concussive symptoms. Group D was characterized by elevated depressive cognitions. Group E was characterized by high anxious arousal but low depressive cognitions and reexperiencing and avoidance. Group F was characterized by elevated reexperiencing and avoidance. The subgroups did not differ statistically on any demographic items, such as years of education, age, or gender. However, there were statistically significant differences across groups in performance validity failure ($x^2(10) = 27.17$, p=.002); Group B showed the highest rate of failure.
Conclusions: Results demonstrate that phenotypically similar subgroups of individuals can be identified within treatment-seeking Veterans with mTBI. Data suggest that somatic post-concussive symptoms may be linked to cognitive deficits, however the rate of validity failure indicates that neuropsychological test scores may not reflect true cognitive ability. In contrast to prior studies that treat mTBI as a unitary construct that accounts for symptoms, our data suggest that a nuanced evaluation yields vastly diverse clinical presentations. Cluster analytic frameworks hold promise for better assessment and treatment planning for Veterans, as both patients and their treating clinicians would be greatly served by the ability to use common clinical assessment tools to better identify a given individual's clinical needs. A critical next step is to validate subgroups using novel samples and data sources (e.g., neurobiology, genetics) and to determine if these subgroupings can be effectively utilized to personalize treatment assignment.

Categories: Concussion/Mild TBI (Adult)
Keyword 1: mood disorders
Keyword 2: traumatic brain injury
Keyword 3: post-traumatic stress disorder
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60 Coping and social participation following mild traumatic brain injury: An observational rehabilitation cohort study in rehabilitation.

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Objective: A non-negligeable proportion of individuals who have sustained a mild traumatic brain injury (TBI) are at risk of developing persistent symptoms. The impact of persistent post-mTBI symptoms can be profound, causing significant disruptions in well-being, functioning and quality of life (Agtarap, et al., 2021). Reduced social participation often extends beyond the acute recovery period and continues to be associated with lower quality of life for many months after mTBI (Voormolen et al., 2019). Coping was found to be essential in order to decrease physical symptoms, have better psychological health, as well as increase social participation (Vos et al., 2019). The variables of perceived stress and depression were also linked directly and indirectly to mild post-TBI adjustment in terms of their return-to-work status (Strom and Kosciulek, 2007). Furthermore, a greater percentage of individuals with mTBI report chronic pain as compared to individuals with more severe TBIs (Weyer Jamora, Schroeder & Ruff, 2013). Given these implications and the growing concern for mTBI as a potentially disabling and chronic medical condition, it is important to focus on identifying the processes that can lead to persistent symptoms and related preventive interventions that can be applied. This present study aimed to investigate the association between coping and social participation according to anxiety, depression, and pain symptomatology, before and after rehabilitation in a mild TBI population benefiting from an outpatient rehabilitation program.
Participants and Methods: A prospective longitudinal cohort study design was employed, with two-time points for outcome assessment (i.e., start and end of rehabilitation). This study included 70 adults aged between 18 and 78 who experienced a mTBI between February 2016 and January 2020 and received interdisciplinary outpatient rehabilitation services at a major rehabilitation centre in the Greater Montreal region.Measures administered pre and post

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rehabilitation included the Rehabilitation Survey of Problems and Coping (R-SOPAC), the Mayo-Portland Adaptability Inventory-4 (MPAI-4), the Depression Anxiety Stress Scales 21 (DASS-21), and the Brief Pain Inventory-Short Form (BPI-SF). Mediation analyses were carried out via PROCESS macro for SPSS, model 4 and 6 (Hayes, 2013).
Results: Mediation analyses indicated a partial indirect link between coping, anxiety, and pain on the level of social participation at the pre-rehabilitation time point. Post-rehabilitation, a significant partial mediating relationship regarding the impact of pain on the link between coping and social participation, was found. In addition, a statistically significant mediation relationship was found, where anxiety mediated the relationship of coping and social participation. These relationships suggest that lower levels of coping appear to be linked to a higher self-reported level of psychological distress and pain, resulting in lower social participation.
Conclusions: This observational rehabilitation cohort study demonstrates how anxiety and pain are associated with coping and social participation outcome following mTBI. These results are quite pertinent for clinical purposes in that paying close attention to the level of anxiety and perceived impact of pain during rehabilitation, and applying targeted interventions at these levels, in particular to increase coping, may prove particularly beneficial to improve social participation outcome.

Categories: Concussion/Mild TBI (Adult)
Keyword 1: concussion/ mild traumatic brain injury
Keyword 2: anxiety
Keyword 3: adaptive functioning
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61 Neurocognitive functioning improves in former athletes with sport-related concussion and repetitive head hits following transcranial photobiomodulation treatment

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Objective: Significant advances in the research of sport-related concussion (SRC) and repetitive head impacts (RHI) over the previous decade have translated to improved injury identification, diagnosis, and management. However, an objective gold standard for SRC/RHI treatment has remained elusive. SRC often result in heterogenous clinical outcomes, and the accumulation of RHI over time is associated with long-term declines in neurocognitive functioning. Medical management typically entails an amalgamation of outpatient medical treatment and psychiatric and/or behavioral interventions for specific symptoms rather than treatment of the underlying functional and/or structural brain injury. Transcranial photobiomodulation (tPBM), a form of light therapy, has been proposed as a non-invasive treatment for individuals with traumatic brain injuries (TBI), possibly including SRC/RHI. With the present proof-of-concept pilot study, we sought to address important gaps in the neurorehabilitation of former athletes with a history of SRC and RHI by examining the effects of tPBM on neurocognitive functioning.
Participants and Methods: The current study included 49 participants (45 male) with a history of SRC and/or RHI. Study inclusion criteria included: age 18-65 years and a self-reported history of SRC and/or RHI. Exclusion criteria included: a history of neurologic disease a history of psychiatric disorder, and MRI contraindication. We utilized a non-randomized proof-of-concept design of active treatment over the course of 8-10 weeks, and neurocognitive functioning was assessed at pre- and post-treatment. A Vielight Neuro Gamma at-home brain tPBM device was distributed to each participant following baseline assessment.

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