



Government
of South Australia

Health
Central Adelaide
Local Health Network

Concussion and mild traumatic brain injury

A Guide to Support Recovery



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Concussion and mild traumatic brain injury

A mild traumatic brain injury (mTBI), including concussion, can occur from a bump, blow or jolt to the head or body that can cause rapid movement of the brain inside the skull.¹ A mTBI can occur without loss of consciousness.¹ Changes may not show on a brain scan following mTBI, however these may be apparent in the case of a more severe injury.¹

Persistent symptoms post-injury can result from changes to one or several different parts of the nervous system. These include:

- Temporary changes to brain cells or nerves, and changes to the balance of chemicals in the brain.² These can affect how brain cells function and communicate.
- Dysfunction of the balance or visual systems, which support mobility, maintaining balance and postural control, and coordination of eye movements.³
- Muscle strain and inflammation in the neck and cervical spine.³

It is normal to experience some symptoms after a mTBI.³ Some symptoms may not be prevalent until returning to more demanding tasks like work.³

Symptoms

Table 1³

Physical	Emotional or behavioural	Cognitive
<ul style="list-style-type: none">• Headache• Nausea• Vomiting• Dizziness• Balance problems• Blurred or double vision• Seeing stars or lights• Sensitivity to light or noise• Tinnitus or ringing in the ears	<ul style="list-style-type: none">• Drowsiness• Fatigue or lethargy• Irritability• Agitation• Impulsivity• Depression or anxiety• Sleeping more than usual• Difficulty sleeping	<ul style="list-style-type: none">• Feeling "slowed down"• Feeling "in a fog" or "dazed"• Difficulty concentrating• Difficulty remembering• Difficulty with higher level thinking skills such as planning, organising and problem solving

¹US Department of Health and Human Services Centres for Disease Control and Prevention, *Facts about Concussion and Brain Injury*, (2010).

²Cynthia L Mayer, Bertrand R Huber, and Elaine Peskind, "Traumatic brain injury, neuroinflammation, and post-traumatic headaches," *Headache: The Journal of Head and Face Pain* 53, no. 9 (2013).

³S Marshall et al., "Guideline for concussion/mild traumatic brain injury and prolonged symptoms: (for Adults 18+ years of age)," *Ontario Neurotrauma Foundation* (2018).

“It can feel like a traffic jam in my brain...”

Mild traumatic brain injury can be compared to a multiple lane highway on which several lanes are temporarily closed. If traffic is light (manageable amounts of information entering the brain), there will be no difference. But once the traffic builds (lots of information at once – sometimes more than the brain can manage), the cars barely move, and it can take ages for the traffic jam to clear. This can cause a sense of “mental flooding”, fatigue, and slowed thinking, amongst other symptoms. In the case of more severe brain injury where changes are apparent on a brain scan, this could be compared to damage along the roads that carry the traffic, which further impacts the flow of traffic and associated symptoms.

Determining severity of injury

Brain injury is diagnosed by taking into consideration the mechanism of injury and other factors including:

- Loss of consciousness resulting from the injury⁴
- Level of consciousness immediately after the injury⁴
- The ability to form new memories for daily events immediately after (and sometimes before) the accident.⁴

Some factors that can affect recovery⁴

- Female gender
- Advanced age
- Severe pain
- Presence of migraine headaches
- Recent brain injury or previous brain injury with unresolved symptoms
- Anxiety, depression, post-traumatic stress disorder (PTSD)
- Alcohol or substance use.

⁴Marshall et al., “Guideline for concussion/mild traumatic brain injury and prolonged symptoms: (for Adults 18+ years of age).”

Recovery and treatment

In the case of mTBI, symptoms often recover on their own within several days to a few weeks, and most people recover within three months.⁴ For a small number of people symptoms can last longer, and additional support may be required to aid recovery.⁴

You can help your recovery by returning to your normal activities gradually (not all at once) during the first few days to weeks after the injury, starting with the easy activities first.⁴ The brain uses more energy during the recovery phase.⁴ It is important to pace yourself and take regular short rests during the day as tiredness can exaggerate the symptoms.⁴ Take paracetamol or ibuprofen if you are experiencing headaches.⁴

Symptoms can be interconnected.⁵ Managing one symptom may positively affect other symptoms. For example, implementing strategies for sleep problems can help mood, pain, fatigue and cognitive changes.

SABIRS Concussion Clinic

The Concussion Clinic, part of the South Australian Brain Injury Rehabilitation Service (SABIRS), offers a multidisciplinary team that provides advice and education on how you can manage symptoms while you are getting better.

Specifically, we will work with you and in liaison with your GP to provide:

- Education about symptoms, expected outcomes and prevention of further injuries
- Education on strategies to monitor and manage your symptoms
- Guidance for a graduated return to activities such as work, driving and sport.

If you are experiencing symptoms after your concussion which have not improved within 7 days, please contact the Concussion Clinic on (08) 7117 5232 to discuss making an appointment.

South Australian Brain Injury Rehabilitation Service
Concussion and Mild Brain Injury Clinic
State-wide Rehabilitation Service: Repat Health Precinct
Building 12
Gate 1 216 Daws Road, Daw Park SA 5042
Telephone: (08) 7117 5232

⁵Shawn Marshall and Jacqueline van Ierssel, "Management of Concussion and Persistent Post-concussion Symptoms," in *Tackling the Concussion Epidemic* (Springer, 2022).

General advice

In the first few days to weeks after your mild traumatic brain injury (mTBI), rest and avoidance of heavy or intense physical activity is important.⁶ A gradual return to your usual activities, as your symptoms improve, is an essential part of your recovery.⁶ Attempting to return to your usual activities too quickly can cause your symptoms to come back or worsen, prolonging your recovery.⁶

Return gradually to activities

- Begin by attempting small tasks, if your symptoms remain settled, gradually increase the amount you're doing.⁶ Don't return to all activities at once.
- As you increase your activities, if you notice an exacerbation or return of your symptoms, stop, take a break and slow down.⁶ Pushing through these symptoms can prolong your recovery.⁶

Manage your energy levels

- Conserve your energy by prioritising important tasks. Monitor your energy levels, take rests and give yourself extra time to do things, before you feel tired.⁶

Monitor your symptoms

- Finding a pattern to your symptoms can help with your recovery.⁶ Use an activity monitoring log to help make changes that may improve your symptoms.⁶

Return to light exercise

- Gentle daily aerobic exercise e.g. walking – at an intensity where symptoms do not worsen – can help with your recovery.⁶ Avoid playing contact sports until cleared by your specialist or local doctor.⁶

Avoid stimulants, alcohol and recreational drugs

- Stimulants such as nicotine and caffeine may exacerbate symptoms.⁷ These should be avoided while you are experiencing symptoms.
- Avoid alcohol and recreational drugs while you're experiencing symptoms as this can worsen the effects of your injury and prolong recovery.⁷ Dizziness and unsteadiness caused by the consumption of alcohol may lead to further injury.

Avoid further injury

- Symptoms can last longer if you experience a second concussion before you have recovered from the first concussion.⁶
- A helmet can help to protect your brain from injury, so always wear a helmet during activities where there is a risk of hitting your head (such as bike riding, horse riding or other high-risk activities).⁶
- If you are experiencing symptoms such as dizziness, reduced balance or visual changes, avoid working at heights – e.g. on ladders – until symptoms have resolved.

⁶E McLellan and D Guo, *Mild Traumatic Brain Injury / Concussion: Your Guide to Recovery*, (Toronto: Sunnybrook Health Sciences Centre, 2016).

⁷Sean P Roach et al., "The influence of self-reported tobacco use on baseline concussion assessments," *Military medicine* 185, no. 3-4 (2020).

Headaches

Headache is one of the most common symptoms after mild traumatic brain injury. If the headache is severe, persistent, and not relieved by ordinary pain relief tablets in the few days after injury, you should return to your local doctor or hospital emergency department.⁸

Strategies to manage headaches

- **Medication:**

Monitor headache symptoms and continue pain management as directed by your GP.⁸

- **Seek referral to a neuro-physiotherapist:**

Musculoskeletal trauma to the neck and shoulders may contribute to headaches, therefore referral to neuro-physiotherapy may assist in treating symptoms.¹⁰

- **Stay well hydrated:**

Maintain adequate hydration throughout the day and avoid caffeine or artificial sweeteners.⁹

- **Reduce bright lights:**

Headaches may be triggered by bright light. Reducing screen brightness, wearing tinted glasses or sunglasses, and reducing bright indoor lighting may assist.⁹

- **Manage sleep and stress:**

Headaches can be made worse by fatigue and stress.⁹ Sleeping, resting or taking a break from activities that require concentration or effort may relieve headaches.

- **Keep a headache diary:**

Keeping track of headaches can help you learn triggers and management strategies.⁹ Keep note of:

- » Timing of headaches
- » Activities completed before you have experienced headaches
- » Type and severity of headache
- » Strategies used to provide relief.⁹

⁸Richard Morris, *Mild Head Injury and Concussion*, 4th, (Nottingham: The Brain Injury Association, 2020).

⁹McLellan and Guo, *Mild Traumatic Brain Injury / Concussion: Your Guide to Recovery*.

¹⁰Michael J Ellis, John J Leddy, and Barry Willer, "Physiological, vestibulo-ocular and cervicogenic post-concussion disorders: an evidence-based classification system with directions for treatment," *Brain injury* 29, no. 2 (2015).

Feeling dizzy or sick without vomiting (nausea) and balance problems

You may experience feeling sick or uncomfortable when moving or changing positions quickly. Often, this will only last a few days.¹¹ If you experience a “room spinning” dizziness when you bend over or if you turn your head sharply, change from sitting to lying or lying to sitting, or avoid sudden movements or changes in position until it settles.¹¹ If the dizziness persists for more than a few days, see your doctor to seek a referral to a neurological physiotherapist.¹²

Strategies to manage dizziness and nausea

- **Take it slowly:**
Give yourself time to do things. Your brain is the control centre for your body.¹¹ It must interpret messages coming in from your eyes, ears and other senses, and then send specific signals to your body to respond.¹¹
- **Keep active:**
Continue with light physical activity as tolerated.¹³ Take your time when changing postures; e.g. standing up from sitting. As you move, focus your eyes on stable targets, as this can help the brain orientate the body. At this stage, avoid sports or movements that may make dizziness worse.
- **Seek a referral to a neuro-physiotherapist:**
A neuro-physiotherapist can provide further assessment for your dizziness and often completely resolve or reduce the symptom.¹²

Strategies to prevent falls

Having a falls prevention plan will reduce the risk of falls and further injury.

- **Keep rooms free of clutter:**¹⁴
Remove trip hazards such as loose rugs, cords or wet floors.¹⁴ Loose mats and cords can be taped down to reduce trip hazards.¹⁴

¹¹Marshall et al., “Guideline for concussion/mild traumatic brain injury and prolonged symptoms: (for Adults 18+ years of age).” *Ontario Neurotrauma Foundation* (2018).

¹²Ellis, Leddy, and Willer, “Physiological, vestibulo-ocular and cervicogenic post-concussion disorders: an evidence-based classification system with directions for treatment.” *Brain injury* 29, no. 2 (2015): 238-48; Marshall et al., “Guideline for concussion/mild traumatic brain injury and prolonged symptoms: (for Adults 18+ years of age).” *Ontario Neurotrauma Foundation* (2018).

¹³McLellan and Guo, *Mild Traumatic Brain Injury / Concussion: Your Guide to Recovery*. Toronto, Sunnybrook Health Sciences Centre, 2016.

¹⁴McLellan and Guo, *Mild Traumatic Brain Injury / Concussion: Your Guide to Recovery*.

- **Be aware of your environment:**

Low ceilings or open cupboards present a risk for hitting your head.¹⁴ Keep items you use regularly in easy-to-reach places.¹⁴ Make sure rooms and stairs are well lit, and use night lights in the bathroom and hallway.¹⁴

- **Understand your triggers:**

Your dizziness may increase with the heat from the shower, so consider using a non-slip mat or shower chair.¹⁴

- **Avoid risky tasks:**

If you experience unsteadiness or dizziness, avoid working from heights such as climbing ladders, and hold railings when using stairs.¹⁴

- **Use supports:**

Well-fitting shoes can reduce your risk of falling.¹⁴ Sturdy furniture can be used to steady yourself or to sit down if you feel a change in your balance.¹⁴

- **Focus on your walking:**

Do not attempt to multitask (i.e. reading or texting when walking).¹⁴

Nausea

Nausea can be associated with changes to the visual system as well as symptoms such as dizziness or vertigo.¹⁵ When nausea is a secondary symptom, treatment for the primary impairment – dizziness or migraine headache, for example – is indicated.¹⁵ Medication, either over the counter or prescription, may be required to manage symptoms of vomiting and nausea.¹⁶ It is best to consult with your local doctor. A referral to a neuro-physiotherapist may be indicated if symptoms persist beyond a few weeks.¹⁵

If the nausea is severe or accompanied by vomiting, it is important to seek medical advice urgently.¹⁷

¹⁵ Marshall et al., "Guideline for concussion/mild traumatic brain injury and prolonged symptoms: (for Adults 18+ years of age)." *Ontario Neurotrauma Foundation* (2018).

¹⁶J. J. Leddy et al., "Management of Concussion and Persistent Post-Concussive Symptoms for Neurologists," *Current Neurology and Neuroscience Reports* 21, no. 12 (2021), <https://doi.org/https://doi.org/10.1007/s11910-021-01160-9>.

¹⁷Morris, *Mild Head Injury and Concussion*. 4th. Nottingham, The Brain Injury Association, 2020.

Sensitivity to lights or sounds

You may find you are more sensitive to bright light.¹⁵ Reducing screen brightness, wearing sunglasses, and reducing bright indoor lighting may assist.¹⁵

Typically, your brain can dampen noise it perceives as unimportant.¹⁵ However, after a mild traumatic brain injury your brain may not have enough energy to do this, and you may find that noises bother you.¹⁵

Strategies to manage noise sensitivity

- **Provide education for family and friends:**
Talk to your family and friends about the issue and ask them to respect your need for a quiet environment.¹⁸
- **Avoid noisy situations where possible:**
Try to organise quiet, enjoyable, social occasions at which noise levels can be controlled. For example, ask a few friends around for a quiet dinner, or select a seat at a restaurant that is nearer the corner or door, where noise levels may be lower. Activities such as dining out or shopping should be scheduled for quieter off-peak times.
- **Where possible consider wearing earplugs or headphones:**
Wearing ear plugs in noisy places will help block sounds that you may be more sensitive to.¹⁹
- **Modify your work environment:**
This may include moving to a quieter area of the worksite, modifying work tasks to reduce noise, working from home, and reducing or changing work hours. However, in the instance this is not practicable, taking regular rest breaks in a quiet area, particularly when noise levels become overwhelming, is advised.

¹⁸Morris, *Mild Head Injury and Concussion*. 4th. Nottingham, The Brain Injury Association, 2020.

¹⁹McLellan and Guo, *Mild Traumatic Brain Injury / Concussion: Your Guide to Recovery*. Toronto, Sunnybrook Health Sciences Centre, 2016.

Tinnitus (ringing in the ears)

- Tinnitus can occur from damage to the inner ear after head trauma, and usually settles on its own within a few weeks.²⁰ It can present as a whistling, ringing or roaring sound, with or without hearing loss.²⁰ It is important to seek medical advice from your doctor if your tinnitus gets worse or does not go away.²⁰
- Factors that can exacerbate tinnitus include anxiety, depression, stress and lack of sleep.^{19,20} Please refer to information handouts on sleep, fatigue, and mood for further information.
- Some helpful resources for managing tinnitus are available at <http://www.seekingbalance.com.au/my-podcast/>



²⁰Marshall et al., "Guideline for concussion/mild traumatic brain injury and prolonged symptoms: (for Adults 18+ years of age)." *Ontario Neurotrauma Foundation* (2018).

Changes in sleep patterns, trouble sleeping or sleeping too much

Sleep disturbance is usually temporary, and your normal routine will gradually return.²¹

Strategies to maintain a regular sleep routine

- **Rest:**

Physical rest is important in the first few days after your injury.²² However, after the first few days, try and avoid napping, as this can affect your sleep quality at night.²² Instead, try to go to bed earlier in the evening.²² If naps are needed, use an alarm clock and aim to keep naps to a maximum of 20-30 minutes.²³
- **Aim for a consistent sleep schedule:**

Use an alarm clock if needed, even on the weekends.²² If you have trouble falling asleep within 30 minutes, get out of bed and do something relaxing until you feel ready to go to sleep.²²
- **Avoid flashback triggers:**

This is particularly important before bedtime, including violent or graphic video games, programs and movies.²⁴
- **Routines:**

Develop bedtime routines to relax and wind down, such as a warm bath, reading a book or relaxation techniques like controlled breathing, meditation, progressive muscle relaxation.²³ Find resources at <http://www.freemindfulness.org/download>
- **See your doctor:**

Although it is best to avoid sleep medications if possible²², discuss the option of sleep medications with your doctor if your sleep has become very disrupted. A short course of medication may be helpful in re-establishing your sleeping pattern.

²¹Marshall et al., "Guideline for concussion/mild traumatic brain injury and prolonged symptoms: (for Adults 18+ years of age)." *Ontario Neurotrauma Foundation* (2018).

²²McLellan and Guo, *Mild Traumatic Brain Injury / Concussion: Your Guide to Recovery*. Toronto, Sunnybrook Health Sciences Centre, 2016.

²³Morris, *Mild Head Injury and Concussion*. 4th. Nottingham, The Brain Injury Association, 2020; McLellan and Guo, *Mild Traumatic Brain Injury / Concussion: Your Guide to Recovery*. Toronto, Sunnybrook Health Sciences Centre, 2016.

²⁴Ronald G Riechers and Robert L Ruff, "Rehabilitation in the patient with mild traumatic brain injury," *CONTINUUM: Lifelong Learning in Neurology* 16, no. 6 (2010): 128-49.

Strategies for a good sleep environment

- **Physical environment:**
A bedroom environment which is dark, quiet, cool and comfortable is best for sleep.²²
- **Avoid screen time:**
Avoid watching TV or using the computer or other screen devices before bedtime, as these can contribute to difficulty falling asleep.²²
- **Sound:**
Ear plugs, a white noise machine or neutral and natural sounds can be beneficial to block out sounds in the environment which may be distracting to sleep.²²

Strategies for lifestyle

- **Avoid caffeine, alcohol, and heavy meals:**
Avoid caffeine, alcohol, and heavy meals 4-6 hours before bedtime, as these can negatively affect sleep.²⁵
- **Minimise stimulants:**
Try to limit caffeine and nicotine intake during recovery.²⁶
- **Exposure to nature:**
Ensure you are exposed to natural light and fresh air during the day.²⁷
- **Exercise:**
Complete 30-60 minutes of light aerobic exercise during the day and avoid exercise at night.²⁷ Consult with your doctor if you are experiencing symptom exacerbation with exercise.²⁷
- **Mental health:**
If your sleep is affected by stress, anxiety and negative thoughts, try talking with a close friend or family member, or ask your local doctor about a referral to a psychologist for strategies and support.²⁸

²⁵McLellan and Guo, *Mild Traumatic Brain Injury / Concussion: Your Guide to Recovery*. Toronto, Sunnybrook Health Sciences Centre, 2016.

²⁶Marshall et al., "Guideline for concussion/mild traumatic brain injury and prolonged symptoms: (for Adults 18+ years of age)." *Ontario Neurotrauma Foundation* (2018).

²⁷J Ponsford et al., *Information about Mild Head Injury or Concussion*, (Melbourne: Victorian Ministerial Implementation Committee on Head Injury, 2004).

²⁸Morris, *Mild Head Injury and Concussion*. 4th. Nottingham, The Brain Injury Association, 2020.

Fatigue

Fatigue is one of the most common symptoms of mild traumatic brain injury and is important to manage, as it can affect other symptoms and the ability to participate in activities.²⁹ It is important to acknowledge what your brain is feeling and the triggers to feeling irritated or tired, as pushing through these can prolong your recovery. Maintaining a daily routine with regular wake and sleep times, and consistent mealtimes can assist in managing fatigue.

- **Prioritise** your time and energy by focusing on the important things first.³⁰ Ask yourself:
 - » Is this urgent? Does it have to be done today?
 - » How important is it? Can it wait for a few days?
 - » Can it be done later? Can it wait for a few weeks, or longer?
 - » Is help needed? Can I ask someone to help me or do it for me?
 - » Does it have to be done at all? Can it wait until I feel better?³⁰
- **Pace** yourself and take your time, and don't overdo it.³⁰
 - » Consider different combinations of activity that allow rest, relaxation and an opportunity to reenergise.
 - » Switch between tasks which are more and less demanding, e.g. tasks which require more and less concentration.³⁰
 - » Take short breaks during tasks and gradually increase activity levels over time as tolerated.³⁰
 - Take 5-10 minute "brain breaks" every hour – if possible, go to a quiet, darkened room and sit or lie and shut your eyes. Set phone alarms as reminders to take a break.
 - Notice the early signs of fatigue, such as when energy levels begin to drop or when you become more irritable. Change tasks or have a short rest as this can prevent more severe fatigue later.
- **Plan** your day around activities that are most tiring.³¹ Using an activity log can assist in recognising fatiguing activities and aim to do these when you're most awake.³¹
 - » Try to break tasks down into smaller steps so that you can easily take a break if needed.³²
 - » Setting small goals can help you build up to what you really want to do.
 - » Have a back-up plan for when fatigue appears at unexpected or inconvenient times.^{32,22} For example, pre-prepare dinners or ask for assistance with shopping.³² Have a back-up child-care plan for when fatigue appears unexpectedly.³² Communicate with your family or close friends to assist in developing your back-up plans.³²
 - » Signs of fatigue after a mTBI can be difficult to recognise.³¹ Ask family or friends to monitor when you appear fatigued and associated signs.³¹

²⁹Joan Norrie et al., "Mild traumatic brain injury and fatigue: a prospective longitudinal study," *Brain injury* 24, no. 13-14 (2010): 1528-38.

³⁰McLellan and Guo, *Mild Traumatic Brain Injury / Concussion: Your Guide to Recovery*. Toronto, Sunnybrook Health Sciences Centre, 2016.

³¹Morris, *Mild Head Injury and Concussion*.

³²McLellan and Guo, *Mild Traumatic Brain Injury / Concussion: Your Guide to Recovery*.

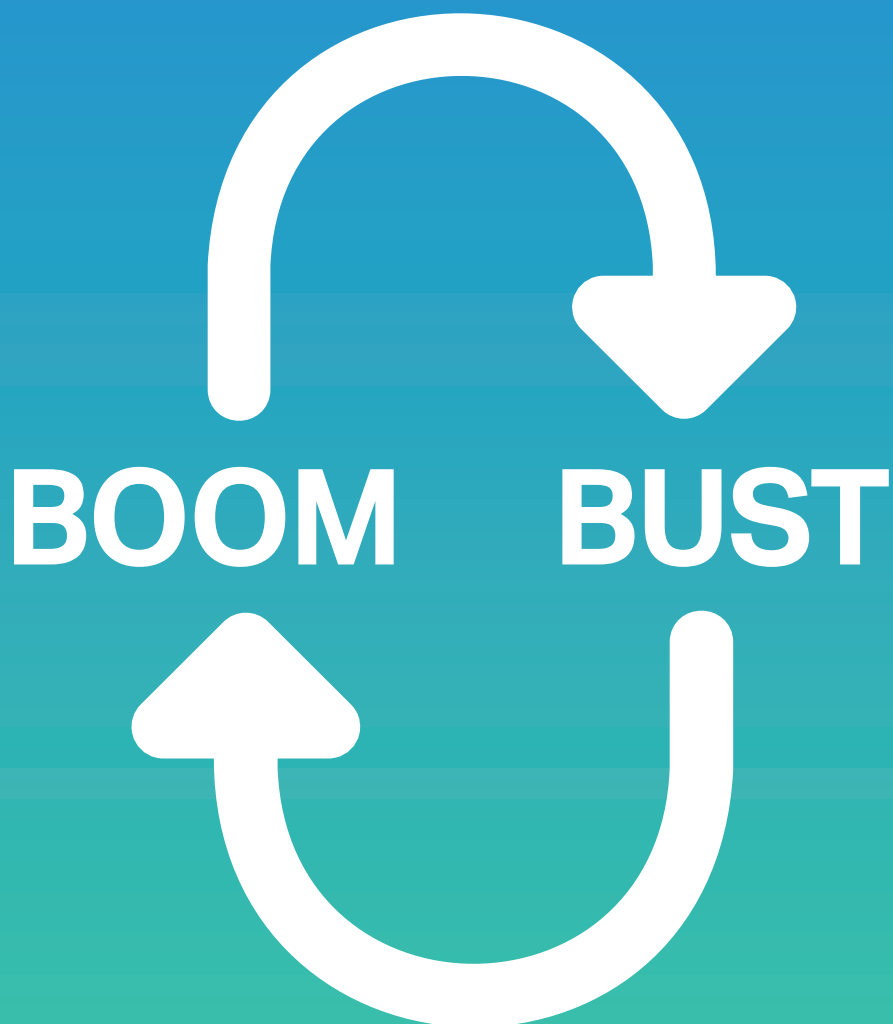
- **Keep active to improve energy.**³² A gradual increase in light physical activity such as walking can improve your energy levels.³² Remember to pace yourself, as too much physical exertion can increase fatigue.³²
- **Sleep is important.**³² Poor sleep can contribute to fatigue which can in turn contribute to cognitive, mood and physical symptoms.³² *For more information, refer to the sleep section in this handout.*
- **Be aware of mood and level of stress.**³²
Fatigue can be linked with stress, anxiety or low mood.³² For more information, refer to the mood section in this handout.
- **Environment and posture** can affect your energy levels.³²
 - » Prolonged standing or sitting with poor posture can contribute to fatigue.³²
 - » More energy is required when concentrating in a noisy or busy environment.³²

Strategies to manage your environment

- Wear tinted glasses or sunglasses to lessen bright light.³¹
- Use earplugs to manage noisy or distracting environments.³¹
- In a noisy environment like a café, try to position yourself with your back against a wall or towards a corner, to reduce the impact of noise and other distractions.
- Use lists – e.g. a shopping list – to help you stay focused during tasks.³¹

The Boom and Bust cycle of fatigue management

This occurs if you get into a cycle where you don't get enough rest and continue to push through symptoms of fatigue.³³ It is important to avoid Boom and Bust by pacing yourself. Your fatigue will improve as you start to feel better.



³³Morris, *Mild Head Injury and Concussion*.

Irritability and mood swings

Losing your temper or getting annoyed easily

Irritability, or getting annoyed at things that wouldn't normally upset you, is common after a mild traumatic brain injury (mTBI).³⁴ While these symptoms may not last long, they can be difficult for you and your family.³⁴ After a mTBI you may have difficulty controlling emotions, particularly when the brain is tired or needs to process a lot of information. This is sometimes called "mental flooding" or "cognitive overload".³⁴

Strategies for cognitive and sensory overload

- **Avoid multi-tasking:**
Do one thing at a time and allow yourself extra time.
- **Use fatigue management strategies:**
refer to the fatigue section in this guide.
- **Choose quieter times to complete activities in the community:**
For example, try grocery shopping on quieter days and times of the week.
- **Take a break:**
When you first notice signs of overload; resist the natural tendency to push beyond your limits. When possible, go to a quiet place.
- **Plan rest breaks:**
As sensory and cognitive overload can exacerbate other symptoms including fatigue, it is important to plan rest breaks and down time between tasks that may trigger overload.
- **Reduce background noise:**
Particularly when doing mentally demanding tasks.
- **Ask for help:**
Ask a family member or close friend to help you monitor your stress levels. You could establish a subtle sign or a code word that reminds you to check how you are feeling. Agree on this before you feel overwhelmed.
- **Practice relaxation techniques:**
Focus on breathing/visualisation as a form of meditation. Find resources at <http://www.freemindfulness.org/download>

³⁴Marshall et al., "Guideline for concussion/mild traumatic brain injury and prolonged symptoms: (for Adults 18+ years of age)."

Strategies for when overload does occur

- Try to identify the cause of overload.
 - » Are you feeling tired or overwhelmed?
 - » Is the environment noisy or confusing?
 - » Are you trying to do too much?
 - » Understanding the cause can help you to manage overload and avoid situations which contribute to it.
- If you are unable to leave the situation, assure yourself that as uncomfortable as the feeling of overload is, you are OK and this feeling will pass.
- Take yourself away from a stimulating room or situation as soon as overload occurs.³⁵
- Try relaxation techniques such as controlled breathing or progressive muscle relaxation to help.³⁵ <http://www.freemindfulness.org/download>
- Rest is important, as irritability can be worse when you are fatigued.³⁵



³⁵Marshall et al., "Guideline for concussion/mild traumatic brain injury and prolonged symptoms: (for Adults 18+ years of age)."

Depression and anxiety

It is normal after a mild traumatic brain injury to feel anxious, worried, frightened, angry or low in mood.³⁶ Mood can be impacted by tiredness, concentration problems, reduced self-control of emotions, and symptoms persisting longer than expected. As you gradually resume usual activities, these feelings often pass, even if it takes longer than you expect.³⁶ You may have experienced an injury in the past and not experienced these emotions, however they are a normal part of recovery.³⁶

Strategies to support mood

- Maintain sleep hygiene – low mood and anxiety can contribute to sleep disturbance. Fatigue can also exacerbate feelings of depression and anxiety.³⁷
- Meditation and relaxation techniques can help.³⁷ <http://www.freemindfulness.org/download>
- Make note of any worries to work through them one at a time. ³⁷
- Talk to family and friends about difficulties you are experiencing so they can understand how the injury is affecting you, and how to support you.
- Maintain regular light exercise.
- Fatigue management is important to support psychological wellbeing. *For more information, refer to the fatigue section in this guide.*
- If symptoms do not improve, or if pre-existing feelings of anxiety or depression have intensified since the injury, visit your doctor. ³⁷ A mental health care plan to access psychology support may be beneficial.

If you need to speak to someone urgently

Mental Health Triage: 13 14 65 (24 hours, 7 days a week)

Lifeline: 13 11 14 (24 hours, 7 days a week) www.lifeline.org.au

Beyond Blue: 1300 22 4636 (24 hours, 7 days a week) www.beyondblue.org.au

Other resources:

Headspace: provides free online and telephone support and counselling to young people aged 12 to 25 and their families and friends: www.headspace.org.au

If you are in danger: Call 000 or go to your local emergency department

³⁶Marshall et al., "Guideline for concussion/mild traumatic brain injury and prolonged symptoms: (for Adults 18+ years of age)."

³⁷"Post Concussion Syndrome - Causes, Symptoms, Recovery, Treatment," Health Jade, accessed 26/07/2022, 2022, <https://healthjade.com/post-concussion-syndrome>.

Difficulties with attention and concentration

A mTBI can impact concentration, particularly in the first few days.³⁸ Concentrating on multiple tasks with distractions or for long periods of time can be challenging.³⁸

Strategies for memory and concentration

- **Pace activity**, and allow yourself extra time to do things. Prioritise important tasks when you are feeling fresh.⁴⁰
- **Minimise distractions:** Work in a quiet environment with no distractions or background noise, such as people talking, radio or television. Ask to not be interrupted while working.⁴¹
- **Apply structure:** Plan, keep a record, or break tasks down into manageable parts.³⁹ If you do get distracted or need to take a break, you can easily pick up where you left off.
- **Talk to yourself:** Say things out loud, such as simply stating "what should I be doing now?", or "stay focused", or reading instructions out loud. This helps you concentrate and retain information.
- **Notice when your brain becomes distracted**, and redirect your focus back to the task (you can verbalise this aloud or use internal self-talk). If the new task is important, stop, write it down and come back to it.
- **Paraphrase:** Confirm important details from conversations that need to be remembered.
- **Concentrate on one thing at a time:** Avoid multitasking.³⁹
- **Manage symptoms of overload and fatigue:** Refer to the fatigue and cognitive overload section in this guide.
- **Use environmental cueing:** Have a cue card in your work area with a simple message on it, such as "focus on what to do", to help avoid distraction. Setting an alarm on your watch or phone to sound every 20 minutes acts as a cue to stay focused or to check your work.
- **Set yourself targets or goals:** Having a goal to work towards will help with motivation. If you are achieving it too easily, set yourself harder targets.
- **Be assertive:** If you feel overloaded in everyday conversation and you cannot attend to information, request that the person slows down their delivery or repeat themselves.
- **Self monitor or check and double-check your work:** This will be slow and hard initially, but will soon become a habit. It is a sure-fire way of picking up on your own errors.

³⁸Morris, *Mild Head Injury and Concussion*.

³⁹McLellan and Guo, *Mild Traumatic Brain Injury / Concussion: Your Guide to Recovery*.

⁴⁰Health Jade Team, "Post Concussion Syndrome - Causes, Symptoms, Recovery, Treatment."

⁴¹Ponsford et al., *Information about Mild Head Injury or Concussion*.

Memory difficulties and forgetfulness

Short term or day-to-day forgetfulness is common after mild traumatic brain injury.⁴² Problems concentrating can also contribute to a disruption of the memory system; this will improve as you recover.⁴³ Internal and external memory strategies can be used to support your recovery.

Internal memory strategies

Internal strategies use different thought processes to help learning and memory. Your brain may not be as good at using these strategies while you recover, as it may have less capacity and flexibility.

- **Pay attention:** Focus on what is being said and reduce background distractions.⁴⁴ You are more likely to remember if you feel alert and engaged.
- **Small chunks:** Break down information into small chunks or concise themes.⁴⁴ Organise information into small key points under each theme.⁴⁴
- **Repeat and rehearse:** Repeat information several times in your head, such as learning someone's name or phone number.⁴⁴
- **Aim for "deep-level processing":** Relating new information to existing memories will allow deep-level processing, improving your chance of remembering.⁴⁴ For example, if a mechanic says you have a problem with the camshaft on your car, you are more likely to remember if you understand the workings of an engine. If you have no idea what happens under the bonnet, the word "camshaft" has no meaning: it doesn't conjure up any image, or fire neural pathways in your brain, and so you are less likely to remember it.
- **Make links or associations:** Make mental associations by relating new ideas to existing information.⁴⁴ The more links or bits of information you have about something, the deeper the level of processing, and the better you will remember.
- **Make visual pictures:** "A picture is worth 1,000 words." Visualising an image when trying to remember something will improve your chance of remembering it.⁴⁴ Make the image vivid, bizarre and exaggerated. Thinking of a picture activates the right hemisphere of the brain; just thinking of a word uses mainly the left.
- **Mind maps or spider diagrams:** Breaking down information on paper in a picture or map makes it easier to remember.⁴⁴ Mind maps have routes with small sections of information.⁴⁴ Using colour or pictures on your map can aid recall.⁴⁴ When trying to remember information, visualise your mind map.

⁴²Marshall et al., "Guideline for concussion/mild traumatic brain injury and prolonged symptoms: (for Adults 18+ years of age)."

⁴³Morris, *Mild Head Injury and Concussion*.

⁴⁴Trevor Powell, *The brain injury workbook: Exercises for cognitive rehabilitation* (Routledge, 2017).

- **Question – 5Ws and PQRST:** If you are trying to remember something, such as a newspaper story, ask yourself the five W questions: **What? Where? When? Who? and Why?**
⁴⁵ You could also try to the PQRST strategy: **P**review – take an overview, what it is about; **Q**uestion – line up your *What?, Where?, When? Who? and Why?* questions; **R**ead, **S**tate or answer your questions, **T**'est' yourself.⁴⁵
- **Stories or rhymes:** Using stories or rhymes can assist in memory; the funnier they are, the easier it is to remember.⁴⁴ Mnemonics can also assist memory, for example "**R**ichard **O**f **Y**ork **G**ave **B**attle **I**n **V**ain" helps us remember the colours of the rainbow in order (Red, Orange, Yellow, Green, Blue, Indigo and Violet).⁴⁵
- **Expanded rehearsal:** Repeat the information immediately after you have taken it in, then again after a slight delay, gradually increasing this delay.⁴⁵

External memory strategies

Some simple measures can be taken to organise yourself and manage memory problems in the home or workplace, including external aids.

- **Adapt your environment:**
Keep a notepad and pen handy and put up a noticeboard or white board in an accessible place.⁴⁵
- **A place for everything, and everything in its place:** Assign a specific place for everyday items and make sure you keep them there.⁴⁵
- **Get into a routine:** Good routines and habits can reduce memory difficulties. Use a daily timetable on the noticeboard.⁴⁵
 - » **Use a diary,** either a paper-based or electronic diary.⁴⁵
 - » **Reminder notes and To Do lists,** either paper-based or electronic. Example: make a shopping list.
 - » **Reminder alarms:** Watch and phone alarms can be used as reminders to complete tasks.⁴⁵
 - » **Write down new information** and things you need to remember. Use stick-on labels as reminders (e.g. remember to lock the back door.)⁴⁵
 - » **Whiteboards or large wall calendars** can be used for visual reminders of events, messages, appointments, social occasions and to help plan.⁴⁵

⁴⁵Powell, *The brain injury workbook: Exercises for cognitive rehabilitation*.

Feeling vague, slowed or “foggy thinking”

Slowed thinking or “fogginess” is a common symptom following a mild traumatic brain injury.⁴⁶ You may have difficulty keeping up with conversations, or you may take longer to think through and complete tasks.⁴⁶

- **Manage fatigue:**

Fatigue can reduce speed of thinking.⁴⁷ Please refer to the fatigue section in this guide for strategies that may help.

- **Concentrate on one thing at a time:**

Don't do too many things at once, like talking on the telephone and making a meal at the same time.⁴⁷

- **Break down large tasks:**

Breaking down lots of information into smaller chunks or pieces can be helpful to improve concentration.⁴⁷

- **Allow yourself extra time to complete tasks:**

Avoid situations where you are under pressure to complete tasks quickly.⁴⁷

- **Ask others to slow down or repeat things:**

This can be helpful if you have difficulty following what they are saying or if they are speaking too fast.⁴⁷

- **Read out loud:**

This can help you to concentrate on and process information.⁴⁷ Please refer to the section in this guide on memory difficulties and forgetfulness for strategies which may help.

- **Reduce distractions:**

Find a quiet area when you need to do work, study or read.⁴⁷ Noisy and distracting environments can make it hard to concentrate on a task and can contribute to fatigue.⁴⁷

- **Reduce stress and brain overload as much as possible:**

Take breaks and rest before you feel tired or overloaded. Resting will give you more energy to re-focus.⁴⁷

⁴⁶Marshall et al., “Guideline for concussion/mild traumatic brain injury and prolonged symptoms: (for Adults 18+ years of age).”

⁴⁷Powell, *The brain injury workbook: Exercises for cognitive rehabilitation*.

Difficulty planning, organising and making decisions

It is common to have trouble with planning ahead, completing activities or decision-making after a mild traumatic brain injury⁴⁶ These kinds of difficulties are usually temporary and there are several strategies which may help.

Try thinking through problems in a structured way. For example:

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?⁴⁸

Strategies to assist with planning, organising and decision making

- **Write down a goal, plan, or problem:** This helps structure your thinking and to make things clearer.
- **Use a timetable, planner, or diary (paper-based or electronic)** to provide structure and ensure plans are made routinely, on an ongoing basis.⁴⁸
- **Mentally rehearse your plans or discuss your plans for the day with others:** This will make you more likely to remember, and the other person can provide reminders if necessary.⁴⁸
- **Stick to routines:** Consistent routines can take the pressure off planning.⁴⁸ Prepare a weekly routine for tasks like shopping, washing, and housework.⁴⁸
- **Use checklists:** To stay on track, tick off each part of the activity that you have accomplished.⁴⁸ Checklists can be placed in key locations in the house to remind you of steps to for a task, such as preparing a meal.⁴⁸
- **Back up plans:** Try to develop back up plans in advance, rather than when problems arise.
- **Take your time when making important decisions:** Make a list of options and talk it over with someone you trust before deciding.⁴⁸
- **Reduce work hours:** If your job requires high levels of planning and organisation, consider returning on part-time hours and taking on lighter duties until you feel better.⁴⁸

⁴⁸ Marshall et al., "Guideline for concussion/mild traumatic brain injury and prolonged symptoms: (for Adults 18+ years of age)."

- **Use external aids** such as your mobile phone, watch, or tablet to provide reminders of tasks. *For more information, refer to the external memory strategies above.*
- **Reduce the number of steps in a task**, particularly in the early stages of your recovery.⁴⁸ For example, try a simple meal plan, eat slow-cooker or one-pot meals, and follow directions from a cookbook.
- **Manage fatigue:** When fatigued, your brain is less able to manage lots of information.⁴⁸ Refer to the fatigue section in this handout for strategies which may help.



⁴⁸ Marshall et al., "Guideline for concussion/mild traumatic brain injury and prolonged symptoms: (for Adults 18+ years of age)."

Vision problems

Some people who have had a mTBI may notice their eyes don't seem to work in the same way, or that they cannot see as well as they used to.⁴⁹ These changes should get better after a while.

You may experience:

- Blurry vision, double vision, eye strain and sensitivity to bright lights.⁴⁹
- Trouble judging distances for things like walking on stairs or parking a car.
- Trouble watching television, reading or spending time on the computer.⁴⁹ These tasks may take longer than usual, make you feel more tired or dizzy, or they may cause headaches.⁴⁹

Strategies for vision problems

- **Reduce bright light, computer screen brightness and increase font/print size:** Sensitivity to light is one of the most common visual problems after mTBI.⁴⁹ This can be triggered by indoor lighting, especially fluorescent lights. Consider changing indoor lighting to warm globes. Smart globes enable lighting hue and intensity to be adjusted using a smart phone.
- **Keep glare from your computer screen:** Make sure there is no reflection on your computer screen from a lamp or outside light. Try using an anti-glare filter on top of your computer screen.
- **Track with reading:** Try putting a blank piece of paper or ruler under the line being read to support the eyes to move smoothly from one line to the next. Alternatively, use your finger to follow along with the text.
- **Use a transparent colour tinted sheet:** Using this over paper when reading helps reduce visual stress and glare.
- **Limit screen use and reading** to reduce overall discomfort and eye strain. Look away from your computer screen every now and again and take short regular breaks to rest your eyes. Most Windows and Apple products can read text aloud.
- **Take breaks and rest your brain:** Remember that mental fatigue can make symptoms worse.
- **See a neuro-physiotherapist:** If visual symptoms do not resolve within a few weeks, see your local doctor. Assessment by a visual specialist may be required.

⁴⁹Nicholas EF Hac and Daniel R Gold, "Neuro-Visual and Vestibular Manifestations of Concussion and Mild TBI," *Current neurology and neuroscience reports* (2022).

Communication problems

After mTBI you may find it difficult to express yourself in the way you would like. You might not be able to find the right words or you may have difficulty speaking sentences.⁵⁰

The following suggestions may help:

- Be patient with yourself.⁵⁰
- Think of a few key words or make a list of key points to prepare what you want to say.⁵⁰
- Explain to people that they may need to allow you more time when talking.⁵⁰

Strategies to assist with word finding difficulties

- **Substitute it:**
Try using other words that describe the word.⁵¹
- **Describe it:**
Describe the features of the word you are trying to say; for example, "it's a red vegetable and you can make it into sauce" (tomato).
- **Visualise:**
Try to create a mental picture of the word.
- **First letter or sound:**
Try to think of the word's first letter or sound and say it out loud. Go through the alphabet to try and trigger the letter or sound the word starts with.
- **Gestures:**
Use gestures, body language and facial expression to help describe the word you are trying to say.
- **Associate:**
Think of words that are associated with the word you are trying to say for example, "round", "cut", "piece" to help you think of the word "pie", or name words in the same category as the target word; for example, "train", "bus", "truck" when you're trying to say "car".
- **Writing:**
Try writing the target word.
- **Drawing:**
Draw a picture about the word you are trying to produce.

⁵⁰Morris, *Mild Head Injury and Concussion*.

⁵¹McLellan and Guo, *Mild Traumatic Brain Injury / Concussion: Your Guide to Recovery*.

Altered sense of taste or smell

The senses of smell and taste are connected, and can be affected after mTBI. If the sense of smell is lost or reduced, then the ability to detect flavour may be affected.

Health, safety and hygiene issues

Taste and smell provide a vital warning system against many health and safety issues. The following suggestions can help:

- **Fire or smoke:** Regularly service electrical appliances and ensure your smoke detector is working.⁵² Unplug appliances when not in use and set an alarm when using appliances for cooking.⁵³
- **Gas leaks:** Regularly service gas appliances and have a gas detector installed.⁵² Consider fitting an electric cooker and fire.⁵²
- **Out-of-date food:** Always eat or throw out food by its use-by date; if in doubt, throw it out.⁵² Regularly clear out the fridge and cupboards of old food.⁵²
- **Identifying products:** Keep products such as drinks, bleach, cleaning products and solvents in their original containers and ensure they are labelled clearly.⁵²
- **Home hygiene:** Regularly empty rubbish bins and keep toilets and kitchen appliances clean.⁵²
- **Personal hygiene:** Be aware of the need to regularly shower, use deodorant and wash your clothes and bed linen.⁵² Ask a close friend or family member to advise you on any problems they may become aware of in this area.⁵²
- **Mouth care:** Oral hygiene is important through regular and thorough teeth brushing, including the tongue. Using mouthwash and dental floss can also help.⁵²
- **Toxic fumes:** When using products such as paint, cleaning chemicals and solvents, always follow manufacturers advice, wear a protective mask, ensure rooms are well ventilated and don't smoke.⁵² Loss of taste and smell can affect eating habits, so remember to maintain a healthy, balanced diet.⁵²

⁵²Morris, *Mild Head Injury and Concussion*.

⁵³Headway The Brain Injury Association, "Loss of Taste and Smell After Brain Injury," (Headway The Brain Injury Association, 2018).

Tips to maintain a healthy balanced diet

Make meals more interesting

- Use varied colours and textures.
- Add texture by using seeds, nuts, wholegrain cereals, fresh fruit and vegetables, beans and pulses; or grate onions, carrots, apples or other suitable fruits and vegetables.⁵⁴
- Use herbs and spices, mustards, lemon juice, vinegar and sauce to increase flavour.⁵⁴
- Try a combination of hot and cold foods together.⁵⁴ For example, try ice cream with hot toppings/stewed fruit or lasagne with salad.⁵⁴
- Include friends and family to make meals an enjoyable, social time.⁵⁴
- Eat breakfast, lunch, evening meals and snacks at the same time every day to maintain a regular routine.⁵⁴

Some of these suggestions may not be suitable if you have difficulty with chewing, swallowing, or choking and have been advised to eat a softer diet.⁵⁴ Consult your doctor for further advice.

Avoid using too much salt

It's common for people with reduced sense of taste to add too much salt or other flavourings, such as garlic or chillies.⁵⁴

- Avoid over-salting foods by following a recipe.⁵⁴
- Instead of boiling vegetables, try steaming, baking, roasting or cooking them in the microwave to retain their natural flavour.⁵⁴

Drinking

Loss of taste and smell can reduce fluid intake, which may result in dehydration.⁵⁴ It is common to have too much caffeine or sugar filled drinks to compensate for impaired sense of taste.⁵⁴

- Try replacing caffeinated drinks for decaffeinated alternatives.⁵⁴
- Be mindful to avoid adding excess sugar to hot drinks.⁵⁴
- Energy drinks should only be consumed in moderation or eliminated due to often high caffeine contents.⁵⁴
- Remove unpleasant tastes from the mouth by drinking plenty of fluids.⁵⁴

Alcohol

- Avoid or reduce your alcohol intake while you are recovering.
- If you are unable to avoid alcohol, try drinking low alcohol- or alcohol-free beers as an alternative.⁵⁴
- Tolerance to alcohol can be reduced following brain injury and will have the same or a more significant effect on you even if you cannot taste it.⁵⁴
- Make sure you know what is in drinks that are bought for you.⁵⁴
- Seek advice from your treating doctor about consuming alcohol if you are taking any medications.⁵⁴

⁵⁴Headway The Brain Injury Association, "Loss of Taste and Smell After Brain Injury."

Returning to work or study

The best time to return to work will depend on the nature of your job and the impact of your symptoms.⁵⁵ Your symptoms might impact your ability to work or study.⁵⁵ Try to complete some work or study activities at home as your symptoms improve, such as reading or computer work.⁵⁵ When you can do similar tasks without your symptoms becoming worse, you may be ready to return to work or school.⁵⁵ Talk to your employer or educational institution about your return. You, your doctor and your employer or institute can work together to facilitate your successful return.

- **Take it slow:** Going to back to work and study must be done gradually.⁵⁵ At first, start with reduced hours and duties. For example, return on a part-time basis in the beginning and consider working non-consecutive days.
- **Graduated return:** slowly increase your workload and your hours as symptoms allow.⁵⁵ If symptoms come back or get worse, reduce activity. Make sure you tell your employer or institute and doctor if you are having problems managing. Remember to conserve your energy by prioritising, planning and pacing.⁵⁵
- **Rest breaks:** Take regular breaks before you feel tired.⁵⁵ Tiredness can affect your concentration, and increase cognitive overload and stress.⁵⁵ Try a 5-10 minute “brain break” every hour. If you start to feel symptoms at work or school, take a break in a quiet area until symptoms improve.⁵⁵ Use an alarm to remind you to rest.⁵⁵
- **Distractions:** Minimise the need for multitasking, concentrate on one task at a time.⁵⁵ Work in a quiet area where possible. Allow additional time to complete tasks. Use strategies to help you concentrate and remember.
- **Environment:** Poor posture, bright lights and computer screens can make symptoms worse.⁵⁵ Set up your computer and workstation properly.⁵⁵ Ask your employer or institute for an ergonomic assessment of your work station.⁵⁵ Turn the lights down or off, and turn computer screen brightness down if you are feeling more sensitive to light.⁵⁵
- **Find support:** If you are a student, contact your student support office as you may be able to access additional help and support for your study, while you are recovering.⁵⁵ If your workplace has an employee assistance program (EAP), they may provide counselling services and other resources to support you and your family with issues that may be affecting your health, work or life.⁵⁵

⁵⁵McLellan and Guo, Mild Traumatic Brain Injury / Concussion: Your Guide to Recovery.

Returning to sport

Once symptoms start improving, start with light exercise such as walking or slow stationary cycling.⁵⁶ If you are able to perform light exercise without your symptoms getting worse during or after exercise, you can gradually increase the intensity (how hard you push yourself) and duration (the amount of time) you are exercising.⁵⁶ If symptoms return, reduce the intensity and duration of your exercise.⁵⁶

Seek medical advice before returning to sport after a mild traumatic brain injury.⁵⁶ It is important to minimise the risk of a second injury while still recovering from the first one.⁵⁶ If in doubt, sit it out.

Return-to-play guidelines exist for returning to sports or heavy exercise.⁵⁶

- If this is your first injury and you have not sustained a skull fracture or changes to the brain (if seen on a brain scan and diagnosed by a doctor), after medical evaluation you may be able to commence a Return-to-play protocol – no sooner than 10 days following your injury.⁵⁷
- If this is your second or subsequent head injury, or you have sustained a skull fracture or changes to the brain (if seen on a scan and diagnosed by a doctor), it is important you speak with your doctor regarding your return to sport.⁵⁷
- If you are experiencing significant symptoms with exercise, further assessment of exercise tolerance may be required by a neurological physiotherapist who can provide you with a specific return to exercise program.

⁵⁶McLellan and Guo, *Mild Traumatic Brain Injury / Concussion: Your Guide to Recovery*.

⁵⁷Michael Makdissi, Gavin Davis, and Paul McCrory, "Updated guidelines for the management of sports-related concussion in general practice," *Australian family physician* 43, no. 3 (2014).

Graded return to exercise for each stage of rehabilitation.⁵⁷

Rehabilitation stage	Functional exercise	Objective
No activity	Symptom-limited physical and cognitive rest	Recovery (24-48 hours)
Light aerobic exercise	Walking, swimming or stationary cycling. Find an intensity that does not aggravate symptoms Recommended: 20 mins per day No resistance training e.g. running, weights, jumping	Progressively increase heart rate
Sport-specific exercise	Light training drills (e.g. running, ball work, etc.) No head impact activities	Add movement
Non-contact training drills	Progression to more complex training drills May start progressive resistance training	Exercise, coordination and cognitive load
Full contact practice	Participation in normal training activities after medical clearance	
Return to play	Normal game play	

Do not exercise on a "bad" day

When moving through each stage, pay careful attention to your physical and cognitive symptoms.⁵⁸ You should participate in each stage for at least 24 hours (or longer) without symptom exacerbation during or after exercise, before progressing to the next stage.⁵⁹ If symptoms return, rest until symptoms subside. Once your symptoms have returned to baseline for a minimum of 24 hours and you receive advice from your doctor, you should restart at the prior level of activity where no symptom exacerbation was experienced.⁵⁹ It is important to know that symptoms can be delayed and become apparent later that day or even the next day.⁵⁹

⁵⁸Makdissi, Davis, and McCrory, "Updated guidelines for the management of sports-related concussion in general practice."

⁵⁹Marshall et al., "Guideline for concussion/mild traumatic brain injury and prolonged symptoms: (for Adults 18+ years of age)."

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South Australian Brain Injury Rehabilitation Service (SABIRS)
Concussion Clinic, Version 2, November 2022



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