

Categories: Concussion/Mild TBI (Adult)

Keyword 1: concussion/ mild traumatic brain injury

Keyword 2: executive functions

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44 The Link Between Loss of Consciousness, Working Memory, and Depressive Symptoms in Adult Concussion Patients.

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Objective: Individuals who have experienced a mild traumatic brain injury, or concussion, often experience a variety of cognitive and emotional sequelae. Specifically, concussions can place individuals at increased risk for experiencing symptoms of depression. It is important to understand if loss of consciousness (LOC) is related to higher rates of depression in order to improve care and cognitive functioning by appropriately monitoring for mood-related symptoms post-concussion. The current study sought to examine the relationship between depressive symptoms (measured using the PHQ-9), working memory (WM; measured using RBANS Digit Span subtest), and presence of LOC in individuals who have sustained a head injury. The relationships between presence of LOC, depressive symptoms, and WM performance were examined, as it was expected LOC would result in greater depressive symptoms and negatively impact WM performance. Finally, the relationship between depressive symptoms and WM performance, while controlling for LOC, was also assessed.

Participants and Methods: Data was drawn from archival medical records of 40 patients who underwent brief neuropsychological screening in an outpatient, community clinic after being referred following a head injury. Patients ranged in ages from 14 to 75, with a mean age of 39.1. The average years of education amongst patients was 14.62. Twenty-five (62%) of the patients were women. Ten individuals endorsed LOC secondary to their head injury.

Results: The average PHQ-9 score was 9.68 (SD=7.69). LOC did not impact reported depressive symptoms ($p > .05$). The correlation between LOC and WM performance was also nonsignificant ($p > .05$). While it was predicted there would be an inverse relationship between PHQ-9 scores and WM performance, there was no statistical significance ($p > .05$). Similarly, there was no significant relationship between PHQ-9 and WM performance when controlling for LOC ($p > .05$).

Conclusions: While the relationships between LOC, depressive symptoms, and WM performance were found to be nonsignificant, understanding the course and best supports of cognitive and emotional sequelae of head injuries is of paramount importance. Future research exploring these relationships with larger, diverse populations would likely prove beneficial.

Categories: Concussion/Mild TBI (Adult)

Keyword 1: working memory

Keyword 2: working memory

Keyword 3: concussion/ mild traumatic brain injury

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45 Providing a Definition of Head Injuries Increases Reported Trauma in Women Between 30 and 50

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Objective: Utilization of an objective measure to evaluate history of head trauma has been demonstrated to have a significant effect on the amount of sustained trauma reported by the individual, in athletic male populations. The ability to generalize this definition across a more diverse population remains an opportunity; a report from the World Health Organization recognized that 93% of current research on mild traumatic brain injuries omitted gender specific data. Further, relative to reports in young adults, research on the effects of concussions in midlife remain sparse. Researchers hypothesized that women between the ages of 30 and 50 from a

general population would report additional head injuries when provided with an objective definition similar to those previously used in male athletes.

Participants and Methods: Highly educated (M=16.7 years, SD=2.1 years) women between the ages of 30 and 50 (M=40.3, SD= 5.1) completed an online web-based survey. The survey probed for demographic information tied to participation in sports & related activities, individual history of head trauma, as well as a series of objective measures. Participants were first asked to provide a history of head trauma, in absence of an objective definition; they were then provided with an objective definition similar to what was previously documented to be effective in the literature, and then asked to provide a reassessment of sustained trauma.

Results: A Wilcoxon Signed Rank test indicated a significant change in number of reported head injuries, pre and post definition ($z= 4.06$, $p<.0001$). The number of head injuries reported increased for 42% of the population, for this portion of the sample the median increased fourfold. To better understand the differences between those who reported an increase, and those who didn't, researchers performed an examination of commonalities between those groups. A Chi-Square Test of Independence indicated a significant relationship ($\chi^2=7.03$, $p<.01$) between participation in sports (recreational, organized) and change in reported head injuries: 21% of individuals without a sport history increased the number of reported head injuries, in contrast 58% of individuals with a sport history increased the number of head injuries reported.

Conclusions: Consistent with the literature in male athletes, providing a definition of a head injury significantly increased the number of reported head injuries in women, between 30 and 50 years of age. This finding indicates that providing a definition can improve reported concussion history within a more diverse population. This fourfold increase for 42% of our population could bear significant implications for those receiving clinical care. Further, given that the definition utilized was especially effective at correcting history of reported head injury in those who participated in sports, its adoption within clinical communities evaluating athletic populations seems especially promising.

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Keyword 1: traumatic brain injury

Keyword 2: concussion/ mild traumatic brain injury

Keyword 3: diversity

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46 Resting State FC in the Default Mode Networks: A Prediction Model for Elevated Aggression from Connectivity Metrics and Neurocognitive Performance Across Multiple Stages of Recovery in mild TBI

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Objective: Mild traumatic brain injury (mTBI) remains one of the most prevalent brain injuries, affecting approximately one-in-sixty Americans. Previous studies have shown an association between white matter integrity and aggression at chronic stages (either 6-months or 12 months post-mTBI) however, the association between white matter axonal damage, neuropsychological outcomes, and elevated aggression in multiple stages since time-since-injury (TSI) is unclear. We hypothesized that functional connectivity between the default mode network (DMN), a key brain network involved in cognitive, self-reflective, and emotional processes, and other cortical regions would predict elevated aggression and emotional disturbances across multiples stages of recovery in mild TBI.

Participants and Methods: Participants healthy controls (HC: n=35 total [15 male, 20 female], age M=24.40, SD=5.95; mTBI: n=121 total [43 male; 78 female], age M = 24.76, SD=7.48). Participants completed a cross-sectional study design at specific post-injury time points ranging from (2W, 1M,3M,6M,12M). Participants completed a comprehensive neuropsychological battery and a neuroimaging session, including resting state functional connectivity (FC). Here, we focus on the FC outcomes for the DMN. During the neuropsychological assessment, participants completed tests that measured learning and memory, speed of information processing, executive function, and attention. To predict neuropsychological performance from brain connectivity, we conducted a series of stepwise linear regression