



# REVEALED: HEARING LOSS THE #1 MOST MODIFIABLE RISK FACTOR OF DEMENTIA

*Dr. Thomas A. McCarty  
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ASSOCIATES, INC.   
Ear, Tinnitus, Brain & Balance Centers of Alaska

**eardocAK.com**

## Introductory Letter from Dr. McCarty

Dr. Thomas A. McCarty, Doctor of Audiology, founded Audiology Associates in 1991.

Dr. McCarty and his team of specialists have created a dynamic award-winning Audiology/Hearing Aid Practice, located in Anchorage, that utilizes the latest in high tech devices and stresses personalized patient services.

He has been voted "Best Audiologist." They are committed to providing the highest level of patient care. Dr. McCarty received his Doctor of Audiology degree from the University of Florida in 2000. He was one of the first Doctor of Audiology recipients in Alaska. Dr. McCarty attended the University of Maryland, having received a Boy Scout Scholarship, while an Eagle Scout. He earned both his Bachelor's and Master's degrees at the University of Maryland.

His first patient was his mother, who he fit with hearing aids after she had been advised that "nothing would help."

He worked as a Public Health Audiologist in Alaska from 1977-1991, providing Audiology and Hearing Aid Services to remote villages outside Bethel, Dillingham, McGrath, Kodiak, St. Paul, and the Aleutians. Dr. McCarty feels that it is important to raise Audiology awareness in the community. He and his team have volunteered on an annual Hearing Mission Trip that has fit thousands of hearing aids to an underserved population in the Dominican Republic. He has run in the Boston Marathon with the Dana-Farber Team, raising funds for cancer research at Harvard.

Dr. McCarty has lectured on hearing, taught classes at the University of Maryland, and given presentations locally in Anchorage, and has received the Academy Scholar Award for continuing education from the American Academy of Audiology.

*Dr. Thomas McCarty*

Dr. Thomas A. McCarty

Board Certified Audiologist



# Research Report: Summary

## Hearing Loss & Dementia

### Hearing Loss and Cognitive Decline.

#### What is the Relationship? And is Dementia Avoidable?

Hearing Loss impacts over 48 Million people in the U.S. and is listed by the Department of Health and Human Services as the 3rd most common chronic disorder affecting people. Unfortunately, for most of us, hearing loss is inevitable; impacting nearly 50% of people between the ages of 60-70, almost 2/3 of people between the age of 70-80 and nearly 80% of individuals over the age of 80. Hearing loss is characterized by the progressive loss of receptor (hair) cells in the ear that consequently reduces the quantity and quality of neural connections from the ear to the brain. This slow-onset disease can have a significant impact on several key brain areas, including the memory, hearing, speech and language portions of cognition. Several key research studies have pointed to the potential links of hearing loss and Dementia that indicate hearing loss can increase the risk of Dementia by 200-500%, including the groundbreaking work from Dr. Frank Lin and his colleagues at Johns Hopkins Medical Center (see summary data in Figure 1).

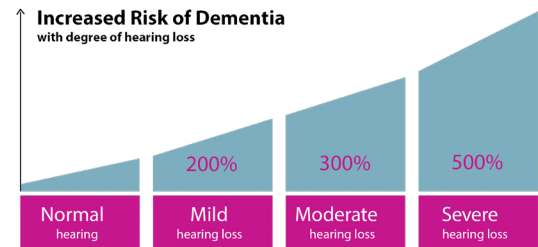


Figure 1: Summary of Data from Lin et al., 2011 Johns Hopkins Medical Center

*It (hearing loss) not only increases memory loss, it increases the incidence of Alzheimer's disease so if you can prevent the onset of Alzheimer's disease or delay it with good hearing devices that's a major public health advance.*



Quote by Erik Kandel, Recipient of the Nobel Prize  
in Physiology or Medicine

Every 3-4 seconds another patient is diagnosed with Dementia. Rates of Dementia are estimated to triple in the next 30 years. Unlike some other diseases, with Dementia the physical body is estimated to outlive the individual's mental capabilities by 10 or more years. There is no cure for this catastrophic disease, but there are treatments available, including several ways to decrease your risk of developing Dementia.

This report, from researchers at Johns Hopkins Medical Center and the National Institute on Aging found that individuals with hearing loss (when compared to participants with normal hearing) are at a significantly higher risk of developing Dementia over time. The more hearing loss they had, the higher their likelihood of developing the memory-robbing disease. "A lot of people ignore hearing loss because it's such a slow and insidious process as we age," Dr. Frank Lin (of Johns Hopkins Medical Center) says. "Even if people feel as if they are not affected, we're showing that it may well be a more serious problem."



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## Hearing Loss & Dementia

**Three risk factors associated with hearing loss and Dementia include Social Isolation, Cerebral Atrophy and Cognitive Overload.**

**1. Social Isolation** – The impact of reduced social and physical activity. Withdrawal from social situations is common in individuals with hearing loss. Many studies cite feelings of embarrassment, fear of making mistakes in conversations, and feeling like you are not part of the conversation as the common rationale for individuals with hearing impairment to separate themselves from family, friends and community. This retreat from social activity has even been found in individuals with a mild degree of hearing loss. In addition, individuals with hearing loss are less likely to engage in physical activity. Both increased social isolation and reduced physical activity are strong risk factors for the development of Dementia.



### Active Aging: How to Reduce Social Isolation

Active Aging – the process of optimizing opportunities for better health, continuing development of knowledge, and increased security in order to maximize quality of life as you age. The word 'active' is used to describe a person's involvement with social, physical, economic, spiritual and civic affairs. We all share the same goal to maintain autonomy and independence as we age, and thus we must rely on preserving the tenants of interdependence (socialization and reliance on family and loved ones) and intergenerational solidarity (maintaining companionship with age-matched peers) to ensure active aging.

Both Social Isolation and Depression are major risk factors for the development of Dementia, and both increase as we age. Being a lifelong learner and staying active is important to maintain a healthy, active brain and can also reduce your risk of cognitive decline and dementia. Some studies have shown that social activities, larger social networks and a history of social contact are associated with better cognitive function and reduced risk for cognitive decline.

*Blindness Separates You From Things...  
Deafness Separates You From People.*



Quote by Helen Keller

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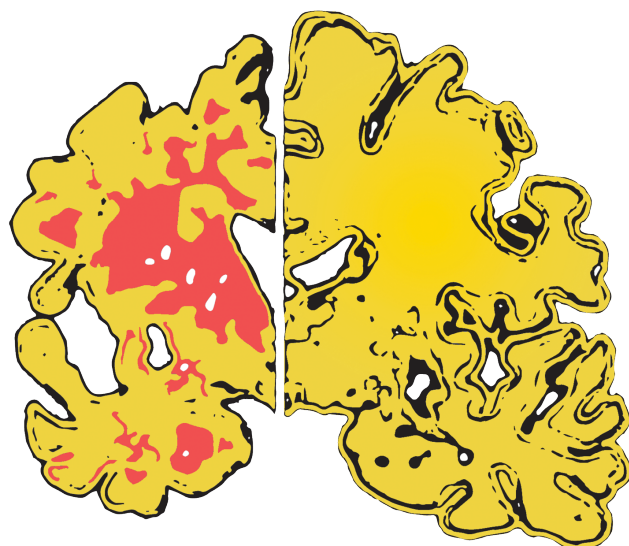
## Hearing Loss & Dementia

### 2. Cerebral Atrophy (aka Brain Shrinkage)

The association of a shrinking brain, resulting from the loss of neurons, with Dementia has been long documented. Even people with MCI (Mild Cognitive Impairment) show signs up cerebral atrophy. In recent years, scientific studies using advanced brain imaging techniques (including fMRI - Functional Magnetic Resonance Imaging) have demonstrated that hearing impairment is associated with accelerated brain atrophy in both the overall brain, as well as even more advanced reductions in volume associated with the memory, hearing, speech and language portions of the brain.

Individuals with Hearing Loss can experience significant cerebral atrophy. The most significant reduction in cerebral volume occurs in areas involved in:

- Memory
- Speech
- Hearing
- Language



Brain With Hearing Loss

Brain With Normal Hearing

#### Tips for Active Aging include:

- Share a meal with family and friends 3-5 times per week
- Commit to an aerobics / exercise regimen
- Learn a new hobby each year
- Play an instrument (or learn a new instrument)
- If you love to read.... Keep reading (try to mix up the topics!)
- If you don't read much – try to read a book every other month
- Participate in classes
- Volunteer at a local hospital, shelter, etc.
- Go back to school. Many local Universities offer free tuition to people

# Research Report: Summary

## Hearing Loss & Dementia

### 3. Cognitive Overload (i.e. Working Your Brain Too Hard To Hear)

Hearing loss is not normal and neither is the excess strain that it puts on your brain. While hearing loss may be more common as we age, it is critical that hearing loss be treated. With hearing loss, the brain is constantly on 'overload' trying to fill in the missing pieces and follow the conversation. Increased cognitive load is considered a risk factor for developing Dementia. Cognitive load, as measured by pupillometry, is a measurement of how hard your brain is working to follow a conversation. Recent research has found that individuals who treat their hearing loss do not work as hard to listen (i.e. have a reduced cognitive load) and have as much as a 20% increase in memory recall when following a conversation.



# Research Report: Summary

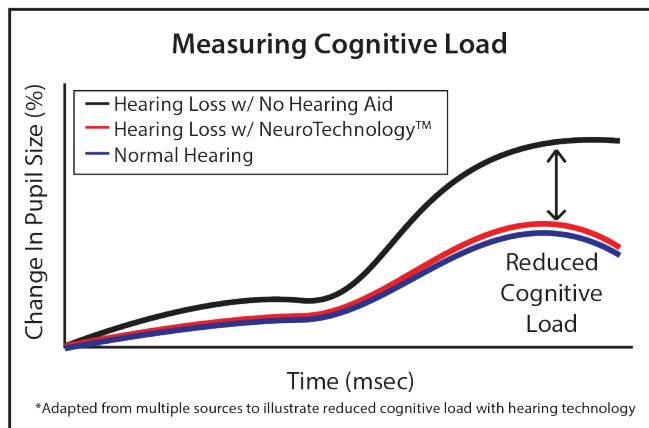
## Hearing Loss & Dementia

### NeuroTechnology™:

### Reduce Your Risk of Developing Dementia

**Improvements in Cognitive Function:** In a recent study, Dr. Jamie Desjardins, PhD, (University of Texas at El Paso), demonstrated that today's current hearing loss treatment options can improve brain function in people with hearing loss. It is known that hearing loss, if left untreated, can lead to emotional and social consequences, reduced job performance, and diminished quality of life. Recently, research has shown that untreated hearing loss also can interfere with cognitive abilities because so much mental effort is diverted toward understanding speech.

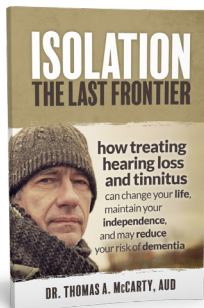
The research was aimed at measuring core cognitive functions that were beginning hearing loss treatment with NeuroTechnology™. After only two weeks of hearing loss treatment, cognitive testing revealed a significant increase in percent scores for recalling words in working memory and selective attention tests, and the processing speed at which participants selected the correct response was faster. By the end of the study, participants had exhibited significant improvement in their cognitive function. Since 2011, multiple long-term studies have provided strong evidence that treating hearing loss may eliminate the risk of developing Dementia. Dr. Lalwani at Columbia University noted that treating hearing loss **"may offer a simple, yet important, way to prevent or slow the development of dementia by keeping adults with hearing loss engaged in conversation and communication."**





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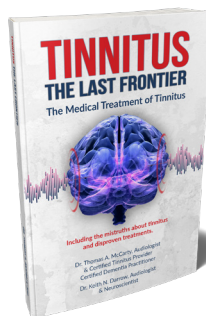


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