Baseline somatization influences sport-related concussion recovery

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Sport-related concussion with its associated physical and cognitive symptoms has become an area of widespread interest with respect to developing techniques to best manage acute concussion effects, determining when concussed athletes may return to play without increased risk of further injury, as well as evaluating the long-term effects from repeated concussions sustained over many years and the degree to which they contribute to pathologic brain changes.

Although the natural history of return to baseline abilities following concussion has been well-established so that we have expected timelines, there remains a small sample of patients whose symptoms take longer to resolve than would be predicted based upon the objective factors associated with the injury. Identification of risk factors for poor outcome or prolonged recovery following sport-related concussion remains a challenge.

One previously identified factor associated with prolonged recovery times is the presence of somatization tendencies, although the data for this report were retrospectively obtained on personal injury claimants, and therefore raises concerns about generalization of the findings to other contexts. Other studies examining duration of symptom recovery are based upon persons referred to specialty clinics, in which case spectrum bias is introduced through selective referral to these centers.

Because of the increasing awareness of concussion effects in sports, baseline testing now forms a routine component of sports participation. Baseline assessment provides the opportunity for prospective examination of concussion in large series, and also allows within-subject change to be established. In this issue of Neurology®, Nelson et al. examined baseline data from a large cohort of healthy high school and collegiate athletes to investigate the contributions of pre-injury psychological, neurocognitive, and balance functions to symptom duration following sport-related concussion. They observed that in addition to acute postconcussive symptom burden, baseline ratings from the Brief Symptom Inventory–18 somatization scale were associated with longer recovery of self-reported concussive symptoms, although when both were included in the same model, the contribution of acute symptom burden was greater.

Of particular interest is that preinjury somatization’s role in predicting postinjury symptom recovery was related to its effect on postinjury symptom reporting rather than an effect of prolonging postconcussive symptoms. That is, baseline somatization contributes to recovery duration by affecting the experience and reporting of postconcussive symptoms. Of note, the degree of reported somatization by the large majority of participants in this sample was below the threshold typically used to infer clinically relevant somatization levels. This suggests that variability in somatization typically associated with normal functioning is nevertheless an important factor related to outcome duration. Thus, both injury severity and predisposition to experience symptoms are related to symptom recovery. These data have important implications for the management of sport-related concussion, and in particular, to the recognition of individuals who may be at risk of prolonged symptom duration. These data also highlight that concussion assessment requires consideration of preinjury psychological function in addition to the postinjury clinical presentation.

The study assessed cognition using computerized tests, and although 3 computerized assessment protocols were included in the study, only 2 of 3 tests were administered to each athlete due to assessment burden. While the computerized tests did not systematically vary due to pseudorandom assignment, only data from Immediate Post-Concussion Assessment and Cognitive Testing (ImPACT) were analyzed since these data constituted the largest percentage of patients. Participants who were not tested with ImPACT, however, could have served as a cross-validation sample evaluating whether similar patterns of preinjury somatization and postconcussive symptoms were observed. This would further establish the robustness of the findings, since ImPACT cognitive performance did not contribute to their prediction equation in the patients administered ImPACT.
Although postconcussion symptom reporting provides a robust measure of prognosis and recovery, there are inherent limitations in relying on this measure. Particularly, symptoms are variably reported (e.g., some athletes do not recognize the implications of their symptoms and others may purposely fail to report concussion symptoms for fear of being excluded from competition), and self-report can be influenced by motivation factors. Care must also be taken when extrapolating the results of the study by Nelson et al. to other populations of athletes, including younger populations and community-level players. These groups pose a more substantial public health risk given the vastly greater number of individuals participating in sports at this level.

Concussion awareness increases the motivation to develop intervention strategies to facilitate recovery and maximize brain health. The identification of factors associated with prolonged recovery including somatization will ultimately facilitate intervention strategies to achieve these goals.

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DISCLOSURE
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REFERENCES