

SPECIAL OLYMPICS CANADA PAN-CANADIAN CONCUSSION PROTOCOL

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Special Olympics Canada and its Chapters have developed the Special Olympics Canada Pan-Canadian Concussion Protocol to help guide the management of athletes who may have a suspected concussion while participating in events or activities that are sanctioned by Special Olympics Canada or a Chapter.

This *National Concussion Protocol*, and the accompanying **Concussion Policy**, are adapted from the *Canadian Guideline on Concussion in Sport (2017)* published by Parachute Canada. That Guideline documents incorporates and interprets information contained in the report that was prepared by the 2017 Concussion in Sport Group (CISG), a group of sport concussion medical practitioners and experts, and adapts concussion assessment and management tools from the 5th Consensus Statement on Concussion in Sport that was released in April 2017.

Purpose

This protocol covers the recognition, medical diagnosis, and management of athletes who may sustain a suspected concussion during a sport activity. It aims to ensure that athletes with a suspected concussion receive timely and appropriate care and proper management to allow them to return back to sport and other activities safely. This protocol may not address every possible clinical scenario that can occur during sport-related activities but includes critical elements based on the latest evidence and current expert consensus.

Who should use this protocol?

This protocol is intended for use by all athletes and individuals who interact with athletes, including parents/guardians, coaches/volunteers, officials, trainers, and licensed healthcare professionals.

For a summary of the Special Olympics Canada Pan-Canadian Concussion Protocol please refer to the **Special Olympics Canada Sport Concussion Pathway** figure on page 12.

1. ANNUAL 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/guardians, coaches/volunteers, officials, teachers, trainers, licensed healthcare professionals) on current 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.

Special Olympics Canada and its Chapters will make concussion education resources available on their public websites, including this protocol. It is recommended that all stakeholders review these resources at least annually.

Concussion education resources for coaches/volunteers, officials, licensed healthcare professionals and parents/guardians of athletes 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,
- *Return-to-Activities* and *Return-to-Sport Strategies*, and
- Return to sport medical clearance requirements

Concussion education resources for athletes should include information on:

- the definition of concussion,
- possible mechanisms of injury,
- what to do if they think they have a concussion (i.e., stop playing and tell a trusted adult)
- return to activities with support and medical clearance

- ▶ **Who:** Athletes, parents/guardians, coaches/volunteers, officials, trainers, licensed healthcare professionals
- ▶ **How:** Concussion education resources made available through the websites of Special Olympics Canada and its Chapters.

2. HEAD INJURY RECOGNITION

Although the formal diagnosis of concussion should be made following a medical assessment, all sport stakeholders including athletes, parents/guardians, teachers, coaches/volunteers, officials, and licensed healthcare professionals are responsible for the recognition and reporting of athletes who may demonstrate visual signs of a head injury or who report concussion-related 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 athlete 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 *Special Olympics Canada Concussion Recognition Tool*
- if an athlete reports *ANY* concussion symptoms to one of their peers, parents/guardians, or coaches or if anyone witnesses an athlete 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 these signs, as indicated on the *Special Olympics Canada Concussion Recognition Tool*, a more severe head or spine injury should be suspected and Emergency Medical Assessment should be pursued immediately.

The following **observable signs** may indicate a possible concussion:

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

A concussion may result in the following **symptoms**:

- a) Headache or “pressure in head”
- b) Balance problems or dizziness
- c) Nausea or vomiting

- d) Drowsiness, fatigue, or low energy
- e) Blurred vision
- f) Sensitivity to light or noise
- g) More emotional or irritable
- h) “Don’t feel right”
- i) Sadness, nervousness, or anxiousness
- j) Difficulty remembering or concentrating
- k) Feeling slowed down or “in a fog”
- l) Memory problems

Suspected concussion in non-verbal athletes should be identified using the criteria above.

In the case of verbal athletes, in addition to the above signs and symptoms, failure to correctly answer any of these **memory questions** may suggest a concussion:

- a) What venue are we at today?
- b) In which sport are you participating?
- c) Is it before or after lunch?

- ▶ **Who:** Athletes, parents/guardians, coaches/volunteers, officials, trainers, and licensed healthcare professionals
- ▶ **How:** *Special [Olympics Canada Concussion Recognition Tool](#)*

3. ONSITE MEDICAL ASSESSMENT

Depending on the suspected severity of the injury, an initial assessment may be completed by emergency medical professionals or by an on-site licensed healthcare 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 immediately (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. Coaches/volunteers, parents/guardians, trainers and officials should not make any effort to remove equipment or move the athlete

until an ambulance has arrived. The athlete's emergency contact should be contacted immediately to inform them of the athlete's injury.

After the emergency medical services staff has completed the Emergency Medical Assessment, the athlete should be transferred to the nearest hospital for Medical Assessment. The athlete should be accompanied at all times: while waiting for the ambulance to arrive, during the emergency medical assessment, and transport to hospital.

- ▶ **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 athlete should be immediately removed from the field of play.

Scenario 1: If a licensed healthcare professional is present

The athlete should be taken to a quiet area and undergo Sideline Medical Assessment using the Sport Concussion Assessment Tool 5 (SCAT5) or the Child SCAT5. The SCAT5 and Child SCAT5 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 SCAT5 and Child SCAT5 testing can be normal in the setting of acute concussion. As such, these tools can be used by licensed healthcare professionals to document initial neurological status but should not be used to make sideline return-to-sport decisions for athletes. Any athlete who is suspected of having sustained a concussion must not return to the game or practice and must be referred for Medical Assessment.

- ▶ **Who:** Athletic therapist, physiotherapist, medical doctor, nurse practitioner
- ▶ **How:** [Sport Concussion Assessment Tool 5 \(SCAT5\)](#), [Child Sport Concussion Assessment Tool 5 \(Child SCAT5\)](#)

Scenario 2: If there is no licensed healthcare professional present

The athlete should be referred immediately for medical assessment by a medical doctor or nurse practitioner, and the athlete must not return to play until receiving medical clearance.

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,
- rule out medical and neurological conditions that can present with concussion-like symptoms, and

- 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, medical doctors¹ that are qualified to evaluate patients with a suspected concussion include: 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 sports activities without restriction.

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

5. CONCUSSION MANAGEMENT

All athletes diagnosed with a concussion must obtain a *Medical Assessment Letter* from a medical doctor or nurse practitioner that states they have been diagnosed with a concussion and may not return to full participation in activities until medically cleared to do so. Because the *Medical Assessment Letter* contains personal health information, it is the responsibility of the athlete or their parent/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.

The athlete's health care provider should provide them 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 activities. Athletes diagnosed with a concussion are to be managed according to their *Return-to-Activities and Return-to-Sport Strategy* under the supervision of a medical doctor or nurse practitioner. When available, athletes should be encouraged to work with the team doctor to optimize progression through their *Return-to-Sport Strategy*. Once the athlete has completed

¹ Medical doctors and nurse practitioners are the only healthcare professionals in Canada with licensed training and expertise to meet these needs; therefore, all athletes with a suspected concussion should undergo evaluation by one of these professionals.

their *Return-to-Activities and Return-to-Sport Strategy* 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 sports activities and issue a *Medical Clearance Letter*.

The stepwise progressions for return to activities are outlined below. As indicated in stage 1 of the *Return-to-Sport Strategy*, reintroduction of daily, school, and work activities must precede return to full sport participation where the athlete may be at risk for another concussion.

Return-to-Activities Strategy

The following is a general guide that should be used to help athletes, their parents/guardians, medical professionals and teachers or supervisors, if applicable, to collaborate in supporting the athlete to make a gradual return to school, work and other daily activities, particularly activities requiring thinking and concentration. Depending on the severity and type of the symptoms present athletes will progress through the following stages at different rates. If the athlete experiences new symptoms or worsening symptoms at any stage, they should return to the previous stage before trying again. Athletes and their parents/guardians should be encouraged to ask their school or workplace, if applicable, if they have a Return-to-Learn Program or return-to-work procedures in place.

Stage	Aim	Activity	Goal of each step
1	Daily activities at home that do not give the athlete symptoms	Typical activities during the day as long as they do not increase symptoms (i.e., reading, texting, screen time). Start at 5-15 minutes at a time and gradually build up.	Gradual return to typical activities
2	School/work activities	Homework, reading or other cognitive activities outside of the classroom/work environment.	Increase tolerance to cognitive work
3	Return to school/work part-time	Gradual introduction of schoolwork and/or work duties. May need to start with a partial school/work day or with increased breaks during the day.	Increase academic and/or work activities
4	Return to school/work full-time	Gradually progress	Return to full academic and/or activities. Catch up on missed schoolwork and/or work requirements.

Adapted from: 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.

Return-to-Sport Strategy

The following is an outline of the Return-to-Sport Strategy that should be used to help athletes, their parents/guardians, coaches, trainers, and medical professionals to partner in supporting the athlete to make a gradual return to sport activities.

An initial period of 24-48 hours of rest is recommended before starting the Return-to-Sport Strategy. The athlete should spend a minimum duration of 24 hours without symptom

increases at each stage before progressing to the next one. If the athlete experiences new symptoms or worsening symptoms at any stage, they should return to the previous stage before trying again.

It is important that athletes return to full-time school, work or other activities that do not put the athlete at risk for another concussion before progressing to stage 5 and 6 of the Return-to-Sport Strategy. It is also important that all athletes or their parents/guardians provide their coach with a *Medical Clearance Letter* prior to returning to full contact sport activities, where the athlete may be at risk for another concussion.

Stage	Aim	Activity	Goal of each step
1	Symptom-limiting activity	Daily activities that do not provoke symptoms	Gradual re-introduction of school/work activities
2	Light aerobic activity	Walking or stationary cycling at slow to medium pace. No resistance training <i>-Light intensity jogging or stationary cycling for 15-20 minutes at sub-symptom threshold intensity</i>	Increase heart rate
3	Sport-specific exercise	Running drills. No head impact activities <i>- Moderate intensity jogging for 30-60 minutes at sub-symptom threshold intensity</i> <i>- Low to moderate impact and agility drills</i>	Add movement
4	Non-contact training drills	Harder training drills. May start progressive resistance training <i>- Participation in high intensity running and drills</i> <i>- Non-contact practice</i> <i>- Participation in resistance training work-outs</i>	Exercise, coordination and increased thinking
5	Full contact practice	Following medical clearance <i>- Participation in full practice without activity restriction</i>	Restore confidence and assess functional skills by coaching staff
6	Return to sport	Normal participation	

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.

- ▶ **Who:** Medical doctor, nurse practitioner and team doctor (where available), parents/guardians, coaches
- ▶ **How:** *Return-to-Activities Strategy, Return-to Sport Strategy*

6. MULTIDISCIPLINARY CONCUSSION CARE

Most athletes who sustain a concussion while participating in sport will make a complete recovery and be able to return to full activities. Time to recovery and return to full activities, including sport, can vary from weeks to months. Healing from a concussion and returning to activities safely takes patience.

If available, athletes who experience prolonged concussion symptoms (longer than 2-4 weeks) may benefit from referral to a medically supervised multidisciplinary 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 multidisciplinary 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 multidisciplinary 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 health care professionals with areas of expertise that address the specific needs of the athlete based on the assessment findings.

- ▶ **Who:** Multidisciplinary medical team, medical doctor with clinical training and experience in concussion (e.g. a sports medicine physician, neurologist, or rehabilitation medicine physician), licensed healthcare professionals

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-Activities and stages 1 to 4 of the Return-to-Sport Strategy* can be considered for return to full sports 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).

Prior to returning to full contact practice and game play, each athlete that has been diagnosed with a concussion must obtain a *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 sports. In geographic regions of Canada with limited access to medical doctors (i.e. rural or northern communities), a licensed healthcare professional (such as a nurse) with pre-arranged access to a medical doctor or nurse practitioner can provide this documentation.

The Medical Clearance Letter must also be signed by the athlete's coach and the athlete or their parent/guardian. Athletes who have been provided with a Medical Clearance Letter may return to full sport activities as tolerated. If the athlete experiences any new concussion-like symptoms while returning to play, they should be instructed to stop playing immediately, notify

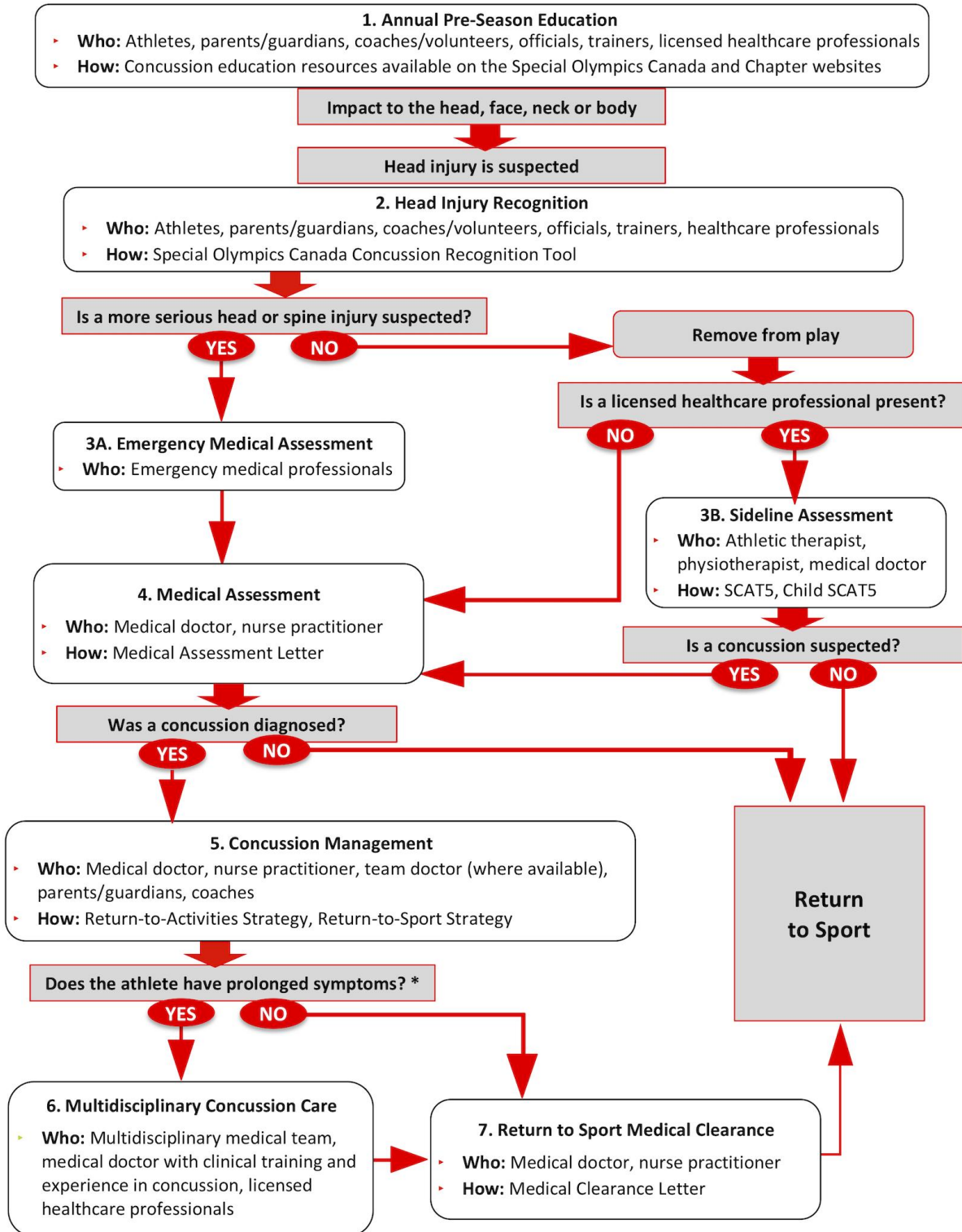
their parents/guardians, coaches/volunteers, trainer or teachers, and undergo follow-up *Medical Assessment*.

A copy of the *Medical Clearance Letter* should also be submitted to sports organization officials for injury reporting and surveillance.

- ▶ **Who:** Medical doctor, nurse practitioner, coach, parent/guardian
- ▶ **Document:** *Medical Clearance Letter*

In the event that an athlete sustains a new suspected concussion, the **Special Olympics Canada Pan-Canadian Concussion Protocol** should be followed as outlined in this document.

SPECIAL OLYMPICS CANADA CONCUSSION PATHWAY



*Prolonged symptoms: lasting > 4 weeks in children & youth or > 2 weeks in adults