The epidemiology of head, face and eye injuries to female lacrosse players in Australia

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1. Introduction
Lacrosse is a fast-paced team sport where players use crosses to pass, catch, shoot, defend and gather the ball (Waicus and Smith 2002). Lacrosse is played in over 20 countries, with 415 registered female players in Victoria, Australia.

Males and females play lacrosse, but there are considerable differences. Males are allowed greater body androsse contact and wear mandatory protective equipment. The only mandatory protective equipment in the women’s game is mouth guards and body contact is illegal (Waicus and Smith 2002, Hinton et al. 2005). Although women’s lacrosse is non-contact, severe injuries do occur, in particular to the head, face and eye regions (Diamond and Gale 2001, Waicus and Smith 2002, Hinton et al. 2005). In the United States, the use of protective eyewear is mandated, whereas in Australia its use is voluntary (Matz and Nibbelink 2004). Australian female players can wear protective headgear; however, not at international competitions.

The aim of this study was to investigate injuries, particularly to the head, face and eye region of female lacrosse players.

2. Method
Using the same cohort of players, data on lacrosse injuries were obtained from retrospective self-report survey and prospective injury report forms.

Retrospective data were collected in 2005, in Melbourne, Australia. Female players (n = 208) over 18 years were invited to take part in an anonymous survey. The survey consisted of questions regarding the number, cause and nature of injuries to the head, face and eye regions sustained over the past two seasons (2004 – 2005). Also included was player demographic information. An injury was defined as that requiring attention/treatment to a player during training or competition.

Prospective data were collected using injury report forms during the 2005 season. Managers (n = 39) were asked to complete a form for each injury occurrence that occurred during training or competition. Gathered information included player demographic information and protective equipment use, as well as injury details. The injury definition was as per the self-report survey.

Chi-square analysis was used to examine the association between an injury to the head, face or eye and categorical demographic data.

This research was approved by the University of Ballarat Human Research Ethics Committee.

3. Results
The response rates were 50.5% for the retrospective study and 43.6% for the prospective study. The total number and percentage of injuries to specific body regions are summarized in table 1.

The thigh was the most frequently injured body region (n = 6; 27.3%) in the prospective study. Although few injuries in total were recorded in the prospective study, the head, together with the face region, was injured more often (each n = 2; 18.2% of all injuries). No head and face
injuries warranted seeking medical treatment and players
returned to competition.
Injuries to the head region (45.9% of all injuries; n = 34)
ocurred more frequently than to the face (41.9%; n = 31) or
eye (12.2%; n = 9) in the retrospective study. A total of 74
head, face or eye injuries were sustained to 36 players
(34.3%). From this study, there was no significant difference
between injury and player demographics (p > 0.05).
The mechanisms for head, face and eye injuries are
summarized in table 2. From the retrospective data the
majority of all injuries were caused by the crosse (68.0%,
64.0%, 75.0% respectively), mostly resulting in bruising
(80.0%, 62.5%, 68.0% respectively). Three cases of concus-
sion were reported, representing 12.0% of head injuries. Two
of these were caused by a crosse and the remaining by the ball.

4. Discussion
This is the first study investigating injuries to adult females
playing lacrosse in Australia. Injury data to females have
predominantly covered USA high school, collegiate and
post-collegiate players (Waicus and Smith 2002, Matz and
Nibbelink 2004, Hinton et al. 2005). Included in the
foundation of information are long-term emergency
department surveillance studies only covering the severe
spectrum of all injuries (Diamond and Gale 2001). Studies
incorporating community level data have been hindered by
recall bias of reporting injuries sustained throughout
playing history (Waicus and Smith 2002). The mandating
of protective eyewear in the USA does not seem to be based
on comprehensive evidence. Given this and the inconsis-
tencies with rules internationally, it is imperative that
players are provided with appropriate recommendations.
Injuries sustained to the head, face and eye regions are
considerable. It is the potential severity of these injuries
that requires attention. In records from emergency depart-
ment surveillance, which covers 80% of statewide presenta-
tions in Victoria 1999 – 2004, face was the most frequent
injury and the head the third most common (Victorian
Emergency Minimum Dataset 2005). Bruising is the most
common outcome of injuries; however, concussion does
occur (Covassin et al. 2003, Hinton et al. 2005).
Female players sustain more head injuries than males
(Diamond and Gale 2001, Hinton et al. 2005). This is not
surprising given that males wear headgear and females do
not, and this highlights the protective benefits of such use.
A positive in the process of behaviour change to female

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*Includes head, eye and face injuries.
players wearing headgear is that they already wear protective equipment in the form of mouth guards.

A limitation of combining methodologies is that there is no ability to report injury trends. The aim of this study was not to compare data as such, but to provide a more comprehensive investigation of injuries to inform recommendations for protective equipment.

As head injuries are more prevalent than eye injuries, the use of protective headgear would be more beneficial for eliminating head and eye injuries. Unlike recent legislation in the USA, which has mandated protective eyewear, it is recommended that the use of protective headgear is allowed. The authors also advocate for continued research evaluating protective equipment interventions to inform consistency internationally. The case for widespread acceptance and adoption of injury prevention in sport is hindered by inconsistencies between countries. It is imperative that injury prevention strategies are evidence-based and findings of comprehensive research are discussed throughout all facets of the sport.

In conclusion, the wearing of headgear by female women lacrosse players should be investigated. Importantly, it must be demonstrated that such use will not change the nature of the game and injuries. The next step required is to explore players’ protective equipment knowledge, attitudes and behaviours. In doing so, a multi-level ecological approach to behaviour change is recommended.

Acknowledgements

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References


