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## **Rugby**

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High degrees of serious injury are inherent in a high-contact sport with no body protection. Of particular concern are head, neck and spinal cord injuries. For those chiropractors novice in on-the-field athletic management, rugby provides a short course in the most serious management issues. From personal experience, I would say the likelihood of seeing concussions, fractures, dislocations and lacerations is extremely high in any given game, given a multiple-team event. This training ground for the novice sports chiropractor can be overwhelming and should include another experienced DC or MD. In fact, it is probably a good idea to always have some medical representation at large events.

### **General Rules and Strategy**

Generally, rugby teams consist of 15 players divided into 8 forwards and 7 backs. However, smaller configurations are allowed. It is important to note that no substitutions are allowed during a match except when there is an injury replacement. Yet, consider the motivation of players knowing that injured players are not allowed to return after leaving the game. This certainly reduces the number of injuries seen during the game, because players are motivated to continue playing even when hurt. Games usually are about 80 minutes long, divided into two 40-minute halves with no time-outs.

In an attempt to compare rugby to American football, spectators are often confused and assume a high degree of complexity; yet there are only two general rules that govern rugby. First, the players may not pass the ball forward; second, players are not allowed to touch the ball if it was touched behind them by players on their own team. When minor infractions of these rules occur, a scrummage or scrum is called.

A scrum involves all the forwards of each team locked together with their arms around each other's shoulders and their heads down. With the ball in the middle, the teams move as a wall, pushing and shoving against each other while the hooker attempts to hook the ball backward with their feet to one of the backs (called a scrum half). The scrum half can either run with the ball until tackled; pass the ball; or kick the ball

downfield. Once downed, the player must release the ball. Scoring is similar to football: a try (similar to a touchdown), and a conversion kick are possible.

### **Head and Neck Injury Patterns**

Due to the position of the players' heads in a scrum, forced hyperflexion is the most common injury. The two opposing packs of a scrum can generate forces equivalent to 1.5 tons. The hooker may sustain as much as 50% of the total force.

When serious injury occurs, such as permanent quadriplegia, two mechanisms are seen: anterior dislocation and bilateral locking of facets of the cervical spine, or anterior dislocation with unilateral locking of facets. This injury can also occur when the front row of the scrum collapses with the other players pushing over them. Finally, "crashing the scrum" may occur where the team forms the scrum far enough away from the opposing team to allow rushing towards them. While this is against the rules of rugby, it occurs more than it should because emotions run high and players attempt to intimidate the opposing team.

There are two variations of the scrum that occur during "loose play" (called, not surprisingly, a loose scrum). The two types of loose scrums are a ruck and a maul. In essence, these are occurrences when one or more players from each team are on their feet in physical contact and closing around the ball (ruck) between them, or around the player carrying the ball (maul). Injury occurs generally in three forms: 1) forward flexion of the ball carrier's neck; 2) charging into a group of engaged players headfirst; and 3) forced flexion of the neck of the bottom player in a ruck.

Tackling injuries are also common. Tackling is an attempt to stop the player with the ball by closing both arms around the player and forcing him/her to the side or down on the ground. There are three types of common injuries: 1) injuries from a tackler hitting the head against the ground (missed tackle) or the tackled player's thigh usually causing compression injury (compression fractures of the cervical spine); 2) high-tackle injuries involving single arm grabbing of the ball carrier's neck, causing flexion and rotation; and 3) double or "sandwich" tackles when two opponents purposely or inadvertently hit the ball carrier at the same time, with injury to all players possible.

A recent study by Scher,<sup>1</sup> involving a 10-year review of neck and spinal cord injuries in South Africa, found the following epidemiological injury patterns:

- Match play injury (versus practice) accounted for 98% of injuries.
- Adult and high-level players were more likely to sustain serious neck injuries.
- As with other studies, this study also indicated that four different types of plays accounted for the majority of injury. In a past study,<sup>2</sup> tackling accounted for 21% of injuries; being tackled, 30%; tight scrum, 21%; and ruck and maul 18% of all head, neck and spinal cord injuries.
- Backline players are injured most in tackling injuries; forwards are most injured in ruck and maul plays; and props and hookers are injured most in scrums.
- In the U.S. and England, 30% of all injuries result from crashing the scrum.

Unfortunately, knowing the mechanism of injury provides little in the way of a solution. However, this may raise the level of concern when an injured player sustains a neck injury. Given that rugby is an unprotected sport, and that the players pride themselves in this distinction, it is unlikely that any of the injuries listed above will decrease in frequency. Illegal play, such as crashing the scrum, is sometimes preventable; however, again this is an issue of player attitude. My experience is that providing the statistics to players does little to dissuade them from playing or motivate them to lobby for some protective gear.

There are several strategies that may be applied through coaching that better prepares the rugby player for the techniques and demands of the scrum.<sup>3</sup> For younger players, it has been suggested that weight matching is more appropriate than age matching. For all players, it has been recommended that coaches "depower" the scrum by teaching control with slow engagements and teaching props (the hooker support players) to crouch, touch, pause, and then engage. Finally, "sequential engagement" has been suggested, where the front row engages separately from the pack. Once a stable scrum is established, the rest of the pack joins.

Although this may paint a picture of Neanderthal macho men, it is clear from speaking to players that they come from all walks of life and a variety of professions, including attorneys, doctors, design engineers, etc. And of course, there are no gender lines; women's rugby is also alive and well.

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3. Wetzler MJ, Akpata T, Laughlin Q, Levy AS. Occurrence of cervical spine injuries during the rugby scrum. Am J Sports Med 1998;26:177-180.

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