VELO NB
Head Injury / Concussion Protocol

Please read “Purpose of Document” before proceeding with further sections

PURPOSE OF DOCUMENT

The purpose of this document is to provide basic education and instructions for medical and non-medical Velo NB Staff (coaches, assistant coaches, and mechanics) on how to properly proceed if faced with a suspected head injury while on a project. It was created and developed with the specifics of cycling events/venues in mind. It is intended to assist the staff in making the best decision(s) possible and to ensure the proper medical personnel is contacted post-event.

It has been created based on recommendations from the 5th International Conference on Concussion in Sport, along with the COPSI Network Sport-Related Concussion Guidelines for Canadian National and National Development High-Performance Athletes as well as in conjunction with Parachute Canada’s Canadian Guideline on Concussion in Sport. In follows similar actions as made by Cycling Canada.

IMPORTANCE

Concussions are a frequent injury in cycling crashes and it can be difficult for on-site staff members to understand how to properly identify and manage an athlete with a suspected concussion. When concussions are understood and managed properly - including using a step-by-step Return-to-Play and Return-to-School guideline - the chance of persistent symptoms and complications can be significantly decreased, which could result in a shorter recovery period for the athlete.

If an athlete returns to sport while they still have ANY of the symptoms outlined in the Common Signs and Symptoms section below, it has the potential to lead to serious and permanent neurological effects, such as: Post-Concussion Syndrome; Second Impact Syndrome; and Multiple Impact Syndrome. It should also be noted that concussion clearly effects balance, focus, and reaction time. An athlete’s return to sport prior to medical clearance can lead to crashes and injuries that may not have otherwise occurred, putting both the athlete and anyone riding around them at risk.

Certain terminology has been used to make this guideline as specific as possible and to directly reflect the Canadian Guideline on Concussion in Sport and the Sport-Related Concussion Guidelines for Canadian National and National Development High-Performance Athletes. For further information on terminology used in this protocol, please refer to the ‘Key Terminology” section below.

KEY TERMINOLOGY

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

Athlete: Any youth or adult participant competing in a Velo NB sanctioned event and/or activity.

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

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

Post-Concussion Syndrome: Persistent headaches, nausea, memory loss, loss of coordination, and confusion

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

Second Impact Syndrome: A large swelling in the brain that results from mild to severe head contact to a previously concussed brain.

Multiple Impact Syndrome: Repetitive contact to a previously concussed brain that results in severe brain swelling. This continuous impact can lead to permanent and irreversible neurological alterations such as memory loss, lowered concentration ability, and severe headaches.

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

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

The following protocol defines concussion, outlines the signs and symptoms, and provides a step-by-step protocol for all Velo NB staff to abide by. It also includes the

standardized SCAT5 assessment tool that can be used to assess an athlete with a suspected concussion.

ATHLETE ASSESSMENTS

It is advised that all athletes have a pre-season assessment completed that includes a detailed past medical history, completion of the Sport Concussion Assessment Tool (SCAT5) completed by a licensed healthcare professional, gait and balance testing, Vestibular/Oculomotor, and Web-based neurocognitive/neuropsychological assessment (when available).

There are several resources, tools and companies available to assist in administering assessments.

WHAT IS A CONCUSSION?

Currently, health care professionals lack a “gold standard” assessment tool to reliably and objectively determine whether an athlete has sustained a sport-related concussion and/or definitively ascertain whether they have recovered. Concussion is a diffuse brain injury with the potential for coexisting, overlapping and confounding pathologies (e.g., cervical, vestibular, visual, previous concussion history, coexisting medical conditions such as anxiety, depression, migraine headaches, etc.). It is not always clear what to look for as it may present with many different signs and symptoms that differ from individual to individual (e.g., cognitive, emotional and physical symptoms, sleep disturbances, sensorimotor and visuospatial deficits, slowed reaction time, working memory and decision making, balance deficits, etc.). There is also the challenge of athletes wanting to return to sport quickly.

Sport-related concussion (SRC) is defined as a traumatic brain injury induced by biomechanical forces. Several common features that may be utilized in clinically defining the nature of a concussive head injury include:

- SRC may be caused either by a direct blow to the head, face, neck or elsewhere on the body with an impulsive force transmitted to the head.

SRC typically results in the rapid onset of short-lived impairment of neurological function that resolves spontaneously. However, in some cases, signs and symptoms evolve over a number of minutes to hours.

- SRC may result in neuropathological changes, but the acute clinical signs and symptoms largely reflect a functional disturbance rather than a structural injury and, as such, no abnormality is seen on standard structural neuroimaging studies.
- SRC results in a range of clinical signs and symptoms that may or may not involve loss of consciousness. Resolution of the clinical and cognitive features typically follows a sequential course. However, in some cases symptoms may be prolonged. The clinical signs and symptoms cannot be explained by drug, alcohol, or medication

use, other injuries (such as cervical injuries, peripheral vestibular dysfunction, etc.) or other comorbidities (e.g., psychological factors or coexisting medical conditions).

A RIDER DOES NOT NEED TO HAVE DIRECT CONTACT TO THE HEAD OR LOSE CONSCIOUSNESS TO HAVE A CONCUSSION

COMMON SIGNS AND SYMPTOMS

- Headache
- Dizziness
- Confusion, disorientation
- Feeling “dinged” “bell rung” “dazed” “slow” “foggy”
- Ringing in the ears
- Pressure in the head
- Neck pain/stiffness
- See stars/flashing lights
- Memory problems – events leading up to the injury and events after the injury
- Vision problems
- Balance problems
- Nausea/Vomiting
- Personality changes
- Concentration problems
- Co-ordination/Balance problems
- Slurred speech
- Slow to respond to questions

SERIOUS SIGNS AND SYMPTOMS

- Severe pain or pressure in head or neck
- Sensory or motor deficits
- Blood or fluid from nose or ears
- Diminishing level of consciousness
- Impaired breathing
- Loss of memory (amnesia) before impact of 30 or more minutes

Note: Persistent vomiting (greater than 2 hours) and altered level of consciousness (GCS<15) after 2 hours are indications for a CT Scan to be ordered

ATHLETE MANAGEMENT

All Velo NB stakeholders including athletes, parents, coaches, officials, trainers, and licensed healthcare professionals are responsible for the recognition and reporting of athletes who demonstrate visual signs of a head injury or who report concussion symptoms.

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 listed above or reports ANY symptoms of a suspected concussion based on the common signs and symptoms listed above.

If an athlete has a suspected head injury, please follow the below management protocol, ***after the athlete has immediately been removed from competition/ training.***

1) Have athlete assessed by on-site medical
2) If above are not available transport athlete to the hospital if any of the serious signs and symptoms are present or if loss of consciousness occurred (more than 10 seconds). If in doubt take to the hospital for medical clearance.
3) If the athlete has been cleared by medical staff and/or transport to the hospital is not necessary be sure the athlete is comfortable and able to monitored (~ every 2 hours). NO SAME DAY RETURN TO SPORT/ACTIVITY. FULL REST REQUIRED.
4) Complete the SCAT5 (See Figure 1.)
5) Transport athlete to hospital if any of the signs and symptoms become worse or if new signs and symptoms appear
6) Athlete to be assessed by Medical Doctor or Nurse Practitioner as soon as possible. Athlete must be cleared by either of these practitioners before return to sport*
7) Educate the athlete on return to riding/rehabilitation guidelines
8) Advise athlete to seek follow up care by a sport medicine physician upon return to city of residence. Advise the athlete that specific rehabilitation may be necessary.
9) Advise athletes personal coaches/staff of the injury and the advised return to cycling guidelines
10) DO NOT: allow the athlete to consume alcohol, wake the athlete every 2 hours (once sleeping, rest is good, monitor during waking hours), leave the athlete unattended for more than 1-2 hrs, allow the athlete to return to cycling unless appropriate (see next section on return to cycling steps)

NO SAME DAY RETURN TO SPORT IF SUSPECTED HEAD INJURY

* 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.

RETURN TO SCHOOL/WORK STRATEGY

Step 1
Symptom Free activities at home: Typical activities during the day as long as they do not increases symptoms (i.e. reading, screen time, texting, etc). Begin at 5-15 minutes at a time and gradually build up.

Step 2
School/Work Activities: Homework, reading or other cognitive activities outside the classroom/workplace.

Step 3
Return to school/work part-time: Gradual introduction of schoolwork. Partial day or several breaks throughout the day.

Step 4
Return to School/Work Full Time: Gradual progression of school/work activities until a full day
can be tolerated.

RETURN TO CYCLING STEPS/STRATEGY

**** NO SAME DAY RETURN TO SPORT IF HEAD INJURY SUSPECTED** (For example, if an athlete crashes in warm up and a head injury is suspected, they are not to continue onto racing that day)**

****It is important that adult student-athletes, and youth (less than 18 yrs of age) return to full-time school before progressing to stage 5 and 6.**

- The athlete must remain asymptomatic throughout the steps- if they experience symptoms, they must back up one step
- There should be at least one day between progression to the next step
- IMPORTANT: ATHLETE MUST BE SYMPTOM FREE FOR 24 HOURS AFTER EACH STEP BEFORE MOVING ONTO THE NEXT STEP.

****Please note these are general guidelines and sport specific intensities for each step should be individually tailored and properly monitored and progressed by a medical professional****

STEP 1
Symptom limited activity. Daily activities, including light walking that do not provoke symptoms

STEP 2
Light aerobic exercise such as trainer, rollers or stationary bike
NO resistance training

STEP 3
Sport Specific Training (Low intensity)
Road – flat, non-paceline, low stress
Track – non-group ride on track or road ride
MTB – road ride, no technical
BMX – low intensity, road ride, no technical

STEP 4
Training Drills and Resistance Training (Increased intensity)
Road – climbs, intervals, paceline
Track – group riding on track, intervals
MTB – training drills- low/moderate technical skills, intervals
BMX – training drills-low/moderate technical skills, intervals
*Integration of strength and conditioning for all disciplines

STEP 5
Regular Training and skill execution
Road – motorpacing or group riding
Track – motorpacing
MTB – course pre-riding, technical riding
BMX – course pre-riding, technical riding

STEP 6
Race Ready

****Reminder this is simply a generalized example of a return to riding protocol, and will be different for each athlete, and situation.**

REHABILLITATION

While some athletes may move through the return to sport strategy with no issues—others may require more in depth assessment and treatment. It is recommended that the following systems be evaluated and treated by qualified professionals

As a coach or team staff working with an athlete as they are recovering from concussion—be sure to ask the athlete if they have had assessments done in the following areas

It is advised to contact a local Therapist or Sport Medicine Doctor to determine qualified practitioners in your area

Musculoskeletal/Cervical Spine

Oculomotor

Vestibular

Nutrition

Mental Performance

Developed by:
Members Cycling Canada Medical Team

References

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