

The balance organs and dizziness

Contents

- 3 **What is inside your ear?**
- 4 **What keeps you balanced?**
- 4 **How do the balance organs work?**
- 5 **How do the balance organs control your eye movements?**
- 7 **Why do you feel dizzy?**
- 7 **What medical problems can affect your balance organs?**
- 8 **What can you do to get better?**
- 11 **Useful sources of information**
- 11 **Contact details**

This information leaflet aims to answer some of your questions about your dizziness or balance difficulties. Several medical conditions can cause these unpleasant symptoms. This leaflet is about the most common cause of dizziness and balance difficulties – a problem within your ears. This problem may be helped by physiotherapy. If you have any questions or concerns, please speak to your doctor or physiotherapist.

What is inside your ear?

Inside each ear there is a chamber called the inner ear.

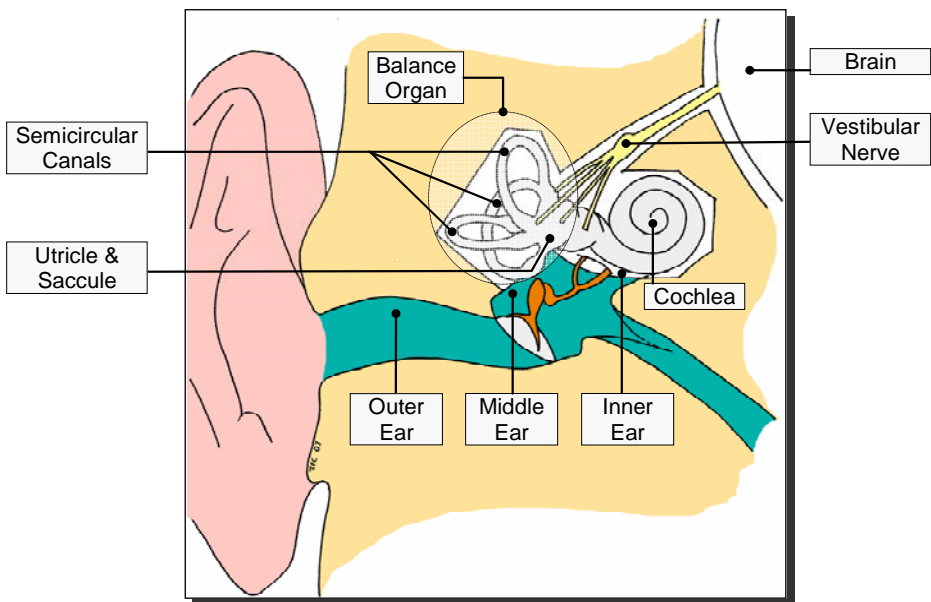
This chamber has two parts:

1. The **cochlea** which is used for hearing.
2. The **balance organ** which is used for balance and steadying your vision (eyesight).

The balance organ is made of three very narrow tubes called the **semicircular canals**. These are attached to two small pouches called the **utricle** and **saccule**.

Together, these structures contain fluid and tiny hairs which detect head movement and balance.

There are two balance organs – one in each ear. They work together and are often known as the **vestibular system**.



What keeps you balanced?

Your sense of balance comes from three things:

- 1. Vestibular system** – the balance organs inside your ears.
- 2. Eyes** – your vision gives you an image of your surroundings and how balanced you are.
- 3. Body sensors** – your muscles and joints sense what position your body is in.

Your brain compares the above three sources of information to make sure you keep balanced. So, if you have problems with either of your vestibular system (balance organs), eyes or body sensors, you may have balance difficulties. Dizziness, blurred vision or balance difficulties are usually caused by problems with your vestibular system.

How do the balance organs work?

The tubes and sacs within the balance organs (vestibular system) are filled with fluid. When you move your head, this movement will cause the fluid and tiny hairs inside the balance organs to move. Signals are then passed along a special canal called the vestibular nerve to your brain. Your brain measures the movement of the hairs to quickly work out the direction and speed of your head movement. It then uses these measurements to control your body movements to help keep you balanced.

Your brain also adjusts your eye movements so that you do not have blurred vision or feel dizzy.

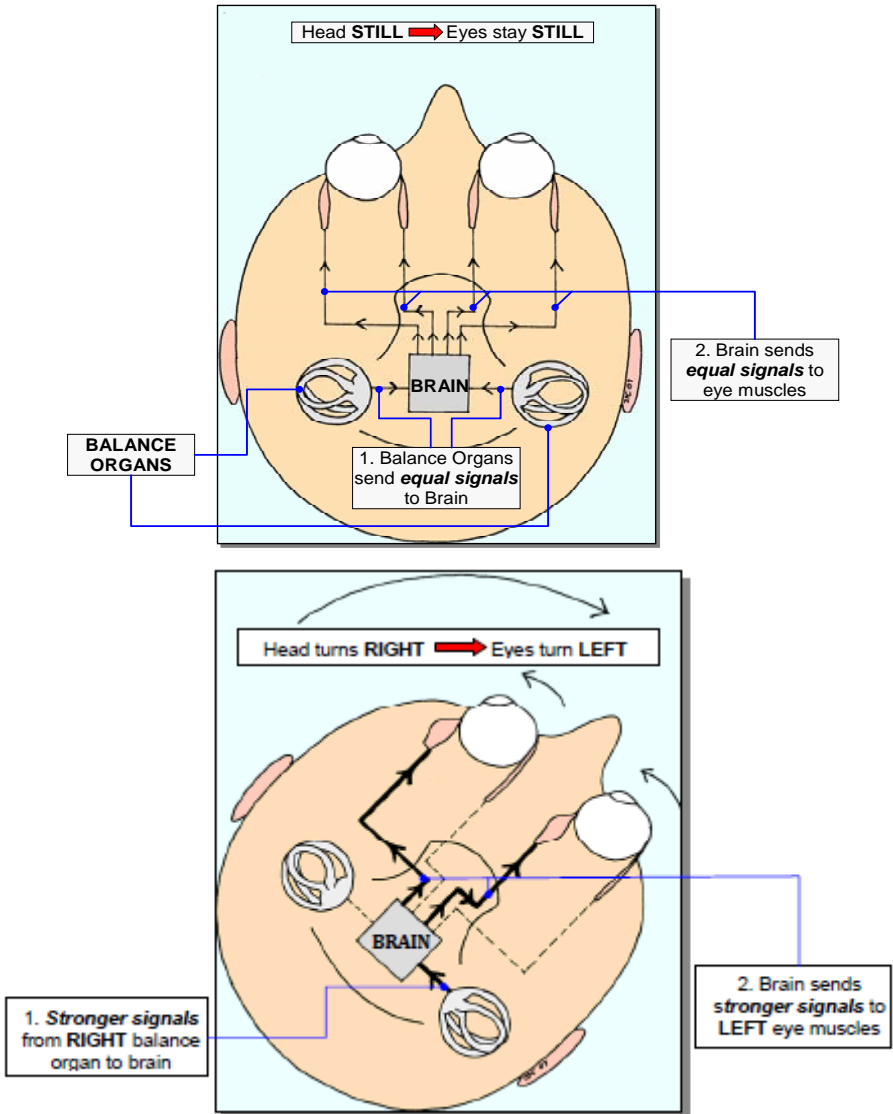
How do the balance organs control your eye movements?

The two balance organs which make up your vestibular system are constantly sending signals to your brain about the position of your head. When your head is still, the signals from the right and left inner ears are equal and so your brain does not move your eyes.

When you move your head however, opposing messages are sent to your brain. This is because your two balance organs are on opposite sides of your head. When your brain gets opposing messages, it responds by moving your eyes away from the direction of the head movement.

For example, if you turn your head right, the balance organ in your right inner ear sends strong signals but your left balance organ sends weak signals. The brain uses these opposing signals to work out that your head has turned to the right. It responds by moving your eyes to the left so that your vision does not blur. This response is an important reflex which helps us keep focused on people or objects – even when our head is moving. For example, you can look at the clock while walking through the station to catch a train.

The following images show what happens to your balance organs (vestibular system) when you turn your head right:



Why do you feel dizzy?

If there is a problem with one of your balance organs, it will send weaker signals to your brain. This will disrupt the way in which your two balance organs usually work together. They will no longer send equal signals when your head is still and opposing signals when your head is moving. Your brain will be unable to calculate the direction, speed or angle of your head movements and this can make your brain think that your head is turning or moving when it is still.

The altered signals from your two balance organs may also cause incorrect reflex eye movements. This can cause you to feel a sense of spinning, tilting or unsteadiness. The brain also gets confused by the differing information coming from your balance organs, eyes and body sensors. This is called a **sensory mismatch** and it adds to your feeling of dizziness and imbalance.

What medical problems can affect your balance organs?

There are several problems that can affect one or both of your balance organs. For example, you may have been diagnosed with a viral infection, Benign Positional Vertigo or Meniere's disease. Your physiotherapist can give you more information on these and other conditions.

What can you do to get better?

Over time, your brain will learn to cope with the altered information it gets from your vestibular system. One way it does this is by adjusting the weaker or altered signals from the affected balance organ. The two balance organs can then work together as normal. This natural process of recovery is called **vestibular compensation**. It will help to reduce your sensation of dizziness but it can take days, weeks or even months to do so.

To help vestibular compensation, it is good to keep moving your head and body normally and not to become less active. Sometimes dizziness does not go away completely and this is when physiotherapy may be helpful.

Your physiotherapist will encourage you to keep active and will give you exercises to do. The exercises involve movements of your eyes, head and body and are designed to cause your dizziness and unsteadiness in a safe way. By safely causing your symptoms, the exercises will help your brain learn to cope with the altered information from your balance organs. The more you practice, the easier your exercises will become. This will help your dizziness and balance problems continue to get better.

Useful sources of information

For more information about certain vestibular disorders you can contact **Action on Hearing Loss**.

t: 0808 808 0123

t: 0808 808 9000 (textphone)

e: informationline@hearingloss.org.uk

w: www.actiononhearingloss.org.uk

Contact details

If you have any questions or concerns, please contact your physiotherapist on 020 7188 8256, Monday to Friday, 8.30am to 5.30pm. Out of hours, please leave a message and a member of staff will call you back in working hours; alternatively please contact your GP or NHS 111.

For more information leaflets on conditions, procedures, treatments and services offered at our hospitals, please visit www.guysandstthomas.nhs.uk/leaflets

Pharmacy Medicines Helpline

If you have any questions or concerns about your medicines, please speak to the staff caring for you or call our helpline.

t: 020 7188 8748 9am to 5pm, Monday to Friday

Your comments and concerns

For advice, support or to raise a concern, contact our Patient Advice and Liaison Service (PALS). To make a complaint, contact the complaints department.

t: 020 7188 8801 (PALS)

e: pals@gstt.nhs.uk

t: 020 7188 3514 (complaints)

e: complaints2@gstt.nhs.uk

Language and Accessible Support Services – If you need an interpreter or information about your care in a different language or format, please get in touch:
t: 020 7188 8815 **e:** languagesupport@gstt.nhs.uk

NHS 111

Offers medical help and advice from fully trained advisers supported by experienced nurses and paramedics. Available over the phone 24 hours a day.
t: 111

NHS Choices – Provides online information and guidance on all aspects of health and healthcare, to help you make choices about your health.
w: www.nhs.uk

Get involved and have your say: become a member of the Trust

Members of Guy's and St Thomas' NHS Foundation Trust contribute to the organisation on a voluntary basis. We count on them for feedback, local knowledge and support. Membership is free and it is up to you how much you get involved. To find out more, and to become a member:

t: 0800 731 0319 **e:** members@gstt.nhs.uk
w: www.guysandstthomas.nhs.uk/membership

Leaflet number: 2237/VER3

Date published: October 2016

Review date: October 2019

© 2016 Guy's and St Thomas' NHS Foundation Trust