COMPLETE
CONCUSSIONS

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COMPLETE CONCUSSIONS HANDBOOK

What you need to know about concussions.

An educational handbook brought to you by Complete Concussions.

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Disclaimer

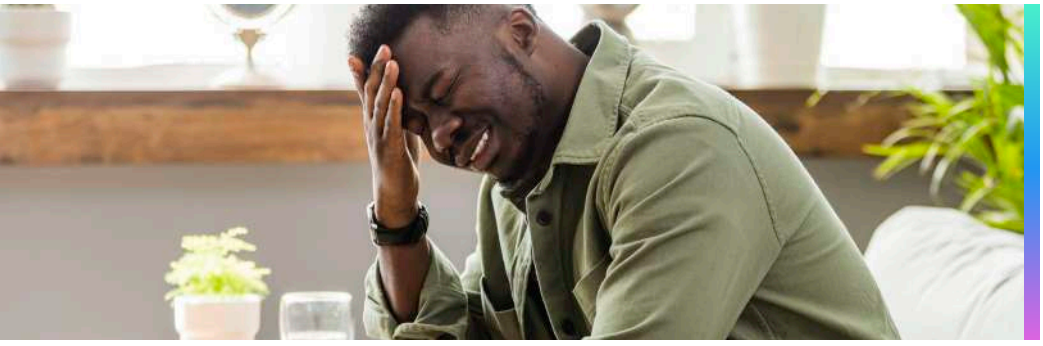
Complete Concussions provides this content for informational purposes to help increase concussion awareness and education. It is not a substitute for medical care, concussion treatment, rehabilitation and/or legal advice. We assume no liability for the decisions you or your healthcare provider make, nor the outcomes suffered in relying on the information in this document.

What is a Concussion?

Concussions can happen due to a blow to the head or elsewhere on the body with an impulsive force translated to the head. These impacts cause the brain to shake, or jiggle inside the skull which can result in temporary changes to how the brain functions. How temporary these changes are is different in each case but depends heavily on receiving proper care and advice.

Common Concussion Symptoms

Each concussion case is different. If you experience any of these symptoms following a significant impact 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.

These are known as Red Flags, and could be indicative of a more serious injury such as a bleed or skull fracture. If any of the following are present, go to the nearest Emergency Department.

- 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)

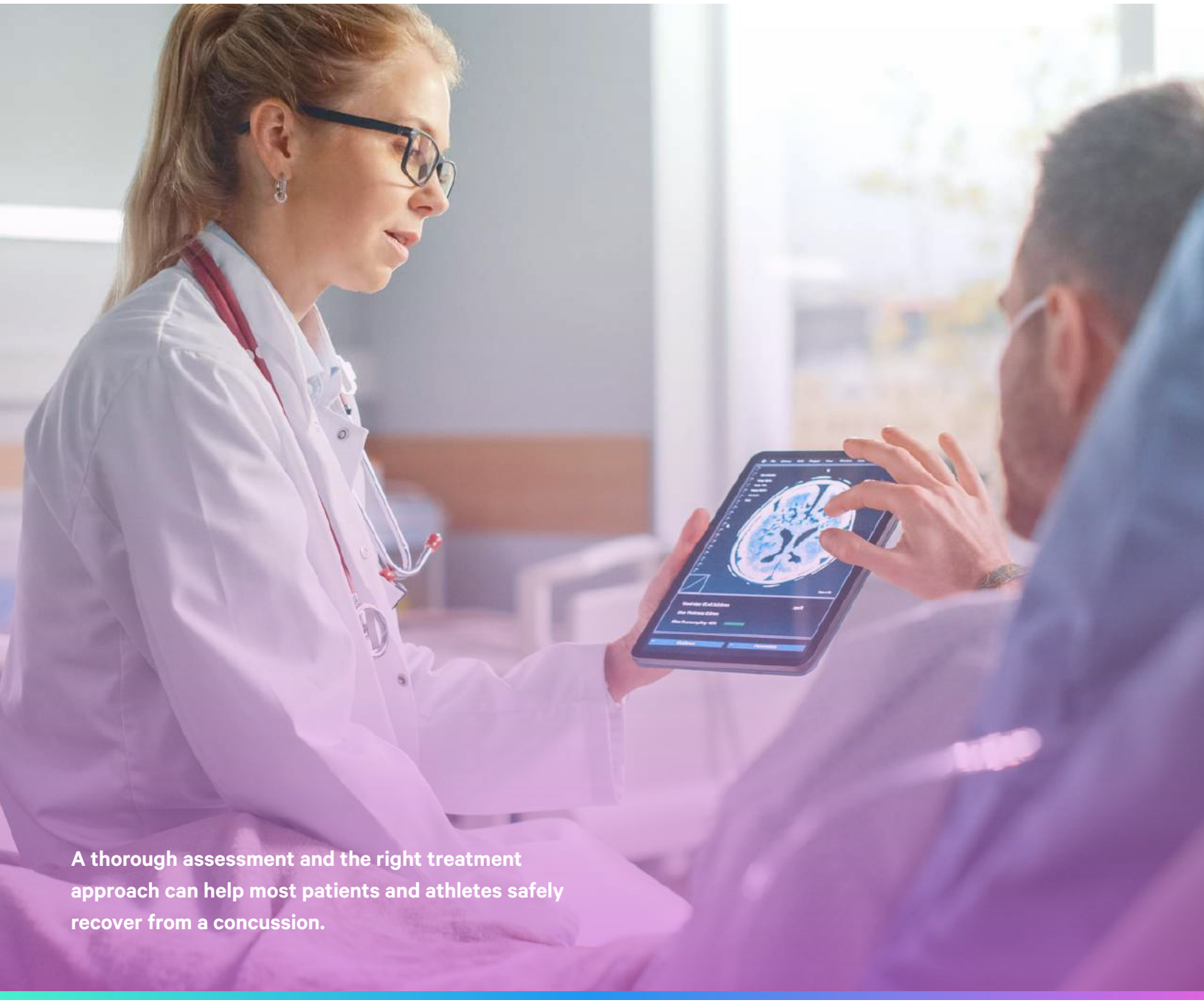
Do's	Dont's
Rest Concussion results in a low energy state in the brain. Stay mobile but avoid strenuous activity for the first 24 to 48 hours.	**Drive** Do not drive for at least 24 hours. Wait until you feel better.
Sleep If there are no Red Flags, then get a good night's sleep. Take naps as necessary for the first 24 to 48 hours.	**Work or Study** Take some time off from school or work until you feel better.
Eat Right Proper nutrition can give you energy and play a role in recovery. Avoid refined sugars and processed foods as these increase inflammation in your brain and may prolong your recovery.	**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 for serious injury.
Follow Protocols Guided return to learn, work and play protocols can help you make a full recovery. Follow the direction of you healthcare provider.	**Take Pain Medication** Pain medication can "mask" symptoms, and make it difficult to tell how the concussion affects you. Talk to your doctor first.
Early Active Rehab Recent evidence suggests that a Buffalo Concussion Treadmill Test and subsequent exercise program should be initiated within the first 5 to 7 days after concussion and that rehab for the visual system, vestibular system, and neck should be started within 10-14 days after injury.	**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. If symptoms are still present at 10 to 14 days, this is an indication that rehabilitation and treatment is likely required. Find a completeconcussions.com clinic near you.

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 as they can start to 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 is important for clearing inflammation and recovery from injury. Practice good sleep hygiene: expose yourself to direct sunlight first thing in the morning, go to bed early, avoid caffeine after noon and reduce screen time.
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. Ask your friends and family for support. You could try some relaxation techniques or breathing exercise to reduce stress. Starting a proper exercise program can be helpful. 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.

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.

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. If symptoms persist beyond a week to 10 days, it's time to start with a concussion rehabilitation professional.
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 until 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 protocols help students gradually return to mental activity and school, without putting too much strain on the brain.

Return to Play.

Return-to-Play is a step-by-step strategy to get safely back into sports following a concussion, 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 is permitted
- **GREEN** = Full participation is permitted

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

Ready 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.

01

Moderate, Symptom Limited Activity

You should avoid any physical and cognitive activity that increases symptoms. Remain at this stage for the first 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

02

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

03

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

04

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

05

Full Return to School/Work

Gradually lift your restrictions based on 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
01	**Symptom-limited Cognitive Activity** 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.	01	**Symptom-Limited Physical Activity** 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.
02	**Light Cognitive Activity** Increase cognitive load – encourage homework and working from home – emails, phone calls, assignments, etc. – once able to tolerate 45 mins -1 hour with minimal increase in symptoms, move on to stage 3.	02	**Light Physical Activity (BCTT)** If it's been any more than 5 to 7 days 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 to Stage 3, Fail = Subsymptom program, re-test in 1 week.
03	**Half Days of School/Work – with restrictions:** No tests, no gym, no recess, no (added) homework (or at least loose deadlines to reduce pressure).	03	**Sport-Specific Activity** Light, non-contact practice with the team or individually.
04	**Full Days of School/Work – with restrictions:** Same restrictions as above – once able to tolerate full days with no increase in symptoms, gradually lift restrictions.	04	**Non-Contact Training Drills** Higher intensity, non-contact practice with team – can begin resistance training – start pushing yourself.

05 - Full Days of School/Work – No Restrictions

05	• 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) • 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.	05	**Medical Clearance** Once completely ASYMPTOMATIC and back to full time school/work with no issues, and no increased symptoms with physical activity/practices – Blackhawks test** (if a high-risk/contact athlete) and comprehensive baseline re-test (if available) in exerted state.
		06	**Full Return to Contact/Discharge** Should have at least one full contact practice prior to playing in a game.

Return to Play.

01

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

02

Light Physical Activity

You should be evaluated by your healthcare provider with a graded exercise test (Buffalo Concussion Treadmill Test) to determine your exercise 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

03

Light Sport-Specific Activity

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

DO: Light individual drills and exercises
DON'T: Engage in contact, increase heart rate too much, continue if you develop symptoms

04

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: Engage in contact or drills with a chance for contact, continue if you develop symptoms

05

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 with physical and cognitive activity.

This step should involve intensive, dynamic physical exertion testing to ensure that there are no lingering issues. Typically at rest we may feel ok, but when our systems are challenged, symptoms may show themselves. This stage should also include a full re-test of all pre-injury baseline metrics (if a pre-injury baseline was performed).

06

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

Persistent Symptoms.

In some cases, the effects of concussion can last for weeks or even months; this is known as PCS (Persistent Concussion Symptoms or sometimes called Post-Concussion Syndrome).

While most people make a full recovery, between 30-40% of people will experience PCS. 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:

Family or Life Stress.

Stress affects how your nervous system recovers from injury and how it deals with pain. Reducing stress is important to balance your nervous system and allow it to heal.

Anxiety or Depression.

Mental health conditions frequently mimic those of concussion and can also be significant barriers to concussion recovery. In order to recover, mental health must be addressed!

Improper Management.

Recent evidence suggests that the number one way to ensure a faster recovery is the sooner you are in to see a *concussion-trained* clinician!

Misinformation.

Unfortunately, there are a lot of gimmicks and incorrect advice out there. Doing the wrong thing and getting the wrong information is just like getting the wrong directions; you can't get to where you are going if you aren't going the right way.

Age.

There tends to be somewhat of an "S" curve with respect to age and concussion recovery. Children & Under 45 adults tend to recover relatively well. Teens and Older adults tend to have a higher likelihood of persistent symptoms.

Sex.

For a number of potential reasons (hormone differences, head to neck ratios, lack of prompt care, etc.), females are much more likely to end up with persistent symptoms.

History of Concussions.

Having previous concussions may increase your recovery time for future concussions.

Treatment may involve addressing specific symptoms such a mood issues, anxiety, difficulty concentrating or headaches. If you are experiencing ongoing problems beyond 10 days after your concussion, there is increased likelihood that you require treatment intervention (mainly active rehabilitation strategies), speak to your doctor or healthcare provider or find a completeconcussions.com clinic near you.

Concussion Treatment & Rehabilitation.

Rest is no longer considered the best 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 and even speed recovery!

Exercise Therapy.

Following a short period of rest and symptom-limited activity, guided exercise therapy starting as early as 5-7 days after injury 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.

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SOCIAL

Complete Concussions

The Complete Concussions 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**