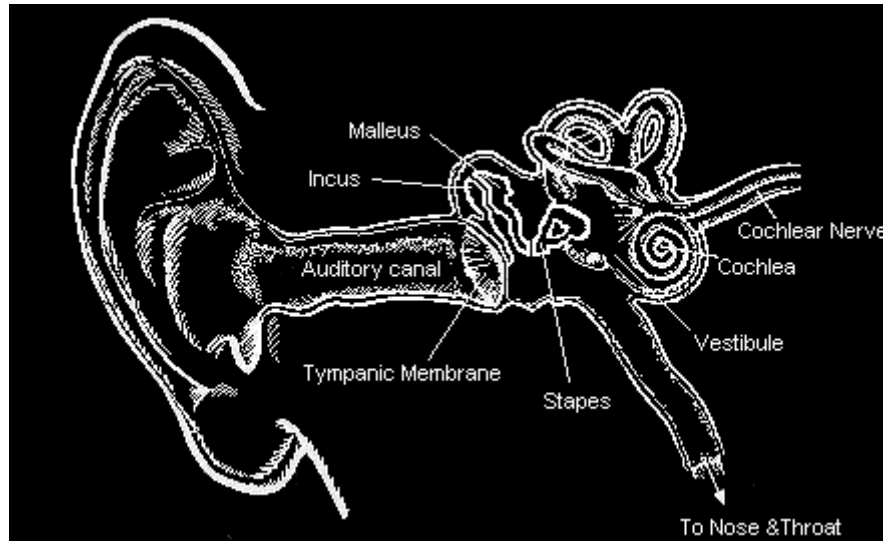


WHAT LOUD MUSIC DOES TO YOUR EAR



Physiology of the Ear and Hearing

The ear has three areas: the outer (visible part of the ear), middle, and inner ear. A thin membrane, called the eardrum (tympanic membrane), divides the middle and outer ear. When we hear, sound vibrations, or sound waves, funnel through the outer ear and down the ear (auditory) canal, where the sounds hit the eardrum, and cause the eardrum to vibrate.

These vibrations are passed through the three small bones in the middle ear - the malleus (hammer), incus (anvil), and stapes (stirrups). From the middle ear, the sound vibrations are transmitted to the inner ear (vestibule). Tiny hairs in the cochlea (a snail-shaped organ in the inner ear) transform the sound vibrations into nerve impulses. The impulses are transmitted to the brain through the auditory (cochlear) nerve.

Noise and Hearing Loss

Excessive exposure to loud noise can damage the tiny hairs in the cochlea and lead to hearing loss. Generally, this type of hearing loss is reversible (except in some cases of a sudden, very loud noise, such as an explosion).

However, over time, repeated exposure to loud noise can cause permanent damage and hearing loss. This condition is known as noise-induced hearing loss.

Watch your hearing!

Your ears are very delicate, prolonged exposure to sound pressure levels above 85dBA will cause damage to your hearing. If you have ever been to a party or to a concert where loud music was played, you may have experienced Temporary Threshold Shift (TTS). This temporary loss of hearing can become permanent if exposure is done on a regular basis.

One way to tell if you've been exposed to excessive sound pressure levels is that you tend to hear a ringing in your ears.

Ringing in your ears, hissing, clicking or buzzing sounds all represent the effects of tinnitus, which is often a side effect of noise-induced hearing loss. Inner-ear cells are sensitive to vibrations. But if they're damaged, the ears will still record ringing or buzzing, **even when there's no sound.**

Remember, it is your high frequency hearing that deteriorates first. Think of what music would sound like if you couldn't hear anything above 10KHz: just like with a crummy old transistor radio or listening to music over a telephone (no cymbals or high pitched instruments, voices sounding deadened). Protect yourself or just turn it down!

The high frequencies are lost first, so you may have difficulty hearing high-pitched voices. Loss of high-frequency hearing makes many words sound alike, especially those containing the high-frequency sounds S or soft C, F, SH, CH or H. Words like "hill," "fill" and "sill" may sound exactly the same.

LOUD MUSIC AND HEARING DAMAGE

iPod sound level	Safe listening time
70% level	4.6 hours per day
80% level	90 minutes per day
95% level	5 minutes