



Sports Concussion Community Education

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Presentation Overview

Concussion Definition

Prevalence Rates

Signs & Symptoms

Recognition & Management

Return to Activities / Play

Long Term Issues





Presentation: Educational Outcome

What is a concussion?

What are the causes of concussion?

What are the common signs and symptoms of concussion?

Management of a suspected concussion or head injury

Return to life (i.e., school, university, TAFE, or work) and return to sport - medical clearance requirements.

Sport specific policies.



Sports Concussion Definition

Any disturbance in normal brain functioning

- could be mild/subtle (i.e., “seeing stars”)
- could be more obvious (i.e., balance problems)
- it is a *functional disturbance* rather than a *structural injury* to the brain.



Sports Concussion

The brain is a very intricate and complex structure.

Communication: chemical, electrical but there so much information we do not know.

Concussion can disrupt the normal brain function in many ways – which is why no concussion presents the same





Sports Concussion

Concussion significant and complex health issue

All concussions must be managed appropriately

Recognise, Remove, Refer

Not all concussions are the same which means individualised management strategies are required





Sports Concussion Prevalence

US Data: **1.6 – 3.8 million** SRCs reported to team doctors annually.

Estimated unreported concussion
6 – 10 times greater than this figure



Sports Concussion Prevalence

Sport	Rates per 1,000 player hours
Horse Racing (amateur)	95.2
Horse Racing (jumps)	25.0
Horse Racing (flat)	17.1
Boxing (professional)	13.2
Australian Rules Football	4.2
Rugby (Union & League)	3.9
NHL (Hockey)	1.5
Football (FIFA)	0.4
NFL (American football)	0.2



Recognise

Remove

Refer





Recognise

Not to be confused with “*diagnosis*”

Loss of consciousness (KO'd) & post-traumatic amnesia (memory issues) are not required.

LOC occurs in <10%

PTA in approx. 20%

Signs and symptoms are often covert; so in-match recognition can be quite challenging.



Recognise





Recognise



If in doubt, sit them out



Recognise

A concussion can occur as a result of impact with

- another player (an opponent or a team mate),
- the playing surface,
- a piece of equipment (ball, goal post etc.).

Contact causing a concussion can also occur in possession or contesting possession, but it may also occur in back play or an off-the ball incident.



Recognise

- Legal or illegal game-play
- Concussion can occur in training.
- Any contact session has some degree of risk for concussive injury.



Recognise

Obvious signs may include:

- Loss of consciousness or non-responsive
- Lying on the ground and slow to get up
- Did not brace themselves for the fall
- Unsteady on feet/balance problems/ poor coordination
- Grabbing, clutching, or shaking head
- Dazed, blank, or vacant look
- Obvious facial or head wound or injury



In-play Subjective Indications

Unaware of what happened, even for a few moments at the time of the injury is the most consistent sign that you've been concussed.

Disorientation (e.g. not knowing who you're playing, what venue you're playing at, the time in the game [1st half/period etc.]).

Forgetting routine team plays.

Other **memory lapses** (e.g. forgetting any portion of the game, the score, how you arrived at the ground etc.).

Feeling slower (in-play movement, processing information & decision-making).

Athlete repeating themselves.



<u>Physical</u>	<u>Cognitive</u>	<u>Emotional</u>	<u>Sleep</u>
Headache	Fogginess	Irritability	Drowsiness
Nausea	Concentration	Sadness	Sleeping less
Vomiting	Memory	More	Sleeping more
Balance	Attention	emotional	Insomnia
Dizziness	Confusion	Nervousness	
Visual	Slowed	Depression	
problems	responses		
Fatigue			
Sensitivity to		<u>Note:</u> Sx not specific to SRC & occur frequently in the general population	
light / noise			
Numbness/tingling			



Recognise & Remove

- So we have identified that an athlete may have sustained a concussion “*suspected concussion*”
- Remember we **do not** need to ‘*diagnose*’ a concussion
- Now management strategy –

(i) remove from play and/or training

(ii) not permitted to return (play/training) on the same day





Recognise & Remove





Why?

- Reduce risk of a potential second injury
- Enable a thorough assessment
- Maximise potential recovery



RED FLAGS = Call Ambulance Immediately

- Neck pain or tenderness
- Double vision
- Weakness or tingling/burning in arms or legs
- Severe or increasing headaches
- Seizure or convulsion
- Loss of consciousness
- Deteriorating consciousness
- Vomiting
- Increasing restless, agitation or aggression



RED FLAGS

- Symptoms tend to get better with time not worse, so any deterioration (or increase in severity) of symptoms.

For example:

- repeated vomiting (> 2 times),
- drifting in and out of consciousness,
- increasingly severe headache.



Management of an unconscious player

- First Aid principles of ABC (Airway, Breathing, and CPR) should be used. It is extremely important to treat all unconscious players as though they also have a neck injury.
- An unconscious player must only be moved (onto a stretcher) by qualified health professionals, trained in spinal immobilisation techniques. If no qualified person is present do not move the player—wait for the *ambulance and paramedics*.



Management of an unconscious player

- Urgent hospital referral is necessary if there is concern regarding the risk of a structural head or neck injury --- ring 000.
- Any player with any of the following should be referred to a hospital URGENTLY:
 - I. Loss of consciousness or seizures
 - II. Persistent confusion
 - III. Deterioration after being injured –increased drowsiness, headache or vomiting)
 - IV. Report of neck pain or spinal cord symptoms –numbness, tingling, muscle weakness.

If at any time there is any doubt the player should be referred to hospital.



Management

“A player who is removed from an activity because of a suspected concussion must not resume the activity for at least 48 hours, even if there are no signs or symptoms of concussion. An absence of signs or symptoms immediately after an incident is not a reliable indicator, because the signs and symptoms of a concussion may emerge up to 48 hours after the impact.”





Athletes with suspected concussion should:

- Be immediately removed from participation
- Not be left alone initially (at least for the first 1–2 hours)
- Not take certain prescription medications including aspirin, anti-inflammatory medications, sedative medications or strong pain-relieving medications
- Not be sent home by themselves
- Monitored during sleep that evening
- Not drive a motor vehicle
- Not drink alcohol
- Be referred for appropriate medical assessment



Management

In some cases the symptom onset may be delayed:

- An athlete may feel fine initially (i.e., during the game, or even after a game) but later (hours, or days) feel much worse.
- These cases must be treated the same as it would be if it was recognised on game day.



Refer

- All players with concussion or suspected concussion need a medical assessment by a registered medical doctor.
- If a doctor is not present at an event, the player should be referred to a local general practice or hospital emergency department.



Referring the player to a medical practitioner

- The management of head injury is difficult for non-medical personnel. Following an injury it is often not clear if you are dealing with a concussion or with a more severe underlying structural head injury.
- Therefore ALL players with concussion or a suspected concussion need an URGENT medical assessment by a medical practitioner. This can be done by a doctor present at the venue (if available) or local general practice or medical centre or hospital emergency department.





Recovery

Most concussions resolve completely without residual problems within 10-14 days.

Minority of athletes suffer prolonged symptoms > 3 months = Post-concussion syndrome.

Children and adolescents may take longer to recover than adults.



Recovery

Rest is recommended immediately following suspected concussion (24-48 hours).

Progressively more involvement in activity thereafter.



Returning to Activity Including Play





Returning to Activity

- Priority to return to life first
 - School or university for the student (*return to learn*)
 - Work
 - Family life
 - Normal everyday function
- Then return to sport



Return to Play

An athlete should never return to play whilst still symptomatic!

That includes either during the same game or weeks later.

While symptoms still remain it is highly unlikely that a full recovery has occurred.

This may result in a further concussion and potential for worse consequences and/or prolonged recovery.





- Complications are not common.
- However, the risk of complications is increased by allowing the player to return to play (or training) before they have recovered completely.
- Therefore it is essential to recognise concussion and keep the player out of training and match play until the player has recovered completely.



Be aware of Sports Specific Policy

World Rugby and Rugby Australia have **mandatory sit down periods**. You need to be aware of these.

GRTP – you need to be aware of this.





Information about concussion policy and training on governing body websites

World Rugby:

<http://playerwelfare.worldrugby.org/concussion>

Rugby Australia:

<http://www.aru.com.au/coaching/SmartRugby/ProgramFeatures/ARUConcussionGuidance%28RugbyPublic-StandardCarePathway%29.aspx>

National Rugby League:

<https://playnrl.com/trainer/concussion/>



Information about concussion policy and training on governing body websites

Australian Institute of Sport:

<https://concussioninsport.gov.au>

Sports Medicine Australia:

<http://sma.org.au/resources-advice/concussion/>





Rugby Australia Concussion Policy

- Rest – **mandatory rest periods**
 - Adults – *age 19 and over*; **mandatory one week** (7 days) rest before commencing GRTP – may change with Berlin documents
 - Children and adolescents – *age 18 and under*; **mandatory two weeks** (14 days) rest *before commencing GRTP* – may change with Berlin documents.



Following 24–48 hours of physical and mental rest

Stage	Activity	Goal of Each Stage
1. Daily activities while remaining symptom-free	Daily activities that do not provoke symptoms	Gradually reintroduce work or school activities.
2. Light aerobic exercise	Walking, swimming or stationary cycling at a slow to medium pace. No strength or weight training	Increase heart rate
3. Sport-specific exercise	Running drills in football or skating drills in ice hockey. No activities with head impact	Add movement
4. Non-contact training drills	Harder training drills, e.g. passing etc. Start progressive strength or weight training.	Exercise, coordination, and mental load
Medical clearance		
5. Full contact training	Normal training activities	Restore confidence and assess skills by coach
6. Return to play	Normal game play	



In a practical sense what may this look like?

Physical Rest:

- no sports
- no weight training
- no cardiovascular training
- no PDHPE classes (for school aged students)
- no leisure activities such as bike riding and skateboarding that risk additional head injury or make symptoms worse.



In a practical sense what may this look like?

Cognitive rest:

1. Time off from school, university or work;
2. No homework;
3. No reading;
4. No visually stimulating activities, such as computers, video games, texting or use of mobile phone, and limited or no television;
5. No trips, social visits in or out of the home; and increased rest and sleep.



The Return-to-Play Decision

- **Always a medical decision**
- May or may not be aided by preseason cognitive, balance and/or symptom data (athletes tested pre-season).
- Same tests that are used post-injury.
- Changes from baseline performance in post-trauma tests reveal more accurately any impairment(s).



Long Term Consequences?

Simple answer:

we do not know at this stage



Thank You.

