

# The Vestibular System

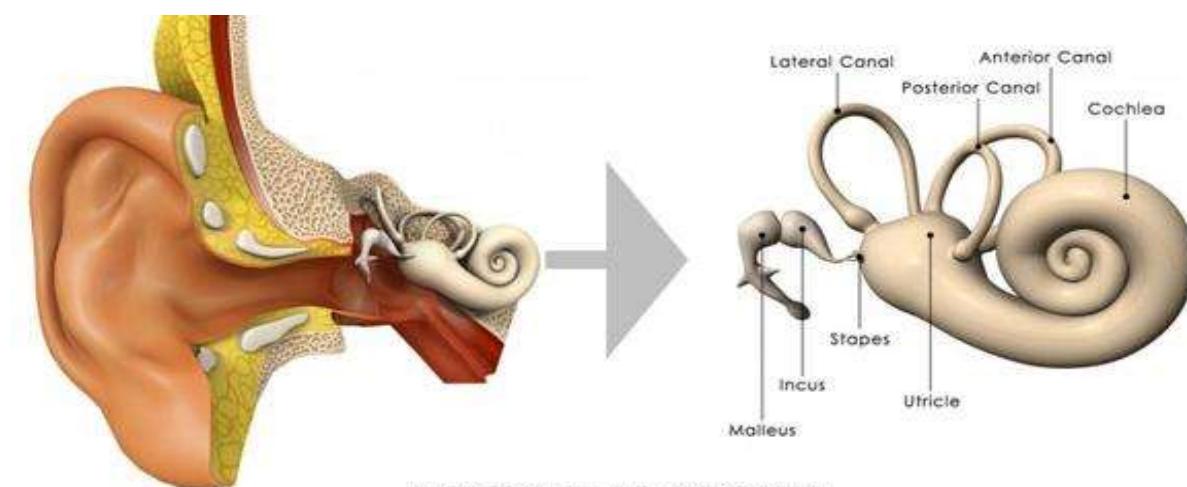
What is it? What can go wrong? How can Physio help?

The **VESTIBULAR SYSTEM** sits within your inner ear.

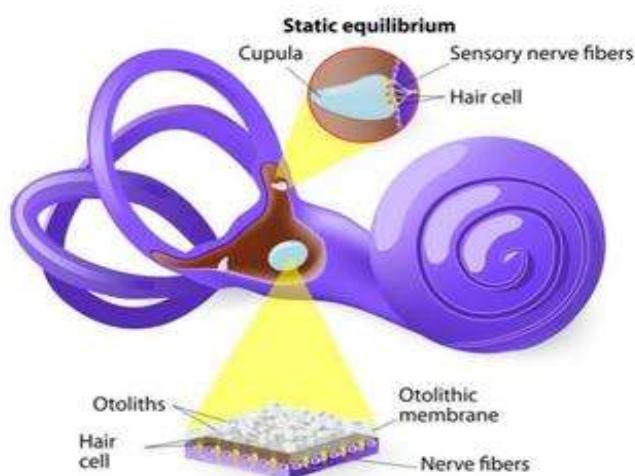
It consists of three **semi-circular canals** connected to the **utricle**.

The **semi-circular canals** are filled with fluid, so they act rather like spirit levels: when you move your head, the fluid moves and pushes tiny hairs at the base of the canal. These hairs are attached to nerves which send messages to the brain about your head movement.

The **Utricle** contains a gel substance with tiny calcium fragments in the top layer (Otocanea). When you move up or down, or change speed, the gel squashes and stretches with the weight of the otocanea. This stimulates tiny hairs embedded in it. These, in turn, stimulate the nerves to send messages to the balance centre in the brain. This is how you sense acceleration and deceleration.



## VESTIBULAR SYSTEM



## What can go wrong?

There are many possible causes for vestibular dysfunction. I have listed a few of the more common problems:

- Otocanea in the Utricle can get dislodged into the semi-circular canals. Otocanea move at a different speed to the fluid and will continue to stimulate the hairs after you have stopped moving - giving the illusion that you are still moving, or that the world is moving around you. This is called **Benign Paroxysmal Positional Vertigo (BPPV)**. This is characterised typically by intermittent vertigo triggered by particular movements. It usually lasts for a few seconds or up to a minute at a time.
- **Vestibular neuritis or labyrinthitis** is caused by a virus which creates inflammation in either the vestibular nerve (neuritis) or the whole inner ear (labyrinthitis). This causes sudden and debilitating vertigo and may also be associated with sickness and flu like symptoms. The sufferer may be bed-bound for several days but will normally make a good recovery over 4-6 weeks.
- **Meniere's is** caused by pressure changes in the fluid within the inner ear. Sudden attacks of vertigo are usually accompanied by some loss of hearing. Attacks can last for hours and are unpredictable. This is a progressive disease. Sufferers should be under the care of a specialist ENT clinic to help with symptom management.
- **Migraine Associated Vertigo (MAV).** Often associated with headache, light and sound sensitivity and other migraine symptoms. Confusingly, it is possible to have migrainous vertigo without a headache, so this can make diagnosis difficult.

## How can physiotherapy help?

The most important thing is a thorough, detailed assessment. I will ask questions to understand how your problem is affecting you, and to check for any symptoms that might suggest an alternative diagnosis. I will look at how well your eyes and ears are working together while you move your

head. I will also assess your balance while standing, walking and turning. I may do a more detailed assessment of your neck, or tests for Benign Paroxysmal Positional Vertigo (BPPV), depending on your symptoms.

In addition, I will screen for any signs that the problem may be related to the nervous, or circulatory systems, rather than the inner ear. In this case I would recommend further investigation through your GP before commencing any physiotherapy.

If it is clear that the problem is vestibular there are various interventions which may be helpful:

- **Particle repositioning manoeuvres** for BPPV - aimed at moving the otocanea back into the utricle where they belong.
- Eye and head exercises to help retrain the system; this can be helpful if, for example, you have not recovered fully from labyrinthitis, or you have other chronic inner ear problems not mentioned here. This is called **vestibular rehabilitation**.
- **Exercises** to improve your balance. If there is permanent damage to the vestibular system, I can also recommend exercises that help you make better use of your other senses to compensate.
- **Manual therapy** for your neck, if this is contributing to your symptoms.
- **Advice** on how to manage migraine-associated vertigo; some of the above treatments may also be helpful for this.