Spinal injuries in rugby union, 1970–2003: lessons and responsibilities

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ABSTRACT

- There was an increase in the frequency of rugby union spinal injuries worldwide during the 1970s and early 1980s.
- The United Kingdom and Australia have since had some success in reducing this increase in spinal injuries.
- These changes were the result of actions by rugby union authorities in response to recommendations by medical advisors; legal action by injured players has also played a part.
- The frequency of spinal injuries has not decreased in New Zealand (up to 2000) and South Africa (up to 1997).
- Rugby union authorities' responsibilities should include establishing and maintaining national and international spinal injury registers to forge closer working relationships with medical researchers.
  - Such registers would provide up-to-date information for enhancing and developing preventive measures.
  - There has been no specific publicly available record of the incidence of rugby union spinal injuries in Australia since 1996, so it is uncertain whether the safety measures introduced so far have had a lasting impact.

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While the success of the 2003 Rugby World Cup in Australia is now part of our folklore, the event was marred by a spinal injury to an Australian player in a semi-final game.[1] Fortunately, his paralysis was temporary, but this is not the first such incident at a Rugby World Cup. In the 1995 Rugby World Cup in South Africa, a player suffered quadriplegia.

During the 1970s and early 1980s, medical researchers identified a significant increase in the frequency of spinal injuries among rugby union players in many countries.[2] It was suggested that this increase was related to the game being played more aggressively than in earlier years.[3,4] As a consequence, measures to reduce spinal injuries were proposed, and some were implemented during the 1980s (see Box 1). There was a subsequent reduction in the frequency of spinal injuries recorded during the late 1980s and early 1990s in the United Kingdom and Australia,[5,6] but not in New Zealand (up to 2000) or South Africa (up to 1997).[7,8]

These events warrant asking:

- What were the common factors that led to the apparent spinal injury reduction in the UK and Australia?
- What was the situation in New Zealand and in South Africa?
- What should be the responsibilities of rugby union authorities internationally?

Success factors in the UK and Australia

Research by medical professionals

In both countries, medical researchers played a key role in recording and analysing spinal injuries, as well as identifying appropriate measures to reduce their occurrence.

Silver began recording details of spinal injuries in rugby players in England in 1972, and his efforts have continued up to recent times.[9] Valuable work was also initiated in the UK by the Medical Officers of Schools Association in 1979.[10]

In Australia, Yeo established a spinal awareness and prevention program in 1982 in response to a rapid increase in the number of patients admitted to spinal units in Sydney in the late 1970s, including those injured in contact sport.[11] In the late 1980s, Taylor and Coolican reviewed the cases of acute spinal cord injuries in players of rugby union and other football codes in Australia between 1960 and 1985.[4] This research was updated in 2003 by the Spinecare Foundation and the Australian Spinal Cord Injury Units for 1986–1996.[6] In the 1990s, the National Health and Medical Research Council produced the report *Football injuries of the head and neck* in response to continuing head and spinal injuries in players.[12]

1 Measures to reduce the incidence of spinal injuries in rugby union

- Awareness programs for players, coaches and referees
- Careful player selection
- An emphasis on player fitness and neck-strengthening exercises
- Amendment of the rules of the game, particularly in relation to the scrum, tackle, ruck and maul
- Enforcement of the rules of the game

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Actions by rugby union authorities

In the UK, in 1980, the Rugby Football Union issued a definitive statement on rugby injuries in schools following work by the Medical Officers of Schools Association.[13] Subsequently, the Rugby Football Union set up a working party (which included Silver as chief witness) that brought about changes for school rugby relating to scrums, rucks and mauls. These changes became effective in the 1985/86 season on an international basis.[14]

In 1984 the Australian Rugby Football Union formed an inaugural safety committee (which included Yeo and Taylor) to investigate the laws of the game. The committee was instrumental in drafting the initial set of "under-19" law variations for the 1985 season. In particular, the "crouch–touch–pause–engage" sequence during scrum engagement was implemented to reduce the momentum of the forward packs. Many of these changes were subsequently introduced — at senior level in Australia in 1988 and internationally for all levels in 1990.[12] Since 1985, there has been a 67% reduction in the number of scrum-engagement spinal injuries recorded in Australia.[6]

Legal action by injured players

Research from both Australia and the UK records instances of legal action by injured players that have brought about change.

In the UK, important legal actions were brought by Van Oppen, Quinn and Smolden.[9] In the case of Smolden, in 1996, it was held that a referee who oversaw a colts rugby union match owed a duty of care in negligence to ensure that scrummages did not collapse dangerously.

In 2002, the Welsh Rugby Union accepted vicarious liability for a referee's failure to opt for uncontested scrums ("passive" scrums in which neither team is allowed to push — used as a safety measure when specialist front-row forwards are not available because of injury) following a scrum collapse in which a player was paralysed. Subsequent appeals by the Welsh Rugby Union to the Court of Appeal and the House of Lords failed. This case has highlighted the importance of referees enforcing uncontested scrum laws.

In 1987, an Australian court awarded damages to a schoolboy who suffered quadriplegia after a rugby league scrum in 1982. The state education department was found to have failed to warn the player and his coach that players with long necks were much more susceptible to spinal injury and should not be allowed to play in the front row of a scrum. This landmark case had considerable implications for rugby union in Australia.[12]

Delays to the amendment of scrum engagement laws in rugby union were subsequently raised in Australian cases.[6,15,16] While these cases did not succeed legally, they have increased community awareness of spinal injury in rugby.

Success in reducing spinal injuries

Box 2 shows the numbers of spinal injuries reviewed in particular years from 1970 in England, Australia, New Zealand and South Africa. These figures have no reference to total numbers playing the game, and data may not be complete. Nevertheless, they do provide some indication of spinal injury trends in each country.

Lack of success in reducing spinal injuries in New Zealand and South Africa

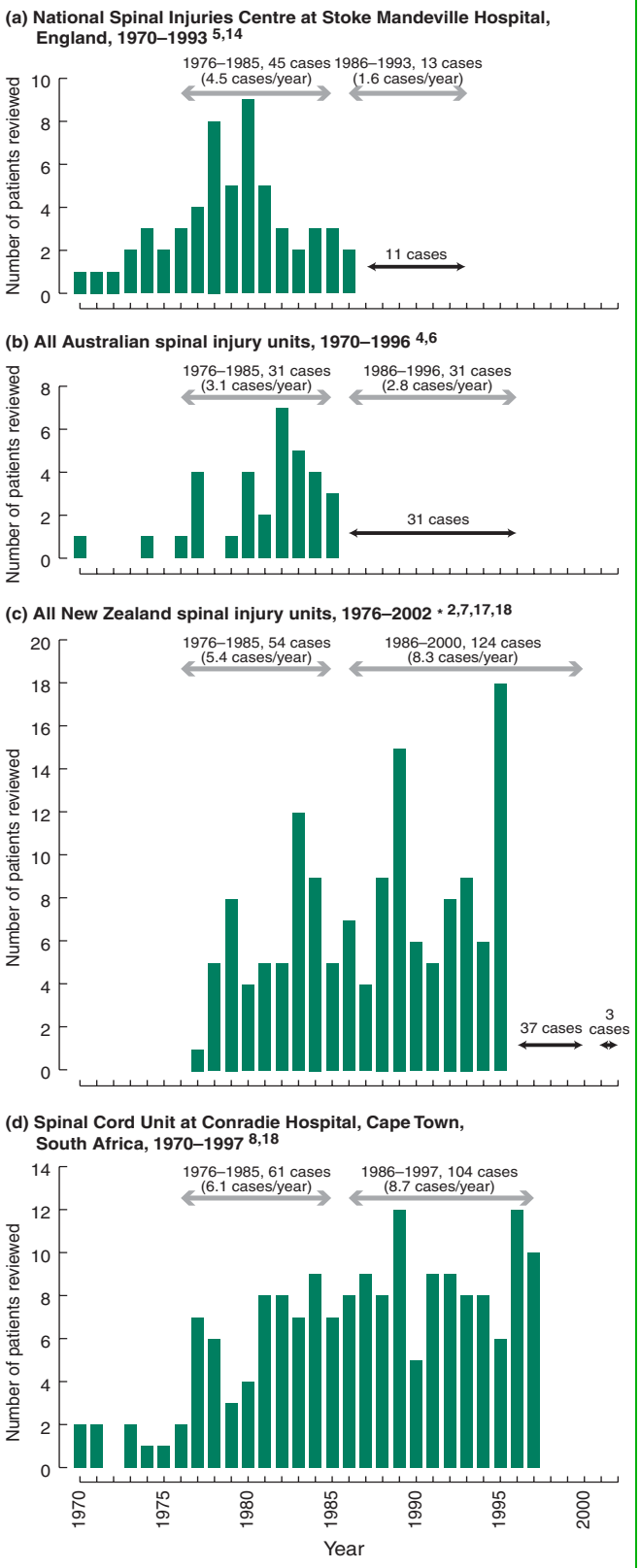
Significant research into spinal injury in rugby union has been undertaken by medical professionals in New Zealand and South Africa.[2,7,8,18,19] In New Zealand, there has also been support and actions by rugby union authorities to address the problem.[14]

Box 2 (c) and (d) shows that these efforts have not resulted in an overall reduction in frequency of spinal injuries in these countries during the late 1980s and 1990s.[2,8] In South Africa, it has been suggested that specific measures were not introduced in a timely manner during the late 1980s.[18] Similar disappointing trends have been recorded in nations with smaller numbers of players (the United States, Fiji and Argentina).[20-22]

Suggested reasons why there have not been reductions in spinal injuries in New Zealand and South Africa include the claim that the game is a "religion" in New Zealand and a "national obsession" in South Africa.[6,23] It is possible that these societal attitudes might be reflected in a more aggressive form of rugby at all levels than in the UK and Australia, where other codes of football are more popular.

Recent data (2001 and 2002) from the New Zealand Accident Compensation Corporation (ACC), which monitors sport, traffic

2 Spinal injuries in rugby union in England, Australia, New Zealand and South Africa between 1970 and 2002



* New Zealand data up until 1995 include 22 rugby league players.

and work injuries, has shown a reduction in recorded spinal injuries in rugby union.[17] This improvement may be due, in part, to recent surveillance and preventive efforts of the ACC in conjunction with the New Zealand Rugby Football Union.

Lessons and responsibilities

The important lesson from the past 30 years is that any progress in reducing spinal injuries in rugby union has generally resulted from rugby authorities and researchers working on the problems together. Significant international extension of this would require the implementation of the actions outlined in Box 3.

Despite calls for properly controlled studies and centralised registers for spinal injuries in rugby union since the 1970s, progress has been limited until recently.[2,12,24] Such national and international spinal injury registers would facilitate a closer working relationship between rugby union authorities and researchers. They would provide up-to-date information on the mechanisms of injury that could be used to support rule changes, plan appropriate awareness programs and monitor the effectiveness of such measures. The registers would also allow data from different countries to be accurately compared in terms of incidence rates rather than frequency of injuries per year.[25] With this knowledge, individuals would be in a better position to assess and manage the risks involved.

Unfortunately, there has been no specific publicly available record of the incidence of rugby union spinal injuries reported in Australia after 1996. It is not known whether the safety measures introduced so far have had a lasting impact. In addition, the effect of professionalism in the game (introduced in 1995) on the incidence of spinal injuries cannot be assessed. It is to be hoped that the International Rugby Board's commitment in November 2002 to establish an injuries database will be the beginning of such a process. With the financial success of the 2003 Rugby World Cup, it may also be an opportune time to address the inadequate compensation available to players with permanent spinal injury, as well as to improve insurance cover for all players.[5,6]

In 1975, J W Kyle, a former international rugby union player and surgeon, said: "Let us have no conspiracy of silence with regard to these serious injuries or to deaths on the rugby field. Our duty is to study the mechanisms of injury in all phases of the game. Then, and then only will we be able to take preventative action."[26] This statement is still relevant today.

3 Responsibilities for rugby union authorities internationally

- Establishing national and international spinal injury registers.
- Undertaking further analyses of the mechanisms of injury.
- Implementing and monitoring further law changes and awareness programs.
- Making up-to-date knowledge available to the public.

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Competing interests

None identified.

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