

Aging and the Earcanal

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Although the first goal of an effective hearing conservation program is to reduce noise at the source, the reality is that many workers rely on daily use of personal hearing protection devices (HPDs) to reduce the risk of noise induced hearing loss. Even a well-designed and expertly-fitted HPD may take some getting used to. For older workers, the challenge can be even greater.



According to the U.S. Bureau of Labor Statistics, approximately 20% of American workers are 65 years or older. With an aging population and workforce, many companies are now taking notice of what is required to keep their employees safe and healthy for a long working lifetime. Keys to HPD success include optimal fit, care and consistent and continued use during the entire workshift. We're often asked if the ear canal changes due to age and if this could affect older workers' ability to be protected from noise on the job.

Although there is a great deal of individual variability, we know that one aspect of the ear that does not seem to change with age is the basic size of the earcanal. Anatomical studies show that the outer ear and ear canal are fully developed by puberty, and that the overall size/volume of the canal does not change significantly over time.

All the same, it's important to recognize that other anatomical changes that accompany aging could affect comfort and successful use of HPDs. Some common transformations in the earcanal associated with getting older include:

- Thinning of the skin that lines the earcanal and loss of elasticity
- Atrophy/loss of fatty tissue that pads the earcanal
- Reduced secretions from glands in the canal, leading to dry skin
- Earwax can be drier, harder and more likely to become impacted
- Sagging, or "collapsing" of the cartilage in the outer portion of the earcanal
- For men, growth of wiry hair at the opening of the canal

Next, it's important to consider the implications of these changes that could impact older workers and hearing protection use:

- Older workers may require more frequent medical care for outer ear infections or earwax build-up. It may be necessary to wear earmuffs instead of earplugs until medical clearance is received.
- Individuals who have thinning skin and decreased fat pads in the ear canal may find earplugs less comfortable than they used to be. Forcing any object into the earcanal could even cause bruising or breaking the skin. It may be necessary to try different styles and materials of HPDs to determine the most comfortable fit (subjective but essential to acceptance and compliance).
- If a worker experiences collapsed canals, it may be more difficult for him or her to insert a hearing protector. It's especially helpful to follow the preferred protocols: using the opposite hand, pull up and out on the outer ear to straighten the earcanal prior to inserting an earplug.

- Jaw motion may cause earplugs to dislodge easier for certain workers, including older individuals with softer ear canals. Again, try different styles and materials of HPDs. Remind employees that they may need to reseat earplugs regularly if they become loose throughout the day.

And most importantly, carefully check the fit and seal of the hearing protector for all of your employees on a regular basis, including older workers. Many companies are now routinely conducting individual fit testing for HPDs, similar in concept to fit testing for respirators. NIOSH, OSHA and professional organizations have identified individual fit testing as a best practice for hearing conservation programs.

To learn more about aging, the earcanal and ear care, see:

American Academy of Otolaryngology. [Earwax and care.](#)

[NIOSH. Productive Aging and Work.](#)

Oliveira, RJ (1997). The active earcanal. *Journal of the American Academy of Audiology*, 8: 401-410.

[Staab, W \(2014\). The human earcanal, series: I-VIII. Hearing Health Matters.](#)