THE MANAGEMENT OF SPORT-RELATED CONCUSSION IN AUSTRALIAN FOOTBALL

With Specific Provisions for Children and Adolescents (Aged 5-17 Years)

FOR TRAINERS, FIRST-AID PROVIDERS, COACHES, CLUB OFFICIALS, PLAYERS AND PARENTS

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TOYOTA AFL CLUBHELP

All players with a suspected concussion must seek an urgent medical assessment with a registered doctor.

These guidelines do not replace the need to seek medical assessment and are intended to assist in the management of concussion only.

This document has been published by the AFL as a position statement on the management of concussion in Australian Football. It is based on guidelines developed by the AFL Concussion Working Group Scientific Committee.

TABLE OF CONTENTS

1.	**SUMMARY**	**2**
2.	**BACKGROUND**	**3**
2.1	Introduction	3
2.2	What is concussion?	3
2.3	What are the potential complications following concussion?	4
2.4	For children and adolescents (aged 5-17 years)	4
3.	**MANAGEMENT GUIDELINES FOR SUSPECTED CONCUSSION**	**5**
3.1	Initial management	5
3.2	Recognising a suspected concussion	5
3.3	Removing the player from the match or training	7
3.4	Referring the player to a medical doctor for assessment	7
3.5	Management of an unconscious player and when to refer to hospital	8
4.	**FOLLOW-UP MANAGEMENT**	**9**
4.1	Important steps	9
4.2	Complete (physical and cognitive) rest	9
4.3	Recovery – symptom-limited activity	9
4.4	Graded loading program (with monitoring)	10
4.5	Return to School	11
5.	**ROLE OF PROTECTIVE EQUIPMENT IN AUSTRALIAN FOOTBALL**	**13**
5.1	Helmets	13
5.2	Mouthguards	13
SCHEDULE 1: MANAGEMENT OF CONCUSSION ON THE DAY OF INJURY		**14**
SCHEDULE 2: PHASES OF REST, RECOVERY AND RETURN TO PLAY FOLLOWING CONCUSSION		**15**

1. SUMMARY

(a) Head impacts can be associated with serious and potentially fatal brain injuries.

(b) In the early stages of injury, it is often not clear whether you are dealing with a concussion or if there is a more severe underlying structural head injury. For this reason, the most important steps in initial management include:

(i) Recognising a suspected concussion;

(ii) Removing the player from the match or training; and

(iii) Referring the player to a medical doctor for assessment.

(c) Any player who has suffered a concussion or is suspected of having a concussion (i.e. in cases where there is no medical doctor present to assess the player or the diagnosis of concussion cannot be ruled out at the time of injury) must be medically assessed (see paragraph 3.4) as soon as possible after the injury and must NOT be allowed to return to play in the same match/training session.

(d) There should be an appropriately accredited first aid provider at every match and the basic rules of first aid should be used when dealing with any player who is unconscious or injured.

(e) Important steps for return to play following concussion include:

(i) A brief period of complete physical and cognitive rest (24-48 hours);

(ii) A period of symptom-limited activity to allow full recovery; and

(iii) A graded loading program (with monitoring).

(iv) Clearance by a medical doctor

(f) Players should **not** enter the graded loading program until they have recovered from their concussion. Recovery means that **all concussion-related symptoms and signs have fully resolved** (for at least 24 hours) at rest and with activities of daily living, and they have successfully returned to work or school, without restrictions.

(g) In addition to the processes outlined in this document, any concussed player must not return to competitive contact sport (including full contact training sessions) before having moved through the graded recovery process outlined in Schedule 2 and obtained medical clearance.

(h) The earliest that a player may return to play (once they have successfully completed a graded loading program and they have obtained medical clearance) is on the 12th day after the day on which the concussion was suffered.

(i) The AFL-approved concussion management app HeadCheck (www.headcheck.com.au) should be utilised to recognise and assist in the management of any suspected concussion for both adults and children.

2. BACKGROUND

2.1 Introduction

(a) In considering the best practice management of sport-related concussion, the priority remains the short and long-term welfare of the player.

(b) These guidelines have been developed on scientific basis that endorse an approach that prioritises **assessment, rest, recovery and a graded return to full participation**.

(c) ***Children and adolescents typically take longer to recover following a concussion than adults.*** In general, children and adolescents (aged 5-17) require a different approach from adults because their brains are developing, and they need to continue learning and acquiring knowledge. As such, the priority is not just player welfare and return to sport, but a critical element is return to school and learning.

2.2 What is concussion?

(a) Head impacts can be associated with serious and potentially fatal brain injuries. "Traumatic brain injury" is the broad term used to describe injuries to the brain that are caused by trauma.

(b) The more severe injuries usually involve structural damage, such as fractures of the skull and bleeding in the brain. Structural injuries require urgent medical attention. Concussion typically falls into the milder spectrum of traumatic brain injury, without evidence of structural damage on traditional scans such as Computerised Tomography (**CT**) or Magnetic Resonance Imaging (**MRI**).

(c) Concussion is caused by trauma to the brain, which can be either direct or indirect (e.g. whiplash injury). When the forces transmitted to the brain are high enough, they can injure or "stun" the nerves and affect the way in which the brain functions.

(d) Concussion is characterised by a range of observable signs (such as lying motionless on the ground, blank or vacant look, balance difficulties or motor incoordination) or symptoms reported by the player (such as headache, blurred vision, dizziness, nausea, balance problems, fatigue and feeling "not quite right").

(e) Other common features of concussion include confusion, memory loss and reduced ability to think clearly and process information. It is important to note that loss of consciousness is seen in only 10-20% of cases of concussion in Australian football. That is, the ***player does not have to lose consciousness to have a concussion***.

(f) The effects of concussion evolve or change over time. Whilst in most cases, symptoms improve, in some cases effects can worsen in the few hours after the initial injury. It is important that a player suspected of sustaining concussion be monitored for worsening effects and be assessed by a medical doctor as soon as possible after the injury.

(g) The presence of concussion is occasionally associated with a neck injury and may be difficult to assess in the early period after head trauma. ***All concussed athletes should be considered to have a neck injury until medically cleared.***

2.3 What are the potential complications following concussion?

(a) There are several risks and complications associated with concussion. These include:

(i) Severe brain swelling (or "second impact syndrome") which is a rare complication of head trauma in younger players;

(ii) Increased risk of further concussion or other injuries on return to play;

(iii) Prolonged symptoms (lasting greater than 14 days in adults; and greater than four weeks in children/adolescents);

(iv) Symptoms of depression and other psychological problems; and

(v) Long-term damage to brain function.

(b) The risk of complications is thought to be increased by allowing a player to return to sport before they have fully recovered. This is why it is important to recognise concussion and keep the player out of full-contact training and matches until they have fully recovered, as outlined below.

(c) Concussion can cause problems with memory and information processing, which interferes with the child's ability to learn in the classroom. It is for this reason that it is strongly recommended that a child does not to return to school until medically cleared to do so.

(d) The AFL-approved concussion management app HeadCheck, is a useful resource that should be utilised to help manage the player's recovery phase, including the child's return to school and sport.

2.4 For children and adolescents (aged 5-17 years)

(a) Symptom evaluation in a child often requires the addition of parent and/or teacher input.

(b) A child is not to return to football, or other sport, until he/she has successfully returned to school/learning, is symptom-free, and has received medical clearance. However early introduction of limited physical activity is appropriate, as long as symptoms do not worsen – see paragraph 4 for more detail.

(c) It is reasonable for a child to miss a day or two of school after concussion, but extended absence from school is uncommon.

3. MANAGEMENT GUIDELINES FOR SUSPECTED CONCUSSION

3.1 Initial management

(a) The most important steps in the initial management include:

(i) Recognising a suspected concussion

(ii) Removing the player from the match or training session

(iii) Referring the player to a medical doctor for assessment

(b) ***Refer flow diagram in Schedule 1 – Management of Concussion***

3.2 Recognising a suspected concussion

(a) Any one or more of the following visual clues can indicate a possible concussion:

(i) Loss of consciousness or responsiveness

(ii) Lying motionless on ground/slow to get up

(iii) Vomiting

(iv) Seizure or convulsion

(v) Unsteady on feet / balance problems or falling over/incoordination

(vi) Grabbing/clutching of head

(vii) Dazed, blank or vacant look

(viii) Confused/not aware of plays or events

(ix) Impaired memory (unable to recall events leading up to or following the injury)

(x) Facial injury

(xi) Player does not seem like their normal self

(b) Loss of consciousness, confusion and memory disturbance are all classic features of concussion. The problem with relying on these features to identify a suspected concussion is that they are not present in every case.

(c) Symptoms reported by the player that should raise suspicion of concussion include:

(i) Headache

(ii) Nausea or feel like vomiting

(iii) Blurred vision

(iv) Balance problems or dizziness

(v) Feeling “dinged” or “dazed”

(vi) “Don’t feel right”

(vii) Sensitivity to light or noise

(viii) More emotional or irritable than usual

(ix) Sadness

(x) Nervous/anxious

(xi) Neck pain

(xii) Feeling slowed down

(xiii) Feeling like in a fog

(xiv) Difficulty concentrating

(xv) Difficulty remembering

(d) Tools such as *HeadCheck* or the Concussion Recognition Tool 5th edition (**CRT5**) should be used to help identify a suspected concussion.

(e) It is important to note however that brief sideline evaluation tools (such as *HeadCheck* or the CRT5), are designed to help identify a suspected concussion. They are ***not*** meant to replace a more comprehensive medical assessment and should never be used as a stand-alone tool for the management of concussion.

(f) Currently, there are no commercially available tools (impact sensors, goggles, balance apps, etc) that can be relied upon to either diagnose or exclude a concussion.

(g) A pre-match/pre-training checklist should be printed and provided to trainers and other staff involved in the care of players. The checklist should include contact details for:

(i) Local general practices;

(ii) Local hospital emergency departments; and

(iii) Ambulance services (000).

(h) The pre-match checklist can also be provided to trainers and medical staff of the away team, who are likely to be less familiar with local medical services.

3.3 Removing the player from the match or training

(a) The basic rules of first aid should be used when dealing with any player who is unconscious or injured.

(b) Immobilisation of the neck in a cervical collar by a qualified first aid provider may be required. An appropriately sized collar should be available at every match and training session.

(c) Removing the conscious player from the match or training session allows the first aid provider time and space to assess the player properly. Assessment should take place in a distraction-free environment, such as the change rooms.

(d) Any player with a concussion or suspected concussion (i.e. in cases where there is no medical doctor present to asses the player or the diagnosis of concussion cannot be ruled out at the time of injury) **must be removed from play and not be allowed to return in the same match or training session. Do not** be swayed by the opinion of the player, trainers, coaching staff, parents or others suggesting premature return to play.

3.4 Referring the player to a medical doctor for assessment

(a) Management of a head injury is difficult for non-medical personnel. In the early stages of injury, it is often not clear whether you are dealing with a concussion or there is a more severe underlying structural head injury.

(b) For this reason, **ALL players with a suspected concussion need an urgent medical assessment (with a registered medical doctor)**. This assessment can be provided by a medical doctor present at the venue, local general practice or hospital emergency department.

(c) It is useful to have a list of local doctors and emergency departments near the ground at which the match or training session is taking place. This resource can be determined at the start of each season (in discussion with local medical services).

3.5 Management of an unconscious player and when to refer to hospital

(a) Basic first aid rules should be used when dealing with any unconscious player (i.e. danger, response, airway, breathing, circulation).

(b) Care must be taken with the player's neck, which may have also been injured in the collision.

(c) In unconscious players, the player must only be moved (onto the stretcher) by qualified health professionals, trained in spinal immobilisation techniques.

(d) If no qualified health professional is on site, then do not move the player - await arrival of the ambulance.

(e) If the unconscious player is wearing a helmet, do not remove the helmet unless trained to do so.

(f) Urgent hospital referral is necessary if there is any concern regarding the risk of a structural head or neck injury.

(g) Overall, if there is any doubt, an ambulance should be called, and the player transferred to hospital.

(h) Urgent transfer to hospital is required for a player with any of the following:

- (i) Neck pain or tenderness
- (ii) Double vision
- (iii) Weakness or tingling/burning in the arms or legs
- (iv) Severe or increasing headache
- (v) Seizure or convulsions
- (vi) Loss of consciousness
- (vii) Deteriorating conscious state
- (viii) Vomiting
- (ix) Increasing restlessness, agitation or combative behaviour

4. FOLLOW-UP MANAGEMENT

4.1 Important steps

(a) Important steps for return to play following concussion include:

(i) Rest

(ii) Recovery – symptom-limited activity

(iii) Graded loading program (with monitoring)

(iv) Clearance by a medical doctor

(b) ***See Schedule 2 for Phases of Rest, Recovery and Return to Play following Concussion***

(c) The earliest that a player may return to play (once they have successfully completed a graded loading program and they have obtained medical clearance) is on the 12th day after the day on which the concussion was suffered.

(d) Schedule 2 outlines the minimum process to follow in returning to play following a concussion. However, a more conservative approach is strongly recommended to allow a longer period of time for recovery where there is a lack of baseline testing and the absence of regular contact between players and a medical doctor limits the ability to assess recovery following concussion.

4.2 Complete (physical and cognitive) rest

A brief period of complete physical and cognitive rest in the first 24-48 hours after injury helps symptoms improve/resolve.

4.3 Recovery – symptom-limited activity

(a) After a brief period of complete rest, players can gradually become more active as long as the activity does not bring on or worsen any symptoms.

(b) This period should start with simple day to day things such as watching TV, reading the papers, using social media, going for a walk, etc.

(c) The duration and/or intensity of the activity may need to be limited based on appearance and/or worsening of symptoms.

(d) The player should progress slowly back to full work/school during this period (for specific return to school provisions, see section below).

(e) <u>The priority for students is to successfully return to school/university before returning to sport</u>.

(f) Recovery means that the player has **no concussion-related symptoms at rest or with both physical and brain activity**, they have recovered back to their baseline on specific tests of balance, brain function, etc, and that they have successfully returned to work and/or school, without restrictions.

(g) The recovery period will be variable in length (days to weeks) across different people and level of injury, noting that **children and adolescents typically recover slower**.

(h) A more conservative approach is required if there is a lack of baseline testing and active medical practitioner oversight of each stage of the graded return to football.

(i) If the player has concussion-related symptoms for more than 10-14 days (or four weeks in children/adolescents), or there is any uncertainty about recovery following concussion, then review by a medical practitioner with expertise in concussion (e.g. sport and exercise medicine physician, neurologist) is strongly recommended.

4.4 Graded loading program (with monitoring)

(a) **Players should not enter the graded loading program until they have recovered from their concussion. Recovery means that all concussion-related symptoms and signs have fully resolved (for at least 24 hours) at rest and with activities of daily living, and they have successfully returned to work/school, without restriction.** Ideally, the player should have a medical clearance before entry into the graded loading program.

(b) Given the challenges and limitations in assessing recovery following concussion, a conservative approach is required regarding return to play. The graded loading program allows incremental increases in physical plus/minus cognitive load once the player has recovered to ensure that concussion-related symptoms or signs do not return (which is a sign of incomplete recovery).

(c) **A more conservative approach is important in children or adolescent athletes as it is recognised that recovery from concussion tends to be slower in this group. A more conservative approach is likely to include longer timeframe for recovery of symptoms and entry into graded loading program and/or longer time spent at each step in the graded loading program.**

(d) Review with a medical doctor (and a more conservative approach to return to play) is also important in:

(i) Players with a history of multiple concussions – especially in the same season

(ii) Players who fail to progress through their return to play program due to a recurrence of symptoms

(iii) Cases where there is any uncertainty about recovery following concussion

(e) Entry into a graded loading program requires careful monitoring for recurrence of symptoms. It is important that the player is honest with themselves, the team and the team medical/coaching staff about symptoms.

(f) If any symptoms return while exercising, the player should go back to the previous symptom free step and seek medical advice.

(g) In following these guidelines, the **focus must be on ensuring that players pass through each of the steps safely** (i.e. rest, recovery and a graded return).

(h) ***Any concussed player must not be allowed to return to competitive contact sport (including full contact training sessions) before having a medical clearance.***

4.5 Return to School

(a) Concussion may impact a child's ability to learn at school. This must be considered, and medical clearance is strongly recommended before the child may return to school.

(b) It is reasonable for a child to miss a day or two of school after concussion, but extended absence from school is uncommon.

(c) The child's doctor should help them get back to school after a few days.

(d) In some children, a graduated return to school programme will need to be developed for the child. Additional management by a paediatric neuropsychologist may assist in more difficult cases.

(e) The child will progress through the return to school programme provided that there is no worsening of their concussion-related symptoms. If any particular activity worsens symptoms (including computers and internet), the child should abstain from that activity until this no longer occurs.

(f) This program should include communication between the parents, teachers, and health professionals and will vary from child to child.

(g) The return to school programme should consider:

(i) Extra time to complete assignments/tests

(ii) Quiet room to complete assignments/tests

(iii) Avoidance of noisy areas such as cafeterias, assembly halls, sporting events, music class

(iv) Frequent breaks during class, homework and tests

(v) No more than one exam per day

(vi) Shorter assignments

(vii) Repetition/memory cues

(viii) Use of peer helper/tutor

(ix) Reassurance from teachers that the child will be supported through the recovery process through accommodations, workload reduction and alternate forms of testing

(x) Later start times, half-days and only attending certain classes

(h) All schools are encouraged to have a concussion policy that includes education on sport-related concussion prevention and management for teachers, staff, students and parents, and should offer appropriate academic accommodations and support to children recovering from sport-related concussion.

(i) The child is not to return to football or other sport, until he/she has successfully returned to school/learning, is symptom-free, completed the graded recovery process and has received medical clearance. However early introduction of limited physical activity is appropriate, as long as symptoms do not worsen.

(j) If there are any doubts, the child should be referred to a qualified health practitioner who is an expert in the management of concussion in children.

5. ROLE OF PROTECTIVE EQUIPMENT IN AUSTRALIAN FOOTBALL

5.1 Helmets

(a) There is no definitive evidence that helmets prevent concussion or other brain injuries in Australian Football.

(b) Helmets may have a role in the protection of players on return to play following specific injuries (e.g. face or skull fractures).

(c) Overall, however, there is insufficient evidence to make a recommendation for the use of helmets for the prevention of concussion in Australian Football.

5.2 Mouthguards

(a) Mouthguards have a definite role in preventing injuries to the teeth and face and for this reason they are **strongly recommended** at all levels of football. Mouthguards should be worn for all matches and contact training sessions.

(b) Dentally fitted laminated mouthguards offer the best protection. 'Boil and bite' type mouthguards are not recommended for any level of play as they can dislodge during play and block the airway.

(c) There is some preliminary scientific evidence that mouthguards may prevent concussion or other brain injuries in Australian Football.

SCHEDULE 1: MANAGEMENT OF CONCUSSION ON THE DAY OF INJURY

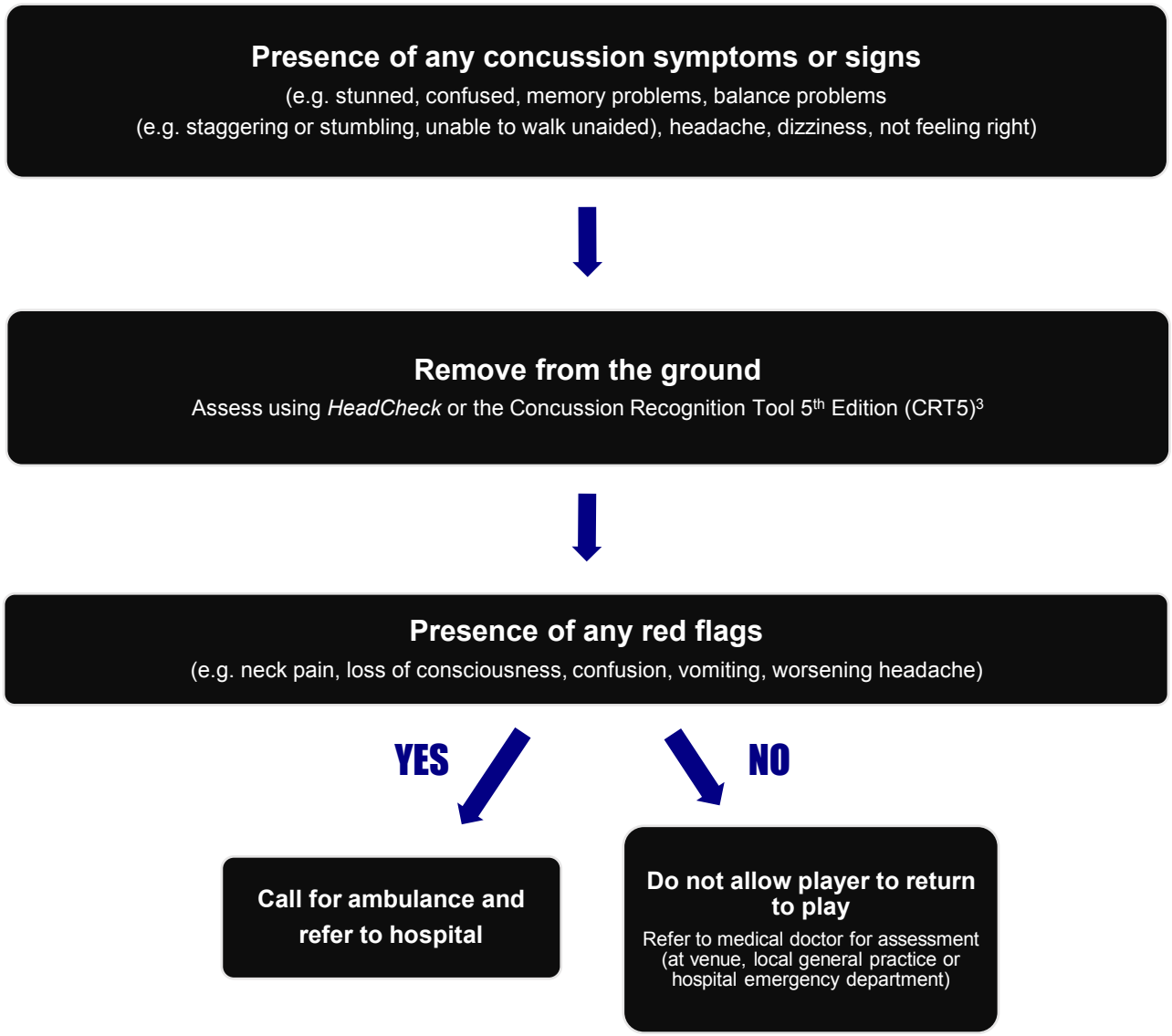

Figure 1. Summary of the management of concussion in Australian Football.

Note: For any player with loss of consciousness, basic first aid principles should be used (i.e. airways, breathing, CPR). Care must also be taken with the player's neck, which may have also been injured in the collision. The unconscious player must not be moved by anyone other than a medical professional or ambulance officer. An ambulance should be called, and these players transported to hospital immediately for further assessment and management.

SCHEDULE 2: PHASES OF REST, RECOVERY AND RETURN TO PLAY FOLLOWING CONCUSSION

Focus	Goal	Requirements to move to next stage
Rest		
Rest	• Help speed up recovery	• Complete physical and cognitive rest in the first 24 – 48 hours
Recovery		
Symptom limited activity	• Two days of activities that do not provoke symptoms	• No concussion-related symptoms at rest or with physical or brain activity for at least 1 day and the player has successfully returned to work/school • The player should also have a medical clearance (e.g. physiotherapist, sports trainer, first aider) to confirm that the player has had no concussion-related symptoms for at least 1 day
Graded Loading – individual program		
Light / moderate aerobic exercise	• Light / moderate aerobic exercise (e.g. walking, jogging, cycling at slow to medium pace) • No resistance training	• Remain completely free of any concussion-related symptoms
Recovery day		
Sport-specific exercise	• Increased intensity (e.g. running at an increased heart rate) and duration of activity • Add sports specific drills (e.g. goal kick, stationary handball) • Commence light resistance training	• Remain completely free of any concussion-related symptoms • The player should also have a medical clearance (e.g. physiotherapist, sports trainer, first aider) to confirm that the player has had no concussion-related symptoms for at least 1 day
Recovery day		
Graded Loading – full team training		
Limited contact training	• Return to full team training – non-contact except drills with incidental contact (incl. tackling)	• Remain completely free of any concussion-related symptoms • Player confident to return to full contact training
Recovery day ***Clearance by a medical doctor is required before returning to the final full contact training session and competitive contact sport***		
Full contact training	• Full team training	• Remain completely free of any concussion-related symptoms • Player confident to participate in a match
Recovery day		
Return to Play		

Note: Schedule 2 outlines the minimum process to follow in returning to play following a concussion. The earliest that a player may return to play (once they have successfully completed a graded loading program and they have obtained medical clearance) is on the 12th day after the day on which the concussion was suffered.

A more conservative approach is required if there is a lack of baseline testing and active medical practitioner oversight of each stage of the graded return to football. Section 4.4 of these guidelines also outlines the importance of a more conservative approach in certain situations including for children and adolescents, players with a history of concussion and where there is a recurrence of symptoms at any stage during the return to play program.

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