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YOU ARE INVITED TO ATTEND THE DEFENSE OF THE DOCTORAL DISSERTATION

Identifying the Contribution of Individual Factors to Chronic and Long-Term Outcomes in Mild Traumatic Brain Injury

by

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Tuesday, March 15th, 2022
12.00 PM.
Stanley S. Bergen Building, Room 133

https://rutgers.zoom.us/j/94315447317?pwd=Mk9IYko4SWZwa212MmUvRlA0YVZNUT09
Meeting ID: 943 1544 7317
Password: 797545

ABSTRACT

Mild traumatic brain injury (mTBI) is a complex injury associated with a myriad of effects on cognitive, psychological, and brain health. The effects are transient for some but may cause prolonged symptoms that impact quality of life in others. Individual factors (e.g., age, sex, mental health status) contribute to this diversity in symptoms and outcomes, making it challenging to predict individual prognosis. Thus, it is crucial to incorporate this heterogeneity into research to develop personalized care for individuals with mTBI. The goal of this dissertation was to examine how age, sex, and mental health contribute to the heterogenous chronic and long-term cognitive, psychological, and neural outcomes following mTBI. Health behaviors and mental health were examined in healthy collegiate athletes to demonstrate the importance of examining behaviors and symptoms in uninjured individuals. Multivariate associations between aggressive behaviors, alcohol use, and fatigue with stress and psychological distress were shown, with unique patterns for females, suggesting that premorbid behaviors and mental health may complicate interpretation of mTBI outcomes. This dissertation research also examined long-term alterations to brain structure and function dependent on cognitive performance and age at the time of injury. Specifically, collegiate athletes with mTBI history showed stronger but variable relationships between cognitive performance and white matter organization, which was not found in collegiate athletes without mTBI history. Using resting state functional connectivity in civilian TBI patients, greater age at the time of injury was shown to attenuate neural functional recovery from mTBI and more severe injuries. These findings showed that individual factors aid in understanding the nuances of long-term neural patterns. Finally, to assess the influence of comorbid psychiatric conditions (e.g., post-traumatic stress disorder [PTSD]) on chronic outcomes following mTBI, neuropsychological and neuroimaging profiles were examined in military personnel. The neuropsychological measures demonstrated greater sensitivity than whole brain neuroimaging measures in identifying distinct symptom profiles of comorbid mTBI and PTSD, underscoring the enhanced heterogeneity that comorbid mental health conditions add to mTBI outcomes. Overall, this dissertation research demonstrates that synthesizing multiple individual factors can improve prediction of prognosis and recovery from mTBI, which is a crucial step toward improving clinical outcomes.