

Concussion Resources for

Athletes

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The Concussion Awareness Training Tool (CATT) is a series of online educational modules and resources with the goal of standardizing concussion recognition, diagnosis, treatment, and management. Good concussion management may decrease the risk of brain damage and potentially reduce long-term health issues.

Developed by Dr. Shelina Babul, Associate Director/Sports Injury Specialist with the BC Injury Research and Prevention Unit, BC Children's Hospital, and Clinical Associate Professor, Department of Pediatrics, University of British Columbia, CATT is based upon the established principles of the Consensus Statement on Concussion in Sport and other evidence-based resources. The 2017 Berlin Concussion in Sport Group Consensus Statement builds on the principles outlined in previous concussion statements and aims to develop better understanding of sport-related concussion.

Research and evidence on concussions is evolving and the knowledge base is continually changing. As a result, this website is updated on a regular basis to provide current information, tools, and resources to support concussion recognition, diagnosis, treatment, and management.

The information, including text and images of this package are intended for your information only and do not substitute professional medical advice and is provided for educational purposes only. Always seek the advice of a physician or other qualified health care provider about any questions you may have regarding a medical condition.

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What You Need to Know About Concussion

This information sheet provides a brief overview on the appropriate care for an individual with a concussion. It outlines the three key steps in dealing with concussion to assist recovery from this injury: recognize, respond, and manage. Visit cattonline.com for further information, resources, or to take one of the e-learning courses tailored for medical professionals, workers & workplaces, coaches, school professionals, and parents & caregivers.

Recognize

A concussion is the most common form of brain injury caused by an impact or forceful motion to the head or body that causes the brain to move inside the skull. Common causes of concussion include falls, motor vehicle crashes, and sport and recreational-related activities.

There is no way to know for certain whether a particular event will lead to a concussion—a relatively minor impact may result in a concussion while a higher-magnitude impact may not. It is important to note that if there is a history of concussion, even a minor impact or forceful motion can cause a concussion.

The signs (observed in individual) and symptoms (experienced by individual) consistent with concussion may include, but are not limited to:

- Headaches
- Neck pain
- Dizziness or loss of balance

- Blurred vision or seeing "stars"
- Sensitivity to light or sound
- Ringing in the ears

Nausea

Confusion or fogginess

Some symptoms may be delayed for hours or days after an injury and can include:

- Frustration or irritability
- Concentration or memory issues
- Sadness

- Anxiety or nervousness
- Fatigue
- Trouble sleeping

Concussion signs to watch for in an infant or toddler may include:

- Crankiness and irritability (beyond their usual)
- Cannot be comforted or excessive crying
- Sudden changes in nursing, eating, sleeping or playing patterns
- Loss of balance, unsteady walking (more so than normal)
- Lack of interest in favourite toys or activities
- Listlessness or tiring easily
- Loss of ability to carry on with newly acquired skills (across any social and emotional, language, physical development domains)

Respond

Immediately:

Following a potential concussion-causing event, the individual should be removed from activity and assessed for a **medical emergency**.

If any of the Red Flags are present, call 911 or seek immediate medical care.

Next steps if not a medical emergency:

- Do not leave the individual alone
- Notify an emergency contact person
- Continue to monitor for Red Flags and signs and symptoms of concussion
- Do not let the individual return to their activity
- Do not give the individual any immediate medication
- Do not let the individual leave by themselves
- Do not let the individual drive or ride a bike

Within 48 hours:

The individual should be monitored before assuming that a concussion has not occurred, including monitoring throughout the night following the initial injury. Do not wake the individual unless you have concerns about their breathing, changes in skin colour, or how they are sleeping. Call 911 or seek immediate medical care if the individual is slow to wake or shows any of the Red Flags.

- If any signs or symptoms are present, seek medical attention from a licensed medical professional such as a physician or nurse practitioner.
- If no signs or symptoms appear, the individual can return to normal activity while being monitored for several days. If no signs or symptoms appear, chances are that a concussion was not sustained. If unsure, see a medical professional for guidance.

Manage

A concussion can have a significant impact on physical, cognitive, and emotional functioning. The recovery process involves managing activities in order to not trigger or worsen symptoms—the key is finding the "sweet spot" between doing too much and too little.

The recovery process is best approached in collaboration with key individuals, such as medical professionals, family members, friends, employers, teachers and school staff, and coaches.

Within 48 hours:

The first and most important step in recovery from a concussion is to rest for a maximum of 2 days. The individual will need both physical and cognitive rest in order to allow the brain to heal.

Image: Series of the series

RED FLAGS

After 48 hours:

- Physical exertion should be limited to activities that do not result in an increased heart rate or breaking a sweat. Restrict: physically strenuous work, exercise, sports, running, biking, rough play, etc.
- Cognitive activity should be limited, minimizing activities that require concentration and learning. Restrict: work or schoolwork, reading, electronics (computers, smartphones, video games, TV), musical instruments, loud music, etc.

Once symptoms start to improve, the individual should begin to increase activities in a step-wise process to return to regular levels of activity, including work, school, and sports.

Symptoms should decrease over time, but some symptoms may return, worsen, or new symptoms may appear as new activity levels are introduced. If this happens, return to a lower level of activity that does not affect or bring on new symptoms. If you are worried that the individual is not improving, follow-up with a licensed medical professional, such as a physician or nurse practitioner.

REMEMBER:

Recovery is a fluctuating process. The individual can be doing well one day but not the next.

On average, it typically takes 2 to 4 weeks to recover from concussion. However, 15 to 30 percent will continue to experience persistent symptoms beyond this period. Persistent symptoms have the potential to cause long-term difficulties. If there is no improvement or symptoms are worsening 4-12 weeks after a concussion, physician referral to an interdisciplinary clinic is recommended.

The recovery period may be influenced by:

- Previous concussions
- History of headaches or migraines
- Learning disabilities
- Mental health issues
- ADHD

- Use of drugs or alcohol
- Returning to activities too soon
- Lack of family or social supports
- Participating in high-risk sport

Proper management of a concussion can reduce the risk of complications. It is important that the individual has successfully returned to work or school before fully returning to sport and physical recreation activities. Returning to full activity too soon may result in more severe symptoms or long-term problems. As well, returning to high risk activities (contact sports, dangerous job duties) before full recovery and medical clearance can put the individual at risk of sustaining another concussion with more severe symptoms and a longer recovery period.

REMEMBER:

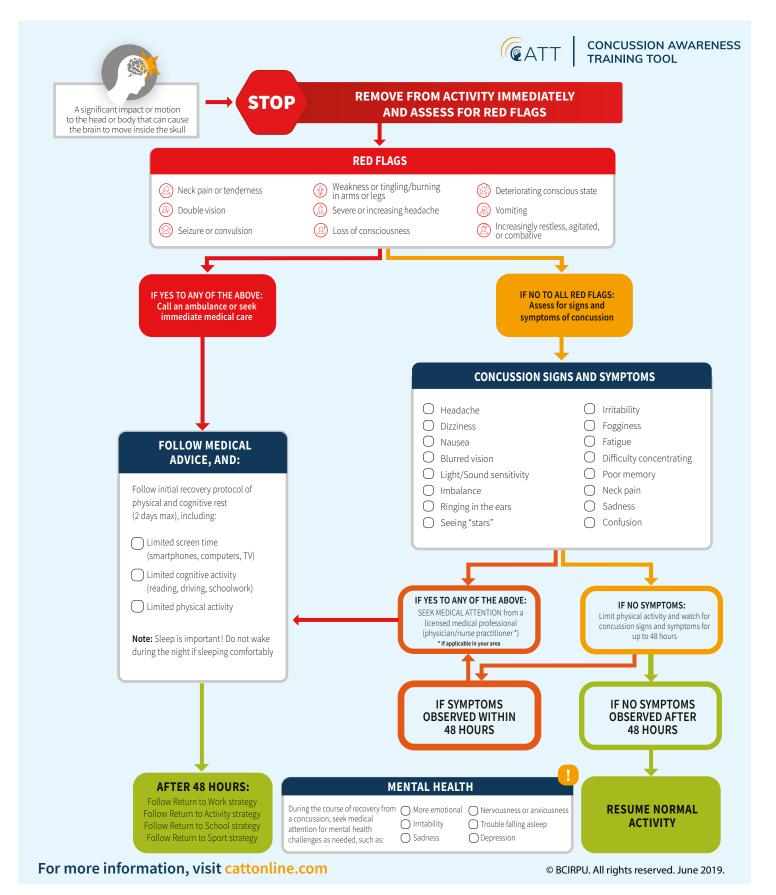
CATT resources to support the recovery process include:

- Return to Work
- Return to Activity
- Return to School
- Return to Sport



CONCUSSION AWARENESS TRAINING TOOL

CATT Concussion Pathway



QUESTIONS TO ASK YOUR DOCTOR (For Adults)

If you suspect that you may have a concussion, you should see your doctor right away. This is a list of questions you can take with you.



INITIAL TREATMENT AND OBSERVATION

What kind of medication can I take?

Does someone need to be with me at all times?

WHAT I CAN DO

Can I eat? Will I have an upset stomach?

What kind of activities can I do at this stage of recovery?

Can I read/use the computer/play video games?

When can I go back to work?

When can I return to physical activity?

Can I drive?

SYMPTOMS

What symptoms should I be watching for?

How soon will symptoms begin to improve?

How long will these problems last?

THE RISKS

What is the risk of a future concussion?

What is the risk of long-term complications?

FOLLOW-UP WITH THE DOCTOR

When should I come back to see you?

Under what circumstances should I call you?

Should a specialist be consulted?

Are there any resources you recommend?

ADDITIONAL QUESTIONS:

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 SC	HOOL			
STAGE 1:	STAGE 2:		STAGE 3:	STAGE 4:	STAGE 5:	STAGE 6:		
rest calls board games, crafts, talk on phone calls board games, crafts, talk on phone calls board games, reading calls board games, reading calls board games, reading calls board	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.	When light cognitive activity is tolerated: Introduce school work. Prior activities plus: • School work as per <i>Return to School</i> 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 <i>Return to School</i> 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 <i>Return</i> to Sport protocol completed and written medical clearance provided		
	No: • School attendance • Sports • Work Gradually add cognit	School attendance Sports		Increase school work, introduce homework, decrease learning accommodations	Work up to full days at school, minimal learning accommodations			
Rest	school work at home			accommodations				
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	<i>Return to School</i> protocol completed; focus on <i>RETURN TO SPORT</i>		

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.

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

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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	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
	activities should be at the point where you are still able to have a conversation.	Add movement	Exercise, coordination, cognitive load	Restore confidence; assess functional skills	
Recovery	Increase heart rate				Note: Premature return
Symptoms improve or 2 days rest max?	No new or worsening symptoms for 24 hours?	No new or worsening symptoms for 24 hours?	Symptom-free for 24 hours?	Symptom-free for 24 hours?	to contact sports (full practice and game play) may cause a significant
Yes: Move to stage 2	Yes: Move to stage 3	Yes: Move to stage 4	Yes: Move to stage 5	Yes: Move to stage 6	setback in recovery.
No: Continue resting	No: Return to stage 1	No: Return to stage 2	No: Return to stage 3	No: Return to stage 4	
Time & Date completed:	Time & Date completed:	Time & Date completed:	Time & Date completed:	Time & Date completed:	

If new or worsening symptoms are experienced at any stage, go back to the previous stage for at least 24 hours. You many 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

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Managing Mental Health Symptoms

Concussion recovery takes a toll on the body, both physically and emotionally. In recent years, psychological well-being has been recognized as a critical component of injury recovery, playing a major role in overall health outcomes. Increasingly, research points to the importance of recognizing and managing mental health issues, in order to cope productively with the stressors of daily life. Concussions can result in cognitive, emotional, and behavioral symptoms, such as mood swings, anxiety, memory issues, and depression. Existing mental health issues may also be exacerbated by a concussion.

It is important to note that every concussion is unique; this list is by no means exhaustive, and these are suggestions, not universal solutions. Expect to try several techniques *before identifying which ones work* best for you. This information is best used *in combination with the guidance* of a licensed health care professional; please seek additional support if you are struggling.

The following outlines possible strategies for managing mental health challenges during recovery.

A) Physical Activity, as Tolerated

Light aerobic exercise—such as walking or biking—is recommended throughout recovery. Athletes should work closely with coaches and team physicians to create an appropriate Return to Activity plan.

B) Deep Breathing Exercises

Deep breathing can help to reduce acute stress, anxiousness, or dizziness. Exercises can be done standing, seated, or lying down; the key is to be as comfortable as possible. Breathe in through your nose and out through your mouth, at a gentle and regular rhythm. There are many available <u>apps</u> and <u>online resources</u> designed to guide deep breathing exercises.

C) Identifying and Reducing Sources of Stress

Learn to recognize physical, emotional, and behavioral stress responses to identify their source. Below are examples of common responses you may have experienced or observed:

- Muscle aches
- Increased heart rate
- Low energy
- Chest or jaw tightness
- Dry throat and/or mouth
- Restlessness, agitation
- Feelings of worthlessness and/or anger
- Lack of motivation and/or concentration

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- Skin picking, nail biting, teeth clenching, foot tapping
- Seeking reassurance
- Increased substance use, spending
- Change in appetite or sleep pattern

The brain requires energy to repair itself after injury. It may be helpful to create a schedule in order to prioritize the tasks and activities that are most important to you; know that you might not have the time or energy to handle the demanding work, academic, athletic, and social calendar you may have be used to while you are recovering. Break essential tasks down into manageable work blocks aim for distraction-free 25-minute sessions followed by 5-minute breaks. Social media use be a significant source of stress for many individuals; notice how media consumption makes you feel and consider setting limits for apps or websites that may be negatively impacting your mental health.

D) Meditation

Mindful meditation is recommended to aid relaxation and relieve stress. There are now a number of free videos on <u>YouTube</u>, apps, like <u>UCLA's Mindful APP</u> and <u>audiobooks</u> designed to guide you in your practice. Before you begin, choose a quiet space without risk of interruption and get into a comfortable position, focus your attention on the present moment and the rhythm of your breath. Similar to learning a new skill or sport, meditation may not immediately feel natural to you. Start slow—try incorporating a 10-minute session into your day.

E) Progressive Muscle Relaxation (PMR)

PMR involves intentionally tensing and relaxing muscle groups to relieve the tension that can be caused by anxiety and stress. Free resources include <u>YouTube</u> videos, <u>Healthlink BC's PMR</u>, and <u>Anxiety Canada's</u> resources are available to guide this practice. Lay comfortably on your back, eyes closed, with your arms at your sides, and focus on the rhythm of your breath. Tense each muscle group independently from feet to head.

F) Memory Aids

You may find it difficult to concentrate on and remember details when recovering from a concussion. To ease the stress associated with memory loss, forgotten appointments, or missed deadlines, it can be helpful to set yourself reminders and alarms, or to create a visual calendar to keep track of your schedule. For example, consider downloading a calendar app or putting up a hard-copy wall calendar at home; using sticky notes or labels as visual reminders; or using a maps app to get yourself safely from place to place.

Be patient—your brain is working to heal! It is normal to experience mental health challenges during the recovery process. Reach out to your support system if you are struggling, or if your symptoms worsen.

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LEARNING ACCOMMODATIONS AND MODIFICATIONS FOR STUDENTS FOLLOWING A CONCUSSION

TIRES EASILY:

and/or timetable

Reduce backpack weight

SENSITIVE TO NOISE:

counselling room, etc.)

hallways, etc.)

Limit time spent doing school work

Allow frequent rest breaks with equipment as needed

Modify the student's attendance requirements, classes,

Schedule activities/subjects during student's best time of day

Limit or restrict noisy classes (music, woodworking, auto

Limit or restrict noisy environments (assemblies, cafeteria,

Provide a quiet work space (library, learning support or

Allow the use of noise-cancelling earplugs/headphones

Allow student to leave class early to avoid noisy hallways

mechanics, foods/home economics, etc.)

Provide a quiet place for lunch, recess

(ear/headphones, music, relaxation tapes, etc.)

Allow student to leave class/school early

Allow student to start school later in the day

For more information about learning accommodations, see the Resources section of the Concussion Toolkit for School Professionals.

PHYSICAL

HEADACHES:

Provide opportunities to ensure student stays hydrated

Allow frequent rest breaks with equipment as needed (ear/headphones, music, relaxation tapes, etc.)

Limit or restrict noisy classes (music, woodworking, auto mechanics, foods/home economics, etc.)

Limit or restrict noisy environments (assemblies, cafeteria, hallways, etc.)

Allow the use of noise-cancelling ear plugs/headphones

Allow sunglasses/hat in classroom

Seat student away from window

Dim light, pull shades

SENSITIVE TO LIGHT:

Allow sunglasses/hat or blue light-blocking glasses

Seat student away from window

Dim light, pull shades

Reduce exposure to computers, smart boards, videos

Reduce brightness on screens

DIZZINESS/BALANCE PROBLEMS:

Allow student to leave early to avoid crowded hallway

Limit standing for long periods and allow student to sit or lie down as needed

COGNITIVE

COGNITIVE FATIGUE:

Limit time focusing c	on schoolwork
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No new learning

Allow frequent rest breaks

Reduce workload

Decrease academic expectations

Prioritize essential schoolwork

Reduce repetition of work

Allow for extra time to complete work, tests

Provide shorter assignments, tests

Allow alternative forms of testing (quiet space, oral, one-to-one, open-book, technology, etc.)

Chunk information into smaller pieces

Provide audio alternative for reading

Schedule high cognitive demand tasks to be followed by less demanding work



CONCUSSION AWARENESS TRAINING TOOL



COGNITIVE

DIFFICULTY CONCENTRATING:

Provide a quiet place to work

Limit time focusing on schoolwork

Decrease distractions

Work on one task at a time

Chunk information into smaller pieces

Allow for extra time to complete work

Provide class notes

Allow alternative forms of testing (quiet space, oral, one-to-one, open-book, technology, etc.)

Provide shorter assignments, tests

Provide or support use of assistive technology and software

Provide extra support or learning assistance (TA, LA teacher, parent, peer, etc.)

Allow preferential seating (front of class, away from windows, doors, other distractions, etc.)

Limit or restrict noisy classes (music, woodworking, auto mechanics, foods/home economics, etc.)

Limit or restrict noisy environments (assemblies, cafeteria, hallways, etc.)

DIFFICULTY REMEMBERING:

Provide written instructions for tasks, homework

Use peer tutor or partner

Check comprehension

Provide class notes/allow class notes for testing

Provide or support use of assistive technologhy and software

Use student agenda, communication book

Chunk information into smaller pieces

Provide extra support or learning assistance (TA, LA teacher, parent, peer, etc.)

Use recognition rather than recall for testing

Use repetition

Use visual reminders (schedules, checklists, calendars, sticky notes, etc.)

Use visual cues (highlighting, underlining, pictures/diagrams, colour coding, etc.)

Use memory strategies (categorizing, associations, chunking, rehearsal, mnemonics, visualization, etc.)

EMOTIONAL

SAD/DEPRESSED/FRUSTRATED:

Allow time for socialization

Listen to and validate student's concerns

Provide reassurance

Use proactive behaviour management to encourage healthy lifestyle

Provide safe place for student when feeling overwhelmed

Ensure student has ready access to support services (school counsellor, school psychologist, etc.)

Provide extra support or learning assistance (TA, LA teacher, parent, peer, etc.)

Provide student and parent/caregiver with mental health and substance use resources

Schedule regular check-ins with student

Schedule regular check-ins with parent/caregiver

ANXIETY:

Set appropriate goals with the student

Allow student to leave class when needed

Set a signal for the student when they need to leave the classroom

Listen to and validate student's concerns

Provide reassurance

Provide safe space for student when feeling overwhelmed

Ensure student has ready access to support services (school counsellor, school psychologist, etc.)

Reduce workload

Provide extra support or learning assistance (TA, LA teacher, parent, peer, etc.)

Allow alternative forms of testing (quiet space, oral, oneto-one, open-book, technology, etc.)

Decrease academic expectations

Prioritize essential schoolwork

Allow for extra time to complete work, tests

Schedule regular check-ins with student

Schedule regular check-ins with parent/caregiver

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Additional Resources

CATT – Learning Accommodations Following a Concussion

https://cattonline.com/wp-content/uploads/2017/10/CATT-Learning-Accommodations-Following-Concussion-V3-September-2019-revised.pdf

CATT - Medical Assessment Letter

https://cattonline.com/wp-content/uploads/2019/05/CATT-Medical-Assessment-Letter-V1-May-2019.pdf

CATT – Medical Clearance Letter

https://cattonline.com/wp-content/uploads/2019/05/CATT-Medical-Clearance-Letter-V1-May-2019.pdf

CATT – Return to Activity https://cattonline.com/wp-content/uploads/2018/06/CATT-Return-to-Activity-V2-June-2019.pdf

CATT - Return to Work

https://cattonline.com/wp-content/uploads/2019/05/CATT-Return-to-Work-2019-V1-June-2019.pdf

Canadian Concussion Collaborative – 4 Characteristics of a Good Concussion Clinic https://casem-acmse.org/wp-content/uploads/2018/06/CCES-PUB-CCC-4Qs-E-FINAL.pdf

University of Georgia – Driving After Concussion: Is it safe to get behind the wheel? https://cattonline.com/wp-content/uploads/2020/07/Driving-After-Concussion-Is-It-Safe-to-Get-Behind-The-Wheel-2020.pdf

The Concussion Legacy Foundation Canada HelpLine

https://www.concussionfoundation.ca/helpline

This HelpLine supports patients and families struggling with the outcomes of brain injury. For guidance on choosing the right doctor, struggling with lingering concussion symptoms, or have any other specific questions, submit a HelpLine request and a dedicated member of the Concussion Legacy Foundation Canada team will assist you.

For more information and resources on concussion, please visit cattonline.com.

Notes