

SHORT REPORT

High school rugby players' understanding of concussion and return to play guidelines

Garry Sye, S John Sullivan, Paul McCrory

Br J Sports Med 2006;40:1003–1005. doi: 10.1136/bjsm.2005.020511

Objective: To document high school players' understanding and attitudes towards concussion return to play guidelines.

Methods: A questionnaire based survey was performed of national high school rugby players as to their knowledge of existing concussion return to play guidelines.

Results: A total of 600 male players were surveyed, and 477 responded (response rate 80%). Half (237/477) were aware of concussion guidelines, and 60% (288/477) identified the mandated stand down period that is part of the regulations governing rugby football. Players obtained their information primarily from: teachers/coaches (239 responses), medical personnel (200), and other players (116). Of those players who suspected that they had been concussed (296/477, 62%), only 66 returned to play after medical clearance.

Conclusions and implications: This sample of high school players showed a limited knowledge of the concussion guidelines covering their sport, and even when concussed did not follow recommended protocols. This indicates the need for an increased focus on player education.

The international game of rugby union is played by men and women of all ages, and, because of its physical nature, is known to result in a range of injuries including concussion.¹ The injury status of schoolboy rugby has previously been addressed.^{2–7} The incidence of concussion has been estimated to range from 0.12 to 11.3 concussions per 100 player-seasons.² Under the regulations of the game, rugby players who have been concussed must “stand down” from games and training for a minimum period of three weeks.⁸

Schoolboy rugby in New Zealand is governed by the International Rugby Board's regulations for return to play after a concussion, and these are reinforced by the Sports Medicine New Zealand national guidelines on the management of concussion, which were widely disseminated in the year before this study.⁹ Despite the availability of this information, it is not known whether schoolboy players are actually aware of these guidelines. The purpose of this investigation was to determine the high school players' knowledge of concussion return to play guidelines and their attitudes to the application of these guidelines.

METHODS

A survey was conducted and a questionnaire administered to 1st XV (senior) players from teams competing in the 2000 New Zealand national school's competition.

The pretested questionnaire specifically developed for this age group sought information on: the basic characteristics of the players and their rugby background; their knowledge and understanding of concussion and return to play guidelines; the source of their information; its applicability to their playing situations and whether they thought the guidelines were being followed. Concussion was not formally defined for the participants, as one of the goals of the study was to investigate the players' understanding of the condition.

Each player was given information about the project and invited to participate. Those choosing to do so were required to provide written informed consent and complete the questionnaire anonymously.

The study protocol was approved by the University of Otago Ethics Committee. The questionnaires and consent forms were anonymised, and the data coded and entered into a spreadsheet for the generation of descriptive statistics using SPSS version 12 (SPSS Inc, Chicago, Illinois, USA).

RESULTS

From a sample of 600 players, 477 completed the survey (80%). Their mean (SD) age was 17.05 (0.96). Most (250/477, 52%) were playing their first season of 1st XV rugby, and 85% (408/477) of the sample devoted four or more hours a week to games and training. Sixty two percent (296/477) of the players suspected that they had previously been concussed and had reported this to their coach (177), doctor or sports (first aid) medic (157), parents/caregivers (137), or teammates (92), and 59 cases went unreported.

Almost all players were aware of the term concussion, but only 61% (290/477) indicated that they “understood” the meaning of the term. Overall the group demonstrated a reasonable knowledge of the classic concussion signs and symptoms by identifying a number of typical concussion real life scenarios, although a relatively large number (121/477, 25%) indicated “being knocked out cold” as the best descriptor of a concussion.

Knowledge of guidelines

Almost half (237/477, 50%) of the group reported having seen or been told of “concussion guidelines”. A larger number (277/477; 58%) believed that they “always” applied at the 1st XV level. The International Rugby Board mandated three week stand down rule was correctly identified by 60% (288/477) of the players, and 365/477 (77%) reported that a player should not return to play after the prescribed stand down period if they were still experiencing symptoms.

For those players who reported a concussion, only 66 returned to play after medical advice, with the majority (154) making the decision themselves. Players sourced their concussion knowledge from teachers/coaches (239 responses), doctors and sports (first aid) medics (200), other players (116), television (93), and the Accident Compensation Corporation/New Zealand Rugby Union (81).

Individual responses

When questioned about the application of their knowledge and player practices, 128/477 (27%) players “agreed” that a player with a suspected concussion should play in an important game such as a final. A total of 363/477 (76%) believed that a teammate had been concussed previously and stayed on during a game, and 151 players believed a concussed player on their team had been under pressure (source not specified) to play.

DISCUSSION

This national sample of young players appeared to have at least a fundamental understanding of what constitutes a concussion, and could recognise certain scenarios illustrating classic concussion signs—for example, headache and blurred vision—and symptoms—for example, inappropriate game behaviours. Many players, however, subscribed to the notion that a player had to be “knocked out cold” in order to be concussed, which suggests potential under-reporting and/or a lack of recognition of a concussion.¹⁰

The number of players reporting a concussion (62%) is greater than that documented previously in a self reporting context for cohorts of American football players of similar age^{11,12} and considerably higher than that reported in prospective studies involving high school rugby players.^{3,13} This discrepancy may be attributed to the anonymous manner in which the data were gathered, to the lack of a formalised definition of concussion presented to the players, the long reporting period, or it may represent the actual seriousness of the situation in this sporting context. The survey purposely did not define a concussion, as the intent was to search the players’ understanding of the term. This may very well have resulted in some uncertainty in their responding to various questions which sought whether or not they had been concussed. The findings do, however, lend cautious support to the suspicion of under-reporting in rugby where the stand down period has major consequences for the individual player. The players clearly indicated that they believed that concussions were not being reported.

Nearly a third of the players disclosed that they were aware of situations on their team where players felt pressure to play after a concussion. More players identified that the responsibility for checking for a concussion rested with the individual player or the coach, rather than with a doctor or sports medic. This may reflect the reality of the situation in that many teams will not have immediate medical support or it may reflect a general risk taking behaviour similar to that shown towards the wearing of headgear in a similar group of young rugby players.¹⁴

Although clear guidelines and policies exist on the return to play after a concussion for high school rugby, only about half the sample reported being aware of these and did not recognise that they applied to their age group. Although a meaningful number identified the prescribed stand down period, only a very small number of the players who had been concussed sought medical clearance before return to training/games, a key component of the return to play guidelines. This is of concern and suggests that greater efforts are required in the education of the players by coaches/teachers/officials. Although the guidelines were disseminated to sports medicine professionals, there was, at that point in time, no systematic programme to ensure that this information reached the school players and coaches. Subsequent national initiatives have addressed this issue.¹⁵ Coaches and sports medicine personnel are systematically informed of concussion and its management, and it can be assumed that this information is now being more extensively transmitted to players.

The apparent importance of the players in the dynamics of reporting and dissemination of information on concussion and its management presents itself as an opportunity. This peer educator role has not been exploited in traditional prevention programmes and is an area that warrants further investigation as part of an overall educational strategy to not only inform players but also to empower them as to their responsibilities within the administration of the guidelines.

Collectively, these preliminary data provide a historic snapshot of the young rugby players’ awareness of their

What is already known on this topic

- Although the incidence of concussion in schoolboy rugby is well documented and the existence of return to play guidelines incorporating a three week stand down period is well documented, it is not known whether schoolboy players are aware or follow such guidelines

What this study adds

- Fewer than half of the players were aware of return to play guidelines: after a concussion, 52% of players made their own decision to return to play whereas only 22% returned after medical clearance
- This study documents the practices associated with concussion reporting and highlights the lack of compliance with existing return to play regulations

sport’s concussion guidelines and suggest the need for a concerted effort to improve their knowledge and understanding of these guidelines.

Authors’ affiliations

G Sye, Kennedy Road Physiotherapy, Napier, New Zealand

S J Sullivan, University of Otago, Dunedin, New Zealand

P McCrory, University of Melbourne, Melbourne, Australia

Competing interests: None declared.

Correspondence to: Professor Sullivan, University of Otago, Dunedin, New Zealand; sjohn.sullivan@otago.ac.nz

Accepted 18 August 2005

REFERENCES

- 1 **Bird YN**, Waller AE, Marshall SW, *et al*. The New Zealand rugby injury and performance project. V. Epidemiology of a season of rugby injury. *Br J Sports Med* 1998;**32**:319–25.
- 2 **Marshall SW**, Spencer RJ. Concussion in rugby: the hidden epidemic. *J Athl Train* 2001;**36**:334–8.
- 3 **Durie RM**, Munroe AD. A prospective survey of rugby injuries in a New Zealand schoolboy rugby population. *NZ J Sports Med* 2000;**28**:84–90.
- 4 **Roux CE**, Goedeke R, Visser GR, *et al*. The epidemiology of schoolboy rugby injuries. *S Afr Med J* 1987;**71**:307–13.
- 5 **Carson JD**, Roberts MA, White AL. The epidemiology of women’s rugby injuries. *Clin J Sport Med* 1999;**9**:75–87.
- 6 **Lees AJ**, Garraway WM. Epidemiological comparison of injuries in school and senior club rugby. *Br J Sports Med* 1996;**30**:213–17.
- 7 **Davidson RM**. Schoolboy rugby injuries, 1969–1986. *Med J Aust* 1987;**147**:119–20.
- 8 **International Rugby Board**. Medical Regulations 10.1 Concussion. In, <http://www.irb.com/Nr/Rdonlyres/4d568967-E778-482d-95cb-6884216517d7/O/Reg10.Pdf> (accessed 9 May 2006).
- 9 **Milne C**. Concussion guidelines. *NZ J Sports Med* 1999;**27**:15–16.
- 10 **Delaney JS**, Lacroix VJ, Leclerc S, *et al*. Concussions during the 1997 Canadian football league season. *Clin J Sport Med* 1997;**10**:9–14.
- 11 **Gerberich SG**, Priest JD, Boen JR, *et al*. Concussion incidences and severity in secondary school and varsity football players. *Am J Public Health* 1983;**73**:1370–5.
- 12 **McCrea M**, Hammeke T, Olsen G, *et al*. Unreported concussion in high school football players: implications for prevention. *Clin J Sport Med* 2004;**14**:13–17.
- 13 **Junge A**, Cheung K, Edwards T, *et al*. Injuries in youth amateur soccer and rugby players: comparison of incidence and characteristics. *Br J Sports Med* 2004;**38**:168–72.
- 14 **Finch CF**, McIntosh AS, McCrory P. What do under-15 year old schoolboy rugby union players think about protective headgear? *Br J Sports Med* 2001;**35**:89–94.
- 15 **Gianotti S**, Hume PA, Quarrie K. Implementation of a community level sport concussion management system in New Zealand. *Br J Sports Med* 2004;**38**:660.