



Diving New Zealand

Concussion Awareness Policy

BACKGROUND

The purpose of this document is to provide:

1. An increased awareness of concussion in those involved in Springboard, Platform and High Diving – athletes, coaches, officials, supporters and their families.
2. Guidance on the identification and management of concussion to those involved in diving in New Zealand.

This summary is prepared specifically for the members of Diving New Zealand and is not a medical document. It incorporates the best practice guidelines developed at the 5th International Conference in Concussion in Sport held in Berlin in 2016. Refer Appendix 1.

This guideline primarily pertains to adults and whilst the principals of the document may be applied to children and adolescents, we would advise that all divers of this age group with suspected concussion be assessed by a medical professional.

Concussion (and diver welfare in general) is everyone's responsibility. Divers, parents, coaches and officials need to act in the best interest of diver safety and welfare by taking responsibility for the **recognition, removal** and **referral** of divers to a medical doctor. They should then ensure that concussion is appropriately managed as per these guidelines.

It is acknowledged that concussion is not well understood and more research is required to identify both the short and long term consequences of this brain injury. This policy is based on the current best practice guidelines and will be reviewed every 4 years in line with international consensus statements.

Guideline Summary:

- **Recognise and Remove.** If concussion is suspected, remove the diver from activity immediately and refer for assessment by the on-site event designated First Aider and seek an urgent assessment by a medical doctor.
- Concussions often occur without loss of consciousness ('knocked out').
- Extra caution is required for child and adolescent athletes.
- It may take several hours (or even days) post injury for some or all of the symptoms of concussion to emerge.
- Non-medical personnel have an important role to play in recognising the signs and symptoms of concussion.
- Concussion can present in a similar manner to other catastrophic conditions with delayed onset of symptoms.
- A medical doctor must provide assessment and diagnosis of concussion because diagnosis may be difficult and relies on clinical judgement.
- No diver should return to sport/activity on the day of a suspected or confirmed concussive injury.
- The effects of concussion can interfere with the divers ability to learn in the



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classroom or to function well at work. Return to school/work may need to be graduated and demands altered to reflect level of function, guided by a medical practitioner experienced in this area. Return to school/work and social activities should be achieved before return to diving (springboard, platform, high diving).

PURPOSE

The purpose of this Diving New Zealand Concussion Awareness Policy is to:

- a) Increase awareness of concussion within the Diving community and its supporters;
- b) Provide guiding principles and general advice regarding the management of concussion in competitions; and
- c) Mandate the process by which a diver may continue to participate or return to Diving, following involvement in an incident which requires assessment as to whether a suspected concussion has occurred.

Diving New Zealand has adopted the Consensus Statement on Concussion in Sport: The 5th International Conference on Concussion in Sport, held in Berlin, November 2016 Refer Appendix 1.

“With respect to the assessment of concussion, the advice contained within this Concussion Policy is of a general nature only. Individual treatment will depend on the facts and circumstances specific to each individual case. This Concussion Policy is not intended as a standard of care and should not be interpreted as such.”

This Concussion Policy will be reviewed annually by Diving New Zealand and will be modified according to the development of new knowledge.

POLICY

The Diving New Zealand Concussion Awareness Policy

The Diving New Zealand Concussion & Awareness Policy:

- a) Applies to; Clubs, divers and Officials;
- b) Applies to all Events;
- c) Forms part of the Diving New Zealand statutes to which all competition participants are bound;
- d) Does not limit or restrict the application of Diving New Zealand Statutes and, in particular, the code of conduct for behaviour or conduct of a club, Diver or official; and
- e) May be supplemented or varied from time to time by Diving New Zealand.



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Divers should be educated on the signs and symptoms of concussion and encouraged to be honest with medical staff and report any new symptoms as they develop.

Definition

Concussion is a brain injury and is defined as *“a traumatic brain injury induced by biomechanical forces either directly or indirectly upon the head”*.

(McCrory P, Meeuwisse WH, Dvorak J, et al. Consensus statement on concussion in sport: the 5th International Conference on Concussion in Sport, Berlin, November 2016).

More simply, a concussion may be defined as a transient alteration in the mental state of the rider that may, or may not, result in a loss of consciousness.

There are several features that are important to highlight. These are:

- a) A concussion is not always caused by a blow to the head. It may be caused by a direct blow to the head, face, neck, or elsewhere on the body with an ‘impulsive’ force transmitted to the head.
- b) A diver does not need to be knocked out to have sustained a concussion. Only approximately 10% of concussions present with a loss of consciousness.
- c) A concussion typically results in the rapid onset of short-lived impairment of neurological function that resolves spontaneously.
- d) Concussion can be difficult to diagnose. Whenever a diver has an injury to the head and becomes confused or acts abnormally or they lose consciousness, even for a few seconds, they have been concussed.

SIGNS OF CONCUSSION

Recognise, Remove & Refer

When a concussion, or possible concussion, occurs it is important to take action and to get help. The most important steps in the early identification of concussion are to recognise a possible injury and remove the participant from the sport/activity.

Non-medical personnel have an important role in observing possible concussion and its effects (e.g. behaviour/symptoms), and should take responsibility for removing the injured athlete from the sport/activity.

Immediate visual indicators of concussion include:

- a) Loss of consciousness or responsiveness;
- b) Lying motionless on the ground/slow to get up;
- c) A dazed, stunned, blank or vacant expression;



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- d) Appears confused or disorientated
- e) Appearing unsteady on feet, balance problems or falling over;
- f) Grabbing or clutching of the head; or
- g) Impact seizure or convulsion.

Concussion can include one or more of the following symptoms:

- a) Symptoms; headache, dizziness, 'feeling in a fog'.
- b) Behavioural changes; inappropriate emotions, irritability, feeling nervous or anxious.
- c) Cognitive impairment; slowed reaction times, confusion/disorientation - not aware of location or event, poor attention and concentration, loss of memory for events up to and/or after the concussion.
- d) Balance problems including dizziness, lightheadedness or vertigo.
- e) Blurred or double vision.

The Pocket Concussion Recognition Tool or the ACC SportSmart Concussion Card may be used to help identify a suspected concussion. These tools are for non-medical personnel to assist with recognition of a suspected concussion and should not be used to 'clear' people to return to riding that day. Refer Appendix 2

The Unconscious Diver

If the Diver is injured and / or unconscious apply first aid principles

- Alert the Lifeguard in the first instance
- DRSABC (Danger, Response, Send for Help, Airway, Breathing, Circulation).
- Treat all unconscious Divers as though they have a spinal injury.
- An unconscious Diver must **ONLY** be moved by personnel trained in spinal immobilisation techniques i.e. trained on-site Lifeguards
- Urgent hospital care is necessary if there is concern regarding the risk of structural head or neck injury – call 111.

Immediate Referral (Red Flags)

A rider with any of the following should be referred to hospital **URGENTLY**.

- Loss of consciousness or seizures
- Persistent confusion
- Double vision
- Deterioration after being injured – increased drowsiness, headache or vomiting
- Report of neck pain or spinal cord symptoms – numbness, tingling, muscle weakness
- Child
- Personal medical history of bleeding disorder / clotting disorder



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- Personal history of regular medication use that could result in prolonged bleeding (e.g. Warfarin, Aspirin).

If at any time there is any doubt the Diver should be referred to hospital for an immediate assessment.

All other Divers who have been withdrawn from competition due to a suspected concussion are advised to seek medical review by a qualified medical practitioner as soon as possible to confirm diagnosis.

Remove From Further Training and Competition

A Diver should never return to training/competition on the day of a suspected or confirmed concussive injury.

A Diver with a suspected or confirmed concussion should be immediately removed from training or an event, and should not be returned to activity until they are assessed by a qualified medical doctor.

Diver(s) with a suspected concussion should not be left alone, should not drive a motor vehicle and should not consume alcohol. The Diver MUST also be in the care of a responsible person who is aware of the concussion.

Only qualified medical practitioners (doctors) should diagnose whether a concussion has occurred, or provide advice as to whether the diver can return to training/competition. All divers should be referred for a medical assessment.

It is suggested that all clubs/events have a list of local medical doctors, concussion clinics and emergency departments close to where the event is being held.

A pre-activity checklist of the appropriate services could include:

- Local doctors or medical centre
- Local hospital emergency department
- Ambulance services (111).

Medical Assessment

Any Diver who is suspected of having sustained a concussion should be reviewed by the designated on-site Lifeguard at the event initially. The Diver will then be referred for immediate medical review (as per the Red Flags above) or have an assessment from a medical doctor post-event

A qualified medical practitioner should:

- a) Diagnose whether a concussion has occurred – based on clinical judgement;



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- b) Evaluate the injured Diver for concussion using SCAT5 (or SCAT5 Child for those under the age of 12 years) or similar tool;
- c) Advise the Diver (or accompanying coach, Team Manager, parent/guardian) as to medical management;
- d) Advise the Diver as to when it is appropriate to begin a Graduated Return to Diving Program (refer Appendix 1 of the this Concussion Policy for Graduated Return to Diving Guidelines);
- e) Clear the Diver to return to play following the Graduated Return to Diving Program, as detailed in this Concussion Policy.

Diving New Zealand endorses the Sport Concussion Assessment Tool version 5 (SCAT5) and the Child-SCAT5 as a validated means of assessing concussion by a medical doctor. Refer Appendix 4.

We recommend Divers, coaches and officials become familiar with the symptoms evaluated in SCAT5.

The SCAT5 is NOT to be used for diagnosis of concussion alone. It provides a standardised assessment to aid diagnosis by a medical doctor.

Recovery

The majority (80-90%) of concussions resolve in a short (7-10 day) period. Some Divers will have more long-lasting symptoms. The recovery frame may be longer in children and adolescents. As a result the return to Diving process should be more conservative for children and adolescents. It should be stressed that there is no arbitrary time for recovery and that decisions regarding a return to Diving need to be individualised.

Prior to embarking on a return to Diving programme, a Diver must have no symptoms at rest and must have had a clearance from a medical doctor.

It is suggested that any Diver who has sustained multiple concussions, or who has symptoms which persist for more than two weeks for adults and adolescents (>12yrs age) and more than four weeks for children (<12yrs age), have a review from a clinician with expertise in managing sports-related concussion (for example a Sport and Exercise Medicine Physician, Neurologist, or Neurosurgeon) before returning to Diving.

Return to Diving

Following clearance from a qualified medical practitioner, the Diver should commence and progress through a **Graduated Return To Diving Program (Appendix 5)**.

In all cases, the Graduated Return To Diving Program provides for a minimum of 6 days before the Diver can dive at a competitive level. **Advance to the next stage no more**



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quickly than every 24 hours and only if symptoms of concussion are not reproduced with each level of increasing activity.

The following points are important considerations:

- If concussion symptoms return at any stage of the Diver's return to training/competition, the Diver must inform the managing medical professional of their symptoms and rest a minimum of 24 hours before resuming the level of activity where symptoms recurred.
- Return to activity should be particularly cautious where children and adolescents are concerned.
- The safety of the Diver is the priority and must NOT be compromised.
- The decision regarding return to school/work and clearance to return to restricted activity should always be made by a medical doctor.
- The decision regarding the timing of return to sport/activity should always be made by a medical doctor.

In some cases, symptoms may be prolonged or graded activity may not be tolerated. If recovery is prolonged, evaluation by a concussion specialist or clinic may be warranted to determine if there are other aspects of the concussion that could respond to rehabilitation.

Clearance by a medical doctor is required before return to all forms of Diving Training and Competition.

Enforcement

These guidelines reflect best practice in the management of concussion in a Diving New Zealand sports context. It is everyone's responsibility to ensure that they are applied. Divers, coaches, officials and clubs are encouraged to promote these guidelines and to ensure that they are applied appropriately.

Legal Disclaimer

The information presented is of a general nature and is not a substitute for professional, medical or legal advice. Diving New Zealand and its Federations, Clubs and their employees, agents and other associates (including Divers and officials) disclaim all liability or responsibility for any actions undertaken by any person on reliance on any information provided herein.



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Appendices

The following resources provide useful further information regarding sports concussion. It is suggested that they are used and referred to.



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Appendix One

Consensus Statement on Concussion in Sport:

The 5th International Conference on Concussion in Sport held in Berlin, November 2016 (McCroory et al), found here: <http://bjsm.bmj.com/content/51/11/838>



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Appendix Two

1. The Pocket Concussion Recognition Tool (CRT):
<http://bjsm.bmj.com/content/51/11/872>
2. The ACC SportSmart Concussion Wallet Card :
<https://accsportsmart.co.nz/assets/Uploads/files/Sportsmart-Concussion-card.pdf>



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Appendix Three

Sport Concussion in New Zealand. ACC National Guidelines, found here:

http://www.acc.co.nz/PRD_EXT_CSMP/groups/external_communications/documents/reference_tools/wpc136118.pdf



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Appendix Four

1. SCAT 5 – Sport Concussion Assessment Tool – 5th Edition, found here:
<http://bjsm.bmj.com/content/bjsports/early/2017/04/26/bjsports-2017-097506SCAT5.full.pdf>
2. Child-SCAT5- Sport Concussion Assessment Tool (for children ages 5-12 years), found here:
<http://bjsm.bmj.com/content/bjsports/early/2017/04/26/bjsports-2017-097492childscat5.full.pdf>



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Appendix Five

Return to Diving Stage	Functional Exercise at each stage of rehabilitation	Objective
No activity	Physical and cognitive rest	Recovery
Light aerobic exercise	Walking, swimming or stationary cycling keeping intensity 70% of maximum predicted heart rate. No resistance (weights) training.	Increase heart rate
Diving specific exercise	Running, jumping or bounding type aerobic exercise that replicates the approach and takeoff in Diving	Add movement
Low impact training drills	Low risk strength training preferably under parental or coach supervision (dryland)	Heart rate, movement, co-ordination and cognitive load
Higher impact training drills	Higher risk water activities preferably under parental or coach supervision, using the techniques of jumps, head first entries from 1m board initially. Increase duration & intensity of water entry slowly during this period, moving to 3m, 7.5m, 10m and higher as tolerated.	Restore Diver confidence.
Normal pre-injury Diving	Movement, coordination and cognitive load with more difficult tasks. Return to diving training/competition events	Full return to Springboard, Platform and High Diving