



**LACROSSE CANADA
CROSSE CANADA**

Concussion Management Guidelines

April 2024



Concussion Management Guidelines

Context

In the landscape of Canadian sport, the incidence, knowledge, and treatment of concussions has grown due to a greater awareness of concussions from the number of high-profile athletes in sport that have sustained them. Increased media coverage relating to brain injury, and our increased understanding of the consequences of repetitive brain trauma, primarily within professional sports has heightened this awareness, with this comes the knowledge that concussions are very possible within the sport of Lacrosse.

Purpose

Lacrosse Canada believes that everyone involved with lacrosse should take all precautionary steps to prevent and reduce brain injuries, by informing themselves of the signs and symptoms of a concussion, and by taking accountability for their role in the prevention, identification, and return to health of any participant suffering from a brain injury.

These Concussion Management Guidelines provide guidance in identifying signs and symptoms of a concussion, the suggested responsibilities of coaches and other team staff, return to play guidelines, and the reporting mechanisms for instances of possible concussions.

These guidelines are consistent with the [Canadian Guideline on Concussion in Sport](#) (Parachute, 2024).

Scope

The Concussion Policy addresses the identification and management of a suspected or confirmed concussion, as well as the protocol for Return to Play for any participant associated within the LC's lacrosse activities. **Lacrosse Canada is not responsible for diagnosing concussions – this can only be done by a medical doctor or nurse practitioner** – but Lacrosse Canada can contribute to the immediate identification and management of concussions. Return to Play procedures for Participants suffering from a confirmed concussion should be guided by the health care professional in charge of treatment.

Awareness

Everyone on the playing surface is at risk of suffering a concussion.

- Players
- Coaches and Team Staff
- On floor/field officials

It is important to note that:

- Individuals with a previous history of concussion are at a higher risk of concussion¹ and take a longer time to recover²
- Females are at higher risk of concussion³

1 Zemper ED. Two-year prospective study of relative risk of a second cerebral concussion. Am J Phys Med Rehabil. 2003;82(9):653-9.

2 Eisenberg MA, Andrea J, Meehan W, Mannix R. Time interval between concussions and symptom duration. Pediatrics. 2013;132(1):8-17.

3 Abrahams S, Fie SM, Patricios J, Posthumus M, September AV. Risk factors for sports concussion: an evidence-based systematic review. Br J Sports Med. 2014;48(2):91-7.



Dangers

Failure to recognize and report concussion symptoms or returning to activity with ongoing concussion symptoms sets the stage for:

- **Cumulative Concussive Injury**

Data suggests that the concussed brain goes through a period of heightened susceptibility to a second injury.⁴

- **Second Impact Syndrome**

Second Impact Syndrome is a rare occurrence and occurs when an participant sustains a brain injury (concussion or worse) and while still experiencing symptoms (not fully recovered) sustains a second brain injury, which is associated with brain swelling and permanent brain injury or death.⁵

Recurrent brain injury is currently implicated in the development of Chronic Traumatic Encephalopathy (CTE). CTE is a progressive degenerative brain disease seen in people with a history of brain trauma. For participants, the brain trauma has been repetitive. Symptoms include difficulty thinking, explosive and aggressive behaviour, mood disorder, and movement disorder (Parkinsonism). Presently, CTE can only be diagnosed pathologically.⁶

Education

The Lacrosse Canada strongly recommends that all participants, coaches, officials, and parents maintain an updated education of concussion awareness and management.

Annual concussion education is strongly recommended for all stakeholders.

Annual concussion education should include information on:

- The definition of concussion,
- Possible mechanisms of injury,
- Common signs and symptoms,
- Steps that can be taken to prevent concussions and other injuries from occurring in sport,
- What to do when a participant has suffered a suspected concussion or more serious head injury,
- What measures should be taken to ensure proper medical assessment,
- Return-to-School and Return-to-Sport Strategies, and
- Return to Sport medical clearance requirements

It is strongly recommended that parents and participants review and submit a signed copy of the [Pre-season Concussion Education Sheet](#) to their coach prior to the first practice of the season. In addition, we encourage our stakeholders to read and review the Lacrosse Canada policy as well as these Management Guidelines.

2014;48(2):91-7.

⁴ Giza CC, Hovda DA. The new neurometabolic cascade of concussion. *Neurosurgery*. 2014;75 Suppl 4:S24-33.

⁵ Cantu RC. Second-impact syndrome. *Clin Sports Med*. 1998;17(1):37-44.

⁶ Mez J, Stern RA, McKee AC. Chronic traumatic encephalopathy: where are we and where are we going? *Curr Neurol Neurosci Rep*. 2013 Dec;13(12):407.



This can be accomplished through a pre-season in-person orientation sessions for participants.

Lacrosse Canada has *mandatory* concussion awareness training for certain stakeholders, specifically coaches. Coaches taking part in NCCP training will be required to complete the CAC NCCP [Making Head Way in Sport e-module](#). Coaches will receive professional development points towards the maintenance of their coaching certification for completing this e-module.

Examples of online Concussion education tools:

- Coaching Association of Canada (CAC) NCCP Making Head Way in Sport E-Learning module (primarily for NCCP-certified coaches)
<http://coach.ca/making-head-way-concussion-elearning-series-p153487>
- Parachute Canada
Downloadable resources For parents and players
- Concussion Awareness Training Tool
Web-based tools, resources, 30-minute online course (for parents, participants, and coaches)
<http://www.cattonline.com/>

Equipment

Wearing the proper equipment can help prevent concussions.

- **Players, coaches and on floor/field officials**
All individuals who are required to wear helmets on the playing surface are expected to wear CSA-certified, properly fitted, and well-maintained equipment. A proper functioning helmet will help reduce the risk of serious head injury. Helmets should be examined twice a year for any cracks, loose screws or other breaks that may reduce the effectiveness of the helmet. Helmets that are not CSA-certified, are ill-fitting, or are in any manner altered (including certain types of adhesive from stickers/decals) or broken should never be worn.

Diagnosis

Concussions are to be formally assessed by health care professionals within their scope of practice and expertise – not by coaches, trainers, team staff, or any other individual associated with the Lacrosse Canada.

If a participant is showing signs of concussion and/or has been clinically assessed as concussed, the coach, administrator and/or supervisor of that participant will prevent the participant from participating until the required medical clearance has been provided.



Participants with a suspected concussion must be seen by a physician before returning to play and must follow the Return to Play instructions as outlined in these **Concussion Management Guidelines**.

Reporting

Although the formal diagnosis of concussion should be made following a medical assessment, all stakeholders are responsible for the recognition and reporting of participants who may demonstrate visual signs of a head injury or who report concussion-related symptoms.

For children or adolescents with suspected concussion not directly transferred for medical management to their parents, the coaches must communicate their concerns with the child or adolescent's parent(s) or guardian(s).

It is the responsibility of the individual with a suspected or confirmed concussion or his/her parents to communicate the player's status to the team staff.

It is the responsibility of the players to communicate to their team staff if a teammate is injured with a suspected concussion.

1. Pre-Season Education

Despite recent increased attention focusing on concussion there is a continued need to improve concussion education and awareness. Optimizing the prevention and management of concussion depends highly on annual education of all sport stakeholders (athletes, parents, coaches, officials, teachers, trainers, and licensed healthcare professionals) on evidence informed approaches that can prevent concussion and more serious forms of head injury and help identify and manage an athlete with a suspected concussion.

Concussion education should include information on:

- The definition of concussion,
- Possible mechanisms of injury,
- Common signs and symptoms,
- Steps that can be taken to prevent concussions and other injuries from occurring in sport, what to do when an athlete has suffered a suspected concussion or more serious head injury,
- What measures should be taken to ensure proper medical assessment including
- *Return-to-School* and *Return-to-Sport Strategies*, and Return-to-sport medical clearance requirements.

As an example, this education could be provided using an education sheet that is reviewed and signed by all stakeholders at the time of sport registration or before the beginning of each sports season to confirm that the key information has been received by all participants.

In addition to reviewing information on concussion, it is also important that all sport stakeholders have a clear understanding of the concussion protocol and policies for their sport



and sport setting at the beginning of each sport season. For example, this can be accomplished through pre-season in-person orientation sessions for athletes, parents, coaches and other sport stakeholders.

Who: Athletes, parents, coaches, officials, teachers, and trainers, licensed healthcare professionals.

How: [Pre-season Concussion Education Sheet](#)

2. Head Injury Recognition

Although the formal diagnosis of concussion should be made following a medical assessment, all sport stakeholders including athletes, parents, coaches, officials, teachers, trainers, and licensed healthcare professionals are responsible for the recognition and reporting of athletes who demonstrate visual signs of a head injury or who report concussion symptoms. This is particularly important because many sport and recreation venues will not have access to on-site licensed healthcare professionals.

A concussion should be suspected:

- In any participant who sustains a significant impact to the head, face, neck, or body and demonstrates *ANY* of the visual signs of a suspected concussion or reports *ANY* symptoms of a suspected concussion as detailed in the [Concussion Recognition Tool 6 \(CRT6\)](#)
- If a player reports *ANY* concussion symptoms to one of their peers, parents, teachers, or coaches or if anyone witnesses a participant exhibiting any of the visual signs of concussion.

In some cases, an athlete may demonstrate signs or symptoms of a more severe head or spine injury including convulsions, worsening headaches, vomiting or neck pain. If an athlete demonstrates any of the 'Red Flags' indicated by the [Concussion Recognition Tool 6 \(CRT6\)](#), a more severe head or spine injury should be suspected, and Emergency Medical Assessment should be pursued (see 3a. Emergency Medical Assessment).

Who: Athletes, parents, coaches, officials, teachers, trainers, and licensed healthcare professionals.

How: [Concussion Recognition Tool - 6th Edition \(CRT6\)](#)



Know the signs and Symptoms of a Concussion

| Thinking / Remembering | Physical | Emotional / Mood | Sleep Disturbance |
|--|---|---|---|
| <ul style="list-style-type: none"> ▪ Difficulty thinking clearly ▪ Feeling slowed down ▪ Difficulty concentrating ▪ Difficulty remembering new information | <ul style="list-style-type: none"> ▪ Headache or head pressure ▪ Nausea or vomiting (early on) ▪ Balance problems ▪ Dizziness ▪ Fuzzy or blurry vision ▪ Feeling tired, having no energy ▪ Sensitivity to noise or light | <ul style="list-style-type: none"> ▪ Irritability ▪ Sadness ▪ More emotional ▪ Nervous or anxious | <ul style="list-style-type: none"> ▪ Sleeping more than usual ▪ Sleeping less than usual ▪ Trouble falling a sleep |

3. Onsite Medical Assessment

Depending on the suspected severity of the injury and access to medical services, an initial assessment may be completed by emergency medical professionals or by an on-site licensed health professional where available. In cases where an athlete loses consciousness or it is suspected an athlete might have a more severe head or spine injury, Emergency Medical Assessment by emergency medical professionals should take place (see 3a below). If a more severe injury is not suspected, the athlete should undergo Sideline Medical Assessment or Medical Assessment, depending on if there is a licensed healthcare professional present (see 3b below).

3a. Emergency Medical Assessment

If an athlete is suspected of sustaining a more severe head or spine injury during a game or practice, an ambulance should be called immediately to transfer the patient to the nearest emergency department for further Medical Assessment.

Coaches, parents, trainers and sports officials should not make any effort to remove equipment or move the athlete until an ambulance has arrived and the athlete should not be left alone until the ambulance arrives. After the emergency medical services staff has completed the Emergency Medical Assessment, the athlete should be transferred to the nearest hospital for Medical Assessment. In the case of youth (under 18 years of age), the athlete’s parents or legal guardian should be contacted immediately to inform them of the athlete’s injury. For athletes over 18 years of age, their emergency contact person should be contacted if one has been provided.

Who: Emergency medical professionals



3b. Sideline Medical Assessment

If an athlete is suspected of sustaining a concussion and there is no concern for a more serious head or spine injury, the player should be immediately removed from the field of play.

Scenario 1: If a licensed healthcare professional is present:

- Bring the Participant to a quiet area.
- Complete a Sideline Medical Assessment using [*Sport Concussion Assessment Tool – 6th Edition\(SCAT6\)*](#) or [*Child Sport Concussion Assessment Tool – 6th Edition \(Child SCAT6\)*](#)

Note:

The SCAT6 and Child SCAT6 are clinical tools that should only be used by a licensed healthcare professional that has experience using these tools.

It is important to note that the results of SCAT6 and Child SCAT6 testing can be normal in the setting of acute concussion and therefore, should not be used to make sideline return-to-sport decisions in youth participants.

Any youth Participant who is suspected of having sustained a concussion must not return to the game or practice and must be referred for Medical Assessment.

If a youth athlete is removed from play following a significant impact and has undergone Sideline Medical Assessment, but there are NO visual signs of a concussion and the athlete reports NO concussion symptoms then the athlete can be returned to play but should be monitored for delayed symptoms for 48 hours.

In the case of national team-affiliated athletes (age 18 years and older) who have been removed from play following a suspected concussion, an experienced certified athletic therapist, physiotherapist, or medical doctor providing medical coverage for the sporting event may make the determination that a concussion has not occurred based on the results of the Sideline Medical Assessment. In these cases, the athlete may be returned to the practice or game without a [*Medical Clearance Letter*](#) but this should be clearly communicated to the coaching staff. Players that have been cleared to return to games or practices should be monitored for delayed symptoms by the licensed healthcare professional. *If the athlete develops any delayed symptoms the athlete should be removed from play and undergo Medical Assessment by a medical doctor or nurse practitioner.* (See 4. Medical Assessment).

Scenario 2: If there is no licensed healthcare professional present

The participant should be referred immediately for medical assessment by a medical doctor, physician assistant or nurse practitioner, and the Participant is not permitted to return to play until receiving medical clearance.

Who: Athletic therapists, physiotherapists, medical doctor

How: [*Sport Concussion Assessment Tool –6th Edition\(SCAT6\)*](#) & [*Child Sport Concussion Assessment Tool – 6th Edition \(Child SCAT6\)*](#)



Once the participant has been seen by Emergency Medical Services and/or taken home, a [LC Head Injury Incident Report Form](#) is to be completed/submitted to the MA & Lacrosse Canada.

Following the identification of a possible concussion and regardless if the participant is conscious, an individual (team staff, coach, trainer, etc.) ideally with first aid knowledge and training must remain with the participant to observe for any signs of deterioration. Any potentially concussed participant not immediately transported to hospital should be observed closely for any deterioration for at least 30 minutes. Someone must remain with the participant until either medical personnel arrive (if required) or until a parent/guardian accepts responsibility for the participant's safety and well-being.

Post-Incident –First 24 to 48 hours

Problems can still arise over the course of the first 24 to 48 hours. The participant should be taken to hospital as soon as possible if one or more of the following symptoms appear:

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

4. Medical Assessment

In order to provide comprehensive evaluation of athletes with a suspected concussion, the medical assessment must rule out more serious forms of traumatic brain and spine injuries, must rule out medical and neurological conditions that can present with concussion-like symptoms, and must make the diagnosis of concussion based on findings of the clinical history and physical examination and the evidence-based use of adjunctive tests as indicated (i.e. CT scan). In addition to nurse practitioners, the types of medical doctors that are qualified to evaluate patients with a suspected concussion include²: pediatricians; family medicine, sports medicine, emergency department, internal medicine and rehabilitation (physiatrists) physicians; neurologists; and neurosurgeons.

In geographic regions of Canada with limited access to medical doctors (i.e., rural or northern communities), a licensed healthcare professional (i.e., nurse) with pre-arranged access to a medical doctor or nurse practitioner can facilitate this role. The medical assessment is responsible for determining whether the athlete has been diagnosed with a concussion or not. Athletes with a diagnosed concussion should be provided with a [Medical Assessment Letter](#) indicating a concussion has been diagnosed. Athletes that are determined to have not sustained a concussion must be provided with a [Medical Assessment Letter](#) indicating a concussion has not been diagnosed and the athlete can return to school, work and sport activities without restriction.

Who: Medical doctor, nurse practitioner. **How:** Medical Assessment Letter



5. Concussion Management

When an athlete has been diagnosed with a concussion, it is important that the athlete's parent/legal guardian or spouse is informed. All athletes diagnosed with a concussion must be provided with a standardized [Medical Assessment Letter](#) that notifies the athlete and their parents/legal guardian/spouse that they have been diagnosed with a concussion and may not return to any activities with a risk of concussion (such as sport) until medically cleared to do so by a medical doctor or nurse practitioner. Because the [Medical Assessment Letter](#) contains personal health information, it is the responsibility of the athlete or their parent/legal guardian to provide this documentation to the athlete's coaches, teachers, or employers. It is also important for the athlete to provide this information to sport organization officials that are responsible for injury reporting and concussion surveillance where applicable.

Athletes diagnosed with a concussion should be provided with education about the signs and symptoms of concussion, strategies about how to manage their symptoms, the risks of returning to sport without medical clearance and recommendations regarding a gradual return to school and sport activities. Athletes diagnosed with a concussion are to be managed according to their [Return-to-School](#) and [Sport-Specific Return-to-Sport Strategies](#) under the supervision of a medical doctor or nurse practitioner. When available, athletes should be encouraged to work with the team athletic therapist or physiotherapist to optimize progression through their [Sport-Specific Return-to-Sport Strategy](#). Once the athlete has completed their [Return-to-School](#) and [Sport-Specific Return-to-Sport Strategies](#) and are deemed to be clinically recovered from their concussion, the medical doctor or nurse practitioner can consider the athlete for a return to full sport activities and issue a [Medical Clearance Letter](#).

The stepwise progressions for [Return-to-School](#) and [Return-to-Sport Strategies](#) are outlined below. Note that these strategies begin at the same time, can happen concurrently and the first step of both is the same.



Return-to-School Strategy

The following is an outline of the *Return-to-School Strategy* that should be used to help student-athletes, parents, and teachers to partner in allowing the athlete to make a gradual return to school activities (Table 1). Depending on the severity and type of the symptoms present, student-athletes will progress through the following stages at different rates. Athletes should also be encouraged to ask their school if they have a school specific Return-to-Learn Program in place to help student-athletes make a gradual return to school.

Athletes do not need to be symptom-free to return to school and complete absence from school of more than one week is not recommended. It is common for an athlete's symptoms to worsen slightly with activity. This is acceptable as they progress through steps so long as the symptom exacerbation is:

- **mild:** Symptoms worsen by only one to two points on a zero-to-10 scale, and
- **brief:** Symptoms settle back down to pre-activity levels within an hour.

If the athlete's symptoms worsen more than this, they should pause and adapt activities as needed.

Table 1. Return-to-School Strategy: Graduated Approach

| Step | Activity | Description | Goal of each step |
|---|---|---|--|
| 1 | Activities of daily living and relative rest (first 24 to 48 hours) | <ul style="list-style-type: none"> ○ Typical activities at home (e.g. preparing meals, social interactions, light walking) that do not result in more than mild and brief worsening of symptoms ○ Minimize screen time | Gradual reintroduction of typical activities |
| After a maximum of 24 to 48 hours after injury, progress to step 2. | | | |
| 2 | School activities with encouragement to return to school (as tolerated) | <ul style="list-style-type: none"> ○ Homework, reading or other light cognitive activities at school or at home ○ Take breaks and adapt activities if they result in more than mild and brief worsening of symptoms ○ Gradually resume screen time, as tolerated | Increase tolerance to cognitive work and connect socially with peers |
| If the student can tolerate school activities, progress to step 3. | | | |
| 3 | Part-time or full days at school with accommodations (as needed) | <ul style="list-style-type: none"> ○ Gradually reintroduce schoolwork ○ Build tolerance to the classroom and school environment over time. Part-time school days with access to breaks throughout the day and other accommodations may be required ○ Gradually reduce accommodations related to the concussion and increase workload | Increase academic activities. |



| | | | |
|--|----------------------------|---|-------------------------------------|
| If the student can tolerate full days without accommodations for concussion, progress to step 4. | | | |
| 4 | Return to school full-time | <ul style="list-style-type: none"> ○ Return to full days at school and academic activities, without accommodations related to the concussion ○ For return to sport and physical activity, including physical education class, refer to the Return-to-Sport Strategy | Return to full academic activities. |
| Return to school is complete. | | | |

Table adapted from: Patricios, Schneider et al., 2023; Reed, Zemek et al., 2023

Sport-Specific Return-to-Sport Strategy

The following is an outline of the *Return-to-Sport Strategy* that should be used to help athletes, parents, coaches, trainers, teachers, and medical professionals to partner in allowing the athlete to make a gradual return to sport activities (Table 2). Activities should be tailored to create a sport-specific strategy that helps the athlete return to their respective sport.

The athlete should spend a minimum of 24 hours at each step before progressing on to the next. It is common for an athlete’s symptoms to worsen slightly with activity. This is acceptable as they progress through steps 1 to 3 of return to sport, so long as symptom exacerbation is:

- **mild:** symptoms worsen by only one to two points on a zero-to-10 scale, and
- **brief:** symptoms settle back down to pre-activity levels within an hour.

If the athlete’s symptoms worsen more than this, they should stop the activity and try resuming the next day at the same step.

It is important that youth and adult student-athletes return to full-time school activities before progressing to stages 4, 5 and 6 of the *Sport-Specific Return-to-Sport Strategy*. It is also important that all athletes provide their coach with a *Medical Clearance Letter* prior to returning to full contact sport activities.

Who: Medical doctor, nurse practitioner and team athletic therapist or physiotherapist.

How: Sport-Specific Return-to Sport Strategy [Medical Assessment Letter](#)



Table 2. Sport-Specific Return-to-Sport Strategy: Graduated Approach

| Step | Activity | Activity details | Goal of each step |
|---|---|---|--|
| 1 | Activities of daily living and relative rest (first 24 to 48 hours) | <ul style="list-style-type: none"> ○ Typical activities at home (e.g. preparing meals, social interactions, light walking) that do not result in more than mild and brief worsening of symptoms ○ Minimize screen time | Gradual reintroduction of typical activities. |
| | | After a maximum of 24 to 48 hours after injury, progress to step 2. | |
| 2 | 2A: Light effort aerobic exercise | <ul style="list-style-type: none"> ○ Start with light aerobic exercise, such as stationary cycling and walking at a slow to medium pace ○ May begin light resistance training that does not result in more than mild and brief worsening of symptoms ○ Exercise up to approximately 55% of maximum heart rate ○ Take breaks and modify activities as needed | Increase heart rate. |
| | 2B: Moderate effort aerobic exercise | <ul style="list-style-type: none"> ○ Gradually increase tolerance and intensity of aerobic activities, such as stationary cycling and walking at a brisk pace ○ Exercise up to approximately 70% of maximum heart rate ○ Take breaks and modify activities as needed | |
| If the athlete can tolerate moderate aerobic exercise, progress to step 3. | | | |
| 3 | Individual sport-specific activities, without risk of inadvertent head impact | <ul style="list-style-type: none"> ○ Add sport-specific activities (e.g., running, changing direction, individual drills) ○ Perform activities individually and under supervision from a teacher, parent/caregiver or coach ○ Progress to where the athlete is free of concussion-related symptoms, even when exercising | Increase the intensity of aerobic activities and introduce low-risk sport-specific movements |
| Medical clearance If the athlete has completed return to school (if applicable) and has been medically cleared, progress to step 4. | | | |



| | | | |
|---|---|--|---|
| 4 | Non-contact training drills and activities | <ul style="list-style-type: none"> ○ Progress to exercises with no body contact at high intensity, including more challenging drills and activities (e.g., passing drills, multi-athlete training and practices) | Resume usual intensity of exercise, co-ordination and activity-related cognitive skills. |
| If the athlete can tolerate usual intensity of activities with no return of symptoms, progress to step 5. | | | |
| 5 | Return to all non-competitive activities, full-contact practice and physical education activities | <ul style="list-style-type: none"> ○ Progress to higher-risk activities including typical training activities, full-contact sport practices and physical education class activities ○ Do not participate in competitive gameplay | Return to activities that have a risk of falling or body contact, restore confidence and assess functional skills by coaching staff |
| If the athlete can tolerate non-competitive, high-risk activities, progress to step 6. | | | |
| 6 | Return to sport | Unrestricted sport and physical activity | |
| Return to sport is complete. | | | |

Table adapted from: Patricios, Schneider et al., 2023; Reed, Zemek et al., 2023

6. Interdisciplinary Concussion Care

Most athletes who sustain a concussion while participating in sport will make a complete recovery and be able to return to full school and sport activities within 4 weeks of injury. However, approximately 15 – 30% of individuals will experience symptoms that persist beyond this time frame. If available, individuals who experience persistent postconcussion symptoms (longer than four weeks) may benefit from referral to a medically-supervised Interdisciplinary concussion clinic that has access to professionals with licensed training in traumatic brain injury that may include experts in sport medicine, neuropsychology, physiotherapy, occupational therapy, neurology, neurosurgery, and rehabilitation medicine.

Referral to a Interdisciplinary clinic for assessment should be made on an individualized basis at the discretion of an athlete’s medical doctor or nurse practitioner. If access to a Interdisciplinary concussion clinic is not available, a referral to a medical doctor with clinical training and experience in concussion (e.g. a sport medicine physician, neurologist, or rehabilitation medicine physician) should be considered for the purposes of developing an individualized treatment plan. Depending on the clinical presentation of the individual, this treatment plan may involve a variety of healthcare professionals with areas of expertise that address the specific needs of the athlete based on the assessment findings.

Who: Interdisciplinary medical team, medical doctor with clinical training and experience in concussion (e.g., a sports medicine physician, neurologist, or rehabilitation medicine physician), licensed healthcare professional.



7. Return to Sport

Athletes who have been determined to have not sustained a concussion and those that have been diagnosed with a concussion and have successfully completed their Return-to-School and Sport-Specific Return-to-Sport Strategies can be considered for return to full sport activities. The final decision to medically clear an athlete to return to full game activity should be based on the clinical judgment of the medical doctor or nurse practitioner taking into account the athlete's past medical history, clinical history, physical examination findings and the results of other tests and clinical consultations where indicated (i.e. neuropsychological testing, diagnostic imaging).

Athletes who have been diagnosed with a concussion can be considered for medical clearance to return to sport activities with risk of contact or fall once they have successfully completed:

- all steps of the Return-to-School Strategy (if applicable), and
- steps 1 to 3 of the Sport-specific Return-to-Sport Strategy

Prior to returning to full contact practice and game play, each athlete must provide their coach with a standardized [Medical Clearance Letter](#) that specifies that a medical doctor or nurse practitioner has personally evaluated the patient and has cleared the athlete to return to sport. In geographic regions of Canada with limited access to medical doctors (i.e. rural or northern communities), a licensed healthcare professional (i.e. a nurse) with pre-arranged access to a medical doctor or nurse practitioner can provide this documentation. *A copy of the Medical Clearance Letter should also be submitted to sport organization officials that have injury reporting and surveillance programs where applicable.*

Athletes who have been provided with a Medical Clearance Letter may progress through steps 4, 5 and 6 of the Sport-specific Return-to-Sport Strategy to gradually return to full, unrestricted sport activities. If the athlete experiences any new concussion-like symptoms during these steps, they should be instructed to stop the activity and return to step 3 to establish the full resolution of symptoms. Medical clearance is required again before progressing to step 4. This information should be provided to the appropriate people (e.g., coach, trainer, teacher). In the event that the athlete sustains a new suspected concussion, the Canadian Guideline on Concussion in Sport should be followed as outlined here.

Who: Medical doctor, nurse practitioner

How: [Medical Clearance Letter](#)



Canadian Sport Concussion Pathway

1. Pre-Season Education

- Who: Athletes, parents/caregivers, coaches, officials, trainers, teachers, licensed healthcare professionals
- Tool: Pre-Season Concussion Education Sheet

Impact to the head, face, neck or body

Head injury is suspected

2. Head Injury Recognition

- Who: Athletes, parents/caregivers, coaches, officials, trainers, teachers, licensed healthcare professionals
- How: Concussion Recognition Tool 6

Is a more serious head or spine injury suspected?

YES NO

Remove from play

Is a licensed healthcare professional present?

NO YES

3A. Emergency Medical Assessment

- Who: Emergency medical personnel

3B. Sideline Assessment

- Who: Licensed healthcare professional
- How: SCAT6, Child SCAT6

4. Medical Assessment

- Who: Medical doctor, nurse practitioner
- How: Medical Assessment Letter

Is a concussion suspected?

YES NO

Was a concussion diagnosed?

YES NO

5. Concussion Management

- Who: Medical doctor, nurse practitioner, team licensed healthcare professional (if available)
- How: Return-to-School Strategy, Return-to-Sport Strategy

Does the athlete have persisting symptoms?*

YES NO

6. Interdisciplinary Concussion Care

- Who: Interdisciplinary medical team, medical doctor with clinical training and experience in concussion, licensed healthcare professionals

7. Return to Sport Medical Clearance

- Who: Medical doctor, nurse practitioner
- How: Medical Clearance Letter

Return to Sport

*Persisting symptoms: lasting longer than four weeks



Glossary

Athlete: Any youth or adult participating in a school or non-school based sport activity, competing at any level of play (amateur or national team). This term refers to all sport participants and players. The most appropriate term will vary across different sports and settings.

Child Sport Concussion Assessment Tool – 6th Edition (Child SCAT6): A standardized tool for evaluating concussions in individuals aged 5 to 12 years, designed for use by physicians and licensed healthcare professionals. Published in 2023 by the Concussion in Sport Group, the Child SCAT6 replaces the previous Child SCAT5 from 2017.

Concussion: A form of traumatic brain injury induced by biomechanical forces that result in signs and symptoms that typically resolve spontaneously within 1-4 weeks of injury.¹

Concussion Recognition Tool – 6th Edition (CRT6): A tool intended to be used for the identification of suspected concussion in children, youth, and adults. Published in 2023 by the Concussion in Sport Group, the CRT6 replaces the previous Pocket Concussion Recognition Tool from 2017.

CSA certified: This means the equipment has been tested using process laid out in the Standard developed by the CSA for that specific piece of equipment and meets its requirements.

Document: A standardized written letter or form that can help facilitate communication between sport stakeholders.

Exercise: Any physical activity that requires bodily movement including resistance training as well as aerobic and anaerobic exercise or training.

Licensed healthcare professional: A healthcare provider who is licensed by national professional regulatory body to provide concussion-related healthcare services that fall within their licensed scope of practice. Examples include medical doctors, nurses, physiotherapists, and athletic therapists.

Among licensed healthcare professionals, only medical doctors and nurse practitioners are qualified to conduct a comprehensive medical assessment and provide a concussion diagnosis in Canada. The types of medical doctors qualified to do such an evaluation are pediatricians; family medicine, sports medicine, emergency department and rehabilitation (physiatrists) physicians; neurologists; and neurosurgeons.

Medical Assessment: The evaluation of an individual by a licensed healthcare professional to determine the presence or absence of a medical condition or disorder, such as a concussion.

¹ McCrory et al. (2017). Consensus statement on concussion in sport – the 5th international conference on concussion in sport held in Berlin, October 2016. *British Journal of Sports Medicine*, 51(11), 838-847.



Interdisciplinary concussion clinic: A facility or network of licensed healthcare professionals that provide assessment and treatment of concussion patients and are supervised by a physician with training and experience in concussion.

Persistent symptoms: Concussion symptoms that last longer than 2 weeks after injury in adults and longer than 4 weeks after injury in youth.

Recognition: The detection of an event (i.e., a suspected concussion) occurring during sports or a sport activity.

Return-to-School Strategy: A graduated stepwise strategy for the process of recovery and return to academic activities after a concussion. The broader process of returning to cognitive activities has commonly been referred to as “return to learn”.

Return-to-Sport Strategy: A graduated stepwise strategy for the process of recovery and then return to sport participation after a concussion. The broader process of returning to unstructured and structured physical activity has commonly been referred to as “return to play”.

Sport Concussion Assessment Tool – 6th Edition (SCAT6): A standardized tool for evaluating concussions in individuals aged 13 years or older, designed for use by physicians and licensed healthcare professionals. Published in 2023 by the Concussion in Sport Group, the SCAT6 replaces the previous SCAT5 from 2017.

Sport or sport activity: A school or non-school based physical activity that can be played as an individual or a team including games and practices.

Tool: A standardized instrument or device that can be used to help recognize an event (i.e., a suspected concussion) or assess an individual with a suspected medical diagnosis (i.e., Sport Concussion Assessment Tool 6).

Treatment: An intervention provided by a licensed healthcare professional to address a diagnosed medical condition/disorder or its associated symptoms, such as physical therapy.

Youth or youth athlete: An athlete or sport participant who is less than 18 years of age.

¹ McCrory et al. (2017). Consensus statement on concussion in sport – the 5th international conference on concussion in sport held in Berlin, October 2016. *British Journal of Sports Medicine*, 51(11), 838-847



Medical Assessment Letter

Date: _____ Athlete's name: _____

To whom it may concern,

Athletes who sustain a suspected concussion should be managed according to the *Canadian Guideline on Concussion in Sport*. Accordingly, I have personally completed a Medical Assessment on this patient.

Results of Medical Assessment

- This patient has not been diagnosed with a concussion and can resume full participation in school, work, and sport activities without restriction.
- This patient has not been diagnosed with a concussion, but the assessment led to the following diagnosis and recommendations:

- This patient has been diagnosed with a concussion.

The goal of concussion management is to allow complete recovery of the patient's concussion by promoting a safe and gradual return to school, work and sport activities. The patient has been instructed to avoid activities that could potentially place them at risk of another concussion or head injury until they have been provided with a *Medical Clearance Letter* from a medical doctor or nurse practitioner in accordance with the *Canadian Guideline on Concussion in Sport*.

Other comments:

Thank-you very much in advance for your understanding.

Yours Sincerely,

Signature/print _____ M.D. / N.P. (circle appropriate designation)*

**In rural, remote or northern regions, the Medical Assessment Letter may be completed by a nurse with pre-arranged access to a medical doctor or nurse practitioner. Forms completed by other licensed healthcare professionals should not otherwise be accepted.*



Return-to-School Strategy

The following is an outline of the Return-to-School Strategy that should be used to help student-athletes, parents, and teachers to partner in allowing the athlete to make a gradual return to school activities (Table 1). Depending on the severity and type of the symptoms present, student-athletes will progress through the following stages at different rates. It is common for a student's symptoms to worsen slightly with activity. This is acceptable as they progress through steps so long as the symptom exacerbation is:

- mild: Symptoms worsen by only one to two points on a zero-to-10 scale, and
- brief: Symptoms settle back down to pre-activity levels within an hour.

If the student's symptoms worsen more than this, they should pause and adapt activities as needed. Athletes should also be encouraged to ask their school if they have a school specific Return-to-Learn Program in place to help student-athletes make a gradual return to school.

Table 1. Return-to-School Strategy: Graduated Approach¹

| Step | Activity | Description | Goal of each step |
|------|---|---|--|
| 1 | Activities of daily living and relative rest (first 24 to 48 hours) | <ul style="list-style-type: none"> ○ Typical activities at home (e.g. preparing meals, social interactions, light walking) that do not result in more than mild and brief worsening of symptoms ○ Minimize screen time | Gradual reintroduction of typical activities |
| | | After a maximum of 24 to 48 hours after injury, progress to step 2. | |
| 2 | School activities with encouragement to return to school (as tolerated) | <ul style="list-style-type: none"> ○ Homework, reading or other light cognitive activities at school or at home ○ Take breaks and adapt activities if they result in more than mild and brief worsening of symptoms ○ Gradually resume screen time, as tolerated | Increase tolerance to cognitive work and connect socially with peers |
| | | If the student can tolerate school activities, progress to step 3. | |
| 3 | Part-time or full days at school with accommodations (as needed) | <ul style="list-style-type: none"> ○ Gradually reintroduce schoolwork ○ Build tolerance to the classroom and school environment over time. Part-time school days with access to breaks throughout the day and other accommodations may be required ○ Gradually reduce accommodations related to the concussion and increase workload | Increase academic activities. |
| | | If the student can tolerate full days without accommodations for concussion, progress to step 4. | |
| 4 | Return to school full-time | <ul style="list-style-type: none"> ○ Return to full days at school and academic activities, without accommodations related to the concussion ○ For return to sport and physical activity, including physical education class, refer to the Return-to-Sport Strategy | Return to full academic activities. |
| | | Return to school is complete. | |



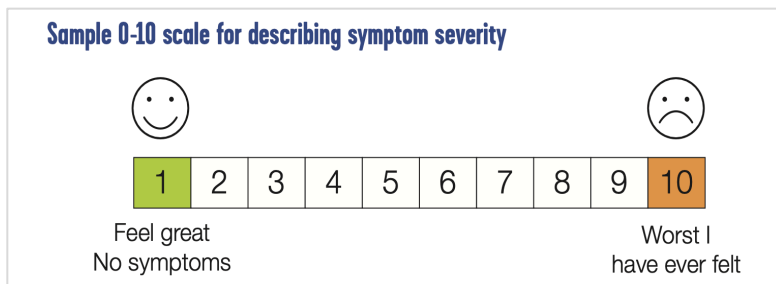
Sport-Specific Return-to-Sport Strategy

The following is an outline of the *Return-to-Sport Strategy* that should be used to help athletes, parents, coaches, trainers, teachers, and medical professionals to partner in allowing the athlete to make a gradual return to sport activities (Table 2). Activities should be tailored to create a sport-specific strategy that helps the athlete return to their respective sport.

The athlete should spend a minimum of 24 hours at each step before progressing on to the next. It is common for an athlete's symptoms to worsen slightly with activity. This is acceptable as they progress through steps 1 to 3 of return to sport, so long as symptom exacerbation is:

- **mild:** symptoms worsen by only one to two points on a zero-to-10 scale, and
- **brief:** symptoms settle back down to pre-activity levels within an hour.

If the athlete's symptoms worsen more than this, they should stop the activity and try resuming the next day at the same step.



Before progressing to step 4 of the sport-specific Return-to-Sport Strategy, athletes must:

- successfully complete all steps of the Return-to-School Strategy (if applicable), and
- provide their coach with a Medical Clearance Letter indicating they have been medically cleared to return to activities with risk of falling or contact.

If the athlete experiences concussion symptoms after medical clearance (i.e., during steps 4 to 6), they should return to step 3 to establish full resolution of symptoms. Medical clearance will be required again before progressing to step 4. It is also important that all athletes provide their coach with a [Medical Clearance Letter](#) prior to returning to full contact sport activities.



Table 2. Sport-Specific Return-to-Sport Strategy: Graduated Approach²

| Step | Activity | Activity details | Goal of each step |
|---|---|---|---|
| 1 | Activities of daily living and relative rest (first 24 to 48 hours) | <ul style="list-style-type: none"> Typical activities at home (e.g. preparing meals, social interactions, light walking) that do not result in more than mild and brief worsening of symptoms Minimize screen time | Gradual reintroduction of typical activities. |
| | | After a maximum of 24 to 48 hours after injury, progress to step 2. | |
| 2 | 2A: Light effort aerobic exercise | <ul style="list-style-type: none"> Start with light aerobic exercise, such as stationary cycling and walking at a slow to medium pace May begin light resistance training that does not result in more than mild and brief worsening of symptoms Exercise up to approximately 55% of maximum heart rate Take breaks and modify activities as needed | Increase heart rate. |
| | 2B: Moderate effort aerobic exercise | <ul style="list-style-type: none"> Gradually increase tolerance and intensity of aerobic activities, such as stationary cycling and walking at a brisk pace Exercise up to approximately 70% of maximum heart rate Take breaks and modify activities as needed | |
| If the athlete can tolerate moderate aerobic exercise, progress to step 3. | | | |
| 3 | Individual sport-specific activities, without risk of inadvertent head impact | <ul style="list-style-type: none"> Add sport-specific activities (e.g., running, changing direction, individual drills) Perform activities individually and under supervision from a teacher, parent/caregiver or coach Progress to where the athlete is free of concussion-related symptoms, even when exercising | Increase the intensity of aerobic activities and introduce low-risk sport-specific movements |
| Medical clearance If the athlete has completed return to school (if applicable) and has been medically cleared, progress to step 4. | | | |
| 4 | Non Contact Training Drills | <ul style="list-style-type: none"> Progress to exercises with no body contact at high intensity, including more challenging drills and activities (e.g., passing drills, multi-athlete training and practices) | Resume usual intensity of exercise, co-ordination and activity-related cognitive skills. |
| If the athlete can tolerate usual intensity of activities with no return of symptoms, progress to step 5. | | | |
| 5 | Return to all non-competitive activities, full-contact practice and physical education activities | <ul style="list-style-type: none"> Progress to higher-risk activities including typical training activities, full-contact sport practices and physical education class activities Do not participate in competitive gameplay | Return to activities that have a risk of falling or body contact, restore confidence and assess functional skills by coaching staff |
| If the athlete can tolerate non-competitive, high-risk activities, progress to step 6. | | | |
| 6 | Return to sport | Unrestricted sport and physical activity | |
| Return to sport is complete. | | | |

¹ Table adapted from: Patricios, Schneider et al., 2023; Reed, Zemek et al., 2023

² McCrory et al. (2017)



Medical Clearance Letter

Date: _____ Athlete's name: _____

To whom it may concern,

Athletes who are diagnosed with a concussion should be managed according to the *Canadian Guideline on Concussion in Sport, 2nd edition*, including the *Return-to-School* and *Return-to-Sport Strategies* (see page 2 of this letter). Accordingly, the above athlete has been medically cleared to participate in the following activities as tolerated effective the date stated above (please check all that apply):

- Return-to-Sport Step 4: Non-contact training drills and activities with risk of inadvertent head impact (Exercises with no body contact at high intensity)**
- Return-to-Sport Step 5: Return to all non-competitive activities, full-contact practice and physical education activities**
- Return-to-Sport Step 6: Unrestricted sport and physical activity**

What if symptoms recur?

Athletes who have been medically cleared must be able to participate in full-time school, if applicable, as well as high intensity resistance and endurance exercise without symptom recurrence. Any athlete who has been medically cleared and has a recurrence of symptoms, should immediately remove themselves from play and inform their coach, teacher or parent/caregiver. Medical clearance is required before progressing to step 4 of the Return-to-Sport Strategy again.

Any athlete who returns to practices or games and sustains a new suspected concussion should be managed according to the *Canadian Guideline on Concussion in Sport*.

Other comments:

Thank-you very much in advance for your understanding.

Yours Sincerely,

Signature/print _____ M.D. / N.P. (circle appropriate designation)*

**In rural or northern regions, the Medical Clearance Letter may be completed by a nurse with pre-arranged access to a medical doctor or nurse practitioner. Forms completed by other licensed healthcare professionals should not otherwise be accepted.*

Child SCAT6™



Sport Concussion Assessment Tool

For Children Ages 8 to 12 Years

What is the SCAT6?

The Child SCAT6 is a standardised tool for evaluating concussions in children ages 8-12 years, and designed for use by Health Care Professionals (HCP). The Child SCAT6 cannot be performed correctly in less than 10-15 minutes. The Child SCAT6 is intended to be used in the acute phase, ideally within 72 hours (3 days), and up to 7 days, following injury. If greater than 7 days post-injury consider using the Child Sport Concussion Office Assessment Tool 6 (Child SCAT6).¹

The Child SCAT6 is used for evaluating children aged 8-12 years. For athletes aged 13 years or older, please use the SCAT6.²

If you are not an HCP, please use the Concussion Recognition Tool 6 (CRT6).³

Detailed instructions for use of the Child SCAT6 are provided as a supplement. Please read through these instructions carefully before using the Child SCAT6. Brief verbal instructions for each test are given in *blue italics*. The only equipment required for the examiner is athletic tape and a watch or timer.

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Recognise and Remove

A head impact by either a direct blow or indirect transmission of force to the head can be associated with serious and potentially fatal consequences. If there are significant concerns, including any of the **RED FLAGS** listed in Box 1 indicating signs that require urgent medical attention, and if a qualified medical practitioner is not present for immediate sideline assessment, then activation of emergency procedures and urgent transport to the nearest hospital should be arranged.

Completion Guide

Blue: Required part of assessment

Orange: Optional part of assessment

Key Points

- Any child with suspected concussion should be **IMMEDIATELY REMOVED FROM PLAY**, medically assessed, and monitored for injury-related signs, including deterioration of clinical condition.
- No child with a suspected concussion should be returned to play on the day of injury.**
- If a child is suspected of having a concussion, and medical personnel are not immediately available, the child should be referred (or transported if needed) to a medical facility for assessment.
- Children with suspected or diagnosed concussion should not be given medications such as aspirin, anti-inflammatories, sedatives or opiates.
- Concussion signs and symptoms may evolve over time and it is important to monitor the child for ongoing, worsening, or development of concussion-related symptoms.
- The Child SCAT6 should not be used in isolation in making post-acute return to play decisions.
- The diagnosis of a concussion is a clinical determination made by a HCP. The Child SCAT6 should NOT be used by itself to make, or exclude, the diagnosis of concussion. It is important to note that a child may have a concussion even if their Child SCAT6 assessment is within normal limits.

Remember

- The basic principles of first aid should be followed: assess danger at the scene, child responsiveness, airway, breathing, and circulation.
- Do not attempt to move an unconscious/unresponsive child (other than that required for airway management) unless trained to do so.
- Assessment for a spinal and/or spinal cord injury is a critical part of the initial on-field assessment. Do not attempt to assess the spine unless trained to do so.
- Do not remove a helmet or any other equipment unless trained to do so safely.

For use by Health Care Professionals Only

Child SCAT6™

Developed by: The Concussion in Sport Group (CISG)

Supported by:





Child SCAT6[©] Sport Concussion Assessment Tool

For Children Ages 8 to 12 Years

Child Name:

ID Number: Date of Birth:

Date of Examination: Date of Injury: Time of Injury:

Sex: Male Female Prefer Not To Say Dominant Hand: Left Right Ambidextrous

Sport/Team/School: Current Year/Grade Level in School:

First Language: Preferred Language:

Examiner:

Concussion History

How many diagnosed concussions has the child had in the past?:

When was the most recent concussion?:

Primary Symptoms:

How long was the recovery (time to being cleared to play) from the most recent concussion?: (Days)

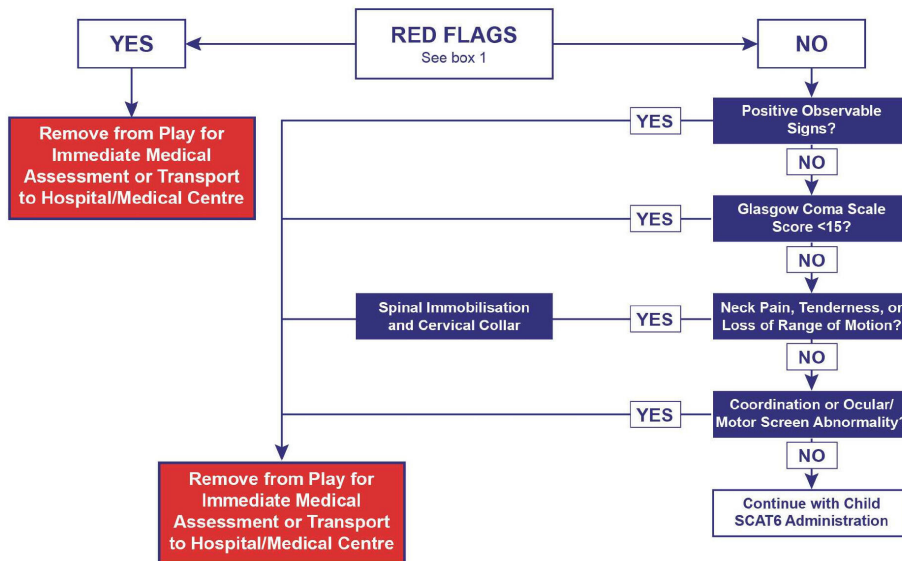
Immediate Assessment/Neuro Screen (Not Required at Baseline)

The following elements should be used in the evaluation of all children who are suspected of having a concussion prior to proceeding to the cognitive assessment, and ideally should be completed "on-field" after the first aid/emergency care priorities are completed.

If any of the observable signs of concussion are noted after a direct or indirect blow to the head, the child should be immediately and safely removed from participation and evaluated by a HCP.

Consideration of transportation to a medical facility should be at the discretion of the physician or HCP.

The Glasgow Coma Scale⁴ is important as a standard measure for all patients and can be repeated over time to monitor deterioration of consciousness. The cervical spine examination is also a critical step in the immediate assessment.





Step 1: Observable Signs

Witnessed Observed on Video

| | | |
|---|---|---|
| Lying motionless on playing surface | Y | N |
| Falling unprotected to the surface | Y | N |
| Balance/gait difficulties, motor incoordination, ataxia: stumbling, slow/laboured movements | Y | N |
| Disorientation or confusion, staring or limited responsiveness, or an inability to respond appropriately to questions | Y | N |
| Blank or vacant look | Y | N |
| Facial injury after head trauma | Y | N |
| Impact seizure | Y | N |
| High-risk mechanism of injury (sport-dependent) | Y | N |

Step 2: Glasgow Coma Scale⁴

Typically, GCS is assessed once. Additional scoring columns are provided for monitoring over time, if needed.

Time of Assessment:

Date of Assessment:

| Best Eye Response (E) | | | |
|--------------------------------|---|---|---|
| No eye opening | 1 | 1 | 1 |
| Eye opening to pain | 2 | 2 | 2 |
| Eye opening to speech | 3 | 3 | 3 |
| Eyes opening spontaneously | 4 | 4 | 4 |
| Best Verbal Response (V) | | | |
| No verbal response | 1 | 1 | 1 |
| Incomprehensible sounds | 2 | 2 | 2 |
| Inappropriate words | 3 | 3 | 3 |
| Confused | 4 | 4 | 4 |
| Oriented | 5 | 5 | 5 |
| Best Motor Response (M) | | | |
| No motor response | 1 | 1 | 1 |
| Extension to pain | 2 | 2 | 2 |
| Abnormal flexion to pain | 3 | 3 | 3 |
| Flexion/withdrawal to pain | 4 | 4 | 4 |
| Localized to pain | 5 | 5 | 5 |
| Obeys commands | 6 | 6 | 6 |
| Glasgow Coma Score (E + V + M) | | | |
| | | | |

Box 1: Red Flags

- Neck pain or tenderness
- Seizure or convulsion
- Double vision
- Loss of consciousness
- Weakness or tingling/burning in more than 1 arm or in the legs
- Deteriorating conscious state
- Vomiting
- Severe or increasing headache
- Increasingly restless, agitated or combative
- GCS <15
- Visible deformity of the skull

Step 3: Cervical Spine Assessment

In a child who is not lucid or fully conscious, a cervical spine injury should be assumed and spinal precautions taken.

| | | |
|---|---|---|
| Does the child report neck pain at rest? | Y | N |
| Is there tenderness to palpation? | Y | N |
| If NO neck pain and NO tenderness, does the athlete have a full range of ACTIVE pain free movement? | Y | N |
| Are limb strength and sensation normal? | Y | N |

Step 4: Coordination & Oculomotor Screen

| | | |
|---|---|---|
| Coordination: Is finger-to-nose normal for both hands with eyes open and closed? | Y | N |
| Ocular/Motor: Without moving their head or neck, can the patient look side-to-side and up-and-down without double vision? | Y | N |
| Are observed extraocular eye movements normal? If not, describe: | Y | N |

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Off-Field Assessment

Please note that the cognitive assessment should be done in a distraction-free environment with the child in a resting state **after** completion of the Immediate Assessment/Neuro Screen.

Step 1: Child Background

Has the child ever been:

| | | | | | |
|--|---|---|--|---|---|
| Hospitalised for head injury? (If yes, describe below) | Y | N | Diagnosed with attention deficit hyperactivity disorder (ADHD)? | Y | N |
| Diagnosed/treated for headache disorder or migraine? | Y | N | Diagnosed with depression, anxiety, or other psychological disorder? | Y | N |
| Diagnosed with a learning disability/dyslexia? | Y | N | | | |

Notes:

Is the child on any medications? If yes, please list:

Step 2: Symptom Evaluation - Child Report

Baseline: Suspected/Post-injury: Time elapsed since suspected injury: mins/hours/days

The child will complete the symptom scale⁵ (below) after you provide instructions. Please note that the instructions are different for baseline versus suspected/post-injury evaluations.

Baseline: Say *“Please rate your symptoms below based on how you typically feel with “1” representing the symptom is a little and “3” representing the symptom is a lot.”*

Suspected/Post-injury: Say *“Please rate your symptoms below based on how you feel now with “1” representing the symptom is a little and “3” representing the symptom is a lot.”*

PLEASE HAND THE FORM TO THE CHILD

| Symptom | Not at all/never | A little/rarely | Somewhat/sometimes | A lot/often |
|---|------------------|-----------------|--------------------|-------------|
| I have headaches | 0 | 1 | 2 | 3 |
| I feel dizzy | 0 | 1 | 2 | 3 |
| I feel like the room is spinning | 0 | 1 | 2 | 3 |
| I feel like I'm going to faint | 0 | 1 | 2 | 3 |
| Things are blurry when I look at them | 0 | 1 | 2 | 3 |
| I see double | 0 | 1 | 2 | 3 |
| I feel sick to my stomach | 0 | 1 | 2 | 3 |
| I get tired a lot | 0 | 1 | 2 | 3 |
| I get tired easily | 0 | 1 | 2 | 3 |
| I have trouble paying attention | 0 | 1 | 2 | 3 |
| I get distracted easily | 0 | 1 | 2 | 3 |
| I have a hard time concentrating | 0 | 1 | 2 | 3 |
| I have problems remembering what people tell me | 0 | 1 | 2 | 3 |
| I have problems following directions | 0 | 1 | 2 | 3 |
| I daydream too much | 0 | 1 | 2 | 3 |
| I get confused | 0 | 1 | 2 | 3 |
| I forget things | 0 | 1 | 2 | 3 |
| I have problems finishing things | 0 | 1 | 2 | 3 |
| I have trouble figuring things out | 0 | 1 | 2 | 3 |
| It's hard for me to learn new things | 0 | 1 | 2 | 3 |
| My neck hurts | 0 | 1 | 2 | 3 |

| | | |
|---|---|---|
| Do the symptoms get worse with physical activity? | Y | N |
| Do the symptoms get worse with trying to think? | Y | N |

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Step 2: Symptom Evaluation - Child Report (Continued)

Overall rating for child to answer:

On a scale of 0 to 10 (where 10 is normal), how do you feel now?

| | |
|------------------------|-----------|
| Very Bad | Very Good |
| 0 1 2 3 4 5 6 7 8 9 10 | |

If not 10, in what way do you feel different?

PLEASE HAND THE FORM BACK TO THE EXAMINER

Child Report: Total number of symptoms: of 21 Symptom severity score: of 63

Step 2: Symptom Evaluation - Parent Report

PLEASE HAND THE FORM TO THE PARENT/GUARDIAN/CARER

| The Child... | Not at all/never | A little/rarely | Somewhat/sometimes | A lot/often |
|--|------------------|-----------------|--------------------|-------------|
| has headaches | 0 | 1 | 2 | 3 |
| feels dizzy | 0 | 1 | 2 | 3 |
| has a feeling that the room is spinning | 0 | 1 | 2 | 3 |
| feels faint | 0 | 1 | 2 | 3 |
| has blurred vision | 0 | 1 | 2 | 3 |
| has double vision | 0 | 1 | 2 | 3 |
| experiences nausea | 0 | 1 | 2 | 3 |
| gets tired a lot | 0 | 1 | 2 | 3 |
| gets tired easily | 0 | 1 | 2 | 3 |
| has trouble sustaining attention | 0 | 1 | 2 | 3 |
| is distracted easily | 0 | 1 | 2 | 3 |
| has difficulty concentrating | 0 | 1 | 2 | 3 |
| has problems remembering what he/she is told | 0 | 1 | 2 | 3 |
| has difficulty following directions | 0 | 1 | 2 | 3 |
| tends to daydream | 0 | 1 | 2 | 3 |
| gets confused | 0 | 1 | 2 | 3 |
| is forgetful | 0 | 1 | 2 | 3 |
| has difficulty completing tasks | 0 | 1 | 2 | 3 |
| has poor problem-solving skills | 0 | 1 | 2 | 3 |
| has problems learning | 0 | 1 | 2 | 3 |
| has a sore neck | 0 | 1 | 2 | 3 |

Do the symptoms get worse with physical activity? Y N

Do the symptoms get worse with trying to think? Y N

Overall rating for parent/teacher/coach/carer to answer:

On a scale of 0 to 100% (where 100% is normal), how would you rate the child now?

If not 100%, in what way does the child seem different?

PLEASE HAND THE FORM BACK TO THE EXAMINER

Parent Report: Total number of symptoms: of 21 Symptom severity score: of 63

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Step 3: Cognitive Screening (Based on Standardized Assessment of Concussion; SAC)⁶

Immediate Memory

All 3 trials must be administered irrespective of the number correct on Trial 1. Administer at the rate of one word per second in a monotone voice.

Trial 1: Say *"I am going to test your memory. I will read you a list of words and when I am done, repeat back as many words as you can remember, in any order."*

Trials 2 and 3: Say *"I am going to repeat the same list. Repeat back as many words as you can remember in any order, even if you said the word before in a previous trial."*

Word list used: A B C

| List A | Trial | | | Alternate Lists | |
|--------------------|-------|-----|-----|-----------------|--------|
| | 1 | 2 | 3 | List B | List C |
| Finger | 0 1 | 0 1 | 0 1 | Baby | Jacket |
| Penny | 0 1 | 0 1 | 0 1 | Monkey | Arrow |
| Blanket | 0 1 | 0 1 | 0 1 | Perfume | Pepper |
| Lemon | 0 1 | 0 1 | 0 1 | Sunset | Cotton |
| Insect | 0 1 | 0 1 | 0 1 | Iron | Movie |
| Candle | 0 1 | 0 1 | 0 1 | Elbow | Dollar |
| Paper | 0 1 | 0 1 | 0 1 | Apple | Honey |
| Sugar | 0 1 | 0 1 | 0 1 | Carpet | Mirror |
| Sandwich | 0 1 | 0 1 | 0 1 | Saddle | Saddle |
| Wagon | 0 1 | 0 1 | 0 1 | Bubble | Anchor |
| Trial Total | | | | | |

Time last trial completed:

Immediate Memory Score of 30

Concentration

Digits Backward:

Administer at the rate of one digit per second in a monotone voice reading DOWN the selected column.

Say *"I'm going to read a string of numbers and when I am done, you repeat them back to me in reverse order of how I read them to you. For example, if I say 7-1-9, you would say 9-1-7. So, if I said 9-6-8 you would say? (8-6-9)"*

Digit list used: A B C

| List A | List B | List C | | | | |
|---------------------|-------------|-------------|---|------|---|---|
| 5-2 | 4-1 | 4-9 | Y | N | 0 | 1 |
| 4-1 | 9-4 | 6-2 | Y | N | 0 | 1 |
| 4-9-3 | 5-2-6 | 1-4-2 | Y | N | 0 | 1 |
| 6-2-9 | 4-1-5 | 6-5-8 | Y | N | 0 | 1 |
| 3-8-1-4 | 1-7-9-5 | 6-8-3-1 | Y | N | 0 | 1 |
| 3-2-7-9 | 4-9-6-8 | 3-4-8-1 | Y | N | 0 | 1 |
| 6-2-9-7-1 | 4-8-5-2-7 | 4-9-1-5-3 | Y | N | 0 | 1 |
| 1-5-2-8-6 | 6-1-8-4-3 | 6-8-2-5-1 | Y | N | 0 | 1 |
| 7-1-8-4-6-2 | 8-3-1-9-6-4 | 3-7-6-5-1-9 | Y | N | 0 | 1 |
| 5-3-9-1-4-8 | 7-2-4-8-5-6 | 9-2-6-5-1-4 | Y | N | 0 | 1 |
| Digits Score | | | | of 5 | | |

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Step 3: Cognitive Screening (Continued)

Days in Reverse Order:

Say *“Now tell me the days of the week in reverse order as QUICKLY and as accurately as possible. Start with the last day and go backward. So, you’ll say Sunday, Saturday... go ahead”*

Start stopwatch and CIRCLE each correct response:

Sunday Saturday Friday Thursday Wednesday Tuesday Monday

Time Taken to Complete (secs): **Number of Errors:**

1 point if no errors and completion under 30 seconds

Days Score: of 1

Concentration Score (Digits + Days) of 6

Step 4: Coordination and Balance Examination

Modified Balance Error Scoring System (mBESS)⁷ testing

(see detailed administration instructions)

Foot Tested: Left Right (i.e. test the **non-dominant** foot)

Testing Surface (hard floor, field, etc.):

Footwear (shoes, barefoot, braces, tape etc.):

OPTIONAL (depending on clinical presentation and setting resources): For further assessment, the same 3 stances can be performed on a surface of medium density foam (e.g., approximately 50cm x 40cm x 6cm) with the same instructions and scoring.

| Modified BESS | (20 seconds each) | On Foam (Optional) | |
|----------------------|----------------------------|----------------------|----------------------------|
| Double Leg Stance: | <input type="text"/> of 10 | Double Leg Stance: | <input type="text"/> of 10 |
| Tandem Stance: | <input type="text"/> of 10 | Tandem Stance: | <input type="text"/> of 10 |
| Single Leg Stance: | <input type="text"/> of 10 | Single Leg Stance: | <input type="text"/> of 10 |
| Total Errors: | <input type="text"/> of 30 | Total Errors: | <input type="text"/> of 30 |

Note: If the mBESS yields negative or questionable findings then proceed to the **Tandem Gait/Complex/Dual-Task Tandem Gait**. If the mBESS reveals clinically significant difficulties, **Tandem Gait** is not necessary at this time. The **Tandem Gait**, **Complex Tandem Gait** and optional **Dual-Task** component may be administered later in the office setting as needed.

Timed Tandem Gait

Place a 3-metre-long line on the floor/firm surface with athletic tape. The task should be timed.

Say *“Please walk heel-to-toe quickly to the end of the tape, turn around and come back as fast as you can without separating your feet or stepping off the line.”*

Single Task:

| Time to Complete Tandem Gait Walking (seconds) | | | | |
|--|----------------------|----------------------|----------------------|----------------------|
| Trial 1 | Trial 2 | Trial 3 | Average 3 Trials | Fastest Trial |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |

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British Journal of Sports Medicine

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Step 4: Coordination and Balance Examination (Continued)

Complex Tandem Gait

Forward

Say "Please walk heel-to-toe quickly five steps forward, then continue forward with eyes closed for five steps" 1 point for each step off the line, 1 point for truncal sway.

Forward Eyes Open Points:

Forward Eyes Closed Points:

Forward Total Points:

Backward

Say "Please walk heel-to-toe again, backwards five steps eyes open, then continue backwards five steps with eyes closed." 1 point for each step off the line, 1 point for truncal sway.

Backward Eyes Open Points:

Backward Eyes Closed Points:

Backward Total Points:

Total Points (Forward + Backward):

Dual Task Gait (Optional)

Only perform if the child successfully completes complex tandem gait.

Place a 3-metre-long line on the floor/firm surface with athletic tape. The task should be timed.

Say "Now, while you are walking heel-to-toe, I will ask you to count backwards out loud by 3s. For example, if we started at 100, you would say 100, 97, 94, 91. Let's practise counting. Starting with 95, count backward by threes until I say "stop". Note that this practice only involves counting backwards.

Dual Task Practice: Circle correct responses; record number of subtraction counting errors.

| Task | | | | | | | | | Errors | Time |
|----------|----|----|----|----|----|----|----|----|--------|------|
| Practice | 95 | 92 | 89 | 86 | 83 | 80 | 77 | 74 | | |

Say "Good. Now I will ask you to walk heel-to-toe and count backwards out loud at the same time. Are you ready? The number to start with is 88. Go!"

Dual Task Cognitive Performance: Circle correct responses; record number of subtraction counting errors.

| Task | | | | | | | | | Errors | Time (circle fastest) |
|---------|----|----|----|----|----|----|----|----|--------|-----------------------|
| Trial 1 | 88 | 85 | 82 | 79 | 76 | 73 | 70 | 67 | | |
| Trial 2 | 76 | 73 | 70 | 67 | 64 | 61 | 58 | 55 | | |
| Trial 3 | 93 | 90 | 87 | 84 | 81 | 78 | 75 | 72 | | |

Alternate double number starting integers may be used and recorded below.

| | | | | | | | | | | | | | | | | | | | | |
|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|

Starting Integer: Errors: Time:

Were any single- or dual-task, timed tandem gait trials not completed due to walking errors or other reasons?

Yes No

If yes, please explain why:



Step 5: Delayed Recall

The Delayed Recall should be performed after at least 5 minutes have elapsed since the end of the Immediate Memory section: Score 1 point for each correct response.

Say "Do you remember that list of words I read a few times earlier? Tell me as many words from the list as you can remember in any order."

Time started:

Word list used: A B C

| List A | Score | Alternate Lists | |
|-----------------------------|--------------|-----------------|--------|
| | | List B | List C |
| Finger | 0 1 | Baby | Jacket |
| Penny | 0 1 | Monkey | Arrow |
| Blanket | 0 1 | Perfume | Pepper |
| Lemon | 0 1 | Sunset | Cotton |
| Insect | 0 1 | Iron | Movie |
| Candle | 0 1 | Elbow | Dollar |
| Paper | 0 1 | Apple | Honey |
| Sugar | 0 1 | Carpet | Mirror |
| Sandwich | 0 1 | Saddle | Saddle |
| Wagon | 0 1 | Bubble | Anchor |
| Delayed Recall Score | of 10 | | |

If the athlete was known to you prior to their injury, are they different from their usual self?

Yes No Not applicable (If different, describe why in the [clinical notes](#) section)

Step 6: Decision

| Domain | Date: | Date: | Date: |
|---|-----------------|-----------------|-----------------|
| Immediate Assessment/Neuro Screen | Normal/Abnormal | Normal/Abnormal | Normal/Abnormal |
| Symptom number (of 21) Child Report Parent Report | | | |
| Symptom Severity (of 63) Child Report Parent Report | | | |
| Immediate Memory (of 30) | | | |
| Concentration (of 6) | | | |
| Delayed Recall (of 10) | | | |
| Cognitive Total Score (of 46) | | | |
| mBESS Total Errors (of 30) | | | |
| Tandem Gait fastest time | | | |
| Complex Tandem Gait Total Points | | | |
| Dual Task fastest time | | | |

Disposition

Concussion diagnosed? Yes No Deferred

If re-testing, has the child improved? Yes No

Describe:

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Health Care Professional Attestation

I am an HCP and I have personally administered or supervised the administration of this Child SCAT6.

Name:

Signature: Title/Speciality:

Registration/License number (if applicable): Date:

Additional Clinical Notes

Note: Scoring on the Child SCAT6 should not be used as a stand-alone method to diagnose concussion, measure recovery, or make decisions about a child's readiness to return to sport after concussion. Remember, a child can score within normal limits on the Child SCAT6 and still have a concussion. Wherever possible, the results of the Child SCAT6 should accompany the child to any later reassessments by an HCP.

Sport Concussion Assessment Tool – 6th Edition (Child SCAT6)

SCAT6™

Sport Concussion Assessment Tool

For Adolescents (13 years +) & Adults



What is the SCAT6?

The SCAT6 is a standardised tool for evaluating concussions designed for use by Health Care Professionals (HCPs). The SCAT6 cannot be performed correctly in less than 10-15 minutes. Except for the symptoms scale, the SCAT6 is intended to be used in the acute phase, ideally within 72 hours (3 days), and up to 7 days, following injury. If greater than 7 days post-injury, consider using the SCOAT6/Child SCOAT6.

The SCAT6 is used for evaluating athletes aged 13 years and older. For children aged 12 years or younger, please use the Child SCAT6.

If you are not an HCP, please use the Concussion Recognition Tool 6 (CRT6).

Preseason baseline testing with the SCAT6 can be helpful for interpreting post-injury test scores but is not required for that purpose. Detailed instructions for use of the SCAT6 are provided as a supplement. Please read through these instructions carefully before testing the athlete. Brief verbal instructions for each test are given in *blue italics*. The only equipment required for the examiner is athletic tape and a watch or timer.

This tool may be freely copied in its current form for distribution to individuals, teams, groups, and organizations. Any alteration (including translations and digital re-formatting), re-branding, or sale for commercial gain is not permissible without the expressed written consent of BMJ.

Recognise and Remove

A head impact by either a direct blow or indirect transmission of force to the head can be associated with serious and potentially fatal consequences. If there are significant concerns, which may include any of the Red Flags listed in Box 1, the athlete requires urgent medical attention, and if a qualified medical practitioner is not available for immediate assessment, then activation of emergency procedures and urgent transport to the nearest hospital or medical facility should be arranged.

Completion Guide

Orange: Optional part of assessment

Key Points

- Any athlete with suspected concussion should be REMOVED FROM PLAY, medically assessed, and monitored for injury-related signs and symptoms, including deterioration of their clinical condition.
- No athlete diagnosed with concussion should return to play on the day of injury.
- If an athlete is suspected of having a concussion and medical personnel are not immediately available, the athlete should be referred (or transported if needed) to a medical facility for assessment.
- Athletes with suspected or diagnosed concussion should not take medications such as aspirin or other anti-inflammatories, sedatives or opiates, drink alcohol or use recreational drugs and should not drive a motor vehicle until cleared to do so by a medical professional.
- Concussion signs and symptoms may evolve over time; it is important to monitor the athlete for ongoing, worsening, or the development of additional concussion-related symptoms.
- The diagnosis of concussion is a clinical determination made by an HCP.
- The SCAT6 should NOT be used by itself to make, or exclude, the diagnosis of concussion. It is important to note that an athlete may have a concussion even if their SCAT6 assessment is within normal limits.

Remember

- The basic principles of first aid should be followed: assess danger at the scene, athlete responsiveness, airway, breathing, and circulation.
- Do not attempt to move an unconscious/unresponsive athlete (other than what is required for airway management) unless trained to do so.
- Assessment for a spinal and/or spinal cord injury is a critical part of the initial on-field evaluation. Do not attempt to assess the spine unless trained to do so.
- Do not remove a helmet or any other equipment unless trained to do so safely.

For use by Health Care Professionals Only

SCAT6™

Developed by: The Concussion in Sport Group (CISG)

Supported by:





SCAT6™ Sport Concussion Assessment Tool

For Adolescents (13 years +) & Adults

Athlete Name: _____ ID Number: _____

Date of Birth: _____ Date of Examination: _____ Date of Injury: _____

Time of Injury: _____ Sex: Male Female Prefer Not To Say Other _____

Dominant Hand: Left Right Ambidextrous Sport/Team/School: _____

Current Year in School (if applicable): _____ Years of Education Completed (Total): _____

First Language: _____ Preferred Language: _____

Examiner: _____

Concussion History

How many diagnosed concussions has the athlete had in the past?: _____

When was the most recent concussion?: _____

Primary Symptoms: _____

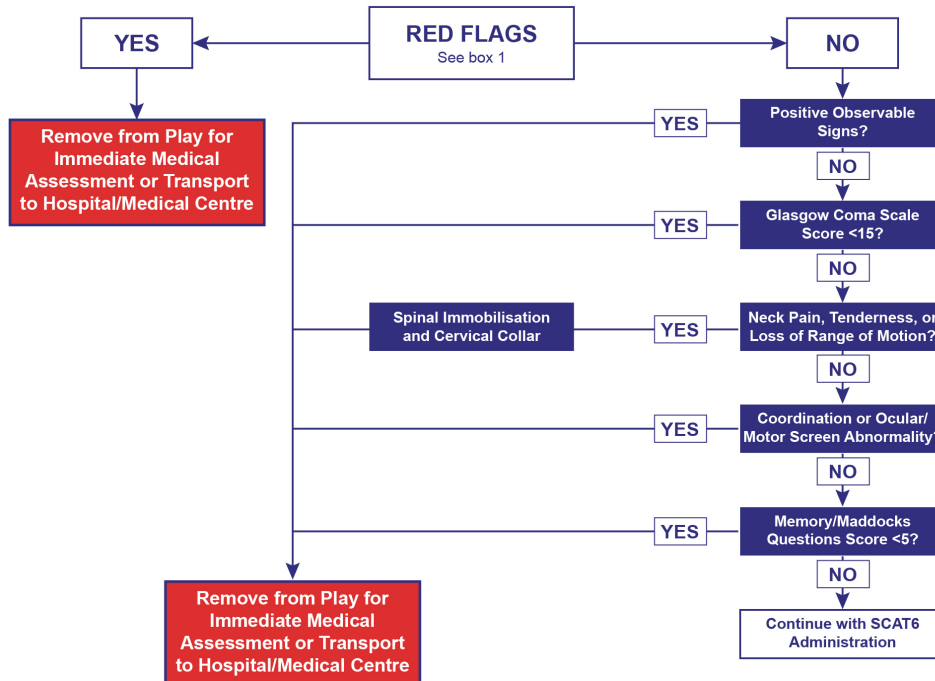
How long was the recovery (time to being cleared to play) from the most recent concussion?: _____ (Days)

Immediate Assessment/Neuro Screen (Not Required at Baseline)

The following elements should be used in the evaluation of all athletes who are suspected of having a concussion prior to proceeding to the cognitive assessment, and ideally should be completed “on-field” after the first aid/emergency care priorities are completed.

If any of the observable signs of concussion are noted after a direct or indirect blow to the head, the athlete should be immediately and safely removed from participation and evaluated by an HCP.

The Glasgow Coma Scale is important as a standard measure for all patients and can be repeated over time to monitor deterioration of consciousness. The Maddocks questions and cervical spine exam are also critical steps of the immediate assessment.



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Step 1: Observable Signs

Witnessed Observed on Video

| | | |
|---|---|---|
| Lying motionless on playing surface | Y | N |
| Falling unprotected to the surface | Y | N |
| Balance/gait difficulties, motor incoordination, ataxia: stumbling, slow/laboured movements | Y | N |
| Disorientation or confusion, staring or limited responsiveness, or an inability to respond appropriately to questions | Y | N |
| Blank or vacant look | Y | N |
| Facial injury after head trauma | Y | N |
| Impact seizure | Y | N |
| High-risk mechanism of injury (sport-dependent) | Y | N |

Step 2: Glasgow Coma Scale

Typically, GCS is assessed once. Additional scoring columns are provided for monitoring over time, if needed.

Time of Assessment:

Date of Assessment:

| Best Eye Response (E) | | | |
|----------------------------|---|---|---|
| No eye opening | 1 | 1 | 1 |
| Eye opening to pain | 2 | 2 | 2 |
| Eye opening to speech | 3 | 3 | 3 |
| Eyes opening spontaneously | 4 | 4 | 4 |

| Best Verbal Response (V) | | | |
|--------------------------|---|---|---|
| No verbal response | 1 | 1 | 1 |
| Incomprehensible sounds | 2 | 2 | 2 |
| Inappropriate words | 3 | 3 | 3 |
| Confused | 4 | 4 | 4 |
| Oriented | 5 | 5 | 5 |

| Best Motor Response (M) | | | |
|----------------------------|---|---|---|
| No motor response | 1 | 1 | 1 |
| Extension to pain | 2 | 2 | 2 |
| Abnormal flexion to pain | 3 | 3 | 3 |
| Flexion/withdrawal to pain | 4 | 4 | 4 |
| Localized to pain | 5 | 5 | 5 |
| Obeys commands | 6 | 6 | 6 |

| | | | |
|---------------------------------------|--|--|--|
| Glasgow Coma Score (E + V + M) | | | |
|---------------------------------------|--|--|--|

Box 1: Red Flags

- Neck pain or tenderness
- Seizure or convulsion
- Double vision
- Loss of consciousness
- Weakness or tingling/burning in more than 1 arm or in the legs
- Deteriorating conscious state
- Vomiting
- Severe or increasing headache
- Increasingly restless, agitated or combative
- GCS <15
- Visible deformity of the skull

Step 3: Cervical Spine Assessment

In a patient who is not lucid or fully conscious, a cervical spine injury should be assumed and spinal precautions taken.

| | | |
|---|---|---|
| Does the athlete report neck pain at rest? | Y | N |
| Is there tenderness to palpation? | Y | N |
| If NO neck pain and NO tenderness, does the athlete have a full range of ACTIVE pain free movement? | Y | N |
| Are limb strength and sensation normal? | Y | N |

Step 4: Coordination & Ocular/Motor Screen

| | | |
|---|---|---|
| Coordination: Is finger-to-nose normal for both hands with eyes open and closed? | Y | N |
| Ocular/Motor: Without moving their head or neck, can the patient look side-to-side and up-and-down without double vision? | Y | N |
| Are observed extraocular eye movements normal? If not, describe: | Y | N |

Step 5: Memory Assessment Maddocks Questions¹

Say "I am going to ask you a few questions, please listen carefully and give your best effort. First, tell me what happened?"

Modified Maddocks questions (Modified appropriately for each sport; 1 point for each correct answer)

| | | |
|--|----|---|
| What venue are we at today? | 0 | 1 |
| Which half is it now? | 0 | 1 |
| Who scored last in this match? | 0 | 1 |
| What team did you play last week/game? | 0 | 1 |
| Did your team win the last game? | 0 | 1 |
| Maddocks Score | /5 | |

Note: Appropriate sport-specific questions may be substituted

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Off-Field Assessment

Please note that the cognitive assessment should be done in a distraction-free environment with the athlete in a resting state **after** completion of the Immediate Assessment/Neuro Screen.

Step 1: Athlete Background

Has the athlete ever been:

| | | | | | |
|--|---|---|--|---|---|
| Hospitalised for head injury? (If yes, describe below) | Y | N | Diagnosed with attention deficit hyperactivity disorder (ADHD)? | Y | N |
| Diagnosed/treated for headache disorder or migraine? | Y | N | Diagnosed with depression, anxiety, or other psychological disorder? | Y | N |
| Diagnosed with a learning disability/dyslexia? | Y | N | | | |

Notes:

Current medications? If yes, please list:

Step 2: Symptom Evaluation

Baseline: Suspected/Post-injury: Time elapsed since suspected injury: mins/hours/days

The athlete will complete the symptom scale (below) after you provide instructions. Please note that the instructions are different for baseline versus suspected/post-injury evaluations.

Baseline: Say *“Please rate your symptoms below based on how you typically feel with “1” representing a very mild symptom and “6” representing a severe symptom.”*

Suspected/Post-injury: Say *“Please rate your symptoms below based on how you feel now with “1” representing a very mild symptom and “6” representing a severe symptom.”*

PLEASE HAND THE FORM TO THE ATHLETE

| Symptom | Rating |
|--|---------------|
| Headaches | 0 1 2 3 4 5 6 |
| Pressure in head | 0 1 2 3 4 5 6 |
| Neck pain | 0 1 2 3 4 5 6 |
| Nausea or vomiting | 0 1 2 3 4 5 6 |
| Dizziness | 0 1 2 3 4 5 6 |
| Blurred vision | 0 1 2 3 4 5 6 |
| Balance problems | 0 1 2 3 4 5 6 |
| Sensitivity to light | 0 1 2 3 4 5 6 |
| Sensitivity to noise | 0 1 2 3 4 5 6 |
| Feeling slowed down | 0 1 2 3 4 5 6 |
| Feeling like “in a fog” | 0 1 2 3 4 5 6 |
| “Don’t feel right” | 0 1 2 3 4 5 6 |
| Difficulty concentrating | 0 1 2 3 4 5 6 |
| Difficulty remembering | 0 1 2 3 4 5 6 |
| Fatigue or low energy | 0 1 2 3 4 5 6 |
| Confusion | 0 1 2 3 4 5 6 |
| Drowsiness | 0 1 2 3 4 5 6 |
| More emotional | 0 1 2 3 4 5 6 |
| Irritability | 0 1 2 3 4 5 6 |
| Sadness | 0 1 2 3 4 5 6 |
| Nervous or anxious | 0 1 2 3 4 5 6 |
| Trouble falling asleep (if applicable) | 0 1 2 3 4 5 6 |

Do your symptoms get worse with physical activity? Y N

Do your symptoms get worse with mental activity? Y N

If 100% is feeling perfectly normal, what percent of normal do you feel?

If not 100%, why?

PLEASE HAND THE FORM BACK TO THE EXAMINER

Once the athlete has completed answering all symptom items, it may be useful for the clinician to revisit items that were endorsed positively to gather more detail about each symptom.

Total number of symptoms: of 22 Symptom severity score: of 132

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Step 3: Cognitive Screening (Based on Standardized Assessment of Concussion; SAC)²

Orientation

| | | |
|--|------|---|
| What month is it? | 0 | 1 |
| What is the date today? | 0 | 1 |
| What is the day of the week? | 0 | 1 |
| What year is it? | 0 | 1 |
| What time is it right now? (within 1 hour) | 0 | 1 |
| Orientation Score | of 5 | |

Immediate Memory

All 3 trials must be administered irrespective of the number correct on Trial 1. Administer at the rate of one word per second.

Trial 1: Say "I am going to test your memory. I will read you a list of words and when I am done, repeat back as many words as you can remember, in any order."

Trials 2 and 3: Say "I am going to repeat the same list. Repeat back as many words as you can remember in any order, even if you said the word before in a previous trial."

Word list used: A B C

| List A | Word list used | | | Alternate Lists | |
|--------------------|----------------|---------|---------|-----------------|---------|
| | Trial 1 | Trial 2 | Trial 3 | List B | List C |
| Jacket | 0 1 | 0 1 | 0 1 | Finger | Baby |
| Arrow | 0 1 | 0 1 | 0 1 | Penny | Monkey |
| Pepper | 0 1 | 0 1 | 0 1 | Blanket | Perfume |
| Cotton | 0 1 | 0 1 | 0 1 | Lemon | Sunset |
| Movie | 0 1 | 0 1 | 0 1 | Insect | Iron |
| Dollar | 0 1 | 0 1 | 0 1 | Candle | Elbow |
| Honey | 0 1 | 0 1 | 0 1 | Paper | Apple |
| Mirror | 0 1 | 0 1 | 0 1 | Sugar | Carpet |
| Saddle | 0 1 | 0 1 | 0 1 | Sandwich | Saddle |
| Anchor | 0 1 | 0 1 | 0 1 | Wagon | Bubble |
| Trial Total | | | | | |

Immediate Memory Score of 30 **Time Last Trial Completed:** _____



Step 3: Cognitive Screening (Continued)

Concentration

Digits Backward:

Administer at the rate of one digit per second reading DOWN the selected column. If a string is completed correctly, move on to the string with next higher number of digits; if the string is completed incorrectly, use the alternate string with the same number of digits; if this is failed again, end the test.

Say *“I’m going to read a string of numbers and when I am done, you repeat them back to me in reverse order of how I read them to you. For example, if I say 7-1-9, you would say 9-1-7. So, if I said 9-6-8 you would say? (8-6-9)”*

Digit list used: A B C

| List A | List B | List C | | | | |
|-------------|-------------|-------------|---|---------------------|---|------|
| 4-9-3 | 5-2-6 | 1-4-2 | Y | N | 0 | 1 |
| 6-2-9 | 4-1-5 | 6-5-8 | Y | N | | |
| 3-8-1-4 | 1-7-9-5 | 6-8-3-1 | Y | N | 0 | 1 |
| 3-2-7-9 | 4-9-6-8 | 3-4-8-1 | Y | N | | |
| 6-2-9-7-1 | 4-8-5-2-7 | 4-9-1-5-3 | Y | N | 0 | 1 |
| 1-5-2-8-6 | 6-1-8-4-3 | 6-8-2-5-1 | Y | N | | |
| 7-1-8-4-6-2 | 8-3-1-9-6-4 | 3-7-6-5-1-9 | Y | N | 0 | 1 |
| 5-3-9-1-4-8 | 7-2-4-8-5-6 | 9-2-6-5-1-4 | Y | N | | |
| | | | | Digits Score | | of 4 |

Months in Reverse Order:

Say *“Now tell me the months of the year in reverse order as QUICKLY and as accurately as possible. Start with the last month and go backward. So, you’ll say December, November... go ahead”*

Start stopwatch and CIRCLE each correct response:

December November October September August July June May April March February January

Time Taken to Complete (secs): Number of Errors:

1 point if no errors and completion under 30 seconds

Months Score: of 1

Concentration Score (Digits + Months) of 5

Step 4: Coordination and Balance Examination

Modified Balance Error Scoring System (mBESS)³ testing

(see detailed administration instructions)

Foot Tested: Left Right (i.e. test the non-dominant foot)

Testing Surface (hard floor, field, etc.):

Footwear (shoes, barefoot, braces, tape etc.):

OPTIONAL (depending on clinical presentation and setting resources): For further assessment, the same 3 stances can be performed on a surface of medium density foam (e.g., approximately 50cm x 40cm x 6cm) with the same instructions and scoring.



Step 4: Coordination and Balance Examination (Continued)

Modified BESS

(20 seconds each)

Double Leg Stance: of 10
 Tandem Stance: of 10
 Single Leg Stance: of 10
 Total Errors: of 30

On Foam (Optional)

Double Leg Stance: of 10
 Tandem Stance: of 10
 Single Leg Stance: of 10
 Total Errors: of 30

Note: If the mBESS yields normal findings then proceed to the **Tandem Gait/Dual Task Tandem Gait**.

If the mBESS reveals abnormal findings or clinically significant difficulties, **Tandem Gait** is not necessary at this time.

Both the **Tandem Gait** and optional **Dual Task** component may be administered later in the office setting as needed (see SCOAT6).

Timed Tandem Gait

Place a 3-metre-long line on the floor/firm surface with athletic tape. The task should be timed. Please complete all 3 trials.

Say *“Please walk heel-to-toe quickly to the end of the tape, turn around and come back as fast as you can without separating your feet or stepping off the line.”*

Single Task:

| Time to Complete Tandem Gait Walking (seconds) | | | | |
|--|----------------------|----------------------|----------------------|----------------------|
| Trial 1 | Trial 2 | Trial 3 | Average 3 Trials | Fastest Trial |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |

Dual Task Gait (Optional. Timed Tandem Gait must be completed first)

Place a 3-metre-long line on the floor/firm surface with athletic tape. The task should be timed.

Say *“Now, while you are walking heel-to-toe, I will ask you to count backwards out loud by 7s. For example, if we started at 100, you would say 100, 93, 86, 79. Let’s practise counting. Starting with 93, count backward by sevens until I say “stop.”* Note that this practice only involves counting backwards.

Dual Task Practice: Circle correct responses; record number of subtraction counting errors.

| Task | | | | | | | | | | | | | Errors | Time |
|----------|----|----|----|----|----|----|----|----|--|--|--|--|--------|------|
| Practice | 93 | 86 | 79 | 72 | 65 | 58 | 51 | 44 | | | | | | |

Say *“Good. Now I will ask you to walk heel-to-toe and count backwards out loud at the same time. Are you ready? The number to start with is 88. Go!”*

Dual Task Cognitive Performance: Circle correct responses; record number of subtraction counting errors.

| Task | | | | | | | | | | | | | Errors | Time (circle fastest) | |
|---------|----|----|----|----|----|----|----|----|----|----|----|----|--------|-----------------------|--|
| Trial 1 | 88 | 81 | 74 | 67 | 60 | 53 | 46 | 39 | 32 | 25 | 18 | 11 | 4 | | |
| Trial 2 | 90 | 83 | 76 | 69 | 62 | 55 | 48 | 41 | 34 | 27 | 20 | 13 | 6 | | |
| Trial 3 | 98 | 91 | 84 | 77 | 70 | 63 | 56 | 49 | 42 | 35 | 28 | 21 | 14 | | |

Alternate double number starting integers may be used and recorded below.

| | | | | | | | | | | | | | | | |
|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|

Starting Integer: Errors: Time:



Step 4: Coordination and Balance Examination (Continued)

Were any single- or dual-task, timed tandem gait trials not completed due to walking errors or other reasons?

Yes No

If yes, please explain why:

Step 5: Delayed Recall

The Delayed Recall should be performed after **at least 5 minutes** have elapsed since the end of the Immediate Memory section: **Score 1 point for each correct response.**

Say *“Do you remember that list of words I read a few times earlier? Tell me as many words from the list as you can remember in any order.”*

Time started:

Word list used: A B C

| Word list used: A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> | | Alternate Lists | |
|--|--------------|-----------------|---------|
| List A | Score | List B | List C |
| Jacket | 0 1 | Finger | Baby |
| Arrow | 0 1 | Penny | Monkey |
| Pepper | 0 1 | Blanket | Perfume |
| Cotton | 0 1 | Lemon | Sunset |
| Movie | 0 1 | Insect | Iron |
| Dollar | 0 1 | Candle | Elbow |
| Honey | 0 1 | Paper | Apple |
| Mirror | 0 1 | Sugar | Carpet |
| Saddle | 0 1 | Sandwich | Saddle |
| Anchor | 0 1 | Wagon | Bubble |
| Delayed Recall Score | of 10 | | |

Total Cognitive Score

Orientation: of 5

Immediate Memory: of 30

Concentration: of 5

Delayed Recall: of 10

Total: of 50

If the athlete was known to you prior to their injury, are they different from their usual self?

Yes No Not applicable (If different, describe why in the [clinical notes](#) section)

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Step 6: Decision

| Domain | Date: | Date: | Date: |
|--|-----------------|-----------------|-----------------|
| Neurological Exam (Acute Injury evaluation only) | Normal/Abnormal | Normal/Abnormal | Normal/Abnormal |
| Symptom number (of 22) | | | |
| Symptom Severity (of 132) | | | |
| Orientation (of 5) | | | |
| Immediate Memory (of 30) | | | |
| Concentration (of 5) | | | |
| Delayed Recall (of 10) | | | |
| Cognitive Total Score (of 50) | | | |
| mBESS Total Errors (of 30) | | | |
| Tandem Gait fastest time | | | |
| Dual Task fastest time | | | |

Disposition

Concussion diagnosed?

Yes No Deferred

Health Care Professional Attestation

I am an HCP and I have personally administered or supervised the administration of this SCAT6.

Name:

Signature: Title/Speciality:

Registration/License number (if applicable): Date:

Additional Clinical Notes

Note: Scoring on the SCAT6 should not be used as a stand-alone method to diagnose concussion, measure recovery, or make decisions about an athlete's readiness to return to sport after concussion. Remember: An athlete can score within normal limits on the SCAT6 and still have a concussion.

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