

Briefing to the Rugby Union All Party Parliamentary Group

Head injuries and concussion in rugby

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Introduction

Rugby union and rugby league are the most commonly played collision sports in schools in England (1). Collision sports involve athletes purposely hitting or colliding with each other or inanimate objects including the ground with great force, and result in greater injury risk than other non-collision contact sports (2). Many schools make rugby compulsory.

Collision sports such as ice-hockey, rugby, and American football have been found to have the highest rates of injury including concussion in children out of all sports (3, 4). Rugby injury in children is frequent and is a significant cause of emergency hospital attendance. Around 20% of children injured while playing rugby have been found to require time off school away from studies (5, 6).

In the US rugby injury emergency department attendances are increasing, in particular head and face injuries (7). In the UK, concussion was the most frequently reported injury in the professional game from 2011-12 to 2014-15 (8).

The tackle is the most injurious phase of play for all ages of children playing the game

- The high risk of injury in rugby is due to the collision elements of the game, mainly the tackle, which accounts for between 39.6% and 64.0% of all injuries sustained by children during rugby (9).

Concussion is a frequent injury in rugby and most concussion occurs during the tackle

- Concussion accounts for between 2.2% and 24.6% of all rugby related injuries (9-11). Two thirds of concussions in child rugby are due to the tackle (12). Numbers and rates of match play concussion are rising in both the professional (8) and community (13) adult rugby union game; data on children are not routinely collected. Concussion injuries occur more commonly among rugby playing children and adolescents than among adult players (14).

Head trauma and concussion can lead to short and long term harms

- A Swedish study of over a million individuals under the age of 26 years identified 104,290 with a prior traumatic brain injury (TBI). Compared to their unaffected siblings, those with mild TBI

(concussion) were more likely to be in receipt of a disability pension or welfare payments, to have had more psychiatric inpatient admissions or outpatient visits, to die younger, and to have lower educational achievement ($p < 0.05$ for all) (15).

- Children are more likely to experience concussion than adults and take longer to recover (16-18).
- A US study of 294 paediatric sports-related concussion patients found girls were three or four times more likely to experience post-concussive symptoms lasting more than 28 days than boys (19). This is a particular concern given the focus on increasing the number of female players (20).
- Studies show continuing poorer cognitive function in young adult male rugby players with repeat concussions, at least three months after their last concussion (21).
- A history of a previous concussion predisposes to repeat concussions (16).
- Repeat concussions are associated with depression, mild cognitive impairment, poorer memory, reduced verbal fluency, and electrophysiological abnormalities in later life among former American football and ice hockey players (22-25).
- There have been multiple autopsy findings of chronic traumatic encephalopathy (CTE), similar to those found in ex-boxers and military veterans, in the brains of former professional athletes in American football, ice hockey, and wrestling (26-29), and in the brains of former rugby players (28, 30, 31).
- Youth players are at increased risk of what is known as 'second impact syndrome', a potentially fatal phenomenon where a player sustains a second head injury without fully recovering from the effects of the first (32).
- Rugby unions invest in identification and management of concussion rather than primary prevention. None of their initiatives have been evaluated or shown to be effective in preventing concussion (33).

United Nations Convention on the Rights of the Child (Article 19)

Under the United Nations Convention on the Rights of the Child (Article 19), governments have a duty to protect children from risks of injury: "States Parties shall take all appropriate legislative, administrative, social and educational measures to protect the child from all forms of physical or mental violence, injury or abuse, neglect or negligent treatment". As a party to the Convention, the UK must ensure the safety of children.

The government should require schools, clubs, and hospitals to implement national injury surveillance systems, including sports.

UK governments should take a cautionary approach and ban the tackle in school rugby to reduce the risks of injury and concussion in rugby.

For further reading see

- Pollock AM. Tackling rugby. What every parent should know about injuries. Verso 2014.
- Kirkwood G, Parekh N, Ofori-Asenso R, Pollock AM. Concussion in youth rugby union and rugby league: a systematic review. *British Journal of Sports Medicine*. 2015;49(8):506-10.
- Freitag A, Kirkwood G, Scharer S, Ofori-Asenso R, Pollock AM. Systematic review of rugby injuries in children and adolescents under 21 years. *British Journal of Sports Medicine*. 2015;49(8):511-9.

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