



## Improving your hearing by listening

### The Flow of Sound

There are several obstacles that can affect the flow of sound from its reception at the outer ear to its decoding in the brain. The mobility of the eardrum can be hampered by an infection, the anvil and stirrup can be 'fused' together, wax or polyps may be present; these are just a few of the possible causes of impaired hearing. Most of these more technical 'defects' can be cleared or operated upon and over the last few years some spectacular successes have been achieved. But all these treatments mainly affect the middle ear. Problems with the cochlea, with the inner ear, are much more complex to solve.

---

### The influence of environmental stress on the way we hear

Unfortunately the ear does not have the equivalent of an eye lid to block out those unwanted sounds. The draining effect of traffic and industrial noise will take its toll and become much too dominant. That is why a few hours in town to do some shopping can be so much more tiresome than a few hours hike in the hills. It's a different acoustic atmosphere and we intuitively respond to that difference, even on an emotional level.

---

### We may hear but not choose to listen

As we grow older, the upper limit at which the ear can perceive sounds drops to under the 10.000 Hz level. But this deterioration is not merely due to our age. A study into the effect of noise pollution brought to light that 60 – 70 year old people living in industrialised areas or cities are much worse-off than their counterparts in the so called 'undeveloped' parts of the world. Only 15% could still perceive frequencies up to 12.000 Hz whereas in the areas where there is little or no noise pollution 85% of people in the same age group could hear to that level.

---

### Sound affects the nervous system and thus the mind

The ear protects against loud or disturbing sounds by increasing the tension of the middle ear muscles. Those muscles are the switch and monitor which control the transfer of sound to the inner ear and ultimately to the brain. If those muscles are continually encouraged to be tense they may become rigid. The ear is a sense of balance - in a multi faceted way. If there is too much strain and on a continuous basis, the regulation of the internal cochle /vestibule chamber will not be harmonious and the fine perception of high sounds will diminish while the lower sounds are augmented. The opposite can be true as well in those cases where low sounds are eliminated and the higher ones accentuated which in psychological terms would mean that the person loses their sense of body awareness and might become more accident prone. This is not as strange as you may think, since it is the vestibule which monitors the interaction between body and environment, whether static or dynamic.

Improving your hearing will enhance your listening skills, your memory, your posture, energy levels and even your eye sight. Too good to be true? Not necessarily! When we grow older it is just as important to maintain physical fitness by walking, swimming or going to the gym, as it is to stay mentally alert by exercising the brain. Although it is often taken as inevitable, a decline in memorisation, concentration and creativity is not necessarily part and parcel of old age at all. Yet, to keep those billions of brain cells active they need energy to function well. Dr. Tomatis contends that the brain requires two billion stimuli a second for at least four hours a day in order to function at maximum potential. Listening Training provides the nervous system with the energy it requires to improve general muscle tone, posture and, once the role of the vestibule is fully integrated, the cochlea - the area where the high frequency sounds are perceived and analysed - will 'feed' the brain with the necessary energy to stay alert and active.

A hearing loss of between 20 to 30 decibels is often perceived as acceptable. Yet those lost decibels can create an auditory processing disorder that may affect the brain in the areas of comprehension, attention span and memory. So some of the side effects that accompany the process of growing older may be interrelated and caused by a lack of positive (upper tone) stimulus of the brain. Pensioners who do the Listening Training report that they feel stimulated to make more out of their days. They sleep less but better, take up new hobbies, get around and enjoy their retirement as an often unexpectedly rewarding part of life.

---

## Tinnitus

Nearly 20% of the Western world will experience tinnitus at some stage in their lives, and one in four seek medical help because they can't bear the persistent din. Tracking down a physical cause is tricky. Early ideas about the causes focused on the cochlea, the coiled organ of the inner ear where sounds are converted into nerve impulses. Most people with tinnitus also have hearing loss or are more sensitive to sounds, and researchers concluded that these were all symptoms of a damaged cochlea. The trouble is that people without a cochlea can also have tinnitus - even cutting the nerve from the cochlea does not stop the ringing in most cases. Nowadays the focus is more on the auditory pathways. Just like other brain pathways, the auditory pathways never completely shut down. Even in silence, the auditory system is continually active. A random 'firing of neurons' creates a kind of background noise that has to be filtered out before the brain registers it as sound. Tinnitus may be caused by a breakdown of this filtering system. That might also explain why tinnitus worsens in a quiet environment - there is less noise from the outside world to swamp the background buzz. Yet the auditory pathway does not run in isolation from cochlea to cortex. Other areas of the brain can link up with it and modify the signals as well.

Neurons deprived of an appropriate input from the cochlea may start sprouting in other directions and make new synapses, which would mean that what the brain 'hears' may not even travel directly up the auditory pathway. Connections with the limbic and autonomic systems could help explain why anxiety and stressful moods increase the sensation. In short, the perception of sound can involve every functioning neuron in the auditory pathway as well as inputs from the limbic system and the autonomic nervous system. The disputes over the causes of and treatments for tinnitus seem set to rumble on for a good while yet. It is still early days for a medicine as a cure. The Listening Training has proven to be effective in many cases, mainly because of the reduction of stress to the overall nervous system. People are often not aware how much anxiety and stress they carry around with them day after day. And even if the tinnitus does not totally disappear, it does become much easier to bear when you are relaxed and have learnt to redirect your focus to more pleasurable things.

---

## Vertigo

Listening Training sits at the junction of listening and communication. To listen well means to be in communication, not only with the outer world, but also with oneself. According to Alfred Tomatis, people affected by Meniere's Vertigo are in some way or another in conflict with themselves and/or their environment. He considers Vertigo to be a physical response to emotional tensions. Sometimes these tensions are obvious and due to direct circumstance. They might also have been growing gradually over many years, unsuspected until the pressure breaks. On a physical level, the emphasis is on the vestibular - that part of the inner ear that has to do with posture and balance, and that when disturbed can trigger various forms of giddiness. Some clients may develop a wish to talk and address the issues involved. Yet, if they prefer not to, clinical evidence has shown that the Listening Training will still help them regain their confidence and peace of mind, by training the ear to function properly so that Vertigo attacks decrease and finally cease altogether.

---

## Deafness

It is quite common among people who start losing their hearing to be afflicted by strong vibrations, particularly coming from their body. These bodily noises would normally be balanced out if the inner ear were functioning properly. But damage to the sound transmission system or the sensory cells in the inner ear may create such a disturbance that this no longer happens. It is evident that the ear is much more than a collector of outside information - it is involved in the proper functioning of the nervous system, playing a key role in cortical charge and hence in one of the most characteristic of human traits: the ability to communicate. Any hearing impairment or deafness should at least be treated with great input of energy to the brain in order to avoid a withdrawal process from the world outside.

Although the Listening Training cannot be seen a cure for deafness, its stimulation of the vestibule is of great importance and we have achieved good results in stabilising and improving hearing deficits. Head control, posture and a right laterality are also stimulated by this technique. Listening Training in fact includes the whole body as an instrument for communication.