

## **‘Care for your Ears’**

‘Care for your ears’ (‘Zorg voor je Oren’) is the title of a prevention project in the Netherlands for the piano branch. Research among 90 piano tuners has been done on their workload and their hearing. Research results force us to look deeper into the matter of sound and how we use it and have to work in it.

**Hearing is becoming a hot item** for those who are professionally active in music: musicians, sound engineers, piano technicians, etc. People using loud music recreationally (walkmans, parties, concerts) are more and more becoming a risk group too.

Even though the subject should be of primary concern - especially for professionals - it is strangely still avoided by most. Afraid to be confronted with a devastating handicap, many turn away from the reality of hearing loss and less known ‘other disorders’ like tinnitus (ringing of the ears), hyperacusis (oversensitivity), menière (dizziness), dyplacusis (split pitch perception). It is my opinion that professionals also hold some responsibility towards their clients, who are mostly using sounds for recreational purposes. And also often too loud...

**Hearing disorders among professionals.** Some figures: 74% for classical orchestral musicians; 55% for pop musicians; an estimated 50% for sound engineers; more than 50% for piano tuners. Compare this against 15% for the average population. Hearing impairment compared to the ‘other disorders’ occurs approximately 50/50.

Hearing impairment mostly develops gradually. Note that hearing impairment develops most rapidly in the first years of ‘over-exposure’. The ‘other disorders’ seem to occur more randomly. One should not forget however that for instance tinnitus, hyperacusis and menière more often lead to the disability for professionals to do their work than hearing impairment does. Cases also exist of instant hearing loss and instant tinnitus and/or hyperacusis. These traumatic disorders should be treated immediately (sometimes even within two days).

Hearing disorders are often multi-causal. High levels of sound are not the only factors involved; other factors might also contribute in developing hearing disorders: genetic defects, damage to the ear (trauma or operation), ear infection, allergy to food or medicine, stimulant foods like coffee etc., stress, high muscle tension in neck and back region, dislocation of vertebrae (often the case when working in asymmetrical postures like violinists and piano tuners do), tooth clenching, (phobic) irritation to sounds, migraine, etc....

**Acoustic Peak Levels.** We still do not include effects of impulse peak noise and high energy in small frequency spectra when calculating ‘safe levels’. Research on impulse peak noise claims that 5 - 12 dB should be added to measurements when impulse noise is involved. Our research among piano tuners confirms this. Furthermore, the so-called ‘safe levels’ of sound like 80 dB(A) for a work day of 8 hours, 5 days a week might be ‘unsafe’ if the exposure is only measured at work. Unintended reflections and over-resonance of sound in work and free time conditions, a lot of car driving (with open window!), noisy hobbies, going out to the movies and parties all add up and a ‘safe level’ is easily exceeded.

**Ever-louder instruments.** In wartime, we used musical instruments to scare off the enemy with terrifying loud noises. Nowadays, it is the sound track that makes the horror movie frightening. We use these kinds of high sound levels to play with our fears and instincts of flight or fight. We love it. It is a kick. It is an addiction. Or we are unwillingly exposed to the same high levels of sound in car traffic, parties, concerts, the movies, etc. And in our work...

Ongoing commercial influence has made musical instruments increasingly louder in the past 300 years. A trend for most western musical instruments: around 5-7 times louder. Playing a clavichord produces an average ‘whisper mode’ of 65 dB(A), a forte piano 75 dB(A), a modern piano 85 dB(A) and a grand up to 95 – 100 dB(A). And that is without adding the ‘extra’ for impulse noise.

Get the picture: compare string tension between a forte piano from 1800 (1,500 – 2,500 kg) to the string tension of a modern grand (18,000-25,000 kg). Be aware that our ears have not become ten times stronger...

I like to finish with some quotes from the piano industry: “*Louder instruments sell better. It is easy for us to make higher-quality pianos, but we don’t do so because we would not sell them. They would sound softer...*” and “*Since the seventies most pianos have become twice as loud...*”

It is mainly through ignorance and addiction to loud sounds, boosted by commercial interest that we now find ourselves mainly in sound environments, which are damaging to our ears.

Since 2001, Hans Troost (musician, piano tuner and assistant sound engineer) has taken the initiative to have research done in the piano branch in the Netherlands and help out in prevention programmes for mainly musicians and piano technicians. Research has been done by Wim Soede from the Leiden University Medical Centre.

More articles and research for musicians and piano technicians on sound and hearing problems can be found on: [www.oorbewust.nl](http://www.oorbewust.nl)

For questions and suggestions please send an e-mail to: [info@oorbewust.nl](mailto:info@oorbewust.nl)