February 2016 Health Notes by Evelyn Ames

Ear Buds/Earphones and Noise Induced Hearing Loss

Have you wondered how those small earbuds handed out by flight attendants on airplanes affect your hearing as well as how come they don't fit in your ears! Technological advances have made it possible for people to insert (or try to insert) these small devices into their outer ears to listen to music, book readings, or whatever while walking, sitting, flying, driving, and exercising. These personal sound systems (e.g., I-Pod, MP3) use a variety of amplification systems that come in many shapes and sizes of headphones and earphones. The devices can be worn for extended periods of time and in many locations (airplanes, gymnasiums, homes, buses). Questions we should be asking are: What are these devices doing to our hearing and what affect will long term use be on young peoples' hearing? If you can hear sound coming from a person wearing headphones or earphones, it indicates the sound is too loud and over an extended period can lead to permanent hearing loss. If you are the one wearing headphones/earbuds, the volume is too loud if someone standing near you can hear what you are listening to. If you are one of many who say the buds don't fit, then don't use them.

The National Institute on Deafness and Other Communication Disorders reports that every day people experience environmental sounds from television, radio, household appliances (vacuum cleaners. hair dryers, food processers), and traffic. Normally, these sounds are at safe levels. But sounds can be harmful when they are too loud, even for a brief time, or when they are both loud and long-lasting. Such sounds can damage sensitive structures in the inner ear and cause noise-induced hearing loss. Healthy hair cells send electrical impulses to the brain. When these hair cells are damaged by loud sound, they cannot send impulses for interpretation. Hair cells in the ears cannot be repaired or "fixed."

In general, most portable stereo music systems produce sound in the range of 95-108 dB. Decibels above 85 are consider potentially harmful to hearing. Loudness/time facts using decibel as the unit of measurement suggest that at 115 dB, damage will occur after 15 minutes of exposure per day. At 120 plus, damage occurs almost immediately. "Most MP3 players today can produce sounds up to 120 decibels, equivalent to a sound level at a rock concert. At that level, **hearing loss can occur after only about an hour and 15 minutes**." Examples of noise levels: 130 dB (jackhammer); 120 dB (jet plane takeoff, siren), 110 dB (some MP3 players, model airplane, chain saw), 106 dB (gas lawn mower, snow blower), 100 dB (hand drill), 90 dB (subway, passing motorcycle), 80-90 dB (blow dryer, kitchen blender, food processor). A simple rule of thumb is the louder the noise and the longer the exposure, the greater the chance of damaging one's hearing. Audiologists recommend no more than an hour at one time of using these devices. Give the ears a rest! Note: Those small earbud style headphones do not block outside sounds. Maybe that is why users tend to turn up the volume! Also, the harder one exercises, the higher the volume of the device. Researchers have found that people who use devices while exercising in gyms tend to turn up the volume to "shut out" noise of the equipment, noise of others, and their own huffing and puffing. They say loud music "pumps" them up.

Simple but useful hints for using bud-style headphones: decrease amount of time using them; turn down the volume; use 60:60 rule (listen to music at 60% of volume for no more than 60 minutes a day); wear older muff-type headphones or noise-reducing headphones; give ears time to recover after they have been exposed to loud noise (sort of noise detox!). Don't block out noise with noise (from MP3 or I-Pod)!

Some resources: American Speech-Language-Hearing Association: http://www.asha.org/public/hearing/Noise/
http://www.nidcd.nih.gov/health/hearing/pages/noise.aspx; http://www.cdc.gov/healthyschools/noise/signs.htm;
http://www.nhs.uk/Livewell/hearing-problems/Pages/tips-to-protect-hearing.aspx
https://www.nlm.nih.gov/medlineplus/ency/patientinstructions/000495.htm
http://www.webmd.com/children/features/hearing-loss-mp3s http://kidshealth.org/teen/safety/safebasics/earbuds.html
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