Concussion knowledge and reporting behaviours before and after a concussion education session in athletes and non-athletes

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Thank you to all of the participants that participated in our study. Concussions are serious injuries that require immediate removal from play and adequate rest and recovery. It is important that both athletes and non-athletes are aware of the symptoms associated with a concussion and understand the severity, in order to report a future concussion. While college athletes receive mandatory concussion education, it is important to assess the effectiveness of the current education methods to determine if changes need to be made. In addition, it is important to assess the concussion knowledge and reporting behaviour levels in non-athletes because they are also susceptible to sustaining a concussion, and they need to know how a concussion should be treated. Your participation in this study allowed us to assess the effectiveness of one current concussion education method and determine if the lack of reported relationship between concussion knowledge and reporting behaviour was unique to athletes. Through your participation, we were able to find the following results.

The study sample ($n = 35$) included a total of 24 non-athlete participants and 11 athlete participants, including athletes from the men's baseball, women's basketball, women's soccer, and women's softball teams. Pearson's Correlation determined that there was a significant negative correlation between having sustained a previous concussion and reporting intention in the athlete group ($p = 0.014$), while there was a significant positive correlation between concussion education and reporting intention in the non-athlete group ($p = 0.035$).

Concussion Knowledge

There were similarly high levels of concussion knowledge in both the athlete and non-athlete groups, both before and after the education session, with no differences between groups. The concussion knowledge questions that were answered correctly most frequently included questions about being knocked unconscious, recovery time, impact of a single concussion, emotional disruptions, and the importance of rest on the brain. The concussion knowledge questions that were answered incorrectly most frequently included questions about diagnostic imaging techniques, cognitive awareness, and comas. The concussion attitude scores were also similar between groups, but there was a significant increase after the concussion education session for the groups collectively ($p = 0.001$).

Concussion Reporting

There were no differences in reporting confidence scores between groups, but there was a significant increase after the concussion education session in the groups combined ($p < 0.01$). The pre-education reporting intention score was significantly higher in the non-athlete group compared to the athlete group ($p = 0.04$), and trended towards a significantly higher post-education reporting intention score than the athlete group ($p=0.056$). In addition, there was a significant increase in reporting intention for the groups combined after the concussion education

session ($p < 0.01$). The symptoms that were consistently the most likely to cause the participants to stop and report their symptoms after an impact included vomiting or feeling nauseous, dizziness, light or noise sensitivity, and having a hard time remembering things. In contrast, the symptom that was consistently scored with the lowest reporting intention was headache.

Of the 29 participants that completed the questionnaire, 10 of them reported experiencing at least one concussion symptom in the last year, with nine reporting that they experienced more than one concussion symptom in the last year. Six athlete participants reported experiencing concussion symptoms in the last year, of those six, two athletes reported their symptoms immediately and one additional athlete reported their symptoms the day after an impact to a coach, athletic trainer, parent, or doctor. Four non-athletes reported that they experienced concussion symptoms within the last year, of those four, 3 reported their symptoms both immediately and the day after an impact to a coach, athletic trainer, parent, or doctor.

Although the study had its limitations (the number of participants was relatively small and the group sizes were uneven), we were able to show improvements in concussion attitudes, reporting confidence and reporting intention in both groups after viewing the video. The improvement in concussion attitudes and reporting behaviours may be more important for health and safety than concussion knowledge.

We appreciate all of you that took the time to participate in our study and want to thank you again. We hope that you were able to gain something from the concussion education video and wish you all the best in the future.

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