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Meredith A. Petschauer, Randy Schmitz, Diane L. Gill (2010) Helmet Fit and Cervical Spine Motion in Collegiate Men's Lacrosse Athletes Secured to a Spine Board. *Journal of Athletic Training*: May/June 2010, Vol. 45, No. 3, pp. 215-221.

doi: 10.4085/1062-6050-45.3.215

### Original Research

## Helmet Fit and Cervical Spine Motion in Collegiate Men's Lacrosse Athletes Secured to a Spine Board

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### Abstract

**Context:** Proper management of cervical spine injuries in men's lacrosse players depends in part upon the ability of the helmet to immobilize the head.

**Objective:** To determine if properly and improperly fitted lacrosse helmets provide adequate stabilization of the head in the spine-boarded athlete.

**Design:** Crossover study.

**Setting:** Sports medicine research laboratory.

**Patients or Other Participants:** Eighteen healthy collegiate men's lacrosse players.

**Intervention(s):** Participants were asked to move their heads through 3 planes of motion after being secured to a spine board under 3 helmet conditions.

**Main Outcome Measure(s):** Change in range of motion in the cervical spine was calculated for the sagittal, frontal, and transverse planes for both head-to-thorax and helmet-to-thorax range of motion in all 3 helmet conditions (properly fitted, improperly fitted, and no helmet).

**Results:** Head-to-thorax range of motion with the properly fitted and improperly fitted helmets was greater than in the no-helmet condition ( $P < .0001$ ). In the sagittal plane, range of motion was greater with the improperly fitted helmet than with the properly fitted helmet. No difference was observed in helmet-to-thorax range of motion between properly and improperly fitted helmet conditions. Head-to-thorax range of motion was greater than helmet-to-thorax range of motion in all 3 planes ( $P < .0001$ ).

Volume 45, Issue 3  
(May/June 2010)

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### Journal Information

Print ISSN 1062-6050

eISSN 1938-162X

Frequency Bimonthly:

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March/April  
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November/December

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**Conclusions:** Cervical spine motion was minimized the most in the no-helmet condition, indicating that in lacrosse players, unlike football players, the helmet may need to be removed before stabilization.

**Keywords:** [stabilization](#), [emergency management](#), [protective equipment](#)

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