



## 2017 Concussion Management Program

Michael Stuart MD  
Alan Ashare MD  
Kevin Margarucci ATC

The standard of care for current medical practice and the law in most states requires that any athlete with a suspected Sports Related Concussion (SRC) is immediately removed from play.

- A Sports Related Concussion is a traumatic brain injury- *there is no such thing as a minor brain injury*.
- A player does not have to be “knocked-out” to have a SRC- *less than 10% of players actually lose consciousness*.
- A SRC can result from a blow to head, neck *or body*.
- SRCs often occur to players who don’t have or just released the puck, from open-ice hits, unanticipated hits and illegal collisions.
- The **youth** hockey player’s brain is *more susceptible* to SRC.
- In addition, the SRC in a young athlete may be *harder* to diagnosis, takes *longer* to recover, is *more likely* to have a recurrence, which can be associated with serious long-term effects.
- The strongest predictor of slower recovery from a concussion is the severity of a person’s **initial symptoms** *in the first day or 2* after the injury.
- Treatment is individualized and it is impossible to predict when the athlete will be allowed to return to play- *there is no standard timetable*.
- Baseline or pre-season **neuropsychological testing** is not mandatory, but may be helpful for return-to-plan decision making when an athlete feels normal.
- The use of helmet-based or other **sensor systems** to diagnose or assess SRC cannot be supported at this time.

A player with *any symptoms/signs* or a *worrisome mechanism of injury* has a SRC until proven otherwise:

**“When in doubt, sit them out”**

Remember these steps:

1. Remove immediately from play (training, practice or game)
2. Inform the player's coach/parents
3. Refer the athlete to a qualified health-care professional
4. Initial treatment requires physical and cognitive rest
5. The athlete begins a graded exertion and schoolwork protocol.
6. Medical clearance is required for return to play

## **Diagnosis**

Players, coaches, officials, parents and health care providers should be able to recognize the symptoms and signs of a sport related concussion. (refer to the attached *Concussion Recognition Tool 5*)

### **Symptoms**

- Headache
- Nausea
- Poor balance
- Dizziness
- Double vision
- Blurred vision
- Poor concentration
- Impaired memory
- Light Sensitivity
- Noise Sensitivity
- Sluggish
- Foggy
- Groggy
- Confusion

### **Signs**

- Appears dazed or stunned
- Confused about assignment
- Moves clumsily
- Answers slowly
- Behavior or personality changes
- Unsure of score or opponent
- Can't recall events after the injury
- Can't recall events before the injury

## Management Protocol

1. If the player is unresponsive- call for help & dial 911
2. If the athlete is *not breathing*: start CPR
  - ✓ DO NOT move the athlete
  - ✓ DO NOT remove the helmet
  - ✓ DO NOT rush the evaluation
3. Assume a neck injury *until proven otherwise*
  - ✓ DO NOT have the athlete sit up or skate off until you have determined:
    - no neck pain
    - no pain, numbness or tingling
    - no midline neck tenderness
    - normal muscle strength
    - normal sensation to light touch
4. If the athlete is conscious & responsive without symptoms or signs of a neck injury...
  - help the player off the ice to the locker room
  - perform an evaluation
  - do not leave them alone
5. Evaluate the player in the locker room: **SCAT5** or other sideline assessment tools
  - Ask about concussion *symptoms* (How do you feel?)
  - Examine for *signs*
  - Verify *orientation* (What day is it?, What is the score?, Who are we playing?)
  - Check *immediate memory* (Repeat a list of 5 words)
  - Test *concentration* (List the months in reverse order)
  - Test *balance* (have the players stand on both legs, one leg and one foot in front of the other with their eyes closed for 20 seconds)
  - Check *delayed recall* (repeat the previous 5 words after 5-10 minutes)

→ If a healthcare provider is not available, the player should be safely removed from practice or play and urgent referral to a physician arranged.
6. A player with any symptoms or signs, disorientation, impaired memory, concentration, balance or recall has a SRC and should not be allowed to return to play on the day of injury.
7. The player should not be left alone after the injury, and serial monitoring for deterioration is essential over the initial few hours after injury. If any of the signs or symptoms listed below develop or worsen: go to the **hospital emergency department** or dial **911**.

- Severe throbbing headache
- Dizziness or loss of coordination
- Ringing in the ears (tinnitus)
- Blurred or double vision
- Unequal pupil size
- No pupil reaction to light
- Nausea and/or vomiting
- Slurred speech
- Convulsions or tremors
- Sleepiness or grogginess
- Clear fluid running from the nose and/or ears
- Numbness or paralysis (partial or complete)
- Difficulty in being aroused

8. An athlete who is *symptomatic* after a concussion initially requires ***physical*** and ***cognitive rest***.

- A concussed athlete ***should not*** participate in physical activity, return to school, play video games or text message if he or she is having symptoms at rest.
- Concussion symptoms & signs *evolve over time*- the severity of the injury and estimated time to return to play are unpredictable.

9. A qualified health care provider guides the athlete through **Graduated Return-to-School** and **Graduated Return-to-Sport** strategies

## Graduated Return-to-Sport Strategy

Stage	Aim	Activity	Goal of each step
1	Symptom-limited activity	Daily activities that do not provoke symptoms	Gradual reintroduction of work/school activities
2	Light aerobic exercise	Walking or stationary cycling at slow to medium pace. No resistance training	Increase heart rate
3	Sport-specific exercise	Running or skating drills. No head impact activities	Add movement
4	Non-contact training drills	Harder training drills, eg, passing drills. May start progressive resistance training	Exercise, coordination and increased thinking
5	Full contact practice	Following medical clearance, participate in normal training activities	Restore confidence and assess functional skills by coaching staff
6	Return to sport	Normal game play	

- After a brief period of rest (24–48 hours after injury), patients can be encouraged to become gradually and progressively more active as long as these activities do not bring on or worsen their symptoms.
- There should be at least 24 hours (or longer) for each step of the progression. If any symptoms worsen during exercise, the athlete should go back to the previous step.
- Resistance training should be added only in the later stages (stage 3 or 4 at the earliest).

## Graduated Return-to-School Strategy

Stage	Aim	Activity	Goal of each step
1	Daily activities at home that do not give the child symptoms	Typical activities of the child during the day as long as they do not increase symptoms (eg, reading, texting, screen time). Start with 5–15 min 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 school activities until a full day can be tolerated	Return to full academic activities and catch up on missed work

- If symptoms are persistent (more than 10–14 days in adults or more than 1 month in children), the athlete should be referred to a healthcare professional who is an expert in the management of concussion.

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

#### Remember:

- In all cases, the basic principles of first aid (danger, response, airway, breathing, circulation) should be followed.
- Assessment for a spinal cord injury is critical.
- Do not attempt to move the player (other than required for airway support) unless trained to do so.
- 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
- Slow to get up after a direct or indirect hit to the head
- Disorientation or confusion, or an inability to respond appropriately to questions
- Blank or vacant look
- Balance, gait difficulties, motor incoordination, stumbling, slow laboured movements
- Facial injury after head trauma

© Concussion In Sport Group 2017

### STEP 3: SYMPTOMS

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

### 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?"
- "Which half is it now?"
- "Who scored last in this game?"
- "What team did you play last week/game?"
- "Did your team win the last 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.

The CRT5 may be freely copied in its current form for distribution to individuals, teams, groups and organisations. Any revision and any reproduction in a digital form requires approval by the Concussion In Sport Group. It should not be altered in any way, rebranded or sold for commercial gain.

**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**

© Concussion In Sport Group 2017