

neurotrauma has been focused on traumatic brain injury (TBI); however, the blast exposure may often be independent of TBI. It is common in both active duty military and veterans to report years of blast exposure from combat and training. The objective of this study was to explore the relationship between blast exposure and cognitive functioning in military personnel seeking treatment for a mild TBI.

Participants and Methods: Participants were recruited from a military hospital while enrolled in a multidisciplinary treatment program for TBI. All patients had at least one diagnosed mTBI as well as persistent cognitive complaints. Exclusion criteria included invalid performance on a performance validity test and a symptom validity test. 97 participants were included in the analysis with an average age of 34.0 (SD = 7.9) and average 4.0 combat deployments (SD = 3.6). Blast exposure history was measured by the overall score from the Blast Exposure Threshold Survey (BETS) which assessed the frequency and duration of use of various blast sources.

Outcomes included the Neurobehavioral Symptom Inventory (NSI) and the Global Deficit Scale (GDS) an objective measure of cognitive deficiency. GDS was calculated from seven measures: Hopkins Verbal Learning Test-Revised Total and Delayed Recall (HVLTR and HVLDR); DKEFS System Color-Word Condition 3 Inhibition (CW3), Color-Word Condition 4 Switching (CW4) and Trail Making Condition 3 Letter Sequencing (TM3), Paced Auditory Serial Addition Test (PASAT), and the Symbol Digit Modality Test (SDMT). Demographically corrected t-scores (M=50, SD = 10) were converted to deficit scores and averaged to calculate GDS. To adjust for non-normal distributions, non-parametric statistics were examined.

Results: The BETS was not related to GDS ($\rho = -.055$); however, there was a significant correlation between higher levels on the BETS and better performance on measures of selective attention (PASAT $\rho = .307$) and processing speed (SDMT $\rho = .218$). The correlation between BETS and the other neuropsychological measures were not meaningful (all ρ 's $< .10$). Those with an impaired GDS, did not differ from others on the BETS. BETS was also not associated with neurobehavioral symptoms ($\rho = .125$). BETS had moderate correlations with number of combat deployments ($\rho = .483$), severity of combat exposure ($\rho = .556$). It was not related

to education ($\rho = .004$) or pre-morbid intelligence ($\rho = -.029$).

Conclusions: The BETS was not related to GDS ($\rho = -.055$); however, there was a significant correlation between higher levels on the BETS and better performance on measures of selective attention (PASAT $\rho = .307$) and processing speed (SDMT $\rho = .218$). The correlation between BETS and the other neuropsychological measures were not meaningful (all ρ 's $< .10$). Those with an impaired GDS, did not differ from others on the BETS. BETS was also not associated with neurobehavioral symptoms ($\rho = .125$). BETS had moderate correlations with number of combat deployments ($\rho = .483$), severity of combat exposure ($\rho = .556$). It was not related to education ($\rho = .004$) or pre-morbid intelligence ($\rho = -.029$).

Categories: Concussion/Mild TBI (Adult)

Keyword 1: traumatic brain injury

Keyword 2: assessment

Keyword 3: cognitive functioning

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52 Developing and Calibrating a Sex-Specific Psychiatric Screener within the Post-Concussion Symptom Scale

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Objective: Pre- and post-morbid mental health conditions can prolong recovery from concussion and are generally detrimental to athletic performance and quality of life. If psychiatric conditions can be identified in athletes at the time of baseline testing, psychological/psychiatric intervention can be implemented to prevent these complications. Given the time constraints on neuropsychological baseline testing, it is important to have time-efficient screening measures. As such, the purpose of this study

was to develop and calibrate a psychiatric screening measure within the Post-Concussion Symptom Scale (PCSS) from the Immediate Post-Concussion Assessment and Cognitive Testing (ImPACT), which is commonly administered to athletes at baseline, thereby “killing two birds with one stone”: (1) screening for psychiatric conditions and (2) obtaining a baseline measurement of concussion-like symptoms.

Participants and Methods: Participants were 278 undergraduate students from a Canadian university with a mean age of 21.87 years (SD=4.87, range=18 to 52) and a sex composition of 64% females (n=179, Age: M=21.29 years-old, SD=4.34, range: 18 to 52) and 36% males (n=179, Age: M=22.93 years-old, SD=5.57, range: 18 to 50). Participants were a convenience sample collected via online survey platform in exchange for bonus points toward courses through a participant pool system between January and July 2021. The psychiatric screener consisted of the affective subscale from the PCSS (irritability, sadness, feeling more emotional, nervousness) and the criterion measure was the Depression, Anxiety, and Stress Scales (DASS-42). Statistical analyses were conducted in R v.4.3 and included confirmatory factor analysis and receiver operating characteristic (ROC) curve analyses. Although a balance was sought between sensitivity and specificity, the former was prioritized given that this is intended as a screening measure. Males and females were analyzed separately as females tend to report more symptoms than males. Mild, moderate, and severe elevations were predicted for depression, anxiety, and stress, based on standard DASS cutoffs.

Results: The CFA analyses revealed good fit for both the PCSS (CFI=.992; TLI=.991; RMSEA=.053; SRMR=.066) and DASS (CFI=.995; TLI=.995; RMSEA=.053; SRMR=.065) models. Cutoffs of ≥ 3 , ≥ 4 , and ≥ 8 (SENS=.77-.80, SPEC=.52-.83) optimally classified males as having mild, moderate, and severe depression, respectively; and cutoffs of ≥ 8 , ≥ 8 , and ≥ 9 (SENS=.79-.83, SPEC=.63-.67) optimally classified females as having mild, moderate, and severe depression, respectively. A cutoff of ≥ 2 (SENS=.78-.81, SPEC=.35-.39) optimally classified males as having both mild and moderate anxiety (insufficient n in severe group); and ≥ 7 , ≥ 8 , and ≥ 9 (SENS=.80-.85, SPEC=.63-.68) optimally classified females as having mild, moderate, and severe anxiety.

Cutoffs of ≥ 5 and ≥ 8 (SENS=.80-.86, SPEC=.70-.85) were optimal for detecting mild and moderate stress in males (insufficient n in severe group); and ≥ 8 , ≥ 8 , and ≥ 9 (SENS=.80-.89, SPEC=.60-.75) were optimal in females.

Conclusions: The affective subscale within the PCSS operates well as a psychiatric screening measure. In general, females had higher cutoffs and the cutoffs for mild and moderate levels of the conditions tended to be similar. Males were less consistent, with cutoffs varying widely depending on the construct and severity.

Categories: Concussion/Mild TBI (Adult)

Keyword 1: concussion/ mild traumatic brain injury

Keyword 2: emotional processes

Keyword 3: sports-related neuropsychology

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53 Does the Corpus Callosum Recover from Concussion? Longitudinal Evidence from a Diffusion Tensor Imaging Study

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Objective: Given that at least 75% of traumatic brain injuries in the U.S. are mild, concussions are a serious public health concern that cause significant neurological damage and negatively impact individuals' quality of life. Due to the rotational forces that occur during a concussion, immediate damage to the corpus callosum is common, resulting in neurological and behavioral deficits. However, the longitudinal damage to the integrity of the corpus callosum is unclear and may differ across sections of the corpus callosum. Our primary aim was to compare the white matter integrity across eight corpus callosum tracts in concussed individuals to healthy controls 3-4 weeks after injury and at a 10-month follow-up.