Concussion Increases Odds of Sustaining a Lower Extremity Musculoskeletal Injury After Return to Play Among Collegiate Athletes

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Abstract

BACKGROUND: Previous studies have identified abnormalities in brain and motor functioning after concussion that persist well beyond observed clinical recovery. Recent work suggests subtle deficits in neurocognition may impair neuromuscular control and thus potentially increase risk of lower extremity musculoskeletal injury after concussion.

PURPOSE: To determine the odds of sustaining an acute lower extremity musculoskeletal injury during the 90-day period after return to play from concussion in a cohort of National Collegiate Athletic Association (NCAA) Division I collegiate athletes.

STUDY DESIGN: Cohort study; Level of evidence, 3.

METHODS: Included in this study were 87 cases of concussion among 75 athletes (58 men; 17 women) participating in NCAA Division I football, soccer, hockey, softball, basketball, wrestling, or volleyball at a single institution from 2011 to 2014. The 90-day period after return to play for each case of concussion was reviewed for acute noncontact lower extremity musculoskeletal injury. Each 90-day period after return to play was matched to the same 90-day period in up to 3 controls. Control athletes without a history of concussion in the previous year were matched to concussed athletes by sport team/sex, games played, and position. A total of 182 control (136 men; 46 women) 90-day periods were reviewed for acute injury. Conditional logistic regression was used to assess the association between concussion and subsequent risk of acute lower extremity musculoskeletal injury.

RESULTS: The incidence of acute lower extremity musculoskeletal injury was higher among recently concussed athletes (15/87; 17%) compared with matched controls (17/182; 9%). The odds of sustaining an acute lower extremity musculoskeletal injury during the 90-day period after return to play were 2.48 times higher in concussed athletes than controls during the same 90-day period (odds ratio, 2.48; 95% CI, 1.04-5.91; P = .04).

CONCLUSION: Concussed athletes have increased odds of sustaining an acute lower extremity musculoskeletal injury after return to play than their nonconcussed teammates. The study results suggest further investigation of neurocognitive and motor control deficits may be warranted beyond the acute injury phase to decrease risk for subsequent injury.