Protective Equipment and the Injury Crisis in English Rugby Union

Dominic Malcolm, Ken Sheard and Stuart Smith
University of Leicester
Leicester, England

Abstract
This paper argues that the increasing use of protective equipment in British rugby union and elsewhere occurs in the context of rising concern over injury rates in the game, but also in an atmosphere of confusion as to its efficacy. A seminal, but methodologically flawed study has resulted in its authors calling on the International Rugby Board to have a moratorium on their use, while at some levels in Canada and throughout the game in Japan, the use of head guards is compulsory. The data gathered from a study of elite professional rugby in England, indicate the extent of the divergence of opinion within and between various groups involved in the game. There appears to be little agreement as to whether the use of protective equipment makes the game more or less dangerous for players and opinion also varied in regard to specific items of protective equipment. The paper concludes by considering whether some of the divergence found may be related to the differing occupational experiences of the groups involved, and suggesting ways in which future research may be modelled to provide more reliable data on this phenomenon.

Introduction
At regular intervals since rugby union became an openly professional sport, the British media has raised the question of whether injury rates in the game have become unacceptably high. Headlines such as 'Set Standards, Save Lives' (Telegraph, 20 June 2002), 'Players' body calls for a cap on club appearances to cut injuries'; (Guardian, 2 January 2001), 'Has rugby become too dangerous in the professional era?' (Guardian, 7 December 2002) and French international, Thomas Castaignede's article, 'The hits get bigger and our shelf life grows shorter' (Guardian, 5 January 2003) are just a few indications of a broader trend. The recent death of an eighteen year old schoolboy rugby player James Harding (BBC News Online, 5 December 2002) and Richard Vowles' successful claim for compensation for the paralysis suffered due to a refereeing error in a Welsh club rugby match (BBC News Online, 13 December 2002) have served to heighten the public's sensitivity towards the health risks involved in the sport.

That rugby is a relatively dangerous sport is, of course, well established (Sports Council 1991; Hume & Marshall 1994). This has led to a large body of sports medicine literature that has addressed the epidemiology of rugby injuries (Garraway & MacLeod, 1995; Targett, 1998; Sharp, Murray & MacLeod, 2001), the identification of key risk factors (Quarrie et al, 2001), the long term effects of injury (Lee, Garraway, Hepburn, & Laidlaw, 2001), the effectiveness of protective headgear (McIntosh & McCory, 2001) and, most recently,
players' perceptions of the effectiveness of headgear (Finch, McIntosh & McCrory, 2001; Petterson, 2002). In summary, this research indicates that most injuries result from the tackle situation, that forwards rather than backs experience the highest rates of injury, that player age and previous injury record are particularly good indicators of injury incidence and that injury is a significant factor in the retirement of many rugby union players. The seminal paper in this area, and the research that has been particularly seized upon by the media, however, is William Garraway and his colleagues' (2000) 'Impact of professionalism on injuries in rugby'. This article was reported widely in the British sporting press at the time (Cain, 2000; Jones, 2000) and has continued to interest the British media, being featured 18 months later, for example, on BBC Television's 'Rugby Special' (BBC2, 7 March 2002).

The Garraway et al. (2000) report was based upon two surveys of Scottish rugby players, conducted in 1993-94 and again in 1997-98, that is, either side of the International Rugby Board's (IRB) 1995 landmark declaration on professionalism. Garraway et al. (2000) found that, despite a reduction in the number of hours of competitive rugby played, the proportion of players who acquired injuries had almost doubled. Amongst professional players surveyed in 1997-98, injury rates were even higher with one injury episode for every 59 minutes of competitive play, the equivalent of 1.4 injuries per team per match. What particularly interested the press and medical community about this research was not only that they linked increased injury rates to the greater number of high impact tackles in rugby post-1995, but that they implicated a) the formal professionalisation of the game and b) in particular, the increased use of protective clothing and equipment in the game. They concluded that 'the penalties for accepting the financial and other rewards accompanying professionalism in rugby union appear to include a major increase in player morbidity' (Garraway et al., 2000, p. 350, emphasis added). They also asserted, other changes aside, that 'the factor that is most likely to have contributed to the increased burden of injuries in competitive play . . . is the almost universal adoption of protective equipment in rugby union between the 1993-94 and 1997-98 seasons' (Garraway et al., 2000, p. 351, emphasis added). Professional players used protective equipment, Garraway et al. (2000, p. 351) claimed, 'in the expectation that it will minimise the consequences of bodily impact and may even give them a psychological edge when . . . [they] tackle opponents'. Thus, they advised the IRB to place a moratorium on the use of protective equipment in competitive matches until further research was available.

We have developed a detailed critique of Garraway et al.'s (2000) thesis elsewhere (Malcolm & Sheard, 2002), however, our major criticisms can easily be summarised. Firstly, Garraway et al. (2000) define professionalism in rugby union as stemming from the changes in 1995 that legitimated the payment of players and thus they fail to recognise the developmental nature of this aspect of modern sport. As a consequence of this definition, a contrast in injury rates
was drawn between a group of formally professional players, who all played at
district or international level, in the 1997-98 survey and the total sample of
formally amateur players in the earlier survey of 1993-94. By eschewing a
developmental approach, they failed to compare like with like, for this group of
elite players would have existed in the 1993-94 survey but because they view
professionalism in strict monetary terms, they were blind to their existence.
Moreover, though not rewarded by direct and open payment, such players
would still have had many of the characteristics of 'time' or 'attitudinal'
professionals. These players too would have played at district or international
level and the notion that players who perform at the highest levels are more
prone to injury is well established in the epidemiological (Garraway &
MacLeod, 1995; Quarrie et al., 2001) as well as the sociological literature on
attributed the rise in injury rates to the 'almost universal' adoption of protective
equipment in the game. The claim of universality is somewhat spurious, as
most observers of the game will know. Moreover, the article contains no data
on the use or impact of protective equipment in the game.

There currently exists a certain amount of confusion about the benefits
and dangers of 'protective' equipment designed for use in rugby union. In
contrast to Garraway et al.'s (2000) calls for the IRB to place a moratorium on
its use, in schools rugby in Canada, and indeed throughout the Japanese game,
the wearing of head guards in compulsory (Petterson, 2002). Even where it is
not compulsory, its use is widespread. For instance, in their study of Australian
schools rugby, Caroline Finch and her colleagues (2001) found that 64.3 per
cent of fifteen year olds wore some form of headgear.

In this article our aim is to add some empirical evidence to the debate
over the efficacy and desirability of the use of protective equipment in rugby
union, outlining some of the considerable diversity of opinion that exists on this
subject, and suggesting how further research should be conducted to provide us
with more reliable evidence on which to act. The data reported here derive from
a broader research project examining changes in the management of injuries in
English elite (professional) rugby union. Initial findings have been reported
elsewhere (Malcolm & Sheard, 2002), but here we seek to focus specifically on
the issues raised by the Garraway et al. (2000) research Whilst others have
looked at the use of head guards in youth rugby (Finch et al., 2001; Petterson,
2002), our findings represent the first set of data related solely to attitudes and
opinions held by those in elite professional rugby union; the part of the game
where injuries are most frequent and which led Garraway et al. (2000) to
propose the moratorium on the use of protective equipment. Below we examine
attitudes towards the use and role of protective equipment, and, in particular,
how those in English professional rugby view the claim that the adoption of
protective equipment is the factor 'most likely' to have caused injury rates to
increase in recent years.
Methods
Between September 2000 and October 2001, 42 in-depth, semi-structured interviews were conducted with seven coaches/directors of rugby (three Premiership, two First Division, one Third Division coach and a coach of a Premiership club's age-group side), nine doctors (five with Premiership clubs, two with First Division clubs, one with a club in the Third Division and one with Premiership club experience, but who mainly works for a representative side), ten physiotherapists (three with Premiership clubs, three with First Division clubs and two each with Second and Third Division clubs) and sixteen players (six with Premiership clubs, four each with First and Second Division clubs and two with Third Division clubs). In total, representatives from fifteen of the 68 clubs in these divisions were interviewed, and clubs from regions across England were represented. Interviews ranged from thirty to eighty minutes in length and took place in various locations ranging from our offices to rugby clubhouses, interviewees' workplaces and homes. Interviews were recorded and transcribed in full. All interviewees were guaranteed confidentiality. Although not central to the wider study, partly because of the prominence of these issues in the game, a total of 21 coaches, players, doctors and physiotherapists volunteered opinions about the use of protective equipment. Due to the complexity of the issues, and the kinds of information volunteered by interviewees, a qualitative approach to the data is presented below.

Results
Coaches
Amongst the five coaches/directors of rugby who expressed their views on the role of protective clothing, there was unanimous disagreement with the Garraway et al. thesis: 'I've never had the view that people are using padding or anything as an offensive weapon or to make it harder in the tackle', argued one Third Division director of rugby. 'I'd be very, very surprised if there was a link or a correlation between the increase in padding and increases in injury', concluded a Premiership coach. We found that coaches were also sceptical of the utility of protective clothing, in general, and head guards, in particular. A Third Division coach recalled a conversation with one of his players: 'I said to him, when he first put it (a head guard) on, "What are you wearing that for?" and he couldn't come up with an understandable answer for me'. The coaches stressed other, concomitant changes in the game as the main cause of higher injury rates. Players are 'bigger and stronger' coaches typically noted; 'it was always going to go that way' stated a Premiership director of rugby.

Players
Opinion was more evenly balanced amongst the players. One of the two players who felt that this equipment was beneficial said: 'It makes you think "I've got
this on so I can smash someone" and so you do it'. The majority of players (five of the seven) were, however, if not dismissive, then unconvinced of the merits of using protective equipment either for protection or to increase offensive tackling. A First Division player stated: 'I'm not going to tackle anyone harder because I've got shoulder pads on or anything like that.' Another player felt that, whilst wearing protective equipment did not lead to more aggressive tackling, it might downgrade the importance of technique and that this could lead to injury. Most of the interviewees argued that wearing such equipment was of limited use in protecting them from injury. Typically, one Second Division player stated, 'well I wear shoulder pads but they're only little things, they're not going to do much. They more or less just take away the bruising, they wouldn't effect dislocation . . . so they don't really make much difference.' More graphically, a First Division player described the context in which protective clothing is used in the sport: 'It's flimsy and if you've got an 18 stone (115kg) bloke running into a 15 (95kg) stone bloke, flat out, there's not much that padding can do'. One Premiership player argued that equipment protected players against nothing more than 'those knocks that you get... in a professional sort of environment'. A Premiership forward, noting the prevalence of 'stingers' in the modern game (that is, mild nerve damage, commonly incurred to the shoulder) argued that shoulder pads sometimes allowed players to continue to play while the injury healed; 'because it needs a couple of weeks rest, 'cause everything is inflamed . . . you just wear . . . a bit of extra padding on your shoulder, it will always do the job'. Others thought protective clothing was useful in avoiding 'knocks' in training. Many players wear a head guard or shoulder pads '[in] the week but not on a Saturday', indicating that these players did not believe such equipment enabled them to tackle more aggressively.

**Doctors**

Of the groups surveyed, the six doctors we interviewed were the most explicitly supportive of Garraway et al.'s (2000) conclusions. All but one doctor argued that padding did contribute to more aggressive tackling. Three doctors went on to state that this led to increased injury rates. With body protectors, noted a First Division doctor, 'you plough into somebody . . . it makes you more likely to be fearless'. Another doctor at a First Division club similarly noted: 'You go in that much harder because you've got this padding and you are more likely to sustain injury or cause injury to your opponent . . . it's just allowing the growth of this macho culture'. Two of the doctors explicitly supported a ban on shoulder protection: 'I feel (it) should be banned because I don't think they reduce danger for the game, they just cause you to go for bigger hits' stated one First Division doctor. Two doctors, however, argued that the benefits of using protective equipment outweighed the costs. 'I think it helps (protect players)', noted one Premiership doctor. Another, whilst stating that 'wearing
padding does mean you can hit harder’, continued, 'but my gut feeling is that it protects . . . What would it be like if they were riot wearing shoulder padding?’ he continued; 'God only knows. . .. If you didn't have the pads it would bad'.

The three doctors who thought protective equipment adversely affected players' health also argued that its potential benefits were minimal: 'I understand from what I read that gum shields offer more protection than head guards . . . [and] I can't believe they [shoulder pads] serve any purpose', said one from the First Division. Two of the three were rather more positive in their views on the use of head guards which were seen as useful in reducing cuts to the head, and especially valuable therefore in junior rugby and lower levels of the adult game, where the presence of medically qualified staff is less common.

Physiotherapists
Two of the three physiotherapists who volunteered opinions supported the idea that the use of protective equipment had led to more aggressive tackling; but all supported players' use of both head guards and shoulder pads. A Premiership physiotherapist felt that the 'Jury's out' on the Garraway et al. (2000) thesis and stated that whilst he expected to see a change in the types of injury players experienced, 'the incidence will remain very much the same . . . because you can't [dress to] protect yourself any more than you can dress yourself to inflict injury'. A Second Division physiotherapist, who felt protective equipment probably did enable players to tackle more aggressively, expressed his support for its use: 'I reckon pads are alright and a lot of our boys wear [them] . . . but it's not just head guards and shoulder pads. I try to get our boys to wear shin guards as well, and mouth guards'. The strongest support for the Garraway et al. (2000) thesis came from a First Division physiotherapist, who stated that: 'The whole idea that if you pad someone up it makes them feel impervious to injury, may well be a factor'. He had 'spoken to players that wear them and they feel as if they can hit harder with the pads'. Yet, in view of other changes in the game he also said: 'I don't think you can say that shoulder protection or head protection has directly led to an increase in injury in rugby'.

The physiotherapists placed particular stress on concurrent changes in the game and the difficulties in isolating the effects of individual factors. Possession of the ball, they noted, had become 'the be-all and end-all' and players were bigger and stronger, which had changed the way in which players tackled. Increased fitness levels meant players 'play on later . . . with the ferocity with which they began the game' and tactical substitutions meant that rapidly tiring players were now in tackle situations with fresh players. A First Division physiotherapist concluded that a factor in increased injury rates was the intensity of the game, played by 'bigger, fitter, stronger, faster individuals, [who] can inflict more punishment on each other for longer, than previously'.
Discussion

Our findings indicate that opinion amongst and between various groups involved in English professional rugby is divided on the utility of protective equipment and the extent to which its use has led to more aggressive tackling and more injuries as a result. But the dearth of research on the use, effectiveness and attitudes towards protective equipment means 'players and coaches have developed their own beliefs' (Petterson, 2002), albeit with little consistency. Some believe that equipment provides minimal protection yet leads to fiercer tackling and a greater incidence of injury, whilst others believe exactly the opposite. The preceding results illustrate that perceptions of the effects of protective clothing, and attitudes towards its use, are highly complex issues and future research should probe why such perceptual differences exist.

Occupational experience may be an important factor here. In relation to differences in the perceptions held by players and coaches, a First Division physiotherapist commented that: 'It's the older players more' who refuse to wear protective clothing; those players who, he thought, adhere most strongly to the tradition of masculine values in the game. Occupational experience, as opposed to simply age, may also be a relevant factor in leading players and coaches to believe that protective equipment provides minimal benefits. Indeed Finch et al. (2001) found that players who had a recent history of head/neck injury were much less likely to say that they felt safer wearing headgear than players with no recent history of such an injury. This finding correlates with our interview data. If experience, and due to the nature of rugby, the experience of injury, leads players to think that such equipment is of limited use, it seems logical to suggest that professional players, who experience the highest injury rates are, therefore, particularly likely to come to that view. The difference of opinion between the doctors and the physiotherapists might also be related to their occupational experience and the kinds of injuries typically dealt with by doctors on the one hand and physiotherapists on the other. Doctors noted that shoulder pads provided little protection from dislocations and/or bone breakages, though head guards were useful in protecting against cuts and lacerations requiring stitches. Few doctors, however, stressed the benefits of protective clothing in terms of reducing bruising and inflammation, and, notably, the one who did, did so in terms of the ramifications this had for the use of pain killing injections (usually given by the doctor rather than the physiotherapist). On the other hand physiotherapists, who would normally deal with injuries such as bruising and inflammation, were more likely to stress the particular utility of protective clothing in reducing this kind of injury. The views of physiotherapists, as the primary health care providers in rugby clubs (see Malcolm & Sheard, 2002), are likely to be more rounded than those of the club doctors who attend to the players less frequently.

Further, systematically collected, data are needed before we can make reliable recommendations about the use of protective equipment. Quantitative
research is needed to establish whether any risk compensation effect is evident, that is whether the perception of enhanced safety leads rugby players to take more/greater risks, but this research must be sensitive to the subjective values and beliefs specific to the context and culture of professional sport. Finch et al. (2001), for instance, failed to establish what conditions respondents defined as 'injuries' and, crucially, failed to ask survey participants about the different types of injury they perceived headgear to provide protection from, for example, more common but less serious lacerations, or less common and potentially more serious concussion. This issue is brought into sharper relief by their finding that 84.3 per cent felt 'safer' when wearing headgear, but only 54.6 per cent felt that it protected them from injury. We would suggest that one reading may be that many of their respondents thought headgear would protect them from pain, but did not equate pain with injury, largely defined by sportspeople as the enforced absence from playing (Curry, 1993; Roderick, Waddington & Parker, 2000). What we are arguing for here is the employment of a social, rather than a clinical, definition of injury.

Future research should also focus on injuries in the round, rather than on any one specific type of injury. Players wear protective equipment for a variety of reasons, from general protection, to the protection of a specific, existing injury. In one case we even found a player who wore a head guard solely because he was sponsored to do so! Moreover, even those who argued that protective equipment led players to tackle more aggressively, did not state that this was their sole motivation for using such equipment. Yet where players, for instance, wear such equipment as an alternative to rest after a significant injury, examples of which were recalled by both a player and a doctor, equipment may be leading players to expose themselves to higher, perhaps unacceptable, degrees of risk. Where, however, shoulder padding is used to protect an area of bruising, the alternative treatment of which might involve the use of anti-inflammatory and painkilling drugs, then the benefits derived from its use probably outweigh the costs (a likely increase in the use of drugs). Finally, it is also important that future research focuses on, and differentiates between, head and shoulder protection. Interviewees often held different views about the respective effectiveness of each type of equipment and it is conceivable that one provides net health benefits and the other provides net health costs.

It is quite clear that there is a great deal of confusion over the use and effectiveness of protective equipment in rugby and that a range of 'common sense' understandings have developed through the game. The media, as one would expect, highlights the most sensationalist aspects of this debate, even though our research indicates considerable perceptual differences between the sports medicine community and the sport's practitioners and a great deal of ambiguity over the issue in general. This, we suggest, is a problematic situation, in that a) players may be able to protect themselves from injury to a greater extent than they currently do so; and b) that the media hype about an
'injury crisis' in rugby may well contribute to the downturn in participation recently highlighted in the English press (Daily Telegraph, 23 November 2003). Until the medical community and the game's coaches and players come together (and if that meeting of minds is mediated by social scientists, so much the better) these problems will persist. We hope, in this article, to have highlighted the confusion that lies behind the media headlines of consensus and concern, and to have suggested ways in which future research can provide us with a more object-adequate portrayal of the degrees of risk inherent in playing competitive rugby at various levels.

REFERENCES


