

Differences in Reporting: The Concussed Student Versus the Concerned Parent

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(No relevant relationships reported)

In the last decade, incidence of sport-related concussion has doubled. Optimal care requires an accurate diagnosis of symptoms and severity. Many student-athletes attempt to disguise symptoms and downplay severity to hasten their return to play. A concerned parent is less likely to participate in the downplaying. An accurate portrayal of symptoms may require both perspectives. Data comparing the reporting by parents and students are needed and limited.

PURPOSE: To evaluate differences in the reporting of concussion symptoms between those who suffer them and the parents who observe them.

METHODS: Over a 7-year period, 80 students were admitted for psychiatric evaluation owing to persistent post-concussion symptoms. Our study sample consisted of 72 of patients who completed the Behavior Assessment System for Children, 2nd Edition (BASC) as a component of their evaluation. The BASC assesses emotional, social, and behavioral functioning via self-report forms that are completed by adolescents and their parents. There are 13 questions that are unique to adolescents, 18 that are unique to parents, and 7 that are asked in both. The overlapping questions address atypicality, anxiety, depression, somatization, hyperactivity, anger control, and internalizing problems. We performed paired-samples t-tests on these domains to measure equivalence in reporting between students and parents. We used multiple linear regression to identify variables that explained differences in reporting.

RESULTS: Student/parent differences were found in atypicality ($p=0.002$), depression ($p=0.012$), anger control ($p=0.006$), and internalizing problems ($p=0.017$); students reported lower scores in each category. Averaging all 7 categories, parents reported 6.7% higher scores ($p=0.031$). Sex did not explain this difference ($p=0.184$), but grade in school was a trending predictor: each additional grade associated with a 1.2-point reduction in parental overestimation ($p=0.064$).

CONCLUSIONS: Following a concussion, adolescents are likely to perceive the severity of emotional, social, and behavioral symptoms more modestly than their parents. The discrepancy was widest among elementary school students, it narrowed in middle and high school, and college students reported symptoms more severely than their parents.

Depression Severity in Adolescent Male and Female Athletes Following Sports-Related Concussion

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PURPOSE: Concussions are a growing concern in adolescent sports medicine. However, there is no prospective data demonstrating an association between sustaining a sports-related concussion (SRC) and depression in adolescents. This study prospectively assessed changes in depressive symptoms in high school athletes following an SRC.

METHODS: This longitudinal cohort study consisted of 1701 adolescent athletes (grades 9-12) who were monitored for SRC. 99 athletes sustained a concussion during the study period (38 females, 61 males). Participants completed the Patient Health Questionnaire-9 (PHQ-9) survey to measure depressive symptoms at baseline (enrollment, pre-SRC), 24-72 hours post-SRC, and 7 days, 3 months, and 6 months post-SRC. Clinically relevant depressive symptoms were defined as a PHQ-9 score >4 , or some depressive symptoms most days and most of each day. To evaluate changes in PHQ-9 scores from baseline, linear mixed-effect models adjusting for sex and time were used; least-square means and standard errors are reported. GEE models assuming a binomial distribution and logit link were used to model the association between depressive symptoms and time since concussion, stratified by sex.

RESULTS: When compared to baseline, females reported PHQ-9 scores that were, on average, 1.53(0.56) points higher at 24-72 hours post-SRC and 1.62(0.57) points higher at 7 days post-concussion than at baseline ($p=0.007$; $p=0.004$). PHQ-9 scores were lower (i.e. better) than baseline for both males and females at 3 months post-SRC (M: -1.19(0.48); $p=0.01$, F: -1.14(0.66); $p=0.09$). Females were 7.6 times more likely to have a PHQ-9 >4 at 24-72 hours post-concussion (95% CI: 1.47, 39.08) than they were at baseline ($p=0.02$) and 10.36 times more likely at 7 days post-concussion (95% CI: 1.90, 56.59) than at baseline ($p=0.007$). By 3 months, no difference from baseline is noted. There is no evidence to suggest that males experience increased depressive symptoms post-SRC.

CONCLUSIONS: In the week following an SRC, athletes experience a transient increase in depressive symptoms, with females being more likely to experience clinically relevant depressive symptoms compared to male athletes at the same time points. We found no evidence that SRCs have a long-lasting impact on depression symptoms in adolescent athletes.

Are Subconcussive Impacts Harmless in Youth Soccer Players?

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In United States at least 3.5 million children play soccer yearly. Head Impact (concussive and subconcussive) in youth players have a growing concern throughout their short or long-term career. A subconcussive impact may induce a traumatic alteration of function of the cerebrum without associated imaging abnormalities or loss of consciousness. Accelerometers can measure the magnitude and quantity of the subconcussive impacts in the field. The SIM-G™ accelerometer is a small portable device that measures change in velocity during an impact and provides estimates of magnitude (G) and angles. The ImPACT Pediatric® is a neurocognitive test that provide information of cognitive changes.

PURPOSE: To evaluate if a subconcussive impact could lead to negative cognitive functions in youth soccer players.

METHODS: A group of 30 youth soccer athletes (15 males, 15 females) between 9 to 11 years old wear a head accelerometer in a specialize headband. Each participant was encouraged to perform normally in the game. Descriptive statistics was used to assess subconcussive impacts. T-test was used for the neurocognitive pre and post-test to assess differences in sequential memory, word memory, visual memory and rapid processing.

RESULTS: Mean age of female and male athletes (9.9 ± 0.6 years) was not different ($P > 0.05$). A total of 42 impacts were receive by both genders in three games. Range of acceleration was from 16g to 60g (Ave = $23.8 \pm 9.1g$). T-Test showed differences in sequential memory for female ($p = 0.02$) and rapid processing for males ($p = 0.01$). There were no differences between pre and post test in word memory for females and males ($p = 0.97$, $p = 0.11$; respectively) and visual memory ($p = 0.30$, $p = 0.34$; respectively).

CONCLUSION: These results suggest that females that play soccer and receive a subconcussive impact can reflect changes in their education and social activities at short term in their word recognition, oral reading and reading comprehension (sequential memory) and males in their auditory processing and language skills (rapid processing). Parents, coaches, trainers, exercise physiologist, and speech-language pathologists (SLP) should receive education to take precautions after a game with children that received at least one sub concussive impact and do not perceived any notable changes.

No Relationship Between Head Impact Kinematics and Concussion Clinical Assessment Performance

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Repetitive head impacts (RHI), independent of concussions, are speculated to be associated with later life neurological impairments. While football has received the majority of the attention, RHIs are commonplace in ice hockey. A multifaceted concussion clinical assessment battery assesses diverse neurological systems in clinically feasible manner.

PURPOSE: To examine relationship between head impact kinematics and performance on a multifaceted concussions assessment.

METHODS: Eleven male collegiate ice hockey players (age: 20.3 ± 0.8 years, Ht: $1.79 \pm 0.06m$, Wt: 80.9 ± 6.6 kg) wore a triaxial accelerometer (Triax Technologies, Norwalk, CT.) for all home games and practices. Participants completed the clinical assessment battery twice: pre-season (PRE) and post-season (POST). The test battery included the Standard Assessment of Concussion (SAC), Balance Error Scoring System (BESS), Trails A and B, Tandem Gait (TG), and Dual Task Tandem Gait (DT-TG). Independent variables were the head impact outcome