Preventing spinal cord injuries in rugby union
Other countries should follow New Zealand’s lead

Spinal cord injuries were first identified as an important sporting problem in the early and mid-1970s in rugby union, American (gridiron) football, and ice hockey. Subsequent studies have identified the most common mechanisms that cause these injuries. In some sports, such as American football, single mechanisms that cause spinal injury, such as the spear tackle, have been identified, which has allowed effective preventive measures to be swiftly implemented (the spear tackle has now been banned in gridiron football). But in other sports progress in preventing spinal injury has been slow and difficult to measure.

In this week’s BMJ, a before and after study by Quarrie and colleagues assesses the effect of RugbySmart, a nationwide educational injury prevention programme, on the frequency of spinal cord injuries in New Zealand rugby union. It found that the introduction of the programme in 2001 coincided with a reduction in the number of spinal injuries (19 injuries were expected between 2001 and 2005 compared with eight reported). Furthermore, only one such injury occurred in the scrum, whereas nine were predicted. The data are robust as they originate from appropriately processed insurance claims. The authors conclude that their educational programme can decrease the rate at which serious spinal cord injuries occur in the scrum.

Whether this intervention has the same effect in less controlled phases of the game—the tackle, ruck, and maul—remains unanswered.

To date, no single complete data set for all spinal cord injuries has been reported in any major rugby union playing country, despite repeated calls for such information for the past 20 years. Without such data, the impact of spinal cord injuries and the effect of preventive measures in any rugby playing nation remains unknown. Regrettably, the number of these injuries in South Africa may not have decreased even 22 years after the problem was first identified.

The study by Quarrie and colleagues provides a reason for renewed hope. The importance of the study is that it is unprecedented. Firstly, it shows that relevant data can be collected and used. Secondly, it establishes that at least some spinal cord injuries are preventable, as had previously been assumed. Thirdly, it sets the new standard. The study does have limitations though. It has a before and after design, which could be confounded by changes in the nature of the game or its players over the past five years that are unrelated to the introduction of the RugbySmart programme. A randomised controlled trial would have confirmed that the findings were not purely the result of a chance association.

Despite these limitations the results of the study are promising. Yet the study also highlights the need to do more; for example, to investigate other ways to prevent these injuries. These include training to improve neck strength and to enhance rugby related skills, increased medical supervision at matches, using protective gear, changes in the law, and continuing advocacy. Although the use of protective gear is actively enforced in certain sports, no such gear exists to prevent spinal cord injuries in rugby, and it may never do so. Changes in the law remain an option to reduce, for example, the possibility of vertex impact in front-on tackling. However, Quarrie and colleagues stress that although changes to the law can alter the way the game is played, such changes may not necessarily produce the desired outcomes.

All of the above methods for reducing injury are reasonable for developed countries whose players usually have sufficient access to quality training, coaching, and medical services. However, players in developing countries such as South Africa and Fiji, both of which have high rates of spinal cord injuries, are less likely to have access to such services. Rectifying this remains a challenging objective in these countries.

Advocacy is the final important strategy. Quarrie and colleagues’ study would not have been possible if the New Zealand government did not provide a national insurance policy that also covers sports injuries. This raises the question of whether these injuries will ever be entirely preventable without the active support of national governments.

The beauty of the RugbySmart programme is that it can do no harm, and according to the results of this study may do great good. Given the relative infrequency of these injuries, a randomised controlled trial may be desirable but financially impractical. Wise rugby administrators should procrastinate no longer, awaiting the outcome of a definitive randomised controlled trial. They should follow the lead of the New Zealand Rugby Union.

4 Tator CH, Edmonds VE. National survey of spinal injuries in hockey players. CMAJ 1984;130:875-80.