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Original Research

Lacrosse Equipment and Cervical Spinal Cord Space During Immobilization: Preliminary Analysis

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Abstract

Context: Removal of the lacrosse helmet to achieve airway access has been discouraged based only on research in which cervical alignment was examined. No researchers have examined the effect of lacrosse equipment on the cervical space available for the spinal cord (SAC).

Objective: To determine the effect of lacrosse equipment on the cervical SAC and cervical-thoracic angle (CTA) in the immobilized athlete.

Design: Observational study.

Setting: Outpatient imaging center.

Patients or Other Participants: Ten volunteer lacrosse athletes (age = 20.7 ± 1.87 years, height = 180.3 ± 8.3 cm, mass = 91 ± 12.8 kg) with no history of cervical spine injury or disease and no contraindications to magnetic resonance imaging (MRI).

Intervention(s): The lacrosse players were positioned supine on a spine board for all test conditions. An MRI scan was completed for each condition.

Main Outcome Measure(s): The independent variables were condition (no equipment, shoulder pads only [SP], and full gear that included helmet and shoulder pads [FG]), and cervical spine level (C3–C7). The dependent variables were the SAC and CTA. The MRI scans were evaluated midsagittally. The average of 3 measures was used as the criterion variable. The SAC data were analyzed using a 3 × 5 analysis of variance (ANOVA) with repeated measures. The CTA data were analyzed with a 1-way repeated-measures ANOVA.

Results: We found no equipment × level interaction effect ($F_{3,7,72} = 1.34, P = .279$)

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or equipment main effect ($F_{2,18} = 1.20, P = .325$) for the SAC (no equipment = 5.04 ± 1.44 mm, SP = 4.69 ± 1.36 mm, FG = 4.62 ± 1.38 mm). The CTA was greater (ie, more extension; critical $P = .0167$) during the SP ($32.64^\circ \pm 3.9^\circ$) condition than during the no-equipment ($25.34^\circ \pm 2.3^\circ$; $t_9 = 7.67, P = .001$) or FG ($26.81^\circ \pm 5.1^\circ$; $t_9 = 4.80, P = .001$) condition.

Conclusions: Immobilizing healthy lacrosse athletes with shoulder pads and no helmets affected cervical spine alignment but did not affect SAC. Further research is needed to determine and identify appropriate care of the lacrosse athlete with a spine injury.

Keywords: [cervical spine position](#), [emergency care](#), [helmet removal](#)

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