

# WHAT YOU NEED TO KNOW ABOUT CONCUSSIONS



AN EDUCATIONAL HANDBOOK BROUGHT TO YOU BY



# TABLE OF CONTENTS

WHAT IS A CONCUSSION	1
CONCUSSION SYMPTOMS	1
WARNING SIGNS TO WATCH OUT FOR (RED FLAGS)	2
SO, YOU HAD A CONCUSSION. NOW WHAT?	2
YOUR ROAD TO RECOVERY	3
TIPS FOR DEALING WITH CONCUSSION SYMPTOMS	3 - 4
RETURN TO ACTIVITY PROTOCOL (RETURN TO LEARN & PLAY)	5
RETURN TO LEARN & PLAY STAGES	6 - 9
PERSISTENT SYMPTOMS (OR POST-CONCUSSION SYNDROME)	9
CONCUSSION TREATMENT & REHABILITATION	10

## MEDICAL ADVISORY BOARD

This document was reviewed and approved by the Complete Concussion Management scientific and medical advisory board of multidisciplinary healthcare professionals.

**Dr. Laura Cruz**

MSc, MD, CCFP (SEM), Dip Sport Med

**Dr. Paul Hrkal**

Naturopathic Doctor

**Dr. Rob Meeder**

MSc, MD, FRCPC (Pediatrics)

**Dana Clark**

BScPT, FCAMT, CAFCI

**Dr. Cameron Marshall**

BA (Hons.), DC, FRCCSS (C)

**Dr. Shirley Blanc**

B.Sc, Doctor of Optometry

**DISCLAIMER:** Complete Concussion Management Inc. (CCMI) provides this content for informational purposes to help increase concussion awareness and education. It is not a substitute for medical care, concussion treatment or rehabilitation and/or legal advice. We assume no liability for the decisions you or your healthcare provider makes nor the outcomes suffered in relying on the information in this document.

# WHAT IS A CONCUSSION?

A concussion is a form of brain injury that causes a temporary disturbance in how your brain functions. Concussions happen because of a hit, bump or blow to the head or elsewhere on the body. This impact causes the brain to move back and forth inside the skull.

## COMMON SYMPTOMS

Each concussion case is different. If you experience any **one** or more of these symptoms following a big hit to the head or body, then you should suspect a concussion:



### PHYSICAL

- Headache
- Neck pain
- Sensitivity to light/noise
- Visual problems
- Dizziness
- Balance issues
- Nausea
- Vomiting



### THINKING

- Memory issues
- Difficulty concentrating
- Confusion
- Feeling slowed down
- Feeling "in a fog"
- Trouble thinking clearly



### EMOTIONAL

- Anxiety
- Nervousness
- Depression
- Sadness
- Irritability
- More emotional



### SLEEP

- Fatigue
- Low energy
- Sleeping more or less
- Difficulty falling asleep

# WARNING SIGNS TO WATCH OUT FOR

Immediately go to the **emergency department** if any of these signs or symptoms are present. These are known as **Red Flags**, and could mean a more serious injury such as a bleed or skull fracture.

- Seizures or convulsions
- Loss of consciousness
- Weakness or numbness in arms or legs
- Unable to wake up
- Worsening headache
- Bad nausea or repeated vomiting
- Increasing confusion
- Unsteadiness standing or walking
- Bruising around eyes or ears
- Odd behaviour
- Slurred speech
- Inability to remember injury

# SO, YOU HAD A CONCUSSION. NOW WHAT?

If you suspect a concussion, or have been diagnosed, you should:

- **Immediately** stop playing and going to school or work
- See your doctor or a licensed healthcare provider for an assessment
- Rest for at least 24 to 48 hours after the injury (physical and cognitive rest)

## DO'S

### REST

Concussion results in a very low energy state in the brain. Avoid strenuous activity for the first 24 to 48 hours.

### SLEEP

If there are no **Red Flags**, then get a good night's sleep. Take naps, if needed.

### EAT RIGHT

Proper nutrition can give you energy and play a role in recovery. Avoid refined sugars and processed foods.

### FOLLOW PROTOCOLS

Guided return to learn, work and play protocols can help you make a full recovery. Follow the direction of your healthcare provider.

## DON'Ts

### PLAY SPORTS

Do not participate in sport before full recovery, and clearance from your healthcare provider. It's dangerous, and can put you at risk.

### WORK OR STUDY

Take some time off from school or work until you feel better.

### DRIVE

Do not drive for at least 24 hours. Wait until you feel better.

### TAKE PAIN MEDICATION

Pain medication can "mask" symptoms, and make it difficult to tell how the concussion affects you. Talk to your doctor first.

### DRINK ALCOHOL OR TAKE DRUGS

These can make you feel worse or "mask" symptoms.



# YOUR ROAD TO RECOVERY

You might get symptoms during recovery, but **this is normal**.

Most people feel "back to normal" (i.e., symptoms go away) within **10 to 14 days** after injury and make a full recovery within 3 to 4 weeks. Children as well as people with a history of concussions or mental health problems, such as anxiety or depression, may take longer to recover.

**You may not realize you have symptoms until you try normal, everyday activities.**



A thorough assessment and the right treatment approach can help most patients and athletes safely recover from a concussion

## TIPS FOR DEALING WITH CONCUSSION SYMPTOMS

*This information may be helpful in the first few days after injury, but is not a substitute for the medical advice of your doctor and/or healthcare provider.*

### MILD HEADACHES

Sleep, rest or take breaks from activities that require concentration or effort. Some headaches are caused by tension in the neck, which can be treated by manual therapy by a trained healthcare provider.

### DIFFICULTY CONCENTRATING

It's difficult to concentrate when you are tired or suffer from headaches. Your ability to concentrate should gradually get better but take breaks when you need to. Don't push it.

### LIGHT OR NOISE SENSITIVITY

Shaded glasses can help you manage light sensitivity, but don't wear them for a long period of time. It can make things worse. If you're sensitive to noise, don't be afraid to ask people to turn it down or leave the room.

### SLEEP PROBLEMS

Sleep problems are usually temporary and will gradually return to normal. Practice good sleep hygiene: go to bed early, avoid caffeine before bed and reduce screen time.

## MORE TIPS

*This information may be helpful in the first few days after injury, but is not a substitute for the medical advice of your doctor and/or healthcare provider.*

### **ANXIETY OR DEPRESSION**

Feeling anxious, worried, scared or mad is normal after a concussion. These feelings often go away when your symptoms go away. Keep in mind that these are normal feelings after injury. Explain to friends and family what you're experiencing to help them understand.

### **IRRITABILITY & MOOD SWINGS**

You might get easily annoyed after a concussion. This doesn't last long. Ask your friends and family for support. You could try some relaxation techniques or breathing exercise to reduce stress. Light exercise may also help. Follow the direction of your healthcare provider.

### **TROUBLE REMEMBERING**

This is common for people with or without a concussion. Your memory will improve over time. In the meantime, ask family or friends to remind you of important dates or write things down.

### **DIZZINESS OR NAUSEA**

You might feel dizzy or sick to your stomach after quickly moving or changing positions. This usually only lasts for a few days. Take your time and avoid sudden movements.

### **BALANCE PROBLEMS**

Feeling a little bit more clumsy than usual? This is common after a concussion. Your brain is your body's control center. Take everything a little bit more slowly. Give your brain a chance to make sense out of all the messages coming from your senses.

### **DIFFICULTY WITH DECISION-MAKING**

You might feel like you're less able to plan ahead or have difficulty completing an activity. This is common in the first few days after a concussion. Plan ahead. Write things down. Try to stay organized. Come up with step-by-step ways to complete tasks.

### **FEELING SLOWED DOWN**

Can't keep up with conversations, follow directions or complete tasks? Ask people to slow down or repeat certain things. Give yourself extra time to complete tasks and avoid pressure situations.

### **RINGING IN EARS**

Hear a whistling, ringing or roaring sound? This is caused by damage to the inner ear after brain injury, and usually goes away in a few days to weeks after injury. Reduce normal noise intake. This can help. Otherwise, ask your healthcare provider.

### **FATIGUE**

After a concussion, your brain has less energy than normal. Even a little bit of effort can make you feel tired. If you need more sleep, that's okay. Let your brain tell you when it needs sleep or a nap.

# RETURN TO ACTIVITY PROTOCOL

If you are injured in sport, **DO NOT** return to play on the same day of your concussion. You may only return to play **AFTER** you have been assessed and cleared by your medical doctor or a licensed healthcare provider with training in concussion.

You may need to take some time off from school, work and/or sport after a concussion. Most protocols include frequent breaks, fewer hours at school or work, diet and nutritional interventions and less screen time.

With a thorough assessment and the right approach, most people with a concussion can make a full recovery. Step-by-step return to activity programs can help you through the process.



## RETURN TO LEARN

Concussion symptoms that affect memory and concentration can impact your performance at school. Return to learn helps students gradually return to mental activity and learning, without putting too much strain on the brain.



## RETURN TO PLAY

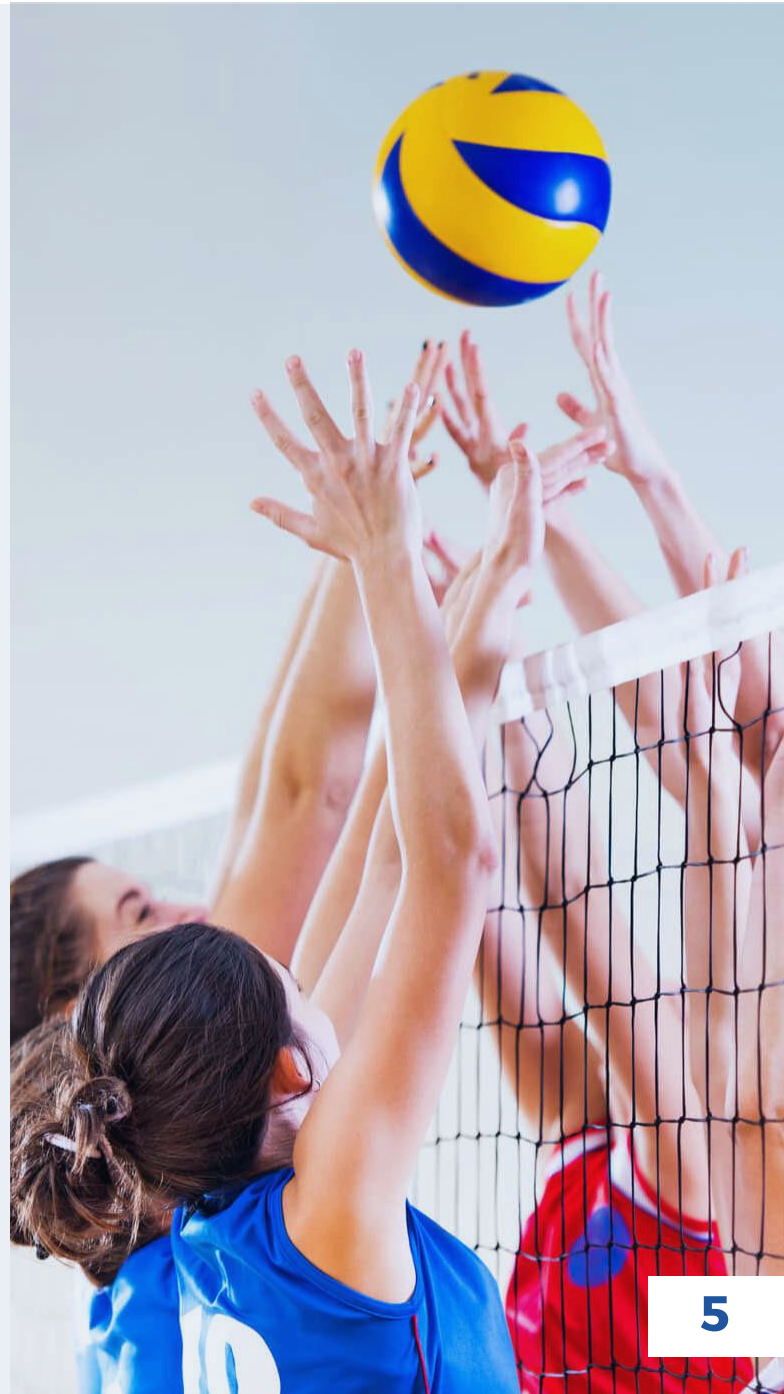
Return to play is a step-by-step rehabilitation strategy, and often includes assessments to determine physical and cognitive recovery. A good return to play protocol should gradually introduce sport-specific activities at certain stages of the recovery process. Below stages are colour coded as follows:

RED = No participation in physical activity

YELLOW = Non-contact participation

GREEN = Full-contact participation permitted

**Return to play protocols may be different for each person, depending on their age, gender and sport.**



# RETURN TO LEARN: GETTING BACK TO THE CLASSROOM

*All return to activity protocols must be overseen by a doctor or a licensed healthcare provider with training in concussion. Each stage must be separated by a least 24 hours. If symptoms occur at any one stage, the athlete must return to the previous stage.*

1

## MODERATE, SYMPTOM LIMITED ACTIVITY

You should avoid any physical and cognitive activity that increases symptoms. Remain at this stage until symptoms go away for 24 to 48 hours and then attempt stage 2. If you are having trouble with stage 2, please consult with your healthcare provider

**DO:** Light walks (15 – 30 minutes), household chores, limit screen time

**DON'T:** Physical or cognitive activities that make symptoms worse, or risk another hit to your head

2

## LIGHT COGNITIVE ACTIVITY

Gradually increase your cognitive activity such as light reading, homework or working from home. If your symptoms increase, take a break and try again in a few hours. Once you can tolerate up to 1-hour of activity without increased symptoms, you can move to Stage 3.

**DO:** Light reading, homework, texting or emails, work from home

**DON'T:** Physical activity that makes symptoms worse, risk another hit to your head

3

## HALF DAY OF SCHOOL OR WORK WITH RESTRICTIONS

You can go back to school or work for one-half day – morning or afternoon. Keep in mind that you should have some restrictions in place. Speak to your healthcare provider.

**DO:** Lower your school or job workload (modified duties), adjust screen and monitor settings (light sensitivity)

**DON'T:** Physical activity that makes symptoms worse, risk another hit to your head, participate in recess or gym class, take quizzes or tests, complete homework assignments



# RETURN TO LEARN: GETTING BACK TO THE CLASSROOM

4

## FULL DAY OF SCHOOL OR WORK WITH RESTRICTIONS

You can now attend a full day of school or work with certain restrictions depending on your symptoms and triggers.

**DO:** Attend class or go to work (desk job), and gradually increase cognitive activity, complete small homework assignments, take frequent breaks

**DON'T:** Physical activity that makes symptoms worse, risk another hit to your head, participate in recess or gym class, or do cognitive activities that significantly provoke symptoms

5

## FULL RETURN TO SCHOOL/WORK

Gradually lift your restrictions to tolerance until you are able to fully participate in all aspects of school (with the exception of gym - see Return to Play stages).

If you are having difficulties introducing any cognitive activities, please consult with your healthcare provider

## COMBINED RETURN TO LEARN/WORK & RETURN TO PLAY PROTOCOL

Stage	Return to Learn/Work	Stage	Return to Sport/Activity
1.	<b>Symptom-limited Cognitive activity</b> (eg., light reading, TV, etc – provided no increase in symptoms) - also encourage plenty of rest - “take it easy for a day or two – but don’t just lie in bed all day” – 2-3 days MAX	1.	<b>Symptom-limited physical activity</b> (eg., encourage light daily walks, and household chores that do not provoke symptoms to a significant degree or place you at risk for hitting your head)
2.	<b>Light Cognitive Activity</b> (increase cognitive load) – encourage homework and working from home – emails, phone calls, assignments, etc.) – once able to tolerate 45 mins-1hr with minimal increase in symptoms, move on to stage 3	2.	<b>Light Physical Activity – Buffalo Concussion Treadmill Test (BCTT)</b> - if it’s been any more than <b>5 to 7 days</b> since the injury – it’s time to find a threshold and start a subsymptom threshold exercise program – can speed recovery vs. rest alone – get them moving Pass = Move on to Stage 3, Fail = Subsymptom program, re-test in 1 wk
3.	<b>½ days of school/work – with restrictions:</b> No tests, no gym, no recess, no (added) homework (or at least loose deadlines to reduce pressure)	3.	<b>Sport-Specific activity</b> – i.e., light, non-contact practice with the team or individually
4.	<b>Full Days of School/work – with restrictions:</b> same restrictions as above – once able to tolerate full days with no increase in symptoms, gradually lift restrictions	4.	<b>Non-Contact Training drills</b> – higher intensity, non-contact practice with team – can begin resistance training – start pushing yourself
5.	<b>Full Days of School/work – no restrictions - (Discharge non-athletes)</b>		
	<ul style="list-style-type: none"> <li>• Stages 1-4 for RTL vs. RTP can be run independently (i.e., you can be on stage 3 of RTP and only stage 2 for RTL)</li> <li>• In order to progress to the medical clearance stage however, the athlete must be fully asymptomatic and back to all academic/cognitive/work activities and capabilities before even considering a return to contact.</li> </ul>	5.	<b>Medical Clearance</b> – Once <u>completely ASYMPTOMATIC</u> and back to full time school/work with no issues, & no increased symptoms with physical activity/practices – <b>Blackhawks test</b> (if a high-risk/contact athlete) & <b>comprehensive baseline re-test</b> (if available) in exerted state
		6.	<b>Full Return to Contact/Discharge</b> – should have at least 1 full contact practice prior to playing in a game

# RETURN TO PLAY: HIGH-RISK ATHLETE

1

## **MODERATE, SYMPTOM LIMITED ACTIVITY**

This is the same as Stage 1 of Return to Learn/Work

You should avoid any physical and cognitive activity that increases symptoms. Remain at this stage until symptoms go away for 24 to 48 hours and then attempt stage 2. If you are having trouble with stage 2, please consult with your healthcare provider

**DO:** Light walks (15 – 30 minutes), household chores, limit screen time

**DON'T:** Physical or cognitive activities that make symptoms worse, or risk another hit to your head

2

## **LIGHT PHYSICAL ACTIVITY**

You should be evaluated by your healthcare provider with a graded exercise test to determine your ability to exercise and tolerance. Once completed, your healthcare provider can provide recommendations for you.

**DO:** Light walking, jogging or weight training

**DON'T:** Physical activity that make symptoms worse, risk another hit to your head, sport-specific activities

3

## **LIGHT SPORT-SPECIFIC ACTIVITY**

You can return to non-contact practice in your sport. This is your first step to safely returning to sport.

**DO:** Remove academic restrictions, individual drills and exercises

**DON'T:** Another hit to your head, increase heart rate too much, practice if you have symptoms

4

## **NON-CONTACT TRAINING DRILLS (HIGHER INTENSITY)**

You can gradually increase intensity and participate in some team-based drills at practice. No contact!

**DO:** Individual drills and exercises at a higher level of difficulty and intensity, some team drills

**DON'T:** Participate in contact drills, risk another hit to your head

## RETURN TO PLAY: HIGH-RISK ATHLETE

5

### MEDICAL CLEARANCE STAGE

This step should be overseen by your healthcare professional. This stage should only be attempted once you have successfully returned to school with no restrictions and are completely asymptomatic

This step should involve intensive, dynamic physical exertion testing to ensure that there are no more lingering issues. Typically at rest we may feel ok, but when our systems are challenged, things that are underlying the surface may present themselves.

This stage should also include a full re-test of all pre-injury baseline metrics (if a pre-injury baseline was performed)

### FULL RETURN

You have now been cleared to return to full contact activity. It is **STRONGLY** recommended that you participate in at least one full contact practice before participating in game play or competition

**DO:** Participate in practice at a high level, including contact - followed by full return to game-play

6

## PERSISTENT SYMPTOMS

In some cases, the effects of concussion can last for weeks or even months. If you experience symptoms for more than 4 weeks, this is known as **persistent symptoms** (or sometimes called Post-Concussion Syndrome).

While most people make a full recovery, about 15 to 30% of people will go on to have persistent symptoms such as headaches or dizziness. Following proper return to learn or play guidelines, and receiving information about concussions, expectations of recovery and strategies for symptom management can help to reduce the risk.

There are some risk factors for prolonged recovery and persistent symptoms:

- History of concussions
- Anxiety or depression
- Family or life stress
- Age (i.e., adolescents)
- Sex (i.e., females tend to be at higher risk)
- Misinformation (i.e., return to sport too soon, prolonged rest in a dark room)
- Improper management

Treatment may involve addressing specific symptoms such as mood issues, anxiety, difficulty concentration or headaches. If you are experiencing ongoing problems, speak to your doctor or healthcare provider.



# CONCUSSION TREATMENT & REHABILITATION

Rest is no longer considered the only approach in concussion care. Early intervention of various therapies can significantly improve recovery following a concussion. Through a thorough assessment and the right treatment approach, trained healthcare practitioners can help you safely return to learn, work and play.



## EXERCISE THERAPY

Following a short period of rest and symptom-limited activity, guided exercise therapy has shown to improve blood flow and speed recovery.



## MANUAL THERAPY

Headaches, balance and visual issues, dizziness and blood flow abnormalities are symptoms of both concussion and neck injuries (or whiplash). Oftentimes, ongoing symptoms are coming from your neck, which can be treated with manual therapy.



## VISUAL & VESTIBULAR THERAPY

Visual disturbances and dizziness are common following concussion. A balance and visual rehabilitation program may help to reduce symptoms such as dizziness, visual abnormalities, concentration issues and memory problems, among other symptoms.



## EDUCATION & REASSURANCE

Education and reassurance is an important part of concussion care. Understanding exactly what is going on and why you feel a certain way can help to improve recovery.



## DIET & NUTRITIONAL INTERVENTION

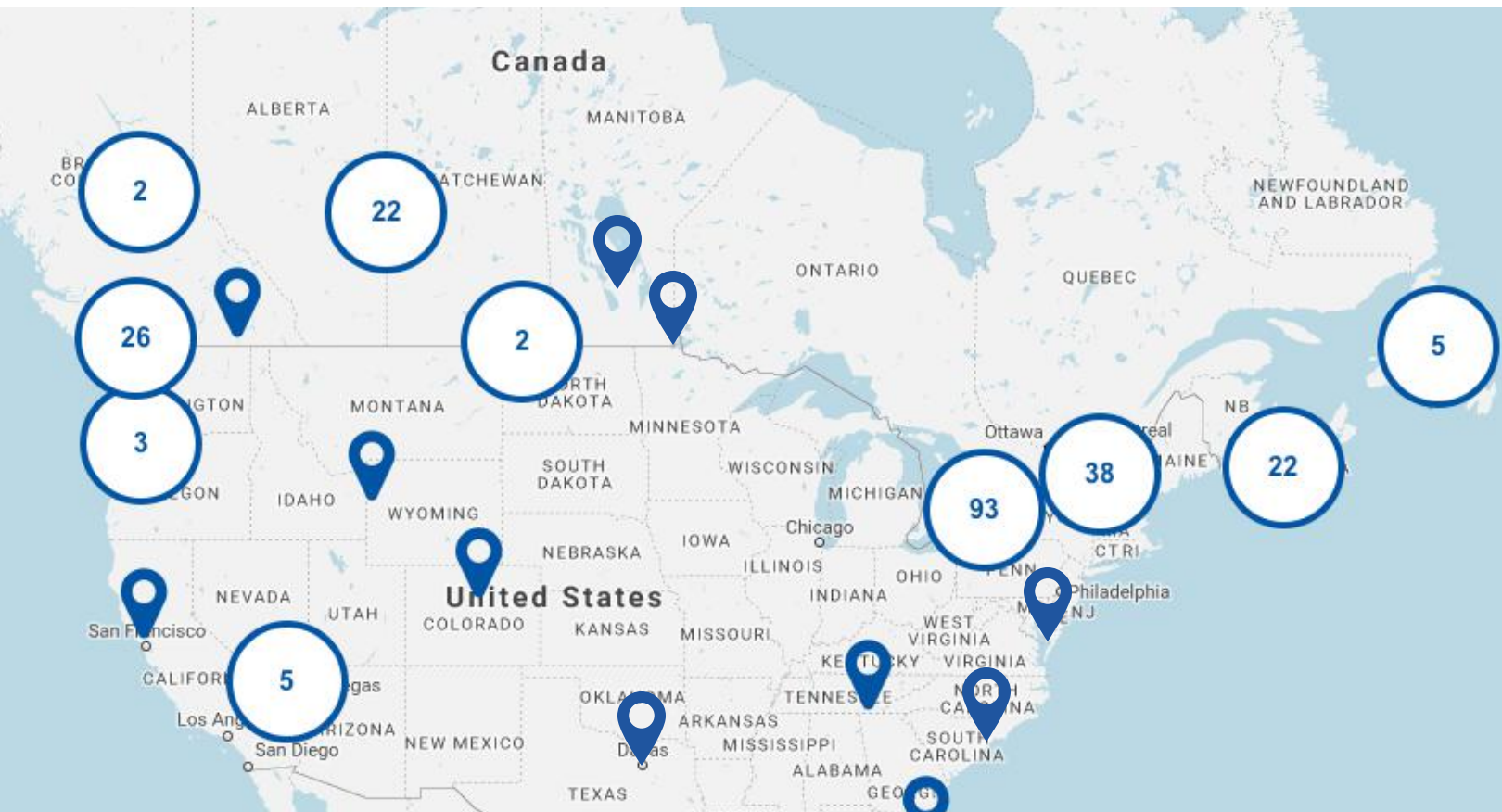
Avoiding pro-inflammatory foods (e.g., processed meats, fast food, sugar) and replacing them with more nutritious foods (e.g., whole foods, fruits, vegetables) may help to offset inflammation and reduce symptoms.



## COMPLETE CONCUSSION MANAGEMENT INC.

The Complete Concussion Management (CCMI) clinic network acts as an extension of existing healthcare teams and medical doctors. From pre-injury concussion assessments to treatment and rehabilitation, partnered clinics and trained practitioners offer accessible and timely care to support those impacted by concussions.

To find a clinic near you, visit [CompleteConcussions.com/find-a-clinic](https://www.CompleteConcussions.com/find-a-clinic)



Follow Us On Social Media!



AN EDUCATIONAL HANDBOOK BROUGHT TO YOU BY

