

Preliminary examination of guardian cap head impact data using instrumented mouthguards



Nicholas Murray, PhD
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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](#)



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Background

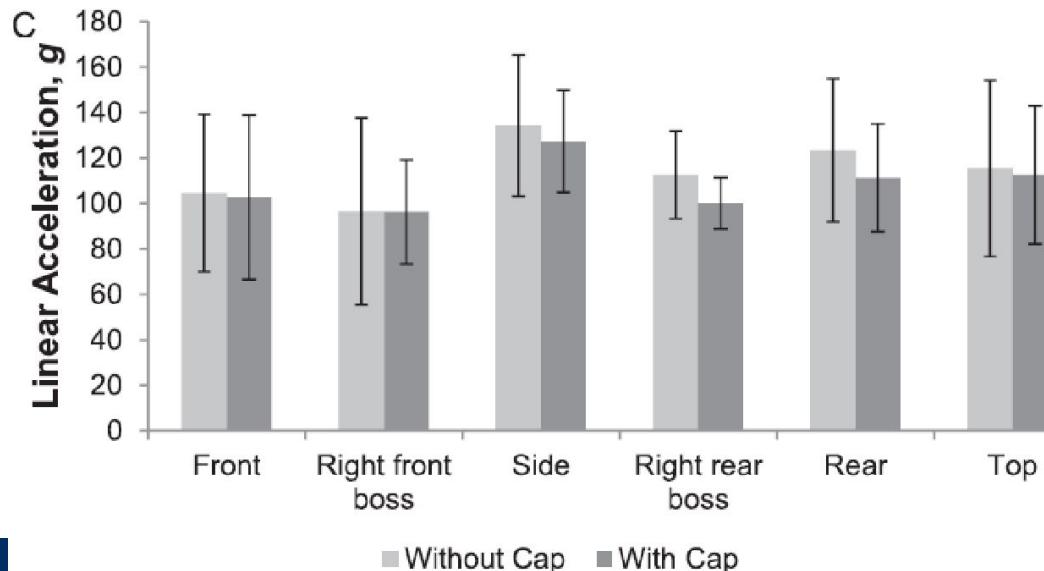
Guardian Cap Results: "Exceeded Our Expectations"

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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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www.natajournals.org



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

original research

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

Population	Methods	Results
1 Full Youth Football Season • 20 Players • 7 Games • 20 Practices	Players Equipped With: • Helmet Impact Monitor • Guardian Caps During Practice • Safe Tackling Techniques	No Concussions All Season Total Impacts: 817 • 1 High • 97 Medium • 719 Low

Heary et al. *Neurosurgery*, January 2020

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Purpose



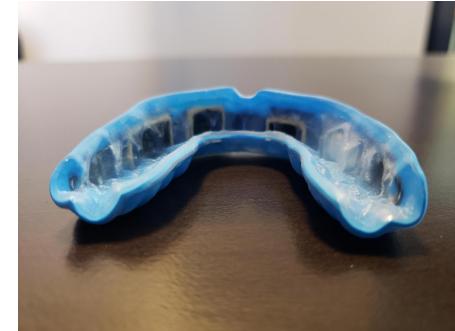
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Methods

- 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



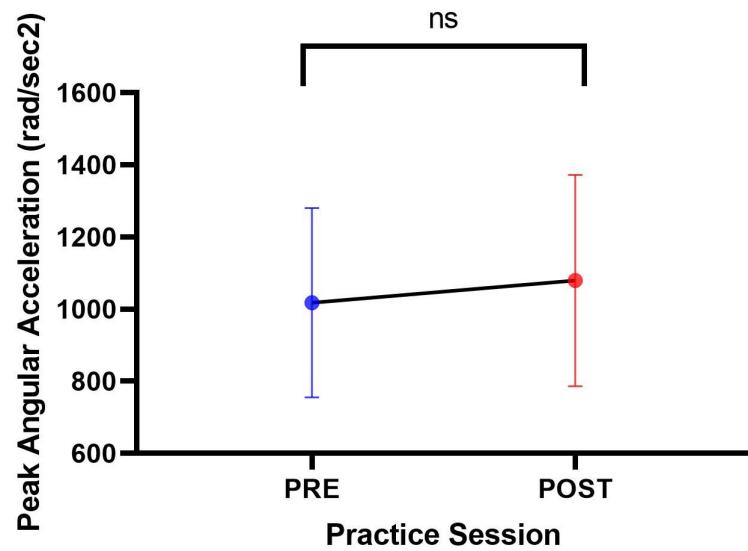
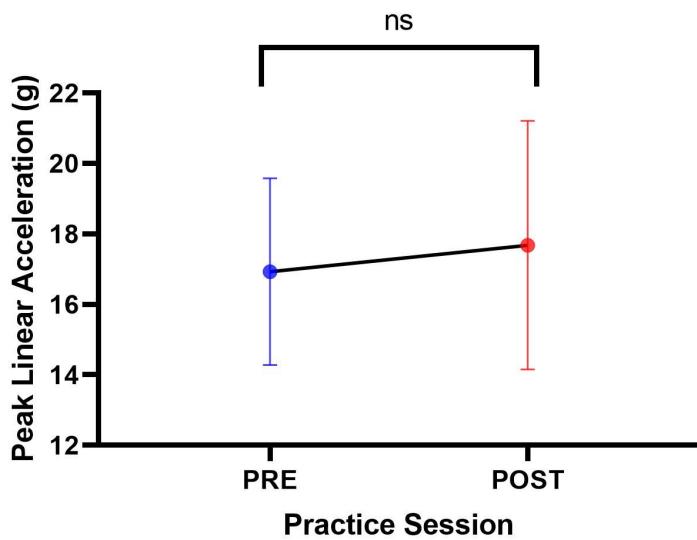
Methods

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

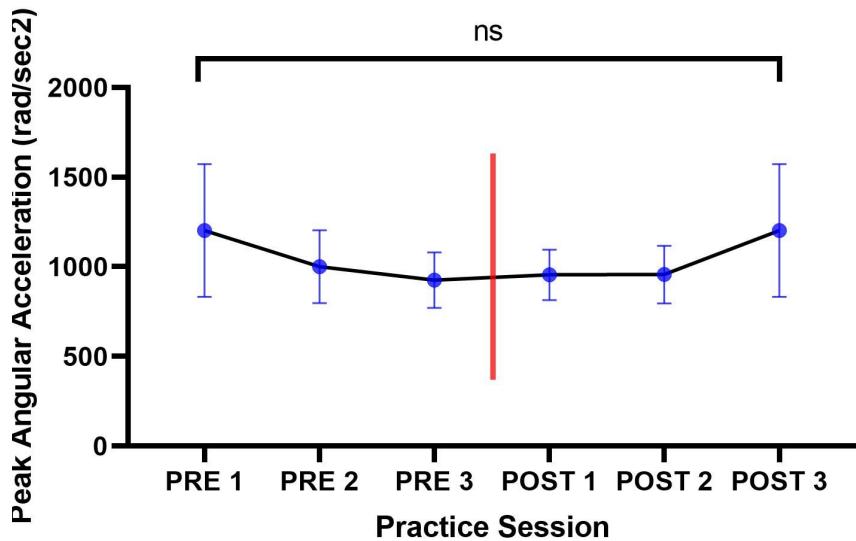
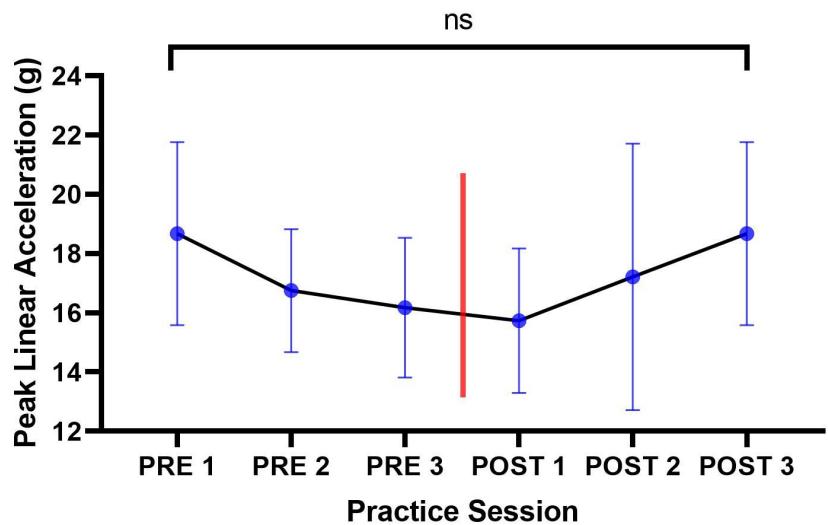
- 42 NCAA Division I football players
- 7 repeat players (starter/rotational=3)



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



Reach out directly:
nicholasmurray@unr.edu
P: (775) 682-8347



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