



NetballSmart

Netball New Zealand Community Concussion Guidelines

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Netball New Zealand Community Concussion Guidelines Background

Netball New Zealand (NNZ) is Netball's national sport organisation. NNZ is responsible for leading the development of the sport at all levels throughout New Zealand.

NNZ recognises the need for a specific Concussion Policy to direct actions, responses and treatment of concussion of all Netball players in New Zealand.

Concussion is a mild traumatic brain injury (mTBI). While the incidence in Netball is low, concussion is becoming a significant public health issue and is increasingly more prevalent across all sporting codes. As Netball becomes a faster and more physical sport, specific guidelines are important to protect the wellbeing and welfare of our players. The highest volume of concussion occurs among those aged 10 to 19 years. It is important in this developing age group to recognise the symptoms early to ensure treatment and prevent any longer-term consequences.

Concussion (and player wellbeing and welfare in general) is everyone's responsibility. Players, parents, coaches and officials need to act in the best interests of the player and their wellbeing/welfare by taking responsibility for recognising, removing and referring to a medical doctor any player who is suspected to have sustained a concussion. They should collectively ensure that appropriate concussion guidelines are followed.

Where a player is engaged in multiple sports it is important to understand that the principles outlined in this document apply across those activities. For example, if the concussion is sustained in a different sport the player cannot play Netball until medical clearance is given and vice versa.

Research shows that early recognition and management are key to a quick and full recovery. Where concussion goes unreported or if a player returns to the court before the concussion is fully resolved it can increase the risk of poor outcomes or longer-term complications. It is known that female athletes, particularly of adolescent age, have increased symptom severity and typically take longer to recover. It is important to allow this time for a full recovery.

This policy specifies the processes, information and resources that can be used by doctors, players, parents, coaches, umpires and support staff when responding to Netball players with suspected concussion. It is not intended to act as a medical document or diagnostic tool. This summary incorporates best-practice guidelines as specified at the 5th International Conference on Concussion in Sport held in Berlin, Germany, in 2016 and draws on key messages from the ACC SportSmart National Concussion Guidelines in New Zealand.

Recognise, Remove and Refer

- If a concussion is suspected, remove the player from the playing or training environment immediately and seek treatment from a medical doctor.
- If a concussion is suspected, the player must not re-enter training/playing on the same day unless cleared by a medical doctor.
- Manage all unconscious players using first aid principles. Call 111 immediately if a player has lost consciousness or has cervical (neck) pain. Do not move them.
- It may take hours (or even days) for symptoms to become obvious.
- A medical doctor's assessment, diagnosis and plan is paramount as diagnosis can be challenging and clinical judgement is required.
- A concussed player must stand down from competitive play until the concussion is fully resolved. The player must have been cleared by a medical doctor to return to competitive play, and have followed a return to play programme.

Purpose

- Increase the knowledge and understanding of concussion in the sporting environment for all Netball players, coaches, officials and supporters of Netball in New Zealand.
- Provide best-practice recommendations for the identification and management of suspected concussion, for those involved in all Netball throughout New Zealand.
- Guide the response and treatment process of possible concussion at all events and competitions at Centre, Regional and National level.

Definition

Concussion is a mild traumatic brain injury (mTBI) induced by biomechanical forces. Several common features that may be utilised in clinically defining the nature of a concussive head injury include:

- Concussion may be caused either by a direct blow to the head, face or neck, or by a blow elsewhere on the body where an impulsive force is transmitted to the head.
- Concussion typically results in the rapid onset of short-lived impairment of neurological function (brain function), which resolves spontaneously. However, in some cases signs and symptoms evolve over several minutes, hours or days.
- Concussion may result in neuropathological damage or change to brain function. However, the acute clinical signs and symptoms largely reflect a functional disturbance (change in brain function) rather than a structural injury (lasting damage to the structure of the brain).
- More simply, a concussion may be defined as an alteration in the mental function and state of a player for a variable period, which may or may not result in a loss of consciousness.

Important Facts

- Less than 10% of concussions from sport involve a loss of consciousness.
- In New Zealand, concussions in the sporting environment make up 21% of all reported concussion. Therefore, 79% of concussions occur in a non-sporting environment.
- Concussion is not always caused by a blow to the head. It may occur because of a direct blow to the face, neck or elsewhere on the body where an impulsive force is transmitted to the head (and head flung strongly as a result).
- The highest volume of concussive incidents in New Zealand occurs among adolescents between 10 and 19 years of age and those in this age group may take longer to recover.
- Concussion is difficult to diagnose. Any player with uncertain/suspected concussion symptoms should be referred to a medical doctor for further assessment.
- Not all players will experience the same signs and symptoms of concussion, and symptoms may take hours or days to develop.
- Early recognition, referral and appropriate treatment combined has been shown to improve the outcome and can lead to a shorter recovery time.
- Like other injuries (such as an ankle sprain), concussion can range from a mild injury through to a significant brain injury. Return-to-play times are variable (no two concussions are the same).
- It is important to achieve 'return to learn' before returning to sport following a concussive injury.
- Players who have had multiple concussions may report more symptoms and perform worse on baseline memory tests, compared with those with no concussion history. This suggests there is a cumulative effect when multiple concussions are sustained.

Guideline Procedures

- Coaches, support staff and management should prepare for the season/event by being aware of the signs, symptoms and protocols involved in concussion. The Be NetballSmart about Concussion: Management Guide should be readily available in all team bags for players and management..
- Coaches, support staff and management should be familiar with the resources in their medical kit to ensure they are able to recognise and respond to suspected incidents of concussion (Concussion Recognition Tool5, ACC SportSmart Concussion Handbook, Be NetballSmart about Concussion: Management Guide).
- Coaches, support staff and management should know of and have access to the details of the closest Emergency Department or medical practice in relation to their location.
- At a Silver Ferns and ANZ Premiership level, it is highly recommended that all athletes complete a SCAT-5 or similar assessment tool, prior to the start of the season. This is to be used as a baseline for return to play, following a possible concussive episode.
- At National Netball League and other competition levels, it is encouraged that all players complete a baseline SCAT-5 assessment or a similar summarised version. However, this is a recommendation only as NNZ is aware of the cost and time involved in this process.

Action 1: Recognise, Remove, Refer

Recognise

When a concussion or possible concussion occurs, it is important to take immediate action, assist the player and seek help as appropriate. The most important steps are early recognition of concussion and removal from play/activity.

At a community level, non-medical personnel play an important role in recognising possible concussion, its symptoms, and effects on behaviour (staggering on the court, running in the wrong direction, being offside). Everyone should take responsibility and facilitate the removal of the potentially concussed player from the court.

If a concussion is suspected during a game or training, it is important to take immediate action.

In the case of uncertainty, concussion should be assumed.

“If in doubt, sit them out.”

Remove

If the player is unconscious:

- Apply first aid principles – DRSABC (Danger, Response, Send for help by calling 111, Airway, Breathing and Circulation).
- Treat all unconscious patients as though they have a neck injury.
- An unconscious player must only be removed by personnel trained in spinal immobilisation.
- **Call 111 immediately if there are any concerns about neck injury.**

If the player is not unconscious and has not sustained a neck injury:

- The player should be removed from play/training into a quiet, safe environment.
- ALL suspected concussions should be referred to a medical doctor as soon as possible.
- Players with a suspected concussion should not be left alone, drive a motor vehicle, or consume alcohol on the day of the incident.

The player may only return to contact play/game when cleared by a medical doctor and never on the same day as a concussive episode if a medical doctor is not present at the training/game.

Refer

Immediate referral to a medical doctor **(Red Flags)**

- Seizure/convulsions
- Double vision
- Deteriorating symptoms after being injured (increase in drowsiness, headache or vomiting)
- Neck pain or spinal symptoms (numbness, tingling, muscle weakness)
- Dazed, stunned, vacant expression
- Personal medical history of a bleeding/clotting disorder or use of blood thinners (Warfarin, aspirin).

Concussion symptoms can include:

- Headache, dizziness, feeling foggy
- Behavioural changes:
 - » Inappropriate emotions
 - » Irritability
 - » Feeling anxious or nervous
- Cognitive impairment (change in brain function):
 - » Slow reaction time
 - » Confusion and disorientation (do not know where they are/who they are playing)
 - » Poor attention or concentration
 - » Loss of memory (do not recognise or know score)
- Balance issues
- Blurred vision or double vision.

If any of these symptoms are identified, the player should be promptly referred to a medical doctor.

The Concussion Recognition Tool 5 (CRT-5) can be used by non-medical personnel to observe possible signs and symptoms of concussion and make the decision to remove the player and seek medical attention. A printable PDF can be downloaded from <https://bjsm.bmj.com/content/51/11/872> and is also included as Appendix A in this document. It is recommended that this tool is included in all team bags to assist with the early recognition of concussive symptoms.

Signs and symptoms to look for in the first 48 hours:

Problems may arise or worsen within the first 24 to 48 hours. Injured players should be supervised during this time and taken to a medical doctor or hospital immediately if they:

- Are very drowsy or cannot be woken up
- Cannot recognise people or familiar places
- Have a headache that gets worse
- Vomit repeatedly
- Behave unusually, seem confused, irritable, or more emotional than usual
- Have balance problems or slurred speech
- Have weak, numb, or tingling arms and legs
- Have seizures.

If any of these symptoms occur, the player must be promptly referred to a medical doctor.

Only qualified medical doctors can diagnose whether a concussion has occurred. They will then advise as to whether a player can return to training or playing Netball and guide them through a return-to-play protocol.

Action 2: Medical Assessment

At an event or training, a medical doctor (if present) primary care person/first-aider/physiotherapist should review the player initially where possible. The CRT-5 can be used at this point unless the player is unconscious. If a physiotherapist is present, they may use the SCAT-5 or similar assessment tool. Referral of the player to a medical doctor, is guided by the presence of concussive symptoms or red flags in accordance with the Be NetballSmart about Concussion Flow Chart.

A qualified medical doctor can:

1. Evaluate the player for concussion using the SCAT-5 or similar.
2. Diagnose whether a concussion has occurred based on clinical judgement.
3. Advise the player on medical management of their symptoms.
4. Advise the player when it is appropriate for them to start the Graduated Return to Netball (GRTN) Strategy.
5. Guide the player through the GRTN Strategy or refer for further specialist support.
6. Clear the player to return to Netball contact training/game as detailed in Stage 4 of the GRTN Strategy.

Action 3: Rest, Recover and Return

When a concussed player has been cleared by a medical doctor, they should follow a step-by-step, symptom-guided return to Netball strategy, including where a player is injured in another sport or non-sport-related activity. Each stage should be preceded by at least 24 hours of symptom-free/minimal symptoms before progressing on to the next stage. Children and adolescents may take longer to recover from a concussive injury, so a more conservative approach should be taken, and the time frame be extended to 48 hours.

In the first 24 to 48 hours a concussed player should minimise screen (TV, computer, phone) time. The concussed player should aim to do normal activities of daily living (ADL) that do not aggravate symptoms.

The importance of returning to school and/or work is recognised by the NNZ Concussion Policy and Guidelines. Anyone with a diagnosed concussion should also follow a graduated return to learn/work strategy. Return to school and work take priority over the return to sports.

The table on the next page outlines the 'Return to Learn' guidelines as specified by ACC SportSmart that should be followed alongside the Graduated Return to Netball protocol.

It is important to follow best-practice guidelines to ensure a full recovery and a safe return to school, work and Netball. Players should start the graduated return to learn/work slowly and if an activity makes symptoms worse, stop and rest until symptoms subside.

Stage	Activity at Each Stage	Goals of Each Stage
1. Things that do not give symptoms	Things you would normally do (e.g. reading, walking, light activity around home) if they do not increase symptoms (e.g. headaches, dizziness, fatigue), starting with 5 to 15 minutes at a time and gradually build up.	No symptoms/minimal symptoms with things that you would normally do at home. Minimise screen time.
2. School/work activities at home	Reading, checking emails, homework, or other thinking tasks.	No symptoms/minimal symptoms with school or work tasks completed at home.
3. Return to school/work part-time	Gradually return to school/work. May need to start with a half day at school/work or take breaks during the day.	Return gradually, guided by symptoms. Start part-time and breaks when needed.
4. Return to school/work full-time	Gradually return to school/work until a full day can be tolerated; may need to take breaks during the day and rest your brain.	Return to school/work full-time guided by symptoms.

If players continue to have symptoms during mental activity, stop or decrease the activity until symptoms ease, or consider doing the following:

- Start school/work later, only go for half days, or only go to certain classes.
- Allow extra time to finish projects/tasks.
- Work in a quiet room and avoid noisy areas.
- Take regular breaks during the day.
- Avoid doing more than one test per day.
- Complete repetition/memory cue exercises as prescribed by a concussion therapist.
- Use a student helper/tutor.

Graduated Return to Netball (GRTN) Strategy

Each stage of the GRTN Strategy should be symptom guided. If the activity worsens symptoms significantly, players should stop and rest for a full 24 hours or until symptoms subside, then repeat the current stage.

Stage	Aim	Activity	Goal of Each Stage
One	Physical and cognitive (mental) rest	Gentle walking or movement with no significant elevation in heart rate. Walking outside for fresh air around home.	Rest and gentle active recovery
Two	Light aerobic exercise. No resistance training.	Walking, stationary cycling or swimming. Slow to medium pace.	Increase heart rate
Three	Netball-specific movement	Individual running programme; change of direction; shooting, jumping and landing.	Adding movement variety
Four	Netball-specific training drills	NetballSmart Dynamic Warm-up. Individual, low-risk, Netball-specific ball drills. No game play. Increase duration and intensity when appropriate. Add light resistance training if appropriate.	Exercise, co-ordination, concentration and return-to-play progression.
MEDICAL CLEARANCE			
Five	Full team practice	Following clearance by a medical doctor - participation in full team training, drills, and game play. Build loading in resistance training as appropriate.	Restore player confidence Coaches to assess player skill level and readiness to return to game play.
Six	Return to Netball	Full-contact training and game play. Progress back to full resistance training over next 4 weeks.	Return to competitive play.

The stages of the GRTN Strategy include:

- Physical and cognitive (mental) rest
» Some gentle movement is encouraged. Go outside for a walk in the fresh air/move around the home.
- Light to moderate aerobic exercise
- Netball-specific movement (non-contact)
- Netball-specific training activities (non-contact).

Medical Clearance

Where a player is involved in multiple sports, regardless of where the concussion occurred, medical clearance must be given prior to return to any sporting activity.

- Full team practice with contact
- Full return to Netball game play.

Graduated Return to Netball Take-Home Messages

Players should be assessed by a medical doctor and should follow a return to school/work protocol before starting Stage 2 of the GRTN Strategy.

- Players should be cleared again by a medical doctor at the end of Stage 4, before progressing to full-contact training.
- There should be a period of at least 24 hours of asymptomatic/minimal symptoms after completing a stage and before progressing on to the next stage.
- If symptoms occur or worsen during exercise, the player should stop exercising immediately and allow symptoms to subside. Once asymptomatic/minimal symptoms or after allowing 24 hours' recovery (whichever is greater), go back to the previous stage and progress through the return-to-play protocol as advised.
- The decision to return to sport from restricted activity should only be made by a medical doctor.

Enforcement

This policy is based on current best practice and the relevant supporting literature and will be revised and updated as required. Players, coaches, officials, Centres, Clubs and schools are encouraged to promote and adhere to these guidelines in the interests of player wellbeing/welfare.

Disclaimer

This policy is a generalised recommendation of how to best identify suspected concussion in the New Zealand Netball environment and the processes thereafter. It is not intended to act as a diagnostic tool or as a substitute for professional medical advice.

Appendices

- Appendix A: Concussion Recognition Tool 5
- Appendix B: Be NetballSmart about Concussion Flow Chart

Useful Links

[SCAT5 - Adult](#)

[SCAT5 - Child](#)

[Consensus Statement - 5th International Conference on Concussion in Sport - Berlin](#)

[ACC SportSmart Sports Concussion Guidelines](#)

References

McCrory P, Meeuwisse WH, Aubry M et al. Consensus statement on concussion in sport: The 5th International Conference on Concussion in Sport held in Berlin, October 2016. *British Journal of Sports Medicine*. 2017.

McCrory P, Meeuwisse WH, Aubry M et al. Consensus statement on concussion in sport: The 4th International Conference on Concussion in Sport held in Zurich, November 2012. *British Journal of Sports Medicine*. 2013;47(5):250-258.

Feigin V, Theadom A, Barker-Collo S et al. Incidence of traumatic brain injury in New Zealand: A population-based study. *The Lancet Neurology*. 2013;12(1):53-64.

Theadom A, Starkey N.J, Dowell T et al. Sports-related Brain Injury in the general population: an epidemiological study. *Nov 2014;17(6):591-596*.

Zumstein MA, et al. Long-term outcome in patients with mild TBI: A prospective observational study. *Journal of Trauma and Acute Care Surgery*. 2011;71(1):120-127.

Iverson GL, Gaetz M, Lovell MR & Collins MW. Cumulative effects of concussion in amateur athletes. *Brain Injury*. 2004;18(5):433-443.

MGroarty NK, Brown SM & Mulcahey MK. Sport-Related Concussion in Female Athletes: A Systematic Review. *The Orthopaedic Journal of Sports Medicine*. 2020;8(7).

CONCUSSION RECOGNITION TOOL 5[©]

To help identify concussion in children, adolescents and adults



Supported by



RECOGNISE & REMOVE

Head impacts can be associated with serious and potentially fatal brain injuries. The Concussion Recognition Tool 5 (CRT5) is to be used for the identification of suspected concussion. It is not designed to diagnose concussion.

STEP 1: RED FLAGS – CALL AN AMBULANCE

If there is concern after an injury including whether ANY of the following signs are observed or complaints are reported then the player should be safely and immediately removed from play/game/activity. If no licensed healthcare professional is available, call an ambulance for urgent medical assessment:

- Neck pain or tenderness
- Double vision
- Weakness or tingling/ burning in arms or legs
- Severe or increasing headache
- Seizure or convulsion
- Loss of consciousness
- Deteriorating conscious state
- Vomiting
- Increasingly restless, agitated or combative

Remember:

- In all cases, the basic principles of first aid (danger, response, airway, breathing, circulation) should be followed.
- Assessment for a spinal cord injury is critical.
- Do not attempt to move the player (other than required for airway support) unless trained to do so.
- Do not remove a helmet or any other equipment unless trained to do so safely.

If there are no Red Flags, identification of possible concussion should proceed to the following steps:

STEP 2: OBSERVABLE SIGNS

Visual clues that suggest possible concussion include:

- Lying motionless on the playing surface
- Slow to get up after a direct or indirect hit to the head
- Disorientation or confusion, or an inability to respond appropriately to questions
- Blank or vacant look
- Balance, gait difficulties, motor incoordination, stumbling, slow laboured movements
- Facial injury after head trauma

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STEP 3: SYMPTOMS

- Headache
- "Pressure in head"
- Balance problems
- Nausea or vomiting
- Drowsiness
- Dizziness
- Blurred vision
- Sensitivity to light
- Sensitivity to noise
- Fatigue or low energy
- "Don't feel right"
- More emotional
- More Irritable
- Sadness
- Nervous or anxious
- Neck Pain
- Difficulty concentrating
- Difficulty remembering
- Feeling slowed down
- Feeling like "in a fog"

STEP 4: MEMORY ASSESSMENT

(IN ATHLETES OLDER THAN 12 YEARS)

Failure to answer any of these questions (modified appropriately for each sport) correctly may suggest a concussion:

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

Athletes with suspected concussion should:

- Not be left alone initially (at least for the first 1-2 hours).
- Not drink alcohol.
- Not use recreational/ prescription drugs.
- Not be sent home by themselves. They need to be with a responsible adult.
- Not drive a motor vehicle until cleared to do so by a healthcare professional.

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ANY ATHLETE WITH A SUSPECTED CONCUSSION SHOULD BE IMMEDIATELY REMOVED FROM PRACTICE OR PLAY AND SHOULD NOT RETURN TO ACTIVITY UNTIL ASSESSED MEDICALLY, EVEN IF THE SYMPTOMS RESOLVE

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Be NetballSmart about Concussion: Flow Chart

RECOGNISE - Has there been a Potentially Concussive Event?

Remove player from the court. All suspected concussions should be referred to a medical doctor ASAP.

REFER IMMEDIATELY – Red Flag Symptoms
 Loss of consciousness, slow to get up, vacant look, clumsiness, severe or increasing headache, seizures or fits, deteriorating conscious state, increasingly combative or agitated.

YES

Call 111 or immediately REFER to emergency department

REST, RECOVER AND RETURN to Netball under medical guidance and following a Return to Play programme. If you are under 18, ACC will fully fund a doctor's appointment for concussion.

Orange Flag Symptoms
 Headache, pressure in the head, balance and coordination problems, feeling unwell/nausea, drowsiness, dizziness, sensitivity to light/noise, tired or low in energy, more emotional/irritable than usual, nervous or anxious, difficulty concentrating or remembering, feeling foggy.

Use Concussion Recognition Tool 5 to **RECOGNISE** all signs and symptoms.

Concussion signs

Assessment by medical doctor

Concussion confirmed

Uncertain concussion

NO

Concussion signs persisting for 10–14 days

RETURN TO PLAY

No signs of concussion

Monitor for developing symptoms:
 Headache, pressure in the head, balance and coordination problems, feeling unwell/nausea, drowsiness, dizziness, sensitivity to light/noise, tired or low in energy, more emotional/irritable than usual, nervous or anxious, difficulty concentrating or remembering, feeling foggy.

No signs



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