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Original Research

Concussion in Sports: Postconcussive Activity Levels, Symptoms, and Neurocognitive Performance

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Abstract

Context: Evidence suggests that athletes engaging in high-intensity activities after concussion have more difficulties with cognitive recovery.

Objective: To examine the role postinjury activity level plays in postconcussive symptoms and performance on neurocognitive tests in a population of student-athletes.

Design: Retrospective cohort study with repeated measures of neurocognitive performance and symptom reporting.

Setting: University-based sports concussion clinic.

Patients or Other Participants: Ninety-five student-athletes (80 males, 15 females; age = 15.88 ± 1.35 years) were retrospectively assigned to 1 of 5 groups based on a postinjury activity intensity scale.

Main Outcome Measure(s): We employed a regression analysis for repeated measures to evaluate the relationship of activity intensity to symptoms and neurocognitive outcome up to 33 days after concussion. Postconcussion symptom scores and neurocognitive (verbal memory, visual memory, visual motor speed, and reaction time) scores served as the primary outcome measures.

Results: Level of exertion was significantly related to all outcome variables ($P < .02$ for all comparisons). With multivariate analysis, activity intensity remained significant with respect to visual memory ($P = .003$) and reaction time ($P < .001$).

Conclusions: Activity level after concussion affected symptoms and neurocognitive recovery. Athletes engaging in high levels of activity after concussion demonstrated

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worse neurocognitive performance. For these tasks, those engaging in moderate levels of activity demonstrated the best performance.

Keywords: [exertion](#), [rehabilitation](#), [mild traumatic brain injuries](#), [student-athletes](#)

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