

Preliminary examination of guardian cap head impact data using instrumented mouthguards



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MW CTR-IN Annual Meeting



University of Nevada, Reno

Neuromechanics Lab



- [Neuromechanics Website](#)
- [Dr. Murray's Research](#)
- [Dr. Murray's Publications](#)



Background

Guardian Cap Results: "Exceeded Our Expectations"

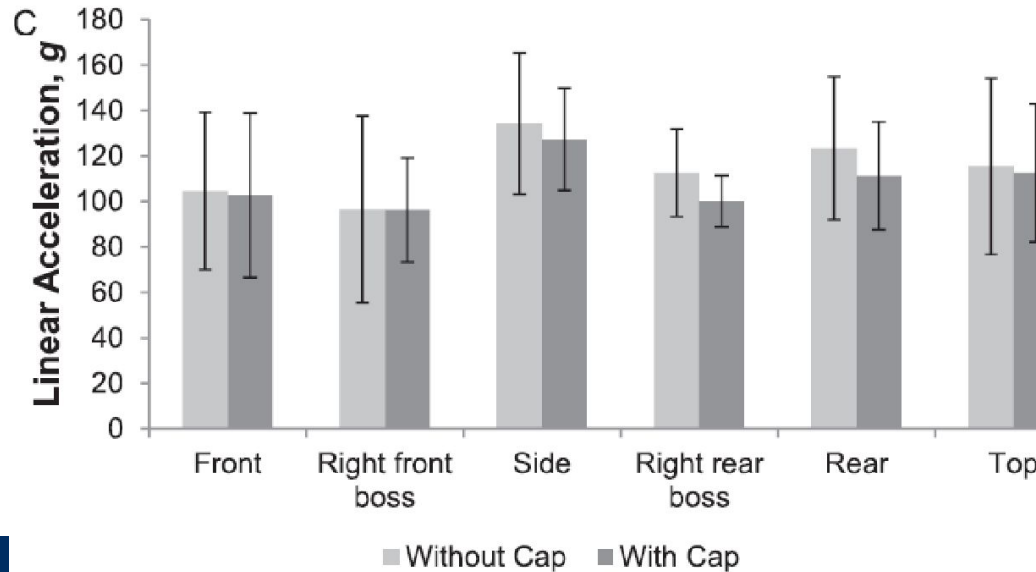
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Background

Journal of Athletic Training 2017;52(9):802-808
doi: 10.4085/1062-6050-52.6.01
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original research



Breedlove et al, 2017, *J of Athl Train*



University of Nevada, Reno

Is Youth Football Safe? An Analysis of Youth Football Head Impact Data

Population

1 Full Youth Football Season

- 20 Players
- 7 Games
- 20 Practices



Methods

Players Equipped With:

- Helmet Impact Monitor
- Guardian Caps During Practice
- Safe Tackling Techniques



Results

No Concussions All Season
Total Impacts: 817

- 1 High
- 97 Medium
- 719 Low



Heary et al. *Neurosurgery*, January 2020

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Heary et al, 2020, *Neurosurgery*

Purpose

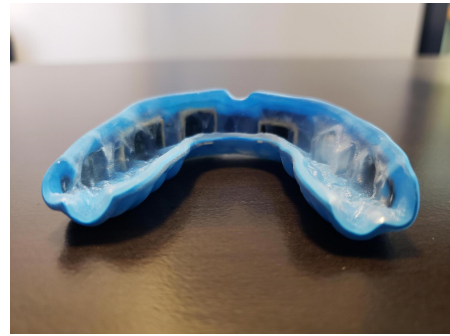


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Methods

- 6 Practice Sessions (pre-season training)
 - Nearly identical on contact/tackling time
- Dental fitted instrumented mouthguards (iMM) (3200 Hz; Prevent Biometrics, Edina, MN)
- Peak linear acceleration (PLA), peak angular acceleration (PAA), and total impacts
 - Filtered and true positives were all video verified



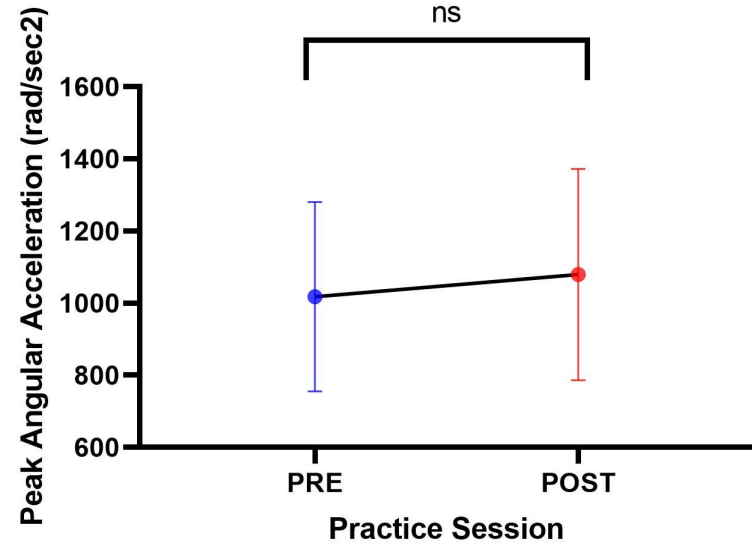
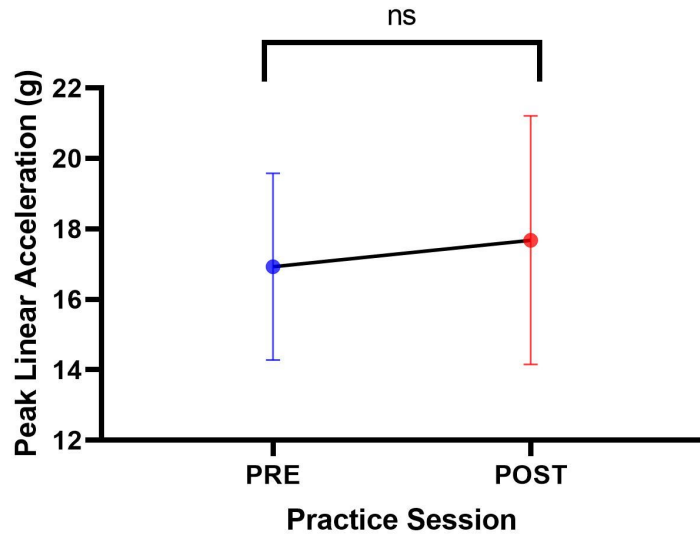
Methods

- 42 NCAA Division I football players
- 7 repeat players (starter/rotational=3)

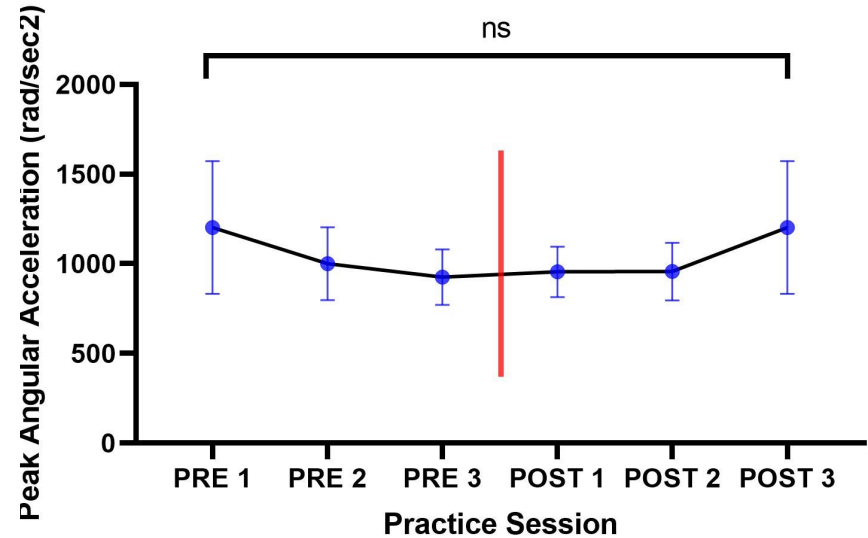
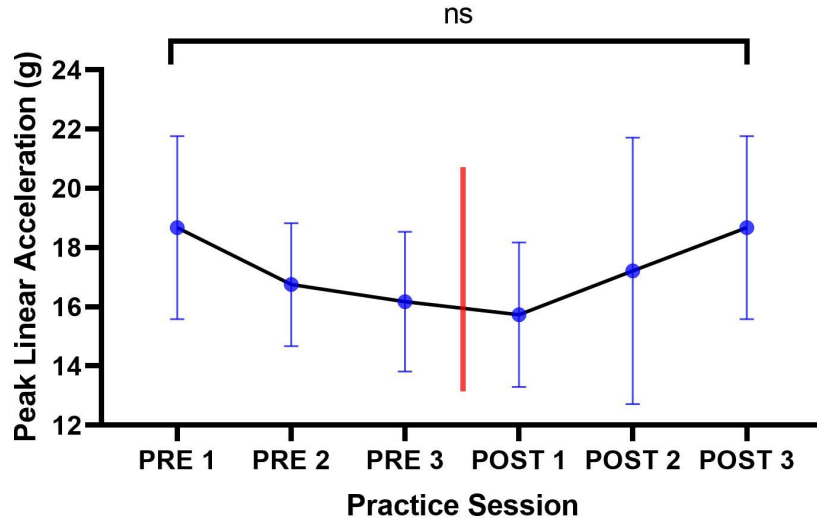
Practice	PRE 1	PRE 2	PRE 3	POST 1	POST 2	POST 3
# of Participants	13	12	17	14	14	13
Position (%)						
OL	3	2	2	2	3	3
DL	2	1	2	1	2	2
RB	2	1	3	3	3	2
TE	3	2	3	2	1	3
LB	3	6	7	6	5	3
Starters/Rotation (%)	46.15	50.00	47.66	42.86	57.14	4.15



Results (total group)



Results (repeat players)



Results (summary)

- Guardian caps didn't reduce overall head impacts
 - Head impacts are related to concussion but no direct comparison metric exists
- Continue to study while tracking injury rate



Questions and Comments



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