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HOW THE EAR WORKS

Learn how the ear works so we can perceive sound and keep our balance.

ANATOMY OF AN EAR

Understanding how the ear works can help people better understand deafness. You might like to share this information with your child's club, coach, or instructor.

Parts of the ear
Our ears are divided into three main parts.

The external (or outer) ear

Sound travels through the external ear and causes the eardrum to vibrate.

The middle ear

Vibrations from the eardrum pass into three very tiny bones (called the ossicles) in the middle ear and cause them to vibrate.

The inner ear

Vibrations from the small bones in the middle ear cause small waves in the fluid inside the cochlear. The cochlear is very complex and spiral in shape, like a snail's shell. It contains about 24,000 tiny hair cells. These hair cells are arranged so high frequency sounds are detected at one end of the spiral and low sounds at the other end.

Each hair cell can detect one frequency. They are connected to a nerve fibre and the movements produce electrical activity in the auditory nerve. The electrical activity travels along the auditory nerve to the brain. Once the brain receives the nerve impulse, it is interpreted as sound.

The process of converting sound waves to a nerve signal that is sent to the brain and interpreted as sound is called sound transduction.

What about balance?

Balance is controlled by the semicircular canals in the inner ear. They are filled with fluid and the fluid moves when a person moves. This signal, plus information from the other senses, is sent to the brain to enable us to keep our balance.

ANATOMY OF AN INNER EAR