**308 INCREASED ACUTE EXPOSURE TO SOCCER BALL HEADING SHOWS NO RESPONSE FROM BIOCHEMICAL MARKERS FOR AXONAL INJURY**

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Background There is limited research quantifying the response of biochemical markers for axonal injury to an acute bout of soccer heading, especially when individual impact biomechanics are considered, and overall heading dose manipulated.

Objective To investigate if individual impact biomechanics or different heading doses affect the reaction of serum neurofilament light (NF-L).

Design Randomized control trial.

Setting Laboratory study.

Participants Forty-four male university students with no history of head injury and currently not active in head-impact sports, randomly split into a control group (n=8), 10 (n=12), 20 (n=12) or 40-header group (n=12).

Interventions (or Assessment of Risk Factors) Blood samples were taken at baseline, then six hours, 24-hours and 7-days post heading. After baseline samples, participants completed either 10, 20 or 40 headers whilst impact biomechanics were quantified using a three-dimensional motion capture system either 10, 20 or 40 headers whilst impact biomechanics were quantified using a three-dimensional motion capture system.

Main Outcome Measurements NF-L concentrations, cumulative linear and angular head acceleration. For NF-L concentrations, cumulative linear and angular head acceleration. For NF-L, concentrations, time, group and interaction effects were assessed via mixed-effects ANOVA. The relationship between cumulative linear and angular head accelerations and percentage change in NF-L across timepoints was assessed via Pearson product moment correlations.

Results There were no significant time, group or interaction effects for NF-L. There was no significant relationship between cumulative linear or angular head accelerations and percentage change of NF-L at any timepoint. At 6hrs, 24hr and 7-days post heading, control group showed 61.8%, 41.7% and 30% NF-L change from baseline respectively; 10 header group 30%, -0.6% and 15.2% change respectively, 20 header group -2.6%, -3.2% and 7.4% change respectively, and 40 header group 18.6%, 33.5% and 29.6% change respectively. Large inter-individual variation in NF-L response was observed.

Conclusions Individual impact biomechanics or increasing heading doses did not effect NF-L response. Further study is required to evaluate chronic loading effects of heading that also considers individual impact biomechanics.