Preventing Ocular Trauma: national survey of eye injuries in female lacrosse players

Zofia Zielicka¹, Susan Sarangapani², Louis Koizia³, Naresh Joshi⁴

Abstract

Aims: To identify ocular trauma and the sentiments towards the implementation of protective eyewear in female English lacrosse.

Methods: Two anonymous retrospective questionnaires were devised, one for women’s lacrosse coaches and players respectively. Surveys were undertaken either anonymously online or in person during national secondary school and university tournaments.

Results: Surveys were collected from 648 players and 85 coaches. 157 players reported sustaining an eye injury, 13 of those had long-term adverse consequences on their vision. 46% of coaches and 24% of players, reported ocular injuries involving doctor based care, including specialist units. The majority of coaches (64%) and players (52%) would recommend the implementation of protective eyewear, into English lacrosse.

Conclusion: Data collected from this study suggests that ocular injuries, including serious visual loss, occur during lacrosse. The mandatory adoption of ocular protection should be considered in England as a matter of urgency.

Keywords: female, lacrosse, ocular injuries

Introduction

Currently in England it is mandatory for all participants in men’s lacrosse to wear helmets and facemasks, due to the physical nature of the sport. In women’s lacrosse, although the same ball and similar lacrosse sticks are used, there is no mandatory protective equipment such as eye goggles. Diamond & Gale (2001) compared US lacrosse-related injuries between genders over a 10 year period and concluded that women are also at high risk of head/face injuries.¹ Goldenberg & Hossler (1995) found that 23% of head/face injuries included the eye region.² Furthermore, over a decade, several studies ³-⁵ have concluded that eye injuries sustained during the women’s game could have been prevented by the use of protective eyewear.

After many years of debate, in 2005, the United States Lacrosse Women’s division enforced the mandatory use of protective eyewear for all female lacrosse players. This decision was taken following extensive medical literature reviews and guidance from the American Academy of Paediatrics and American Academy of Ophthalmology, with the conclusion drawn that it was necessary to enforce safety goggles in order to prevent “rare, but potentially catastrophic eye injuries.”⁶ Since
the decision has been implemented, the number of eye injuries has been reduced dramatically. A recent study of high school female lacrosse teams, found that from 2000 to 2003, there were 22 serious eye injuries, and from 2004 to 2009 there were just five. Furthermore, four out of the five injuries that occurred after the eyewear requirement happened while the players were not wearing the protective gear.7

The purpose of this retrospective survey was to identify ocular trauma and the sentiments towards the mandatory implementation of protective eyewear in English women’s lacrosse.

Methods
An anonymous, retrospective online survey was sent to all registered secondary school women’s lacrosse coaches, as provided by the English Lacrosse Association (ELA). Lacrosse in England is mainly played either at school or university. Therefore, female players participating in the university championships February 2012 (Durham) and the under 15A/19A championships March 2012 (Imperial College, London), were invited to participate in the retrospective questionnaire. The questions within the survey were based upon a previous study conducted in the USA, Waicus & Smith, 2002.5

The data was analysed using the ASSIST program to calculate frequencies based on the survey answers.

Ethical approval was not applicable. However, permission was sought from the ELA

Results
Participants
Out of the 99 lacrosse coaches, there were 85 online responses (86%). Whilst 648 university and secondary female lacrosse players in total participated in the questionnaire – 117 players from the U15A tournament (74%), 219 players from the U19A tournament (79%) and 180 players from the university tournament (85%), respectively. Overall, the opinions of each answers seemed to be similar between those under 15/under 19 and university students.

Level of Experience
Out of the 85 lacrosse coaches, the majority of coaches were found to have over 10 years of experience as a lacrosse coach (40%), followed by coaches having 2-5 years (32%) and 5-10 years (26%) of coaching experience. The majority of

<table>
<thead>
<tr>
<th>Number of Eye Injuries</th>
<th>Coaches (%)</th>
<th>Players (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>15 (24)</td>
<td>100 (64)</td>
</tr>
<tr>
<td>2-5</td>
<td>34 (54)</td>
<td>51 (32)</td>
</tr>
<tr>
<td>6-10</td>
<td>11 (17)</td>
<td>4 (3)</td>
</tr>
<tr>
<td>11+</td>
<td>3 (5)</td>
<td>1 (0.6)</td>
</tr>
<tr>
<td>Not Answered</td>
<td>0 (0)</td>
<td>1 (0.6)</td>
</tr>
</tbody>
</table>
Ninety-two percent of players do not currently use protective eyewear. However, over 60% of coaches thought that protective eyewear should be recommended (‘advisable’ 42% and ‘mandatory’ 21%). Similarly, the majority of players recommended protective eyewear; 48% advisable and 6% mandatory.

What were the barriers making the wearing of goggles undesirable? The majority of coaches felt that the players were not considerably at risk of eye injuries (48), closely followed by goggle discomfort (41) and potential impaired vision during play (37). Only 7 coaches thought that the availability of suitable eyewear maybe an issue. The fifteen ‘other’ responses included; not aware that protective eyewear was available (2), not worn because they are ‘not mandatory’ (4), increased risk of injuries/physical contact (6), ‘not required if there was good umpiring and coaching’ (1), ‘have not had the kind of injuries that would suggest protective eye wear use’ (1), an old fashioned’ approach (1).

It was found that players cited discomfort associated with wearing goggles as the main barrier (344). The second and third most cited reasons were impaired vision (327) and not feeling at risk of eye injuries (212), respectively. Less than 30% of players cited cosmetic appearance (195), cost (130) and availability (56) as reasons. ‘Other’ responses included; harder to play (2), no one else wears them (5), not encouraged (2), increase in illegal contact (4), unaware of existence (1), additional equipment (1), increase in injuries (2).

**Discussion**

Although ocular injuries are infrequent, injuries do occur, some of which were found to be physically and psychologically debilitating. To further quantify the prevalence of lacrosse injuries within England, a national surveillance system should be set up with umpires being required to log injuries that occur during practise and competitive games. A national surveillance system has been introduced into US lacrosse, National Collegiate Athletic Association (NCAA) Injury Surveillance System (ISS), with sport injuries being logged by participating schools. NCAA ISS has been instrumental in developing health and safety policy related to women’s lacrosse, as well as other sports.6 Both coaches and players reported that the majority of ocular injuries required medical attention, with the majority of medical treatment occurring at the institution/tournament. The two players, who reported vision loss, also reported needing specialist unit intervention. Potentially the numbers of long-term consequences are underestimated, as some players may have been forced to stop playing lacrosse as a result of the injuries sustained.

The overwhelming majority of players do not wear protective eyewear, although paradoxically a significant proportion of coaches and players welcome the implementation of protective eyewear. This study suggests there are some barriers that need to be overcome to implement mandatory/highly advisable use of protective eyewear in English lacrosse. The top three potential barriers included; ‘impaired vision,’ ‘discomfort’ and ‘do not feel at risk of injuries.’ (Table 4) However, with the mandatory implementation of goggles in US lacrosse, there is now a large variety and increased availability. Lacrosse goggles manufacturers use materials, such as silicone gel and foam, and different shaped wires to allow for maximum comfort and avoid impairing vision.6 Furthermore, players are at risk of eye injuries, and wearing protective eyewear can minimise the risk. Lincoln et al (2012) found that since the introduction of mandatory protective eyewear in the US the rate of eye injuries reduced from 0.10 injuries per 1000 to 0.016 per 1000 injuries.7 By presenting coaches and players with research, whether it be in a school, university or club setting, there is opportunity to increase the awareness and seriousness of eye injuries.
At present there has been no formal dialogue between the UK lacrosse and Ophthalmology governing bodies. The US Lacrosse Association embraced both players’ and coaches’ views, as well as looking to the medical community, including the American Academy of Ophthalmology, for guidance. Legislation is the only way of ensuring that preventative strategies, like safety goggles, are enforced.

The major limitation of this study is related to the retrospective design – as surveys rely on recall of past events and thus recall bias must be taken into consideration. Furthermore, this study is relatively small, and does not include experiences at club or athletic level. A significant proportion of the data is also gathered from those under the age of nineteen whose opinions and reservations regarding protective eyewear could potentially differ from older adult players. It also potentially misses players who have stopped playing lacrosse due to ocular injuries.

**Conclusion**

This is the first study amongst non-professional English female lacrosse players to identify ocular trauma. The study highlights that sight threatening injuries and loss of vision as a result of lacrosse do occur.

In light of this survey, formal dialogue between the UK lacrosse and Ophthalmology governing bodies needs to be established, as mandatory eye protection for all female lacrosse players could be an effective safety strategy.

**Table 4 | Reasons Preventing Players from Using Protective Eyewear**

<table>
<thead>
<tr>
<th>Reasons</th>
<th>Coaches Response</th>
<th>Players Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impaired Vision</td>
<td>37</td>
<td>327</td>
</tr>
<tr>
<td>Cosmetic Appearance</td>
<td>19</td>
<td>195</td>
</tr>
<tr>
<td>Discomfort associated with goggles</td>
<td>41</td>
<td>344</td>
</tr>
<tr>
<td>Availability of goggles</td>
<td>7</td>
<td>56</td>
</tr>
<tr>
<td>Cost</td>
<td>19</td>
<td>130</td>
</tr>
<tr>
<td>Do not feel at risk of eye injuries</td>
<td>48</td>
<td>212</td>
</tr>
<tr>
<td>Other</td>
<td>15</td>
<td>18</td>
</tr>
</tbody>
</table>

**References**