

Discover your hearing



PHONAK

life is on

The world is calling you back

Why wait?

The ability to hear is such an integral part of life that most people take it for granted. Hearing is a gift, but do we place enough value on it? Hearing loss is the world's single most common disability. Correcting it can result in a significant improvement in quality of life.





Benefits of hearing well with both ears

Why we have two ears

Our two ears act as a type of receiving station for the brain. One ear is directed to the left, the other to the right. When the ears pick up a sound, the brain calculates the angle from which the sound has arrived. The brain has this capability since the closest ear receives the sound microseconds earlier than the other ear.

With only one ear functioning properly, origin of sound is impossible to determine. Even more importantly, the quality of sound is better when it is heard with two ears. Speech received by only one ear sounds flat and devoid of its rich nuances. In most cases, two hearing instruments are fitted to those with impaired hearing in both ears.

Function and dysfunction of the ear

The ear is a very complex organ comprising of three parts: the outer ear, the middle ear and the inner ear. Hearing loss can result from damage to any of these three parts. Hearing loss resulting from a problem located in the outer or middle ear is called a conductive hearing loss.

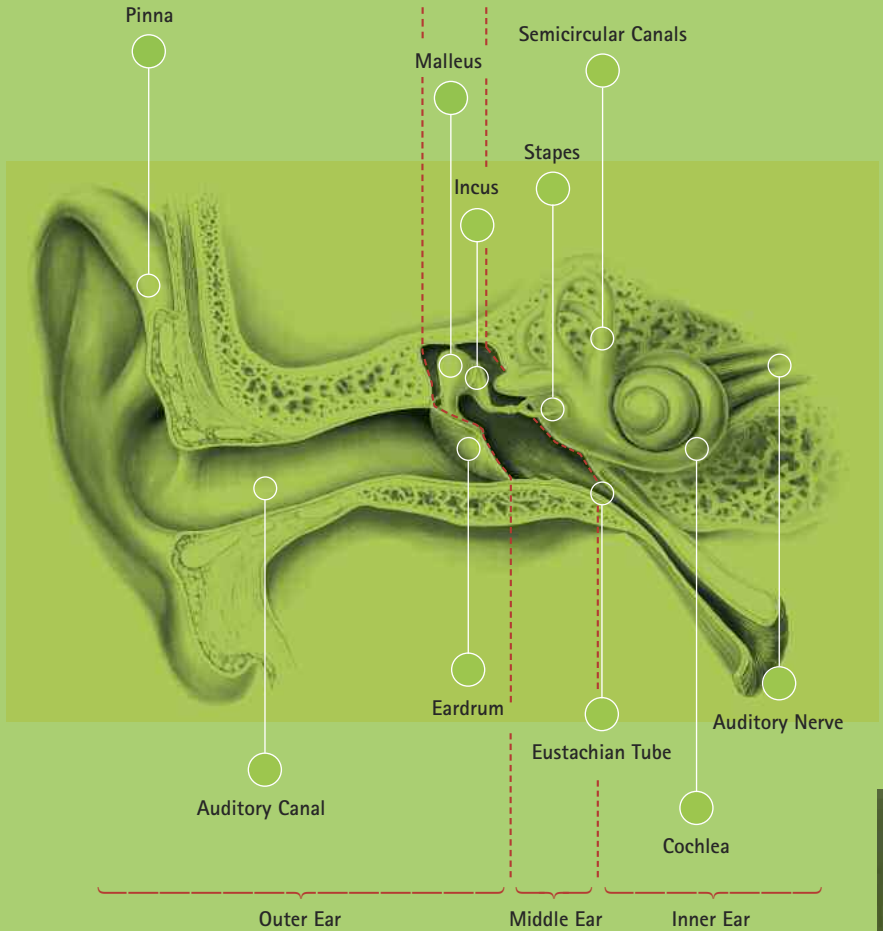
From the inner ear the auditory nerve transmits information to the brain. Hearing loss caused by a damaged inner ear is called a sensorineural hearing loss. A combination of a conductive and sensorineural hearing loss is known as a mixed hearing loss.

In order to gain a better understanding of hearing loss, it is important to know how the ear functions.





Parts of the ear



How the ear functions



The outer ear

The outer ear includes the pinna, the auditory canal and the eardrum. These structures channel sounds from the environment into the middle ear. The pinna helps to gather sound waves and the auditory canal directs them to the eardrum.



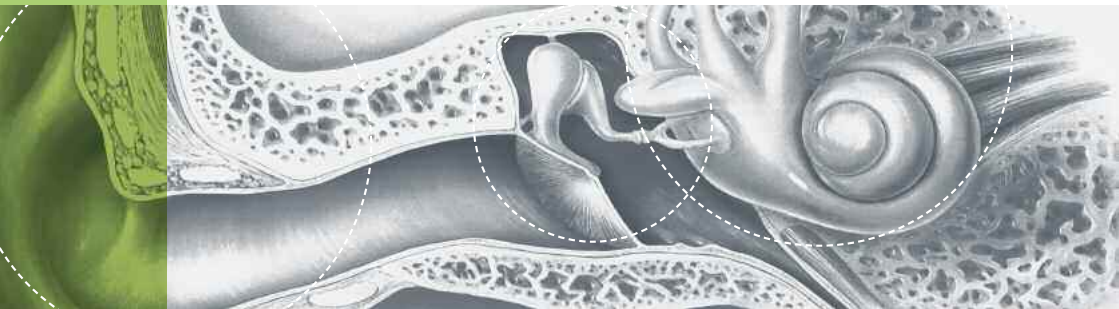
The middle ear

The middle ear is an air-filled cavity that contains the smallest bones in the human body – the malleus, incus and stapes, which are connected to the eardrum and the inner ear. The Eustachian tube keeps the air pressure in the middle ear equal to that of the surrounding environment.



The inner ear

In the inner ear, sound is processed by the cochlea, while information affecting balance is processed by the semicircular canals. There are tiny hair cells along the entire length of the fluid-filled cochlea. When the fluid in the cochlea is displaced by sound waves, the hair cells bend. This triggers a chemical response that transmits the message to the area of the brain in charge of processing and interpreting what we hear.



Causes of hearing loss in...

...the outer ear

Typical problems include excessive accumulation of earwax and infections of the auditory canal (e.g. 'swimmer's ear').

...the middle ear

Perforation of the eardrum, infection or fluid in the middle ear and otosclerosis (a calcification around the stapes limiting its ability to move) are the most common causes. Many outer and middle ear problems can be treated successfully with medication or surgery. In cases where treatment is not effective, remaining hearing loss can usually be helped by using hearing instruments.

...the inner ear

The majority of hearing problems result from damaged inner ear structures. Typical causes are the natural aging process, excessive exposure to noise, medication that is toxic to the auditory system and head injuries. As a rule, this damage cannot be reversed but can be largely overcome with hearing instruments.

The degree of hearing loss varies from person to person

Between the two extremes of hearing well and hearing nothing, there are many degrees of impairment. The terms used to describe the degree of hearing loss are mild, moderate, severe and profound. Most hearing losses are mild to moderate.

What does the degree of hearing impairment mean?

Mild hearing loss

Unable to hear soft sounds and difficulty understanding speech in noisy environments.

Moderate hearing loss

Unable to hear soft and moderately loud sounds, considerable difficulty in understanding speech, particularly with background noise.

Severe hearing loss

Unable to hear most sounds. Speakers must raise their voice to be heard. Group conversation is possible only with considerable effort.

Profound hearing loss

Some very loud sounds are audible but communication without a hearing instrument or through sign language is very difficult.



The impact of hearing loss on speech understanding

Hearing loss in the inner ear (sensorineural hearing loss) initially affects high frequency sounds. These high-pitched sounds such as "s", "f", "sh" and "t" play a key role in our ability to understand speech clearly. This is why a person with this type of hearing loss will often say, "I can hear but I don't understand what's being said."

Hearing loss drastically reduces the ability to understand speech. These are sentences to simulate of what a hearing loss would sound like:

I went to the zoo yesterday

I went to e zoo yesterday

I wen to e zoo yesterday

n to e zoo ye terday

e oo e erday

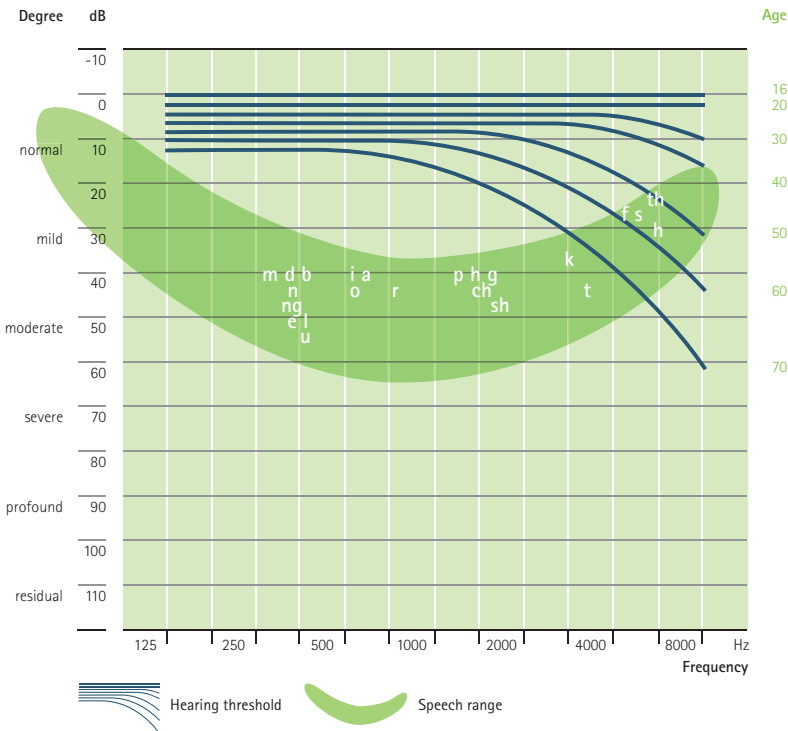
The average perception of sounds among men of various ages shows a decrease, particularly in the high frequencies, as age increases. The point where the speech range and hearing threshold cross indicated that these sounds cannot be heard, particularly in a noisy environment.

The hearing test

A hearing test is conducted using an audiometer. The test precisely measures the extent of the hearing loss. As the extent of the loss may be different in each ear, they are tested separately using headphones. Both the perception of sound and the understanding of speech are evaluated.

Speech Range

Speech consists of vowels and consonants in different frequency (pitch) and loudness categories. A healthy ear easily registers these sounds. When hearing loss is present, a louder level is required. Depending on the degree and progression of the hearing loss, these elements of speech are softer than the normal hearing threshold and are not audible, at least not when spoken at a normal level.





Life is on

We are sensitive to the needs of everyone who depends on our knowledge, ideas and care. And by creatively challenging the limits of technology, we develop innovations that help people hear, understand and experience more of life's rich soundscapes.

**Interact freely. Communicate with confidence.
Live without limit. Life is on.**

