Don’t save the ball!

D M Macgregor

**Objectives:** To identify, over a period of 12 months, all attendances at an accident and emergency department by children over the age of 5 years with an injury to a wrist, hand, or finger, and to examine those sustained as a result of a blow from a ball.

**Methods:** The case notes of all children aged 6–13 years attending the Accident and Emergency Department of the Royal Aberdeen Children’s Hospital in the year 2001 as a result of a wrist, hand, or finger injury sustained from a blow by a ball were reviewed, and the cause, type, and severity of the injury noted.

**Results:** A total of 187 children were identified; 69% were boys and football was the main sport involved. Most (93%) were radiographed, and 40% were positive; most fractures were sustained outwith school. Hand dominance was not significant.

**Conclusions:** These injuries are common and may be preventable with modification of rules, equipment, and coaching. A register of youth sporting injuries may show if there are any detrimental long term effects.

Sport plays a significant part in the lives of many children, and ball games are popular both at school and in leisure time. Football (as goalkeeper), basketball, netball, volleyball, cricket, and rugby all involve hand contact with a fast moving heavy ball, with the potential for forced hyperextension of the fingers, hand, and wrist. Ball games have been noted to account for the greatest number of paediatric sports injuries in Hong Kong. From clinical encounters in the Accident and Emergency (A&E) department, it became apparent that there was a high presentation rate of wrist, hand, and finger injuries caused by a blow from a ball during sport. The aim of this study was to confirm the suspicion that such an injury was more prevalent in children and that there was a high presentation rate of wrist, hand, and finger injuries caused by a blow from a ball.

**DISCUSSION**

Injuries are a common, unwanted aspect of participation in sports, and injuries to the upper extremity in children are increasing with the expanded participation in and higher competitive levels of youth sport. A previous paper on the epidemiology of all paediatric sports related injuries showed a fracture rate of 29%: this is lower than our rate of 37% for ball induced hand and wrist injuries alone, and we have no explanation for this finding. Sahlin noted that sports accidents...
The use of lighter weight balls has reduced the incidence of distal radial fractures in young goalkeepers as a result of saving the ball. Although more children were referred from schools in our study, there was a lower rate of serious injury. This may reflect a higher threshold for referral from schools or more aggressive play in leisure time.

Finger injuries have previously been noted in basketball and rugby, although the incidence of rugby injuries is lower in children than adults. Sports related injuries may impinge on training and participation in competitive matches, preventing progression to higher league sport, the aspiration of many children. Recognition of injury patterns with early activity modification and the initiation of efficacious treatment can prevent disability and return the young athlete to sport. This is important, as Yde and Nielsen noted, that of the ball games played by adolescents, soccer produced the most serious injuries requiring the longest rehabilitation period. Both fractures and soft tissue injuries may be best dealt with in a sports injury clinic, but return to competition should never compromise care.

It has been shown that the danger of accidents and injuries can be reduced by preventive measures such as weight categories in children’s leagues, rule modifications such as jumping for the ball in soccer and rugby, and excluding younger children from taking part in technically advanced sports activities. The use of lighter weight balls has reduced the incidence of distal radial fractures in goalkeepers, and, in Australia, rule modifications at the under 10 level has substantially reduced injury rates.

Table 2 Details of injuries sustained

<table>
<thead>
<tr>
<th>Site of injury</th>
<th>Fracture/dislocation</th>
<th>Soft tissue injury</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finger</td>
<td>28</td>
<td>58</td>
<td>86 (46)</td>
</tr>
<tr>
<td>Wrist (distal radius/ulna)</td>
<td>27</td>
<td>27</td>
<td>54 (29)</td>
</tr>
<tr>
<td>Thumb</td>
<td>7/2</td>
<td>27</td>
<td>36 (19)</td>
</tr>
<tr>
<td>Scaphoid</td>
<td>1 (radiologically proven)</td>
<td>6 (clinically tender, x-ray neg)</td>
<td>7 (4)</td>
</tr>
<tr>
<td>Metacarpal</td>
<td>4</td>
<td>0</td>
<td>4 (2)</td>
</tr>
</tbody>
</table>

Table 3 Injuries broken down into whether they were sustained in school or during leisure time

<table>
<thead>
<tr>
<th>Location</th>
<th>Total referred</th>
<th>Soft tissue injury</th>
<th>Fracture (% of referred)</th>
</tr>
</thead>
<tbody>
<tr>
<td>School</td>
<td>105</td>
<td>77</td>
<td>28 (27)</td>
</tr>
<tr>
<td>Leisure</td>
<td>82</td>
<td>41</td>
<td>41 (50)</td>
</tr>
</tbody>
</table>

Conclusions

The injuries in this series were all caused by a blow from a ball. Lighter balls for younger children would reduce the force of a blow, and weight categories would ensure that heavier players were not kicking or throwing balls with greater force at lighter players. These modifications of rules, equipment, and coaching practices have been shown to reduce injuries in other areas, and their wider implementation should be considered. A register of injuries kept by sporting bodies would be of benefit, and such injuries could be carefully monitored to ascertain whether they result in any detrimental long term effects.

Injuries to the fingers, hand, and wrist are common in ball sports, and parents and coaches should be made aware of the risk of such injuries in youth players.

Authors’ affiliations

D M Macgregor, A&E Department, Royal Aberdeen Children’s Hospital, Aberdeen, Scotland, UK

Correspondence to: Dr Macgregor, Cornhill Road, Aberdeen AB25 2ZG, Scotland, UK; diana.macgregor@arh.grampian.scot.nhs.uk

Accepted 25 September 2002

REFERENCES


