

Management of Sport Related Concussions

BC Lacrosse | Online Workshop

April 8th 2021



Presented by:
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Manager, Sport Safety & Event Services



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Concussion in the media

HIGH SCHOOL
Kaci Messier redefines her role after concussions end lacrosse playing career
 Bob Chavez *Casandagua Daily Messenger USA TODAY NETWORK*
 Published 10:41 a.m. CT May 24, 2020

[View Comments](#) [f](#) [t](#) [e](#) [s](#)

The first thought in Kaci Messier's head was her head. Something hit it and hit it hard, with no warning.
 The second thought? The pain. Excruciating pain.
 "I had no idea who it was or really, what happened," said Messier. "I remember the feeling of hitting my head and how much it hurt. I just assumed I ran into someone."
 That was four years ago, when Messier




HEALTHCARE & PHARMA 10:41 AM, 2020 | 2:02 PM | UPDATED 2 YEARS AGO
Younger lacrosse players have more concussions than older players
 By Lisa Bappert 4 MIN READ [f](#) [t](#) [s](#)

(Reuters Health) - Younger boys who play lacrosse are more likely to get injured and sustain concussions than high school or college players, a U.S. study suggests.



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Challenges

1. Recognizing a concussion when it happens
2. Lack of reporting
3. Everyone responds differently
4. Understanding how to manage long-term symptoms
5. When to safely return to school/sport



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Course Outline

- Defining Concussions
- Recognition
- Recovery
- Mechanisms of Injury
- Signs and Symptoms
- Second Impact Syndrome
- Suspecting a Concussion
- Acute Concussion Management
- Red Flags
- Return to Learn/Sport
- Resources/Q&A

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Definition | Sport Related Concussion (SRC)

“A complex pathophysiological process affecting the brain, induced by traumatic biomechanical forces”



McCroly et al. Br J Sports Med Published Online First: [26/04/2017].
(full text available at : <http://bjsm.bmj.com/content/early/2017/04/27/bjsports-2017-097699>)

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Defining SRC (cont'd)

Force causes brain to move rapidly within the skull, causing impact and/or twisting

- May cause stretching/damage of nerve cells, resulting in a cascade of chemical events and altered cerebral blood flow
- May lead to signs and symptoms including:
 - somatic, cognitive and neurobehavioral
- Brain becomes vulnerable to increased stresses, including cognitive/physical work, light, noise, and other external stimuli

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Defining | SRC (cont'd)

- Should NOT be dismissed as “getting your bell rung” or “getting dinged” injuries
- Typically result in rapid onset of neurological impairment (signs & symptoms)
- Appearance of symptoms might be delayed several hours (up to 48-72 hours)
 - “day-after” effect
 - Adrenaline wears off



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Defining | SRC (cont'd)

- Symptoms reflect a functional disturbance, and thus are not detected by imaging of brain.
- May **NOT** include loss of consciousness
- Concussions are cumulative, and thus increases in risk and symptomatic effects are typical
- If not managed properly, concussions can lead to prolonged symptoms and associated complications

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Recovery

Adults

- 80%-90% resolve in a short period (7-10 days)
- *IF managed properly*

Children & Teens

- More cautious approach due to continuing brain development
- 2-3 weeks minimum.
- 85% will fully recover in 3 months



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Mechanisms of Injury

How Concussions Occur:

- Direct Blow
 - ✓ To the head, face, neck, chest or anywhere in the body that causes an impulsive force to transmit to the brain
- Indirect Blow:
 - ✓ Whiplash, etc.



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Mechanisms of Injury

- Most common LAX mechanisms:
 - Athlete-Athlete contact
 - Stick/ball contact
 - Athlete-Ground contact

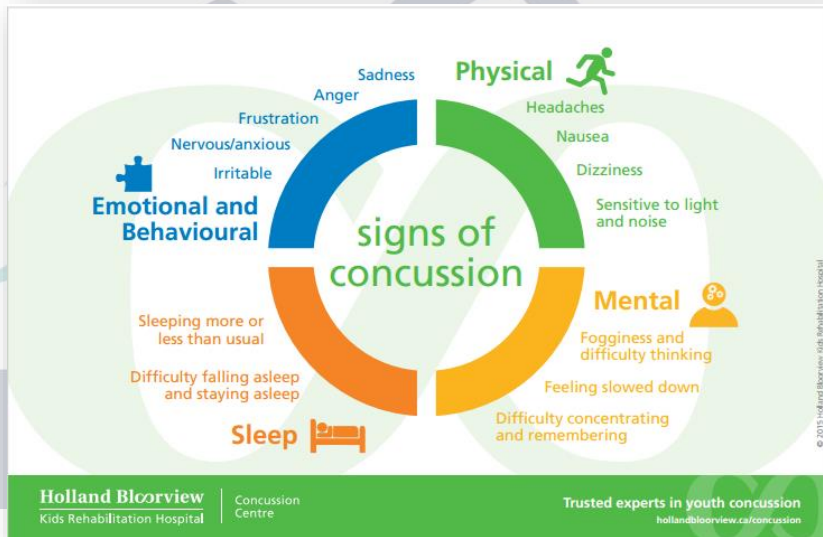


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What are the Effects?



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Signs & Symptoms

Somatic/Physical (relating to the body):

- Headache/Pressure in head
- Dizziness
- Nausea/Vomiting
- Blurred Vision
- Sensitivity to light
- Sensitivity to sound/noise
- Numbing or tingling
- Balance and/or coordination problems



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Signs & Symptoms Cont.

Cognitive (Mental):

- Feeling slowed down
- Feeling in a fog
- Difficulty concentrating
- Difficulty remembering
- Confusion



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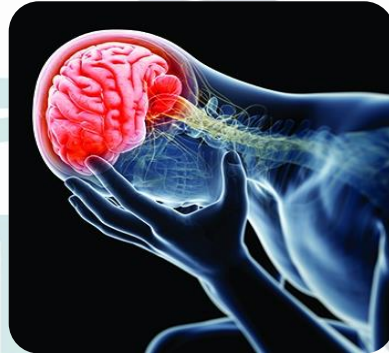


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Signs & Symptoms Cont.

Neurobehavioral/Emotional

- Sleeping more or trouble sleeping
- Drowsiness
- Fatigue
- Sadness/depression
- Nervousness
- Irritable



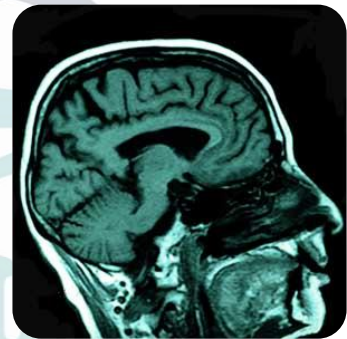
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Diagnostic Imaging

- No standard structural Neuro-imaging
 - CT, MRI, XRAY
- Research is on-going to discover ways to see concussions:
 - Dye injected MRI
 - Functional MRI
 - TAU biomarker
 - Others



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Recognition

Current issue at hand: Athletes are NOT reporting their symptoms

A few reasons include:

- Peer pressure from teammates
- Pressure from coaches, parents
- They want to keep performing
- Want to appear tough
- **Do not know enough about concussions**

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Second Impact Syndrome

Defining | Second Impact Syndrome (SIS)

"Individual suffers a concussive impact, while still suffering the effects from a previous concussion"

Varying results can be catastrophic

- Increased symptom severity
- Permanent brain damage
- Paralysis
- Death

**** The second injury can result from even the mildest concussive forces ****

**** Therefore...Athletes MUST receive medical clearance to return to sport ****

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Suspecting a Sports-Related Concussion

A sports-related concussion should be suspected:

1 Mechanism of Injury (MOI) 1 or more signs /symptoms of a concussion are present

- Severity of S&S does not matter
- Onset of S&S can be delayed several hours
- Initiate concussion treatment (explained later)
- Day after effect – delayed recognition

*Participant must be removed from environment immediately *

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Suspecting a SRC

Signs observed by **Coaching Staff:**

- Appears dazed or stunned/vacant stare
- Is confused about assignment (in game/training)
- Moves clumsily/decreased playing ability
- Delayed responses to questions
- Loses consciousness (even briefly)
- Shows behavior or personality changes
- Can't recall events prior to incident (anterograde amnesia)
- Can't recall events after the incident (retrograde amnesia)

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Suspecting a SRC

Symptoms reported by Participant/Athlete

- Headache or “pressure” in head
- Nausea or vomiting
- Balance problems or dizziness
- Double or blurry vision
- Seeing stars
- Ringing in ears
- Sensitivity to light
- Sensitivity to noise
- Feeling sluggish, hazy, foggy, or groggy
- Concentration or memory problems
- Confusion
- Does not “feel right”

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SRC | Management

Initial Response – If there is ANY loss of consciousness – Initiate EAP and call EMS.

1. Once emergency scenario, including spinal injury has been ruled out, the athlete is removed from activity.
2. Remove player from current activity
3. Check and treat any tissue injury (i.e. cuts, deformities)
4. If possible, monitor the athlete in a quiet room.
5. Give the athlete ear plugs if it is loud
6. Give the athlete a facemask, eye cover/patch or sunglasses if it is too bright
7. Arrange for a ride home/hotel and have someone keep an eye on them and available to them, watching for deteriorating conditions.
8. Give athlete and guardian/coach/parent instructions
9. Follow up with a doctor
10. Injury report form is filled out

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SRC | Management – BC Lacrosse

BC Lacrosse | Injury Report Forms*:

1. Medical Clearance Letter
2. Head Injury Incident Report
3. Medical Assessment Letter
4. CATT Info Sheet
5. CATT Pathway

**can be found here:*

<http://www.bclacrosse.com/Policies/2020-2021/2020-2021%20BCLA%20Operating%20Policy%20-%20General.pdf> Section 16 (page 16).

<http://www.bclacrosse.com/Policies/2020-2021/2020-2021%20BCLA%20Operating%20Policy%20-%20General%20-%20Appendix%20H%20Concussion%20Policy.pdf>

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Unconscious Athlete

If an athlete experiences an impact that causes loss of consciousness...

***DO NOT** move athlete & activate **EMS** immediately!

*** Only move athlete if CPR must be initiated***

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Red Flags to Watch For

When to Seek Urgent Care:

- Headaches worsen
- Neck Pain
- Seizures
- Unusual behavior change
- Repeated vomiting
- Slurred speech
- Increasing confusion/irritability
- Weakness/Numbness in arms or legs
- Can't recognize people or places
- Decreasing state of consciousness



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SRC | Management

In the absence of a Trained Medical Professional...

- Priority must be to protect the athlete
- Be aware of signs and symptoms and steps to manage an acute concussion

Concussion Incident Report:

- An excellent resource for Coaches and Parents to guide recognition and management of concussion during a sporting event.
- Easy to use, follows a step by step process, provides guidelines for safe and effective management of an acute concussion
- BCLA | Head Injury Incident Report – as viewed previously

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Concussion Incident Report – CATT / BC Injury Research and Prevention Unit

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CONCUSSION INCIDENT REPORT

CLEAR FORM

DATE OF INCIDENT:	TIME OF INCIDENT:	NAME OF INDIVIDUAL:	AGE:
NAME OF PARENT/GUARDIAN: (IF UNDER 18 YEARS OF AGE)	NAME OF PERSON MONITORING PERSON AT SCENE:		
CONTACT INFORMATION:		CONTACT INFORMATION:	

What happened? Blow to the head Hit to the body

AT THE SCENE OF THE INCIDENT

STEP 1: DETERMINE IF THIS IS A MEDICAL EMERGENCY

A) FOLLOW BASIC FIRST AID

Danger

Response

Airway

Breathing

Circulation

B) IF THERE IS SERIOUS INJURY OR ANY OF THE RED FLAGS:

- Call 911
- Do not move the individual
- Stay with the injured individual and monitor them until Emergency Services arrives
- If the individual is wearing a helmet, do not remove it unless you are trained to do so

STEP 2: REMOVE THE INDIVIDUAL FROM PLAY OR ACTIVITY

If the injury is NOT an emergency, **remove the individual from activity** and do not let them return to play that day. The child needs to be seen by a doctor as soon as possible. While the child is waiting to be taken to a doctor, follow instructions in Step 3 (next page).

RED FLAG SYMPTOMS

If someone shows any of the following Red Flag Symptoms, **CALL 911** immediately.

- 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

1 of 3 - Version 3 | Updated January 2018

CONCUSSION AWARENESS TRAINING TOOL

BC INJURY research and prevention unit

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Concussion Incident Report – CATT / BC Injury Research and Prevention Unit

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STEP 3: MONITOR THE INDIVIDUAL

Do not leave the individual alone. If they are a child, ensure they are with a responsible adult at all times. In addition to the Red Flags, watch the following signs and symptoms and check off any that appear.

A) RECORD WHAT YOU SEE

<input type="checkbox"/> Loss of consciousness	<input type="checkbox"/> Balance problems	<input type="checkbox"/> Dazed, blank, or vacant look	Comments:
<input type="checkbox"/> Lying motionless on ground	<input type="checkbox"/> Uncoordinated movement	<input type="checkbox"/> Confusion	
<input type="checkbox"/> Slow to get up	<input type="checkbox"/> Grabbing or clutching head		

B) RECORD WHAT THE INDIVIDUAL IS SAYING

<input type="checkbox"/> Headache	<input type="checkbox"/> Double or fuzzy vision	<input type="checkbox"/> Difficulty concentrating	Comments:
<input type="checkbox"/> Dizzy	<input type="checkbox"/> Sick	<input type="checkbox"/> Numbness in arms or legs	
<input type="checkbox"/> Confused	<input type="checkbox"/> Don't feel right	<input type="checkbox"/> Tired or drowsy	

C) ASK THESE QUESTIONS TO TEST MEMORY

Failure to answer any of these questions correctly may suggest a concussion. Repeat periodically and tick response.

	Time	Correct	Incorrect	Time	Correct	Incorrect	Time	Correct	Incorrect
5 to 12 years old									
Where are you now?		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Is it before or after lunch?		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
What did you have last lesson/class?		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
What is your teacher's name?		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
13 years old and over									
What venue are you at today?		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Which half/period/quarter is it now?		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Who scored last in this game?		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
What team did you play last week/game?		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Did your team win the last game?		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

STEP 4: REFER TO PARENT/GUARDIAN










The parent or guardian should take the child to a doctor for assessment as soon as possible. Ideally this should be done on the same day as the injury and may require taking the child to an Emergency Department if they are unable to access their own doctor.

2 of 3 - Version 3 | Updated January 2018
For more information on concussions and resources, visit www.cattonline.com

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Concussion Incident Report – CATT / BC Injury Research and Prevention Unit

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AT HOME																											
<p>Do not leave the individual alone. Keep them in a calm environment. They should not return to sport or activity, and should be seen by a medical professional and/or monitored for delayed symptoms for 48 hours. Do not give them any medication within the first 24-48 hours unless directed by a doctor. There is evidence that some medications can worsen concussion symptoms and could increase potential risks associated with brain injuries.</p>																											
<p>MONITOR FOR SIGNS AND SYMPTOMS</p> <p>If the individual shows one of the following symptoms, seek medical attention as soon as possible.</p> <table border="1"> <thead> <tr> <th>Thinking and Remembering</th> <th>Emotional and Mood</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> Not thinking clearly</td> <td><input type="checkbox"/> Easily upset or angered</td> </tr> <tr> <td><input type="checkbox"/> Feeling slowed down</td> <td><input type="checkbox"/> Sad</td> </tr> <tr> <td><input type="checkbox"/> Unable to concentrate</td> <td><input type="checkbox"/> Nervous or anxious</td> </tr> <tr> <td><input type="checkbox"/> Unable to remember new information</td> <td><input type="checkbox"/> More emotional</td> </tr> <tr> <th>Physical</th> <th>Sleep</th> </tr> <tr> <td><input type="checkbox"/> Headache</td> <td><input type="checkbox"/> Sleeping more than usual</td> </tr> <tr> <td><input type="checkbox"/> Fuzzy or blurry vision</td> <td><input type="checkbox"/> Sleeping less than usual</td> </tr> <tr> <td><input type="checkbox"/> Nausea and vomiting</td> <td><input type="checkbox"/> Having a hard time falling asleep</td> </tr> <tr> <td><input type="checkbox"/> Dizziness</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Sensitivity to light or noise</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Balance problems</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Feeling tired or having no energy</td> <td></td> </tr> </tbody> </table>		Thinking and Remembering	Emotional and Mood	<input type="checkbox"/> Not thinking clearly	<input type="checkbox"/> Easily upset or angered	<input type="checkbox"/> Feeling slowed down	<input type="checkbox"/> Sad	<input type="checkbox"/> Unable to concentrate	<input type="checkbox"/> Nervous or anxious	<input type="checkbox"/> Unable to remember new information	<input type="checkbox"/> More emotional	Physical	Sleep	<input type="checkbox"/> Headache	<input type="checkbox"/> Sleeping more than usual	<input type="checkbox"/> Fuzzy or blurry vision	<input type="checkbox"/> Sleeping less than usual	<input type="checkbox"/> Nausea and vomiting	<input type="checkbox"/> Having a hard time falling asleep	<input type="checkbox"/> Dizziness		<input type="checkbox"/> Sensitivity to light or noise		<input type="checkbox"/> Balance problems		<input type="checkbox"/> Feeling tired or having no energy	
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<p>CONTINUE TO MONITOR AND RECORD INFORMATION</p> <p>Signs and symptoms can be delayed for several hours or even days following a concussion incident. Problems caused by a head injury can get worse later that day or night. Your child should not be left alone in the first 24 hours. If your child's symptoms are getting worse or they develop new symptoms seek medical attention as soon as possible.</p>																											
<p>THE FIRST NIGHT</p> <p>An individual with a suspected concussion should not be left alone initially. On the first night, the individual should NOT BE WOKEN UP, but should be monitored throughout the night for anything out of the ordinary.</p> <p>Only wake the individual if you have concerns about their breathing, changes in skin colour, or how they are sleeping. Call 911 if the person is slow to wake or shows any of the Red Flag symptoms. If they are sleeping normally, let them sleep to allow the brain to rest. Sleep is an important part of the recovery process.</p> <p>You know the individual best. If they are showing any unusual behaviour, seek medical attention.</p>																											
<p>3 of 3 - Version 2 Updated January 2018 For more information on concussions and resources, visit www.cattonline.com</p>																											

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SRC | Management

Physician/Doctor Follow-Up

- Only a Physician can diagnose a concussion!
- An athlete with a suspected concussion should **ALWAYS** see a Physician
- Physician's assessment:
 - History
 - Neurological Examination (Mental Status, Cognitive Functioning, Gait, Balance)
 - Clinical Status (Symptoms and Severity)
 - Need for potential neuroimaging
 - Neuropsychological Testing
- Best to see a Physician trained in Concussion Management
 - Canadian Academy of Sport and Exercise Medicine (CASEM)
 - www.casem-acmse.org

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While Symptomatic

The following may irritate and slow down recovery:

- Physical activity:
 - Running, jogging, swimming, biking, rollerblading, working out, dancing
- Mental activity:
 - Texting, watching TV, listening to music, reading, video games, computers
- Environmental:
 - Loud and bright environments (Gymnasiums, arenas)
 - Prolonged exposure to the sunlight/heat

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The Real First Step: Return to Learn

- Before returning to sport, being symptom free during normal, everyday activity is essential
- School environment can be very stimulating and overwhelming
- Work with school administration to help support the student-athlete
- Allow for full recovery before enforcing deadlines/tests/assignments

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Robyn Littleford – GF Strong School Program

<https://www.youtube.com/watch?v=I7H3bLWBemY>

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The Real First Step: Return to Learn

Return to Learn – Before Creating the Plan

1. Identify Primary School Contacts.
(Including Administrators, Teachers, Counselors, School Support Staff etc..)
2. Identify the Support System.
(Parents/Guardians, School Staff, Doctor, Coaches, Friends, Family)
3. Establish Student's Current Level of Functioning.
Symptoms? Needs? What can be tolerated? Pre-existing challenges (Cognitive, Social/Emotional)
4. Create an Individualized Plan.
(Plan absolutely must be individualized based on the nature of the child and the child's injury.)

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The Real First Step: Return to Learn

Return to Learn – Creating the Plan

1. Determine learning accommodations best suited for students needs (Physical, Cognitive, Emotional)
2. Determine school work and attendance expectations.
3. Document medical recommendations for physical activity (Must be guided by Health Care Professional)
4. Ensure a plan for continued monitoring of child's signs/symptoms (Requires student, Parent/Guardian, Teachers, Physician input)
5. Determine steps for evaluating the effectiveness of the plan

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The Real First Step: Return to Learn/school

Return to School

This tool is a guideline for managing a student's return to school following a concussion and does not replace medical advice. Timelines and activities may vary by direction of a health care professional.

AT HOME		AT SCHOOL				
STAGE 1:	STAGE 2:	STAGE 3:	STAGE 4:	STAGE 5:	STAGE 6:	
Physical & cognitive rest • Basic board games, crafts, talk on phone • Activities that do not increase heart rate or break a sweat Limit/Avoid: • Computer, TV, texting, video games, reading No: • School work • Sports • Work • Driving until cleared by a health care professional	Start with light cognitive activity: Gradually increase cognitive activity up to 30 min. Take frequent breaks. Prior activities plus: • Reading, TV, drawing • Limited peer contact and social networking Contact school to create Return to School plan. No: • School attendance • Sports • Work	When light cognitive activity is tolerated: Introduce school work. Prior activities plus: • School work as per Return to School plan Communicate with school on student's progression.	Back to school part-time Part-time school with maximum accommodations. Prior activities plus: • School work at school as per Return to School plan No: • P.E., physical activity at lunch/recess, homework, testing, sports, assemblies, field trips Communicate with school on student's progression.	Part-time school Increase school time with moderate accommodations. Prior activities plus: • Increase time at school • Decrease accommodations • Homework – up to 30 min./day • Classroom testing with adaptations No: • P.E., physical activity at lunch/recess, sports, standardized testing Communicate with school on student's progression.	Full-time school Full days at school, minimal accommodations. Prior activities plus: • Start to eliminate accommodations • Increase homework to 60 min./day • Limit routine testing to one test per day with adaptations No: • P.E., physical activity at lunch/recess, sports, standardized testing	Full-time school Full days at school, no learning accommodations. • Attend all classes • All homework • Full extracurricular involvement • All testing No: • full participation in P.E. or sports until Return to Sport protocol completed and written medical clearance provided Full academic load
Rest	Gradually add cognitive activity including school work at home	School work only at school	Increase school work, introduce homework, decrease learning accommodations	Work up to full days at school, minimal learning accommodations	Return to School protocol completed, focus on RETURN TO SPORT	
When symptoms start to improve OR after resting for 2 days max, BEGIN STAGE 2	Tolerates 30 min. of cognitive activity, introduce school work at home	Tolerates 60 min. of school work in two 30 min. intervals, BEGIN STAGE 3	Tolerates 120 min. of cognitive activity in 30-45 min. intervals, BEGIN STAGE 4	Tolerates 240 min. of cognitive activity in 45-60 min. intervals, BEGIN STAGE 5	Tolerates school full-time with no learning accommodations BEGIN STAGE 6	

Note: A student is tolerating an activity if symptoms are not exacerbated.

Adapted from the Return to Learn protocol by G.F. Strong School Program (Vancouver School Board), Adolescent and Young Adult Program, G.F. Strong Rehabilitation Centre.

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The Real First Step: Return to Learn

SUMMARY | RETURN TO LEARN PROTOCOL

At Home

Stage 1: Physical/Cognitive Rest

Stage 2: Light Cognitive Activity (Slowly introduce School work)

At School

Stage 3: Back to School Part Time

(Maximum Accommodations, No PE, Physical Activity, Homework, Testing, Sports, Field Trips etc...)

Stage 4: Part Time School (Increase time at school, Introduce Homework)

Stage 5: Full Time at School (Decreased accommodations, Homework, Testing)

Stage 6: Full Return to School (Must follow RTP protocol before PE/Sports)

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Return to Play/Sport (RTP)

- After each stage, have athlete rest and monitor for 15 minutes post exercise
- Must have at least 24 hours between each stage
- If ANY new or worsening S&S appear, no matter the severity, athlete must rest at least 24 hours and drops back to previous stage
- Athlete may have to move back a stage more than once during the recovery process

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Module 3 | Concussion | Return to Play/Sport

Return to Sport

This tool is a guideline for managing an individual's return to sport following a concussion and does not replace medical advice. Timelines and activities may vary by direction of a health care professional.

STAGE 1:	STAGE 2:	STAGE 3:	STAGE 4:	STAGE 5:	STAGE 6:
No sporting activity Physical and cognitive rest until symptoms start to improve OR after resting for 2 days max.	Light aerobic exercise Walking, swimming, stationary cycling. No resistance training. The pace of these activities should be at the point where you are still able to have a conversation.	Sport-specific exercise Skating drills (ice hockey), running drills (soccer). No head-impact activities.	Non-contact drills Progress to complex training drills (e.g. passing drills). May start resistance training.	Full-contact practice Following medical clearance participate in normal training activities.	Back in the game Normal game play
Recovery Symptoms improve or 2 days rest max? Yes: Move to stage 2 No: Continue resting Time & Date completed:	Increase heart rate No new or worsening symptoms for 24 hours? Yes: Move to stage 3 No: Return to stage 1 Time & Date completed:	Add movement No new or worsening symptoms for 24 hours? Yes: Move to stage 4 No: Return to stage 2 Time & Date completed:	Exercise coordination, cognitive load Symptom-free for 24 hours? Yes: Move to stage 5 No: Return to stage 3 Time & Date completed:	Restore confidence; assess functional skills Symptom-free for 24 hours? Yes: Move to stage 6 No: Return to stage 4 Time & Date completed:	Note: Premature return to contact sports (full practice and game play) may cause a significant setback in recovery.

If new or worsening symptoms are experienced at any stage, go back to the previous stage for at least 24 hours. You may need to move back a stage more than once during the recovery process.

Medical clearance required before moving to stage 5

BOTH TOOLS CAN BE USED IN PARALLEL; HOWEVER, RETURN TO SCHOOL SHOULD BE COMPLETED BEFORE RETURN TO SPORT IS COMPLETED



Sport Related Concussion | RTP – Stage 1

Stage 1 – No Sporting Activity

- **Physical and cognitive rest until symptoms start to improve OR after resting for 2 days max.**
- Mental activity includes: reading, texting, watching TV, computers, video games, listening to music
- Physical activity includes: Running, jogging, hiking, swimming, cycling, rollerblading, skateboarding, working out
- **Stage goal: Recovery**



Sport Related Concussion | RTP – Stage 2

Stage 2 - Light Aerobic Exercise

- **Keep effort to 70% of Max Heart Rate (MHR)**
 - Estimated MHR = 220-age
 - Conversational Pace
- Example:
 - 20 minute stationary bike
 - 20 minute light run/walk
- **Stage goal: Increase Heart Rate (HR)**

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Sport Related Concussion | RTP – Stage 3

Stage 3 – Sport-Specific Exercise/Technique

- **Low to moderate intensity activity**
- Absolutely no contact or head impact
- Example: running, floor work
- **Stage Goal: Add movement**

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Sport Related Concussion | RTP – Stage 4

Stage 4 – Non-Contact Practice/Training

- Ex: no head contact, no body hitting/body checking
- May start progressive resistance training
- Participate in drills, combine movement and strategy
- ***Stage Goal: Exercise, coordination, and cognitive load***

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Sport Related Concussion | RTP – Stage 5

Stage 5 – Full Contact Training/Practice

- **Medical Doctor clears athlete – written permission PRIOR to activity**
- Participate in normal training activities
- ***Stage goal:***
 - ***Restore confidence***
 - ***Assess functional skills by coaching staff***
 - ***Final on field tests.***

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Sport Related Concussion | RTP – Stage 6

Stage 6 – Return to Play/Competition

- Normal training and competition play
- No restrictions
- Continue to monitor and assess periodically

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Injury Prevention

Equipment

- Proper fitting
 - Certified, fitted, replaced after significant damage
- Mouth guards
 - Debated but still has many benefits
 - Reduces dental injuries
 - Shock absorption – only with proper/custom fit (not pre-cut)
- Helmet Debate

Technique

- Proper use of stick
- How to take/make a tackle, etc

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Injury Prevention cont.

- **Appropriate physical conditioning**

- Good general health and physical conditioning
- Strength, power and endurance
- Coordination, balance and proprioception
- Flexibility, agility, etc.
- Athletes are more at risk of injury when they are tired and/or out of shape



- **Appropriate refereeing**

- Ensure qualified referees are monitoring the match

- **Medical staff**

- CATA – Certified Athletic Therapist
- SPC – Sports Physiotherapist
- CASEM – Sports Medicine Physician



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Sideline Assessment Tools

1. **Concussion Recognition Tool 5 (CRT-5)**

- Standardized approach to concussion Recognition
- Recommended for teachers, parents, coaches

2. **Sideline Concussion Assessment Tool 5 (SCAT5) and Child SCAT5 (5-12 years)**

- Standardized approach to concussion evaluation
- Good tool used by medical professionals

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CONCUSSION RECOGNITION TOOL 5[®]

To help identify concussion in children, adolescents and adults



Supported by

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.
- 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

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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

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Baseline Testing

A series of tests, performed by a medical professional, used to establish a "Baseline", objective measurement, of "Normal" athlete cognitive, physical functioning. Used as a comparison following a concussion incident.

Examples:

- Neuropsychological Testing: ImPACT, COGNIGRAM**
- Computer based programs used pre-and post- concussions for comparisons
- Used by medical professionals
- Can be costly, not properly analyzed by Neuropsychologist
- Not unanimously recommended
- SCAT 5 – Sport Concussion Assessment Tool**
- KING-DEVICK Vision Test, Near Point Convergence**
- Reaction Time, Balance, Cervical Testing**
- Head Check Health -- App**

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Baseline Testing | Key Messages

1. Baseline testing is not required for post-injury care of youth athletes with suspected or diagnosed concussion and is not recommended.
2. Recognize and remove. (See Concussion Recognition Tool 5)
3. Appropriate medical assessment, management, and return to sport are key.

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Myths & Mistakes

- ✓ I just got my bell rung – I don't have a concussion
- ✓ My symptoms aren't that bad, I can play through it
- ✓ It's just a headache
- ✓ I had a headache before the hit
- ✓ I can finish the match and rest after
- ✓ I'm sick and have a cold so that's why I feel this way
- ✓ He's just suffering from "Concussion-like symptoms"
- ✓ No longer need to wake up every couple hours – let sleep and promote rest

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Conclusion

- When in doubt, sit them out!
- Err on the side of caution
- Patience is very important
- **Any suspected concussion should be followed up with a doctor**

BE SAFE!

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Resources - For up to date information, visit:

SportMedBC

- www.sportmedbc.com

CDC website – Heads up training tool

- <http://www.cdc.gov/concussion/headsup/youth.html>

Concussion Awareness Training Tool (CATT)

- www.cattonline.com

Canadian Concussion Collaborative

- <http://casem-acmse.org/education/cc/>

Parachute Canada

- www.parachutecanada.org

YouTube:

- Concussions 101, a Primer for Kids and Parents
- <https://youtu.be/zCCD52Pty4A>

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THANK YOU!

Questions???



The slide features a background with stylized mountain peaks in shades of blue and green. In the center, there is a large thought bubble containing the text "Questions???". Below the thought bubble is a profile of a human head with a brain, connected to the thought bubble by three small circles. The text "SportMedBC" is written in a large, light blue font across the middle. In the bottom right corner, there is a circular logo for the BC Lacrosse Association, which includes the letters "BC" and "LACROSSE ASSOCIATION" around a stylized lacrosse stick.

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Key Contact

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This slide has the same background as the previous one. It features the text "Key Contact" in bold. Below it is the name "Philippe Saucier, BSc." followed by his title "Manager, SportMed Safety and Event Services" in italics. The contact information includes an email address "safetyevents.manager@sportmedbc.com" and a phone number "604.294.3050 x104". The address is "#3 – 1225 Keith Rd East, North Vancouver, BC, V7J 1J3". The "SportMedBC" logo and the BC Lacrosse Association logo are also present.

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