A revised factor structure for the post-concussion symptom scale: baseline and postconcussion factors.

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Source

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Abstract

BACKGROUND:

Symptom reports play a critical role in the assessment and management of concussions. Symptoms are often conceptualized as factors comprising several related symptoms (e.g., somatic factor = headache, nausea, vomiting). Previous research examining the factor structure of the 22-item Post-Concussion Symptom Scale (PCSS) has been limited to small samples and has not adequately evaluated factor loadings at both baseline and postconcussion for male and female athletes at the high school and collegiate levels.

PURPOSE:

To examine the factor structure of the 22-item PCSS in independent samples of high school and collegiate athletes reported at baseline and postconcussion, and to evaluate sex and age differences in the resulting baseline and postconcussion symptom factor scores.

STUDY DESIGN:

Case series; Level of evidence, 4.

METHODS:

Exploratory factor analytic (EFA) methods were applied to 2 separate samples of athletes who completed the PCSS at baseline (n = 30,455) and 1 to 7 days after a sport-related concussion (n = 1438). The baseline sample (mean ± standard deviation) was 15.74 ± 1.78 years, with a range of 13 to 22 years, and the postconcussion sample was 17.14 ± 2.25 years, with a range of 13 to 24 years.

RESULTS:

A 4-factor solution accounting for 49.1% of the variance at baseline included a cognitive-sensory, sleep-arousal, vestibular-somatic, and affective factor structure. A 4-factor solution that included cognitive-fatigue-migraine, affective, somatic, and sleep was revealed for the postconcussion EFA. High school athletes reported higher baseline levels of the cognitive-sensory and vestibular-somatic symptom factors and lower levels of the sleep-arousal factor than college athletes. Female participants reported higher symptoms on all postconcussion factors than male participants.
CONCLUSION:

The current findings reveal different symptom factors at baseline and postinjury and several age and sex differences on the symptom factors. At postconcussion, symptoms aggregated into a global concussion factor including cognitive, fatigue, and migraine symptoms. Symptoms reported at baseline are not the same as those reported after injury. The presence of a global postconcussion symptom comprising the fatigue factor highlights the importance of physical and cognitive rest during the first week after a concussion. Although headache was the most commonly reported symptom, it was not the greatest contributor to the global postconcussion symptom factor.