

INFOSHEET



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Concussion aftercare: Balance

Problems with balance are very common following a concussion. For good balance you need input from vision, inner ear and the somatosensory systems. Many people with imbalance after a concussion have associated visual impairment as well. Dizziness however is more likely to take a longer recovery time. You need to address this quickly as it can make you “feel bad” and can worsen other symptoms such as anxiety, fatigue and even difficulty concentrating. Ongoing dizziness may be the reason why you feel unable to go to school or work.

What is balance?

There are many causes of imbalance, and we will focus on only those that are important and seen following a concussion.

Balance is the ability to keep your body centred over your feet. The ability to maintain your balance is determined by many factors, including your physical strength and coordination, your senses, and your cognitive or thinking ability.

Postural hypotension- A drop in blood pressure when standing or sitting up suddenly can make you feel lightheaded and dizzy. You may have difficulty standing up (transient orthostatic intolerance) as a result of your concussion. This needs to be treated by an experienced clinician.

Vision impairment- Eyesight is one of the key senses you need to keep your balance. Eyesight problems such as double vision and visual instability can make your balance worse.

Vestibular impairment- Your inner ear contains many tiny organs that help you keep your balance (called the vestibular system). Your inner ear has three loop-shaped structures (semicircular canals) that contain fluid and have fine, hair-like sensors that monitor the rotation of your head. It also has other structures (otolith organs) that monitor linear movements of your head. These otolith organs contain crystals that make you sensitive to movement and gravity.

If your vestibular system is damaged from a concussion, you may have problems with balance, dizziness, or a sudden sensation that either you’re spinning or that your head is spinning. This is called vertigo. Positional vertigo may be associated with vestibular system damage and should be treated by an experienced clinician.

Children can have positional vertigo post-concussion, which is not the result of vestibular system damage. These children have a high association with underlying migraine headache.

Sensory impairment- Problems with your ability to sense things (sensory integration), may be impaired following a concussion. The balance system needs dynamic flexibility and precise timing of neural transmission. Following a concussion, sensory information may be misinterpreted, and this may lead to an illusion of movement, motion intolerance, or even a sense of nausea or dizziness.

Treatment options

The following are ways you can improve your balance following a concussion.

Specific exercises will be described for:

- Habituation
- Gaze
- Balance training and co-ordination

How quickly can your balance improve?

Most people with a concussion recover within 4 weeks, sometimes even quicker.

In a small number of cases however, dizziness may continue. For these people special treatment may be required. This is called vestibular therapy or vestibular rehabilitation. This is done by specially trained therapists and you will need a referral from your doctor.

Habituation exercises

Goal: To gently re-train your brain so that you are not dizzy or nauseous when moving.



Aim to look in different directions, as shown above, slowly moving both your head and neck.

You can also try short exposures to light and noise – e.g. shopping centre, screen time.

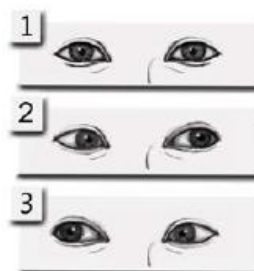
Gaze stabilization exercises

These exercise help to improve control of eye movements so vision can be clear during head movement. These are helpful for people who report problems seeing clearly because their visual world appears to bounce or jump around, e.g. when reading or trying to identify objects when moving.

Goal: To reduce dizziness when focusing on a point.

Activity 1:

1. Hold an object (e.g. pencil, finger, drink bottle) an arm's length away. Start with both eyes fixed on the object with the head facing forwards.



- Slowly turn your head to one side, keeping eyes on the object. Slowly turn back to the centre and then to the opposite side.
- Repeat 5 to 10 times, as many as you can tolerate. Start increasing the speed when you are able.

Activity 2:

- Hold an object an arm's length away. Start with eyes focused on the object and head forwards.
- Move the object to the right and rotate head to the left, keeping your eyes focused on the object. Then move the object to the left whilst rotating the head to the right, keeping your eyes on the object.
- Repeat 5-10 times as tolerated, increasing the speed when you are able.

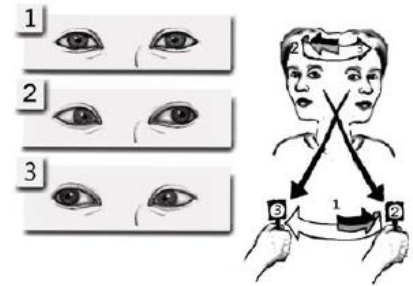


Image by Karen Ilari, © VEDA

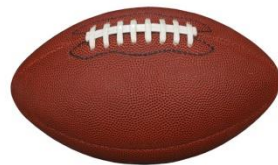
Activity 3:

- Hold an object an arm's length away, with your eyes focused on the object. Move the object towards your nose, until it is about half the distance away than from where it started.
- Keep your eyes focused on the object throughout the movement.
- Repeat 5-10 times as tolerated, increasing the speed when you are able.



Activity 4:

Throw a ball up into the air and then catch, starting with a larger sized ball and graduating to a smaller ball.



Balance training and co-ordination exercises:

Goal: To increase balance.

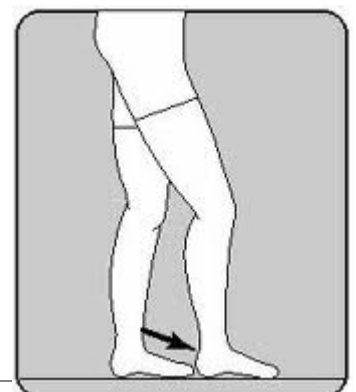
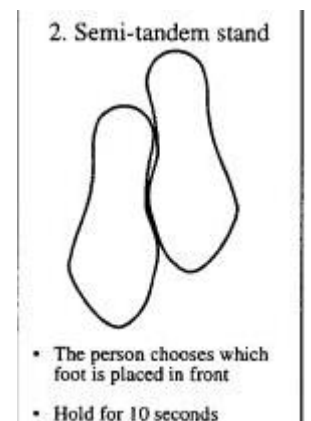
Activity 1: Walking the tightrope – semi-tandem or full-tandem (heel-to-toe)

If you are unsteady on your feet, try doing this exercise near a wall so you can steady yourself if you need to.

- Place your feet in semi-tandem stand position. Hold in place for 10 seconds.
- Then swap your feet over so that the other foot is in front. Hold in place for 10 seconds.

Try to walk along the corridor (with supervision) in semi-tandem position.

- Place the heel of one foot just in front of the toes of the other foot. Your heel and toes should touch or almost touch.
- Choose a spot ahead of you and focus on it to keep you steady as you walk. Take a step, putting your heel just in front of the toe of your other foot. Repeat for 20 steps along the corridor.



Activity 2: Single leg balance

1. Stand on one foot behind a sturdy chair, holding on for balance.
Hold position for up to 10 seconds.
Repeat 10-15 times.
Repeat 10-15 times with other leg.
Repeat 10-15 more times with each leg.
2. Then try to balance without holding on to the chair.
3. To make it more difficult try increasing the time until you get to 30 second balances.



You can also try:

- Closing your eyes
- Drawing the alphabet (or shapes, or sentences) in the air whilst staying balanced
- Having somebody throw a ball to you so that you can catch it and throw it back

You can do this exercise while waiting for the bus or standing in line at the grocery. For an added challenge, you can modify the exercise to improve your balance.

Activity 3: Balance walk

1. Raise arms up at your sides to shoulder height. Choose a spot ahead of you and focus on it to keep you steady as you walk.
2. Walk in a straight line with one foot in front of the other. As you walk, lift your back leg. Pause for 1 second before stepping forward.
3. Repeat for 20 steps, alternating legs.



Activity 4: Sport-related exercises

Bounce the ball on the racquet. You can try to bounce a tennis ball off the racquet (up in the air or down towards the floor). You can do this with a table tennis racquet and ball as well.

Hitting a ball (baseball, cricket, tennis, volleyball) gently.

Shoot a ball into the net – netball, basketball, soccer.

