3.52	4.90	5.89	6.05	6.09	6.10
Goalie	Non-dietary Objects	8	1.84	0.59	1.06	1.22	2.03	2.32	2.44	2.45	2.46
Goalie	All Objects	8	1.89	0.62	1.13	1.26	2.04	2.42	2.54	2.56	2.57
Other	Artificial Turf	8	1.50	1.09	0.48	0.79	1.13	1.84	3.26	3.48	3.54
Other	Body	10	1.98	1.11	0.83	1.15	1.71	2.17	3.89	3.89	3.89
Other	Clothes	13	2.45	1.19	1.17	1.92	2.08	2.38	4.83	4.91	4.93
Other	Field Structures	11	2.74	1.57	0.69	1.39	2.86	3.97	4.92	5.24	5.32
Other	Footwear	8	3.03	1.54	1.58	1.67	2.71	4.17	5.06	5.32	5.38



Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Other	Head/face/hair	13	1.23	0.76	0.62	0.71	1.00	1.25	2.42	3.24	3.44
Other	Shin guards	4	1.93	0.88	0.90	1.43	1.94	2.44	2.84	2.92	2.94
Other	Soccer ball	11	1.79	0.61	0.90	1.50	1.58	2.13	2.76	2.78	2.78
Other	Water bottle	7	8.87	4.28	2.52	6.11	9.85	11.24	14.23	14.87	15.03
Other	Dietary Objects	7	8.87	4.28	2.52	6.11	9.85	11.24	14.23	14.87	15.03
Other	Non-dietary Objects	13	1.96	0.99	1.12	1.26	1.82	1.94	4.00	4.24	4.30
Other	All Objects	13	1.97	0.99	1.12	1.27	1.83	1.95	4.02	4.29	4.36
p value	Artificial Turf	ND	0.867	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.012*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.500	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.425	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.171	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.210	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	0.800	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	0.600	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.101	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.101	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.972	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.804	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-309. Mouthing Frequency (Event/Hour) by Players' Position, with Gloves On

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=7)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=7)	Body	0.09	0.26	0.00	0.00	0.00	0.00	0.47	0.68	0.73
Goalie (n=7)	Clothes	4.32	7.27	0.00	0.68	1.80	3.68	15.95	20.65	21.82
Goalie (n=7)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=7)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA



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Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=7)	Hands	5.30	6.49	0.00	1.10	2.81	6.74	15.97	18.68	19.36
Goalie (n=7)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=7)	Shinguards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=7)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=7)	Water bottle	2.48	2.29	0.00	0.00	2.81	3.90	5.46	5.74	5.81
Goalie (n=7)	Dietary Objects	2.96	2.24	0.00	1.09	3.42	4.79	5.46	5.74	5.81
Goalie (n=7)	Non-dietary Objects	6.38	7.84	0.00	1.76	4.78	6.64	18.58	23.50	24.73
Goalie (n=7)	All Objects	9.34	7.70	0.00	5.64	8.20	10.25	21.20	25.19	26.19
Other (n=11)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=11)	Body	3.71	9.72	0.00	0.00	0.00	0.00	21.03	31.41	34.00
Other (n=11)	Clothes	13.54	34.95	0.00	0.00	1.26	7.69	63.99	115.31	128.14
Other (n=11)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=11)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=11)	Hands	4.70	8.29	0.00	0.00	0.00	3.14	19.79	25.59	27.04
Other (n=11)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=11)	Shinguards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=11)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=11)	Water bottle	1.79	2.04	0.00	0.00	0.63	4.13	4.61	4.70	4.72
Other (n=11)	Dietary Objects	2.22	2.22	0.00	0.00	1.89	4.27	5.09	5.53	5.64
Other (n=11)	Non-dietary Objects	23.56	35.99	0.00	1.05	11.34	23.58	88.18	120.15	128.14
Other (n=11)	All Objects	25.78	36.65	0.00	5.64	13.21	28.29	89.89	123.91	132.41
p value*	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.492	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.999	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.264	ND	ND	ND	ND	ND	ND	ND	ND



Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shinguards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.521	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.396	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.309	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.293	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-310. Mouthing Duration (Min/Hour) by Players' Position, with Gloves On

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=7)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=7)	Body	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
Goalie (n=7)	Clothes	0.17	0.26	0.00	0.02	0.06	0.18	0.59	0.75	0.79
Goalie (n=7)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=7)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=7)	Hands	0.18	0.24	0.00	0.03	0.07	0.27	0.56	0.66	0.69
Goalie (n=7)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=7)	Shinguards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=7)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=7)	Water bottle	0.15	0.16	0.00	0.00	0.14	0.19	0.40	0.43	0.44
Goalie (n=7)	Dietary Objects	0.17	0.16	0.00	0.05	0.14	0.25	0.40	0.43	0.44
Goalie (n=7)	Non-dietary Objects	0.21	0.26	0.00	0.06	0.14	0.23	0.63	0.78	0.82
Goalie (n=7)	All Objects	0.38	0.28	0.00	0.25	0.37	0.51	0.76	0.86	0.88
Other (n=11)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=11)	Body	0.10	0.26	0.00	0.00	0.00	0.00	0.57	0.83	0.89
Other (n=11)	Clothes	0.29	0.60	0.00	0.00	0.03	0.16	1.55	1.81	1.88
Other (n=11)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA



Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Other (n=11)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=11)	Hands	0.31	0.75	0.00	0.00	0.00	0.15	1.59	2.45	2.67
Other (n=11)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=11)	Shinguards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=11)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=11)	Water bottle	0.11	0.13	0.00	0.00	0.04	0.23	0.30	0.33	0.34
Other (n=11)	Dietary Objects	0.16	0.18	0.00	0.00	0.16	0.25	0.44	0.56	0.59
Other (n=11)	Non-dietary Objects	0.51	0.64	0.00	0.02	0.19	1.03	1.57	1.82	1.88
Other (n=11)	All Objects	0.66	0.69	0.00	0.19	0.36	1.20	1.84	2.07	2.13
p value*	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.492	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.714	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.280	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shinguards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.850	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.883	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.561	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.690	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-311. Mouthing Median Duration (Second) by Players' Position, with Gloves On

Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie	Artificial turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Body	1	0.72	ND	ND	ND	ND	ND	ND	ND	ND



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Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie	Clothes	6	3.02	3.73	1.19	1.35	1.56	1.83	8.42	10.17	10.61
Goalie	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Hands	7	1.52	0.57	0.81	1.14	1.41	1.94	2.27	2.29	2.29
Goalie	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Water bottle	5	3.46	1.41	1.71	2.60	3.60	3.93	5.13	5.37	5.43
Goalie	Dietary Objects	6	3.12	1.34	1.71	2.51	2.59	3.60	5.06	5.36	5.43
Goalie	Non-dietary Objects	7	2.82	3.50	0.76	0.98	1.86	2.30	8.23	10.13	10.61
Goalie	All Objects	7	2.45	1.74	0.76	1.32	1.78	3.14	5.10	5.59	5.71
Other	Artificial turf	3	0.92	0.36	0.54	0.74	0.95	1.11	1.23	1.25	1.26
Other	Body	3	0.92	0.36	0.54	0.74	0.95	1.11	1.23	1.25	1.26
Other	Clothes	9	1.35	0.88	0.62	0.93	1.03	1.34	2.73	3.43	3.61
Other	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	Hands	6	2.39	2.30	0.67	0.92	1.75	2.48	5.75	6.61	6.82
Other	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	Water bottle	7	3.89	1.02	2.99	3.33	3.44	4.20	5.49	5.68	5.73
Other	Dietary Objects	8	4.06	1.07	2.99	3.35	3.45	5.02	5.58	5.70	5.73
Other	Non-dietary Objects	10	1.05	0.23	0.70	0.88	1.08	1.26	1.29	1.30	1.30
Other	All Objects	11	1.58	1.27	0.86	0.99	1.27	1.34	3.62	4.97	5.30
p value*	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.050	ND	ND	ND	ND	ND	ND	ND	ND



Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.731	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.876	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.142	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.230	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.211	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

S3.5.4.2. Activity Patterns by Players' Position, with Gloves Off

Table S3-312. Frequency of Hand to Object Contact (Event/Hour) by Players' Position, with Gloves Off

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=9)	Artificial Turf	7.07	15.52	0.00	0.00	1.08	3.47	31.86	44.65	47.85
Goalie (n=9)	Body	12.47	10.50	0.00	3.33	14.49	16.52	27.52	33.06	34.45
Goalie (n=9)	Clothes	86.87	32.82	22.97	72.45	85.29	110.44	128.15	134.97	136.67
Goalie (n=9)	Field Structures	10.75	9.77	0.74	4.14	10.29	15.17	25.59	31.15	32.54
Goalie (n=9)	Footwear	2.89	2.98	0.00	0.00	2.17	5.00	7.35	8.09	8.28
Goalie (n=9)	Head/face/hair	31.47	25.39	5.18	9.18	22.74	54.16	68.93	76.57	78.48
Goalie (n=9)	Shin guards	0.81	1.90	0.00	0.00	0.00	0.00	4.07	5.35	5.67
Goalie (n=9)	Soccer ball	10.52	12.27	0.00	1.91	5.42	14.83	30.69	36.46	37.90
Goalie (n=9)	Water bottle	8.70	6.85	0.00	4.97	5.06	11.91	19.14	20.68	21.06
Goalie (n=9)	Dietary Objects	8.75	6.82	0.00	5.00	5.38	11.91	19.14	20.68	21.06
Goalie (n=9)	Non-dietary Objects	179.47	30.80	124.59	169.30	179.69	192.08	220.67	230.95	233.52
Goalie (n=9)	All Objects	188.22	35.87	127.57	169.30	187.40	203.16	238.07	251.28	254.58
Other (n=30)	Artificial Turf	2.59	3.39	0.00	0.23	1.66	3.33	9.37	13.97	14.30



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Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Other (n=30)	Body	15.60	12.07	2.82	5.57	13.52	19.88	38.66	50.67	54.40
Other (n=30)	Clothes	86.04	51.43	17.63	52.93	65.62	111.28	187.04	222.45	227.06
Other (n=30)	Field Structures	7.51	6.81	0.00	2.86	5.93	8.80	17.66	29.09	33.57
Other (n=30)	Footwear	8.13	8.18	0.00	2.69	6.20	10.81	23.91	34.57	36.17
Other (n=30)	Head/face/hair	27.36	22.38	0.00	12.63	20.37	32.68	72.59	89.16	94.94
Other (n=30)	Shin guards	1.40	3.80	0.00	0.00	0.00	0.93	7.21	16.03	18.79
Other (n=30)	Soccer ball	12.77	20.00	0.00	2.89	6.81	16.19	32.75	85.21	106.16
Other (n=30)	Water bottle	11.82	28.05	0.00	1.90	5.65	9.63	20.96	117.37	156.73
Other (n=30)	Dietary Objects	11.86	28.04	0.00	1.90	5.98	9.63	20.96	117.37	156.73
Other (n=30)	Non-dietary Objects	171.59	75.83	73.89	122.06	149.54	201.90	330.85	364.59	368.32
Other (n=30)	All Objects	183.45	87.16	80.69	127.24	153.92	211.38	375.38	400.21	409.91
p value	Artificial Turf	0.826	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.501	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.440	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.494	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.030*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.731	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.639	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.726	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.617	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.594	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.299	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.284	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined



Table S3-313. Duration of Hand to Object Contact (Min/Hour) by Players' Position, with Gloves Off

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=9)	Artificial Turf	0.75	1.80	0.00	0.00	0.01	0.15	3.68	5.10	5.46
Goalie (n=9)	Body	1.22	1.69	0.00	0.17	0.38	1.82	3.95	4.97	5.23
Goalie (n=9)	Clothes	22.50	14.78	1.79	12.43	19.22	32.18	42.65	45.47	46.17
Goalie (n=9)	Field Structures	0.93	1.19	0.02	0.36	0.44	1.28	2.86	3.65	3.85
Goalie (n=9)	Footwear	0.38	0.55	0.00	0.00	0.20	0.29	1.34	1.55	1.60
Goalie (n=9)	Head/face/hair	1.57	1.77	0.08	0.46	1.07	1.85	4.45	5.55	5.83
Goalie (n=9)	Shin guards	0.09	0.19	0.00	0.00	0.00	0.00	0.43	0.47	0.48
Goalie (n=9)	Soccer ball	0.75	1.02	0.00	0.13	0.49	0.85	2.36	3.10	3.28
Goalie (n=9)	Water bottle	1.51	1.83	0.00	0.45	0.93	1.60	4.61	5.67	5.94
Goalie (n=9)	Dietary Objects	1.51	1.83	0.00	0.45	0.93	1.60	4.61	5.67	5.94
Goalie (n=9)	Non-dietary Objects	29.90	13.51	16.17	19.64	25.18	35.17	51.06	53.99	54.72
Goalie (n=9)	All Objects	31.41	12.75	17.10	20.27	27.79	36.21	51.24	54.02	54.72
Other (n=30)	Artificial Turf	0.16	0.24	0.00	0.00	0.06	0.18	0.65	0.92	0.98
Other (n=30)	Body	1.27	1.65	0.07	0.16	0.52	1.93	3.92	6.13	6.99
Other (n=30)	Clothes	14.72	13.90	2.05	5.95	9.10	17.16	48.91	51.95	52.73
Other (n=30)	Field Structures	0.85	1.07	0.00	0.19	0.39	1.09	2.97	4.22	4.53
Other (n=30)	Footwear	0.74	0.72	0.00	0.15	0.49	1.11	2.02	2.35	2.47
Other (n=30)	Head/face/hair	0.82	0.64	0.00	0.36	0.54	1.38	1.88	2.34	2.44
Other (n=30)	Shin guards	0.15	0.46	0.00	0.00	0.00	0.07	0.83	1.91	2.29
Other (n=30)	Soccer ball	0.52	0.71	0.00	0.06	0.26	0.66	1.45	3.02	3.58
Other (n=30)	Water bottle	2.04	4.43	0.00	0.32	0.86	2.07	5.28	19.24	24.33
Other (n=30)	Dietary Objects	2.04	4.43	0.00	0.32	0.88	2.07	5.28	19.24	24.33
Other (n=30)	Non-dietary Objects	20.11	14.41	6.15	10.83	14.48	24.98	55.37	57.60	57.88
Other (n=30)	All Objects	22.15	15.66	6.74	12.27	15.60	25.64	57.22	58.75	58.83
p value	Artificial Turf	0.826	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.714	ND	ND	ND	ND	ND	ND	ND	ND



Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Clothes	0.086	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.701	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.080	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.243	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.669	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.677	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.999	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.999	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.023*	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.021*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-314. Median Duration of Hand to Object Contact (Second) by Players' Position, with Gloves Off

Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie	Artificial Turf	5	1.54	1.40	0.46	0.81	1.15	1.27	3.44	3.87	3.98
Goalie	Body	8	1.40	0.72	0.74	0.95	1.13	1.65	2.52	2.88	2.96
Goalie	Clothes	9	5.99	3.50	3.09	3.44	4.75	6.73	11.86	13.29	13.65
Goalie	Field Structures	9	4.98	5.84	1.64	1.85	2.82	4.41	14.67	18.90	19.96
Goalie	Footwear	6	4.29	2.86	2.30	2.53	2.96	4.83	8.59	9.44	9.65
Goalie	Head/face/hair	9	1.83	0.61	1.01	1.33	1.79	2.06	2.75	2.88	2.92
Goalie	Shin guards	2	10.00	9.47	3.31	6.66	10.00	13.35	16.03	16.56	16.70
Goalie	Soccer ball	7	2.69	1.20	0.98	1.96	2.21	3.77	4.04	4.13	4.15
Goalie	Water bottle	8	6.33	2.87	1.16	5.24	6.71	7.36	9.99	10.84	11.05
Goalie	Dietary Objects	8	6.29	2.88	1.16	5.03	6.71	7.36	9.99	10.84	11.05
Goalie	Non-dietary Objects	9	3.73	1.56	2.20	2.32	3.45	4.64	6.14	6.77	6.93
Goalie	All Objects	9	3.72	1.51	2.27	2.37	3.45	3.96	6.18	6.79	6.94
Other	Artificial Turf	22	1.63	1.16	0.66	0.88	1.34	1.72	4.47	5.02	5.14



Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Other	Body	30	1.85	1.96	0.53	0.99	1.38	1.91	5.43	9.17	9.78
Other	Clothes	30	4.33	2.15	1.85	2.84	3.82	4.73	8.57	10.19	10.78
Other	Field Structures	29	3.35	2.11	0.40	1.71	2.61	4.75	6.91	7.50	7.72
Other	Footwear	29	3.91	3.69	0.95	1.65	2.46	4.75	12.30	15.22	15.34
Other	Head/face/hair	29	1.28	0.49	0.60	1.11	1.18	1.32	1.73	3.01	3.47
Other	Shin guards	10	4.23	3.41	1.26	2.02	3.42	5.21	9.58	12.13	12.76
Other	Soccer ball	28	1.77	0.88	0.64	1.16	1.51	2.12	3.39	3.82	3.95
Other	Water bottle	27	7.15	3.21	2.09	4.79	6.77	8.69	13.59	13.77	13.79
Other	Dietary Objects	27	7.05	3.20	2.09	4.79	6.69	8.37	13.59	13.77	13.79
Other	Non-dietary Objects	30	2.70	1.28	1.23	1.82	2.51	3.10	5.19	6.60	6.91
Other	All Objects	30	2.83	1.32	1.25	1.87	2.59	3.17	5.48	6.65	6.91
p value	Artificial Turf	ND	0.447	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.635	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.140	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.589	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.356	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.003*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	0.364	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	0.049*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.658	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.743	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.025*	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.039*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-315. Mouthing Frequency (Event/Hour) by Players' Position, with Gloves Off

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=9)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA



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Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=9)	Body	0.47	0.76	0.00	0.00	0.00	0.78	1.76	1.94	1.99
Goalie (n=9)	Clothes	4.98	5.14	0.00	1.73	4.12	6.33	13.43	15.18	15.62
Goalie (n=9)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=9)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=9)	Hands	10.63	7.36	0.00	5.88	11.46	13.94	21.14	21.27	21.30
Goalie (n=9)	Head/face/hair	0.17	0.51	0.00	0.00	0.00	0.00	0.92	1.41	1.53
Goalie (n=9)	Shinguards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=9)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=9)	Water bottle	6.31	6.25	0.00	1.47	4.68	11.29	15.55	15.60	15.61
Goalie (n=9)	Dietary Objects	6.31	6.25	0.00	1.47	4.68	11.29	15.55	15.60	15.61
Goalie (n=9)	Non-dietary Objects	5.62	5.34	0.00	1.73	4.12	6.33	14.59	16.55	17.04
Goalie (n=9)	All Objects	11.93	6.12	4.58	6.33	15.27	17.04	18.68	19.40	19.58
Other (n=29)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=29)	Body	0.19	0.52	0.00	0.00	0.00	0.00	1.27	2.05	2.19
Other (n=29)	Clothes	11.01	17.89	0.00	1.31	6.09	13.09	32.68	76.86	92.76
Other (n=29)	Field Structures	0.01	0.07	0.00	0.00	0.00	0.00	0.00	0.28	0.40
Other (n=29)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=29)	Hands	9.44	6.87	0.00	4.42	7.09	14.24	20.59	24.30	25.44
Other (n=29)	Head/face/hair	0.01	0.08	0.00	0.00	0.00	0.00	0.00	0.31	0.43
Other (n=29)	Shinguards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=29)	Soccer ball	0.02	0.10	0.00	0.00	0.00	0.00	0.00	0.39	0.55
Other (n=29)	Water bottle	7.91	14.86	0.00	1.11	5.30	7.71	19.72	63.96	81.30
Other (n=29)	Dietary Objects	8.02	14.82	0.00	1.51	5.30	7.79	19.72	63.96	81.30
Other (n=29)	Non-dietary Objects	11.36	17.80	0.00	1.96	6.09	13.09	32.68	76.86	92.76
Other (n=29)	All Objects	19.39	22.64	0.00	6.11	11.37	24.55	64.29	95.29	101.00
p value*	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.247	ND	ND	ND	ND	ND	ND	ND	ND



Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Clothes	0.376	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.726	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shinguards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.999	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.960	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.453	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.756	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-316. Mouthing Duration (Min/Hour) by Players' Position, with Gloves Off

Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie (n=9)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=9)	Body	0.01	0.01	0.00	0.00	0.00	0.01	0.02	0.02	0.02
Goalie (n=9)	Clothes	0.88	2.16	0.00	0.03	0.12	0.18	4.24	6.14	6.61
Goalie (n=9)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=9)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=9)	Hands	0.27	0.18	0.00	0.15	0.26	0.41	0.52	0.55	0.56
Goalie (n=9)	Head/face/hair	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.02	0.02
Goalie (n=9)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=9)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie (n=9)	Water bottle	0.36	0.31	0.00	0.12	0.29	0.61	0.80	0.80	0.80
Goalie (n=9)	Dietary Objects	0.36	0.31	0.00	0.12	0.29	0.61	0.80	0.80	0.80
Goalie (n=9)	Non-dietary Objects	0.88	2.16	0.00	0.03	0.12	0.18	4.26	6.15	6.62
Goalie (n=9)	All Objects	1.25	2.04	0.18	0.25	0.78	0.90	4.38	6.17	6.62



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Position	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Other (n=29)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=29)	Body	0.00	0.01	0.00	0.00	0.00	0.00	0.03	0.04	0.04
Other (n=29)	Clothes	0.30	0.41	0.00	0.03	0.16	0.37	1.21	1.48	1.51
Other (n=29)	Field Structures	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.03
Other (n=29)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=29)	Hands	0.47	0.88	0.00	0.08	0.17	0.57	1.14	3.70	4.74
Other (n=29)	Head/face/hair	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Other (n=29)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (n=29)	Soccer ball	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other (n=29)	Water bottle	0.52	0.83	0.00	0.06	0.25	0.52	2.40	3.33	3.39
Other (n=29)	Dietary Objects	0.53	0.83	0.00	0.09	0.26	0.52	2.40	3.33	3.39
Other (n=29)	Non-dietary Objects	0.32	0.40	0.00	0.03	0.18	0.40	1.21	1.48	1.51
Other (n=29)	All Objects	0.85	0.92	0.00	0.21	0.51	1.08	2.87	3.41	3.42
p value*	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.298	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.789	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.802	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.828	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.894	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.738	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.641	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined



Table S3-317. Mouthing Median Duration (Second) by Players' Position, with Gloves Off

Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Goalie	Artificial turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Body	3	0.92	0.59	0.58	0.58	0.59	1.09	1.50	1.58	1.60
Goalie	Clothes	7	2.05	1.05	1.05	1.47	1.68	2.25	3.68	4.07	4.17
Goalie	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Hands	8	1.19	0.43	0.82	0.91	1.06	1.26	1.91	1.99	2.01
Goalie	Head/face/hair	1	0.79	#N/A	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Goalie	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goalie	Water bottle	7	3.65	1.40	2.11	2.42	3.95	4.45	5.51	5.72	5.78
Goalie	Dietary Objects	7	3.65	1.40	2.11	2.42	3.95	4.45	5.51	5.72	5.78
Goalie	Non-dietary Objects	8	1.41	0.55	0.67	0.99	1.47	1.73	2.12	2.23	2.26
Goalie	All Objects	9	2.62	1.30	1.45	2.01	2.26	2.48	4.80	5.58	5.78
Other	Artificial turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	Body	5	1.10	0.36	0.60	0.97	1.14	1.22	1.51	1.57	1.59
Other	Clothes	25	1.37	0.71	0.62	0.87	1.21	1.66	2.60	3.20	3.39
Other	Field Structures	1	5.18	ND	ND	ND	ND	ND	ND	ND	ND
Other	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	Hands	28	1.33	0.88	0.54	0.89	1.07	1.41	2.95	4.33	4.76
Other	Head/face/hair	1	1.50	ND	ND	ND	ND	ND	ND	ND	ND
Other	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	Soccer ball	1	0.13	ND	ND	ND	ND	ND	ND	ND	ND
Other	Water bottle	25	3.65	1.36	1.72	2.63	3.41	4.34	5.84	6.60	6.83
Other	Dietary Objects	26	3.59	1.36	1.72	2.60	3.28	4.31	5.83	6.59	6.83
Other	Non-dietary Objects	26	1.34	0.61	0.62	0.87	1.30	1.61	2.57	2.61	2.61
Other	All Objects	29	2.30	1.31	0.62	1.30	2.30	2.82	5.13	5.77	5.85
p value*	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND



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Position	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Body	ND	0.571	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.061	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.999	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.859	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.914	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.647	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.636	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined



S3.6. Data Summarized by Event Type (i.e., Game and Practice)

S3.6.1. Data Summarized During the Whole Event by Event Type

Table S3-318. Frequency (Event/Hour) of Actions by Event Type, during the Whole Event

Event	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Slip or fall	2.15	3.76	0.00	0.00	0.60	1.56	11.32	12.82	13.19
Practice (n=20)	Jumping	13.25	24.15	0.00	0.70	3.26	8.25	65.87	73.41	75.30
Practice (n=20)	Diving	0.78	2.29	0.00	0.00	0.00	0.18	3.83	8.68	9.89
Practice (n=20)	Heading	0.28	0.44	0.00	0.00	0.00	0.48	1.07	1.33	1.40
Practice (n=20)	Tackling or sliding	0.26	0.64	0.00	0.00	0.00	0.11	0.77	2.39	2.80
Game (n=20)	Slip or fall	2.23	3.20	0.00	0.30	0.84	3.50	7.14	11.71	12.85
Game (n=20)	Jumping	5.67	5.54	0.00	0.32	5.12	9.52	13.96	18.18	19.23
Game (n=20)	Diving	0.27	0.68	0.00	0.00	0.00	0.00	1.72	2.25	2.38
Game (n=20)	Heading	0.38	0.75	0.00	0.00	0.00	0.14	2.02	2.08	2.10
Game (n=20)	Tackling or sliding	0.59	0.88	0.00	0.00	0.00	0.85	2.20	2.69	2.81
p value*	Slip or fall	0.871	ND	ND	ND	ND	ND	ND	ND	ND
p value	Jumping	0.409	ND	ND	ND	ND	ND	ND	ND	ND
p value	Diving	0.509	ND	ND	ND	ND	ND	ND	ND	ND
p value	Heading	0.221	ND	ND	ND	ND	ND	ND	ND	ND
p value	Tackling or sliding	1.000	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to the activity not observed; and ND: not determined

Table S3-319. Frequency of Hand to Object Contact (Event/Hour) by Event Type, during the Whole Event

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Artificial Turf	4.49	5.18	0.00	1.00	2.46	4.83	14.46	16.84	17.43
Practice (n=20)	Body	12.62	13.59	1.52	4.18	7.32	16.48	42.17	51.95	54.40
Practice (n=20)	Clothes	87.78	39.83	26.14	65.30	77.88	97.40	162.84	178.40	182.29
Practice (n=20)	Field Structures	9.16	6.36	1.67	3.87	7.46	12.62	19.65	21.95	22.52
Practice (n=20)	Footwear	7.24	6.81	0.72	2.38	5.13	9.95	13.81	27.29	30.66



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Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Head/face/hair	28.95	22.71	3.35	13.51	23.75	35.48	78.41	86.12	88.05
Practice (n=20)	Shin guards	1.66	4.28	0.00	0.00	0.00	0.82	6.33	16.30	18.79
Practice (n=20)	Soccer ball	22.97	27.00	0.76	4.60	12.97	32.49	65.67	98.06	106.16
Practice (n=20)	Water bottle	6.41	3.88	1.77	4.21	5.15	8.16	13.63	16.65	17.40
Practice (n=20)	Dietary Objects	6.50	3.95	1.77	4.42	5.15	8.36	14.32	16.78	17.40
Practice (n=20)	Non-dietary Objects	183.97	63.42	76.57	152.53	172.70	206.35	303.96	330.31	336.90
Practice (n=20)	All Objects	190.48	65.67	81.36	156.72	179.67	211.93	308.60	345.16	354.30
Game (n=20)	Artificial Turf	4.34	6.38	0.00	1.37	2.39	4.76	15.17	25.18	27.68
Game (n=20)	Body	14.38	9.33	4.29	6.90	12.49	17.95	29.56	34.04	35.16
Game (n=20)	Clothes	61.15	25.69	17.63	42.21	56.84	89.03	95.25	98.29	99.05
Game (n=20)	Field Structures	6.02	5.36	1.46	2.52	5.24	6.54	14.18	22.64	24.75
Game (n=20)	Footwear	5.29	3.66	1.26	2.25	4.32	7.48	11.48	12.43	12.67
Game (n=20)	Head/face/hair	27.87	26.85	2.28	12.08	18.12	31.83	71.85	105.40	113.79
Game (n=20)	Shin guards	1.04	1.96	0.00	0.00	0.00	1.18	4.84	6.95	7.48
Game (n=20)	Soccer ball	18.72	24.08	0.55	6.44	9.88	18.15	62.35	93.70	101.54
Game (n=20)	Water bottle	6.85	6.61	0.00	1.28	5.05	11.67	20.72	20.86	20.89
Game (n=20)	Dietary Objects	6.86	6.61	0.00	1.28	5.05	11.67	20.72	20.86	20.89
Game (n=20)	Non-dietary Objects	152.36	59.36	73.89	118.37	134.21	175.39	262.33	289.65	296.48
Game (n=20)	All Objects	159.22	60.44	80.69	123.35	144.57	185.40	276.91	298.79	304.26
p value	Artificial Turf	0.935	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.223	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.028*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.091	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.512	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.620	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.881	ND	ND	ND	ND	ND	ND	ND	ND



Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Soccer ball	0.799	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.598	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.598	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.056	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.052	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-320. Duration of Hand to Object Contact (Min/Hour) by Event Type, during the Whole Event

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Artificial Turf	0.23	0.27	0.00	0.02	0.11	0.36	0.79	0.94	0.98
Practice (n=20)	Body	0.90	1.36	0.03	0.12	0.29	0.86	3.69	4.80	5.08
Practice (n=20)	Clothes	15.96	13.50	3.47	6.73	9.61	18.42	40.26	50.24	52.73
Practice (n=20)	Field Structures	0.98	0.91	0.07	0.20	0.68	1.62	2.43	2.92	3.04
Practice (n=20)	Footwear	0.65	0.61	0.01	0.18	0.49	0.87	1.85	1.95	1.97
Practice (n=20)	Head/face/hair	0.93	0.70	0.15	0.39	0.73	1.52	2.15	2.20	2.21
Practice (n=20)	Shin guards	0.08	0.16	0.00	0.00	0.00	0.07	0.36	0.58	0.64
Practice (n=20)	Soccer ball	1.02	1.13	0.01	0.17	0.71	1.38	3.61	3.99	4.09
Practice (n=20)	Water bottle	1.03	0.60	0.19	0.66	0.89	1.20	2.22	2.31	2.33
Practice (n=20)	Dietary Objects	1.03	0.60	0.19	0.66	0.91	1.21	2.24	2.31	2.33
Practice (n=20)	Non-dietary Objects	21.31	13.56	5.40	13.19	15.82	22.54	46.52	54.83	56.91
Practice (n=20)	All Objects	22.34	13.79	5.83	14.04	16.95	24.17	48.29	56.72	58.83
Game (n=20)	Artificial Turf	0.29	0.67	0.00	0.04	0.10	0.29	0.72	2.58	3.05
Game (n=20)	Body	1.61	1.98	0.10	0.29	0.60	2.47	4.65	6.52	6.99
Game (n=20)	Clothes	10.17	8.12	1.62	4.43	6.95	14.76	22.85	30.51	32.42
Game (n=20)	Field Structures	0.63	0.81	0.03	0.15	0.36	0.62	2.09	3.06	3.30
Game (n=20)	Footwear	0.48	0.53	0.02	0.16	0.27	0.83	1.52	1.89	1.98
Game (n=20)	Head/face/hair	1.08	1.82	0.03	0.35	0.52	1.17	1.88	7.23	8.57



Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Game (n=20)	Shin guards	0.17	0.45	0.00	0.00	0.00	0.08	1.03	1.69	1.85
Game (n=20)	Soccer ball	0.72	0.78	0.01	0.25	0.52	0.82	1.62	3.12	3.50
Game (n=20)	Water bottle	1.41	1.67	0.00	0.22	0.81	1.99	3.63	6.14	6.77
Game (n=20)	Dietary Objects	1.41	1.67	0.00	0.22	0.81	1.99	3.63	6.14	6.77
Game (n=20)	Non-dietary Objects	16.10	9.19	6.15	8.65	12.92	22.65	29.18	37.82	39.98
Game (n=20)	All Objects	17.51	9.30	6.65	10.40	14.57	24.87	29.25	38.15	40.37
p value*	Artificial Turf	0.735	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.110	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.096	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.172	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.425	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.607	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.940	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.534	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.756	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.756	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.211	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.341	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum
ND: not determined

Table S3-321. Median Duration of Hand to Object Contact (Second) by Event Type, during the Whole Event

Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice	Artificial Turf	18	1.66	1.40	0.46	0.81	0.91	2.03	4.66	5.05	5.14
Practice	Body	20	1.64	1.27	0.53	1.12	1.27	1.92	3.13	5.68	6.32
Practice	Clothes	20	4.62	2.62	1.89	2.73	3.43	5.88	9.26	10.47	10.78
Practice	Field Structures	20	4.02	4.28	0.41	1.85	2.49	4.75	8.33	17.64	19.96
Practice	Footwear	20	4.21	3.67	0.99	1.69	2.65	5.74	9.93	14.26	15.34



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Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice	Head/face/hair	20	1.38	0.50	0.92	1.13	1.18	1.59	2.11	2.89	3.09
Practice	Shin guards	9	2.81	1.41	1.26	1.93	2.40	3.31	5.10	5.33	5.39
Practice	Soccer ball	20	1.88	0.95	0.77	1.12	1.62	2.36	3.78	3.92	3.95
Practice	Water bottle	20	6.63	2.79	2.39	5.08	6.73	7.59	10.44	13.04	13.69
Practice	Dietary Objects	20	6.57	2.76	2.39	5.08	6.69	7.42	10.44	13.04	13.69
Practice	Non-dietary Objects	20	2.70	1.50	1.43	1.64	2.11	3.28	5.88	6.72	6.93
Practice	All Objects	20	2.76	1.50	1.48	1.75	2.17	3.32	6.06	6.77	6.94
Game	Artificial Turf	17	1.39	0.69	0.62	0.88	1.27	1.51	2.57	3.14	3.29
Game	Body	20	1.76	1.95	0.72	0.93	1.22	1.87	2.54	8.33	9.78
Game	Clothes	20	3.80	2.45	1.85	2.47	3.22	4.46	6.01	11.73	13.16
Game	Field Structures	20	2.92	1.73	0.72	1.63	2.56	3.23	5.86	6.56	6.73
Game	Footwear	20	3.27	3.09	0.89	1.64	2.38	4.00	5.90	13.12	14.93
Game	Head/face/hair	20	1.32	0.43	0.60	1.10	1.24	1.45	1.99	2.26	2.32
Game	Shin guards	8	5.94	5.76	0.90	1.58	4.18	7.45	15.32	16.42	16.70
Game	Soccer ball	20	1.84	0.82	0.64	1.24	1.66	2.02	3.47	3.76	3.83
Game	Water bottle	18	7.15	3.23	2.09	5.19	6.34	8.41	13.42	13.72	13.79
Game	Dietary Objects	18	7.13	3.24	2.09	5.16	6.34	8.41	13.42	13.72	13.79
Game	Non-dietary Objects	20	2.26	0.78	1.23	1.79	2.06	2.59	3.53	3.99	4.10
Game	All Objects	20	2.37	0.79	1.25	1.86	2.27	2.91	3.57	4.05	4.17
p value*	Artificial Turf	ND	0.782	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.925	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.301	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.678	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.445	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.947	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	0.423	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	0.841	ND	ND	ND	ND	ND	ND	ND	ND



Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Water bottle	ND	0.828	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.806	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.565	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.820	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-322. Hourly Duration (Min/Hour) of Player Intensity by Event Type, during the Whole Event

Event	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	High	2.09	1.08	0.09	1.07	2.16	3.06	3.64	3.83	3.88
Practice (n=20)	Moderate	13.79	4.94	3.75	11.82	13.21	16.03	20.95	22.45	22.82
Practice (n=20)	Light	24.81	3.80	17.21	22.17	23.98	27.47	29.38	33.31	34.29
Practice (n=20)	Resting	19.32	5.02	11.97	16.78	17.97	21.36	27.46	31.53	32.55
Game (n=20)	High	1.91	0.91	0.56	1.19	1.93	2.46	3.40	3.70	3.77
Game (n=20)	Moderate	11.25	5.05	4.55	6.73	10.57	15.49	19.38	19.39	19.39
Game (n=20)	Light	23.28	6.49	10.65	19.09	24.74	27.32	31.05	32.54	32.91
Game (n=20)	Resting	23.57	9.51	10.86	15.82	20.53	30.57	39.62	41.37	41.81
p value	High	0.525	ND	ND	ND	ND	ND	ND	ND	ND
p value	Moderate	0.192	ND	ND	ND	ND	ND	ND	ND	ND
p value	Light	0.659	ND	ND	ND	ND	ND	ND	ND	ND
p value	Resting	0.242	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

ND: not determined

Table S3-323. Duration (Min/Hour) of Macro-Activities by Age, during the Whole Event

Event	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Sit on ground	0.96	0.91	0.00	0.27	0.69	1.48	2.78	3.07	3.14
Practice (n=20)	Rest Standing	0.01	0.02	0.00	0.00	0.00	0.00	0.01	0.08	0.10
Practice (n=20)	Running	17.82	5.25	8.35	15.09	16.66	20.10	24.56	30.91	32.50
Practice (n=20)	Stretching	15.06	5.63	3.81	11.84	14.92	18.60	23.68	24.73	24.99



Event	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Walking	1.20	1.67	0.00	0.13	0.60	1.26	5.22	5.73	5.86
Practice (n=20)	Sit on chair	24.57	4.80	16.09	21.66	24.34	27.30	30.48	35.92	37.28
Practice (n=20)	Push ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Sit ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Sit on ground	1.40	2.29	0.00	0.11	0.44	1.63	4.74	8.75	9.75
Game (n=20)	Rest Standing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Game (n=20)	Running	16.80	5.91	6.98	13.88	17.18	19.33	27.23	28.50	28.82
Game (n=20)	Stretching	12.33	6.44	2.47	7.27	10.51	17.97	22.94	23.55	23.70
Game (n=20)	Walking	0.31	0.35	0.00	0.09	0.15	0.39	0.82	1.33	1.46
Game (n=20)	Sit on chair	24.40	7.27	10.50	19.61	25.42	29.34	33.63	33.66	33.67
Game (n=20)	Push ups	4.51	5.55	0.00	0.20	2.75	7.02	17.62	17.66	17.67
Game (n=20)	Sit ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
p value	Sit on ground	0.718	ND	ND	ND	ND	ND	ND	ND	ND
p value	Rest Standing	0.192	ND	ND	ND	ND	ND	ND	ND	ND
p value	Running	0.486	ND	ND	ND	ND	ND	ND	ND	ND
p value	Stretching	0.931	ND	ND	ND	ND	ND	ND	ND	ND
p value	Walking	0.000*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on chair	0.084	ND	ND	ND	ND	ND	ND	ND	ND
p value	Push ups	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit ups	ND	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to these activities not observed; and ND: not determined

Table S3-324. Mouthing Frequency (Event/Hour) by Event Type, during the Whole Event

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Body	0.94	2.35	0.00	0.00	0.00	0.61	4.52	8.85	9.93
Practice (n=20)	Clothes	7.87	8.13	0.00	1.82	4.05	11.10	24.30	27.87	28.76



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Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Hands	10.24	7.33	0.71	3.66	10.01	14.04	25.47	25.92	26.03
Practice (n=20)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Shinguards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Water bottle	5.51	4.14	0.00	3.47	4.43	6.23	12.39	16.73	17.81
Practice (n=20)	Dietary Objects	5.87	3.91	1.01	3.80	4.73	6.51	12.39	16.73	17.81
Practice (n=20)	Non-dietary Objects	10.58	10.27	0.00	3.83	9.69	12.40	25.65	41.19	45.08
Practice (n=20)	All Objects	16.45	10.50	2.52	10.65	15.54	18.23	31.83	45.53	48.96
Game (n=20)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Body	0.16	0.44	0.00	0.00	0.00	0.00	1.00	1.58	1.72
Game (n=20)	Clothes	10.39	22.86	0.00	1.11	3.50	8.62	23.95	88.21	104.27
Game (n=20)	Field Structures	0.02	0.09	0.00	0.00	0.00	0.00	0.02	0.32	0.40
Game (n=20)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Hands	7.57	3.62	1.36	6.14	7.06	9.06	11.80	16.79	18.04
Game (n=20)	Head/face/hair	0.06	0.20	0.00	0.00	0.00	0.00	0.45	0.75	0.83
Game (n=20)	Shinguards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Soccer ball	0.03	0.12	0.00	0.00	0.00	0.00	0.03	0.45	0.55
Game (n=20)	Water bottle	4.42	5.17	0.00	0.51	2.45	6.85	15.58	17.15	17.54
Game (n=20)	Dietary Objects	4.47	5.13	0.00	0.86	2.45	6.85	15.58	17.15	17.54
Game (n=20)	Non-dietary Objects	11.21	22.69	0.00	2.10	4.65	9.67	26.24	88.66	104.27
Game (n=20)	All Objects	15.69	23.99	0.00	5.29	9.25	14.23	36.96	96.38	111.23
p value*	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.145	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.534	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND



Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.277	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shinguards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.126	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.053	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.262	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.091	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-325. Mouthing Duration (Min/Hour) by Event Type, during the Whole Event

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Body	0.02	0.06	0.00	0.00	0.00	0.01	0.13	0.23	0.25
Practice (n=20)	Clothes	0.22	0.21	0.00	0.07	0.14	0.37	0.62	0.68	0.69
Practice (n=20)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Hands	0.34	0.32	0.01	0.08	0.25	0.44	0.92	1.07	1.11
Practice (n=20)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Water bottle	0.34	0.24	0.00	0.19	0.31	0.41	0.68	1.02	1.10
Practice (n=20)	Dietary Objects	0.36	0.24	0.08	0.20	0.33	0.42	0.68	1.02	1.10
Practice (n=20)	Non-dietary Objects	0.28	0.24	0.00	0.12	0.21	0.39	0.72	0.84	0.87
Practice (n=20)	All Objects	0.64	0.31	0.13	0.39	0.65	0.79	1.14	1.21	1.23
Game (n=20)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Body	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.03	0.04



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Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Game (n=20)	Clothes	0.39	0.70	0.00	0.03	0.08	0.33	1.69	2.55	2.76
Game (n=20)	Field Structures	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.03
Game (n=20)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Hands	0.47	1.03	0.02	0.11	0.18	0.26	1.08	4.01	4.74
Game (n=20)	Head/face/hair	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
Game (n=20)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Soccer ball	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Game (n=20)	Water bottle	0.38	0.74	0.00	0.04	0.12	0.30	1.55	2.85	3.17
Game (n=20)	Dietary Objects	0.38	0.74	0.00	0.04	0.12	0.30	1.55	2.85	3.17
Game (n=20)	Non-dietary Objects	0.42	0.70	0.00	0.03	0.16	0.37	1.69	2.57	2.79
Game (n=20)	All Objects	0.81	1.00	0.00	0.17	0.27	1.07	2.86	3.31	3.42
p value	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.229	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.515	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.588	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.060	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.034*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.440	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.262	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no mouth contact with these objects; and ND: not determined



Table S3-326. Mouthing Median Duration (Second) by Event Type, during the Whole Event

Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice	Artificial turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Body	7	0.93	0.40	0.54	0.59	0.97	1.12	1.50	1.58	1.60
Practice	Clothes	19	2.06	2.26	0.62	0.90	1.41	1.80	4.81	9.45	10.61
Practice	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Hands	20	1.26	0.63	0.66	0.91	1.10	1.27	2.56	3.06	3.18
Practice	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Water bottle	19	3.72	1.28	1.72	2.64	3.70	4.62	5.72	5.82	5.85
Practice	Dietary Objects	20	3.56	1.27	1.72	2.53	3.53	4.48	5.32	5.63	5.71
Practice	Non-dietary Objects	20	1.72	2.21	0.62	0.88	1.19	1.45	3.34	9.15	10.61
Practice	All Objects	20	2.19	1.33	0.90	1.37	1.76	2.54	5.33	5.66	5.74
Game	Artificial turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game	Body	3	1.16	0.47	0.66	0.94	1.22	1.40	1.55	1.58	1.59
Game	Clothes	17	1.35	0.54	0.62	0.92	1.30	1.76	2.17	2.50	2.58
Game	Field Structures	1	5.18	ND	ND	ND	ND	ND	ND	ND	ND
Game	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game	Hands	20	1.44	0.93	0.66	0.93	1.09	1.69	2.47	4.30	4.76
Game	Head/face/hair	2	1.15	0.50	0.79	0.97	1.15	1.33	1.47	1.50	1.50
Game	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game	Soccer ball	1	0.13	ND	ND	ND	ND	ND	ND	ND	ND
Game	Water bottle	16	3.45	1.42	1.71	2.53	3.14	4.07	6.05	6.68	6.83
Game	Dietary Objects	17	3.40	1.39	1.71	2.48	3.12	3.95	6.00	6.67	6.83
Game	Non-dietary Objects	20	1.38	0.65	0.62	0.79	1.29	1.85	2.49	2.58	2.61
Game	All Objects	20	2.06	1.26	0.62	1.12	1.78	2.46	4.57	5.38	5.58



Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value*	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.517	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.471	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.738	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.422	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.641	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.845	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.687	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

S3.6.2. Data Summarized According to Event Moment/Time and Event Type

S3.6.2.1. Activity Patterns by Event Type, during the Game/Practice

Table S3-327. Frequency (Event/Hour) of Actions by Event Type, during the Game/Practice

Event	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Diving	0.86	2.42	0.00	0.00	0.00	0.20	4.95	9.08	10.11
Practice (n=20)	Heading	0.32	0.50	0.00	0.00	0.00	0.58	1.29	1.40	1.43
Practice (n=20)	Jumping	14.26	26.73	0.00	0.88	2.42	9.11	75.89	76.74	76.95
Practice (n=20)	Slip or fall	2.44	4.36	0.00	0.00	0.69	2.00	13.56	14.70	14.98
Practice (n=20)	Tackling or sliding	0.33	0.86	0.00	0.00	0.00	0.16	1.04	3.21	3.75
Game (n=20)	Diving	0.20	0.54	0.00	0.00	0.00	0.00	1.47	1.88	1.98
Game (n=20)	Heading	0.45	0.87	0.00	0.00	0.00	0.19	2.33	2.37	2.38
Game (n=20)	Jumping	4.78	5.94	0.00	0.00	2.27	7.30	14.72	19.43	20.61
Game (n=20)	Slip or fall	1.89	2.27	0.00	0.35	1.04	2.21	6.38	7.04	7.21



Event	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Game (n=20)	Tackling or sliding	0.63	1.05	0.00	0.00	0.00	0.88	2.69	3.10	3.20
p value*	Diving	0.416	ND	ND	ND	ND	ND	ND	ND	ND
p value	Heading	0.802	ND	ND	ND	ND	ND	ND	ND	ND
p value	Jumping	0.364	ND	ND	ND	ND	ND	ND	ND	ND
p value	Slip or fall	0.489	ND	ND	ND	ND	ND	ND	ND	ND
p value	Tackling or sliding	ND	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

ND: not determined

Table S3-328. Frequency of Hand to Object Contact (Event/Hour) by Event Type, during the Game/Practice

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Artificial Turf	4.14	5.04	0.00	0.97	2.63	4.13	13.99	17.13	17.92
Practice (n=20)	Body	11.22	11.33	1.68	4.16	8.26	12.39	39.46	41.80	42.39
Practice (n=20)	Clothes	80.18	42.16	16.15	57.80	70.21	98.21	149.09	176.82	183.75
Practice (n=20)	Field Structures	7.87	6.07	0.00	3.60	6.47	10.90	18.47	21.08	21.73
Practice (n=20)	Footwear	5.08	7.35	0.00	1.36	2.62	6.03	9.20	29.17	34.16
Practice (n=20)	Head/face/hair	29.34	23.66	3.69	12.64	24.51	36.13	80.75	88.65	90.63
Practice (n=20)	Shin guards	1.04	2.77	0.00	0.00	0.00	0.40	3.89	10.31	11.92
Practice (n=20)	Soccer ball	23.73	30.68	0.74	2.63	11.09	34.19	68.26	112.87	124.02
Practice (n=20)	Water bottle	1.86	2.32	0.00	0.27	1.34	2.53	4.74	9.01	10.08
Practice (n=20)	Dietary Objects	1.92	2.47	0.00	0.27	1.34	2.59	4.78	9.62	10.83
Practice (n=20)	Non-dietary Objects	171.46	66.90	75.54	134.14	164.48	189.15	290.38	333.12	343.80
Practice (n=20)	All Objects	173.37	66.88	78.86	135.24	165.52	196.98	290.47	334.47	345.47
Game (n=20)	Artificial Turf	3.42	3.90	0.00	1.08	2.16	4.07	10.97	14.33	15.17
Game (n=20)	Body	12.02	8.46	1.29	6.00	10.49	15.76	26.92	32.15	33.46
Game (n=20)	Clothes	55.63	26.88	13.12	33.90	51.31	80.87	97.02	99.80	100.49
Game (n=20)	Field Structures	3.30	2.88	0.00	0.51	3.50	5.37	7.11	9.13	9.64
Game (n=20)	Footwear	4.79	3.82	0.00	2.16	3.72	5.90	12.66	14.40	14.84



Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Game (n=20)	Head/face/hair	28.14	27.71	3.38	9.85	15.23	41.65	71.32	104.55	112.86
Game (n=20)	Shin guards	0.94	1.91	0.00	0.00	0.00	1.26	4.05	6.83	7.53
Game (n=20)	Soccer ball	15.84	22.97	0.70	6.35	9.55	15.69	37.80	92.50	106.18
Game (n=20)	Water bottle	3.00	5.19	0.00	0.00	1.22	3.34	16.86	17.22	17.31
Game (n=20)	Dietary Objects	3.02	5.19	0.00	0.00	1.22	3.34	16.86	17.22	17.31
Game (n=20)	Non-dietary Objects	136.61	59.32	48.06	110.59	121.12	160.00	232.54	290.97	305.58
Game (n=20)	All Objects	139.63	60.18	48.06	110.59	129.54	167.63	236.02	292.85	307.06
p value	Artificial Turf	0.818	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.394	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.056	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.008*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.516	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.512	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.907	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.547	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.804	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.825	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.076	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.102	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-329. Duration of Hand to Object Contact (Min/Hour) by Event Type, during the Game/Practice

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Artificial Turf	0.17	0.19	0.00	0.02	0.09	0.30	0.48	0.58	0.60
Practice (n=20)	Body	0.80	1.41	0.03	0.11	0.26	0.62	3.41	5.33	5.81
Practice (n=20)	Clothes	15.21	14.73	0.53	6.10	8.84	18.08	41.49	52.35	55.06
Practice (n=20)	Field Structures	0.77	0.85	0.00	0.14	0.44	1.13	2.02	3.14	3.42



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Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Footwear	0.49	0.60	0.00	0.07	0.21	0.82	1.85	1.93	1.95
Practice (n=20)	Head/face/hair	0.94	0.74	0.09	0.32	0.70	1.44	2.17	2.32	2.36
Practice (n=20)	Shin guards	0.05	0.11	0.00	0.00	0.00	0.01	0.20	0.41	0.46
Practice (n=20)	Soccer ball	0.98	1.23	0.01	0.17	0.48	1.37	4.05	4.15	4.17
Practice (n=20)	Water bottle	0.25	0.44	0.00	0.00	0.10	0.19	0.84	1.66	1.86
Practice (n=20)	Dietary Objects	0.25	0.44	0.00	0.00	0.10	0.19	0.85	1.68	1.89
Practice (n=20)	Non-dietary Objects	19.91	14.77	2.78	10.10	14.87	21.74	47.93	56.51	58.65
Practice (n=20)	All Objects	20.16	14.73	2.97	10.53	15.08	22.90	48.03	56.58	58.72
Game (n=20)	Artificial Turf	0.23	0.33	0.00	0.01	0.09	0.33	0.68	1.21	58.72
Game (n=20)	Body	1.04	1.31	0.02	0.14	0.45	1.29	3.61	3.75	1.34
Game (n=20)	Clothes	9.45	9.53	1.27	2.42	5.42	14.15	27.21	32.26	3.79
Game (n=20)	Field Structures	0.31	0.53	0.00	0.02	0.15	0.31	1.42	1.99	33.52
Game (n=20)	Footwear	0.37	0.47	0.00	0.08	0.26	0.38	0.98	1.82	2.13
Game (n=20)	Head/face/hair	1.08	1.98	0.04	0.32	0.49	1.02	2.09	7.81	2.03
Game (n=20)	Shin guards	0.13	0.44	0.00	0.00	0.00	0.04	0.48	1.67	7.97
Game (n=20)	Soccer ball	0.63	0.79	0.01	0.28	0.41	0.69	1.48	3.22	9.24
Game (n=20)	Water bottle	0.59	1.32	0.00	0.00	0.12	0.46	2.30	5.07	1.97
Game (n=20)	Dietary Objects	0.59	1.32	0.00	0.00	0.12	0.46	2.30	5.07	3.66
Game (n=20)	Non-dietary Objects	14.07	10.35	2.17	5.35	11.54	23.02	30.82	38.08	5.76
Game (n=20)	All Objects	14.65	10.60	2.17	5.47	11.74	23.42	30.89	38.23	5.76
p value	Artificial Turf	0.989	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.561	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.127	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.028*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.914	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.490	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.947	ND	ND	ND	ND	ND	ND	ND	ND



Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Soccer ball	0.705	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.900	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.911	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.201	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.234	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-330. Median Duration of Hand to Object Contact (Second) by Event Type, during the Game/Practice

Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice	Artificial Turf	18	1.41	1.11	0.46	0.81	0.88	1.34	3.69	4.39	4.57
Practice	Body	20	1.54	1.29	0.45	1.11	1.30	1.48	2.75	5.77	6.52
Practice	Clothes	20	4.94	3.56	1.20	2.42	3.22	6.28	11.96	13.33	13.67
Practice	Field Structures	19	2.93	2.19	0.41	1.58	2.06	3.81	6.85	7.55	7.72
Practice	Footwear	19	4.69	3.74	0.99	1.73	3.11	6.95	10.22	14.31	15.34
Practice	Head/face/hair	20	1.37	0.51	0.87	1.08	1.18	1.60	2.11	2.89	3.09
Practice	Shin guards	6	2.19	0.73	1.26	1.75	2.10	2.55	3.14	3.28	3.31
Practice	Soccer ball	20	2.44	3.53	0.77	1.07	1.56	2.02	4.61	14.57	17.06
Practice	Water bottle	15	4.01	2.26	0.22	2.52	3.63	6.08	7.49	7.63	7.66
Practice	Dietary Objects	15	4.00	2.23	0.22	2.52	3.63	6.08	7.33	7.60	7.66
Practice	Non-dietary Objects	20	2.66	1.71	1.25	1.61	1.93	3.17	6.51	7.49	7.73
Practice	All Objects	20	2.67	1.68	1.28	1.64	1.93	3.17	6.39	7.43	7.69
Game	Artificial Turf	17	2.22	3.19	0.48	1.03	1.36	1.78	5.91	12.54	14.20
Game	Body	20	1.26	0.64	0.63	0.78	1.06	1.38	2.52	2.70	2.74
Game	Clothes	20	3.46	2.77	1.59	1.98	2.41	4.13	5.80	12.43	14.08
Game	Field Structures	16	4.88	10.56	0.44	1.24	1.81	2.81	16.03	38.35	43.93
Game	Footwear	19	2.93	3.24	0.82	1.26	1.94	2.90	6.52	13.25	14.93
Game	Head/face/hair	20	1.35	0.50	0.60	1.05	1.16	1.80	2.27	2.35	2.37



Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Game	Shin guards	7	3.32	2.35	0.90	1.51	2.88	4.79	6.32	6.67	6.76
Game	Soccer ball	20	1.98	0.90	0.64	1.38	1.82	2.11	3.77	3.82	3.83
Game	Water bottle	10	6.97	3.05	3.39	4.84	6.65	8.37	11.75	13.45	13.88
Game	Dietary Objects	10	6.93	3.08	3.39	4.65	6.65	8.37	11.75	13.45	13.88
Game	Non-dietary Objects	20	2.09	0.88	1.16	1.42	1.76	2.49	3.63	3.94	4.02
Game	All Objects	20	2.13	0.88	1.16	1.42	1.88	2.53	3.66	3.97	4.05
p value	Artificial Turf	ND	0.184	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.327	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.068	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.523	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.057	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.883	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	0.818	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	0.369	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.011*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.009*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.265	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.314	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-331. Hourly Duration (Min/Hour) of Player Intensity by Event Type, during the Game/Practice

Event	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	High	2.20	1.26	0.11	1.11	2.51	2.87	4.19	4.58	4.68
Practice (n=20)	Moderate	14.81	5.37	3.86	12.00	14.76	17.47	24.36	25.72	26.06
Practice (n=20)	Light	25.69	4.19	17.02	22.56	26.03	28.98	31.58	33.64	34.16
Practice (n=20)	Resting	17.30	6.16	8.09	13.17	16.02	21.71	26.19	30.96	32.15
Game (n=20)	High	1.77	0.92	0.30	1.11	1.64	2.64	2.92	3.15	3.21



Event	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Game (n=20)	Moderate	12.68	6.00	4.52	6.97	12.31	17.24	23.18	23.35	23.39
Game (n=20)	Light	24.89	6.75	11.30	20.13	26.07	28.83	33.85	34.31	34.43
Game (n=20)	Resting	20.66	10.51	7.03	11.32	18.92	28.50	36.55	38.78	39.34
p value*	High	0.372	ND	ND	ND	ND	ND	ND	ND	ND
p value	Moderate	0.289	ND	ND	ND	ND	ND	ND	ND	ND
p value	Light	0.925	ND	ND	ND	ND	ND	ND	ND	ND
p value	Resting	0.482	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

ND: not determined

Table S3-332. Duration (Min/Hour) of Macro-Activities by Age, during the Game/Practice

Event	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Push ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Rest Standing	16.07	6.21	6.27	13.03	14.97	20.19	24.98	30.68	32.10
Practice (n=20)	Running	16.50	6.29	5.09	12.62	16.62	19.46	25.84	28.33	28.95
Practice (n=20)	Sit on chair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Sit on ground	0.70	1.06	0.00	0.01	0.37	0.73	2.58	3.88	4.20
Practice (n=20)	Stretching	0.76	0.98	0.00	0.00	0.40	1.18	2.53	3.26	3.44
Practice (n=20)	Walking	25.54	5.39	15.96	21.95	24.86	29.65	32.83	36.35	37.23
Game (n=20)	Push ups	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Game (n=20)	Rest Standing	13.84	7.95	3.89	7.74	11.06	17.92	26.40	32.57	34.11
Game (n=20)	Running	13.76	7.46	1.83	8.23	11.76	19.80	26.44	26.87	26.98
Game (n=20)	Sit on chair	5.13	7.48	0.00	0.00	0.74	7.96	19.67	22.79	23.57
Game (n=20)	Sit on ground	0.93	1.31	0.00	0.03	0.37	1.31	3.33	4.45	4.73
Game (n=20)	Stretching	0.26	0.39	0.00	0.00	0.11	0.34	0.89	1.46	1.60
Game (n=20)	Walking	25.87	7.47	11.33	20.98	26.61	32.36	35.19	36.58	36.93
p value*	Push ups	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Rest Standing	0.242	ND	ND	ND	ND	ND	ND	ND	ND



Event	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Running	0.253	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on chair	0.341	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on ground	0.615	ND	ND	ND	ND	ND	ND	ND	ND
p value	Stretching	0.198	ND	ND	ND	ND	ND	ND	ND	ND
p value	Walking	0.725	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to the activity not observed; and ND: not determined

Table S3-333. Mouthing Frequency (Event/Hour) by Event Type, during the Game/Practice

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	All Objects	11.76	9.30	1.87	5.49	10.84	13.99	27.19	38.09	40.81
Practice (n=20)	Body	1.01	2.44	0.00	0.00	0.00	0.75	4.65	9.19	10.33
Practice (n=20)	Clothes	7.41	7.67	0.00	1.17	4.27	12.88	22.36	25.07	25.75
Practice (n=20)	Dietary Objects	1.38	1.72	0.00	0.00	0.63	2.22	4.84	5.02	5.07
Practice (n=20)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Hands	10.38	7.72	0.94	3.45	9.57	13.39	26.54	27.36	27.56
Practice (n=20)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Non-dietary Objects	10.39	9.66	0.00	3.21	9.45	13.07	27.19	38.09	40.81
Practice (n=20)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Water bottle	1.28	1.74	0.00	0.00	0.59	1.74	4.84	5.02	5.07
Game (n=20)	All Objects	12.69	23.58	0.00	2.20	5.81	9.94	36.76	92.24	106.11
Game (n=20)	Body	0.16	0.73	0.00	0.00	0.00	0.00	0.16	2.64	3.26
Game (n=20)	Clothes	10.12	22.13	0.00	0.35	3.46	8.22	24.64	84.82	99.87
Game (n=20)	Dietary Objects	1.77	3.21	0.00	0.00	0.36	1.97	6.59	11.91	13.24
Game (n=20)	Field Structures	0.02	0.11	0.00	0.00	0.00	0.00	0.02	0.38	0.47
Game (n=20)	Hands	6.68	3.16	1.08	3.79	6.92	8.50	11.44	11.97	12.10
Game (n=20)	Head/face/hair	0.07	0.22	0.00	0.00	0.00	0.00	0.49	0.83	0.91
Game (n=20)	Non-dietary Objects	10.92	21.96	0.00	0.94	4.48	9.16	26.48	85.19	99.87



Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Game (n=20)	Soccer ball	0.04	0.19	0.00	0.00	0.00	0.00	0.04	0.68	0.84
Game (n=20)	Water bottle	1.70	3.24	0.00	0.00	0.00	1.97	6.59	11.91	13.24
p value	All Objects	0.140	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.025*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.498	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.809	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.342	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.149	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.163	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.213	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.938	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.840	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-334. Mouthing Duration (Min/Hour) by Event Type, during the Game/Practice

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	All Objects	0.35	0.23	0.05	0.19	0.35	0.43	0.78	0.83	0.84
Practice (n=20)	Body	0.02	0.06	0.00	0.00	0.00	0.01	0.14	0.24	0.27
Practice (n=20)	Clothes	0.20	0.22	0.00	0.05	0.11	0.33	0.69	0.74	0.75
Practice (n=20)	Dietary Objects	0.09	0.12	0.00	0.00	0.04	0.16	0.33	0.36	0.37
Practice (n=20)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Hands	0.33	0.33	0.01	0.07	0.25	0.38	0.94	1.20	1.26
Practice (n=20)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Non-dietary Objects	0.26	0.23	0.00	0.09	0.21	0.35	0.72	0.77	0.78
Practice (n=20)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Water bottle	0.08	0.12	0.00	0.00	0.02	0.15	0.33	0.36	0.37
Game (n=20)	All Objects	0.57	0.95	0.00	0.04	0.17	0.52	2.12	3.38	3.69
Game (n=20)	Body	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.06	0.08



Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Game (n=20)	Clothes	0.46	0.89	0.00	0.00	0.08	0.32	1.69	3.23	3.62
Game (n=20)	Dietary Objects	0.09	0.15	0.00	0.00	0.01	0.08	0.41	0.50	0.52
Game (n=20)	Field Structures	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.03	0.04
Game (n=20)	Hands	0.49	1.16	0.02	0.10	0.14	0.27	1.18	4.46	5.28
Game (n=20)	Head/face/hair	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
Game (n=20)	Non-dietary Objects	0.47	0.89	0.00	0.02	0.11	0.32	1.69	3.25	3.64
Game (n=20)	Soccer ball	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Game (n=20)	Water bottle	0.09	0.16	0.00	0.00	0.00	0.08	0.41	0.50	0.52
p value	All Objects	0.213	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.025*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.497	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.561	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.342	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.525	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.162	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.303	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.979	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.664	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-335. Mouthing Median Duration (Second) by Event Type, during the Game/Practice

Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice	All Objects	20	1.74	1.24	0.65	0.98	1.33	1.73	4.53	5.15	5.30
Practice	Body	7	0.93	0.40	0.54	0.59	0.95	1.11	1.50	1.58	1.60
Practice	Clothes	19	1.95	2.28	0.47	0.86	1.31	1.87	4.81	9.45	10.61
Practice	Dietary Objects	12	4.00	1.81	1.06	2.81	3.93	5.41	6.60	6.74	6.78
Practice	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA



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Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice	Hands	20	1.17	0.46	0.62	0.87	1.05	1.33	2.04	2.43	2.52
Practice	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Non-dietary Objects	20	1.69	2.21	0.62	0.90	1.11	1.38	3.34	9.15	10.61
Practice	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Water bottle	11	3.88	1.85	1.06	2.64	3.60	5.02	6.61	6.75	6.78
Game	All Objects	20	1.59	0.86	0.13	0.87	1.30	2.23	2.78	2.98	3.03
Game	Body	1	1.59	ND	ND	ND	ND	ND	ND	ND	ND
Game	Clothes	15	1.48	0.79	0.24	0.96	1.28	1.98	2.88	3.03	3.06
Game	Dietary Objects	10	3.02	1.19	1.49	2.40	2.81	3.28	5.01	5.26	5.33
Game	Field Structures	1	5.18	ND	ND	ND	ND	ND	ND	ND	ND
Game	Hands	20	1.42	0.91	0.72	0.89	1.18	1.64	2.47	4.30	4.76
Game	Head/face/hair	2	1.15	0.50	0.79	0.97	1.15	1.33	1.47	1.50	1.50
Game	Non-dietary Objects	20	1.38	0.85	0.13	0.78	1.28	1.90	3.04	3.06	3.06
Game	Soccer ball	1	0.13	ND	ND	ND	ND	ND	ND	ND	ND
Game	Water bottle	9	3.08	1.24	1.49	2.38	3.08	3.33	5.05	5.27	5.33
p value*	All Objects	ND	0.869	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.500	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.228	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.516	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.851	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.370	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined



S3.6.2.2. Activity Patterns by Event Type, when Participants Were Warming Up

Table S3-336. Frequency (Event/Hour) of Actions by Event Type, during Warm Up

Event	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=7)	Diving	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=7)	Jumping	7.73	14.40	0.00	0.00	0.00	8.53	31.03	35.82	37.02
Practice (n=7)	Slip or fall	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=9)	Diving	1.58	4.74	0.00	0.00	0.00	0.00	8.54	13.09	14.23
Game (n=9)	Jumping	20.85	22.06	0.00	0.00	21.60	46.25	48.54	49.56	49.82
Game (n=9)	Slip or fall	9.88	29.65	0.00	0.00	0.00	0.00	53.36	81.82	88.94
p value*	Diving	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Jumping	0.199	ND	ND	ND	ND	ND	ND	ND	ND
p value	Slip or fall	ND	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to activities not observed; and ND: not determined

Table S3-337. Frequency of Hand to Object Contact (Event/Hour) by Event Type, during Warm Up

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=7)	Artificial Turf	13.12	31.10	0.00	0.00	0.00	4.30	60.87	78.79	83.27
Practice (n=7)	Body	57.03	72.45	0.00	1.53	29.26	87.27	168.07	187.49	192.34
Practice (n=7)	Clothes	133.23	44.45	63.26	105.80	151.06	156.56	183.26	191.49	193.55
Practice (n=7)	Field Structures	3.66	7.87	0.00	0.00	0.00	2.27	16.12	20.10	21.09
Practice (n=7)	Footwear	49.26	32.15	0.00	32.02	49.78	68.02	87.38	93.42	94.93
Practice (n=7)	Head/face/hair	24.95	13.50	0.00	20.66	27.01	31.67	40.03	42.40	42.99
Practice (n=7)	Soccer ball	0.64	1.70	0.00	0.00	0.00	0.00	3.15	4.23	4.50
Practice (n=7)	Water bottle	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=7)	Dietary Objects	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=7)	Non-dietary Objects	285.30	113.89	137.98	208.21	275.62	361.80	435.36	441.88	443.51
Practice (n=7)	All Objects	285.30	113.89	137.98	208.21	275.62	361.80	435.36	441.88	443.51



Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Game (n=11)	Artificial Turf	3.63	11.61	0.00	0.00	0.00	0.00	19.97	34.90	38.63
Game (n=11)	Body	25.11	51.30	0.00	0.65	5.52	19.79	109.36	160.48	173.26
Game (n=11)	Clothes	63.44	42.21	0.00	41.30	69.12	88.30	121.18	135.72	139.36
Game (n=11)	Field Structures	10.75	23.17	0.00	0.00	3.68	5.76	48.89	72.63	78.56
Game (n=11)	Footwear	1.55	4.53	0.00	0.00	0.00	0.00	8.53	13.79	15.11
Game (n=11)	Head/face/hair	28.38	43.59	0.00	0.92	6.32	41.57	100.66	135.84	144.63
Game (n=11)	Soccer ball	28.59	83.99	0.00	0.00	0.00	7.06	148.26	254.78	281.41
Game (n=11)	Water bottle	3.52	8.69	0.00	0.00	0.00	1.51	17.87	26.72	28.93
Game (n=11)	Dietary Objects	3.52	8.69	0.00	0.00	0.00	1.51	17.87	26.72	28.93
Game (n=11)	Non-dietary Objects	166.59	113.71	0.00	113.04	144.63	189.50	339.12	437.15	461.66
Game (n=11)	All Objects	170.11	113.27	0.00	116.44	161.75	191.01	339.12	437.15	461.66
p value	Artificial Turf	0.522	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.009*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.576	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.092	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.554	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.619	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.035	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.035*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no contact with the object; and ND: not determined

Table S3-338. Duration of Hand to Object Contact (Min/Hour) by Event Type, during Warm Up

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=7)	Artificial Turf	0.38	0.69	0.00	0.00	0.00	0.45	1.49	1.69	1.74



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Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=7)	Body	2.24	3.08	0.00	0.01	1.20	3.42	7.01	7.53	7.66
Practice (n=7)	Clothes	18.72	16.82	3.92	6.25	10.29	28.14	43.69	47.16	48.03
Practice (n=7)	Field Structures	0.12	0.30	0.00	0.00	0.00	0.03	0.58	0.76	0.80
Practice (n=7)	Footwear	1.93	1.75	0.00	0.76	1.37	2.76	4.41	4.96	5.10
Practice (n=7)	Head/face/hair	0.59	0.28	0.00	0.54	0.70	0.78	0.80	0.80	0.80
Practice (n=7)	Soccer ball	0.01	0.03	0.00	0.00	0.00	0.00	0.06	0.08	0.08
Practice (n=7)	Water bottle	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=7)	Dietary Objects	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=7)	Non-dietary Objects	24.07	14.56	11.54	14.50	15.90	31.50	46.20	48.47	49.04
Practice (n=7)	All Objects	24.07	14.56	11.54	14.50	15.90	31.50	46.20	48.47	49.04
Game (n=11)	Artificial Turf	0.05	0.15	0.00	0.00	0.00	0.00	0.27	0.46	0.51
Game (n=11)	Body	0.46	0.91	0.00	0.01	0.08	0.34	2.08	2.81	2.99
Game (n=11)	Clothes	8.96	7.38	0.00	3.08	9.04	14.29	19.51	20.47	20.71
Game (n=11)	Field Structures	1.58	4.59	0.00	0.00	0.06	0.42	8.20	13.94	15.38
Game (n=11)	Footwear	0.43	1.40	0.00	0.00	0.00	0.00	2.35	4.18	4.64
Game (n=11)	Head/face/hair	0.73	0.99	0.00	0.02	0.12	1.48	2.32	2.45	2.48
Game (n=11)	Soccer ball	0.61	1.65	0.00	0.00	0.00	0.23	3.07	5.05	5.54
Game (n=11)	Water bottle	0.33	0.72	0.00	0.00	0.00	0.06	1.75	2.05	2.12
Game (n=11)	Dietary Objects	0.33	0.72	0.00	0.00	0.00	0.06	1.75	2.05	2.12
Game (n=11)	Non-dietary Objects	13.05	8.88	0.00	6.47	13.32	19.45	24.60	26.72	27.25
Game (n=11)	All Objects	13.37	8.62	0.00	7.97	13.32	19.45	24.65	26.82	27.36
p value*	Artificial Turf	0.360	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.277	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.494	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.083	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.682	ND	ND	ND	ND	ND	ND	ND	ND



Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Soccer ball	0.619	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.151	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.179	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no contact with these objects; and ND: not determined

Table S3-339. Median Duration of Hand to Object Contact (Second) by Event Type, during Warm Up

Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice	Artificial Turf	2	5.79	7.30	0.62	3.21	5.79	8.37	10.43	10.85	10.95
Practice	Body	5	1.87	1.19	0.44	0.97	1.84	2.94	3.11	3.14	3.15
Practice	Clothes	7	3.84	2.40	1.23	2.25	3.41	4.63	7.33	8.22	8.44
Practice	Field Structures	2	1.32	0.83	0.73	1.02	1.32	1.61	1.84	1.89	1.90
Practice	Footwear	6	1.68	0.67	0.73	1.44	1.52	2.17	2.50	2.53	2.54
Practice	Head/face/hair	6	1.28	0.23	0.95	1.12	1.33	1.41	1.53	1.56	1.57
Practice	Soccer ball	1	1.06	ND	ND	ND	ND	ND	ND	ND	ND
Practice	Water bottle	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Dietary Objects	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Non-dietary Objects	7	2.82	2.24	1.14	1.35	2.34	3.02	6.33	7.27	7.50
Practice	All Objects	7	2.82	2.24	1.14	1.35	2.34	3.02	6.33	7.27	7.50
Game	Artificial Turf	2	0.74	0.05	0.71	0.73	0.74	0.76	0.77	0.77	0.78
Game	Body	8	0.95	0.52	0.42	0.70	0.78	1.06	1.78	2.00	2.06
Game	Clothes	9	7.73	7.31	1.15	4.01	6.10	8.52	19.56	24.20	25.36
Game	Field Structures	7	3.22	3.22	0.73	0.88	2.00	4.52	8.21	8.85	9.01
Game	Footwear	2	5.38	5.56	1.45	3.41	5.38	7.35	8.92	9.23	9.31
Game	Head/face/hair	8	1.15	0.37	0.68	0.83	1.22	1.38	1.60	1.66	1.67
Game	Soccer ball	5	1.47	0.65	0.89	0.90	1.48	1.61	2.29	2.43	2.47



Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Game	Water bottle	3	4.69	2.75	2.09	3.25	4.40	5.99	7.26	7.51	7.58
Game	Dietary Objects	3	4.69	2.75	2.09	3.25	4.40	5.99	7.26	7.51	7.58
Game	Non-dietary Objects	10	2.38	1.57	0.68	0.97	2.20	3.52	4.72	4.88	4.92
Game	All Objects	10	2.40	1.54	0.85	0.97	2.24	3.47	4.72	4.88	4.92
p value*	Artificial Turf	ND	0.222	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.210	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.142	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.573	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.740	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.740	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to no contact with the object; and ND: not determined

Table S3-340. Hourly Duration (Min/Hour) of Player Intensity by Event Type, during Warm Up

Event	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=7)	High	4.34	4.33	0.00	0.60	3.34	7.88	9.93	10.04	10.07
Practice (n=7)	Moderate	27.92	10.78	11.12	20.22	32.69	36.34	37.97	38.39	38.50
Practice (n=7)	Light	19.25	9.79	10.57	11.83	18.52	21.68	33.78	37.66	38.63
Practice (n=7)	Resting	8.50	9.61	0.97	2.15	4.09	11.07	23.28	27.04	27.98
Game (n=9)	High	4.78	6.95	0.00	0.00	0.91	9.94	15.95	18.35	18.95
Game (n=9)	Moderate	19.64	10.05	7.50	14.52	19.22	22.94	34.24	39.97	41.40
Game (n=9)	Light	20.91	7.33	5.78	20.09	20.73	27.47	28.89	29.32	29.43
Game (n=9)	Resting	14.68	6.67	4.19	11.26	16.19	17.70	23.49	23.71	23.76



Event	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value*	High	0.914	ND	ND	ND	ND	ND	ND	ND	ND
p value	Moderate	0.210	ND	ND	ND	ND	ND	ND	ND	ND
p value	Light	0.606	ND	ND	ND	ND	ND	ND	ND	ND
p value	Resting	0.071	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum
ND: not determined

Table S3-341. Duration (Min/Hour) of Macro-Activities by Age, during Warm Up

Event	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=7)	Rest Standing	7.55	8.88	0.97	1.76	2.86	10.06	21.44	24.58	25.36
Practice (n=7)	Running	21.44	10.82	11.52	13.06	15.19	29.38	36.27	38.05	38.50
Practice (n=7)	Sit on ground	0.58	0.81	0.00	0.00	0.00	1.03	1.80	1.98	2.02
Practice (n=7)	Stretching	14.46	12.68	0.00	5.26	10.07	23.23	31.59	33.68	34.20
Practice (n=7)	Walking	15.74	6.35	8.06	10.42	15.82	20.73	23.58	23.91	23.99
Game (n=9)	Rest Standing	14.78	6.55	5.43	11.59	14.65	21.07	23.05	23.07	23.08
Game (n=9)	Running	18.48	14.33	0.00	9.18	15.35	23.85	40.11	41.14	41.40
Game (n=9)	Sit on ground	0.42	0.89	0.00	0.00	0.00	0.00	2.02	2.44	2.54
Game (n=9)	Stretching	3.61	8.10	0.00	0.00	0.00	0.68	17.51	22.85	24.18
Game (n=9)	Walking	21.79	7.44	5.78	20.80	23.76	25.72	29.18	29.38	29.43
p value	Rest Standing	0.536	ND	ND	ND	ND	ND	ND	ND	ND
p value	Running	0.034*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on ground	0.071	ND	ND	ND	ND	ND	ND	ND	ND
p value	Stretching	0.114	ND	ND	ND	ND	ND	ND	ND	ND
p value	Walking	0.520	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to the activity not observed; and ND: not determined

Table S3-342. Mouthing Frequency (Event/Hour) by Event Type, during Warm Up

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=7)	All Objects	13.18	22.11	0.00	0.00	5.07	13.41	48.86	62.25	65.60
Practice (n=7)	Body	NA	NA	NA	NA	NA	NA	NA	NA	NA



Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=7)	Clothes	12.49	22.47	0.00	0.00	2.31	13.41	48.86	62.25	65.60
Practice (n=7)	Dietary Objects	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=7)	Hands	8.69	14.63	0.00	0.00	2.31	8.69	33.21	40.12	41.85
Practice (n=7)	Non-dietary Objects	13.18	22.11	0.00	0.00	5.07	13.41	48.86	62.25	65.60
Practice (n=7)	Water bottle	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=9)	All Objects	6.69	10.10	0.00	0.00	0.00	10.02	23.13	30.64	32.52
Game (n=9)	Body	0.17	0.55	0.00	0.00	0.00	0.00	0.91	1.64	1.82
Game (n=9)	Clothes	6.03	10.29	0.00	0.00	0.00	10.02	23.13	30.64	32.52
Game (n=9)	Dietary Objects	0.50	1.65	0.00	0.00	0.00	0.00	2.74	4.92	5.47
Game (n=9)	Hands	6.23	8.46	0.00	0.00	0.00	11.69	19.68	24.10	25.20
Game (n=9)	Non-dietary Objects	6.19	10.20	0.00	0.00	0.00	10.02	23.13	30.64	32.52
Game (n=9)	Water bottle	0.50	1.65	0.00	0.00	0.00	0.00	2.74	4.92	5.47
p value*	All Objects	0.631	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.456	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.613	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.286	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.893	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.513	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.456	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-343. Mouthing Duration (Min/Hour) by Event Type, during Warm Up

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=7)	All Objects	0.22	0.26	0.00	0.00	0.15	0.31	0.63	0.72	0.74
Practice (n=7)	Body	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=7)	Clothes	0.18	0.27	0.00	0.00	0.03	0.28	0.63	0.72	0.74
Practice (n=7)	Dietary Objects	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=7)	Hands	0.18	0.23	0.00	0.00	0.05	0.36	0.52	0.57	0.58



Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=7)	Non-dietary Objects	0.22	0.26	0.00	0.00	0.15	0.31	0.63	0.72	0.74
Practice (n=7)	Water bottle	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=9)	All Objects	0.17	0.30	0.00	0.00	0.00	0.19	0.70	0.93	0.99
Game (n=9)	Body	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.04	0.04
Game (n=9)	Clothes	0.16	0.31	0.00	0.00	0.00	0.19	0.70	0.93	0.99
Game (n=9)	Dietary Objects	0.01	0.03	0.00	0.00	0.00	0.00	0.05	0.09	0.10
Game (n=9)	Hands	0.10	0.12	0.00	0.00	0.00	0.22	0.28	0.28	0.28
Game (n=9)	Non-dietary Objects	0.16	0.30	0.00	0.00	0.00	0.19	0.70	0.93	0.99
Game (n=9)	Water bottle	0.01	0.03	0.00	0.00	0.00	0.00	0.05	0.09	0.10
p value*	All Objects	0.458	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.456	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.613	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.286	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.503	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.407	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.456	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-344. Mouthing Median Duration (Second) by Event Type, during Warm Up

Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice	All Objects	7	1.30	0.94	0.67	0.83	0.87	1.17	2.60	2.89	2.96
Practice	Body	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Clothes	4	0.89	0.21	0.67	0.79	0.85	0.94	1.12	1.16	1.17
Practice	Dietary Objects	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Hands	4	1.63	1.23	0.72	1.02	1.17	1.78	3.11	3.37	3.44
Practice	Non-dietary Objects	7	1.30	0.94	0.67	0.83	0.87	1.17	2.60	2.89	2.96
Practice	Water bottle	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game	All Objects	8	1.56	1.03	0.75	0.91	1.08	1.83	2.97	3.19	3.25



Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Game	Body	1	1.22	ND	ND	ND	ND	ND	ND	ND	ND
Game	Clothes	4	1.68	1.15	0.75	0.87	1.37	2.19	3.04	3.21	3.25
Game	Dietary Objects	1	0.93	ND	ND	ND	ND	ND	ND	ND	ND
Game	Hands	5	0.96	0.42	0.45	0.71	0.87	1.33	1.43	1.45	1.46
Game	Non-dietary Objects	8	1.59	1.01	0.75	0.91	1.22	1.83	2.97	3.19	3.25
Game	Water bottle	1	0.93	ND	ND	ND	ND	ND	ND	ND	ND
p value*	All Objects	ND	0.548	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.343	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.556	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.421	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

S3.6.2.3. Activity Patterns by Event Type, on Break/After/Before Game

Table S3-345. Frequency (Event/Hour) of Actions by Event Type, on Break/After/Before Game

Event	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Jumping	1.38	5.00	0.00	0.00	0.00	0.00	6.44	18.83	21.93
Practice (n=20)	Slip or fall	0.51	1.71	0.00	0.00	0.00	0.00	3.17	6.39	7.19
Practice (n=20)	Tackling or sliding	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Jumping	2.71	7.85	0.00	0.00	0.00	0.00	8.97	29.34	34.43
Game (n=20)	Slip or fall	0.90	2.73	0.00	0.00	0.00	0.00	5.16	10.22	11.48
Game (n=20)	Tackling or sliding	0.24	0.75	0.00	0.00	0.00	0.00	2.11	2.61	2.73
p value*	Jumping	0.396	ND	ND	ND	ND	ND	ND	ND	ND
p value	Slip or fall	0.655	ND	ND	ND	ND	ND	ND	ND	ND
p value	Tackling or sliding	ND	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum



NA: not applicable due to the activity not observed; and ND: not determined

Table S3-346. Frequency of Hand to Object Contact (Event/Hour) by Event Type, on Break/After/Before Game

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Artificial Turf	3.33	5.64	0.00	0.00	0.00	4.20	15.42	16.39	16.63
Practice (n=20)	Body	9.41	11.87	0.00	0.00	5.36	14.96	35.61	37.83	38.38
Practice (n=20)	Clothes	131.02	63.53	59.45	88.85	119.71	146.32	253.79	298.38	309.53
Practice (n=20)	Field Structures	19.59	22.27	0.00	1.23	10.14	39.42	61.63	70.45	72.66
Practice (n=20)	Footwear	12.85	13.98	0.00	0.00	11.21	17.68	40.00	40.78	40.97
Practice (n=20)	Head/face/hair	21.84	16.50	0.00	13.90	19.89	28.97	50.50	59.63	61.91
Practice (n=20)	Shin guards	5.34	12.75	0.00	0.00	0.00	3.94	26.70	47.24	52.37
Practice (n=20)	Soccer ball	20.00	21.97	0.00	0.00	16.80	36.98	45.90	69.96	75.97
Practice (n=20)	Water bottle	63.66	73.58	9.81	19.30	41.41	67.40	177.12	294.60	323.97
Practice (n=20)	Dietary Objects	64.14	73.62	9.81	19.30	41.41	69.46	177.12	294.60	323.97
Practice (n=20)	Non-dietary Objects	235.64	79.25	80.12	198.25	208.35	280.87	358.50	432.52	451.02
Practice (n=20)	All Objects	299.78	103.58	89.93	238.81	290.01	333.24	496.80	520.52	526.45
Game (n=20)	Artificial Turf	5.34	17.64	0.00	0.00	0.00	2.05	12.41	65.98	79.38
Game (n=20)	Body	29.41	20.61	0.00	12.97	27.86	41.81	65.10	67.45	68.04
Game (n=20)	Clothes	91.13	45.55	31.75	58.70	92.83	104.39	147.95	209.21	224.52
Game (n=20)	Field Structures	16.23	25.34	0.00	5.11	9.58	13.59	46.01	101.86	115.82
Game (n=20)	Footwear	9.25	15.79	0.00	0.00	4.20	8.70	45.07	58.00	61.23
Game (n=20)	Head/face/hair	29.67	29.19	0.00	10.64	19.96	36.09	79.08	107.55	114.67
Game (n=20)	Shin guards	2.08	5.12	0.00	0.00	0.00	0.00	9.48	18.53	20.79
Game (n=20)	Soccer ball	12.74	19.39	0.00	0.00	1.60	23.79	57.03	59.37	59.96
Game (n=20)	Water bottle	35.14	42.10	0.00	6.30	25.92	45.93	145.50	145.71	145.76
Game (n=20)	Dietary Objects	35.14	42.10	0.00	6.30	25.92	45.93	145.50	145.71	145.76
Game (n=20)	Non-dietary Objects	218.95	85.32	97.17	162.76	200.98	235.56	382.21	400.61	405.21



Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Game (n=20)	All Objects	254.09	70.99	178.44	209.52	224.29	277.28	405.41	408.50	409.27
p value	Artificial Turf	0.874	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.001*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.02*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.881	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.366	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.705	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.488	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.314	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.068	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.068	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.327	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.064	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-347. Duration of Hand to Object Contact (Min/Hour) by Event Type, on Break/After/Before Game

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Artificial Turf	0.63	1.39	0.00	0.00	0.00	0.28	3.43	4.75	5.08
Practice (n=20)	Body	1.16	2.25	0.00	0.00	0.20	0.70	7.15	7.37	7.42
Practice (n=20)	Clothes	17.70	9.97	4.17	11.03	16.11	22.56	35.40	37.74	38.33
Practice (n=20)	Field Structures	2.81	3.86	0.00	0.07	1.18	4.55	11.10	13.36	13.93
Practice (n=20)	Footwear	1.58	2.43	0.00	0.00	0.85	2.23	6.14	9.06	9.79
Practice (n=20)	Head/face/hair	0.76	0.73	0.00	0.33	0.56	0.95	2.07	2.53	2.65
Practice (n=20)	Shin guards	0.27	0.53	0.00	0.00	0.00	0.24	1.56	1.70	1.73
Practice (n=20)	Soccer ball	1.43	2.24	0.00	0.00	0.58	1.65	5.01	8.11	8.88
Practice (n=20)	Water bottle	9.26	7.68	1.26	4.42	6.04	12.67	19.02	30.94	33.92
Practice (n=20)	Dietary Objects	9.30	7.69	1.26	4.42	6.11	13.02	19.02	30.94	33.92



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Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Non-dietary Objects	27.47	10.87	11.95	20.25	25.14	35.01	44.39	51.68	53.50
Practice (n=20)	All Objects	36.77	12.96	13.31	28.91	34.93	44.40	58.66	59.49	59.70
Game (n=20)	Artificial Turf	0.44	1.85	0.00	0.00	0.00	0.02	0.66	6.78	8.31
Game (n=20)	Body	4.55	5.36	0.00	0.53	1.21	7.50	12.92	17.34	18.45
Game (n=20)	Clothes	12.99	7.93	2.75	7.80	10.12	17.85	24.80	31.83	33.59
Game (n=20)	Field Structures	1.53	3.16	0.00	0.23	0.45	1.38	5.18	12.35	14.14
Game (n=20)	Footwear	1.29	2.77	0.00	0.00	0.19	0.88	6.90	10.28	11.12
Game (n=20)	Head/face/hair	1.21	1.75	0.00	0.30	0.70	1.16	5.16	6.64	7.01
Game (n=20)	Shin guards	0.45	1.24	0.00	0.00	0.00	0.00	2.71	4.57	5.03
Game (n=20)	Soccer ball	0.57	0.82	0.00	0.00	0.04	1.06	1.93	2.15	2.20
Game (n=20)	Water bottle	6.97	8.37	0.00	0.37	3.84	8.48	21.30	29.82	31.95
Game (n=20)	Dietary Objects	6.97	8.37	0.00	0.37	3.84	8.48	21.30	29.82	31.95
Game (n=20)	Non-dietary Objects	25.46	11.33	7.38	17.30	24.36	36.35	41.28	43.31	43.82
Game (n=20)	All Objects	32.43	9.17	12.69	26.90	33.33	39.48	44.35	44.69	44.78
p value	Artificial Turf	0.645	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.002*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.108	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.542	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.496	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.705	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.606	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.342	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.096	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.096	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.659	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.289	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined



Table S3-348. Median Duration of Hand to Object Contact (Second) by Event Type, on Break/After/Before Game

Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice	Artificial Turf	7	10.15	16.68	2.03	2.32	2.69	7.24	36.49	45.03	47.17
Practice	Body	13	2.94	1.83	0.16	1.41	3.17	3.97	5.74	6.33	6.47
Practice	Clothes	20	4.64	1.48	2.43	3.31	4.81	5.88	6.73	6.84	6.87
Practice	Field Structures	15	5.84	4.58	1.07	3.23	4.15	6.73	13.50	18.67	19.96
Practice	Footwear	12	4.65	2.44	1.29	3.11	4.10	5.53	8.96	9.10	9.13
Practice	Head/face/hair	17	1.43	0.62	0.58	1.03	1.10	1.74	2.65	2.75	2.77
Practice	Shin guards	6	3.25	1.54	1.23	2.39	2.96	4.30	5.21	5.35	5.39
Practice	Soccer ball	12	2.54	1.98	0.82	1.64	2.07	2.39	5.64	7.94	8.52
Practice	Water bottle	20	7.84	3.99	2.27	5.02	7.14	9.45	15.59	17.65	18.16
Practice	Dietary Objects	20	7.73	4.00	2.27	5.02	6.77	9.17	15.59	17.65	18.16
Practice	Non-dietary Objects	20	3.82	1.30	1.92	2.95	3.35	4.42	6.26	6.28	6.29
Practice	All Objects	20	4.11	1.29	1.97	3.25	3.77	5.21	6.27	6.33	6.35
Game	Artificial Turf	7	1.01	0.51	0.47	0.64	1.05	1.13	1.75	1.94	1.99
Game	Body	19	3.66	3.33	0.95	1.25	2.04	4.54	10.27	10.88	11.03
Game	Clothes	20	4.60	2.09	2.15	3.34	3.83	5.14	7.89	10.20	10.78
Game	Field Structures	18	3.74	2.27	1.69	2.18	2.79	5.04	8.30	8.69	8.78
Game	Footwear	13	4.32	2.38	1.12	3.03	3.62	5.30	8.18	9.08	9.30
Game	Head/face/hair	19	1.67	0.74	0.65	1.25	1.39	1.89	2.82	3.69	3.91
Game	Shin guards	4	8.72	7.17	1.64	3.26	8.28	13.75	16.11	16.58	16.70
Game	Soccer ball	10	2.28	1.83	1.06	1.41	1.56	1.79	5.63	6.63	6.88
Game	Water bottle	16	7.87	3.26	3.44	6.25	7.34	8.46	14.05	14.68	14.83
Game	Dietary Objects	16	7.87	3.26	3.44	6.25	7.34	8.46	14.05	14.68	14.83
Game	Non-dietary Objects	20	3.05	1.05	1.61	2.50	2.67	3.46	5.34	5.63	5.70
Game	All Objects	20	3.50	1.17	2.25	2.65	3.06	3.87	5.81	5.83	5.83
p value	Artificial Turf	ND	0.001*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.970	ND	ND	ND	ND	ND	ND	ND	ND



Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Clothes	ND	0.718	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.040*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.689	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.129	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	0.352	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	0.203	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.888	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.024*	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.081	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-349. Hourly Duration (Min/Hour) of Player Intensity by Event Type, on Break/After/Before Game

Event	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	High	0.61	0.90	0.00	0.00	0.00	1.19	2.27	2.58	2.66
Practice (n=20)	Moderate	1.69	1.57	0.00	0.27	1.39	2.75	4.12	4.25	4.28
Practice (n=20)	Light	19.81	9.33	4.04	13.12	21.46	23.61	38.52	38.89	38.98
Practice (n=20)	Resting	37.89	10.50	15.44	32.01	36.72	46.42	53.93	55.20	55.52
Game (n=20)	High	1.82	1.69	0.00	0.23	1.50	2.96	4.42	5.10	5.27
Game (n=20)	Moderate	3.63	4.20	0.00	0.99	2.13	4.92	12.72	13.85	14.13
Game (n=20)	Light	17.92	8.99	3.92	11.42	14.77	25.20	31.15	37.90	39.59
Game (n=20)	Resting	36.63	8.86	15.37	31.93	37.36	42.00	47.34	52.78	54.14
p value	High	0.009*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Moderate	0.196	ND	ND	ND	ND	ND	ND	ND	ND
p value	Light	0.565	ND	ND	ND	ND	ND	ND	ND	ND
p value	Resting	0.799	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined



Table S3-350. Duration (Min/Hour) of Macro-Activities by Age, on Break/After/Before Game

Event	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Push ups	0.03	0.14	0.00	0.00	0.00	0.00	0.03	0.49	0.61
Practice (n=20)	Rest Standing	33.82	10.20	16.15	25.93	33.66	39.10	49.73	50.68	50.92
Practice (n=20)	Running	1.83	1.76	0.00	0.23	1.75	2.86	4.95	5.01	5.03
Practice (n=20)	Sit on chair	0.01	0.05	0.00	0.00	0.00	0.00	0.01	0.19	0.24
Practice (n=20)	Sit on ground	3.69	5.98	0.00	0.00	0.41	5.64	13.36	21.70	23.79
Practice (n=20)	Stretching	0.20	0.55	0.00	0.00	0.00	0.00	1.00	2.06	2.32
Practice (n=20)	Walking	20.38	9.76	4.00	13.14	22.11	24.94	39.06	40.32	40.63
Game (n=20)	Push ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Rest Standing	28.62	10.54	10.59	22.58	29.91	34.74	45.23	46.04	46.24
Game (n=20)	Running	4.36	5.50	0.00	1.01	1.62	6.15	16.15	16.83	17.00
Game (n=20)	Sit on chair	4.29	7.64	0.00	0.00	0.56	3.96	20.80	25.30	26.43
Game (n=20)	Sit on ground	2.59	6.51	0.00	0.00	0.02	1.04	14.15	24.03	26.50
Game (n=20)	Stretching	0.18	0.39	0.00	0.00	0.00	0.00	0.96	1.20	1.26
Game (n=20)	Walking	19.86	10.45	4.01	11.82	15.55	30.05	36.38	39.26	39.98
p value*	Push ups	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Rest Standing	0.149	ND	ND	ND	ND	ND	ND	ND	ND
p value	Running	0.377	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on chair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on ground	0.553	ND	ND	ND	ND	ND	ND	ND	ND
p value	Stretching	0.985	ND	ND	ND	ND	ND	ND	ND	ND
p value	Walking	0.862	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to the activity not observed; and ND: not determined

Table S3-351. Mouthing Frequency (Event/Hour) by Event Type, on Break/After/Before Game

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA



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Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Body	0.42	1.87	0.00	0.00	0.00	0.00	0.42	6.76	8.35
Practice (n=20)	Clothes	10.71	19.19	0.00	0.00	5.03	11.15	53.58	70.86	75.18
Practice (n=20)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Hands	7.94	12.13	0.00	0.00	4.19	10.14	26.18	43.20	47.46
Practice (n=20)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Water bottle	48.61	55.36	0.00	24.44	29.91	49.09	137.82	219.44	239.85
Practice (n=20)	Dietary Objects	50.17	54.27	8.58	24.44	32.42	49.09	137.82	219.44	239.85
Practice (n=20)	Non-dietary Objects	11.75	19.25	0.00	0.00	5.26	12.46	53.58	70.86	75.18
Practice (n=20)	All Objects	61.92	54.40	9.49	27.60	45.56	89.38	137.82	219.44	239.85
Game (n=20)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Body	0.42	1.86	0.00	0.00	0.00	0.00	0.42	6.74	8.32
Game (n=20)	Clothes	11.20	24.66	0.00	0.00	6.01	10.65	25.43	95.60	113.14
Game (n=20)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Hands	13.21	13.94	0.00	1.39	11.00	20.84	35.58	48.64	51.91
Game (n=20)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Water bottle	21.00	23.42	0.00	2.34	13.52	27.61	65.30	74.52	76.82
Game (n=20)	Dietary Objects	21.00	23.42	0.00	2.34	13.52	27.61	65.30	74.52	76.82
Game (n=20)	Non-dietary Objects	13.03	24.70	0.00	3.06	6.83	11.18	33.33	97.18	113.14
Game (n=20)	All Objects	34.03	32.48	0.00	9.22	28.34	36.88	88.01	114.82	121.52
p value	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.574	ND	ND	ND	ND	ND	ND	ND	ND



Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Clothes	0.813	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.128	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.018*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.006*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.565	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.044*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-352. Mouthing Duration (Min/Hour) by Event Type, on Break/After/Before Game

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Body	0.01	0.03	0.00	0.00	0.00	0.00	0.01	0.12	0.15
Practice (n=20)	Clothes	0.34	0.60	0.00	0.00	0.12	0.36	1.99	2.01	2.02
Practice (n=20)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Hands	0.40	1.10	0.00	0.00	0.06	0.29	1.44	4.21	4.90
Practice (n=20)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Water bottle	3.07	3.41	0.00	0.91	2.10	3.51	8.14	13.45	14.78
Practice (n=20)	Dietary Objects	3.16	3.35	0.27	1.05	2.10	3.51	8.14	13.45	14.78
Practice (n=20)	Non-dietary Objects	0.40	0.64	0.00	0.00	0.14	0.39	1.99	2.01	2.02



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Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	All Objects	3.56	3.28	0.49	1.38	2.62	4.51	8.14	13.45	14.78
Game (n=20)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Body	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.07	0.09
Game (n=20)	Clothes	0.20	0.37	0.00	0.00	0.10	0.25	0.41	1.44	1.70
Game (n=20)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Hands	0.53	0.88	0.00	0.02	0.27	0.47	2.19	3.24	3.50
Game (n=20)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Water bottle	1.74	2.96	0.00	0.12	0.76	1.40	4.76	11.26	12.89
Game (n=20)	Dietary Objects	1.74	2.96	0.00	0.12	0.76	1.40	4.76	11.26	12.89
Game (n=20)	Non-dietary Objects	0.27	0.40	0.00	0.05	0.17	0.26	0.97	1.55	1.70
Game (n=20)	All Objects	2.00	3.00	0.00	0.43	1.08	1.90	5.65	11.65	13.15
p value	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.574	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.802	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.122	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.027*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.011*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.913	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.009*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)



NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-353. Mouthing Median Duration (Second) by Event Type, on Break/After/Before Game

Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice	Artificial Turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Body	1	1.14	ND	ND	ND	ND	ND	ND	ND	ND
Practice	Clothes	12	1.88	1.20	0.57	1.12	1.61	2.33	4.02	4.60	4.74
Practice	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Hands	11	1.73	1.25	0.59	0.97	1.23	1.84	4.11	4.42	4.50
Practice	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Water bottle	18	3.79	1.52	1.46	2.63	4.03	4.36	6.13	6.74	6.90
Practice	Dietary Objects	20	3.61	1.54	1.46	2.33	3.85	4.28	6.04	6.73	6.90
Practice	Non-dietary Objects	15	1.78	1.12	0.57	1.19	1.51	1.92	3.78	4.55	4.74
Practice	All Objects	20	3.25	1.67	1.20	1.87	2.75	4.22	6.04	6.73	6.90
Game	Artificial Turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game	Body	1	0.66	ND	ND	ND	ND	ND	ND	ND	ND
Game	Clothes	13	1.32	0.58	0.66	0.86	1.20	1.46	2.36	2.45	2.47
Game	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game	Hands	15	1.65	1.18	0.28	1.00	1.33	1.81	4.09	4.58	4.70
Game	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game	Water bottle	15	3.73	1.55	1.35	2.70	3.29	4.68	6.10	6.69	6.83
Game	Dietary Objects	15	3.73	1.55	1.35	2.70	3.29	4.68	6.10	6.69	6.83
Game	Non-dietary Objects	19	1.94	2.69	0.18	0.78	1.20	1.66	5.64	10.16	11.29



Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Game	All Objects	20	2.88	1.57	0.72	1.73	2.84	3.86	5.73	5.78	5.79
p value*	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.247	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.817	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.882	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.316	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.573	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

S3.6.2.4. Activity Patterns by Event Type, Any Time but during the Game/Practice

Table S3-354. Frequency (Event/Hour) of Actions by Event Type, Any Time but during the Game/Practice

Event	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Diving	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Jumping	2.60	6.55	0.00	0.00	0.00	0.00	18.17	21.18	21.93
Practice (n=20)	Slip or fall	0.51	1.71	0.00	0.00	0.00	0.00	3.17	6.39	7.19
Practice (n=20)	Tackling or sliding	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Diving	0.37	1.66	0.00	0.00	0.00	0.00	0.37	6.02	7.43
Game (n=20)	Jumping	7.31	10.89	0.00	0.00	0.00	15.04	24.65	32.47	34.43
Game (n=20)	Slip or fall	3.22	10.53	0.00	0.00	0.00	0.00	13.23	39.79	46.43
Game (n=20)	Tackling or sliding	0.23	0.71	0.00	0.00	0.00	0.00	2.10	2.43	2.51
p value*	Diving	ND	ND	ND	ND	ND	ND	ND	ND	ND



Event	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Jumping	0.083	ND	ND	ND	ND	ND	ND	ND	ND
p value	Slip or fall	0.372	ND	ND	ND	ND	ND	ND	ND	ND
p value	Tackling or sliding	ND	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to these activities not observed; and ND: not determined

Table S3-355. Frequency of Hand to Object Contact (Event/Hour) by Event Type, Any Time but during the Game/Practice

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Artificial Turf	4.83	11.24	0.00	0.00	0.00	5.65	18.24	42.66	48.77
Practice (n=20)	Body	18.51	30.12	0.00	0.00	4.94	20.29	77.02	110.00	118.25
Practice (n=20)	Clothes	132.49	62.05	59.45	90.68	124.78	153.98	253.79	298.38	309.53
Practice (n=20)	Field Structures	17.46	20.47	0.00	1.23	8.71	31.27	45.74	67.28	72.66
Practice (n=20)	Footwear	19.15	19.90	0.00	0.00	15.78	31.19	40.45	69.21	76.40
Practice (n=20)	Head/face/hair	22.11	16.86	0.00	12.31	21.73	31.60	50.50	59.63	61.91
Practice (n=20)	Shin guards	4.99	12.60	0.00	0.00	0.00	3.94	26.70	47.24	52.37
Practice (n=20)	Soccer ball	18.88	21.34	0.00	0.00	14.86	36.71	45.90	69.96	75.97
Practice (n=20)	Water bottle	56.44	75.64	8.32	16.82	29.85	49.79	177.12	294.60	323.97
Practice (n=20)	Dietary Objects	56.68	75.56	8.32	16.82	31.59	49.79	177.12	294.60	323.97
Practice (n=20)	Non-dietary Objects	249.72	83.39	80.12	200.04	237.53	297.48	378.10	436.44	451.02
Practice (n=20)	All Objects	306.40	104.29	89.93	257.81	293.73	340.28	496.80	520.52	526.45
Game (n=20)	Artificial Turf	6.26	17.01	0.00	0.00	0.00	3.71	25.16	64.89	74.82
Game (n=20)	Body	28.53	23.28	0.00	9.65	24.04	38.28	68.48	75.15	76.82
Game (n=20)	Clothes	87.49	44.72	29.93	58.89	79.40	100.29	144.64	208.54	224.52
Game (n=20)	Field Structures	14.53	22.30	0.00	4.49	8.53	13.54	42.93	89.00	100.52
Game (n=20)	Footwear	8.16	14.64	0.00	0.00	2.60	8.70	33.71	55.73	61.23
Game (n=20)	Head/face/hair	27.07	28.42	0.00	10.06	17.76	31.36	77.38	108.59	116.39
Game (n=20)	Shin guards	2.02	4.86	0.00	0.00	0.00	0.00	9.41	17.42	19.42



Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Game (n=20)	Soccer ball	21.42	38.54	0.00	0.00	4.48	28.23	65.18	144.49	164.32
Game (n=20)	Water bottle	30.05	41.82	0.00	4.89	22.94	26.43	145.50	145.71	145.76
Game (n=20)	Dietary Objects	30.05	41.82	0.00	4.89	22.94	26.43	145.50	145.71	145.76
Game (n=20)	Non-dietary Objects	212.10	89.70	97.17	144.85	196.46	230.44	383.86	427.31	438.17
Game (n=20)	All Objects	242.15	81.56	142.90	192.36	222.92	265.48	397.84	430.10	438.17
p value	Artificial Turf	0.714	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.027*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.007*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.957	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.114	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.511	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.804	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.064	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.064	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.049*	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.011*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-356. Duration of Hand to Object Contact (Min/Hour) by Event Type, Any Time but during the Game/Practice

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Artificial Turf	0.43	0.87	0.00	0.00	0.00	0.28	2.34	2.67	2.75
Practice (n=20)	Body	1.30	2.27	0.00	0.00	0.23	0.82	6.34	6.98	7.14
Practice (n=20)	Clothes	18.07	10.19	4.17	10.59	16.32	24.21	35.40	37.74	38.33
Practice (n=20)	Field Structures	2.56	3.87	0.00	0.07	0.61	4.37	11.10	13.36	13.93
Practice (n=20)	Footwear	1.42	1.67	0.00	0.00	1.35	1.78	5.41	5.69	5.76
Practice (n=20)	Head/face/hair	0.72	0.72	0.00	0.28	0.58	0.82	2.07	2.53	2.65



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Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Shin guards	0.25	0.51	0.00	0.00	0.00	0.21	1.56	1.70	1.73
Practice (n=20)	Soccer ball	1.39	2.22	0.00	0.00	0.42	1.65	4.61	8.03	8.88
Practice (n=20)	Water bottle	8.12	8.03	1.26	3.07	4.69	12.67	17.53	30.64	33.92
Practice (n=20)	Dietary Objects	8.15	8.02	1.26	3.07	4.76	12.67	17.53	30.64	33.92
Practice (n=20)	Non-dietary Objects	27.03	11.41	11.95	17.44	25.14	35.01	44.39	51.68	53.50
Practice (n=20)	All Objects	35.17	13.93	13.31	24.28	33.16	43.86	58.66	59.49	59.70
Game (n=20)	Artificial Turf	0.43	1.74	0.00	0.00	0.00	0.05	0.68	6.40	7.83
Game (n=20)	Body	4.26	5.29	0.00	0.40	1.18	7.50	12.92	17.34	18.45
Game (n=20)	Clothes	13.17	7.80	2.59	7.23	12.28	17.54	24.66	31.80	33.59
Game (n=20)	Field Structures	1.47	3.27	0.00	0.17	0.37	1.19	4.95	12.71	14.65
Game (n=20)	Footwear	1.20	2.70	0.00	0.00	0.13	0.77	6.10	10.12	11.12
Game (n=20)	Head/face/hair	1.04	1.53	0.00	0.28	0.62	1.03	3.36	6.05	6.72
Game (n=20)	Shin guards	0.43	1.18	0.00	0.00	0.00	0.00	2.70	4.30	4.70
Game (n=20)	Soccer ball	0.74	0.99	0.00	0.00	0.10	1.58	2.19	3.03	3.24
Game (n=20)	Water bottle	5.70	7.90	0.00	0.37	3.53	7.57	21.30	29.82	31.95
Game (n=20)	Dietary Objects	5.70	7.90	0.00	0.37	3.53	7.57	21.30	29.82	31.95
Game (n=20)	Non-dietary Objects	24.44	10.66	7.38	15.85	23.32	32.26	41.28	43.31	43.82
Game (n=20)	All Objects	30.14	9.94	15.67	22.47	29.35	39.37	44.35	44.69	44.78
p value	Artificial Turf	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.007*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.134	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.578	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.328	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.695	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.606	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.678	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.120	ND	ND	ND	ND	ND	ND	ND	ND



Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Dietary Objects	0.113	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.583	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.291	ND	ND	ND	ND	ND	ND	ND	ND

* <0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-357. Median Duration of Hand to Object Contact (Second) by Event Type, Any Time but during the Game/Practice

Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice	Artificial Turf	7	4.45	6.12	0.67	2.10	2.48	2.80	13.64	17.31	18.23
Practice	Body	14	2.53	1.83	0.16	1.09	2.45	3.36	5.68	6.31	6.47
Practice	Clothes	20	4.33	1.59	1.38	3.12	4.44	5.60	6.73	6.81	6.83
Practice	Field Structures	15	5.71	4.67	1.07	2.82	4.15	6.73	13.50	18.67	19.96
Practice	Footwear	13	3.21	2.12	1.11	1.80	2.44	3.76	6.68	8.29	8.70
Practice	Head/face/hair	17	1.32	0.51	0.58	1.03	1.10	1.54	2.15	2.65	2.77
Practice	Shin guards	6	3.25	1.54	1.23	2.39	2.96	4.30	5.21	5.35	5.39
Practice	Soccer ball	13	2.42	1.94	0.82	1.58	2.00	2.35	5.37	7.89	8.52
Practice	Water bottle	20	7.84	3.99	2.27	5.02	7.14	9.45	15.59	17.65	18.16
Practice	Dietary Objects	20	7.73	4.00	2.27	5.02	6.77	9.17	15.59	17.65	18.16
Practice	Non-dietary Objects	20	3.31	1.23	1.52	2.53	3.09	3.87	5.74	6.16	6.26
Practice	All Objects	20	3.54	1.30	1.59	2.61	3.30	3.95	5.83	6.18	6.26
Game	Artificial Turf	9	0.95	0.46	0.47	0.71	0.78	1.08	1.66	1.93	1.99
Game	Body	19	3.50	3.39	0.76	1.23	1.85	4.35	10.27	10.88	11.03
Game	Clothes	20	4.92	2.10	1.91	3.61	4.46	6.15	7.89	10.20	10.78
Game	Field Structures	18	3.32	2.04	0.91	1.95	2.79	3.87	6.80	8.39	8.78
Game	Footwear	14	4.19	2.45	1.12	2.55	3.51	5.80	8.09	9.06	9.30
Game	Head/face/hair	19	1.60	0.74	0.65	1.21	1.39	1.72	2.82	3.69	3.91
Game	Shin guards	4	8.72	7.17	1.64	3.26	8.28	13.75	16.11	16.58	16.70
Game	Soccer ball	13	1.74	0.82	0.90	1.36	1.54	1.72	3.18	3.92	4.10



Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Game	Water bottle	17	7.44	3.27	2.09	6.03	7.16	8.45	13.44	13.72	13.79
Game	Dietary Objects	17	7.44	3.27	2.09	6.03	7.16	8.45	13.44	13.72	13.79
Game	Non-dietary Objects	20	2.96	1.15	1.29	2.34	2.66	3.40	5.34	5.63	5.70
Game	All Objects	20	3.32	1.33	1.29	2.40	2.89	3.89	5.81	5.83	5.83
p value	Artificial Turf	ND	0.008*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.760	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.495	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.052	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.239	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.114	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	0.352	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	0.204	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.775	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.892	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.355	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.620	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-358. Hourly Duration (Min/Hour) of Player Intensity by Event Type, Any Time but during the Game/Practice

Event	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	High	1.41	1.92	0.00	0.00	0.47	2.04	5.18	6.56	6.91
Practice (n=20)	Moderate	6.36	7.77	0.00	0.42	3.40	11.88	21.36	22.85	23.22
Practice (n=20)	Light	19.91	9.45	4.04	15.14	19.44	23.71	38.52	38.89	38.98
Practice (n=20)	Resting	32.33	13.40	14.73	20.16	31.13	41.30	53.93	55.20	55.52
Game (n=20)	High	2.06	1.86	0.00	0.41	1.83	2.99	5.33	6.19	6.41
Game (n=20)	Moderate	5.82	4.69	0.00	1.85	4.66	9.88	13.03	13.91	14.13
Game (n=20)	Light	17.58	8.48	4.00	11.42	14.77	23.78	29.43	37.56	39.59



Event	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Game (n=20)	Resting	34.54	10.44	15.37	26.62	36.45	42.00	47.25	51.36	52.39
p value*	High	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Moderate	1	ND	ND	ND	ND	ND	ND	ND	ND
p value	Light	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Resting	1.000	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

ND: not determined

Table S3-359. Duration (Min/Hour) of Macro-Activities by Age, Any Time but during the Game/Practice

Event	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Push ups	0.02	0.08	0.00	0.00	0.00	0.00	0.02	0.28	0.35
Practice (n=20)	Rest Standing	28.64	12.40	11.99	18.92	25.12	36.32	49.73	50.68	50.92
Practice (n=20)	Running	5.30	6.25	0.00	0.35	3.30	8.19	15.09	21.67	23.32
Practice (n=20)	Sit on chair	0.01	0.02	0.00	0.00	0.00	0.00	0.01	0.09	0.11
Practice (n=20)	Sit on ground	3.36	5.82	0.00	0.00	0.61	4.28	13.36	21.70	23.79
Practice (n=20)	Stretching	3.06	6.16	0.00	0.00	0.00	2.35	17.61	19.40	19.85
Practice (n=20)	Walking	19.54	9.37	4.00	14.43	19.51	23.44	39.06	40.32	40.63
Game (n=20)	Push ups	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Rest Standing	27.28	10.68	10.59	17.59	28.28	34.70	45.23	46.04	46.24
Game (n=20)	Running	6.36	5.74	0.00	1.31	4.54	10.46	16.15	16.83	17.00
Game (n=20)	Sit on chair	3.97	7.67	0.00	0.00	0.27	1.99	20.80	25.30	26.43
Game (n=20)	Sit on ground	2.60	6.28	0.00	0.00	0.11	1.14	14.10	23.15	25.41
Game (n=20)	Stretching	0.33	0.55	0.00	0.00	0.00	0.53	1.29	1.79	1.91
Game (n=20)	Walking	19.14	9.52	4.08	11.82	15.53	26.44	32.21	38.43	39.98
p value*	Push ups	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Rest Standing	0.808	ND	ND	ND	ND	ND	ND	ND	ND
p value	Running	0.371	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on chair	ND	ND	ND	ND	ND	ND	ND	ND	ND



Event	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Sit on ground	0.570	ND	ND	ND	ND	ND	ND	ND	ND
p value	Stretching	0.768	ND	ND	ND	ND	ND	ND	ND	ND
p value	Walking	0.968	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to the activity not observed; and ND: not determined

Table S3-360. Mouthing Frequency (Event/Hour) by Event Type, Any Time but during the Game/Practice

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Body	0.42	1.87	0.00	0.00	0.00	0.00	0.42	6.76	8.35
Practice (n=20)	Clothes	9.81	17.07	0.00	0.00	4.80	11.31	29.44	66.03	75.18
Practice (n=20)	Hands	7.83	9.19	0.00	0.00	4.82	13.50	25.25	28.13	28.85
Practice (n=20)	Water bottle	42.74	55.11	0.00	13.95	28.26	42.92	137.82	219.44	239.85
Practice (n=20)	Dietary Objects	43.82	54.34	5.25	17.07	28.26	42.92	137.82	219.44	239.85
Practice (n=20)	Non-dietary Objects	10.80	17.10	0.00	0.00	5.12	15.05	29.44	66.03	75.18
Practice (n=20)	All Objects	54.63	53.66	5.25	27.60	41.12	52.81	137.82	219.44	239.85
Game (n=20)	Body	0.27	0.89	0.00	0.00	0.00	0.00	1.67	3.34	3.76
Game (n=20)	Clothes	11.13	24.58	0.00	0.00	6.27	10.62	21.75	94.86	113.14
Game (n=20)	Hands	11.97	12.46	0.00	3.41	9.09	14.10	33.81	43.71	46.19
Game (n=20)	Water bottle	15.80	16.88	0.00	1.48	12.20	25.01	40.18	59.79	64.69
Game (n=20)	Dietary Objects	15.80	16.88	0.00	1.48	12.20	25.01	40.18	59.79	64.69
Game (n=20)	Non-dietary Objects	12.78	24.42	0.00	3.24	8.05	11.12	26.14	95.74	113.14
Game (n=20)	All Objects	28.59	29.67	0.00	10.97	23.32	31.34	88.01	114.82	121.52
p value	Body	0.574	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.989	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.212	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.016*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.004*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.652	ND	ND	ND	ND	ND	ND	ND	ND



Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	All Objects	0.022*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-361. Mouthing Duration (Min/Hour) by Event Type, Any Time but during the Game/Practice

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Body	0.01	0.03	0.00	0.00	0.00	0.00	0.01	0.12	0.15
Practice (n=20)	Clothes	0.30	0.48	0.00	0.00	0.12	0.37	1.09	1.81	1.99
Practice (n=20)	Hands	0.31	0.66	0.00	0.00	0.15	0.24	1.34	2.56	2.86
Practice (n=20)	Water bottle	2.72	3.38	0.00	0.69	2.04	2.80	8.14	13.45	14.78
Practice (n=20)	Dietary Objects	2.78	3.35	0.27	0.92	2.04	2.80	8.14	13.45	14.78
Practice (n=20)	Non-dietary Objects	0.34	0.50	0.00	0.00	0.18	0.42	1.09	1.81	1.99
Practice (n=20)	All Objects	3.12	3.26	0.36	1.38	2.39	3.29	8.14	13.45	14.78
Game (n=20)	Body	0.00	0.01	0.00	0.00	0.00	0.00	0.03	0.04	0.04
Game (n=20)	Clothes	0.21	0.37	0.00	0.00	0.10	0.26	0.43	1.45	1.70
Game (n=20)	Hands	0.49	0.84	0.00	0.05	0.23	0.36	2.18	3.11	3.34
Game (n=20)	Water bottle	1.21	1.73	0.00	0.11	0.68	1.20	4.26	6.23	6.72
Game (n=20)	Dietary Objects	1.21	1.73	0.00	0.11	0.68	1.20	4.26	6.23	6.72
Game (n=20)	Non-dietary Objects	0.26	0.40	0.00	0.06	0.15	0.30	0.93	1.55	1.70
Game (n=20)	All Objects	1.47	1.84	0.00	0.29	0.80	1.63	5.12	6.66	7.05
p value*	Body	0.574	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.781	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.150	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.024*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.009*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.989	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.009*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined



Table S3-362. Mouthing Median Duration (Second) by Event Type, Any Time but during the Game/Practice

Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice	Body	1	1.14	ND	ND	ND	ND	ND	ND	ND	ND
Practice	Clothes	12	1.85	1.18	0.83	0.97	1.61	2.01	4.02	4.60	4.74
Practice	Hands	12	1.63	1.21	0.59	0.91	1.17	1.76	3.99	4.40	4.50
Practice	Water bottle	18	3.79	1.52	1.46	2.63	4.03	4.36	6.13	6.74	6.90
Practice	Dietary Objects	20	3.61	1.54	1.46	2.33	3.85	4.28	6.04	6.73	6.90
Practice	Non-dietary Objects	13	1.76	1.07	0.83	1.01	1.51	2.33	3.33	4.46	4.74
Practice	All Objects	20	3.21	1.67	1.20	1.89	2.67	4.22	6.04	6.73	6.90
Game	Body	2	0.94	0.40	0.66	0.80	0.94	1.08	1.19	1.22	1.22
Game	Clothes	13	1.27	0.55	0.66	0.84	1.20	1.62	2.10	2.39	2.47
Game	Hands	16	1.59	1.16	0.36	0.94	1.26	1.72	4.05	4.57	4.70
Game	Water bottle	15	3.71	1.57	1.35	2.59	3.29	4.68	6.10	6.69	6.83
Game	Dietary Objects	15	3.71	1.57	1.35	2.59	3.29	4.68	6.10	6.69	6.83
Game	Non-dietary Objects	16	1.87	2.61	0.18	0.81	1.21	1.67	5.24	10.08	11.29
Game	All Objects	18	2.75	1.60	0.72	1.55	2.42	3.83	5.73	5.78	5.79
p value*	Body	ND	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.205	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.945	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.735	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.961	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.215	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.290	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined



S3.6.3. Data Summarized According to Location and Event Type

S3.6.3.1. Activity Patterns by Event Type, On Field

Table S3-363. Frequency (Event/Hour) of Actions by Event Type, On Field

Event	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Diving	0.89	2.59	0.00	0.00	0.00	0.20	4.56	9.81	11.12
Practice (n=20)	Heading	0.30	0.47	0.00	0.00	0.00	0.51	1.34	1.39	1.40
Practice (n=20)	Jumping	14.14	26.58	0.00	0.75	3.58	8.18	72.77	82.27	84.64
Practice (n=20)	Slip or fall	2.36	4.32	0.00	0.00	0.63	1.66	13.54	14.57	14.83
Practice (n=20)	Tackling or sliding	0.29	0.76	0.00	0.00	0.00	0.11	0.81	2.86	3.37
Game (n=20)	Diving	0.35	0.92	0.00	0.00	0.00	0.00	1.96	3.29	3.62
Game (n=20)	Heading	0.43	0.85	0.00	0.00	0.00	0.14	2.25	2.32	2.34
Game (n=20)	Jumping	5.45	4.87	0.00	0.35	5.57	9.21	13.77	14.15	14.25
Game (n=20)	Slip or fall	2.83	4.56	0.00	0.44	1.07	3.20	7.74	17.17	19.53
Game (n=20)	Tackling or sliding	0.67	1.01	0.00	0.00	0.00	1.06	2.73	2.99	3.05
p value*	Diving	0.486	ND	ND	ND	ND	ND	ND	ND	ND
p value	Heading	0.790	ND	ND	ND	ND	ND	ND	ND	ND
p value	Jumping	0.935	ND	ND	ND	ND	ND	ND	ND	ND
p value	Slip or fall	0.322	ND	ND	ND	ND	ND	ND	ND	ND
p value	Tackling or sliding	0.211	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

ND: not determined

Table S3-364. Frequency of Hand to Object Contact (Event/Hour) by Event Type, On Field

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Artificial Turf	4.46	5.37	0.00	1.03	2.62	4.47	13.60	18.82	20.12
Practice (n=20)	Body	13.06	14.88	1.53	3.81	7.92	16.57	42.76	58.15	62.00
Practice (n=20)	Clothes	85.17	39.08	29.80	62.98	74.95	100.85	156.56	175.41	180.12
Practice (n=20)	Field Structures	8.49	6.09	1.60	3.40	6.72	11.12	20.01	22.23	22.79
Practice (n=20)	Footwear	6.78	6.73	0.72	2.43	5.26	9.21	14.70	27.17	30.29



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Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Head/face/hair	29.62	23.38	3.36	13.20	25.30	34.90	81.13	89.70	91.84
Practice (n=20)	Shin guards	1.68	4.57	0.00	0.00	0.00	0.65	6.41	17.34	20.07
Practice (n=20)	Soccer ball	23.04	30.62	0.79	2.51	8.16	32.21	75.69	110.91	119.72
Practice (n=20)	Water bottle	3.57	3.03	0.00	0.40	3.55	5.54	8.77	9.80	10.06
Practice (n=20)	Dietary Objects	3.63	3.12	0.00	0.40	3.60	5.54	8.81	10.48	10.90
Practice (n=20)	Non-dietary Objects	181.13	61.57	87.21	144.22	172.82	199.66	299.34	327.13	334.08
Practice (n=20)	All Objects	184.76	61.69	92.90	145.37	177.93	208.57	299.61	331.57	339.56
Game (n=20)	Artificial Turf	4.09	4.97	0.00	1.16	2.61	5.15	15.22	18.10	18.82
Game (n=20)	Body	11.52	7.88	2.22	6.42	9.18	15.25	26.69	30.75	31.77
Game (n=20)	Clothes	55.90	24.88	13.63	36.46	51.42	74.31	93.84	94.72	94.94
Game (n=20)	Field Structures	3.89	2.93	0.00	1.76	3.04	6.06	6.99	11.13	12.17
Game (n=20)	Footwear	4.46	3.72	0.60	2.42	3.38	5.03	9.90	15.57	16.99
Game (n=20)	Head/face/hair	27.78	26.61	2.60	11.91	16.26	34.39	71.92	104.26	112.34
Game (n=20)	Shin guards	1.02	2.00	0.00	0.00	0.00	1.25	4.59	6.99	7.59
Game (n=20)	Soccer ball	19.92	28.05	0.00	4.18	10.16	21.78	89.80	101.52	104.45
Game (n=20)	Water bottle	1.12	1.62	0.00	0.00	0.00	2.19	4.79	4.94	4.98
Game (n=20)	Dietary Objects	1.13	1.61	0.00	0.00	0.14	2.19	4.79	4.94	4.98
Game (n=20)	Non-dietary Objects	141.28	64.91	66.35	110.56	127.62	152.90	289.41	297.43	299.44
Game (n=20)	All Objects	142.41	65.46	67.25	111.02	127.62	153.79	289.52	299.21	301.63
p value	Artificial Turf	0.882	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.738	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.012*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.013*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.223	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.640	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.840	ND	ND	ND	ND	ND	ND	ND	ND



Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Soccer ball	0.947	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.005*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.007*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.008*	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.007*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-365. Duration of Hand to Object Contact (Min/Hour) by Event Type, On Field

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Artificial Turf	0.23	0.28	0.00	0.02	0.12	0.33	0.80	0.94	0.98
Practice (n=20)	Body	0.88	1.45	0.03	0.08	0.25	0.76	4.17	5.08	5.31
Practice (n=20)	Clothes	15.85	14.16	1.83	7.06	9.24	17.84	41.48	52.37	55.09
Practice (n=20)	Field Structures	0.91	0.90	0.09	0.19	0.49	1.35	2.45	2.99	3.13
Practice (n=20)	Footwear	0.51	0.48	0.01	0.19	0.45	0.56	1.46	1.71	1.77
Practice (n=20)	Head/face/hair	0.96	0.72	0.16	0.43	0.70	1.52	2.27	2.29	2.30
Practice (n=20)	Shin guards	0.07	0.17	0.00	0.00	0.00	0.03	0.37	0.63	0.69
Practice (n=20)	Soccer ball	0.97	1.14	0.01	0.14	0.54	1.51	3.76	3.82	3.84
Practice (n=20)	Water bottle	0.59	0.52	0.00	0.08	0.51	0.92	1.21	1.86	2.02
Practice (n=20)	Dietary Objects	0.59	0.52	0.00	0.08	0.51	0.92	1.21	1.89	2.06
Practice (n=20)	Non-dietary Objects	20.86	14.08	5.92	12.23	14.69	22.51	47.43	56.47	58.73
Practice (n=20)	All Objects	21.45	13.98	6.42	12.91	15.14	23.36	47.99	56.58	58.73
Game (n=20)	Artificial Turf	0.24	0.53	0.00	0.03	0.06	0.21	0.57	2.03	2.40
Game (n=20)	Body	0.84	1.13	0.04	0.14	0.38	1.12	3.53	3.72	3.77
Game (n=20)	Clothes	8.13	6.72	1.25	3.81	5.75	11.04	20.36	26.30	27.78
Game (n=20)	Field Structures	0.39	0.52	0.00	0.07	0.19	0.49	1.29	1.95	2.12
Game (n=20)	Footwear	0.26	0.21	0.01	0.09	0.27	0.32	0.73	0.78	0.79
Game (n=20)	Head/face/hair	1.02	1.92	0.03	0.31	0.56	0.80	1.85	7.58	9.01
Game (n=20)	Shin guards	0.17	0.51	0.00	0.00	0.00	0.07	0.94	1.91	2.15



Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Game (n=20)	Soccer ball	0.74	0.90	0.00	0.14	0.48	0.78	2.32	3.30	3.55
Game (n=20)	Water bottle	0.21	0.31	0.00	0.00	0.00	0.39	0.77	0.82	0.83
Game (n=20)	Dietary Objects	0.21	0.31	0.00	0.00	0.01	0.39	0.77	0.82	0.83
Game (n=20)	Non-dietary Objects	12.49	7.51	4.53	6.74	11.11	17.23	22.30	31.76	34.13
Game (n=20)	All Objects	12.70	7.53	4.53	7.05	11.11	17.23	22.65	31.83	34.13
p value	Artificial Turf	0.645	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.525	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.028*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.023*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.091	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.330	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.938	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.626	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.013*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.016*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.015*	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.008*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-366. Median Duration of Hand to Object Contact (Second) by Event Type, On Field

Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice	Artificial Turf	18	1.64	1.46	0.18	0.76	0.91	2.06	4.81	5.08	5.14
Practice	Body	20	1.57	1.25	0.45	1.05	1.22	1.71	2.78	5.61	6.32
Practice	Clothes	20	4.82	3.24	1.92	2.66	3.33	6.09	9.48	13.62	14.65
Practice	Field Structures	20	3.95	4.28	0.41	1.72	2.42	4.82	8.33	17.64	19.96
Practice	Footwear	20	3.62	2.56	0.99	1.66	2.53	5.15	8.42	9.40	9.65
Practice	Head/face/hair	20	1.38	0.49	0.92	1.12	1.20	1.58	2.11	2.89	3.09



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Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice	Shin guards	8	2.58	1.31	1.26	1.80	2.34	2.81	4.66	5.24	5.39
Practice	Soccer ball	20	2.22	2.18	0.77	1.12	1.62	2.31	4.44	9.34	10.56
Practice	Water bottle	15	7.18	3.82	2.39	3.94	6.97	9.32	13.31	15.02	15.45
Practice	Dietary Objects	15	7.15	3.83	2.39	3.94	6.43	9.32	13.31	15.02	15.45
Practice	Non-dietary Objects	20	2.68	1.61	1.32	1.64	2.07	3.05	6.69	6.89	6.94
Practice	All Objects	20	2.72	1.60	1.39	1.70	2.08	3.05	6.69	6.90	6.96
Game	Artificial Turf	17	1.38	0.85	0.62	0.88	1.20	1.39	2.75	3.92	4.21
Game	Body	20	1.09	0.41	0.64	0.78	0.94	1.30	1.86	1.87	1.87
Game	Clothes	20	3.97	3.89	1.59	2.21	2.94	4.19	6.81	17.03	19.59
Game	Field Structures	19	3.26	3.24	0.55	1.43	2.38	3.40	7.14	13.25	14.78
Game	Footwear	20	3.07	3.12	0.82	1.54	1.89	3.80	5.90	13.12	14.93
Game	Head/face/hair	20	1.29	0.44	0.60	1.09	1.18	1.39	2.01	2.32	2.40
Game	Shin guards	7	6.89	6.74	0.90	1.54	4.16	11.71	16.34	16.59	16.65
Game	Soccer ball	19	1.68	0.66	0.64	1.39	1.50	1.96	2.45	3.56	3.83
Game	Water bottle	9	9.76	6.69	2.09	5.35	8.29	9.98	21.04	22.97	23.45
Game	Dietary Objects	10	8.94	6.81	1.58	5.18	7.50	9.84	20.74	22.91	23.45
Game	Non-dietary Objects	20	1.99	0.67	1.18	1.51	1.79	2.31	3.14	3.32	3.36
Game	All Objects	20	2.01	0.68	1.18	1.53	1.81	2.32	3.23	3.34	3.36
p value*	Artificial Turf	ND	0.782	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.127	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.134	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.687	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.314	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.529	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	0.463	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	0.967	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.519	ND	ND	ND	ND	ND	ND	ND	ND



Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Dietary Objects	ND	0.807	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.165	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.134	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

ND: not determined

Table S3-367. Hourly Duration (Min/Hour) of Player Intensity by Event Type, On Field

Event	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=10)	High	2.12	1.20	0.10	1.15	2.26	2.92	3.70	4.48	4.67
Practice (n=10)	Moderate	14.45	4.91	4.18	11.96	14.50	16.97	21.42	22.55	22.83
Practice (n=10)	Light	25.85	4.64	15.46	22.60	25.63	28.64	33.77	34.19	34.29
Practice (n=10)	Resting	17.58	4.80	10.30	14.31	17.33	19.92	24.90	28.84	29.82
Game (n=30)	High	2.12	1.32	0.31	1.24	1.85	2.75	4.07	5.23	5.52
Game (n=30)	Moderate	13.27	5.72	4.78	7.96	12.31	18.28	22.16	22.54	22.63
Game (n=30)	Light	26.26	5.65	13.63	23.27	27.78	29.59	32.79	33.28	33.40
Game (n=30)	Resting	18.34	8.16	8.83	12.02	17.85	22.66	31.73	37.05	38.38
p value*	High	0.957	ND	ND	ND	ND	ND	ND	ND	ND
p value	Moderate	0.512	ND	ND	ND	ND	ND	ND	ND	ND
p value	Light	0.529	ND	ND	ND	ND	ND	ND	ND	ND
p value	Resting	0.925	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

ND: not determined

Table S3-368. Duration (Min/Hour) of Macro-Activities by Age, On Field

Event Type	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Push ups	0.01	0.02	0.00	0.00	0.00	0.00	0.01	0.08	0.10
Practice (n=20)	Rest Standing	16.47	5.12	8.26	13.64	15.67	19.33	23.77	28.55	29.75
Practice (n=20)	Running	15.75	5.62	4.48	12.85	15.98	18.52	24.22	24.85	25.01
Practice (n=20)	Sit on chair	0	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Sit on ground	0.61	0.64	0.00	0.02	0.51	0.93	1.69	2.03	2.11
Practice (n=20)	Stretching	1.20	1.80	0.00	0.13	0.54	1.23	5.06	6.52	6.89



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Event Type	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Walking	25.55	5.82	13.73	21.84	24.42	29.27	33.85	36.59	37.28
Practice (n=20)	Push ups	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Practice (n=20)	Rest Standing	15.76	7.24	5.00	11.46	15.38	18.38	30.76	31.49	31.67
Practice (n=20)	Running	14.71	7.28	2.50	8.54	13.34	20.95	26.38	26.88	27.00
Practice (n=20)	Sit on chair	1.01	2.86	0.00	0.00	0.00	0.00	8.31	9.87	10.26
Practice (n=20)	Sit on ground	0.71	1.29	0.00	0.03	0.44	0.70	1.46	5.05	5.95
Practice (n=20)	Stretching	0.17	0.19	0.00	0.00	0.13	0.28	0.48	0.62	0.65
Practice (n=20)	Walking	27.37	6.27	13.65	23.83	29.43	31.34	33.77	35.81	36.32
p value	Push ups	1.000	ND	ND	ND	ND	ND	ND	ND	ND
p value	Rest Standing	0.534	ND	ND	ND	ND	ND	ND	ND	ND
p value	Running	0.602	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on chair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on ground	0.860	ND	ND	ND	ND	ND	ND	ND	ND
p value	Stretching	0.007*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Walking	0.279	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to the activity not observed; and ND: not determined

Table S3-369. Mouthing Frequency (Event/Hour) by Event Type, On Field

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Body	1.08	2.83	0.00	0.00	0.00	0.68	4.63	10.74	12.27
Practice (n=20)	Clothes	7.78	8.18	0.00	1.36	4.15	11.18	24.78	27.42	28.08
Practice (n=20)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Hands	10.29	7.40	0.84	3.63	11.31	13.28	25.53	26.17	26.33
Practice (n=20)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA



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Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Water bottle	2.25	2.12	0.00	0.00	2.22	4.20	5.64	5.69	5.70
Practice (n=20)	Dietary Objects	2.65	2.03	0.00	0.75	2.54	4.20	5.73	6.13	6.23
Practice (n=20)	Non-dietary Objects	10.71	10.40	0.00	3.59	9.21	12.60	26.26	41.59	45.42
Practice (n=20)	All Objects	13.36	10.11	1.99	4.85	12.99	16.35	26.26	41.59	45.42
Game (n=20)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Body	0.13	0.45	0.00	0.00	0.00	0.00	0.70	1.69	1.94
Game (n=20)	Clothes	8.97	21.33	0.00	0.74	2.33	5.82	22.94	82.04	96.81
Game (n=20)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Hands	5.89	2.30	1.60	3.78	6.64	7.50	8.68	9.18	9.30
Game (n=20)	Head/face/hair	0.02	0.11	0.00	0.00	0.00	0.00	0.02	0.38	0.47
Game (n=20)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Soccer ball	0.03	0.14	0.00	0.00	0.00	0.00	0.03	0.51	0.63
Game (n=20)	Water bottle	0.63	1.22	0.00	0.00	0.00	0.84	2.91	4.21	4.54
Game (n=20)	Dietary Objects	0.63	1.22	0.00	0.00	0.00	0.84	2.91	4.21	4.54
Game (n=20)	Non-dietary Objects	9.72	21.21	0.00	1.22	3.65	6.86	25.03	82.45	96.81
Game (n=20)	All Objects	10.36	21.50	0.00	1.94	3.65	9.79	25.11	83.75	98.41
p value	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.057	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.261	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.068	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.006*	ND	ND	ND	ND	ND	ND	ND	ND



Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Dietary Objects	0.001*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.081	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.015*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-370. Mouthing Duration (Min/Hour) by Event Type, On Field

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Body	0.02	0.07	0.00	0.00	0.00	0.01	0.13	0.27	0.31
Practice (n=20)	Clothes	0.21	0.22	0.00	0.06	0.10	0.38	0.62	0.68	0.69
Practice (n=20)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Hands	0.34	0.34	0.01	0.08	0.26	0.39	0.93	1.15	1.21
Practice (n=20)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Water bottle	0.15	0.15	0.00	0.00	0.09	0.27	0.41	0.41	0.41
Practice (n=20)	Dietary Objects	0.17	0.14	0.00	0.04	0.17	0.28	0.41	0.41	0.41
Practice (n=20)	Non-dietary Objects	0.28	0.24	0.00	0.10	0.22	0.39	0.72	0.84	0.87
Practice (n=20)	All Objects	0.45	0.29	0.08	0.21	0.41	0.61	0.98	1.00	1.01
Game (n=20)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Body	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.04	0.05
Game (n=20)	Clothes	0.19	0.37	0.00	0.01	0.05	0.16	0.78	1.37	1.52
Game (n=20)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Hands	0.18	0.19	0.03	0.10	0.12	0.16	0.64	0.74	0.77
Game (n=20)	Head/face/hair	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Game (n=20)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA



Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Game (n=20)	Soccer ball	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Game (n=20)	Water bottle	0.04	0.07	0.00	0.00	0.00	0.05	0.16	0.27	0.30
Game (n=20)	Dietary Objects	0.04	0.07	0.00	0.00	0.00	0.05	0.16	0.27	0.30
Game (n=20)	Non-dietary Objects	0.21	0.37	0.00	0.03	0.08	0.16	0.81	1.38	1.52
Game (n=20)	All Objects	0.24	0.39	0.00	0.03	0.08	0.23	0.81	1.46	1.62
p value*	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.117	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.104	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.133	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.006*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.001*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.042*	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.002*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-371. Mouthing Median Duration (Second) by Event Type, On Field

Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice	Artificial Turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Body	7	0.93	0.40	0.54	0.59	0.97	1.12	1.50	1.58	1.60
Practice	Clothes	19	1.92	2.19	0.62	0.90	1.39	1.80	3.58	9.20	10.61
Practice	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Hands	20	1.28	0.63	0.62	0.91	1.11	1.41	2.55	3.03	3.15



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Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Water bottle	14	3.68	1.38	1.06	2.68	3.74	4.44	5.64	5.71	5.73
Practice	Dietary Objects	16	3.58	1.47	1.06	2.25	3.74	4.69	5.62	5.71	5.73
Practice	Non-dietary Objects	19	1.68	2.21	0.58	0.88	1.11	1.43	3.34	9.15	10.61
Practice	All Objects	20	1.92	1.23	0.58	1.11	1.46	2.16	4.53	5.15	5.30
Game	Artificial Turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game	Body	2	1.40	0.26	1.22	1.31	1.40	1.50	1.57	1.58	1.59
Game	Clothes	16	1.15	0.47	0.24	0.84	1.23	1.35	1.82	1.96	2.00
Game	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game	Hands	20	1.17	0.59	0.36	0.81	0.98	1.41	2.37	2.63	2.69
Game	Head/face/hair	1	1.50	ND	ND	ND	ND	ND	ND	ND	ND
Game	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game	Soccer ball	1	0.13	ND	ND	ND	ND	ND	ND	ND	ND
Game	Water bottle	6	3.20	1.41	0.93	2.93	3.33	3.43	4.86	5.23	5.33
Game	Dietary Objects	6	3.20	1.41	0.93	2.93	3.33	3.43	4.86	5.23	5.33
Game	Non-dietary Objects	18	1.12	0.55	0.24	0.73	1.06	1.43	2.02	2.11	2.13
Game	All Objects	18	1.20	0.61	0.24	0.79	1.06	1.63	2.17	2.36	2.41
p value	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.333	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.125	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.445	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND



Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.397	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.641	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.461	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.038*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

S3.6.3.2. Activity Patterns by Event Type, Off Field

Table S3-372. Frequency (Event/Hour) of Actions by Event Type, Off Field

Event	Actions	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Jumping	3.39	10.10	0.00	0.00	0.00	0.00	23.67	36.37	39.55
Practice (n=20)	Slip or fall	0.41	1.27	0.00	0.00	0.00	0.00	3.08	4.51	4.87
Practice (n=20)	Tackling or sliding	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=19)	Jumping	3.91	8.19	0.00	0.00	0.00	0.35	18.35	25.98	27.89
Game (n=19)	Slip or fall	0.26	1.17	0.00	0.00	0.00	0.00	0.26	4.23	5.22
Game (n=19)	Tackling or sliding	0.25	1.13	0.00	0.00	0.00	0.00	0.25	4.10	5.06
p value*	Jumping	0.564	ND	ND	ND	ND	ND	ND	ND	ND
p value	Slip or fall	0.584	ND	ND	ND	ND	ND	ND	ND	ND
p value	Tackling or sliding	ND	ND	ND	ND	ND	ND	ND	ND	ND

*p values from Wilcoxon Rank Sum

NA: not applicable due to the activity not observed; and ND: not determined

Table S3-373. Frequency of Hand to Object Contact (Event/Hour) by Event Type, Off Field

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=19)	Artificial Turf	5.22	11.92	0.00	0.00	0.00	0.79	33.24	38.25	39.50
Practice (n=19)	Body	9.07	12.97	0.00	0.00	0.00	15.58	35.18	39.58	40.68
Practice (n=19)	Clothes	104.26	79.58	0.00	59.99	83.06	131.52	259.82	266.42	268.07
Practice (n=19)	Field Structures	14.47	17.83	0.00	0.00	8.53	22.56	43.68	59.44	63.38



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Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=19)	Footwear	16.68	28.24	0.00	0.00	0.00	27.58	62.80	96.82	105.33
Practice (n=19)	Head/face/hair	19.06	18.83	0.00	1.15	12.03	34.51	49.62	51.74	52.27
Practice (n=19)	Shin guards	0.29	1.24	0.00	0.00	0.00	0.00	0.54	4.44	5.42
Practice (n=19)	Soccer ball	43.33	77.73	0.00	0.00	25.59	52.00	112.02	297.04	343.30
Practice (n=19)	Water bottle	47.79	53.09	0.00	12.69	31.69	69.72	156.34	188.02	195.94
Practice (n=19)	Dietary Objects	48.17	52.96	0.00	13.37	34.43	69.72	156.34	188.02	195.94
Practice (n=19)	Non-dietary Objects	226.94	117.36	0.00	165.53	222.51	326.49	373.97	378.19	379.24
Practice (n=19)	All Objects	275.11	148.19	0.00	192.95	299.61	345.16	465.36	553.21	575.17
Game (n=20)	Artificial Turf	4.43	13.84	0.00	0.00	0.00	1.16	13.66	52.19	61.82
Game (n=20)	Body	28.52	19.67	0.00	13.13	23.42	43.16	60.64	62.38	62.82
Game (n=20)	Clothes	88.68	42.05	11.99	61.48	76.27	119.64	164.13	174.06	176.54
Game (n=20)	Field Structures	20.16	27.73	0.00	6.14	13.41	20.80	54.78	112.33	126.72
Game (n=20)	Footwear	9.15	12.89	0.00	0.00	4.50	12.48	35.04	41.77	43.45
Game (n=20)	Head/face/hair	31.97	33.00	0.00	7.98	24.51	32.71	94.70	114.44	119.37
Game (n=20)	Shin guards	1.06	2.40	0.00	0.00	0.00	0.00	6.98	7.78	7.98
Game (n=20)	Soccer ball	24.81	37.16	0.00	6.56	13.32	22.23	82.66	144.84	160.38
Game (n=20)	Water bottle	43.40	47.85	0.00	4.53	38.65	54.72	160.68	162.68	163.18
Game (n=20)	Dietary Objects	43.40	47.85	0.00	4.53	38.65	54.72	160.68	162.68	163.18
Game (n=20)	Non-dietary Objects	226.14	85.34	112.37	157.61	210.51	289.65	355.22	387.52	395.60
Game (n=20)	All Objects	269.54	85.13	139.68	221.19	269.32	310.52	397.45	425.51	432.53
p value	Artificial Turf	0.901	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.000*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.643	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.289	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.893	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.216	ND	ND	ND	ND	ND	ND	ND	ND



Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Shin guards	0.174	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.703	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.899	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.877	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.771	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.647	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-374. Duration of Hand to Object Contact (Min/Hour) by Event Type, Off Field

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=19)	Artificial Turf	0.17	0.39	0.00	0.00	0.00	0.01	1.06	1.07	1.07
Practice (n=19)	Body	1.11	1.66	0.00	0.00	0.00	2.53	3.39	5.33	5.82
Practice (n=19)	Clothes	12.93	11.12	0.00	4.61	8.68	21.26	33.80	33.89	33.91
Practice (n=19)	Field Structures	1.41	2.07	0.00	0.00	0.53	1.97	5.88	6.61	6.79
Practice (n=19)	Footwear	3.49	7.32	0.00	0.00	0.00	2.45	22.16	24.31	24.85
Practice (n=19)	Head/face/hair	0.58	0.65	0.00	0.02	0.42	0.86	1.59	2.13	2.26
Practice (n=19)	Shin guards	0.03	0.14	0.00	0.00	0.00	0.00	0.06	0.48	0.59
Practice (n=19)	Soccer ball	1.95	2.49	0.00	0.00	0.66	2.58	6.63	7.67	7.93
Practice (n=19)	Water bottle	6.62	7.52	0.00	0.66	3.40	11.39	19.34	20.10	20.29
Practice (n=19)	Dietary Objects	6.65	7.51	0.00	0.66	3.40	11.39	19.34	20.10	20.29
Practice (n=19)	Non-dietary Objects	23.42	14.46	0.00	10.88	26.65	32.99	43.33	49.48	51.02
Practice (n=19)	All Objects	30.07	18.06	0.00	18.98	30.05	41.71	58.45	59.43	59.68
Game (n=20)	Artificial Turf	0.47	1.31	0.00	0.00	0.00	0.09	2.27	4.91	5.57
Game (n=20)	Body	4.17	4.56	0.00	0.71	2.13	5.76	12.30	16.04	16.97
Game (n=20)	Clothes	16.88	11.61	3.05	7.28	15.21	21.82	37.32	44.38	46.15
Game (n=20)	Field Structures	2.04	3.80	0.00	0.32	1.20	1.48	5.04	14.98	17.46
Game (n=20)	Footwear	1.27	2.31	0.00	0.00	0.12	1.18	5.89	7.94	8.45
Game (n=20)	Head/face/hair	1.60	2.07	0.00	0.31	1.01	1.82	6.94	7.48	7.61



Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Game (n=20)	Shin guards	0.15	0.36	0.00	0.00	0.00	0.00	1.09	1.21	1.24
Game (n=20)	Soccer ball	1.09	1.28	0.00	0.25	0.68	1.51	2.55	4.82	5.39
Game (n=20)	Water bottle	8.56	9.10	0.00	0.61	6.78	12.35	23.23	28.47	29.78
Game (n=20)	Dietary Objects	8.56	9.10	0.00	0.61	6.78	12.35	23.23	28.47	29.78
Game (n=20)	Non-dietary Objects	29.27	11.43	9.38	21.31	28.81	37.16	45.90	51.19	52.51
Game (n=20)	All Objects	37.83	8.02	24.50	32.49	37.68	42.45	49.09	51.95	52.67
p value	Artificial Turf	0.684	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.004*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.332	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.162	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.823	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.031*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.174	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.832	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.490	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.490	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.296	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.101	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined

Table S3-375. Median Duration of Hand to Object Contact (Second) by Event Type, Off Field

Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice	Artificial Turf	5	1.50	0.76	0.61	1.26	1.40	1.56	2.47	2.65	2.69
Practice	Body	9	7.29	9.62	1.36	2.64	3.17	6.47	23.01	30.24	32.05
Practice	Clothes	17	4.15	2.00	0.82	2.66	3.91	6.14	6.90	7.45	7.58
Practice	Field Structures	11	4.48	3.40	1.57	2.69	3.47	5.10	10.18	12.74	13.38
Practice	Footwear	8	8.07	8.31	2.02	2.99	5.84	8.60	21.09	26.14	27.40



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Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice	Head/face/hair	14	1.72	1.37	0.83	1.00	1.28	1.70	3.98	5.70	6.12
Practice	Shin guards	1	4.68	ND	ND	ND	ND	ND	ND	ND	ND
Practice	Soccer ball	13	2.04	1.06	0.83	1.40	1.74	2.64	3.94	4.11	4.15
Practice	Water bottle	15	5.71	3.28	0.22	2.90	5.38	7.68	10.49	12.38	12.85
Practice	Dietary Objects	15	5.59	3.22	0.22	2.90	5.38	7.07	10.47	12.31	12.78
Practice	Non-dietary Objects	18	3.22	1.28	0.97	2.32	3.10	4.07	5.22	5.59	5.69
Practice	All Objects	18	3.43	1.30	0.97	2.47	3.46	4.31	5.20	5.49	5.57
Game	Artificial Turf	6	4.27	4.09	1.15	1.66	2.32	5.76	10.33	11.26	11.49
Game	Body	19	3.29	2.64	0.78	1.50	2.64	4.34	6.04	10.96	12.19
Game	Clothes	20	5.53	2.91	2.24	3.70	4.74	6.14	12.02	12.19	12.23
Game	Field Structures	19	3.64	1.97	1.35	2.20	2.61	4.98	7.36	7.43	7.45
Game	Footwear	12	3.54	2.34	0.97	2.00	3.11	3.94	7.76	8.07	8.15
Game	Head/face/hair	19	2.02	1.04	0.65	1.35	1.79	2.22	3.85	4.70	4.92
Game	Shin guards	4	7.85	6.53	2.71	3.02	6.00	10.83	15.52	16.46	16.70
Game	Soccer ball	18	2.44	1.54	0.64	1.52	2.06	2.78	5.67	6.38	6.56
Game	Water bottle	17	7.45	3.23	3.39	5.38	6.35	8.45	13.87	14.13	14.20
Game	Dietary Objects	17	7.45	3.23	3.39	5.38	6.35	8.45	13.87	14.13	14.20
Game	Non-dietary Objects	20	3.39	1.31	1.58	2.37	3.11	4.05	5.48	6.33	6.54
Game	All Objects	20	3.82	1.40	2.11	3.01	3.41	4.57	5.90	7.36	7.73
p value*	Artificial Turf	ND	0.247	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.129	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.209	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.471	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.115	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.077	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	0.514	ND	ND	ND	ND	ND	ND	ND	ND



Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Water bottle	ND	0.132	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.105	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.828	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.613	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum
ND: not determined

Table S3-376. Hourly Duration (Min/Hour) of Player Intensity by Event Type, Off Field

Event	Intensity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	High	2.04	3.08	0.00	0.00	0.81	2.79	9.96	10.20	10.26
Practice (n=20)	Moderate	8.34	10.02	0.00	1.01	4.58	10.39	30.36	31.35	31.60
Practice (n=20)	Light	14.71	8.59	2.73	6.28	16.99	21.16	26.81	28.08	28.40
Practice (n=20)	Resting	34.90	14.92	0.00	25.41	32.10	46.95	54.72	55.10	55.20
Game (n=20)	High	1.03	1.27	0.00	0.09	0.54	1.78	3.00	4.47	4.84
Game (n=20)	Moderate	2.95	3.65	0.26	0.91	2.22	2.99	7.47	15.07	16.97
Game (n=20)	Light	12.21	7.83	3.69	7.43	9.96	15.35	24.68	34.06	36.41
Game (n=20)	Resting	43.82	9.34	19.69	38.45	46.35	51.00	55.39	55.73	55.81
p value*	High	0.669	ND	ND	ND	ND	ND	ND	ND	ND
p value	Moderate	0.166	ND	ND	ND	ND	ND	ND	ND	ND
p value	Light	0.354	ND	ND	ND	ND	ND	ND	ND	ND
p value	Resting	0.054	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum
ND: not determined

Table S3-377. Duration (Min/Hour) of Macro-Activities by Age, Off Field

Event	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Rest Standing	30.33	14.18	0.00	22.28	27.99	38.94	54.68	54.78	54.81
Practice (n=20)	Running	8.33	10.62	0.00	0.66	3.58	10.97	31.31	31.54	31.60
Practice (n=20)	Sit on chair	0.01	0.03	0.00	0.00	0.00	0.00	0.01	0.11	0.13
Practice (n=20)	Sit on ground	4.60	8.00	0.00	0.00	0.00	5.42	19.61	27.61	29.61
Practice (n=20)	Stretching	1.31	2.97	0.00	0.00	0.00	0.30	8.59	9.85	10.16



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Event	Activity	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Walking	15.35	8.98	2.84	6.00	18.23	22.28	28.14	28.35	28.40
Game (n=19)	Rest Standing	25.14	9.99	12.27	18.16	24.05	30.29	46.77	47.36	47.51
Game (n=19)	Running	2.28	1.53	0.08	1.36	2.31	3.06	4.19	6.15	6.64
Game (n=19)	Sit on chair	14.15	13.59	0.00	1.28	9.70	23.29	36.25	42.22	43.71
Game (n=19)	Sit on ground	3.70	6.01	0.00	0.00	0.06	7.61	15.24	19.69	20.80
Game (n=19)	Stretching	0.73	1.83	0.00	0.00	0.00	0.56	2.55	6.94	8.04
Game (n=19)	Walking	13.86	9.75	3.74	7.45	9.55	18.26	34.52	36.47	36.96
p value	Rest Standing	0.141	ND	ND	ND	ND	ND	ND	ND	ND
p value	Running	0.182	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on chair	0.000*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Sit on ground	0.964	ND	ND	ND	ND	ND	ND	ND	ND
p value	Stretching	0.823	ND	ND	ND	ND	ND	ND	ND	ND
p value	Walking	0.569	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to these activities not observed; and ND: not determined

Table S3-378. Mouthing Frequency (Event/Hour) by Event Type, Off Field

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=18)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=18)	Body	0.31	0.93	0.00	0.00	0.00	0.00	1.68	2.58	2.80
Practice (n=18)	Clothes	11.84	23.39	0.00	0.00	0.00	10.96	47.73	84.76	94.02
Practice (n=18)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=18)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=18)	Hands	7.76	9.55	0.00	0.00	5.30	11.51	26.11	26.32	26.37
Practice (n=18)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=18)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=18)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=18)	Water bottle	59.00	69.05	0.00	9.46	29.85	89.16	197.61	240.98	251.82
Practice (n=18)	Dietary Objects	59.00	69.05	0.00	9.46	29.85	89.16	197.61	240.98	251.82



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Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=18)	Non-dietary Objects	12.14	23.26	0.00	0.00	2.69	10.96	47.73	84.76	94.02
Practice (n=18)	All Objects	71.14	81.17	0.00	12.28	42.73	102.53	256.36	276.93	282.07
Game (n=20)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Body	0.14	0.63	0.00	0.00	0.00	0.00	0.14	2.27	2.80
Game (n=20)	Clothes	15.89	33.72	0.00	0.00	5.72	16.91	37.50	130.52	153.78
Game (n=20)	Field Structures	0.07	0.30	0.00	0.00	0.00	0.00	0.07	1.07	1.32
Game (n=20)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Hands	13.23	15.03	0.00	2.39	9.15	20.16	34.51	54.13	59.04
Game (n=20)	Head/face/hair	0.18	0.81	0.00	0.00	0.00	0.00	0.18	2.94	3.63
Game (n=20)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Water bottle	21.66	25.25	0.00	0.99	14.47	34.52	49.53	89.58	99.59
Game (n=20)	Dietary Objects	21.80	25.13	0.00	2.08	14.47	34.52	49.53	89.58	99.59
Game (n=20)	Non-dietary Objects	16.51	33.58	0.00	2.63	6.18	17.90	37.50	130.52	153.78
Game (n=20)	All Objects	38.31	47.44	0.00	9.14	27.36	41.86	123.34	181.63	196.20
p value*	Artificial Turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.370	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.294	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.370	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.227	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.370	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.055	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.059	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.308	ND	ND	ND	ND	ND	ND	ND	ND



Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	All Objects	0.214	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-379. Mouthing Duration (Min/Hour) by Event Type, Off Field

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=18)	Artificial Turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=18)	Body	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=18)	Clothes	0.29	0.42	0.00	0.00	0.00	0.47	0.94	1.30	1.39
Practice (n=18)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=18)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=18)	Hands	0.22	0.36	0.00	0.00	0.04	0.30	0.77	1.19	1.29
Practice (n=18)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=18)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=18)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=18)	Water bottle	3.40	3.88	0.00	0.64	2.33	5.05	11.06	13.75	14.42
Practice (n=18)	Dietary Objects	3.40	3.88	0.00	0.64	2.33	5.05	11.06	13.75	14.42
Practice (n=18)	Non-dietary Objects	0.29	0.42	0.00	0.00	0.07	0.47	0.94	1.30	1.39
Practice (n=18)	All Objects	3.69	4.03	0.00	0.72	2.79	5.44	12.24	13.98	14.42
Game (n=20)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Body	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.03
Game (n=20)	Clothes	0.83	1.61	0.00	0.00	0.13	0.66	2.70	5.84	6.62
Game (n=20)	Field Structures	0.01	0.02	0.00	0.00	0.00	0.00	0.01	0.09	0.11
Game (n=20)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Hands	1.12	2.53	0.00	0.04	0.21	1.52	2.82	9.66	11.37
Game (n=20)	Head/face/hair	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.04	0.05
Game (n=20)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=20)	Water bottle	2.17	5.53	0.00	0.05	0.75	1.63	4.88	21.18	25.25



Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Game (n=20)	Dietary Objects	2.17	5.53	0.00	0.11	0.75	1.63	4.88	21.18	25.25
Game (n=20)	Non-dietary Objects	0.88	1.61	0.00	0.04	0.17	0.81	2.81	5.88	6.65
Game (n=20)	All Objects	3.05	5.66	0.00	0.53	1.50	3.10	7.71	22.11	25.71
p value	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.370	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.261	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.370	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.078	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.370	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.048*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.051	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.236	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.313	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-380. Mouthing Median Duration (Second) by Event Type, Off Field

Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice	Artificial turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Body	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Clothes	8	2.50	2.74	0.81	1.13	1.44	2.22	7.03	8.57	8.96
Practice	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Hands	10	1.50	1.40	0.20	0.65	1.06	1.59	4.02	4.41	4.50
Practice	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA



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Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Water bottle	16	3.51	1.29	0.99	2.68	3.32	4.10	5.88	5.97	6.00
Practice	Dietary Objects	16	3.51	1.29	0.99	2.68	3.32	4.10	5.88	5.97	6.00
Practice	Non-dietary Objects	9	2.44	2.57	0.81	1.21	1.59	1.92	6.75	8.52	8.96
Practice	All Objects	16	3.21	1.31	1.17	2.39	2.73	3.52	5.88	5.97	6.00
Game	Artificial turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game	Body	1	0.66	ND	ND	ND	ND	ND	ND	ND	ND
Game	Clothes	14	1.69	0.92	0.72	0.89	1.32	2.34	3.16	3.31	3.35
Game	Field Structures	1	5.18	ND	ND	ND	ND	ND	ND	ND	ND
Game	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game	Hands	15	2.27	2.19	0.54	0.99	1.29	2.51	6.79	7.80	8.06
Game	Head/face/hair	1	0.79	ND	ND	ND	ND	ND	ND	ND	ND
Game	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game	Water bottle	15	3.71	2.25	1.35	2.48	3.06	4.20	7.26	10.00	10.69
Game	Dietary Objects	16	3.64	2.20	1.35	2.46	2.99	4.07	7.01	9.95	10.69
Game	Non-dietary Objects	15	2.30	2.65	0.72	0.83	1.40	2.53	5.95	10.22	11.29
Game	All Objects	17	2.86	1.71	1.05	1.71	2.51	3.33	6.15	7.29	7.58
p value*	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.726	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.714	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.726	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.311	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.726	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND



Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Water bottle	ND	0.626	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.515	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.726	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.245	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

S3.6.4. Data Summarized if Participants Were Wearing Gloves or Not and by Event Type

S3.6.4.1. Activity Patterns by Event Type, with Gloves On

Table S3-381. Frequency of Hand to Object Contact (Event/Hour) by Event Type, with Gloves On

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=11)	Artificial Turf	5.65	8.38	0.00	0.00	0.63	10.38	19.04	24.78	26.21
Practice (n=11)	Body	7.75	9.90	0.00	1.09	3.17	9.91	25.08	30.82	32.26
Practice (n=11)	Clothes	61.39	42.80	13.90	35.65	47.66	77.58	134.59	148.31	151.74
Practice (n=11)	Field Structures	11.45	12.89	0.00	1.76	8.19	15.74	32.87	40.68	42.63
Practice (n=11)	Footwear	2.67	3.21	0.00	0.00	1.07	4.36	8.22	8.89	9.06
Practice (n=11)	Head/face/hair	29.99	30.47	1.61	5.50	20.74	44.06	82.13	89.86	91.79
Practice (n=11)	Shin guards	0.42	1.21	0.00	0.00	0.00	0.00	2.33	3.68	4.02
Practice (n=11)	Soccer ball	39.37	42.22	0.00	4.95	17.17	70.79	103.01	107.43	108.53
Practice (n=11)	Water bottle	3.30	4.10	0.00	0.00	1.27	4.77	10.44	11.70	12.02
Practice (n=11)	Dietary Objects	3.40	4.33	0.00	0.00	1.27	4.77	10.99	12.69	13.11
Practice (n=11)	Non-dietary Objects	175.17	65.16	63.78	149.51	169.67	187.98	282.18	309.67	316.54
Practice (n=11)	All Objects	178.56	64.70	67.87	149.51	170.93	196.67	282.18	309.67	316.54
Game (n=10)	Artificial Turf	6.47	7.16	0.00	2.06	3.51	7.54	19.37	21.21	21.67
Game (n=10)	Body	11.56	18.58	0.00	1.74	4.05	9.64	44.58	56.66	59.68
Game (n=10)	Clothes	64.41	53.47	6.40	31.86	44.18	83.04	155.35	178.15	183.85



Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Game (n=10)	Field Structures	3.43	2.80	0.00	1.29	3.03	5.80	7.29	7.84	7.98
Game (n=10)	Footwear	5.34	5.70	0.00	0.00	5.41	7.73	14.17	16.58	17.18
Game (n=10)	Head/face/hair	34.84	35.58	8.14	12.31	24.60	39.29	95.98	118.64	124.31
Game (n=10)	Shin guards	1.42	2.43	0.00	0.00	0.00	1.48	5.88	6.80	7.03
Game (n=10)	Soccer ball	34.71	40.48	0.00	6.61	12.36	51.30	104.32	113.22	115.44
Game (n=10)	Water bottle	5.00	5.62	0.00	0.00	2.36	10.83	12.51	13.00	13.12
Game (n=10)	Dietary Objects	5.00	5.62	0.00	0.00	2.36	10.83	12.51	13.00	13.12
Game (n=10)	Non-dietary Objects	187.54	88.95	65.10	118.07	192.72	266.74	288.41	294.38	295.87
Game (n=10)	All Objects	192.53	91.28	65.10	123.14	200.07	275.89	294.37	302.67	304.75
p value*	Artificial Turf	0.393	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.916	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.973	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.148	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.447	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.557	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.233	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.888	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.690	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.690	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.973	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.918	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

ND: not determined

Table S3-382. Duration of Hand to Object Contact (Min/Hour) by Event Type, with Gloves On

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=11)	Artificial Turf	0.24	0.50	0.00	0.00	0.01	0.23	1.04	1.55	1.68
Practice (n=11)	Body	1.13	2.86	0.00	0.02	0.18	0.50	5.40	8.82	9.68



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Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=11)	Clothes	6.35	5.80	0.43	2.42	5.73	7.81	16.31	19.25	19.98
Practice (n=11)	Field Structures	1.74	3.12	0.00	0.07	0.77	1.91	6.73	9.89	10.68
Practice (n=11)	Footwear	0.15	0.21	0.00	0.00	0.03	0.23	0.51	0.60	0.62
Practice (n=11)	Head/face/hair	1.03	1.19	0.02	0.13	0.80	1.61	2.91	3.71	3.91
Practice (n=11)	Shin guards	0.02	0.05	0.00	0.00	0.00	0.00	0.10	0.16	0.18
Practice (n=11)	Soccer ball	1.70	2.09	0.00	0.21	0.63	2.09	5.58	5.72	5.75
Practice (n=11)	Water bottle	0.56	0.83	0.00	0.00	0.14	0.62	2.13	2.43	2.51
Practice (n=11)	Dietary Objects	0.57	0.84	0.00	0.00	0.14	0.62	2.16	2.48	2.56
Practice (n=11)	Non-dietary Objects	13.44	8.11	2.20	9.09	10.13	17.55	26.83	29.74	30.47
Practice (n=11)	All Objects	14.00	8.29	2.63	9.50	11.25	17.81	28.11	30.00	30.47
Game (n=10)	Artificial Turf	0.37	0.71	0.00	0.02	0.11	0.28	1.52	2.18	2.34
Game (n=10)	Body	1.64	4.55	0.00	0.02	0.20	0.47	8.24	13.30	14.56
Game (n=10)	Clothes	6.36	7.22	0.46	1.64	4.59	7.76	18.25	23.43	24.73
Game (n=10)	Field Structures	0.20	0.20	0.00	0.02	0.13	0.33	0.50	0.53	0.54
Game (n=10)	Footwear	0.20	0.24	0.00	0.00	0.17	0.30	0.57	0.73	0.77
Game (n=10)	Head/face/hair	1.63	2.81	0.23	0.40	0.49	1.15	6.26	8.76	9.39
Game (n=10)	Shin guards	0.05	0.10	0.00	0.00	0.00	0.07	0.22	0.28	0.29
Game (n=10)	Soccer ball	1.26	1.29	0.00	0.26	0.68	2.11	3.23	3.84	3.99
Game (n=10)	Water bottle	0.78	0.88	0.00	0.00	0.36	1.66	1.94	2.01	2.03
Game (n=10)	Dietary Objects	0.78	0.88	0.00	0.00	0.36	1.66	1.94	2.01	2.03
Game (n=10)	Non-dietary Objects	13.20	12.06	1.83	7.29	10.26	14.20	33.69	41.64	43.63
Game (n=10)	All Objects	13.97	12.44	1.83	8.21	10.38	14.71	35.26	43.12	45.08
p value*	Artificial Turf	0.318	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.972	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.973	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.129	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.745	ND	ND	ND	ND	ND	ND	ND	ND



Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Head/face/hair	0.512	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.270	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.888	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.856	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.856	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.705	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.705	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

ND: not determined

Table S3-383. Median Duration of Hand to Object Contact (Second) by Event Type, with Gloves On

Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice	Artificial Turf	6	1.48	1.05	0.82	0.87	1.06	1.47	3.04	3.44	3.54
Practice	Body	9	1.67	0.96	0.66	1.19	1.29	2.06	3.22	3.75	3.89
Practice	Clothes	11	2.80	1.37	1.20	1.99	2.35	3.66	5.03	5.25	5.30
Practice	Field Structures	10	2.86	1.32	1.20	1.80	2.81	3.58	4.81	5.22	5.32
Practice	Footwear	7	2.90	1.58	1.58	1.72	1.78	4.06	5.10	5.33	5.38
Practice	Head/face/hair	11	1.08	0.36	0.62	0.90	1.00	1.15	1.72	1.73	1.74
Practice	Shin guards	2	2.61	0.47	2.28	2.44	2.61	2.78	2.91	2.94	2.94
Practice	Soccer ball	10	1.75	0.64	0.75	1.49	1.71	2.19	2.62	2.75	2.78
Practice	Water bottle	7	6.36	3.78	2.52	3.25	5.90	8.60	11.69	12.23	12.36
Practice	Dietary Objects	7	6.36	3.78	2.52	3.25	5.90	8.60	11.69	12.23	12.36
Practice	Non-dietary Objects	11	1.91	0.74	1.06	1.45	1.83	2.00	3.09	3.66	3.80
Practice	All Objects	11	1.93	0.73	1.13	1.47	1.86	2.02	3.14	3.66	3.80
Game	Artificial Turf	9	1.45	1.03	0.48	0.72	1.03	2.39	3.01	3.14	3.18
Game	Body	9	1.37	1.10	0.39	0.83	0.88	1.93	3.15	3.74	3.88
Game	Clothes	10	2.52	1.29	1.17	1.70	2.14	2.87	4.75	4.89	4.93
Game	Field Structures	8	2.07	1.44	0.55	0.89	1.70	3.17	4.08	4.43	4.51



Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Game	Footwear	6	1.92	1.10	0.89	1.53	1.63	1.76	3.51	3.97	4.08
Game	Head/face/hair	10	1.55	0.84	0.67	1.02	1.36	1.87	2.91	3.34	3.44
Game	Shin guards	4	2.04	1.45	0.90	1.34	1.54	2.24	3.77	4.08	4.16
Game	Soccer ball	9	1.95	0.79	1.02	1.58	1.78	1.99	3.24	3.51	3.58
Game	Water bottle	6	7.56	4.22	3.39	5.32	5.99	8.91	13.73	14.77	15.03
Game	Dietary Objects	6	7.56	4.22	3.39	5.32	5.99	8.91	13.73	14.77	15.03
Game	Non-dietary Objects	10	1.91	0.99	1.12	1.23	1.52	2.29	3.47	4.13	4.30
Game	All Objects	10	1.95	1.01	1.12	1.25	1.53	2.37	3.55	4.20	4.36
p value*	Artificial Turf	ND	0.529	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.161	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.605	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.315	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.181	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.152	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	0.533	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	0.661	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.731	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.731	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.756	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.605	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

ND: not determined

Table S3-384. Mouthing Frequency (Event/Hour) by Event Type, with Gloves On

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=11)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=11)	Body	4.02	10.09	0.00	0.00	0.00	0.47	22.11	31.62	34.00
Practice (n=11)	Clothes	2.45	3.14	0.00	0.00	1.23	2.83	8.48	9.26	9.45
Practice (n=11)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA



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Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=11)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=11)	Hands	4.45	8.96	0.00	0.00	0.40	2.20	22.82	26.20	27.04
Practice (n=11)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=11)	Shinguards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=11)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=11)	Water bottle	2.02	2.24	0.00	0.00	1.26	4.23	5.26	5.70	5.81
Practice (n=11)	Dietary Objects	2.69	2.46	0.00	0.00	3.01	4.79	5.72	5.79	5.81
Practice (n=11)	Non-dietary Objects	13.22	18.35	0.00	1.16	8.09	13.57	47.64	58.76	61.54
Practice (n=11)	All Objects	15.90	17.95	0.00	5.92	10.47	15.09	50.13	59.26	61.54
Game (n=7)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=7)	Body	0.08	0.24	0.00	0.00	0.00	0.00	0.44	0.67	0.73
Game (n=7)	Clothes	20.13	41.44	0.00	0.78	3.23	21.22	85.61	119.63	128.14
Game (n=7)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=7)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=7)	Hands	5.57	5.38	0.00	2.34	2.91	9.68	13.69	14.70	14.95
Game (n=7)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=7)	Shinguards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=7)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=7)	Water bottle	2.10	2.05	0.00	0.00	3.11	3.60	4.54	4.68	4.72
Game (n=7)	Dietary Objects	2.26	1.92	0.00	0.00	3.11	3.60	4.54	4.68	4.72
Game (n=7)	Non-dietary Objects	22.08	40.82	0.00	4.51	6.23	23.58	86.78	119.87	128.14
Game (n=7)	All Objects	24.34	41.78	0.00	4.51	9.34	26.19	90.76	124.08	132.41
p value*	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.378	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.369	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND



Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Hands	0.176	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shinguards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.970	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.492	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.999	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.915	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-385. Mouthing Duration (Min/Hour) by Event Type, with Gloves On

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=11)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=11)	Body	0.11	0.27	0.00	0.00	0.00	0.01	0.60	0.83	0.89
Practice (n=11)	Clothes	0.07	0.08	0.00	0.00	0.04	0.15	0.20	0.21	0.21
Practice (n=11)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=11)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=11)	Hands	0.15	0.30	0.00	0.00	0.01	0.06	0.77	0.85	0.87
Practice (n=11)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=11)	Shinguards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=11)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=11)	Water bottle	0.14	0.16	0.00	0.00	0.10	0.25	0.39	0.43	0.44
Practice (n=11)	Dietary Objects	0.20	0.20	0.00	0.00	0.21	0.33	0.51	0.57	0.59
Practice (n=11)	Non-dietary Objects	0.30	0.40	0.00	0.05	0.19	0.28	1.11	1.18	1.20
Practice (n=11)	All Objects	0.50	0.41	0.00	0.25	0.43	0.63	1.22	1.24	1.25
Game (n=7)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=7)	Body	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
Game (n=7)	Clothes	0.48	0.70	0.00	0.01	0.07	0.79	1.66	1.84	1.88



Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Game (n=7)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=7)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=7)	Hands	0.42	0.85	0.00	0.04	0.11	0.25	1.73	2.48	2.67
Game (n=7)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=7)	Shinguards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=7)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=7)	Water bottle	0.11	0.11	0.00	0.00	0.14	0.16	0.26	0.27	0.27
Game (n=7)	Dietary Objects	0.11	0.11	0.00	0.00	0.14	0.16	0.26	0.27	0.27
Game (n=7)	Non-dietary Objects	0.52	0.69	0.00	0.06	0.17	0.82	1.68	1.84	1.88
Game (n=7)	All Objects	0.63	0.77	0.00	0.06	0.31	0.88	1.93	2.09	2.13
p value*	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.378	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.350	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.134	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shinguards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.630	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.405	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.831	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.803	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-386. Mouthing Median Duration (Second) by Event Type, with Gloves On

Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice	Artificial turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA



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Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice	Body	3	0.92	0.36	0.54	0.74	0.95	1.11	1.23	1.25	1.26
Practice	Clothes	8	2.65	3.33	0.93	1.02	1.32	1.96	8.16	10.12	10.61
Practice	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Hands	6	1.46	0.77	0.67	0.89	1.24	2.05	2.47	2.52	2.53
Practice	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Water bottle	7	4.30	1.06	2.99	3.53	3.93	5.18	5.64	5.71	5.73
Practice	Dietary Objects	8	4.29	1.21	2.57	3.35	4.43	5.34	5.63	5.71	5.73
Practice	Non-dietary Objects	10	2.10	3.01	0.79	0.89	1.21	1.30	6.70	9.82	10.61
Practice	All Objects	11	2.23	1.79	0.86	1.25	1.34	2.60	5.51	5.67	5.71
Game	Artificial turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game	Body	1	0.72	ND	ND	ND	ND	ND	ND	ND	ND
Game	Clothes	7	1.29	0.44	0.62	1.06	1.34	1.56	1.83	1.85	1.86
Game	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game	Hands	7	2.32	2.07	0.84	1.18	1.67	2.28	5.48	6.56	6.82
Game	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game	Water bottle	5	2.88	0.74	1.71	2.60	3.28	3.38	3.43	3.44	3.44
Game	Dietary Objects	6	2.82	0.68	1.71	2.51	2.94	3.35	3.43	3.44	3.44
Game	Non-dietary Objects	7	1.33	0.71	0.70	0.85	1.12	1.56	2.43	2.63	2.67
Game	All Objects	7	1.43	0.69	0.76	0.90	1.12	1.86	2.41	2.57	2.61
p value	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND



Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Clothes	ND	0.694	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.445	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.018*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.029*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.669	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.375	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no mouth contact with these objects; and ND: not determined

S3.6.4.2. Activity Patterns by Event Type, with Gloves Off

Table S3-387. Frequency of Hand to Object Contact (Event/Hour) by Event Type, with Gloves Off

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Artificial Turf	2.89	4.07	0.00	0.00	1.54	3.87	13.23	14.09	14.30
Practice (n=20)	Body	13.01	13.33	0.00	4.60	9.50	15.99	42.17	51.95	54.40
Practice (n=20)	Clothes	104.26	50.86	46.48	64.60	88.35	133.63	211.96	224.04	227.06
Practice (n=20)	Field Structures	8.58	5.61	0.00	4.38	7.34	13.53	17.13	17.93	18.13
Practice (n=20)	Footwear	9.21	9.29	0.00	3.39	7.57	11.41	30.94	35.12	36.17
Practice (n=20)	Head/face/hair	30.53	24.23	0.00	13.51	26.30	40.43	76.01	91.15	94.94
Practice (n=20)	Shin guards	1.67	4.27	0.00	0.00	0.00	1.18	6.33	16.30	18.79
Practice (n=20)	Soccer ball	14.73	24.43	0.00	1.94	5.87	15.22	41.31	93.19	106.16
Practice (n=20)	Water bottle	15.25	33.64	1.77	5.05	6.03	11.00	27.81	130.95	156.73
Practice (n=20)	Dietary Objects	15.31	33.62	1.77	5.05	6.29	11.00	27.81	130.95	156.73



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Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Non-dietary Objects	196.03	72.46	97.32	150.92	191.37	214.83	356.09	365.87	368.32
Practice (n=20)	All Objects	211.35	87.19	99.09	154.81	198.84	222.66	378.14	403.56	409.91
Game (n=19)	Artificial Turf	4.40	10.70	0.00	0.54	1.67	3.08	11.87	40.65	47.85
Game (n=19)	Body	16.84	9.58	4.10	9.82	15.53	22.53	34.52	35.03	35.16
Game (n=19)	Clothes	67.26	35.63	17.63	40.89	55.95	90.11	126.28	151.30	157.55
Game (n=19)	Field Structures	7.92	9.37	0.74	2.49	4.83	8.49	32.64	33.38	33.57
Game (n=19)	Footwear	4.51	4.39	0.00	1.53	3.00	6.46	12.97	15.12	15.66
Game (n=19)	Head/face/hair	25.97	21.66	2.28	10.90	19.67	32.26	70.52	76.89	78.48
Game (n=19)	Shin guards	0.84	2.32	0.00	0.00	0.00	0.00	5.16	8.44	9.26
Game (n=19)	Soccer ball	9.64	8.31	0.00	3.26	7.06	16.66	22.19	27.52	28.85
Game (n=19)	Water bottle	6.73	7.67	0.00	0.49	3.44	10.18	20.91	21.03	21.06
Game (n=19)	Dietary Objects	6.75	7.66	0.00	0.49	3.44	10.18	20.91	21.03	21.06
Game (n=19)	Non-dietary Objects	149.60	54.78	73.89	121.63	137.13	173.12	240.25	288.67	300.78
Game (n=19)	All Objects	156.35	56.21	80.69	124.66	142.10	179.63	259.20	292.46	300.78
p value	Artificial Turf	0.842	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.079	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.016	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.211	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.052	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.550	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.250	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.736	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.094	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.112	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.018*	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.016*	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

ND: not determined



Table S3-388. Duration of Hand to Object Contact (Min/Hour) by Event Type, with Gloves Off

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Artificial Turf	0.18	0.28	0.00	0.00	0.04	0.19	0.79	0.94	0.98
Practice (n=20)	Body	0.83	1.18	0.00	0.11	0.27	0.89	3.63	3.76	3.79
Practice (n=20)	Clothes	19.86	15.72	5.36	8.88	11.11	31.26	50.17	52.22	52.73
Practice (n=20)	Field Structures	0.85	0.85	0.00	0.20	0.46	1.30	1.99	3.17	3.46
Practice (n=20)	Footwear	0.76	0.70	0.00	0.21	0.55	1.08	2.00	2.38	2.47
Practice (n=20)	Head/face/hair	1.04	0.78	0.00	0.42	0.82	1.56	2.39	2.43	2.44
Practice (n=20)	Shin guards	0.08	0.16	0.00	0.00	0.00	0.10	0.36	0.58	0.64
Practice (n=20)	Soccer ball	0.73	1.03	0.00	0.04	0.28	0.93	3.30	3.52	3.58
Practice (n=20)	Water bottle	2.31	5.22	0.25	0.68	0.99	1.68	3.70	20.20	24.33
Practice (n=20)	Dietary Objects	2.32	5.22	0.25	0.68	1.02	1.68	3.70	20.20	24.33
Practice (n=20)	Non-dietary Objects	25.33	15.74	9.33	14.02	17.24	34.56	56.96	57.70	57.88
Practice (n=20)	All Objects	27.65	16.96	10.05	14.74	18.31	37.19	58.55	58.77	58.83
Game (n=19)	Artificial Turf	0.42	1.24	0.00	0.01	0.05	0.17	1.45	4.66	5.46
Game (n=19)	Body	1.71	1.95	0.10	0.31	0.95	2.04	5.41	6.67	6.99
Game (n=19)	Clothes	12.99	12.06	1.79	4.96	10.38	15.61	38.26	44.59	46.17
Game (n=19)	Field Structures	0.88	1.30	0.02	0.18	0.36	0.75	3.92	4.41	4.53
Game (n=19)	Footwear	0.55	0.68	0.00	0.06	0.25	0.92	1.99	2.05	2.06
Game (n=19)	Head/face/hair	0.95	1.27	0.03	0.32	0.53	1.20	1.96	5.06	5.83
Game (n=19)	Shin guards	0.20	0.56	0.00	0.00	0.00	0.00	1.12	2.06	2.29
Game (n=19)	Soccer ball	0.40	0.33	0.00	0.13	0.35	0.65	0.92	1.10	1.14
Game (n=19)	Water bottle	1.49	2.02	0.00	0.03	0.59	2.34	6.02	6.62	6.77
Game (n=19)	Dietary Objects	1.49	2.02	0.00	0.03	0.59	2.34	6.02	6.62	6.77
Game (n=19)	Non-dietary Objects	19.24	13.08	6.15	9.33	18.66	23.69	46.49	53.07	54.72
Game (n=19)	All Objects	20.73	13.07	6.74	11.41	19.84	25.91	46.89	53.15	54.72
p value*	Artificial Turf	0.700	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.036	ND	ND	ND	ND	ND	ND	ND	ND



Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Clothes	0.089	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	0.448	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	0.196	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	0.305	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	0.372	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	0.800	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.243	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.243	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.175	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.160	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

ND: not determined

Table S3-389. Median Duration of Hand to Object Contact (Second) by Event Type, with Gloves Off

Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice	Artificial Turf	13	1.74	1.52	0.46	0.77	0.89	2.20	4.80	5.08	5.14
Practice	Body	19	1.76	1.58	0.53	0.97	1.20	1.93	3.43	6.81	7.66
Practice	Clothes	20	5.09	2.63	1.89	3.13	4.15	7.02	9.26	10.47	10.78
Practice	Field Structures	19	4.27	4.41	0.40	1.77	2.82	5.62	8.95	17.76	19.96
Practice	Footwear	19	4.19	3.77	0.99	1.66	2.44	6.23	10.22	14.31	15.34
Practice	Head/face/hair	19	1.54	0.66	0.99	1.16	1.28	1.63	2.97	3.37	3.47
Practice	Shin guards	8	2.88	1.50	1.26	1.78	2.52	3.65	5.14	5.34	5.39
Practice	Soccer ball	17	2.04	1.13	0.79	1.06	1.54	2.97	3.81	3.92	3.95
Practice	Water bottle	20	6.56	2.80	1.16	5.05	6.77	7.93	9.69	12.89	13.69
Practice	Dietary Objects	20	6.42	2.76	1.16	5.05	6.71	7.42	9.69	12.89	13.69
Practice	Non-dietary Objects	20	3.26	1.72	1.58	1.88	2.56	4.20	6.91	6.93	6.93
Practice	All Objects	20	3.35	1.72	1.64	2.04	2.59	4.24	6.91	6.94	6.94
Game	Artificial Turf	14	1.50	0.79	0.85	1.09	1.30	1.48	2.78	3.74	3.98



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Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Game	Body	19	1.75	1.99	0.72	0.97	1.26	1.67	2.84	8.39	9.78
Game	Clothes	19	4.32	2.51	1.85	3.00	3.74	4.66	6.88	12.29	13.65
Game	Field Structures	19	3.21	1.76	1.25	1.99	2.73	3.71	6.75	6.89	6.93
Game	Footwear	16	3.73	3.31	0.95	1.96	2.85	4.21	7.80	13.50	14.93
Game	Head/face/hair	19	1.28	0.43	0.60	1.04	1.24	1.34	1.88	2.38	2.50
Game	Shin guards	4	9.84	5.91	4.20	5.31	9.22	13.75	16.11	16.58	16.70
Game	Soccer ball	18	1.88	0.90	0.64	1.30	1.66	2.05	3.55	4.03	4.15
Game	Water bottle	15	7.50	3.51	2.09	4.79	6.35	9.74	13.48	13.73	13.79
Game	Dietary Objects	15	7.48	3.52	2.09	4.79	6.35	9.74	13.48	13.73	13.79
Game	Non-dietary Objects	19	2.60	0.87	1.23	1.91	2.63	3.14	3.60	4.68	4.95
Game	All Objects	19	2.71	0.86	1.25	2.07	2.75	3.15	3.61	4.74	5.03
p value*	Artificial Turf	ND	0.458	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	ND	0.840	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.461	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	0.795	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	0.999	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	0.325	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	0.016	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	0.987	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.657	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.610	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.496	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.531	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

ND: not determined

Table S3-390. Mouthing Frequency (Event/Hour) by Event Type, with Gloves Off

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA



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Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Body	0.31	0.66	0.00	0.00	0.00	0.14	2.00	2.15	2.19
Practice (n=20)	Clothes	9.28	10.22	0.00	1.82	5.46	12.11	26.85	35.71	37.92
Practice (n=20)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Hands	10.81	8.23	0.00	3.78	9.98	18.96	21.71	24.69	25.44
Practice (n=20)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Shinguards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Water bottle	10.17	17.50	0.00	3.63	5.67	8.42	24.50	69.94	81.30
Practice (n=20)	Dietary Objects	10.34	17.43	0.00	3.63	5.67	8.42	24.50	69.94	81.30
Practice (n=20)	Non-dietary Objects	9.71	10.16	0.00	3.47	6.04	12.68	26.85	35.71	37.92
Practice (n=20)	All Objects	20.05	18.22	3.24	8.06	15.44	25.08	45.38	74.12	81.30
Game (n=18)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=18)	Body	0.19	0.50	0.00	0.00	0.00	0.00	1.45	1.67	1.72
Game (n=18)	Clothes	9.98	20.75	0.00	0.89	4.90	10.04	23.33	78.87	92.76
Game (n=18)	Field Structures	0.02	0.09	0.00	0.00	0.00	0.00	0.04	0.33	0.40
Game (n=18)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=18)	Hands	8.56	5.14	0.00	6.06	7.10	11.36	18.37	20.71	21.30
Game (n=18)	Head/face/hair	0.10	0.36	0.00	0.00	0.00	0.00	0.54	1.33	1.53
Game (n=18)	Shinguards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=18)	Soccer ball	0.03	0.13	0.00	0.00	0.00	0.00	0.05	0.45	0.55
Game (n=18)	Water bottle	4.78	5.91	0.00	0.20	2.14	7.54	15.80	17.19	17.54
Game (n=18)	Dietary Objects	4.78	5.91	0.00	0.20	2.14	7.54	15.80	17.19	17.54
Game (n=18)	Non-dietary Objects	10.39	20.66	0.00	1.63	4.90	10.75	24.61	79.13	92.76
Game (n=18)	All Objects	15.16	22.37	0.00	5.27	9.55	15.62	39.84	88.77	101.00
p value*	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.461	ND	ND	ND	ND	ND	ND	ND	ND



Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Clothes	0.526	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.623	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shinguards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.118	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.072	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.564	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.120	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined

Table S3-391. Mouthing Duration (Min/Hour) by Event Type, with Gloves Off

Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice (n=20)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Body	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.04	0.04
Practice (n=20)	Clothes	0.27	0.34	0.00	0.07	0.16	0.37	0.76	1.28	1.41
Practice (n=20)	Field Structures	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Hands	0.37	0.38	0.00	0.08	0.24	0.57	1.11	1.16	1.17
Practice (n=20)	Head/face/hair	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Soccer ball	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice (n=20)	Water bottle	0.56	0.74	0.00	0.22	0.39	0.54	1.43	3.00	3.39
Practice (n=20)	Dietary Objects	0.57	0.73	0.00	0.25	0.39	0.54	1.43	3.00	3.39
Practice (n=20)	Non-dietary Objects	0.29	0.34	0.00	0.07	0.18	0.39	0.76	1.28	1.41
Practice (n=20)	All Objects	0.85	0.77	0.16	0.39	0.72	0.98	2.29	3.17	3.39



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Event	Object	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Game (n=18)	Artificial turf	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=18)	Body	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.03	0.04
Game (n=18)	Clothes	0.60	1.51	0.00	0.02	0.12	0.39	2.02	5.69	6.61
Game (n=18)	Field Structures	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.03
Game (n=18)	Footwear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=18)	Hands	0.48	1.05	0.00	0.10	0.19	0.43	1.13	4.02	4.74
Game (n=18)	Head/face/hair	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.02	0.02
Game (n=18)	Shin guards	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game (n=18)	Soccer ball	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Game (n=18)	Water bottle	0.41	0.77	0.00	0.01	0.11	0.39	1.63	2.86	3.17
Game (n=18)	Dietary Objects	0.41	0.77	0.00	0.01	0.11	0.39	1.63	2.86	3.17
Game (n=18)	Non-dietary Objects	0.62	1.51	0.00	0.03	0.15	0.41	2.02	5.70	6.62
Game (n=18)	All Objects	1.03	1.62	0.00	0.18	0.26	1.28	3.74	6.04	6.62
p value	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Body	0.473	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	0.652	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	0.966	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	0.065	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	0.039*	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	0.866	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	0.255	ND	ND	ND	ND	ND	ND	ND	ND

*<0.05 (Wilcoxon Rank Sum)

NA: not applicable due to no mouth contact with these objects; and ND: not determined



Table S3-392. Mouthing Median Duration (Second) by Event Type, with Gloves Off

Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
Practice	Artificial turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Body	5	0.98	0.42	0.58	0.60	0.97	1.14	1.51	1.58	1.60
Practice	Clothes	17	1.61	0.97	0.62	0.87	1.41	1.68	3.54	4.04	4.17
Practice	Field Structures	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Hands	18	1.28	0.66	0.66	0.90	1.07	1.29	2.62	3.07	3.18
Practice	Head/face/hair	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Soccer ball	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Practice	Water bottle	18	3.70	1.30	1.72	2.63	3.99	4.31	5.79	5.83	5.85
Practice	Dietary Objects	19	3.62	1.32	1.72	2.45	3.99	4.29	5.78	5.83	5.85
Practice	Non-dietary Objects	17	1.29	0.53	0.62	0.87	1.39	1.62	2.02	2.48	2.60
Practice	All Objects	20	2.44	1.37	0.90	1.42	2.40	2.71	5.78	5.83	5.85
Game	Artificial turf	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game	Body	3	1.13	0.50	0.59	0.91	1.22	1.40	1.55	1.58	1.59
Game	Clothes	15	1.41	0.65	0.62	0.89	1.30	1.88	2.57	2.58	2.58
Game	Field Structures	1	5.18	ND	ND	ND	ND	ND	ND	ND	ND
Game	Footwear	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game	Hands	18	1.32	0.93	0.54	0.87	1.06	1.52	2.17	4.24	4.76
Game	Head/face/hair	2	1.15	0.50	0.79	0.97	1.15	1.33	1.47	1.50	1.50
Game	Shin guards	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Game	Soccer ball	1	0.13	ND	ND	ND	ND	ND	ND	ND	ND
Game	Water bottle	14	3.58	1.44	1.95	2.59	3.10	4.33	6.16	6.70	6.83
Game	Dietary Objects	14	3.58	1.44	1.95	2.59	3.10	4.33	6.16	6.70	6.83
Game	Non-dietary Objects	17	1.42	0.66	0.62	0.87	1.30	1.90	2.49	2.58	2.61
Game	All Objects	18	2.32	1.24	0.62	1.53	2.23	2.74	4.63	5.39	5.58
p value*	Artificial turf	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND



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Event	Object	N	Mean	SD	Min	p25	Median	p75	p95	p99	Max
p value	Body	ND	0.786	ND	ND	ND	ND	ND	ND	ND	ND
p value	Clothes	ND	0.655	ND	ND	ND	ND	ND	ND	ND	ND
p value	Field Structures	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Footwear	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Hands	ND	0.988	ND	ND	ND	ND	ND	ND	ND	ND
p value	Head/face/hair	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Shin guards	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Soccer ball	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p value	Water bottle	ND	0.722	ND	ND	ND	ND	ND	ND	ND	ND
p value	Dietary Objects	ND	0.900	ND	ND	ND	ND	ND	ND	ND	ND
p value	Non-dietary Objects	ND	0.683	ND	ND	ND	ND	ND	ND	ND	ND
p value	All Objects	ND	0.654	ND	ND	ND	ND	ND	ND	ND	ND

*p value from Wilcoxon Rank Sum

NA: not applicable due to no mouth contact with these objects; and ND: not determined