

Study to test whether hearing aids can help prevent falls

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UT Dallas researchers are recruiting patients for a new study aimed at determining a connection between hearing deficits and the likelihood of falls.

The research project, a collaboration between The University of Texas at Dallas and UNT Health Science Center in Fort Worth, is evaluating how much hearing aids and other technologies might improve balance and prevent falls for people with auditory problems.

One-third of [older adults](#) fall each year, according to recent national studies. The resulting injuries can be life-threatening.

A person's [sense of balance](#) relies heavily on the [vestibular system](#) of the inner ear, as well as on information gained from the senses of sight, touch and hearing. Previous research on falls has focused on the roles played by visual, cognitive or [motor impairments](#). But recent studies suggest that people with [hearing loss](#) also may be at greater risk of falling.

More than half of adults over the age of 65 experience hearing loss. About 65 percent of them seek no treatment.

The study will help identify people at risk of falling and evaluate the effects of different types of hearing aid technologies on balance and gait. Subjects with and without hearing loss, while wearing or not wearing the hearing aids, will be monitored as they stand, walk and

perform routine daily tasks while repeating words or sentences that are played in the surrounding environment.

Participants will stand or walk on a treadmill through different virtual environments, such as a walk in the forest. The researchers want to evaluate the participants in "normal" daily environments. Previous studies of hearing and balance rarely replicated real-life situations, so results were questionable, said Dr. Linda Thibodeau, a professor in UT Dallas' School of Behavioral and [Brain Sciences](#) and the chief investigator for the UT Dallas team.

The study also will provide volunteer subjects with overall assessments of their hearing and balance systems. The auditory and vestibular testing and hearing aid fitting will take place at the UT Dallas Callier Center for Communication Disorders. If a hearing loss is confirmed, the audiologist will perform a hearing aid evaluation and selection.

People with hearing loss will be equipped with bilateral hearing aids and FM systems for a six-week period. The study requires four to five visits, taking a total of 10 to 12 hours, scheduled over a period of six to eight weeks.

The second phase of the study, looking at balance and mobility, will take place at the UNT center in Fort Worth. Dr. Nicoleta Bugnariu, associate professor at UNT, is lead investigator for the project.

Reflective sensors will be placed on the arms, legs and the body to measure patients' various aspects of gait and balance. A harness is provided for patient safety during the testing.

Researchers will compare the base-line test results gathered before amplification with the results noted after six weeks of amplification to determine whether balance improves when the participant is able to hear

better in the noisy environment.

The investigators are seeking 10 adults, ages 50 to 80 years, who have normal hearing and another 10 who have hearing loss but have never worn a hearing aid.

"We anticipate that there will be increased cognitive resources available to devote to [balance](#) and gait when the [hearing aids](#) or assistive devices are worn," Thibodeau said. "But until we observe these individuals in situations that are created to simulate normal day-to-day environments, we can't be certain of the effects. This study could go a long way toward helping us understand the importance of hearing and how it affects many other aspects of a person's well-being."

Provided by University of Texas at Dallas

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