



ImPACT™

The **Best** Approach to
Concussion
Management

**ATHLETES
COACHES
& PARENTS**

Guide to Concussion Management





The most important consideration to prevent Second-Impact Syndrome is never to go back to play before all symptoms of concussion have been resolved.



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What is a concussion?



A concussion is a disturbance in brain function that occurs following either a blow to the head or as a result of violent shaking of the head. Concussion is sometimes called Mild Traumatic Brain Injury (MTBI) and usually occurs as a result of a collision with another player or from contact with sports equipment such as a hockey stick or cricket ball.

Concussion is one of the most serious and prevalent medical problems that can occur in sports played at a high school level. A concussion can occur with or without loss of consciousness and does not only occur in contact sports such as rugby. Concussions have been prevalent in other sports such as hockey, soccer, water polo and cricket.

Is concussion a real problem?



The National Sports Concussion Initiative (NSCI) at Rhodes University, South Africa, recently conducted a study on the incidence of concussion in South African high schools, clubs and provincial rugby teams. The results showed that the average seasonal incidence of concussion per team was as high as 23% at an adult level and 14% at a high school level. In the United States it is estimated that between 50,000 to 300,000 sports related concussions occur each season and over 80% of these are amongst high school students. Research in Canada and New Zealand indicates that approximately 30% of all high school students reported at least one concussion before leaving school.

Studies show that athletes younger than 18 years of age are potentially at risk for concussion due to neurochemical processes which appear to differ from adults in the developing brain. In addition, girls may be more vulnerable than boys to the effects of concussion - girls competing in sports like soccer and basketball may therefore be particularly susceptible. A recent study at the University of Stellenbosch also found that concussions can negatively effect academic performance. The study found that the academic performance of young rugby players who had suffered concussions, was lower than those of non-players. Functions such as attention and concentration, memory, working speed and reaction time are just some of the areas affected after sustaining a concussion. The performance of the players, measured three years apart, also declined with time.



Signs & symptoms

A concussed athlete may report the following symptoms:

- Headache
- Memory problems
- Disorientation (unaware of the game period or score)
- Difficulty in concentrating
- Visual problems (double or fuzzy vision, seeing stars)
- Nausea
- Problems with balance and dizziness
- Fatigue and drowsiness
- Sensitivity to light and noise (ringing in the ears)
- Numbness or tingling sensation
- Feeling slowed down or mentally foggy

A coach/parents may observe the following signs during play:

- Slow to follow instructions or to answer questions
- Impaired balance and poor hand-eye coordination
- Increased distractibility and problems with following the game
- Displays of emotion that appear out of place (eg. irritability, crying and sadness)
- Poor concentration
- Slurred speech
- Vacant stare
- Unsteady and shaky mobility
- Inappropriate game-play (eg. Lingering in the corner of the field, running the wrong way)
- Loss of insight (eg. Insisting they are fit to play and refusal to leave the field)
- Loss of consciousness
- Seizures or convulsions

Parents may observe the following signs at home:

- Sleeping difficulties (sleeping more or less than usual, trouble falling asleep)
- Problems with waking up
- Regular vomiting
- Appears confused and disoriented
- Loses consciousness (passes out)
- Slurred speech
- Experiences weakness or numbness in a part of the body
- Inappropriate emotions such as irritability or crying

Action steps



It is important that coaches and parents follow the necessary steps to ensure that the concussion is managed effectively.

Action plan for COACHES

1 REMOVE THEM FROM THE GAME OR PRACTICE IMMEDIATELY, if you suspect that one of your players has suffered a concussion.

2 Alert the **medical personnel** available at the match fixture or the school first-aid team. The team should be trained to assess concussion and assist you in taking the appropriate steps.

In the event that medical personnel or a first aid team is unavailable, utilise an on-field Concussion Assessment Card made available by ImPACT. This will help you to recognise the signs and symptoms of a concussion.

3 Refer them to a **qualified medical practitioner** at the emergency and trauma unit which is closest to the school, if you are sure that the player has sustained a concussion.

This should be done as soon as possible after the concussion has occurred. Utilise either an ambulance or a responsible adult driver (preferably a parent/guardian) to drive them to the trauma unit promptly. A list of trauma units, names of doctors and phone numbers available nationwide will be provided by the ImPACT psychologist managing the school's concussion program.

4 Refer them to the **ImPACT accredited psychologist** who is managing your school's concussion program, once the athlete has been evaluated by a medical practitioner at the trauma unit. Your player will normally undergo post-concussion neuropsychological testing with ImPACT once any initial severe symptoms have subsided - usually within a few days after sustaining the head injury. The ImPACT test will evaluate the player's cognitive abilities and symptom profile..

5 **Await feedback** from the medical practitioner to assist you in managing a return-to-play protocol.

“When in doubt, sit them out!”

If the player does not report or show any signs or symptoms of concussion but you are still unsure about whether the player has been concussed, do not return them to play for the rest of the match.

- Inform the athlete's parents or guardians of the situation. -



Action plan for PARENTS

- Should you be attending the game/practice in which your child sustains a concussion, assist the coach by driving your child to the emergency & trauma unit. If your child has sustained a severe concussion, utilise the services of an ambulance if one is available.
- Once the medical practitioner has assessed your child, contact the ImPACT psychologist responsible for concussion management at your school. An appointment will be arranged to ensure post-concussion testing with ImPACT usually between three to seven days after sustaining the concussion. Should your child be on tour and out of the area, either the coach or another ImPACT accredited psychologist will conduct the testing.
- Monitor your child by looking for worrying signs and symptoms mentioned before.
- It is recommended that the concussed individual consult with a medical doctor as to what medication can be taken following a concussion as some medications may be contra-indicated.
- Ensure that the suggestions for recovery provided by the medical practitioner, who will have the ImPACT report, is adhered too. The ImPACT psychologist's report will include advice about the extent to which your child will be able to participate in study activities. If necessary a letter may be provided for school authorities in this regard, especially if there are important tests or examinations to be written - a concussed individual will not be capable of performing at their normal level.
- Physical AND mental exertion should be avoided to facilitate complete recovery from a concussion.





When is it safe to return to play?

Most concussions which are straight-forward in nature will resolve within a few days. In these cases, athletes will proceed quickly through the steps necessary to return them to active competition. In all cases, it is important that the recommendations of the medical practitioner be adhered to. He or she has the knowledge and experience of how to manage concussion and will have the player's neuropsychological test results provided by the ImPACT psychologist.

Before a follow-up consultation is made with the medical practitioner the athlete must first redo the ImPACT neuropsychological test. The report will be sent directly to the medical practitioner, who will now have the results of the baseline test, post-concussion test done within the first week of injury and any further tests taken thereafter. Based on their clinical training, experience and supporting information from the ImPACT test, they will advise whether it is safe to return-to-play to training and/or matches. The final decision about returning to play rests with the medical doctor, not the ImPACT clinician.

It is important for coaches to ensure that athletes follow a strict return-to-play protocol in order to ensure their safety following a concussion. An internationally recommended return-to-play protocol typically proceeds as follows:

1. Removal from contest following signs and/or symptoms of concussion.
2. No return-to-play in current game
3. Medical evaluation following injury
 - Rule out more serious intracranial pathology
 - Neuropsychological testing considered "cornerstone" of proper post-injury assessment
4. Step-by-step process for return-to-play:
 - No activity and rest until asymptomatic
 - Light aerobic exercise
 - Sport-specific training
 - Non-contact drills
 - Full-contact drills
 - Game play

It was specifically recommended that each step would, in most circumstances, be separated by 24 hours. Furthermore, any recurrence of concussive symptoms should lead to the athlete dropping back to the previous level. In other words, if an athlete is asymptomatic at rest and develops a headache following light aerobic exercise, the athlete should return to complete rest.



Questions & Answers

What is Second-Impact Syndrome?

Whilst the first concussion a player sustains may not cause permanent damage, a repeat injury to the head soon after the prior unresolved concussion, can have serious consequences. This is referred to as Second Impact Syndrome which results from increases in intracranial pressure, massive swelling, herniating and even death. The second injury does not have to be severe to have permanently disabling or deadly effects.

Prevention of second-impact syndrome may be assisted by neuropsychological testing in which brain functions such as visual motor speed, reaction time, impulse control and memory are measured. The results of the neuropsychological testing conducted by an ImPACT accredited psychologist after injury are compared to the results of the a players “baseline” test completed before the start of the season. If the player has not received baseline testing, the post-concussion test results can be compared to the normative standard of South African athletes of a particular age and gender.

! The most important consideration to prevent Second-Impact Syndrome is never to go back to play before all symptoms of concussion have been resolved!

How does taking the ImPACT test help?

Athletes sometimes hide the fact that they have symptoms because they want to return to play, or because they do not recognise symptoms that may indicate a concussion. However, they cannot hide their performance on the ImPACT brain function tests. Taking the test therefore provides much better assurance to medical doctors, parents and coaches that an athlete is fully recovered and ready for safe return-to-play.

Sometimes athletes have a number of concussions over a few seasons, or even within one season. Research has shown that over time there can be gradual permanent decline in some intellectual functions after many concussions, although this does not happen in all cases. Repeat testing with the ImPACT test at the beginning of each season, and after a concussion enables an ImPACT accredited psychologist to see when this is starting to happen to a particular individual and it enables him or her to provide recommendations about future sports participation in order to stop any further decline before it has harmful study or even life consequences.

! Taking the ImPACT test provides athletes and their parents with a greater sense of security and peace of mind about participating in a sport where there is a high risk of sustaining a concussion.

Pre-season CHECKLIST



An important consideration in the prevention of concussion involves education and management before the season starts. Sports coaches and school management can take steps to ensure that athletes, parents and school staff know what concussion is and how to deal with it.

Educate the school and the community

- Ensure that signs and symptoms of concussion can be recognised
- Take every concussion seriously
- Inform coaching staff to be vigilant in monitoring players for concussive symptoms
- Organise an information session for parents and coaches run by the ImPACT accredited psychologist responsible for your school's concussion program

Coordinate with school officials

- Ensure that medical teams are on standby at matches and practices
- Involve the principal, sports trainers, school nurses and parent-teacher associations

Construct a concussion-management protocol

- With the assistance of the ImPACT psychologist, draw up an action plan to assist you when a concussion occurs
- Establish a protocol that satisfies the unique needs of your school, for example: Where will you refer the concussed athlete? Who will take them there? What is the name of the trauma unit and where is it situated? Who is the doctor in charge?
- Ensure that you have names and numbers of medical practitioners and ImPACT psychologists on hand during practice or matches

Encourage pre-season “baseline” testing with ImPACT

- Conduct baseline testing well before the season begins
- Ensure that your ImPACT psychologist educates the school on concussion management

Adopt a “safety-first” approach

- Teach athletes safe playing techniques and encourage them to follow rules of play
- Discourage un-sportsman like conduct and promote fair-play and respect for opponents and fellow team members.
- Make sure that athletes wear the right equipment such as scrum-caps, shin-pads and mouth guards. Equipment should be worn consistently and correctly
- Teach athletes of the consequences of playing while injured
- Prevent second-impact syndrome by ensuring your player does not compete if they have sustained a concussion
- Adhere to advice from your medical practitioner

! Ensure that players are healthy enough to participate and have undergone a medical evaluation.



Taking the ImPACT test provides athletes and their parents with a greater sense of security and peace of mind about participating in a sport where there is a high risk of sustaining a concussion.

For more information on sports concussion management visit:

www.concussion.co.za

www.impacttest.com
www.discoverysharksmart.co.za
www.rugbyiq.com

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