Impacts and Effects of Mandatory Protective Eyewear in Youth Sports

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**BACKGROUND**

**Youth Sports:**
- Over 50% of U.S. children and youth participate in sporting activities.
- **Benefits** of athletic participation can include increased physical health, improved psychological and social health, better academic skills, and even a more stable future financial wellbeing.
- **Risks** of athletic participation can include injuries ranging from mild to serious.
- **Eye injuries** are a serious risk for many youth athletes.

**Eye Injuries and Burden:**
- US annual average of 19,000 cases of ED-presenting pediatric sports-related eye injuries9, 4.7% of which require hospitalization.8
- This does not include those that did not seek medical attention or sought it elsewhere.

**Prevention:**
- Up to 90% of eye injuries are preventable.
- Policy mandated protective eyewear has the potential to reach a wider population of youth athletes.

**RESEARCH QUESTIONS**

(1) What policy-level interventions designed to protect the ocular region of child athletes have been empirically tested?

(2) What are the effects of the interventions on child athletes in preventing ocular trauma?

**METHODS**

Rapid review of the literature by a single reviewer

**Databases:**
- PubMed - MeSH and Keywords
- Scopus - Keywords

**Searched for:** (1) child/ren, youth athletes/sports; (2) eye injury; (3) prevention, policy, protective eyewear and related terms

**Inclusion/exclusion criteria:** peer-reviewed, in English, study performed in western countries, including a study population under age 18, testing a policy-level intervention, outcomes of eye injury prevention

**RESULTS**

<table>
<thead>
<tr>
<th>First Author</th>
<th>Year</th>
<th>Sport, level</th>
<th>Intervention Description</th>
<th>Primary Findings (eye injuries)</th>
<th>Secondary outcomes</th>
<th>Secondary Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Khan, 2008<strong>3</strong></td>
<td>Hurting, under 18</td>
<td>Gaelic Athletic Association (GAA) mandated protective helmets and facemasks for players under age 18 beginning in 2005</td>
<td>Frequency:</td>
<td>Pre-mandate: 12 injuries Post-mandate: 2 injuries</td>
<td>1. Visual outcome</td>
<td>1. 1 injury with permanent visual deficit (pre-mandate); 8 injuries with permanent visual deficit (post-mandate)</td>
</tr>
<tr>
<td>Kriz, 2012<strong>1</strong></td>
<td>Field Hockey, high school</td>
<td>Individual state intercollegiate association mandated protective eyewear (MPE) for field hockey players</td>
<td>Frequency:</td>
<td>MPE states: 1 injury No-MPE states: 21 injuries Incidence per 1000 AE*: MPE states: 0.015 No-MPE states: 0.08</td>
<td>1. Head/face injuries 2. Concussive injuries 3. Severe injuries</td>
<td>1. Incidence per 1000 AE: 0.18 (MPE states), 0.32 (no-MPE states) 2. Incidence per 1000 AE: 0.27 (MPE states), 0.28 (no-MPE states) 3. Incidence per 1000 AE: 0.015 (MPE states), 0.10 (no-MPE states)</td>
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<tr>
<td>Kriz, 2015<strong>2</strong></td>
<td>Field Hockey, high school</td>
<td>National Federation of State High School Associations (NFHS) protective eyewear mandate (MPE) for all HS field hockey players beginning in 2011</td>
<td>Frequency:</td>
<td>Pre-national mandate: MPE states: 1 injury No-MPE states: 21 injuries Post-national mandate: 8 injuries Incidence, injuries per 1000 AE: Pre-national mandate: MPE states: 0.015 No-MPE states: 0.08 Post-national mandate: 0.027</td>
<td>1. Head/face injuries 2. Concussive injuries 3. Severe injuries</td>
<td>1. Incidence per 1000 AE: 0.18 (MPE states, pre-mandate), 0.32 (no-MPE states, post-mandate) 2. Incidence per 1000 AE: 0.27 (MPE states, post-mandate), 0.28 (no-MPE states, post-mandate) 3. Incidence per 1000 AE: 0.015 (MPE states, pre-mandate), 0.10 (no-MPE states, post-mandate)</td>
</tr>
<tr>
<td>Lincoln, 2012<strong>3</strong></td>
<td>Women’s Lacrosse, high school</td>
<td>US Lacrosse mandated use of protective eyewear for women’s lacrosse (youth, scholastic, and collegiate levels) beginning in 2005AE</td>
<td>Frequency:</td>
<td>Pre-mandate: 22 injuries Post-mandate: 5 injuries Incidence, injuries per 1000 AE: Pre-mandate: 0.10 Post-mandate: 0.016</td>
<td>1. Head/face injuries 2. Concussive injuries</td>
<td>1. Incidence, injuries per 1000 AE: 0.15 (pre-mandate), 0.07 (post-mandate) 2. Incidence, injuries per 1000 AE: 1.9 (pre-mandate), 1.8 (post-mandate)</td>
</tr>
</tbody>
</table>

*AE: Athletic Exposure, defined as one athlete participating in one practice or competition for the given sport

**DISCUSSION**

- Policy of mandatory protective eyewear is associated with a reduction in (1) eye injury incidence, (2) eye injury severity, and (3) head/face injury incidence
- Inconsistent results in concussion injuries could be related to a general increase of concussion rates across youth sports

**LIMITATIONS:**
- Single reviewer process
- All studies were cross-sectional, causation cannot be assessed

**FUTURE DIRECTIONS AND RECOMMENDATIONS:**
- Introducing mandatory protective eyewear to more youth sports
- Examining compliance and acceptability of wearing protective eyewear during athletic activity

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REFERENCES