Lacrosse Helmet Facemask Removal Timeliness Using Cordless Screw Driver, FM Extractor, and Combined Tool Approach

Frick KA, Bradney DA, Aronson PA, Bowman TG: Lynchburg College, Lynchburg, Virginia

Context: In the case of a catastrophic cervical spine injury during athletic play, removal of the facemask is necessary to establish a patent airway for the helmeted athlete. Current literature stresses the importance of timely removal of the facemask from the helmet to provide appropriate care to the athlete. No data to date has evaluated facemask removal techniques on men’s lacrosse helmets.

Objective: To compare the speed of 3 methods of removing the facemask of a men’s Cascade CPX lacrosse helmet.

Design: 2 x 3 crossover trial. Setting: Controlled laboratory setting.

Patients or Other Participants: We used 20 participants, 10 Certified Athletic Trainers (ATCs) and 10 Athletic Training Students (ATSs).

Interventions: Our independent variables consisted of removal method (cordless screw driver, CSD; FM Extractor, FMX; combined tool approach, CTA) and group (ATC, ATS). Each facemask removal technique was explained in detail to the participants for specific cuts of loop straps or screw(s) to unscrew. We counterbalanced the order of the removal tools throughout the study.

Main Outcomes Measures: We measured the time to the nearest hundredth of a second from when the participants first picked up the removal tool until the time when the facemask had been completely removed from the helmet. Participants stated preference of method verbally on a 10 point scale, 0 being completely unsatisfactory and 10 being completely satisfactory.

Results: When we analyzed the results, the interaction between removal method and group was not significant for time (F2,54=1.22, p=0.30) or preference (F2,54=0.36, p=0.70). We did discover a main effect for method of removal on time (F2,54=15.27, p<0.01). Tukey post hoc tests indicated the use of the CSD (38.83±11.49) was significantly faster than the use of the FMX (207.92±143.20, p<0.001) or CTA (167.83±103.96, p=0.001). We also found a significant main effect for method of removal on preference scores (F2,54=38.35, p<.001). Tukey post hoc tests revealed significant differences between the preference of the CSD (9.20±0.52) and the FMX (4.85±1.93; p<0.001), and between the CSD (9.20±0.52) and the CTA (6.05±1.90; p<0.001). We found no significant differences between the FMX (4.85±1.93) and the CTA (6.05±1.90; p=0.06). We observed no group differences for time (F1,54=1.99, p=0.16) or preference (F1,54=0.057, p=0.81).

Conclusions: The CSD was the fastest and most preferred method to remove a facemask from a new men’s Cascade CPX lacrosse helmet. Also, we observed no significant differences in the amount of time it took ATCs and ATSs to remove facemasks.

Word Count: 415.