

Ears explained

The ear has two important roles. It is our organ of hearing and our organ of balance. The lining of the ear canal is coated with wax, a type of lubrication that stops the tissues from drying out.

The parts of the ear

The ear is made up of three different parts:

- **The outer ear** - this is the part you can see. Its shape helps to collect sound waves.
- **The middle ear** - separated from the outer ear by the eardrum, the middle ear contains tiny bones. These amplify the sound waves.
- **The inner ear** - sound waves are changed into electrical impulses and sent to the brain. The sense organ of balance is located here, too.

Sound is vibration

The vibration of air molecules makes up a sound wave. These sound waves hit the outer ear and are funnelled into the middle ear, where they vibrate the eardrum. The three tiny bones lying on the other side of the eardrum pick up the vibration and pass it on to the inner ear. There, the vibration is picked up by a small, spiral-shaped organ called the cochlea. Hairs on the cochlea sense the vibration and pass on the message to the brain via the cochlear nerve.

The sense of balance

Inside the inner ear is a series of canals filled with fluid. These canals are positioned at different angles. When the head is moved, the rolling of the fluid inside these canals tells the brain exactly how far, how fast and in what direction the head is moving. Information from these canals is passed along to the brain via the vestibular nerve, which lies next to the cochlear nerve. If the brain knows the position of the head, it can work out the position of the rest of the body.

Feedback from other body parts

The inner ear is the main organ of balance, but the body also relies on information from the eyes and from the muscles themselves (called 'muscle sense' or kinaesthesia). The brain uses the inner ear, the eyes and muscles to pinpoint the position of the body at all times.

Common problems

Some common problems of the ear include:

- **Deafness** - either mild or profound, due to injury, disease or ageing.
- **Ear infection** - inflammation, often caused by bacteria.
- **Motion sickness** - can be caused by conflicting information from the eyes and inner ear (for example, if you are reading while in a moving vehicle).
- **Tinnitus** - a sensation of a ringing sound in the ears.
- **Vertigo** - dizziness, caused by an infection of the inner ear.
- **Wax** - a build-up of wax can cause temporary deafness.

Where to get help

- Your doctor

- Your local chemist.

Things to remember

- The ears are organs of hearing and balance.
- Sound waves are picked up by the ear, converted into electrical impulses and sent to the brain.

This page has been produced in consultation with, and approved by:

Royal Victorian Eye and Ear Hospital (RVEEH)

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