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Original Research

Concussion History and Postconcussion Neurocognitive Performance and Symptoms in Collegiate Athletes

Tracey Covassin, PhD, ATC*, David Stearne, PhD, ATC†, and Robert Elbin III, MA*

*Michigan State University, East Lansing, MI
†West Chester University, West Chester, PA

Abstract

Context: Athletes are at an inherent risk for sustaining concussions. Research examining the long-term consequences of sport-related concussion has been inconsistent in demonstrating lingering neurocognitive decrements that may be associated with a previous history of concussion.

Objective: To determine the relationship between concussion history and postconcussion neurocognitive performance and symptoms in collegiate athletes.

Design: Repeated-measures design.

Setting: Multi-center analysis of collegiate athletes.

Patients or Other Participants: Fifty-seven concussed collegiate athletes (36 without concussion history, 21 with a history of 2 or more concussions).

Intervention(s): All subjects were administered an Immediate Post-Concussion Assessment and Cognitive Testing (ImPACT) neurocognitive test battery, which measures verbal memory, visual memory, reaction time, and visual processing speed and 22 concussion symptoms.

Main Outcome Measure(s): Subjects who sustained a concussion were administered 2 follow-up tests at days 1 and 5 postinjury. Independent variables were history of concussion (no history of concussion, 2 or more concussions) and time (baseline, day 1 postconcussion, or day 5 postconcussion).

Results: A within-subjects effect (time) on ImPACT performance ($P < .001$), a between-subjects multivariate effect of group ($P < .001$), and a group-by-time interaction ($P = .034$) were noted. Athletes with a concussion history performed significantly worse on verbal memory ($P = .01$) and reaction time ($P = .023$) at day 5 postconcussion compared with athletes who did not report a previous concussion. No significant group differences were seen at day 5 postinjury on

Volume 43, Issue 2 (March/April 2008)

< Previous Next >

Current Issue
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visual memory (*P* = .167), processing speed (*P* = .179), or total concussion symptoms (*P* = .87).

Conclusions: Concussed collegiate athletes with a history of 2 or more concussions took longer to recover verbal memory and reaction time than athletes without a history of concussion.

Keywords: mild traumatic brain injury, ImPACT, memory, reaction time

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Address correspondence to Tracey Covassin, PhD, ATC, Michigan State University, Department of Kinesiology, 105 IM Sport Circle, East Lansing MI 48824. Address e-mail to, e-mail: covassin@msu.edu

top