



# Balance problems and dizziness after a brain injury

**Dizziness and balance problems are common after a brain injury. This can result in problems with movement even when there is no loss of function in the limbs themselves.**

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## What causes balance problems and dizziness after a brain injury?

Our sense of balance comes from the interaction of three systems in our body:

- eyesight,
- the vestibular system (inner ear), and
- proprioception (the brain's ability to sense where parts of our body are spatially).

Problems with balance can stem from damage to any parts of these systems, and a brain injury can affect all three. For example the trauma of a traumatic brain injury (TBI) can damage the inner ear, while a stroke could affect parts of the brain responsible for our sense of balance.

Other possible causes include:

- infection or trauma to the inner ear
- low blood pressure
- medication side effects.

## Diagnosis of dizziness or balance problems

Due to this complexity, diagnosis usually involves a thorough medical examination. This may start with a doctor and could also involve physiotherapists, neurologists, neurosurgeons and optometrists. Tests may include a CT scan, MRI scan or EEG reading.

It is helpful to have a detailed list of all symptoms for the doctor or rehabilitation team. This includes what the person was doing at the time the symptoms appeared, what was happening, and the time of day. A list of medication is also important.

## Treatment options

Treatment depends on the nature of the balance disorder, and if a specific cause can be identified. If the specific cause is treatable, then that is the best option. Some conditions can be improved with dietary changes such as reducing salt, caffeine, nicotine or alcohol.

Another treatment option is vestibular rehabilitation balance retraining exercises that are sometimes combined with electrical stimulation or biofeedback to train the muscles.

Physical aids are sometimes used along with therapy, such as braces, splints or moulded shoe inserts.



Other treatments involving training the brain can include training an individual to rely more heavily on visual cues if proprioception can no longer be completely trusted.

Invasive surgical procedures that may be used can include correction of joint or limb contraction, shortening or lengthening limbs or, in some cases, severing proprioceptive nerves to prevent contradictory feedback.

None of these techniques, as useful and effective as they can be, should happen in isolation. Environmental modifications are also desirable. These can include the addition of handrails in the home or the use of a walking stick or frame, and safety education.

### **Coping strategies for people with brain injury experiencing balance problems**

If a person is waiting to access treatment, or if it is taking time to work, there are ways to improve quality of life in the meantime:

- avoid alcohol and other drugs
- get out of bed slowly and allow time to adjust to a changed body posture
- stop the moment dizziness starts and sit or lie down until it passes
- avoid or slow down movements that unbalance you
- sleep without a pillow to keep your neck and backbone perfectly straight
- cut down on salt as this can increase the sensation of vertigo
- pinpoint times or conditions when dizziness is worse and then avoid those conditions or schedule activities to avoid those times.

### **References and further information**

<https://www.nidcd.nih.gov/health/balance-disorders>

<https://www.bcm.edu/healthcare/care-centers/balance-disorders/conditions/benign-paroxysmal-positional-vertigo>