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.

Participants and Methods: Seventeen concussed participants completed a diffusion tensor imaging (DTI) scan 3-4 weeks after receiving a concussion and again 10 months after injury. Nineteen control participants completed a single DTI scan. DTI data were analyzed using the automated fiber quantification (AFQ) pipeline, which extracts fractional anisotropy (FA) values from 100 nodes in eight tracts of the corpus callosum (listed anterior to posterior): orbital frontal, anterior frontal, superior frontal, motor, superior parietal, posterior parietal, occipital, and temporal. Given the non-linearity, high multicollinearity, and large number of data points, a cubic smoothing spline was used to fit a penalized regression to the FA values in each tract, allowing us to compare the FA values of each node in each tract between groups and across time. To assess acute damage, a spline model for the concussed participants at 3-4 weeks was compared to a spline model for the control participants in each tract. To assess longitudinal damage, a spline model of the FA difference value (10-month minus acute visit) in concussed participants was compared to a spline model of the FA difference value for controls (zero, representative of a theoretical no change in FA values). Significant nodes were defined as p-values less than 0.006 (alpha of .05/8, given 8 tracts).

Results: Acutely following injury, concussed participants showed lower FA values than controls in the anterior frontal, posterior parietal, occipital, and temporal tracts. In the orbital frontal tract, concussed participants had higher FA values on the left, but decreased FA values compared to controls in the middle. Longitudinally, concussed participants showed continued decreased white matter integrity in the orbital frontal, superior parietal, and occipital tracts, but improved white matter integrity in the anterior frontal and superior frontal tracts. The motor, posterior parietal, and temporal tracts showed mixed longitudinal results of decreased or improved white matter integrity within each tract.

Conclusions: Concussed individuals show decreased white matter integrity across the corpus callosum acutely after injury. Longitudinally, the most anterior and posterior portions of the corpus callosum (i.e., genu and splenium) show continued damaged while the more medial sections of the corpus callosum may show some recovery. Results suggest the corpus callosum displays differential patterns of damage acutely and longitudinally following concussion, with some tracts improving while others continue to deteriorate.

Categories: Concussion/Mild TBI (Adult)
Keyword 1: concussion/ mild traumatic brain injury
Keyword 2: traumatic brain injury
Keyword 3: brain injury
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54 Individuals Employing Extreme Coping Behaviors Correlated with Increased Severity of Symptoms Following mTBI

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Objective: Approximately 10-15% of patients with mild traumatic brain injury (mTBI) report persistent, chronic symptoms more than one month later. Coping behaviors after mTBI can range from fear avoidance (FA), or a reluctance to return to activity because of the fear of symptom exaggeration, to endurance (END), or an overly aggressive return to activity. We evaluated how coping strategy relates to self-reported symptoms in patients with prolonged recovery from mTBI.
Participants and Methods: Participants were 72 individuals (age 37.8 + 18.4, 65% female) who sustained a mTBI at least one month prior