

Biathlon Canada Sport Concussion Guidelines

Date: February 20, 2020

The following document created and edited by the following people: Stephanie Cowle (Parachute Canada), Dr. Brian Benson (CSI Calgary- Concussion specialist), Dr. Andy Reed (Biathlon team physician), Jessica Kryski (IST Team lead), Roddy Ward, Jacqueline Akerman, Sarah Murphy and Heather Ambery.

Introduction:

The purpose of this document is to outline Biathlon Canada's sport-related concussion guidelines, which is to ensure the health and safety of all participants in the sport of biathlon in Canada, including summer and winter training and competition.

Biathlon is considered a low-risk sport in regards to concussion occurrences. Concussions in biathlon are rare, but can occur while participating in the sport, and its associated activities. In biathlon, athletes are especially vulnerable during dryland training, in particular roller-skiing, and when cross training in the summer months, which may include mountain biking and road cycling.

The following document is a guideline in which Biathlon Canada will adhere to protect and manage athlete health and wellbeing, in regard to sport-related concussions. This document is based on the *Canadian Guideline on Concussion in Sport* (Parachute, 2017) and the *Canadian Olympic and Paralympic Sport Institute Network Sport-Related Concussion Guidelines for Canadian National and National Development High-Performance Athletes* (COPSIN, 2018).

Who should use this guideline?

This guideline is intended for use by all individuals who interact with athletes inside and outside the context of school and non-school based organized sports activity, including athletes, parents, coaches, officials, teachers, management, integrated support team (IST) members, trainers, and licensed healthcare professionals (i.e., certified athletic therapist, physiotherapist, medical doctor).

For a summary of the **Biathlon Canada Concussion Guideline** please refer to the **Biathlon Canada Concussion Pathway** at the end of this document.

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, management, integrated support team (IST) members, trainers, licensed healthcare professionals) on current evidence-informed approaches that may help to prevent concussion and more serious forms of head injury, and assist with identifying and managing an athlete with a suspected concussion.

Concussion education should include information on:

- the definition of concussion,
 - possible mechanisms of injury,
 - common signs and symptoms,
 - **how to recognize a suspected concussion,**
 - 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,
 - steps that can be taken to prevent concussions and other injuries from occurring in sport,
 - *Return-to-School* and *Return-to-Sport Strategies*, and
 - return to unrestricted training and competition medical clearance requirements.
- ▶ **Who:** Athletes, parents, coaches, officials, teachers, management, integrated support team (IST) members, trainers, and licensed healthcare professionals
- ▶ **How:** [Pre-season Concussion Education Sheet](#)

2. Head Injury Recognition

Recognition, diagnosis and timely clinical assessment of suspected concussions may help facilitate earlier recovery, reduce the risk of early complications and avoid further head and musculoskeletal injuries. Although the formal diagnosis of concussion should be made following a medical assessment by a physician, all sport stakeholders including athletes, parents, coaches, teachers, management, integrated support team (IST) members, 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 immediate 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 an athlete reports ANY concussion symptoms to one of their peers, parents, teachers, integrated support team members, 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 worsening headache, drowsiness or inability to be awakened, inability to recognize people or places, repeated vomiting, unusual behavior (confusion or irritable), seizures (arms and legs jerk uncontrollably), weakness or numbness in arms or legs, unsteadiness on their feet, or slurred speech. 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 urgent Emergency Department Medical Assessment should be pursued.

- ▶ **Who:** Athletes, parents, coaches, officials, teachers, management, integrated support team members, trainers, and licensed healthcare professionals
- ▶ **How:** [Concussion Recognition Tool 5](#)

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 (i.e., physician, physiotherapist, certified athletic therapist) where available. In cases where an athlete loses consciousness or it is suspected an athlete might have a more severe head or spine injury, an ambulance must be called immediately to transfer the patient to the nearest emergency department for further medical assessment (see 3a below). If a more severe head / spine injury is not suspected, the athlete should be removed from the training or racing area and undergo Sideline Medical Assessment by a trained and experienced certified athletic therapist or physiotherapist, or a more comprehensive Medical Assessment by a medical doctor if present (see 3b below).

3a. Emergency Medical Assessment

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

Coaches, parents, teachers, integrated support team members, 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. After the emergency medical services staff has completed the Emergency Medical Assessment, the athlete should be transferred to the nearest hospital for a more comprehensive 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 informed 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 athlete should be immediately removed from the training or racing area.

Scenario 1: If a licensed healthcare professional is present

The athlete should be taken to a distraction-free environment when possible 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 competition or practice and must be referred for comprehensive Medical Assessment by a physician.

If a youth athlete is removed from play following a significant impact and has undergone assessment by an experienced licensed healthcare professional (certified athletic therapist, physiotherapist, medical doctor), 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 with serial re-evaluations for up to 48 hours because of the possibility of delayed symptom onset.

In the case of athletes aged 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 multi-faceted Sideline Medical Assessment. In these cases, the athlete may be returned to training without a [Medical Clearance Letter](#) but this should be clearly communicated to the coaching staff. Athletes that have been cleared to return to training should be monitored for delayed symptoms. If the athlete develops any delayed symptoms the athlete must be removed from training or competition and undergo assessment by a medical doctor.

Scenario 2: If there is no licensed healthcare professional present

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

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

4. Medical Assessment

A comprehensive medical assessment (clinical history, physical examination and evidence-based use of adjunctive tests) is required for diagnosis of all athletes with suspected concussion, and to rule out more serious forms of traumatic brain and spine injuries. Licensed health care professionals qualified to diagnose a suspected concussion include physicians from the following specialties: pediatrics, family medicine, sports medicine, emergency medicine, physiatry, neurology, and neurosurgery.

In geographic regions of Canada with limited access to medical doctors (i.e., rural or northern communities), a licensed healthcare professional (i.e., nurse, nurse practitioner) with pre-arranged access to a medical doctor can facilitate this role. The comprehensive 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
- ▶ **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 is informed if the athlete is < 18 years of age, and emergency contact person if 18 years or older. All athletes diagnosed with a concussion must be provided with a standardized *Medical Assessment Letter* that notifies the athlete and their parents/legal guardians/emergency contact 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. 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 Strategy* under the supervision of a medical doctor (or nurse practitioner if no medical doctor available). When available, athletes and their coaches should be encouraged to work with their certified 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 Strategy* and are deemed to be clinically recovered from their concussion, a medical doctor must issue a *Medical Clearance Letter* to return to unrestricted training / competition.

The stepwise progressions for *Return-to-School* and *Return-to-Sport Strategies* are outlined below. For student athletes, return to school must precede return to sport participation.

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 collaborate in allowing the athlete to make a gradual return to school activities. Depending on the severity and type of the symptoms present student-athletes will progress through the following stages at different rates. If the student-athlete experiences new symptoms or worsening symptoms at any stage, they should go back to the previous stage. 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.

Stage	Description	Activity	Goal of each stage
1	Daily activities at home that do not give the student-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 activities	Homework, reading or other cognitive activities outside of the classroom.	Increase tolerance to cognitive work
3	Return to school part-time	Gradual introduction of schoolwork. May need to start with a partial school day or with increased breaks during the day.	Increase academic activities
4	Return to school full-time	Gradually progress	Return to full academic activities and catch up on missed school work

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.

Biathlon-Specific Return-to-Sport Strategy

The following is an outline of the Return-to-Sport Strategy that should be used to help athletes, coaches, integrated support team members, 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 *Biathlon-Specific 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 go back to the previous stage after 24 hours and their symptom flare has subsided. It is important that youth and adult student-athletes return to full-time school activities before progressing to stage 5 and 6 of the *Biathlon-Specific Return-to-Sport Strategy*. **It is also important that all athletes provide their coach with a [Medical Clearance Letter](#) from a medical doctor prior to returning to any contact sport activities.**

Stage	Description	Activity	Goal of each stage
1	Symptom-limited activity	Daily activities that do not provoke symptoms. No dry-firing or shooting.	Re-introduce daily activities.
2	Limited to sub aerobic training (Low zone 1)	Walking or stationary cycling at slow to medium pace. No resistance training. Introduce dry-firing. No shooting.	Increase heart rate and add movement
3	Training up to aerobic threshold (Zone 1)	Running, cross-country skiing, roller-skiing. Reintroduce shooting – no combo. Start to build volume and monitor symptoms.	Increase training volume and static shooting (noise/focus)
4	Training up to anaerobic threshold (Zone 3)	Reintroduce combo training at zone 1-3. May start progressive resistance training.	Exercise, coordination and increased thinking with added intensity
5	Training above anaerobic threshold (Zone 4)	Hard interval reintroduction. Combo shooting zone 1-4. Continue progressive resistance training.	Exercise, coordination and increased thinking with added high intensity.
6	Full training-reintroduce competition	Following medical clearance, participate in all training and competition training activities	Restore confidence. Full integration into daily training environment, monitored by coaching staff.

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.

- ▶ **Who:** Medical doctor, physiotherapist and team physiologist (where available)
- ▶ **How:** *Return-to-Learn Strategy, Sport-Specific Return-to Sport Strategy, Medical Assessment Letter*

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 and sport activities within 1-4 weeks of injury. However, approximately 15-30% of individuals may experience symptoms that persist beyond this time frame. If available, individuals who experience persistent post-concussion symptoms (>4 weeks for athletes < 18 years, >2 weeks for adult athletes) may benefit from referral to a medically supervised multidisciplinary concussion clinic that has access to professionals experienced with sport-related concussion assessment and management, that may include experts in sport medicine, psychology, neuropsychology, physiotherapy, vestibular therapy, neuro-optometry / ophthalmology, psychiatry, neurology, or neurosurgery.

Referral to a multidisciplinary clinic for assessment should be made on an individualized basis at the discretion of an athlete's medical doctor. If access to a multidisciplinary concussion clinic is not available, a referral to a medical doctor with clinical experience in sport-related concussion (e.g., sport medicine physician, neurologist, or rehabilitation medicine physician) should be considered for the purpose of developing an individualized treatment plan targeted to specific medical, physical and psychosocial factors identified from multi-modal assessments.

- ▶ **Who:** Multidisciplinary medical team, including a medical doctor with clinical experience in sport-related concussion (e.g., 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-School and Biathlon-Specific Return-to-Sport Strategy* can be considered for return to full unrestricted sports 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 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 (e.g., neuropsychological testing, multi-modal clinical assessments, diagnostic imaging). Prior to returning to full-time training, each athlete that has been diagnosed with a concussion must provide their coach with a standardized *Medical Clearance Letter* that specifies that a medical doctor has personally evaluated the patient and has cleared the athlete to return to unrestricted 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 or nurse practitioner) with pre-arranged access to a medical doctor can provide such documentation. A copy of the *Medical Clearance Letter* should also be submitted to sport organization officials (i.e., Canadian Sport Institute or Centre) that have injury reporting and surveillance programs where applicable.

Athletes who have been provided with a *Medical Clearance Letter* may return to full unrestricted sport activities. If the athlete experiences any return of concussion-like symptoms while returning to play, they should be instructed to stop immediately, notify their parents, coaches, trainer or teachers, and undergo follow-up *Medical Assessment*. In the event that the athlete sustains a new suspected concussion, the **Biathlon Canada Concussion Guideline** should be followed as outlined here.

- ▶ **Who:** Medical doctor
- ▶ **Document:** [Medical Clearance Letter](#)

Links

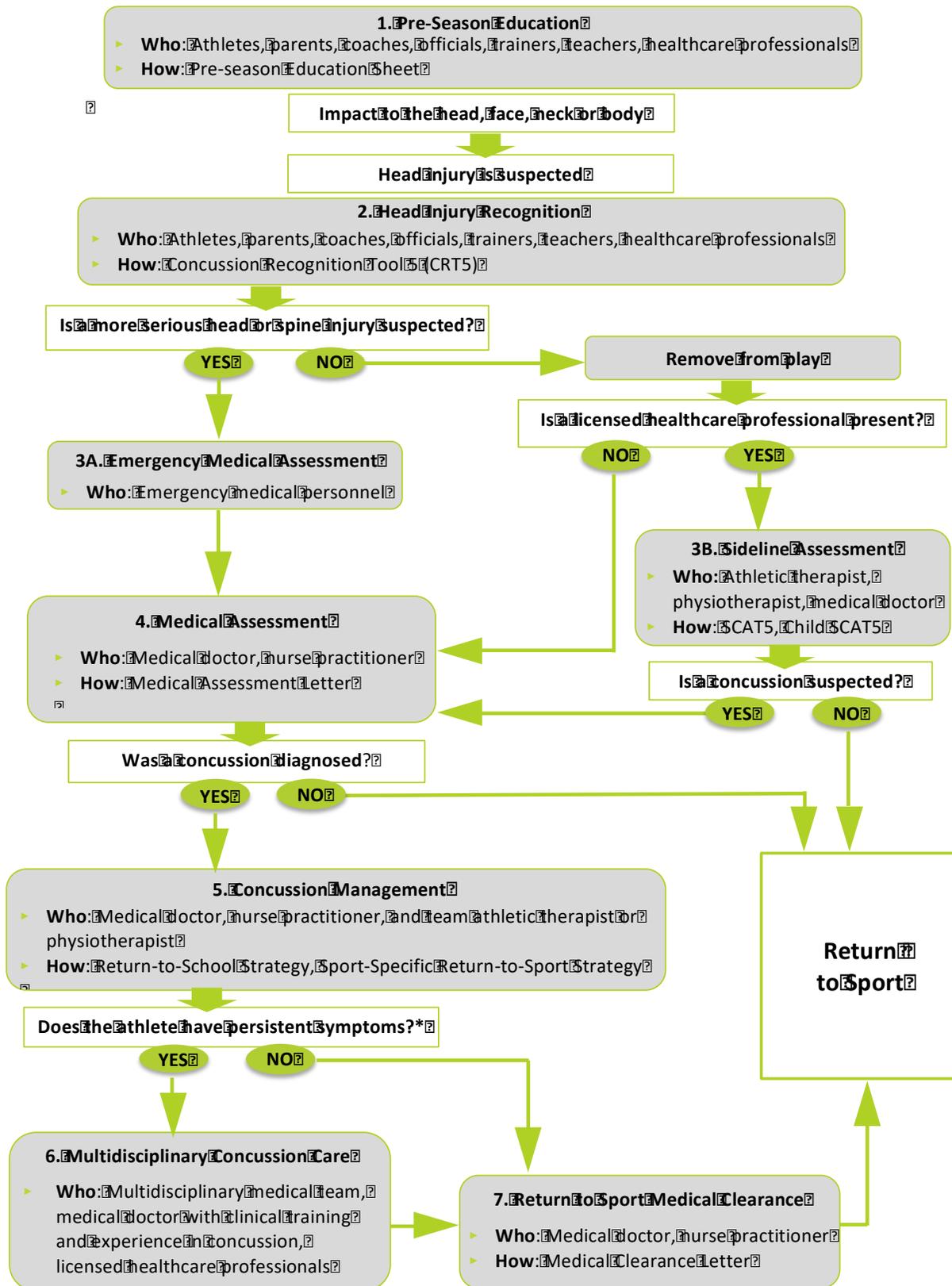
Canadian Guideline on Concussion in Sport (Parachute): www.parachute.ca/guideline

Canadian Olympic and Paralympic Sport Institute Network:
[http://www.ownthepodium.org/getattachment/Initiatives/Sport-Science-Innovation/2018-COPSI-Network-Concussion-Guidelines/2018-COPSI-Network-Concussion-Guidelines-EN-\(2\).pdf.aspx?lang=en-CA](http://www.ownthepodium.org/getattachment/Initiatives/Sport-Science-Innovation/2018-COPSI-Network-Concussion-Guidelines/2018-COPSI-Network-Concussion-Guidelines-EN-(2).pdf.aspx?lang=en-CA)

Nordiq Canada: <https://nordiqcanada.ca/>

Coaching Association of Canada: <https://www.coach.ca/concussion-awareness-s16361>

Biathlon Canada Concussion Pathway



*Persistent symptoms: Lasting 2-4 weeks in children & youth or 2-3 weeks in adults