

Nordiq Canada Concussion Protocol

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Introduction

Nordiq Canada has developed this *National Concussion Protocol* to help guide the management of participants who may have a suspected concussion as a result of participation in Nordiq Canada's activities, which may include but is not limited to training sessions, competitions, games and championships (hereinafter "Nordiq Canada Activities").

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.

Additionally, this *National Concussion Protocol* recognizes the advent of concussion legislation throughout Canada; particularly *Rowan's Law (Concussion Safety)*, 2018 in Ontario.

Purpose

This *National Concussion Protocol* covers the recognition, medical diagnosis, and management of Nordiq Canada participants who may sustain a suspected concussion during Nordiq Canada Activities. It aims to ensure that participants with a suspected concussion receive timely and appropriate care and proper management to allow them to return to their sport safely. This protocol may not address every possible clinical scenario that can occur during Nordiq Canada Activities but includes critical elements based on the latest evidence and current expert consensus.

Who should use this protocol?

This *National Concussion Protocol* is intended for use by all individuals who interact with participants inside and outside the context of Nordiq Canada Activities, including participants, parents/guardians, coaches, officials, trainers, and licensed healthcare professionals.

For a summary of the *National Concussion Protocol* please refer to **Appendix A - Sport Concussion Pathway**.

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 Nordiq Canada Stakeholders (participants, parents/guardians, coaches, officials, 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 a participant with a suspected concussion.

Concussion education should include information on:

- the definition of concussion,
 - possible mechanisms of injury (MOI),
 - 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
- **Who:** Nordiq Canada Stakeholders
- **How:** Pre-season Concussion Education Sheet

All parents/guardians and participants are encouraged to review **Appendix B - Pre-season Concussion Education Sheet** with their coach prior to the first meeting of the season. Nordiq Canada strongly recommends that Member Associations require participants (and parents/guardians of minor participants) to review this document and submit a signed copy. In addition to reviewing information on concussions, it is also important that all Nordiq Canada

Stakeholders have a clear understanding of this *National Concussion Protocol*. For example, through pre-season in-person orientation sessions for Nordiq Canada Stakeholders.

2. Head Injury Recognition

Although the formal diagnosis of concussion should be made following a medical assessment, all Nordiq Canada 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. 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
- if a participant reports *ANY* concussion symptoms to one of their peers, parents/guardians, teachers, or coaches or if anyone witnesses a participant exhibiting any of the visual signs of concussion.

If a participant demonstrates any of the **red flags** described below, a severe head or spine injury should be suspected, and [Emergency Medical Assessment](#) (section 3a of this document) should be pursued:

- a) Neck pain or tenderness
- b) Double vision
- c) Weakness or tingling / burning in arms or legs
- d) Severe or increasing headache
- e) Seizure or convulsion
- f) Loss of consciousness

- g) Deteriorating conscious state
- h) Vomiting more than once
- i) Increasingly restless, agitated, or combative
- j) Getting more and more confused

In the event of a suspected concussion where there are **observable signs** of a concussion, **symptoms** of a concussion, or a failure to correctly answer **memory questions**, the Participant should be immediately removed from participation by a designated person and [Sideline Medical Assessment](#) (section 3b of this document) should be pursued.

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) Neck pain
- k) Difficulty remembering or concentrating
- l) Feeling slowed down or “in a fog”

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) What day is it?
- d) What month is it?

- ▶ **Who:** Nordiq Canada Stakeholders
- ▶ **How:** Recognizing red flags, observable signs, symptoms, and memory issues

3. Onsite Medical Assessment + Removal From Participation

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 a participant loses consciousness, or it is suspected a participant might have a more severe head or spine injury, Emergency Medical Assessment by emergency medical professionals should take place (see section 3a [Emergency Medical Assessment](#) below). If a more severe injury is not suspected, the participant should undergo Sideline Medical

Assessment or Medical Assessment, depending on if there is a licensed healthcare professional present (see section 3b [Sideline Medical Assessment](#) and section 4 [Medical Assessment](#) below).

3a. Emergency Medical Assessment

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

Nordiq Canada Stakeholders should not make any effort to remove equipment or move the participant until an ambulance has arrived and the participant should not be left alone until the ambulance arrives. After the emergency medical services staff has completed the Emergency Medical Assessment, the participant should be transferred to the nearest hospital for Medical Assessment. In the case of minors, the participant's parents/guardians should be contacted immediately to inform them of the participant's injury. For participants who are older than the age of majority, their emergency contact person should be contacted if one has been provided.

- ▶ **Who:** Emergency medical professionals

3b. Sideline Medical Assessment

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

After removal from participation, the following actions should be taken:

- a) The designated person who removed the Participant should consider calling 9-1-1;
- b) Nordiq Canada must make and keep a record of the removal;
- c) The designated person must inform the Participant's parent or guardian if the Participant is younger than the age of majority and the designated person must inform the parent or guardian that the Participant is required to undergo a medical assessment

by a physician or nurse practitioner before the Participant will be permitted to return to participation; and

- d) The designated person will remind the Participant, and the Participant's parent or guardian as applicable, of Nordiq Canada's Return-to-Sport protocol as described in this *National Concussion Protocol*

Participants who have a suspected concussion and who are removed from participation should:

- a) Be isolated in a dark room or area and stimulus should be reduced
- b) Be monitored
- c) Have any cognitive, emotional, or physical changes documented
- d) Not be left alone (at least for the first 1-2 hours)
- e) Not drink alcohol
- f) Not use recreational/prescription drugs
- g) Not be sent home by themselves
- h) Not drive a motor vehicle until cleared to do so by a medical professional

Scenario 1: If a licensed healthcare professional is present when the participant is removed from participation, the participant should be taken to a quiet area and undergo Sideline Medical Assessment using the [Sport Concussion Assessment Tool – 5th Edition \(SCAT5\)](#) (for Participants over the age of 12) or the [Child SCAT5](#) (for Participants between 5 and 12 years old). The SCAT5 and Child SCAT5 are clinical tools that should only be used by a licensed healthcare professional that has experience using these tools. Since the results of SCAT5 and Child SCAT5 testing can be normal in the setting of acute concussion, 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 participants. Any youth participant who is suspected of having sustained a concussion must not return to participation and must be referred for Medical Assessment.

If a youth participant is removed from participation following a significant impact and has undergone assessment by a licensed healthcare professional, but there are NO visual signs of a concussion and the participant reports NO concussion symptoms then the participant can return to play but should be monitored for delayed symptoms.

In the case of participants who are over the age of majority, 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 participant may be returned to participation without a *Medical Clearance Letter* but this should be clearly communicated to the coaching staff. Participants who have been cleared to return to participation should be monitored for delayed symptoms. If the participant develops any delayed symptoms the participant should be removed from participation and undergo medical assessment by a medical doctor or nurse practitioner.

Scenario 2: If there is no licensed healthcare professional present when the participant is removed from participation, the participant should be referred immediately for medical assessment by a medical doctor or nurse practitioner, and the participant must not return to play until receiving medical clearance.

- ▶ **Who:** Athletic therapists, physiotherapists, medical doctor
- ▶ **How:** SCAT5 and Child SCAT5

4. Medical Assessment

In order to provide comprehensive evaluation of participants 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 (e.g., 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 (e.g., rural or northern communities), a licensed healthcare professional (e.g., 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 participant has been diagnosed with a concussion or not. Participants with a diagnosed concussion should be provided with a *Medical Assessment Letter* indicating a concussion has been diagnosed. Participants 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 participant can return to school, work and sports activities without restriction.

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

5. Concussion Management

When a participant has been diagnosed with a concussion, it is important that the participant's parent/guardian is informed. All participants diagnosed with a concussion must be provided with a standardized *Medical Assessment Letter* that notifies the participant and their parent/guardian (when the participant is a minor) 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.

Because the *Medical Assessment Letter* contains personal health information, it is the responsibility of the participant or their parent/guardian to provide this documentation to the

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

participant's coaches, teachers, or employers. It is also important for the participant to provide this information to sport organization officials that are responsible for injury reporting and concussion surveillance where applicable.

Participants diagnosed with a concussion should be provided with education about the signs and symptoms of a 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. Participants diagnosed with a concussion are to be managed according to their *Return-to-School* and *Return-to-Sport Strategy* under the supervision of a medical doctor or nurse practitioner. When available, participants should be encouraged to work with the team athletic therapist or physiotherapist to optimize progression through their *Return-to-Sport Strategy*. Once the participant has completed their *Return-to-School* and *Return-to-Sport Strategy* and are deemed to be clinically recovered from their concussion, the medical doctor or nurse practitioner can consider the participant for a return to full sports activities and issue a *Medical Clearance Letter*.

The stepwise progressions for *Return-to-School* and *Return-to-Sport Strategies* are outlined below. As indicated in stage 1 of the *Return-to-Sport Strategy*, reintroduction of daily, school, and work activities using the *Return-to-School Strategy* 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-participants, parents/guardians, and teachers to collaborate in allowing the participant to make a gradual return to school activities. Depending on the severity and type of the symptoms present student-participants will progress through the following stages at different rates. If the student-participant experiences new symptoms or worsening symptoms at any stage, they should go back to the previous stage. Participants should also be encouraged to ask their school if they have a school-specific Return-to-Learn Program in place to help student-participants make a gradual return to school.

Stage	Aim	Activity	Goal of each step
1	Daily activities at home that do not give the student-participant 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

Return-to-Sport Strategy

The following is an outline of the Return-to-Sport Strategy that should be used to help participants, coaches, trainers, and medical professionals to partner in allowing the participant 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*. If the participant experiences new symptoms or worsening symptoms at any stage, they should go back to the previous stage. It is important that youth and adult student-participants return to full-time school activities before progressing to stage 5 and 6 of the *Return-to-Sport Strategy*. It is also important that all participants provide their coach with a *Medical Clearance Letter* prior to returning to 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	Walking or stationary cycling at slow to medium pace. No resistance training	Increase heart rate

3	Sport-specific exercise	Running, cross-country skiing or roller skiing on easy terrain	Add movement
4	Low intensity training drills	Cross-country skiing or roller skiing on more challenging terrain, agility drills, low intensity strength and conditioning (going through movement patterns with light load)	Exercise, coordination and increased thinking
5	High intensity practice	An appropriate progression from moderate to higher intensity interval training. May start more progressive resistance training.	Restore confidence and assess functional skills by coaching staff
6	Return to sport	Normal participation	

- **Who:** Medical doctor, nurse practitioner and team athletic therapist or physiotherapist (where available)
- **How:** *Return-to-Learn Strategy, Return-to Sport Strategy, Medical Assessment Letter*

6. Multidisciplinary Concussion Care

Most participants 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 will experience symptoms that persist beyond this time frame. If available, individuals who experience persistent post-concussion symptoms (>4 weeks for youth participants, >2 weeks for adult participants) 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 a participant'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 participant 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

Participants 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 *Return-to-Sport Strategy* can be considered for return to full sports activities. The final decision to medically clear a participant to return to full participation should be based on the clinical judgment of the medical doctor or nurse practitioner considering the participant'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).

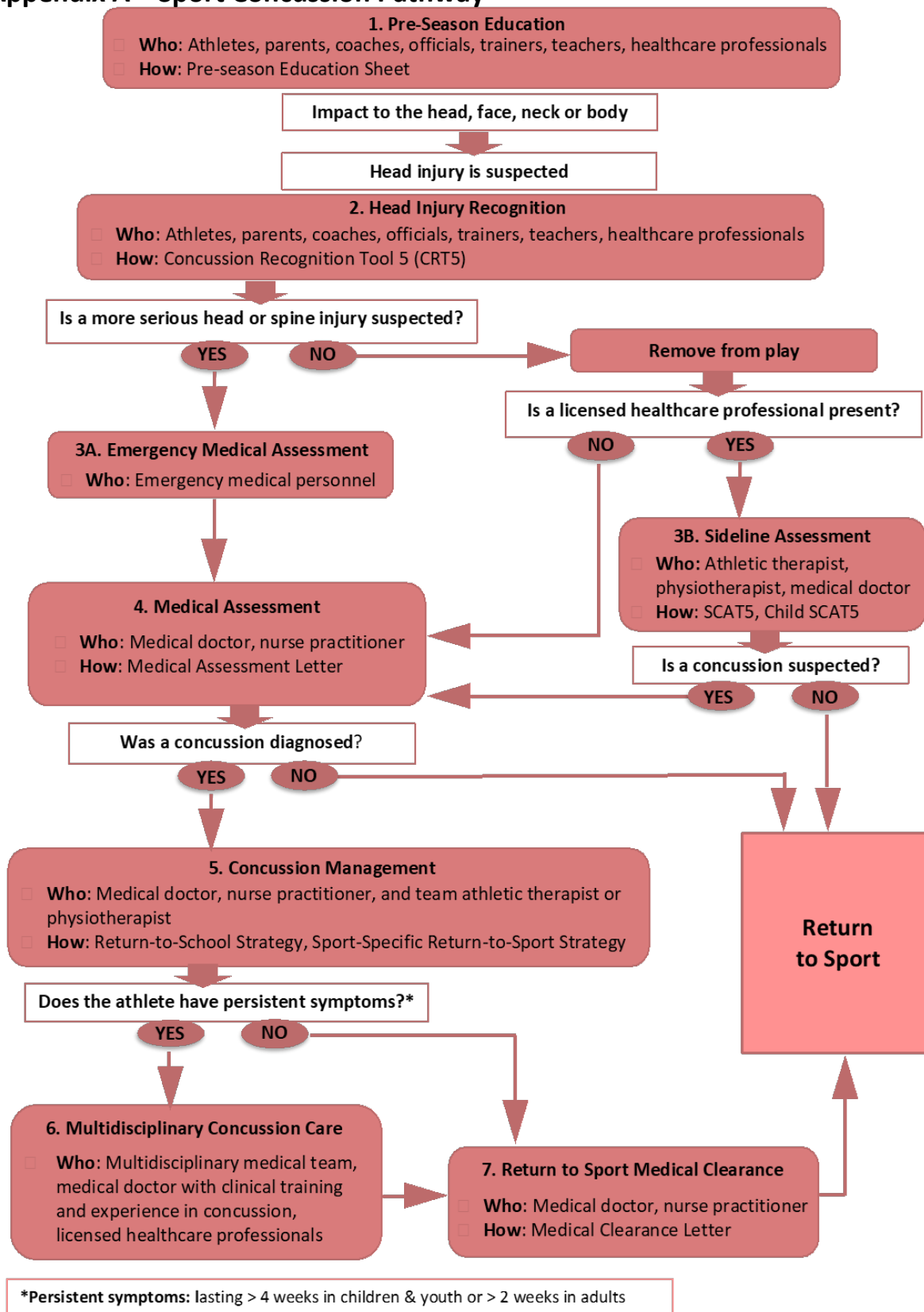
Prior to returning to full contact participation, each participant that has been diagnosed with a concussion must provide their coach with a *Medical Clearance Letter* that specifies that a medical doctor or nurse practitioner has personally evaluated the patient and has cleared the participant to return to sports. In geographic regions of Canada with limited access to medical doctors (e.g., 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.

Participants who have been provided with a *Medical Clearance Letter* may return to full sport activities as tolerated. If the participant experiences any new concussion-like symptoms while returning to play, they should be instructed to stop playing immediately, notify their parents/guardians, coaches, trainer or teachers, and undergo follow-up *Medical Assessment*. In

the event that the participant sustains a new suspected concussion, this *National Concussion Protocol* should be followed again.

- ▶ **Who:** Medical doctor, nurse practitioner
- ▶ **Document:** *Medical Clearance Letter*

Appendix A – Sport Concussion Pathway



Appendix B – Pre-Season Concussion Education Sheet

WHAT IS A CONCUSSION?

A concussion is a brain injury that can't be seen on x-rays, CT or MRI scans. It affects the way a participant thinks and can cause a variety of symptoms.

WHAT CAUSES A CONCUSSION?

Any blow to the head, face or neck, or somewhere else on the body that causes a sudden jarring of the head may cause a concussion. Examples include getting body-checked in hockey or hitting one's head on the floor in gym class.

WHEN SHOULD I SUSPECT A CONCUSSION?

A concussion should be suspected in any participant who sustains a significant impact to the head, face, neck, or body and reports *ANY* symptoms or demonstrates *ANY* visual signs of a concussion. A concussion should also be suspected if a participant reports *ANY* concussion symptoms to one of their peers, parents/guardians, teachers, or coaches or if anyone witnesses a participant exhibiting *ANY* of the visual signs of concussion. Some participants will develop symptoms immediately while others will develop delayed symptoms (beginning 24-48 hours after the injury).

WHAT ARE THE SYMPTOMS OF A CONCUSSION?

A person does not need to be knocked out (lose consciousness) to have had a concussion.

Common symptoms include:

- | | |
|-------------------------------------|---------------------------------------|
| • Headaches or head pressure | • Easily upset or angered |
| • Dizziness | • Sadness |
| • Nausea and vomiting | • Nervousness or anxiety |
| • Blurred or fuzzy vision | • Feeling more emotional |
| • Sensitivity to light or sound | • Sleeping more or sleeping less |
| • Balance problems | • Having a hard time falling asleep |
| • Feeling tired or having no energy | • Difficulty working on a computer |
| • Not thinking clearly | • Difficulty reading |
| • Feeling slowed down | • Difficulty learning new information |

WHAT ARE THE VISUAL SIGNS OF A CONCUSSION?

Visual signs of a concussion may include:

<ul style="list-style-type: none"> • Lying motionless on the playing surface • Slow to get up after a direct or indirect hit to the head • Disorientation or confusion or inability to respond appropriately to questions 	<ul style="list-style-type: none"> • Blank or vacant stare • Balance, gait difficulties, motor incoordination, stumbling, slow labored movements • Facial injury after head trauma • Clutching head
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WHAT SHOULD I DO IF I SUSPECT A CONCUSSION?

If any participant is suspected of sustaining a concussion during sports they should be immediately removed from play. Any participant who is suspected of having sustained a concussion during sports must not be allowed to return to the same game or practice.

It is important that ALL participants with a suspected concussion undergo medical assessment by a medical doctor or nurse practitioner, as soon as possible. It is also important that ALL participants with a suspected concussion receive written medical clearance from a medical doctor or nurse practitioner before returning to sport activities.

WHEN CAN THE PARTICIPANT RETURN TO SCHOOL AND SPORTS?

It is important that all participants diagnosed with a concussion follow a stepwise return to school and sports-related activities that includes the following Return-to-School and Return-to-Sport Strategies. It is important that youth and adult student-participants return to full-time school activities before progressing to stage 5 and 6 of the Return-to-Sport Strategy.

Return-to-School Strategy

Stage	Aim	Activity	Goal of each step
1	Daily activities at home that do not give the student-participant 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

Return-to-Sport Strategy

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	Walking or stationary cycling at slow to medium pace. No resistance training	Increase heart rate
3	Sport-specific exercise	Running, cross-country skiing or roller skiing on easy terrain	Add movement
4	Low intensity training drills	Cross-country skiing or roller skiing on more challenging terrain, agility drills, low intensity strength and conditioning (going through movement patterns with light load)	Exercise, coordination and increased thinking
5	High intensity practice	An appropriate progression from moderate to higher intensity interval training. May start more progressive resistance training.	Restore confidence and assess functional skills by coaching staff
6	Return to sport	Normal participation	

HOW LONG WILL IT TAKE FOR THE PARTICIPANT TO RECOVER?

Most participants who sustain a concussion will make a complete recovery within 1-2 weeks

while most youth participants will recover within 1-4 weeks. Approximately 15-30% of patients will experience persistent symptoms (>2 weeks for adults; >4 weeks for youth) that may require additional medical assessment and management.

HOW CAN I HELP PREVENT CONCUSSIONS AND THEIR CONSEQUENCES?

Concussion prevention, recognition and management require participants to follow the rules and regulations of their sport, respect their opponents, avoid head contact, and report suspected concussions.

TO LEARN MORE ABOUT CONCUSSIONS PLEASE VISIT:

Parachute Canada: www.parachutecanada.org/concussion

SIGNATURES: The following signatures certify that the participant and the participant's parent/guardian (when the participant is a minor) have reviewed the above information related to concussions.

_____	_____	_____
Printed name of participant	Signature of participant	Date
_____	_____	_____
Printed name of parent/guardian	Signature of parent/guardian	Date
<i>(when the participant is younger than the age of majority)</i>		