

Guideline for Concussion/Mild Traumatic Brain Injury and Persistent Symptoms

3rd Edition - for adults, +18 years of age



Ontario Neurotrauma Foundation
Fondation ontarienne de neurotraumatologie

Patient Version

This guideline has been created to help with management of concussion/mild traumatic brain injury (mTBI). It is only for management for adults over 18 years of age. The guideline can be used by patients when speaking with healthcare providers about their care. It covers getting a diagnosis, managing symptoms in the early phase (acute) and management in the longer recovery phase (persistent symptoms). It is based on up-to date, quality research evidence, the expertise of providers and the input of patients.

3) Sport-related Concussion/mTBI

A sport-related concussion/mTBI is caused by a direct blow to the head, face, neck, or other part of the body during a sport activity that causes the head to be jolted.

Concussion/mTBI can happen in any sport, and tends to happen when the athlete does not expect the force or impact.

Concussion/mTBI is complex to assess and manage because the symptoms can start right afterwards or be delayed, and can change rapidly.

In adults, the majority of sport concussion/mTBI symptoms resolve within 10 to 14 days, but it can be longer for children and adolescents.

How is a sport-related concussion/mTBI assessed?

It is critical to stop playing your sport immediately after having a suspected concussion. Do not return to the game or practice until a doctor or other trained expert assesses you and approves your return. They will look for signs of concussion as well as severe head, neck or spine injury. You will also need to be monitored for a few hours.

Assessment right after the injury will help find out if you have any symptoms of a concussion/mTBI, such as:

- Lack of memory (amnesia)
- Change in mental state (such as confusion, disorientation, slowed thinking)
- Physical symptoms (such as headache, weakness, loss of balance, change in vision, hearing sensitivity, dizziness)

If you have any of these symptoms and a concussion/mTBI is suspected by you or a person affiliated with your sport such as the coach or trainer, you should be medically examined. You may need a full neurological exam. In some cases, scans of your brain and neck might be used to rule out anything needing serious attention.

How is sport-related concussion/mTBI managed?

If you are diagnosed with a concussion/mTBI, your healthcare provider will give you information about concussion/mTBI and what you can do to improve your chances of a full recovery. It is a good idea for your family or support person to have this information as well so they can help you monitor your symptoms and progress.

Management of concussion/mTBI depends on factors related to the symptoms, including:

- The types of symptoms you have
- How long you've had them
- How severe they are
- How long the symptoms last
- How often and when they appear

Management of your concussion/mTBI will also depend on other factors, such as:

- If you've had a previous concussion/mTBI
- How much time passed between concussion/mTBI
- If you have migraine, sleep difficulties, or mental health problems
- If you are taking certain medications

When can I return to my regular activities after a sport-related concussion/mTBI?

You will need a brief period of rest in the first day or two (the acute phase). After that, you will be able to do regular daily activities as long as your symptoms do not get worse. Most athletes make a complete recovery after 1 to 4 weeks.

While you recover, you will need to avoid any vigorous activity or contact sport. Your doctor/healthcare provider will guide and monitor your progress to recovery. You will gradually increase your activity level so that you do not bring on or worsen your symptoms.

If you have symptoms that persist, your doctor may refer you to a specialized clinic that has a physician with experience in concussion/mTBI and other rehabilitation specialists.

Do I need to stop playing?

Until you are cleared to return to play by a medical doctor or nurse practitioner, it is very important that you do not play. You should follow a step-wise process to return to sport. Most sports have a protocol for returning to play. In the long-term, it is important to understand the health risks of having more than one concussion/mTBI. To help you decide whether to continue playing, you may need to see a specialist who is trained in the necessary tests and a specialist in sport concussion/mTBI management.



TOOLS AND RESOURCES

- ✓ Sports Concussion Assessment Tool - Advice
- ✓ Appendix 1.3 Brain Injury Advice Card - long version
- ✓ Appendix 1.4 Brain Injury Advice Card - short version
- ✓ Do's and Don'ts
- ✓ Patient Care Pathway
- ✓ Appendix 2.2 Parkwood Pacing Graphs
- ✓ [Parachute Return to Play Protocols](#)

CONCUSSION INFORMATION

Any athlete suspected of having a concussion should be removed from play and seek medical evaluation.

Signs to watch for

Problems could arise over the first 24-48 hours. The athlete should not be left alone and must go to a hospital at once if they experience:

- Worsening headache
- Repeated vomiting
- Weakness or numbness in arms or legs
- Drowsiness or inability to be awakened
- Unusual behaviour or confusion or irritable
- Unsteadiness on their feet.
- Inability to recognize people or places
- Seizures (arms and legs jerk uncontrollably)
- Slurred speech

Consult your physician or licensed healthcare professional after a suspected concussion. Remember, it is better to be safe.

Rest & Rehabilitation

After a concussion, the athlete should have physical rest and relative cognitive rest for a few days to allow their symptoms to improve. In most cases, after no more than a few days of rest, the athlete should gradually increase their daily activity level as long as their symptoms do not worsen. Once the athlete is able to complete their usual daily activities without concussion-related symptoms, the second step of the return to play/sport progression can be started. The athlete should not return to play/sport until their concussion-related symptoms have resolved and the athlete has successfully returned to full school/learning activities.

When returning to play/sport, the athlete should follow a stepwise, **medically managed exercise progression, with increasing amounts of exercise.** For example:

Graduated Return to Sport Strategy

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

In this example, it would be typical to have 24 hours (or longer) for each step of the progression. If any symptoms worsen while exercising, the athlete should go back to the previous step. Resistance training should be added only in the later stages (Stage 3 or 4 at the earliest).

Written clearance should be provided by a healthcare professional before return to play/sport as directed by local laws and regulations.

Graduated Return to School Strategy

Concussion may affect the ability to learn at school. The athlete may need to miss a few days of school after a concussion. When going back to school, some athletes may need to go back gradually and may need to have some changes made to their schedule so that concussion symptoms do not get worse. If a particular activity makes symptoms worse, then the athlete should stop that activity and rest until symptoms get better. To make sure that the athlete can get back to school without problems, it is important that the healthcare provider, parents, caregivers and teachers talk to each other so that everyone knows what the plan is for the athlete to go back to school.

Note: If mental activity does not cause any symptoms, the athlete may be able to skip step 2 and return to school part-time before doing school activities at home first.

Mental Activity	Activity at each step	Goal of each step
1. Daily activities that do not give the athlete symptoms	Typical activities that the athlete does during the day as long as they do not increase symptoms (e.g. reading, texting, screen time). Start with 5-15 minutes at a time and gradually build up.	Gradual return to typical activities.
2. School activities	Homework, reading or other cognitive activities outside of the classroom.	Increase tolerance to cognitive work.
3. Return to school part-time	Gradual introduction of school-work. May need to start with a partial school day or with increased breaks during the day.	Increase academic activities.
4. Return to school full-time	Gradually progress school activities until a full day can be tolerated.	Return to full academic activities and catch up on missed work.

If the athlete continues to have symptoms with mental activity, some other accommodations that can help with return to school may include:

- Starting school later, only going for half days, or going only to certain classes
- Taking lots of breaks during class, homework, tests
- More time to finish assignments/tests
- No more than one exam/day
- Quiet room to finish assignments/tests
- Shorter assignments
- Not going to noisy areas like the cafeteria, assembly halls, sporting events, music class, shop class, etc.
- Repetition/memory cues
- Use of a student helper/tutor
- Reassurance from teachers that the child will be supported while getting better

The athlete should not go back to sports until they are back to school/learning, without symptoms getting significantly worse and no longer needing any changes to their schedule.

Appendix 1.3

Brain Injury Advice Card - Long Version: Example # 1

Brain Injury Advice Card (Long Version)

Important Points about Mild Brain Injury

- You had a mild brain injury or what is sometimes called a concussion. Most people recover quickly following a concussion/mTBI. A few people may experience symptoms over a longer period.
- There is a small risk of you developing serious complications so you should be watched closely by another adult for 24 hours after the accident.
- Please read the following. It outlines what signs to look for after a brain injury/concussion and what you need to do if you have problems.

Warning Signs

If you show any of these symptoms or signs after your brain injury/concussion, or you get worse, go to the nearest hospital, doctor or call 911 immediately.

- Fainting or blacking out, drowsiness, or can't be woken up
- A constant severe headache or a headache that gets worse
- Vomiting or throwing up more than twice
- Cannot remember new events, recognise people or places (increased confusion)
- Acting strange, saying things that do not make sense (change in behaviour)
- Having a seizure (any jerking of the body or limbs)
- Inability to move parts of your body, weakness in arms or legs, or clumsiness
- Blurred vision or slurred speech
- Being unsteady on your feet or loss of balance
- Continual fluid or bleeding from the ear or nose

The First 24-48 Hours After Injury

- **Warning Signs:** You should be observed and return to hospital if you develop any of the above warning signs.
- **Rest/Sleeping:** Rest (both physical and mental) and avoid strenuous activity for at least 24 hours. It is alright for you to sleep tonight but you should be checked every four hours by someone to make sure you are alright.
- **Driving:** Do not drive for at least 24 hours. You should not drive until you feel much better and can concentrate properly. Talk to your doctor.
- **Drinking/Drugs:** Do not drink alcohol or take sleeping pills or recreational drugs in the next 48 hours. All of these can make you feel worse. They also make it hard for other people to tell whether the injury is affecting you or not.
- **Pain Relief:** Use **acetaminophen** or **acetaminophen/codeine** for headaches (e.g., Tylenol).
- **Sports:** Do not return to sports until you have received medical clearance from a healthcare professional.

See your primary care provider or visit the ED if you are not starting to feel better within a few days of your injury.

The First 4 Weeks After Injury

You may have some common effects from the brain injury/concussion which usually resolve in several weeks to three months. These are called **post-concussion symptoms** (see below). Tiredness can exaggerate the symptoms. Return to your normal activities gradually (not all at once) during the first weeks or months. **You can help yourself get better by:**

- **Rest/Sleeping:** Your brain needs time to recover. It is important to get adequate amounts of sleep as you may feel more tired than normal and you need to get adequate amounts of both physical and mental rest.
- **Driving:** Do not drive or operate machinery until you feel much better and can concentrate properly. Talk to your doctor.
- **Drinking/Drugs:** Do not drink alcohol or use recreational drugs until you are fully recovered. They will make you feel much worse. Do not take medication unless advised by your doctor.
- **Work/Study:** You may need to take time off work or study until you can concentrate better. Most people need a day or two off work but are back full-time in less than 2 weeks. How much time you need off work or study will depend on the type of job you do. See your doctor and let your employer or teachers know if you are having problems at work or with study. You may need to return to study or work gradually.
- **Sport/Lifestyle:** It is dangerous for the brain to be injured again if it has not recovered from the first injury. Talk to your doctor about the steps you need to take to gradually increase sports activity and return to play. If in doubt, sit out.
- **Relationships:** Sometimes your symptoms will affect your relationship with family and friends. You may suffer irritability and mood swings. See your doctor if you or your family are worried.

Recovery

- You should start to feel better within a few days and be 'back to normal' within about 4 weeks. See your local doctor if you are not starting to feel better.
- Your doctor should monitor these symptoms and may refer you to a specialist if you do not improve over 4 weeks up to 3 months.

Post Concussion Symptoms

There are common symptoms after a mild brain injury/ concussion. **They usually go away within a few days or weeks.** Sometimes you may not be aware of them until sometime after your injury like when you return to work.

» **Mild headaches (that won't go away)**

Headaches are a common problem after a mild brain injury/concussion. They can be made worse by fatigue and stress. Sleeping, resting or taking a break from activities requiring concentration or effort will usually relieve headaches. Pain relievers may help to break a cycle of headaches - use acetaminophen or acetaminophen/codeine, limited to <15 days per month. If your headache gets worse, or cannot be relieved, see your doctor.

» **Having more trouble than usual with attention and concentration**

No one can concentrate well when they are tired, so it is not surprising that many people have trouble concentrating for a while after they have had a mild brain injury. Maybe you cannot even concentrate well enough to read the newspaper. If you really need to, just read for a short time, and then come back to it when you have had a break. The same thing applies to other areas where concentration is needed. Leave things that need your complete concentration until you are feeling better. If you need to concentrate on something important, do it when you are feeling fresh.

» **Having more trouble than usual with remembering things (memory difficulties/forgetfulness)**

You cannot expect your brain to be as good at remembering things as it usually is. Don't worry if you can't think of a name or a phone number that you ought to know, or if you go to get something, and then can't remember what it is. Your memory is only going to be a problem until you recover. In the meantime, get your family and friends to remind you of important dates and appointments, or write things down.

» **Feeling dizzy or sick without vomiting (nausea)**

Occasionally, people find that they get a sick or uncomfortable feeling if they move or change their position quickly. Usually it is only a problem for a few days. If you find that things seem to spin round if you sit up suddenly after lying down, or if you turn your head sharply, it is best to avoid such sudden movements or changes in position until it clears. If the dizziness persists for more than a week or two, see your doctor.

» **Balance problems**

You may find that you are a bit more clumsy than usual. Don't worry if you do find that you are a bit unsteady on your feet, or bump into furniture, or maybe drop things. Just take everything you do a little more slowly. Your brain is the control centre for your whole body. It has to make sense out of all the messages coming in from your eyes and ears and other senses, and to send the right signals to the right muscles for you to be able to do anything. So give yourself more time to do things.

» **More difficulty than usual with making decisions and solving problems, getting things done or being organized**

You may find you are less able to plan ahead or follow through the steps that are required in carrying out an activity. These kinds of difficulties may cause particular problems during the first few days after a mild brain injury but they are usually temporary in nature. When facing situations that present problems or opportunities to plan, it may help to think things through in a more structured and objective way. For example, you may want to ask yourself a series of questions like:

1. What do I want to achieve?
2. What are the available options?
3. What is the best option?
4. What steps will I need to take to achieve this?

After these questions have been considered and answered, you can then carry out your plan. Writing down a goal, plan or problem also helps to give structure to your thinking and helps to make things clearer. Using a daily and weekly time table, planner, or keeping a diary can provide structure and ensure that plans are made routinely and on an ongoing basis.

» **Feeling vague, slowed or 'foggy' thinking**

Some people who have sustained a mild brain injury find their thinking is a bit slower. This means they might have some difficulty keeping up with conversations or following directions, and things take longer to get done. Encourage others to slow down by asking questions and having them repeat what they have said. Allow yourself extra time to complete tasks and avoid situations where you are under pressure to do things quickly.

» **Balance problems**

At first, even a little effort may make you feel very tired. Your brain has less energy to spare than it normally does. If you feel sleepy, go to bed. You will probably find that you need several hours more sleep than you usually do. Let your brain tell you when it needs to sleep, even if it is the middle of the day.

» **Tinnitus. Ringing in the ears.**

Tinnitus is due to damage to the inner ear after brain injury. It is usually described as a whistling, ringing or roaring sound and may be accompanied by some hearing loss. It usually settles on its own within a few weeks after injury. If the ringing in your ears gets worse or does not go away, see your doctor. Reduce your normal intake until you feel fully recovered.

» **Irritability/mood swings. Losing your temper and getting annoyed easily**

Some people who have had a mild brain injury find that they get annoyed easily by things that normally would not upset them. This does not last very long, but it can be difficult for you and for your family. It happens because the brain controls your emotional system as well as the rest of your body. After a mild brain injury your emotions may not be as well controlled as they usually are. There are several ways to deal with this. Some people find that going out of a room, or away from a situation as soon as it begins to get annoying is enough. Others use relaxation techniques (controlled breathing, progressive muscle relaxation) to help them get back on an even keel. You may find that you can stop the irritability from developing by doing an activity that uses up some physical energy like riding an exercise bicycle, if tiredness permits. Irritability will be worse when you are tired, so rest will also help.

» **Anxiety or depression**

Feeling anxious, worried, frightened, angry and low in mood are normal emotions after sustaining a mild brain injury. These feelings often pass in the weeks following the injury, as a person gradually resumes their usual activities. Recognise that emotional upset and worry is a normal part of recovery, even though you may have suffered an injury in the past and not felt like this before. Explain any difficulties that you are experiencing to your family and friends, so that they can understand the effect the injury has had on you and support you in managing your difficulties. Recognise if your worry about symptoms intensifies and a vicious circle develops. If that happens remind yourself of the point above. If symptoms nevertheless do not improve, or if you have suffered from anxiety or depression before the injury and the brain injury has intensified those feelings, visit your doctor.

» **More sensitive to lights or sounds**

You may find that your eyes are sensitive to bright light. Wearing dark glasses in strong light can help to manage this and the need for dark glasses will likely clear up within a few days. When you want to shut out something you don't want to look at, all you have to do is close your eyes. It is much harder to shut your ears. When your brain is fully awake it uses part of its energy to dampen down noises that would interfere with what you are doing. After a mild brain injury your brain may not have enough energy to spare to do this, and you may find that most noises bother you. Explain to your family and friends, and ask them to keep the noise level down if they can.

» **Change in sleep patterns. Trouble sleeping or sleeping too much.**

Don't worry about the sleep disturbance. This is usually temporary and your normal routine will come back gradually. If you are having trouble falling asleep you may try things like reducing stimulation by not watching TV in bedroom or spending long times on the computer, avoiding a large meal before bed, avoiding caffeine, using relaxation techniques (controlled breathing, progressive muscle relaxation), or getting up for about 30 minutes if you are unable to sleep for long periods. It is best to avoid sleep medications but if your sleeping pattern has become very disrupted, discuss with your doctor if a short course of medication may be helpful in re-establishing your sleeping pattern.

» **Reduced tolerance to alcohol.**

After a mild brain injury you may be more sensitive to the effects of alcohol. A small amount may worsen the effects of the brain injury. It can cause unsteadiness and dizziness which may lead to a fall and further injury. It is sensible to avoid alcohol for at least one week after injury and then monitor carefully how alcohol affects you. Reduce your normal intake until you feel fully recovered.

Information included on this advice card was adapted from the Motor Accidents Authority of NSW, Guidelines for Mild/Traumatic Brain Injury following Closed Head Injury (MAA NSW, 2008) and the Information about Mild Head Injury or Concussion booklet (Ponsford, Willmott, Nelms & Curran, 2004).

Appendix 1.4

Brain Injury Advice Cards - Short Versions: Example # 1



For more information about concussion, please visit:
www.cdc.gov/Concussion.

PATIENT INSTRUCTIONS

You have been examined at _____
[name of hospital emergency department]
for a head injury and possible concussion. Be sure to let a family member or friend know about your injury. They may notice symptoms before you do and can help you.

Take time off from work or school for _____ days or until you and your doctor think you are able to return to your usual routine.

Your next appointment with _____
[Doctor's name]
is _____
[date and time]

What to Expect Once You're Home from the Hospital

Most people with a concussion recover quickly and fully. During recovery, you may have a range of symptoms that appear right away, while others may not be noticed for hours or even days after the injury. You may not realize you have problems until you try to do your usual activities again. Most symptoms go away over time without any treatment. Below is a list of some of the symptoms you may have:



Thinking/Remembering

- Difficulty thinking clearly ■ Feeling slowed down
- Trouble concentrating ■ Difficulty remembering new information



Physical

- Headache ■ Balance problems ■ Blurred vision ■ Dizziness
- Nausea or vomiting ■ Lack of energy ■ Sensitivity to noise or light



Emotional/Mood

- Irritability ■ Nervousness ■ Sadness ■ More emotional



Sleep

- Sleeping more than usual ■ Sleeping less than usual ■ Trouble falling asleep

How to Feel Better

- Get plenty of rest and sleep.
- Avoid activities that are physically demanding or require a lot of thinking.
- Do not drink alcohol.
- Return slowly and gradually to your routine.
- Ask a doctor when it is safe to drive, ride a bike, or operate heavy equipment.

WHEN TO RETURN TO THE HOSPITAL

Sometimes serious problems develop after a head injury. Return to the emergency department right away if you have any of these symptoms:

- Repeated vomiting
- Worsening or severe headache
- Unable to stay awake during times you would normally be awake
- More confused and restless
- Seizures
- Difficulty walking or difficulty with balance
- Difficulty with your vision
- Any symptom that concerns you, your family members, or friends

Appendix 1.4 (Continued)

Brain Injury Advice Cards - Short Versions: Example # 2

Brain Injury Advice Card (Short Version)

Important Points about Mild Brain Injury

- You had a mild brain injury or what is sometimes called a concussion. Most people recover quickly following a mild brain injury/concussion. A few people may experience symptoms over a longer period.
- There is a small risk of you developing serious complications so you should be watched closely by another adult for 24 hours after the accident.
- Please read the following. It outlines what signs to look for after a brain injury and what you need to do if you have problems.

Warning Signs

If you show any of these symptoms or signs after your brain injury/concussion, or you get worse, go to the nearest hospital, doctor or call 911 immediately.

- Fainting or blacking out, drowsiness, or can't be woken up
- A constant severe headache or a headache that gets worse
- Vomiting or throwing up more than twice
- Cannot remember new events, recognise people or places (increased confusion)
- Acting strange, saying things that do not make sense (change in behaviour)
- Having a seizure (any jerking of the body or limbs)
- Inability to move parts of your body, weakness in arms or legs, or clumsiness
- Blurred vision or slurred speech
- Being unsteady on your feet or loss of balance
- Continual fluid or bleeding from the ear or nose

The First 24-48 Hours After Injury

- **Warning Signs:** You should be observed and return to hospital if you develop any of the above warning signs.
- **Rest/Sleeping:** Rest (both physical and mental) and avoid strenuous activity for at least 24 hours. It is alright for you to sleep tonight but you should be checked every four hours by someone to make sure you are alright.
- **Driving:** Do not drive for at least 24 hours. You should not drive until you feel much better and can concentrate properly. Talk to your doctor.
- **Drinking/Drugs:** Do not drink alcohol or take sleeping pills or recreational drugs in the next 48 hours. All of these can make you feel worse. They also make it hard for other people to tell whether the injury is affecting you or not.
- **Pain Relief:** Use **acetaminophen** or **acetaminophen/codeine** for headaches (e.g., Tylenol).
- **Sports:** Do not return to sports until you have received medical clearance from a healthcare professional.

See your primary care provider or visit the ED if you are not starting to feel better within a few days of your injury.

The First 4 Weeks After Injury

You may have some common effects from the brain injury/concussion which usually resolve in several weeks to three months. These are called **post-concussion symptoms** (see below). Tiredness can exaggerate the symptoms. Return to your normal activities gradually (not all at once) during the first weeks or months. **You can help yourself get better by:**

- **Rest/Sleeping:** Your brain needs time to recover. It is important to get adequate amounts of sleep as you may feel more tired than normal and you need to get adequate amounts of both physical and mental rest.
- **Driving:** Do not drive or operate machinery until you feel much better and can concentrate properly. Talk to your doctor.
- **Drinking/Drugs:** Do not drink alcohol or use recreational drugs until you are fully recovered. They will make you feel much worse. Do not take medication unless advised by your doctor.
- **Work/Study:** You may need to take time off work or study until you can concentrate better. Most people need a day or two off work but are back full-time in less than 2 weeks. How much time you need off work or study will depend on the type of job you do. See your doctor and let your employer or teachers know if you are having problems at work or with study. You may need to return to study or work gradually.
- **Sport/Lifestyle:** It is dangerous for the brain to be injured again if it has not recovered from the first injury. Talk to your doctor about the steps you need to take to gradually increase sports activity and return to play. If in doubt, sit out.
- **Relationships:** Sometimes your symptoms will affect your relationship with family and friends. You may suffer irritability and mood swings. See your doctor if you or your family are worried.

Recovery

- You should start to feel better within a few days and be 'back to normal' within about 4 weeks. See your local doctor if you are not starting to feel better.
- Your doctor will monitor these symptoms and may refer you to a specialist if you do not improve over 4 weeks up to 3 months.

Information included on this advice card was adapted from the Motor Accidents Authority of NSW, Guidelines for Mild Traumatic Brain Injury following Closed Head Injury (MAA NSW, 2008) and the Information about Mild Head Injury or Concussion booklet (Ponsford, Willmott, Nelms & Curran, 2004).

Concussion Do's and Don'ts: The first few days of recovery



Ontario Neurotrauma Foundation
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The individual with concussion **SHOULD**:



✓ **See a medical doctor or nurse practitioner for help**



✓ **The first 24-48 hours - physical AND mental rest!**
Sleep at night, rest during the day.



✓ **Take it slowly returning to daily activities and sport**
Talk with your doctor or nurse practitioner about when you can return to work, school or play.
Respect your brain and your body. Have a conversation with your doctor or nurse practitioner about what this can look like for you.
As you start to feel better, it's important to get back to doing your normal activities. Start by doing just a little, and if you feel okay, then you can try to do a bit more. Keep track of how you feel.



✓ **Conserve your energy**
After a concussion, your brain has less energy to spare than it normally does. It is important to manage physical and mental energy so that your brain can fully recover.
If symptoms return or you get new ones as you become more active, this is a sign that you are pushing yourself too hard.



✓ **Take care of basic needs**
Eating well and regularly can improve your mood, sleep and mental focus.
Stay away from stimulants such as coffee, caffeine, pop and energy drinks. Stimulants can put added stress on your brain.
Keep a regular sleep schedule. Talk to your healthcare provider if you have trouble getting a good night's sleep.



✓ **Manage stress**
Stress and emotional upset can make symptoms feel worse. Try to do things that help you relax and feel calm.
Talk about your worries with someone you trust such as your healthcare provider, a family member or friend. Let others know how they can help you.



The individual with concussion **should NOT**

(until or unless your doctor or nurse practitioner says it's okay):



✗ **Don't be woken up every hour**
Increased sleep is normal and necessary.



✗ **Don't use electronic devices** (e.g. looking at computer, phone, tablet, TV screens)



✗ **Don't be put in a dark room to avoid all activity**
In the past, patients were told to have absolute rest. It is now accepted that light and cautious activity can be part of the healing process. Respect your brain and your body. Have a conversation with your doctor or nurse practitioner about what this can look like for you.



✗ **Don't exercise, play sports, do heavy household chores or activities that could lead to another concussion or cause symptoms to worsen**
Be careful in the first few days. Some people who have had repeated concussions may have serious long-term problems, including difficulty with concentration, memory, headache and sometimes physical skills (e.g. balance, coordination).



✗ **Don't return to full-time work or study**
The demands of work or school can trigger symptoms. You may need to take some time off to rest and recover or reduce your responsibilities for a short period of time.



✗ **Don't drive, ride a bike or work with machinery or ladders**
Reaction time, vision and thinking may be affected by a concussion. Do not drive a car until your doctor or nurse practitioner advises you it is okay.



✗ **Don't use non-prescription drugs, including alcohol**
Using non-prescription drugs (including alcohol) may add to concussion symptoms and increase recovery time. Only take medications that your doctor has approved.



Concerned you have a concussion?

Visit your family doctor, nurse practitioner or an emergency doctor who can diagnose your concussion.

OUTCOME #1

They do not suspect a concussion. However, see a medical professional right away if your symptoms get worse.

OUTCOME #2

They suspect or diagnose a concussion. See the "Concussion Do's and Don'ts" resource to manage your symptoms over the first few days.

OUTCOME #3

They are concerned you may have a more serious brain injury. You may require immediate medical care at a hospital or by a specialist.

You have been diagnosed with a concussion

You should have a follow-up appointment with your family doctor within 1-2 weeks of diagnosis to check symptoms.

Keep track of your symptoms over time. Your family can help you with this. Write down how you think and feel, and any changes in your mood and sleep.

See a medical doctor right away if your symptoms get worse.

My symptoms are getting better ← **My symptoms are NOT getting better**

- Continue to see your family doctor or nurse practitioner until your symptoms are gone
- You should receive information and helpful resources

CHECK-IN: Do you still have symptoms more than a few weeks after your diagnosis?

My symptoms are getting better

- See your family doctor or nurse practitioner regularly as part of your recovery
- Get help on when and how to start doing regular activities again

My symptoms are NOT getting better

- See your family doctor or nurse practitioner for a re-assessment
- Ask if you need a referral to other healthcare providers or to a concussion clinic
- See a medical doctor with experience in concussion for a second opinion
- Talk about warning signs for persistent-concussion symptoms

- Follow up with referrals (as needed)
- Get new information and helpful resources from each healthcare provider you see

- See your family doctor, nurse practitioner and other healthcare providers regularly as part of your recovery
- Get help on when and how to start doing regular activities again

I am better and my symptoms are gone

I can fully return to work, school, sports/recreation and family activities

Appendix 2.2

The Parkwood Pacing Graphs

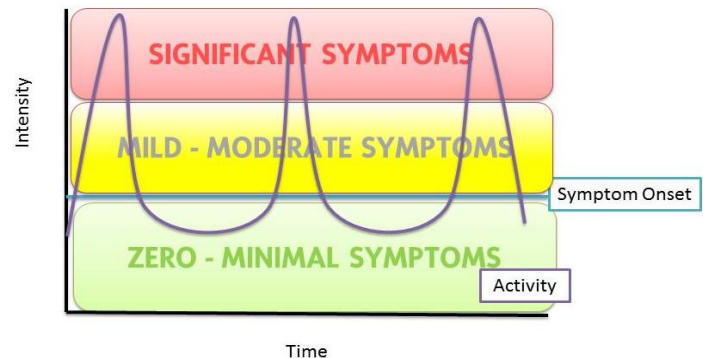


The Pacing Graphs Explained

The green (safe zone) represents when you are symptom-free, or your baseline symptoms. The red (danger zone) represents when your symptoms are increased.

Your Current Activity Pattern may look like this if you continue to work, study, exercise, and in effect push through your symptoms into the 'red zone'. Unfortunately, you end up crashing and may need hours or days to return to baseline.

Current Activity Pattern

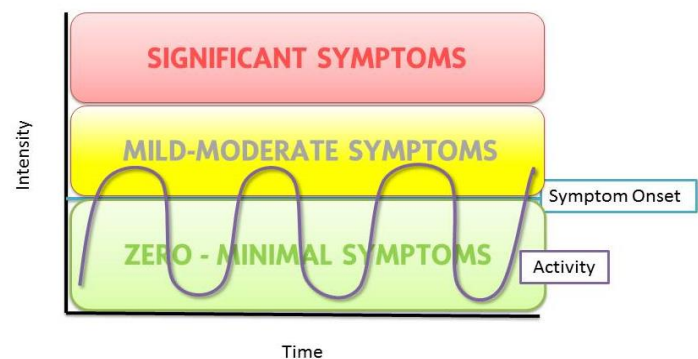


Your Goal: To gradually increase activity tolerance without significantly increasing symptoms or crossing the symptom threshold (into the 'danger zone'). Therefore, planning and pacing of activities is very important. You need to find the right level of activity whereby your symptoms are either eliminated or manageable, and then as your symptoms are better controlled, you can gradually increase your activity level.

You should aim to remain below your significant symptom threshold to promote recovery.

Use your timer to set time restrictions for activities to ensure that a task is stopped soon after symptom onset (i.e. if symptoms increase by 2-3/10 and then return back to baseline within 30-60 min, this is an appropriate amount). This will allow you to monitor your response to activity and teach you how to self-pace and self-monitor. You need to challenge the system in a manageable way in order to change it.

Persistent Symptom Target Activity Pattern



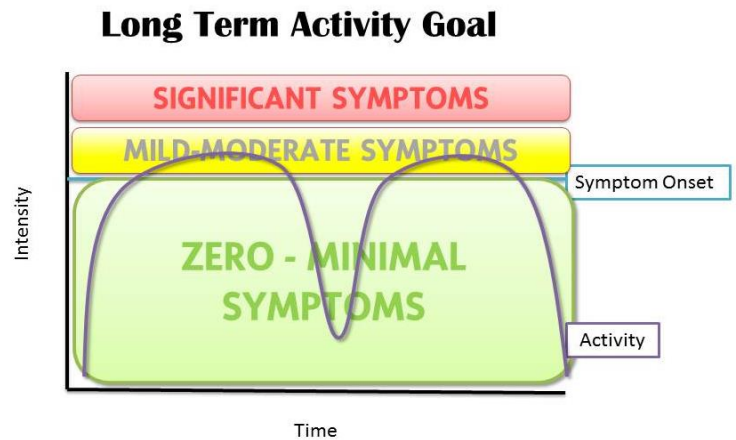
Additional Strategies

- Start with shorter bouts of exercise or activity with rest in between OR
- Try switching between different types of activities (e.g., switching from reading to walking).
- **Doing nothing at all will not promote recovery, but doing too much each day may cause prolonged symptoms.** Therefore, completing structured, paced activities throughout the day with rest breaks as appropriate is ideal.

- **Use a Planner/Agenda/Technology**

- Plan your day in advance. This promotes scheduling of necessary rest breaks into your day, and activities across a number of days, rather than trying to ‘push through’ and get things all done at once.
- **If you have memory issues**, an agenda or technology aid may assist you, with remembering appointments, upcoming tasks/commitments and sending out reminders (in the case of technology solutions).
- **Track your activities** to help you determine any cause and effect or patterns of setbacks which may occur during your recovery. Tracking activities and symptoms in the notes/journal/agenda can also help with determining if there is a relationship between certain activities and symptom onset.

Using strategies to plan and pace your day will help you reach your **long term activity goal** to be able to engage in activities for longer periods of time without making your symptoms significantly worse, and eliminates the need for prolonged recovery time.



Using a Timer for Planning & Pacing

What is it? A timer on your microwave/oven, cellphone, or a digital timer from the dollar store should have an alarm/beep/light that notifies you when the set time has elapsed.

Why? A timer is very important for recovery and for helping you get back doing the day-to-day activities you did before your injury. After brain injury, you have or will experience various symptoms which may be worsened by overstimulation. Overstimulation may include too much “going on” (e.g., sights and sounds) for the brain to process. It is important for you to learn to recognize how much overstimulation it takes to bring on your symptoms (e.g., headache, tremor, fatigue, etc.).

Temporal (time) awareness in brain injured patients may be disrupted as well, resulting in individuals “pushing through” symptoms to finish tasks. Additional challenges may include difficulty starting/stopping activities and over or under-estimation of the passage of time. A timer is a good way to promote pausing, rest, and evaluation of symptoms and to give the brain a break before the symptoms become problematic. It also helps to “reset” your internal clock, as time estimation skills often improve with continued use of a timer.

How to use it: Set a timer for a defined amount of time (e.g., 20 minutes), and then take a break from the task for a defined amount of time (e.g., 10 minutes). Breaks should consist of resting or doing something that encourages focus on something that is not up close. For example, if you read for 20 minutes, then perhaps take a walk for 10 minutes, rest or grab a healthy snack. This will give your brain the break it needs for recovery and to prevent onset of symptoms.

How to progress: Over time, longer work periods (relative to rest), may be established using a timer and increasing the on-task time in increments of 5 minutes every few days. Your goal is to work relatively symptom-free or without a lasting increase in symptoms.

Summary

- Many patients return to activities too quickly, or participate in symptom provoking activities for too long.
- We encourage you to participate in activities below the level of symptom onset in order to gradually build tolerance. As tolerance increases, symptoms may not occur as quickly, and many patients begin to recover and have less symptoms as time progresses.
- Stay conscious of the significant symptoms zone (red), even when symptoms begin to subside, as it is easy to slide into old habits of pushing through symptoms.