



Shooting Federation of Canada Concussion Protocol

Preface

Although the risk of suffering a concussion in the practice of the shooting sports is very low, the Shooting Federation of Canada (SFC) recognizes the severity of short and long-term consequences for those sustaining a concussion and the importance of concussion prevention. The Shooting Federation of Canada has developed the SFC's Concussion Protocol to help guide the management of athletes who may have a suspected concussion while participating in target shooting sport activities. This protocol will apply whether the suspected concussion is a result of an incident within the shooting sports environment or due to an incident outside of the sport environment.

Definition

Concussion is defined as, "a traumatic brain injury induced by biomechanical forces that cause the head and brain to shift back and forth and alter the way the brain functions... with the potential for co-existing, overlapping and confounding pathologies".¹

Purpose

This protocol covers the recognition, medical diagnosis, and management of shooters, parents, officials and coaches who may have sustained a concussion and are participating in a shooting 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 the shooting sports 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 individuals who interact with athletes inside and outside the context of the shooting sports, school, work and non-school or work based organized sports activity, including athletes, parents, coaches, officials, teachers, facilitators, trainers and licensed healthcare professionals.

For a summary of the Shooting Federation of Canada Concussion Protocol, please refer to the [SFC Sport Concussion Pathway](#) at the end of this document.

1. Education & Awareness

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 the annual education of SFC stakeholders (athletes, parents, coaches, officials, trainers, facilitators, licensed healthcare professionals) on current evidence-informed approaches to prevent concussion and more serious forms of head injury and help identify and manage an athlete with a suspected concussion.

¹ Excerpted from the Canadian Olympic and Paralympic Sport Institute Network, Sport-Related Concussion Guidelines for Canadian National and National Development High-Performance Athletes 2018.

Concussion education shall 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
- The measures that should be taken to ensure proper medical assessment
- Return-to-Activity and Shooting Specific Return-to-Sport Strategies
- Return to sport medical clearance requirements

2. Head Injury Recognition

Although the formal diagnosis of concussion should be made following a medical assessment, all sport stakeholders including athletes, parents, teachers, coaches, trainers, 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 and ranges 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 [Concussion Recognition Tool 5](#).
- if a participant or athlete reports *ANY* concussion symptoms to one of their peers, parents, teachers, 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 the 'Red Flags' indicated by the [Concussion Recognition Tool 5](#), a more severe head or spine injury should be suspected, and Emergency Medical Assessment should be pursued.

In the shooting sports, should a concussion or symptoms of concussion be suspected in an athlete, the athlete is to be barred or removed from the line of fire immediately and prevented from engaging in the sport until medically cleared as per item 4. below.

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 (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 competition or practice, an ambulance should be called immediately to transfer the patient to the nearest emergency department for further Medical Assessment.

Coaches, parents, teachers, trainers and 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 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

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

If a youth athlete is removed from play following a significant impact and has undergone assessment by a licensed healthcare professional, 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.

In the case of national team-affiliated athletes (age 18 years and older), 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 competition 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. 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.

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, 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, medical doctors² that are qualified to evaluate patients with a suspected concussion include:

² 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.

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.

5. Concussion Management

When an athlete has been diagnosed with a concussion, it is important that the athlete's parent/legal guardian, next of kin 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 guardians/spouse that they have been diagnosed with a concussion and may not return to any activities with a risk of concussion until medically cleared to do so by a medical doctor or nurse practitioner. It is important that the athlete 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 daily, school, work and sport activities. Athletes diagnosed with a concussion are to be managed according to the Shooting Federation of Canada's *Return-to-Activity* and *Shooting Specific Return-to-Sport Strategy* under the supervision of a medical doctor or nurse practitioner. When available, athletes should be encouraged to work with a team athletic therapist or physiotherapist to optimize progression through their *Shooting Specific Return-to-Sport Strategy*. Once the athlete has completed *Return-to-Activity* and *Shooting Specific 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](#).

Progressions for *Return-to-Activity* and *Shooting Specific Return-to-Sport Strategy* are outlined below. As indicated in stage 1 of the *Return-to-Shooting Strategy*, reintroduction of daily, school and work activities using the *Return-to-Activity Strategy* must precede any return to sport participation.

Return-to-Activity Strategy

The following is an outline of the *Return-to-Activity Strategy* that should be used to help athletes, parents, coaches and teachers collaborate in allowing the athlete to make a gradual return to school, work or daily activities. 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. Athletes should also be encouraged to ask their school or workplace if they have a specific Return-to-Activity Program in place to help the athlete or employee make a gradual return to school or to the workplace.

Stage	Aim	Activity	Goal of each step
1	Daily activities at home that do not give the athlete symptoms	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> -Homework, reading or other cognitive activities outside of the classroom. -Any work-related activities that require as little screen-time as possible while still at home (ex. reviewing documents). Activities will vary by occupation. 	Increase tolerance to cognitive work
3	Return to School/Work part-time	<ul style="list-style-type: none"> - Gradual introduction of schoolwork. May need to start with a partial school day or with increased breaks during the day. - Return to regular workplace, begin by working part day/full day from home if occupation allows and gradually return to the workplace when comfortable. Increased work breaks during the day are recommended. 	Increase academic and workplace activities Return to workplace at the end of the stage.
4	Return to School/Work full-time	Gradually progress to a full school or workday. Gym or fitness classes in school should be avoided until the Return-to-Sport strategy or a similar school/work-specific Return-to-Activity program is completed.	Return to full academic and workplace activities and catch-up on missed school/work projects

Shooting Specific Return-to-Sport Strategy

The following is an outline of the Return-to-Sport Strategy that should be used to help athletes, coaches, trainers, and medical professionals to partner in allowing the athlete to make a gradual return to sport activities. An initial period of 24-48 hours of rest is recommended before starting the *Shooting Specific Return-to-Sport Strategy*. It is advisable that the athlete spend a minimum 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.

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

Stage	Aim	Activity	Goal of each step
1	Symptom-limiting activity	- Daily activities that do not provoke symptoms	Gradual re-introduction of work/school activities

2	Light aerobic activity	<ul style="list-style-type: none"> - Walking, jogging, swimming or stationary cycling at slow to medium pace for 15-20 minutes at sub-symptom threshold intensity. - If a stretching routine is in place, begin to reintegrate refraining from dynamic stretches that include sudden movement (i.e. twisting or rapid up and down movement) or any stretches of the neck area. - No resistance training 	Increase heart rate
3	Sport-specific exercise	<ul style="list-style-type: none"> - Increase movement to moderate intensity at sub-symptom thresholds. Integrate dynamic stretches to a daily stretching routine. - Refrain from firing a firearm; particularly shotgun and rifle due to proximity to the head. - Moderate intensity jogging or exercise for 30-60 minutes at sub-symptom threshold intensity - No head impact activities 	Add movement
4	Non-contact training drills	<ul style="list-style-type: none"> - More intense training up to, but not including, the act of firing. (Engaging a firearm agitates the hearing sensitivity associated with concussions.) - Full warmup and training routine run throughs with monitoring for any concussion-like symptoms. - May start progressive resistance training/work outs 	Exercise, coordination and increased thinking
5	Full contact training	<ul style="list-style-type: none"> - Following medical clearance, participation in full practice without activity restriction. - Athlete is to be monitored for any sign of setback during and after training sessions, in particular when firing. 	Restore confidence and assess functional skills by coaching staff
6	Return to sport	<ul style="list-style-type: none"> - Normal field of play/range activity including competition 	

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 school, work and sport activities within 1-4 weeks of injury. However, approximately 15-30% of individuals will experience symptoms that persist beyond this time frame. If available, individuals who experience persistent post-concussion symptoms (>4 weeks for youth athletes, >2 weeks for adult athletes) 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.

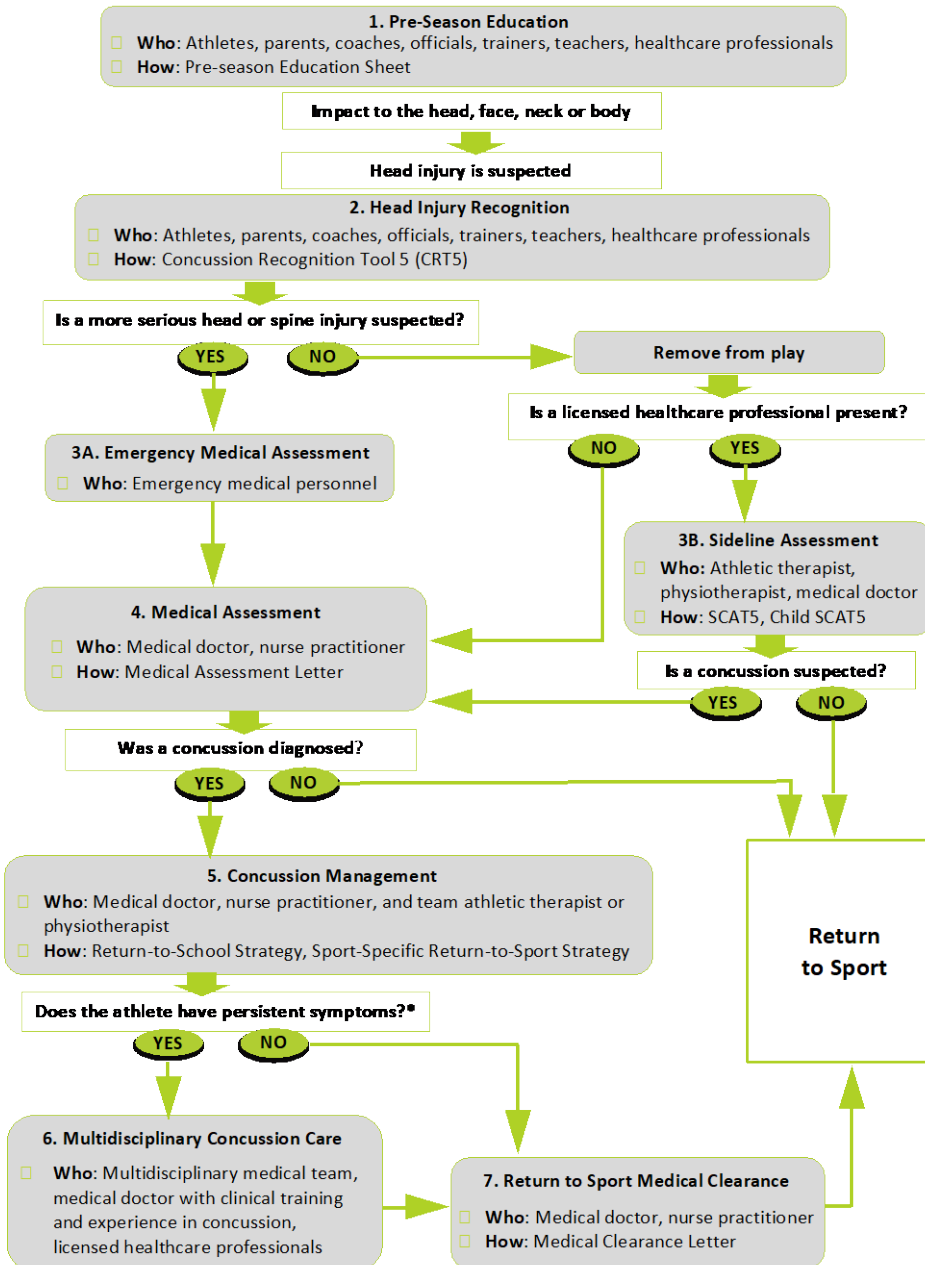
7. Return to Sport

Athletes who have been determined to have not sustained a concussion and those who have been diagnosed with a concussion and have successfully completed their *Return-to-Activity* and *Shooting Specific Return-to-Sport Strategy* can be considered for a return to full sport activities. The final decision to medically clear an athlete to return to full 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 participation and competition, each athlete diagnosed with a concussion 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 (such as 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 sports organization officials that have injury reporting and surveillance programs where applicable.

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 the field of play, they should be instructed to stop participating immediately, notify their parents/next-of-kin, coaches, trainer or teachers, and undergo follow-up *Medical Assessment*. In the event that the athlete sustains a new suspected concussion, the **Shooting Federation of Canada Concussion Protocol** should be followed as outlined here.

Shooting Federation of Canada Concussion Pathway



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

Figure 1 – Concussion Recognition Tool 5

CONCUSSION RECOGNITION TOOL 5®

To help identify concussion in children, adolescents and adults








RECOGNISE & REMOVE

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

STEP 1: RED FLAGS – CALL AN AMBULANCE

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

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

Remember:

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

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

STEP 2: OBSERVABLE SIGNS

Visual clues that suggest possible concussion include:

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

STEP 3: SYMPTOMS

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

STEP 4: MEMORY ASSESSMENT

(IN ATHLETES OLDER THAN 12 YEARS)

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

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

Athletes with suspected concussion should:

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

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

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Figure 2 - Medical Assessment Letter

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 and sport activities. The patient has been instructed to avoid all recreational and organized sports or activities that could potentially place them at risk of another concussion or head injury. Starting on _____ (date), I would ask that the patient be allowed to participate in school and low-risk physical activities as tolerated and only at a level that does not bring on or worsen their concussion symptoms. The above patient should not return to any full contact practices or games until the coach has been provided with a *Medical Clearance Letter* provided by a medical doctor or nurse practitioner in accordance with the *Canadian Guideline on Concussion in Sport*. Athletes and their parents/caregivers should check the return to play strategy of their sport governing body to ensure they meet the necessary requirements.

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 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.

We recommend that this document be provided to the athlete without charge.

Figure 3 - Medical Clearance Letter

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* 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):

- ☐ **Symptom-limiting activity (cognitive and physical activities that don't provoke symptoms)**
- ☐ **Light aerobic activity (Walking or stationary cycling at slow to medium pace. No resistance training)**
- ☐ **Sport-specific exercise (Running or skating drills. No head impact activities)**
- ☐ **Non-contact practice (Harder training drills, e.g. passing drills. May start progressive resistance training. Including gym class activities without a risk of contact, e.g. tennis, running, swimming)**
- ☐ **Full-contact practice (Including gym class activities with risk of contact and head impact, e.g. soccer, dodgeball, basketball)**
- ☐ **Full game play**

What if symptoms recur? Any athlete who has been cleared for physical activities, gym class or non-contact practice, and who has a recurrence of symptoms, should immediately remove himself or herself from the activity and inform the teacher or coach. If the symptoms subside, the athlete may continue to participate in these activities as tolerated.

Athletes who have been cleared for full contact practice or game play must be able to participate in full-time school (or normal cognitive activity) as well as high intensity resistance and endurance exercise (including non-contact practice) without symptom recurrence. Any athlete who has been cleared for full-contact practice or full game play and has a recurrence of symptoms, should immediately remove himself or herself from play, inform their teacher or coach, and undergo medical assessment by a medical doctor or nurse practitioner before returning to full-contact practice or games.

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.

We recommend that this document be provided to the athlete without charge.