

type of insurance). Individual logistic regressions were run to assess the effect of each injury severity, child, and family factor on placement after hospital discharge.

**Results:** Results indicated that having a caregiver with a history of mental health difficulties and/or a history of substance abuse increased the likelihood of an out-of-home placement for the child after an inflicted TBI. Results also demonstrated that the more caregiver psychosocial concerns reported, the higher the risk of an out-of-home placement for the child after discharge from the hospital. Finally, results indicated that having public insurance significantly increased the risk of an out-of-home placement for the child after discharge from the hospital. Post-hoc analyses were conducted to assess the effect of insurance type on out-of-home placement, while controlling for psychosocial concerns. Results indicated that, even when taking total psychosocial concerns into account, having public insurance significantly increased the risk of an out-of-home placement. Logistic regressions were carried out to assess the effect of injury severity, child, and every other family factor (e.g., prior criminal history) on placement after hospital discharge and the overall models were not significant.

**Conclusions:** One explanation for these findings is that families with public insurance have less of a social safety net and, thus, are unable to meet the needs of a child with an inflicted TBI. However, we cannot rule out the effect of bias in child welfare practices. Similarly, caregivers with histories of mental health difficulties and substance abuse are likely to have a harder time meeting their child's needs and providing a stable household, increasing the likelihood of an out-of-home placement. Despite expectations, child and injury severity factors did not play a role in placement decisions after an inflicted TBI, indicating that placement decisions rely more heavily on caregivers' abilities to meet the child's needs rather than the child's medical complexity or the severity of the inflicted TBI.

**Categories:** Acquired Brain Injury (TBI/Cerebrovascular Injury & Disease - Child)

**Keyword 1:** brain injury

**Keyword 2:** pediatric neuropsychology

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### 38 Fluid Cognition Deficits Persisting Beyond Clinical Recovery in Pediatric Mild Traumatic Brain Injury

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**Objective:** Evidence-based consensus in children and adolescents following uncomplicated mTBI indicates acute cognitive symptoms resolve over time with minimal long-term impact. However, traditional paper-and-pencil neuropsychological measures used in many studies have been criticized for lacking sensitivity to subtle changes in attention and executive functions. The National Institutes of Health Toolbox Cognition Battery (NIHTB-CB) is a computerized tool assessing overall cognition, fluid cognition, and crystallized cognition with few studies in pediatric mTBI. The aim of this study is to continue to explore the utility of the NIHTB-CB in adolescents recovering from mTBI compared to orthopedic injuries (OI) and healthy controls (HC).

**Participants and Methods:** The current pilot study utilized a prospective cohort design with longitudinal follow-up in three cohorts of high school student-athletes aged 14-18 (N= 52). Participants with mTBI (n= 17) or OI (n= 15) sustained during sport were recruited within 10 days of injury from a quaternary care setting. An age- and gender-matched cohort of healthy controls (HC) in an active sport season was included for community comparison (n= 20). The NIHTB-CB was administered as part of a neuropsychological screening battery at enrollment and one month after medical clearance (mTBI and OI) or eight weeks after enrollment (HC).

**Results:** Results of a 3(group) x 2(time) ANOVA revealed a main effect of time ( $p < .001$ ), but not group ( $p = .06$ ), on the overall Fluid Cognition Composite. The mTBI group showed significantly lower performance on a measure of attention/inhibitory control (Flanker) compared to healthy controls acutely post-injury ( $p = .04$ ;  $d = 0.72$ ) and following clinical recovery ( $p < .01$ ;  $d = 0.98$ ), with no decline observed in the magnitude of group differences over time. The mTBI and OI groups exhibited deficits in performance on a measure of cognitive flexibility (Dimensional Change Card Sort) compared to the HC group

acutely post-injury (both  $p < .01$ ;  $d = 1.09-0.93$ ). The magnitude of group differences between the OI and HC groups declined over time ( $p > .05$ ;  $d = 0.68$ ), whereas the mTBI group continued to show significantly lower performance following clinical recovery compared to the HC group ( $p = .02$ ;  $d = 0.81$ ). The mTBI, OI, and HC groups did not exhibit significant differences in working memory, explicit memory, or processing speed acutely post-injury and following clinical recovery (all  $p > .05$ ; all  $d = 0.52 - 0.05$ ). No significant effects of group ( $p = .16$ ), time ( $p = .67$ ), or the interaction ( $p = .45$ ) were found on the Crystallized Cognition Composite.

**Conclusions:** Adolescents with mTBI demonstrated deficits on the NIHTB-CB measures of attention and executive functions acutely post-injury and extending beyond clinical recovery compared with healthy controls in this study. These subtle yet persistent deficits in cognitive performance lend support to the growing body of literature suggesting that alterations in neurotransmission may persist beyond resolution of clinical symptoms of mTBI. Further work is needed in larger samples to better understand trends in cognitive deficits and to identify clinical correlates persisting beyond clinical recovery from mTBI.

**Categories:** Acquired Brain Injury  
(TBI/Cerebrovascular Injury & Disease - Child)

**Keyword 1:** traumatic brain injury

**Keyword 2:** executive functions

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### 39 Measuring Psychological Resilience as a Predictor of mTBI Recovery: Is There Value Added to the Clinical Exam?

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**Objective:** Recent studies have begun to explore the role of psychological resilience in pediatric mTBI recovery, with findings associating higher levels of resilience with shorter recovery and lower levels of resilience mediated by pre-injury anxiety and depression

associated with persistent symptoms. The purpose of this study is to extend the current literature by further exploring the relationship between resilience, post-injury emotional changes, and length of recovery from pediatric mTBI. Based upon previous literature, we predicted that resilience would explain a unique portion of the variance in length of recovery above and beyond acute post-injury emotional symptoms in adolescents recovering from mTBI compared with orthopedic injured (OI) controls.

**Participants and Methods:** The current study pulled data from a larger project utilizing a prospective cohort design in two cohorts of high school student-athletes aged 14-18 ( $N = 32$ ). Participants with mTBI ( $n = 17$ ) or OI ( $n = 15$ ) sustained during sport were recruited within 10 days of injury from a quaternary care setting. Participants completed a neuropsychological screening evaluation within one week of enrollment, including self-report rating scales of resilience (Connor-Davidson Resilience Scale-10; CD-RISC) and self- and parent-reported post-concussion symptoms (Post-Concussion Symptom Inventory, Second Edition; PCSI-2). Hierarchical regression analysis was performed with days from injury to recovery as the dependent variable. Predictors were entered in three steps: (1) group (mTBI/OI) and sex, (2) PCSI self- and parent-reported post-injury change in emotional symptoms, and (3) CD-RISC raw score. Bonferroni correction was utilized to control for multiple comparisons.

**Results:** Group and sex did not provide significant prediction when entered into the first block of the model ( $p = .61$ ). Introducing PCSI emotional ratings in the second block showed statistically significant improvement,  $F(2,26) = 5.12$ ,  $p < .01$ , accounting for 31% of the variance in recovery length. Addition of the CD-RISC in the third block was not statistically significant ( $p = .59$ ). Post hoc testing indicated parent ratings on the PCSI were significantly associated with recovery length  $t(32) = 3.16$ ,  $p < .01$ , while self-reported ratings were not ( $p = .54$ ).

**Conclusions:** Findings indicated that psychological resilience did not explain a unique portion of the variance in length of recovery above and beyond acute parent report of post-injury emotional symptoms in adolescents recovering from mTBI compared with orthopedic injured (OI) controls. Interestingly, sex, group (mTBI vs. OI), and self-reported acute post-injury emotional symptoms were not significant predictors of recovery length in this sample. Results highlight the significant role of acute