

SOUTH AFRICAN RUGBY UNION

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BOKSMART - TACKLING HEAD AND NECK INJURIES



To tackle concussion effectively, if in doubt, sit the player out!

Simply put, concussion is a minor traumatic injury to the brain. Concussion seldom results from a direct blow to the brain, but rather from a direct or indirect blow to the head which causes the brain to move within the skull. This movement results in the brain accelerating in a forward, backward or rotational direction. Although linear (forward, backward) acceleration has a role to play, it is mostly the rotational acceleration that causes the temporary disruption to the functioning of the nerves (neurons) of the brain; this is known as a concussion. The brain therefore does not have to strike the skull for a player to suffer a concussion.

Where a player undergoes a 'whiplash' action, there might be no indication of a direct blow to the head at all, but the player may still show signs and symptoms of concussion. For example where a player is running forward and is suddenly stopped in a collision or driven backwards in a direct high-impact front-on tackle, it is possible that this player can also be concussed. This can damage some of the tiny blood vessels and nerve fibers, thereby temporarily stopping the brain from working properly.

When the brain does strike the skull or where the forward, backward or rotational forces are great enough to cause damage to the membranes surrounding the brain, or the blood vessels supplying blood to the brain; it can lead to a more serious situation. Here the brain can swell, and being in a confined space inside the bony skull, this situation, if left

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unmanaged can become serious, and therefore the need to see a medical doctor as soon as possible after the event.

These, however are very seldom found in rugby!

Time-loss injuries are when the player had to miss either a match or at least one day of normal or planned rugby activities. Time-loss injuries due to concussion, in the South African Rugby Union Youth weeks last year, ranged from 13 – 38% of all Time-loss injuries reported at these tournaments, depending on the level of the game. The higher 38% value positively reflects the strict application of the current management protocols applied at these Youth weeks, and also the BokSmart education on removing players from the field of play and from the remainder of the tournament following a suspected concussion. When looking at all medical attention injuries, i.e. when a doctor was required to assess the player, concussions ranged from 8 – 19% of all the injuries recorded at these same tournaments.

Because it is not an obvious and visible injury such as a hamstring injury, coaches, referees, players and spectators do not always give it the necessary respect that it is due. For if not managed properly, some concussion injuries can have devastating consequences. The majority of concussion injuries however, are minor injuries, and if managed correctly, should never end up in a severe or catastrophic outcome.

If managed correctly and conservatively and according to international evidence-based best practice principles the player can have a long rugby career with no more risk of catastrophic outcome than any other player on the field.

A suspected concussed player should be managed according to the international consensus guidelines available in the scientific research literature. Each case should be managed individually, as there is no blanket management approach that fits all.

How to identify, suspect and manage a suspected concussion, forms an integral part of the BokSmart programme's educational content on the Rugby Safety Course DVD's provided to all rugby coaches and referees around the country for free, and each coach and referee in attendance receives a pocket BokSmart Concussion Guide to use at practices and matches.

Extensive evidence-based information on this topic is also available on the BokSmart website at www.boksmart.com, and is promulgated via the BokSmart programme's social pages i.e. www.facebook.com/boksmart, www.youtube.com/boksmartsa and Twitter @BokSmart.

The referee and coach are often the first people who come into contact with a head or neck injured player, and decisive action may prevent further serious injury.

How does one suspect a concussion?

- If a player loses consciousness for any period of time
- If a player has memory loss
- If a player appears confused
- If a player does not understand calls or phase plays
- If a player complains of headaches, nausea, dizziness, sensitivity to light or noise, excessive, tiredness, numbness or tingling

If any of these symptoms are present, remove the player from the field.

If a player is uncertain about any of the following Maddock's questions, take him off

- What venue are we at?
- Who are we playing?
- Which half is it?
- Who scored last?
- What team did we play last week?
- Did we win last week?

Child Maddock's questions for kids aged 5 – 12:

- Where are we now?
- Is it before or after lunch
- What did you have last lesson/class?
- What is your teachers name?

All players suspected of suffering a concussion should be assessed by a medical doctor as soon as possible after the incident.

Any player who loses consciousness, is unsteady on their feet, or you in any way suspect to have suffered a significant neck injury, are to have their head and neck stabilised according to standard protocol. Players suspected of having suffered a significant neck injury or whose level of consciousness or condition deteriorates should be removed from the game or practice immediately and be taken to hospital. There should be no debate on this!

Important signs of a serious or deteriorating head injury – get them to hospital immediately! (RED FLAGS)

- Headaches that worsen
- Increasing drowsiness
- Inability to recognise people or places
- Deteriorating consciousness
- Increasing confusion or irritability
- Repeated vomiting
- Seizures or slurred speech
- Enlargement of one or both pupils
- Unusual behavioural changes
- Severe neck pain
- Weakness or numbness in the limbs

During the first 48-72 hours after the incident, a concussed player should not

- Consume any alcohol
- Take excessive painkillers
- Place self in an environment with excessive loud noise or bright light
- Work at a computer
- Exercise

Before a suspected concussed player can return to play, they should follow the international return-to-play guidelines protocol, and be completely symptom free or asymptomatic before commencing the process. They should also be assessed by a medical doctor who is sufficiently versed in the latest international standards for concussion assessment and management.

It is no longer ok to simply be cleared by a medical doctor alone, as the concussion science has evolved significantly over the last decade, and one needs to be in touch with the current research evidence out there. Players suspected of having suffered a concussion, have to undergo a general medical, neurological, balance and cognitive assessment by an appropriate clinician.

Once cleared by the doctor, the player has to further undergo a series of progressive exercise stress tests, and be without any symptoms throughout each session and the initial 24 hours after every phase. Before returning to contact training, and having undergone the first part of the return to play protocol, the player should be cleared by a medical doctor to do so. Only once having undergone the full protocol, having received medical clearance and going through the contact phase of the protocol without any symptoms, can the player be reintroduced to full contact training and match play.

The BokSmart philosophy is that the outcome of a properly managed concussion should never be catastrophic in nature, and proper education on preventing, identifying, managing, treating and rehabilitating a player before returning to match play, forms an integral part of the programme.

A few key TAKE HOME points to consider are:

1. Stabilise head injured players on-field, as you would for a neck injury, if there is a significant loss of consciousness, the player is clearly confused, or there is any suggestion of an associated neck injury
2. The concussed player must be assessed as soon as possible after the event by a medical doctor who is experienced in concussion management, and who holds knowledge of the current international and IRB guidelines on the matter
3. In circumstances where this is not possible, and the medical doctor does not have this knowledge, he should be referred to the BokSmart Website for the relevant information, and should follow the protocols provided
4. If a concussed or suspected concussed player shows any of the RED FLAGS or signs of a serious or deteriorating head injury, then get them to a hospital immediately
5. A seizure or fit may be a normal physiological response to head trauma, but repeated seizures or fits are a RED FLAG
6. Return-to-play on the same day is definitely not allowed under ANY circumstances
7. Whether a coach, referee, parent or player, it is your responsibility to ensure that any players suspected of suffering a concussion are cleared by a medical doctor before returning to play
8. Following a suspected concussion, and even if a player has been cleared by a medical doctor, the player must first follow the graded return-to-play process before returning to full match play

Return to play guidelines following concussion

1. Complete rest from physical activity – until asymptomatic & cleared by a doctor



(If asymptomatic after at least 1 day)



2. Light aerobic exercise – walking, swimming, stationary cycling

(HR range 100 – 140 bpm; 5 min warm up; duration 20 min)



(If asymptomatic after at least 1 day)



3. More intense sport-specific exercise – running, skipping, weights training

(HR range 140 – 180 bpm; 5 min warm up; duration 25 min)



(If asymptomatic after at least 1 day)



4. Non-contact training drills – passing, cutting, lineout jumping

(HR range 140-180 bpm; 5 min warm up; duration 30 min)



(If asymptomatic after at least 1 day)



5. Contact training – after a progressive warm-up - scrums, tackle bags, controlled live contact or simulated sport-specific sessions; duration 30 min, HR 140-180 bpm



6. Asymptomatic at rest and with exertion, normal neurological & cognitive exam, computerised neurological assessment returned to baseline or comparative norms (where available)



Cleared for match play!

*Each stage should take at least 24 hours, but can be longer in recurrent or severe cases. Progression to the following stage is governed strictly by the player being asymptomatic (that is without any symptoms); report any headache, dizziness, nausea or any other symptoms of concussion that might be relevant. Should the player become symptomatic (or with any symptoms), they should return to the previous (asymptomatic) stage and contact the **doctor** in charge. In association with the medical team, coaches must ensure that a concussed player has fulfilled these criteria before returning to **full-contact training (Stage 5) and match play.***

For additional up to date evidence-based information on concussion, its treatment and management, go to www.BokSmart.com

Where no medical doctor is available to confirm concussion, it is recommended that a suspected concussed player be removed from any contact or collision sport for a mandatory stand-down period of 14 days. This 14 day period only begins once the player is completely asymptomatic. Following this 14-day stand-down period, the player must undergo the full graduated return to play protocol under the minimum supervision of a responsible adult.

In this instance the BokSmart Concussion Guide can be utilised to monitor signs and symptoms. The player is nonetheless still required to be cleared by a medical doctor before participating in Stage 5 of the return to play protocol. The final decision for return to play following concussion remains a medical decision, one that is made by a medical doctor who is versed in the current best practice concussion management guidelines.

If they are on the deck, think about the neck!

For a suspected serious or catastrophic neck injury, one should always take full precautions, even if you are unsure. No game is worth a player's life. Even if the player is found to be fine afterwards, it is best practice to address the situation proactively, with a worst case scenario in mind.

Only suitably qualified and experienced medical professionals can make the call on a suspected seriously injured player returning to the fray.

The mechanism that caused the neck injury e.g. spear tackle, scrum engagement, scrum collapse, head on the wrong side of the tackle or high tackle is the first consideration when suspecting such an injury, as these events have stronger associations with cervical spinal rugby injuries.

Thereafter one would look for the following RED FLAGS:

1. Deformity or misalignment of the spine
2. Significant pain at the site of injury
3. Inability to move the arms or legs
4. Inability to feel sensation in the arms or legs
5. Significant 'pins and needles'
6. Noticeable swelling at the site of injury
7. Breathing using the stomach only
8. Priapism or erection
9. Abnormally low heart rate

The player may have one, a few, or all of these symptoms. One should react to ANY of these RED FLAGS, even if you are not sure, and take full cervical spine precautions.

The immediate initial assessment of a spinal injured rugby player on-field is extremely difficult and might not always be accurate, as the player may suffer from spinal shock. The player's symptoms might recover to some extent once spinal shock resolves, and therefore one should treat every potential spinal injury as if it could be reversed.

What this effectively means, is that every potential spinal injury should be treated as a matter of urgency and with extreme caution. These players should be appropriately stabilised and transported as soon as possible to a suitable hospital with a spinal surgeon in attendance.

Most head and neck injuries are minor injuries and are mostly soft tissue injuries and lacerations i.e. bumps, bruises, muscle strains, ligament sprains, cuts and grazes.

Very seldom will you find a catastrophic outcome.

Our current statistics are estimated at around 1.04 per 100 000 players for permanent Acute Spinal Cord Injuries (including fatalities, quadriplegics, and players with remaining neurological deficits), and 0.25 per 100 000 players for Traumatic Brain Injuries (severe or catastrophic brain injuries, which lead to disability or fatality).

These numbers, in relation to the number of player exposure hours to the game of rugby in any given year are very low.

Severe neck injuries are the most devastating form of rugby injury and most often have life-changing consequences for the player. The treatment as well as the management of personal care is often extensive and financially draining.

Even though not many severe and/or catastrophic neck injuries occur (in relation to the number of hours that players are exposed to the game of rugby), it is SARU's viewpoint that any severe and/or catastrophic neck injury incurred is unacceptable, and it is for that reason alone that the BokSmart Rugby Safety programme was developed.

Key steps in preventing these kinds of injuries:

- *The creation of awareness programmes and training courses for coaches, referees & medical support staff*
- *Astute player selection, e.g. do not choose someone to play in the front row if they are not physically suited, conditioned or adequately coached for it*
- *Constantly assess and amend the laws of the game, especially in the contact situations, e.g. rucks, mauls, scrums and tackles*
- *Impose the laws – referees have to be ultra-strict with these infringements and players should be punished for contravening them*
- *Emphasize strength and conditioning of the players with specific attention to neck strengthening exercises*

The BokSmart programme focuses on these key steps in an active attempt to limit these kinds of injuries.

As the controlling body of rugby in South Africa, SARU has a duty of care to ensure that, within the constraints of the game we do our utmost to ensure the safety of our players. It is within this capacity that the programme is compulsory for all coaches and referees in South Africa, regardless of their level of participation.

Key aspects of prevention are elaborated upon within the DVD facilitated BokSmart Rugby Safety courses and participants are directed to the expert content available on the BokSmart website and other media platforms for additional material. The aspects of prevention above are the core focus areas of the programme, and are emphasised over all educational platforms and in all materials.

One aspect that can actively have a significant preventative impact on these kinds of injuries is proper coaching, physical conditioning, technical preparation and sensible selection of players in playing positions with documented stronger associations to serious head, neck or spine rugby injuries.

Active prevention is the main focus of the DVD facilitated course and focuses on correct and safe techniques, with a special focus on the contact areas of the game such as the scrum, tackle, ball carry and ruck situations. Many of the injuries that happen can be prevented by simply addressing and correcting scrum, tackle, ball carry and ruck techniques in training; and on match-day, having the referees ensure that the game is played accordingly and to the Laws of the game.

Not only will it protect the players, it has also been shown that the safest techniques in contact are also the most effective in these situations, so there is a gain in the quality of the player, with less risk of injury.

Concussion cannot be prevented by wearing scrum caps and mouth guards! There is no high level research evidence currently available to support these claims.

By using the correct technique of approach, getting your feet, body, head and neck in the right place, and controlling the contact, one can limit the number of situations that could potentially lead to concussion and/or neck injury.

Albeit that it is difficult to study this prospectively in a randomised clinical trial, neck strengthening and conditioning, by inference of other muscle group and joint-related studies, may potentially have a positive effect in limiting the severity of neck injuries.

For more information on the above, go the website www.boksmart.com



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