



# BokSmart Information Pack on Concussion



*The following Documents are prepared for the purpose of educating and circulating to all the players, parents, or families of those participating in Rugby at your School or Club.*

*This will assist them in making better 'player safety' decisions with regards to their own/son/daughter/spouse's medical management, care at home, and ultimately making best practice informed return to play decisions.*

*Please ensure that everyone is aware of World Rugby and SARU's requirements in terms of best practice identification, treatment, and management of these types of injuries.*

***We are dealing with the BRAIN  
here, NOT a muscle!***

*For more information on Concussion go to*

*[www.BokSmart.com/Concussion](http://www.BokSmart.com/Concussion),*

*[https://www.springboks.rugby/general/boksmart-  
medical-protocol-concussion-blue-card/](https://www.springboks.rugby/general/boksmart-medical-protocol-concussion-blue-card/),*

*[www.sportsconcussion.co.za](http://www.sportsconcussion.co.za), and*

*[https://passport.world.rugby/player-welfare-  
medical/concussion-management-for-the-general-public/](https://passport.world.rugby/player-welfare-medical/concussion-management-for-the-general-public/).*



# Concussion Pack Content

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4. When can a player safely return to play
5. Graduated Return to Sport (GRTS) Infographic
6. Returning to Learning
7. Concussion Prevention



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[www.BokSmart.com](http://www.BokSmart.com)



## Concussion Advice Sheet

### What is a concussion?

A concussion is an **injury to the brain** caused by a direct or indirect blow to the head or caused by the head striking something else such as the ground or a bony hip. A concussion can occur **whether or not a person is “knocked out.”** A concussion typically causes the rapid onset of short lived impairment of brain function that resolves spontaneously with time. However, occasionally there can be a more significant or longer lasting problem, and it is important that the symptoms from every concussion be monitored by team medics and doctors who understand concussion management protocol. When you suffer a concussion, you may suffer from:

- Physical symptoms e.g. headaches, nausea, dizziness, tiredness, intolerance of bright light
- Concentration difficulties, memory loss, difficulty reading or using a computer
- Emotional changes such as mood swings, irritability and aggression
- Sleeping pattern changes – sleeping more or difficulty falling asleep

### What should I watch for? (“Red Flags”)

After evaluation by a sideline medic, it may be determined that you are safe to go home. If you are sent home, you should not be left alone. A responsible adult must accompany you. Symptoms from your concussion may persist when you are sent home but should not worsen, nor should new symptoms develop.

Important symptoms to monitor over the next 48 hours include:

- Headaches that worsen
- Severe neck pain
- Loss of feeling or use of an arm or leg
- Confusion
- Slurred speech
- Deteriorating consciousness
- Seizures (fits)
- Repeated vomiting

References: SCAT3 and Child SCAT 3 (Zurich 2012) McCrory P, et al. Br J Sports Med 2013;47:250–258;  
IRB Player Welfare <http://www.irbplayerwelfare.com/?documentid=module&module=21>;  
NCAA Concussion Fact Sheet for Students [http://fs.ncaa.org/Docs/health\\_safety/ConFactSheetsa.pdf](http://fs.ncaa.org/Docs/health_safety/ConFactSheetsa.pdf)

The presence of **ANY** of these requires **urgent medical attention** and usually a **brain scan**. Report to a hospital casualty, preferably one with a neurosurgeon and brain scanning facilities.

### **Is it okay to go to sleep?**

Concussion often makes a player feel drowsy or tired. Once you have been medically assessed, as long as you are not getting worse, as noted above, it is alright for you to sleep. We do however want the responsible adult to be at home with you in case any problems arise.

### **May I take something for pain?**

Do not take any medication unless a doctor has told you to do so. Normally, we do not advise anything stronger than paracetamol (e.g. Panado). **Avoid anti-inflammatories** e.g. Voltaren, Cataflam, Brufen etc. and anything containing codeine e.g. Myprodol

### **What should I avoid doing?**

**Avoid** actions that may worsen your symptoms, slow down recovery or place you at risk

- Do not consume **caffeine** (including coffee) or any other stimulants
- Stop taking any **supplements** that you may be using
- Do not consume **alcohol** for at least 48 hours after a concussion and until cleared by a medical doctor
- Do not **drive** a motor vehicle or motorcycle or ride a bicycle until cleared by a medical doctor
- Do not **exercise** at all until medically cleared to do so
- Do not spend long periods behind a **computer**, playing video games, watching TV or reading

### **May I eat after the practice or game?**

It is fine for you to eat if you are hungry. Remember, some athletes do have a sense of nausea and fatigue, and often find that their appetite is decreased immediately after a concussion. Do not force yourself to eat.

### **How long will I be observed?**

You must follow up with a medical doctor after your suspected or confirmed concussion. You must be monitored regularly and your symptoms observed until they have completely cleared. You must refrain from any physical exertion including strength conditioning until released to do so by the medical staff. Return-to-practice and return-to-play decisions are made at the appropriate time by the team physicians and these may differ from player to player.

References: SCAT3 and Child SCAT 3 (Zurich 2012) McCrory P, et al. Br J Sports Med 2013;47:250–258;  
IRB Player Welfare <http://www.irbplayerwelfare.com/?documentid=module&module=21>;  
NCAA Concussion Fact Sheet for Students [http://fs.ncaa.org/Docs/health\\_safety/ConFactSheetsa.pdf](http://fs.ncaa.org/Docs/health_safety/ConFactSheetsa.pdf)

Additional testing will be considered (e.g. computerized brain function testing) and this should be explained to you during your follow up visits. Determining if school activities (e.g. class, exams) need to be modified can also be evaluated by your doctor.

There are however mandatory stand-down periods, and different stage durations based on your age at the time of injury. This information can also be found on [www.BokSmart.com](http://www.BokSmart.com) at the following link: [www.BokSmart.com/Concussion](http://www.BokSmart.com/Concussion).

**If symptoms persist, what other support is available to me?**

Your concussion may make it difficult to **concentrate, study, and/or attend class**. In such a situation, it’s important for you to discuss with your medical team and teachers, different options for receiving academic support during this time including:

- (1) short-term adjustments such as a shorter school day, working in an isolated & quiet environment and limited reading and computer work
- (2) extended accommodations to be made regarding your academic assessments including deferring or allowing for additional time.

These options usually involve disclosing some information about your medical condition to other School or University offices and/or personnel

**Important Contacts:**

Designation	Name	Tel no.	After hours no.	Email / Website
Doctor				
Hospital				
School/Club nurse				
BokSmart SpineLine operated by ER24		0800 678 678	0800 678 678	<a href="http://www.boksmart.com/Concussion">www.boksmart.com/Concussion</a>
Sports Concussion SA		011-3047724	0825746918	<a href="http://www.sportsconcussion.co.za">www.sportsconcussion.co.za</a> <a href="mailto:sportsconcussion@mweb.co.za">sportsconcussion@mweb.co.za</a>

*Document Compiled by Dr Jon Patricios*

References: SCAT3 and Child SCAT 3 (Zurich 2012) McCrory P, et al. Br J Sports Med 2013;47:250–258;  
 IRB Player Welfare <http://www.irbplayerwelfare.com/?documentid=module&module=21>;  
 NCAA Concussion Fact Sheet for Students [http://fs.ncaa.org/Docs/health\\_safety/ConFactSheetsa.pdf](http://fs.ncaa.org/Docs/health_safety/ConFactSheetsa.pdf)



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**Concussion Referral Note by Medical Personnel**

\_\_\_\_\_ has been assessed as having suffered either a suspected or confirmed  
concussion on \_\_\_\_\_ (date)

A SCAT5 Evaluation form is / is not attached

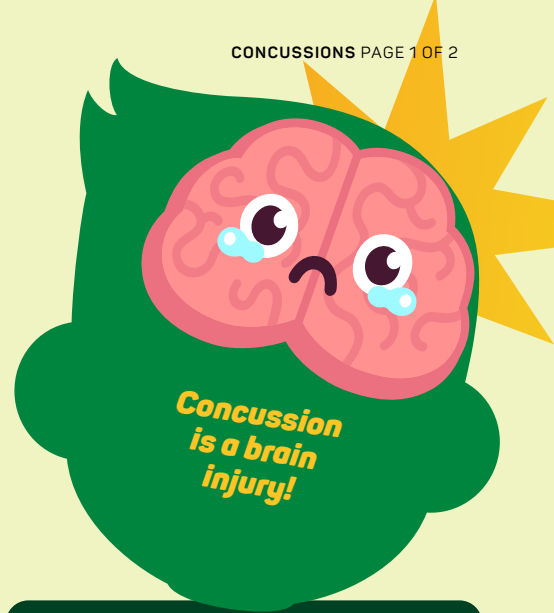
The patient has been referred:

- to \_\_\_\_\_ hospital for further evaluation
- to home with a responsible adult for monitoring.

It is recommended that the guidelines on this form are strictly adhered to and that Dr \_\_\_\_\_  
at contact number \_\_\_\_\_ is consulted for further evaluation and advice.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_ Tel no.: \_\_\_\_\_

# CONCUSSION MANAGEMENT



## PREVENTION 5Es

- 1. EDUCATE** your team, club or school on concussions
- 2. ENFORCE** the laws, protocols and policies in your players
- 3. ENHANCE** your players' protection against concussion by preparing them properly for rugby
- 4. EQUIP** your players with the right information about what works and what does not
- 5. EVALUATE** your concussion prevention process and policies yearly to ensure that you remain up to date with what is expected at the time

## IDENTIFICATION 6Rs

- 1. RECOGNISE** concussions
- 2. REMOVE** the player
- 3. REFER** them to a medical doctor to clear them of any complications, NOT for going back to rugby
- 4. REST** them according to their age-group requirements
- 5. RECOVER** until sign and symptom free
- 6. RETURN** them to play, once they have gone through the rugby specific return to sport process without any hiccups

## MANAGEMENT MEDICAL CLEARANCE STEPS

- 1. Medical doctor clearance** of complications straight after event
- 2. Clearance to start GRTS** after age-appropriate stand-down period
- 3. Clearance to progress** to full contact after Stage 4 of GRTS

## MADDOCKS' QUESTIONS

### QUESTIONS YOU NEED TO ASK TO PLAYERS 13 YEARS OF AGE AND OLDER

- What venue are we at?
- What team are you playing?
- What half is it?
- Who scored last in this game?
- Who did you play last week/game?
- Did your team win the last game?

### QUESTIONS YOU NEED TO ASK CHILDREN AGED 5 - 12

- Where are we now?
- Is it before or after lunch?
- What did you have last lesson/class? or Who scored last in this game?
- What is your teacher's/coach's name?

Where there is any hesitation, uncertainty or one cannot verify the information, have the player permanently removed from the game or training session, and suspect a concussion.

## MONITORING: CONCUSSION REGISTER

1. Must be done by a responsible person at School or Club
2. Step by Step monitoring of progression through the rugby-specific GRTS
3. Recordal of medical steps and processes

## SIGNS AND SYMPTOMS

### WHAT YOU NEED TO LOOK FOR?

- Dazed, vacant or blank expression
- Lying motionless on the ground or very slow to get up
- Unsteady on feet
- Balance problems or falling over
- Poor coordination
- Loss of consciousness or lack of responsiveness
- Confused or not aware of plays or events
- Grabbing or clutching the head
- Convulsions
- More emotional or irritable

### WHAT THE PLAYER MIGHT TELL YOU

- Headache
- Dizziness
- Confusion or feeling slowed down
- Struggling with or blurred vision
- Nausea or vomiting
- Fatigue
- Drowsy, feeling in a fog or difficulty concentrating
- A feeling of pressure in the head
- Sensitivity to light or noise
- Memory loss for events before, during or after the game or practice



NAME OF PLAYER	SURNAME OF PLAYER	TEAM PLAYED FOR	DIVISION	AGE	DATE OF BIRTH	COACH	DATE OF CONCUSSION/SUSPECTED CONCUSSION	DATE OF MEDICAL ASSESSMENT TO RULE OUT COMPLICATIONS	NAME OF MEDICAL DOCTOR	COMPULSORY RECOVERY REST PERIOD USED	CLEARANCE RECEIVED TO ENTER GRADUATED RETURN TO PLAY PROCESS	DATE OF MEDICAL ASSESSMENT CLEARANCE RECEIVED	DATE OF COMPLETION OF GRTP	SIGNED OFF & ACKNOWLEDGED BY COACH	DATE RETURNED TO FULL MATCH PLAY
Clint	Readhead	Senior Adult	d	46	May 14, 1970	Dawie Snyman	August 1, 2016	August 2, 2016	Dr Jerome Mampane	1 week	Yes	August 9, 2016	August 13, 2016	Yes	August 20, 2016





# THE REFEREE SPOTLIGHT BLUE CARD

**SA RUGBY CONCUSSION REGULATIONS**  
<https://www.springboks.rugby/general/boksmart-legislation>

## BLUE CARD CONCUSSION PROCESS

1. Referee or Medical professional recognises a potential concussion event
2. Referee then signals Blue Card to the player
3. Visual cue to all watching → Concussion or suspected concussion
4. Player is permanently removed from the field of play
5. Player is logged onto the Club or School's submitted Team Sheet as a Concussion
6. Referee to submit Blue Card report to the Provincial Rugby Union
7. Referee, Coach, Team management, Player, Parent or Family member logs the Blue Card onto the SA Rugby Online software [bluecard.footprintapp.net](http://bluecard.footprintapp.net)
8. All contact persons listed when logging the Blue Card on the App will receive emailed advice on the required GRTS processes to follow with the player
9. All Blue Card concussion events recorded on the App will be stored on a national database
10. Sport Concussion SA's information:  
**011-3047724, 0825746918,**  
Email: [sportsc concussion@mweb.co.za](mailto:sportsc concussion@mweb.co.za) will also be emailed to them should they wish to access Medical Doctors who are sufficiently knowledgeable in Concussion management for rugby union

The following are 11 **OBVIOUS SIGNS & SYMPTOMS** that you as a referee, coach or medical support staff simply cannot miss, and cannot allow players presenting with any of these to continue in a match or practice. **THESE ARE IMMEDIATE BLUE CARDS!**

### THOSE SIGNS AND SYMPTOMS TYPICALLY SEEN ON-FIELD:

1. Confirmed loss of consciousness; this is clear and obvious, the player was knocked out
2. Suspected loss of consciousness, or from what you saw happen on the field, where you have a strong suspicion of the player having lost consciousness
3. Convulsions or fits after making contact
4. Tonic posturing, abnormal muscle contractions or muscle stiffening
5. Balance disturbance, ataxia, stumbling or falling over
6. Clearly dazed, dinged or unable to think or react properly

### THOSE ADDITIONAL SIGNS AND SYMPTOMS TYPICALLY IDENTIFIED DURING AN ON-FIELD ASSESSMENT:

7. The player is clearly not orientated in time, place or person or doesn't know what time it is, where they are or who they are talking to
8. Definite signs of confusion in the player
9. Definite changes in behaviour for that player
10. Oculomotor signs for e.g. spontaneous nystagmus or rapid involuntary eye movements
11. On-field identification of regular signs or symptoms of concussion as highlighted in your pocket BokSmart Concussion Guides

**LAW 3.22 (C):** The referee decides (*with or without medical advice*) that it would be inadvisable for the player to continue. The referee orders that player to leave the playing area.

**LAW 3.24:** 'If, at any point during a match, a player is concussed or has suspected concussion, that player must be immediately and permanently removed from the playing area. This process is known as "RECOGNISE AND REMOVE".'



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## When can a player safely return to play following a concussion?

### Why is it so important to return to play at the appropriate time?

Returning too soon following a concussion may have serious short and long-term consequences including:

- More serious brain injury and even death
- Prolonged symptoms lasting weeks or months
- Greater risk of further concussions
- Interference with studies (school and university) and work
- Poor performance on the Rugby field
- Long-term, permanent brain effects including memory loss and emotional disturbances.

### Mandatory rest periods

Unless advised by a medical doctor with expertise in concussion management, the following minimum rest periods are prescribed for players suspected of sustaining a concussion in Rugby:

**Players 18 and younger** – rest for a minimum of 2 weeks, followed by a 4-day minimum period of Graduated Return To Sport (**GRTS**, see protocol below)

**Players 19 and older** – rest for a minimum of 1 week followed by a 4-day minimum **GRTS**.

These minimum periods only apply if the player no longer has **ANY** symptoms of concussion remaining.

**Note: It is recommended that, in all cases of suspected concussion, the player be referred to a medical professional**

## The Graduated Return To Sport (GRTS) Protocol




**GRTS** Protocol – each Stage progression AFTER the stand-down period is a minimum of 24 hours

Stage	Rehabilitation	Objective	Exercise Allowed
1	Minimum age-appropriate rest period.	Recovery	<ul style="list-style-type: none"> <li>Complete body and brain rest for the first 24-48 hours</li> <li>Followed by rest and light exercise (walking, slow, stationary cycling) that does not worsen symptoms</li> </ul>
2	Light aerobic exercise (20 min)	Increase heart rate	<ul style="list-style-type: none"> <li>Light jogging, swimming or stationary cycling at low to moderate intensity.</li> <li>No resistance training.</li> <li>Symptom free during full 24-hour period.</li> </ul>
3	Sport-specific exercise (25-30 minutes)	Add movement	<ul style="list-style-type: none"> <li>Running drills.</li> <li>No head impact activities</li> </ul>
4	Non-contact training drills	Exercise, coordination, and cognitive load	<ul style="list-style-type: none"> <li>Progression to more complex training drills, e.g. passing drills.</li> <li>May start progressive resistance training.</li> <li>Player MUST be medically cleared at the end of this Stage before going to Full-contact training or Stage 5</li> </ul>
5	Full Contact Practice	Restore confidence and assess functional skills by coaching staff	<ul style="list-style-type: none"> <li>Normal rugby training activities</li> <li>If player remains sign and symptom-free for the full 24 hours, they then move onto Stage 6</li> </ul>
6	Return To Match Play/ Sport	Recover	<ul style="list-style-type: none"> <li>Player rehabilitated and can be progressively re-introduced into full match play</li> </ul>

### Notes:

- ***a player may only start the GRTS process once cleared by a medical doctor and all symptoms have cleared***
- ***a player may only progress to the next stage if no symptoms occur during or after exercise in each stage***
- ***a player must again be cleared by medical doctor before starting full-contact training***

**Summary of Graduated Return To Sport (GRTS) Criteria for Rugby**

AGE GROUP	COMPULSORY REST PERIOD POST CONCUSSION		GRTS		NUMBER OF MISSED FULL WEEKS
<i>Players 18 and younger</i>	Minimum of <b>2 weeks</b> off before starting the <b>GRTS</b> process, even longer if any signs or symptoms remain.	Caution! Return To Sport protocol should be started only if the player is symptom free and off medication that modifies symptoms of concussion	4 Stage <b>GRTS</b> with progression every <b>24 hours</b> if no symptoms. <b>Total GRTS days = a minimum of 4 days.</b>	Caution! Contact Sport should be authorized only if the player is symptom free and off medication MEDICAL CLEARANCE REQUIRED	<b><u>Earliest Return To Sport</u></b> = 2 weeks rest post injury + 4 days <b>GRTS</b> (Play - <b>Day 19</b> post injury)
<i>Players 19 and older</i>	Minimum of <b>1 week</b> off before starting the <b>GRTS</b> process, even longer if any signs or symptoms remain.				<b><u>Earliest Return To Sport</u></b> = 1 week rest post injury + 4 day <b>GRTS</b> (Play - <b>Day 12</b> post injury)
 <p><b>Any player with a second concussion within 12 months, a history of multiple concussions, players with unusual presentations or prolonged recovery should be assessed and managed by health care providers (multidisciplinary) with experience in sports-related concussions. It is recommended that if this expertise is unavailable then as a minimum the player should be managed using the protocol from the lower age group i.e. 1. 'Players 19 and older' uses the 'Players 18 and younger' protocol and 2. for 'Players 18 and younger' the minimum rest period should be <u>doubled</u>. However, the medical doctor clearance is non-negotiable and must always be provided before entering the <b>GRTS</b> and before starting full-contact training, regardless of who is available to manage or monitor the <b>GRTS</b> process.</b></p>					

**NOTE:** Exceptions to SA Rugby's and World Rugby's Concussion protocols are only allowed where a player has access to an Enhanced Care clinical setting.

*Advanced care settings include:*

- (1) Medical doctors with training and experience in recognising and managing concussion*
- (2) Access to brain imaging facilities and neuro-radiologists*
- (3) Access to a multidisciplinary team of specialists including neurologists, neurosurgeons, neuropsychologists, neurocognitive testing, balance and vestibular rehabilitation therapists.*

## **REFERENCES**

1. Purcell L. What are the most appropriate return-to-play guidelines for concussed child athletes? *Br J Sports Med* 2009; 43 (Suppl 1): i51-i55
2. Schneider KJ et al. The effects of rest and treatment following a sports related concussion: a systematic review of the literature. *Br J Sports Med* 2013; 47: 304-307
3. McCrory P et al. Consensus Statement on Concussion in Sport 3rd International Conference on Concussion in Sport, Zurich. *Clinical J Sports Med* 2009; 19: 185-200
4. McCrory P et al. Consensus statement on concussion in sport—the 5<sup>th</sup> international conference on concussion in sport held in Berlin, October 2016. *Br J Sports Med* 2017; 0:1–10. doi:10.1136/bjsports-2017-097699

*Document Compiled by Dr Jon Patricios*

**PLEASE USE A  
COMMON SENSE  
APPROACH**



*You don't need a handbook to identify a suspected concussion. If you suspect one, take the player off, it's really that simple*

# THE GRADUATED RETURN TO SPORT (GRTS) PROTOCOL

EACH STAGE PROGRESSION **AFTER** THE STAND-DOWN PERIOD IS A MINIMUM OF **24 HOURS**

STAGE	REHABILITATION	OBJECTIVE	EXERCISE ALLOWED
<b>1</b>	Minimum age-appropriate rest period	<b>RECOVERY</b>	<ul style="list-style-type: none"> <li>Complete body and brain rest for the first 24-48 hours</li> <li>Followed by rest and light exercise (walking, slow, stationary cycling) that does not worsen symptoms</li> </ul>
<b>2</b>	Light aerobic exercise (20 minutes)	<b>INCREASE HEART RATE</b>	<ul style="list-style-type: none"> <li>Light jogging swimming or stationary cycling at low to moderate intensity</li> <li>No resistance training</li> <li>Symptom free during full 24-hour period</li> </ul>
<b>3</b>	Sport-specific exercise (25-30 minutes)	<b>ADD MOVEMENT</b>	<ul style="list-style-type: none"> <li>Running drills</li> <li>No head impact activities</li> </ul>
<b>4</b>	Non-contact training drills	<b>EXERCISE, COORDINATION AND COGNITIVE LOAD</b>	<ul style="list-style-type: none"> <li>Progression to more complex training drills, e.g. passing drills</li> <li>May start progressive resistance training</li> <li>Player <b>MUST</b> be medically cleared at the end of this Stage before going to Full-contact training or Stage 5</li> </ul>
<b>5</b>	Full-contact practice	<b>RESTORE CONFIDENCE AND ASSESS FUNCTIONAL SKILLS BY COACHING STAFF</b>	<ul style="list-style-type: none"> <li>Normal rugby training activities</li> <li>If player remains sign and symptom-free for the full 24 hours, they then move on to Stage 6</li> </ul>
<b>6</b>	Return to match play/sport	<b>RECOVER</b>	<ul style="list-style-type: none"> <li>Player rehabilitated and can be progressively re-introduced into full match play</li> </ul>

**NOTES:**

- a player may only start the GRTS process once cleared by a medical doctor and all symptoms have disappeared
- a player may only progress to the next stage if no symptoms occur during or after exercise in each stage
- a player must again be cleared by medical doctor before starting full-contact training

**AGE-APPROPRIATE STAND-DOWN & GRTS – EARLIEST RETURN TO SPORT**

**PLAYERS 18 AND YOUNGER:** 2 weeks rest post injury + 4 days GRTS (Earliest return to rugby – Day 19 post injury)

**PLAYERS 19 AND OLDER:** 1 week rest post injury + 4 day GRTS (Earliest return to rugby – Day 12 post injury)

PLAYER AGE GROUP	COMPULSORY REST PERIOD POST CONCUSSION	CAUTION!	GRTS	CAUTION!	NUMBER OF MISSED FULL WEEKS
<b>18 AND YOUNGER</b>	Minimum of <b>2 WEEKS</b> off before starting the GRTS process, even longer if any signs or symptoms remain	<b>CAUTION! Return To Sport protocol should be started only if the player is symptom free and off medication that modifies symptoms</b>	4 Stage GRTS with progression every 24 hours if no symptoms. Total GRTS days = a minimum of 4 days	<b>CAUTION! Contact Sport should be authorised only if the player is symptom free and off medication</b>	Earliest Return To Sport = 2 weeks rest post injury + 4 days GRTS (Play – <b>DAY 19</b> post injury)
<b>19 AND OLDER</b>	Minimum of <b>1 WEEK</b> off before starting the GRTS process, even longer if any signs or symptoms remain				Earliest Return To Sport = 1 week rest post injury + 4 days GRTS (Play – <b>DAY 12</b> post injury)

**CAUTION:** Any player with a second concussion within 12 months, a history of multiple concussions, players with unusual presentations or prolonged recovery should be assessed and managed by health care providers (*multidisciplinary*) with experience in sports-related concussions. It is recommended that if this expertise is unavailable then as a minimum the player should be managed using the protocol from the lower age group.

**EXAMPLE:** 1. 'Players 19 and older' uses the 'Players 18 and younger' protocol and 2. for 'Players 18 and younger' the minimum rest period should be doubled.

However, the medical doctor clearance is non-negotiable and must always be provided before entering the GRTS and before starting full-contact training, regardless of who is available to manage or monitor the GRTS process.





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## “Return to Learning” (RTL) after Concussion

### **Important introductory NOTE for parents, teachers, and lecturers!**

This article talks about ‘concussed’ players, which implies a confirmed diagnosis of concussion. However, it is equally important to include those players who are suspected of having a concussion into this grouping. In many cases of concussion, the development of signs and symptoms is delayed. Therefore, when concussion is suspected, but the players do not show any classic signs or symptoms of concussion to initially confirm diagnosis, they should be monitored and treated in exactly the same way as the confirmed cases of concussion.

For clarity and for more information on SARU’s position on concussion in rugby, and the **SARU Regulation on Concussion**, go to the following link: <https://www.springboks.rugby/general/boksmart-legislation/>. The SARU regulation also stipulates a mandatory graduated return-to-play process for players suspected of sustaining a concussion at school or amateur rugby. This process can also be sourced from the BokSmart website at the following page: [www.BokSmart.com/concussion](http://www.BokSmart.com/concussion)

### **What’s happening to the concussed brain?**

There is microscopic damage to the cells and nerves of the concussed brain and brain function is disrupted following complex chemical changes. There appears to be a “mismatch” between the brain’s energy requirements and needs. This causes a variety of symptoms and affects the brain’s ability to think, to concentrate for sustained periods and to absorb and retain information.

Adding cognitive (“thinking”) activities to an energy-deprived brain worsens symptoms. These changes are not visible which makes it difficult for school or tertiary education officials to understand the need for resting the brain in a learning environment. Although guidelines for reducing cognitive stress exposure are not as well defined as the guidelines for reducing physical activity, they are equally important.

### **What does this mean for students?**

As a result of these changes in the brain it is not unusual for performance in the classroom to be affected. Learning new tasks and recalling previously learnt material might become difficult. Moreover, stressing the brain by expecting it to cope with normal teaching loads, writing tests and exams, and completing long assignments may make students' symptoms either reoccur or worsen, and may slow recovery.

Just as a strained hamstring muscle requires time to readjust to running as it repairs, a "strained" brain requires time to readapt to learning. There is no one set of ideal guidelines that fit all concussed students, therefore doctors, lecturers and teachers should adapt protocols to suit individual needs and recovery.

While resting the brain is necessary, getting behind on studying and assignments may create additional emotional stress that is also undesirable for recovery. Therefore there is a fine balance between resuming normal function, without overexerting the brain, and worsening symptoms.

Cognitive recovery after concussion for scholars or students is variable but usually occurs within 3 weeks. Recovery lasting longer than this requires further medical evaluation. Full return to academic and physical activities requires the student to be cleared using a spectrum of assessments that evaluate performance under conditions of both cognitive (computer and paper-based "thinking" tests) and physical (gym or field based activity) stress. Students need to pass all of these parameters to be properly cleared to return to full learning and rugby participation.

### **How to help your cognitive recovery**

At home:

- Keep stressful brain activities to the more essential ones such as homework and reading
- Avoid texting, non-academic computer work, video games and television
- Read and study in a quiet and dimly lit area
- Take regular breaks (every 20 minutes) when doing homework or assignments
- Organise your day by creating a list of tasks to be completed
- Report symptom patterns following learning exposure to your doctor



At school / tertiary education:

- Consider returning to school or tertiary education when you can tolerate 30-45 minutes of reading or studying without worsening symptoms
- Discuss your injury with your teachers, head teacher, lecturers, school or tertiary education nurse and/or psychologist
- Discuss attending fewer classes – prioritise the important ones
- Schedule academic “time outs” during the school or tertiary education day during which you can rest
- Avoid brightly lit and noisy areas
- Ask a fellow student to take notes for you
- Request more time for assignments and tests
- Ask your doctor to provide feedback to your teachers or lecturers and your coaches regarding your progress

### **Finally – A Team Approach Works Best**

Many young rugby players suffering a suspected or confirmed concussion are in a learning environment that stresses the injured brain. Recognising this fact helps the recovery process. The most comprehensive evaluation and successful recovery from any concussion occurs when players, coaches, parents, teachers/lecturers and medical staff cooperate to completely evaluate and correctly manage the injured player. This process should involve a carefully monitored and safer progression to full academic activities and sports participation.

*Document Compiled by Dr Jon Patricios*

### **Additional References and Resources for Students, Parents and Educators**

1. Halstead M et al. Returning to learning following concussion. *Pediatrics* 2013;132:948-957.
2. BokSmart YouTube links: [www.Youtube.com/BokSmartSA](http://www.Youtube.com/BokSmartSA) or go to [www.BokSmart.com](http://www.BokSmart.com)
3. Dr.MikeEvans:  
<http://www.evanshealthlab.com/concussion-management-and-return-to-learn/>
4. Rocky Mountain Youth Sports Medicine Institute, Center for Concussion. REAP Guidelines. Available at:  
<http://rockymountainhospitalforchildren.com/service/concussion-management-reap-guidelines> .
5. Centers for Disease Control and Prevention: Fact Sheet for School Professionals on Returning to School after a Concussion:  
[http://www.cdc.gov/concussion/pdf/TBI\\_Returning\\_to\\_School-a.pdf](http://www.cdc.gov/concussion/pdf/TBI_Returning_to_School-a.pdf)
6. Centers for Disease Control and Prevention: Heads Up for Schools:  
<http://www.cdc.gov/concussion/HeadsUp/schools.html>
7. Centers for Disease Control and Prevention: Online Coaches Training:  
[http://www.cdc.gov/concussion/HeadsUp/online\\_training.html](http://www.cdc.gov/concussion/HeadsUp/online_training.html)
8. Frequently Asked Questions about 504 Plans:  
<http://www2.ed.gov/about/offices/list/ocr/504faq.html>
9. Sample Return to Learning Note for Physicians: <http://www.aap.org/en-us/>
10. McAbee GN. Pediatric Concussion, Cognitive Rest and Position Statements, Practice Parameters, and Clinical Practice Guidelines. *J Child Neurol* published online 7 October 2014 DOI: 10.1177/0883073814551794



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## How Can Concussion Be Prevented?

### **Why is prevention important?**

Concussion is a brain injury which should be identified, treated and managed correctly. Failure to do so can potentially have **serious short and long-term consequences**. Reducing the incidence or rate of concussion is important for rugby players' health, well-being and ongoing participation in the game.

### **Can all concussions be prevented?**

Concussion is a brain injury that occurs as a result of a direct or indirect blow to the brain.

Rugby is a collision sport with many high speed, high impact contact events between the players! Considering there are 2 teams of 15 players on the field, having frequent anticipated and unexpected collisions, within a dynamic ever-changing environment, it becomes very difficult to control the safety aspects of ALL contact situations between players. As a result, concussions will never be completely prevented.

However a number of important intervention strategies may help reduce the probability (chance) and incidence (rate) of concussions.

Equally important is a secondary prevention strategy to **avoid further concussions** in a player who has already suffered a concussive head injury. That is why **"Recognising and Removing"** is so essential for player well-being.

It is also important to follow the most appropriate best practice concussion management protocols and return to play guidelines before returning to full match play (details available here: [www.BokSmart.com/Concussion](http://www.BokSmart.com/Concussion)).

## Five “E’s” of Concussion Prevention – Educate, Enforce, Enhance, Equip and Evaluate

### Educate

- The more you know about concussion, the more you can do to prevent concussions!
- Understand the impact and significance of concussion
- Learn how to identify a concussed player and what YOU can do
- Identify those situations which may place players at potential risk of concussion and be aware
- Follow best practice principles in managing concussions in your players
- Use the freely available BokSmart Concussion Guides and BokSmart Concussion Resources in your club or school
  - [www.BokSmart.com/Concussion](http://www.BokSmart.com/Concussion)
- Go online to the World Rugby *Player Welfare* site for their Concussion education modules:
  - <http://playerwelfare.worldrugby.org/concussion>

### Enforce

- Play strictly by the laws of the game of rugby union
- Forbid dangerous tackles and players flying in or diving recklessly into rucks
- Ensure that ALL coaches and referees are BokSmart Certified at all times, carry their BokSmart Concussion Guides with them while working with players, and understand the principles of concussion prevention, identification, treatment and management
- Enforce the mandated Graduated return to play protocol and stand down periods on all of your players who have suspected or confirmed concussions:
  - <https://www.springboks.rugby/media/b3yd5xed/grts-infographic.pdf>

### Enhance

- Improve and work only on safe and effective tackling techniques. Do this often!
  - <https://www.youtube.com/watch?v=yqyTsHatXZY>
- The tackle phase contributes to around 61% of all concussions
- The tackler is almost four times more susceptible to concussion than the ball carrier, and alone contributes to about 49% of all concussions, so perfecting tackle technique is crucial for preventing concussions.
- Tackle technique is often not good in younger developing rugby players, and still requires a lot of coaching and individual practice; this makes younger players more susceptible to getting it wrong on match day, and getting concussed!

- Good tackling technique takes time to perfect; regular practicing of safe and effective tackling techniques should therefore start at a young age so that it eventually becomes instinctive.
- Local research has shown that concussion rates also increase as game time progresses in a match. This could be due to fatigue, as fatigue reduces tackle technique proficiency.
- So essentially, the fitter you are for rugby, the easier it is to maintain good tackle technique and reduce the risk of getting concussed!
- Therefore, make sure that you are well conditioned and are fit enough for the game of rugby to be able to compete safely in contact situations with good technique up until the final whistle!
  - <https://www.springboks.rugby/media/taifea1z/aspects-of-physical-conditioning-for-rugby.pdf>
  - <https://www.springboks.rugby/media/ewvborcf/physical-conditioning-for-rugby-players.pdf>
- It is also important to occasionally practice tackling under fatigued conditions to reinforce safer tackling techniques under these circumstances!
- Specifically strengthen the neck by referring to BokSmart’s guidelines! This should be done throughout the year!
  - <https://www.springboks.rugby/media/4afpkbof/practical-guidelines-neck-injury-prevention.pdf>
  - <https://www.springboks.rugby/media/utrmbkhz/safe-necks-exercises-infographic.pdf>
- Practice and coach safe rucking techniques, practices and principles, especially for those players already in the ruck. These players are potentially more vulnerable and exposed to concussions than the players entering the ruck.

## **Equip**

- Although mouth guards do not always reduce the incidence of concussion, players should use them to prevent injuries to teeth, gums and the tongue. It is preferable to have a mouth guard fitted by a dentist.
- The use of rugby headgear may help reduce friction injuries to the ears (“cauliflower ears”) as well as cuts to the scalp but do not prevent concussions.
- In other sports such as cycling, cricket and horse riding hard helmets are useful in preventing concussion.

## **Evaluate**

- Ensure that your school or club has a concussion policy and action plan in place for suspecting, identifying, treating and managing concussions.
- Reassess this policy at the end of every season and align it with the updated BokSmart protocols.
- For SARU’s Concussion Regulation go to the following link:
  - <https://www.springboks.rugby/general/boksmart-legislation/>

- Send all players with a **suspected concussion** for medical evaluation before allowing them to participate again.
- Ensure that all **suspected and diagnosed** concussions undergo the complete graduated return to play protocol before returning to rugby.

### **Conclusion**

Concussions occur in many sporting and non-sporting situations. Preventing all concussions is impossible. However, adequate conditioning, all-year round neck strengthening, good tackle and ruck techniques, abiding by the laws of the game, appropriate use of equipment and a concussion policy that players, coaches, referees and supporters understand, will significantly help reduce the risks.

### **References and Useful Resources**

*Tator C. Sport Concussion Education and Prevention. Journal of Clinical Sport Psychology, 2012, 6, 293-301*

*How can concussion be prevented?* [www.cdc.gov/concussion/sports](http://www.cdc.gov/concussion/sports)

*Heads-Up factsheet.* [www.cdc.gov/concussion/headsup/youth.html](http://www.cdc.gov/concussion/headsup/youth.html)

*BokSmart, unpublished data McFie et al. 2014*