Post-exertion neurocognitive test failure among student-athletes following concussion.

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Abstract

OBJECTIVE:

The purpose of the present study was to examine post-exertion (PE) neurocognitive performance among student-athletes following concussion who were asymptomatic and returned to baseline normal neurocognitive test levels at rest. This study examined the neurocognitive performance of a sub-set of student-athletes who 'failed' to perform at baseline levels of neurocognitive function, i.e. exhibited downward reliable change index (RCI) alterations following a moderate exertional protocol during recovery from concussion.

METHOD:

A retrospective records review was carried out of Immediate Post-concussion Assessment and Cognitive Testing (ImPACT) and neuropsychological consultation data among athletes with sports-related concussion from a network of 22 schools and one junior hockey programme.

RESULTS:

Fifty-four student-athletes met inclusion criteria and participated in the study. A total of 27.7% of concussed student-athletes who were symptom-free and returned to baseline on ImPACT at rest (i.e. no longer demonstrated performance deficits on neurocognitive tests) exhibited cognitive decline following moderate physical exertion. The PE cognitive changes were not simply general performance effects, but significant changes in memory ability in the presence of intact processing speed functions. The PE-Pass and PE-Fail groups did not, however, differ on post-concussive symptoms or concussion history.

CONCLUSIONS:

Clinicians' return-to-play evaluation protocols should include post-exertional computerized neurocognitive testing.

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