



16th Annual Brain Injury Conference

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Poster #: 18

Abstract Title: Investigating Differences in Heart Rate Between Athletes with Concussion and Healthy Controls During Visual and Cognitive Clinical Assessments.

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ABSTRACT:

Abstract Theme: Mild TBI / Concussion

Topic(s) of Interest: Clinical Interventions, Clinical Research

Purpose of Project: This study will assess differences in average heart rate between concussed individuals and healthy controls during various clinical assessments.

Methods, Procedure, Results/Outcome, Conclusion: Methods: This study is a subset of a larger ongoing project that is recruiting athletes with concussion and healthy controls from various varsity sport teams at the University of Toronto between September 2022 and November 2023. Thirty-four concussed participants completed various clinical assessments within one week (4-7 days) post-concussion and 118 control participants completed the assessments before their athletic season.

Procedures: Participants completed the following clinical tasks: a symptom evaluation, visual acuity, and oculomotor assessments; RightEye Sensorimotor System™ (seated eye movement tracking); Dynavision™ (reaction time + hand-eye coordination); Vestibular Ocular Motor Screening (smooth pursuits, rapid eye movements, near-point convergence, visual motion sensitivity); balance tests (Tandem Gait, mBess); and a cognitive task (Hopkins Verbal Learning Test). Heart rate was recorded for the duration of the assessments.

Results: Data analysis is currently ongoing and results will be presented at the conference.

Statistical analysis will use a Bayesian approach. Average heart rate for concussed and control participants will be calculated for each task. A model will be developed to identify the tasks resulting in the highest and lowest average heart rate within each group. Additionally, a model will be created to estimate differences in average heart rate between concussed participants and controls for each task.

Conclusion: Sustaining a concussion can disrupt the autonomic nervous system and lead to alterations in heart rate. Results from this study will seek to identify autonomic disturbances at rest post-concussion during clinical tasks.