



TheElite Training Group track club

Expanding the area of what is possible

In Track & Field Distance Running & Competent Self-Care in medicine and psychology

www.theetgtrackclub.com

TheETG hearing training

A major part of TheETG mission is to expand the area of what is possible in competent self-care in medicine and psychology. TheETG's primary method of achieving that is to proliferate applied science based information by way of \$free packets containing plain language info for anyone seeking to move themselves or others forward in these areas.

TheETG packets attempt to address the following;

".....the benefits that US health care currently deliver may not outweigh the aggregate health harm it imparts."
[Journal Of The American Medical Association...Volume 302 #1..July 1, 2009...page 89 - 91]

"Not enough doctors adapt appropriately to new scientific findings.....An insufficient number of medical faculty members are well prepared, effective educators, and too few medical schools prepare their students for a lifetime of learning and change."
[J.Hilliard, et al. -- The Lancet -- Volume 385 #9969 -- February 21, 2015 -- page 672]

"...takes an average of 17 years to translate 14% of original research into benefit.....average of 9 years for interventions recommended as evidence-based practices to be fully adopted."
[M.Tinkle, et al -- Dissemination and Implementation -- Nursing Research and Practice -- Volume 2013]

".....1.5 million U.S. residents are harmed or killed each year because of medication errors, according to an Institute of Medicine report."
[Nature Medicine -- Volume 12 #9 -- September 2006 -- page 984 - 985....News In Brief]

"It is estimated that more than 700,000 individuals are seen in hospital emergency departments for adverse drug events each year in the United States."
[Centers For Disease Control -- 2015]

"Most drugs are only effective for a small percentage of people who take them."
[Michael Leavitt -- U.S. Secretary of Health & Human Services 2005 - 2009]

".....A recent study for example, found that only half of all cardiac guidelines are based on scientific evidence."
[President Barack Obama -- Speech to the American Medical Association -- June 15, 2009]

"All the good things....they don't teach us in medical school, because the drug companies pay for our education."
[Dr. John Sessions M.D.]

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What Your Doctor Won't Tell You About Your Hearing

Hearing loss can occur in several ways, but there are 2 main mechanisms of so-called "age related" hearing loss. One is like everything else...dis-use atrophy. Also known as use it or lose it syndrome. The other is loud noise exposure, either something extremely loud like an explosion, or long term like loud music. With the proliferation of people wearing ear pieces from i-pods and cell phones we're gonna see a lotta hearing loss over the next few decades. Both are reversible to some degree.

We hear by converting sound waves into electrical signals to brain cells that make sense of them. We do this by having structures in the ear set up such that sound waves hit tiny bones that beat against a thin piece of tissue. That tissue in turn pushes some fluid that's in a chamber along with some tiny hairs attached to the floor of the fluid chamber. The movement of the fluid pushes the tiny hairs around. The movement of the tiny hairs activates the nerves that are attached to each tiny hair.

If you lose these hairs, you lose your hearing. As you lose these hairs you lose your hearing. Also, there are muscles attached to the tiny bones that beat against a thin piece of tissue. If those muscles atrophy you lose your hearing. As those muscles atrophy you lose your hearing.

Muscle Atrophy Induced Hearing Loss -----

Exposure to steady amount of not very loud but somewhat loud sound [vehicle traffic, sirens, stereo music, etc.] over the course of the life span, can result in an adaptation to those sounds by reducing the activation of muscles and nerve cells in the ear. Over time you may find that regular sounds on the TV or radio or of people talking to you, may be hard to hear without elevating the volume or asking people to talk louder. At this point, you may be more likely to turn-up the volume of the TV or radio, and ask people to talk louder. This creates a situation where you are not exposed to potential muscle training tasks that force you to functionally activate the muscles and nerve cells in the ear. This scenario leads to a chronic situation over time resulting in further atrophy of those muscles and cells. Thus the gradual hearing loss is primarily due to dis-use atrophy ["use-it or lose-it"], rather than this "age related" hearing loss being "caused" by aging.

Loud Sound Induced Hearing Loss -----

Exposure to loud sound for a prolonged period of time can lead to a high level of activity and stress of hearing related cells, leading to production of things called "oxidants" that can damage hearing related cells, resulting in the death of some of those cells. Over time, loss of hearing related cells in the inner ear can result in the gradual loss of hearing as one ages, rather than the hearing loss being "caused" by aging. Oxidants are the reason we need "anti-oxidants" produced by our bodies [super-oxide dismutase, glutathione] and consumed in our diets [vitamin E, vitamin C, beta carotene, selenium, etc, etc, etc]. Exposure to sound increases activity of antioxidant enzymes [super-oxide dismutase, glutathione], which reduce or prevent damage by oxidants to hearing related cells in the ear. Exposure to loud sound for a prolonged period of time, may lead to a situation where the oxidant load substantially exceeds anti-oxidant production in the body or supply in the diet, resulting in loss of hearing related cells.

Hearing Training -----

Training can improve the function of the muscles and cells of the ear to reverse some aspects of hearing loss, as well as to prevent so-called "age-related" hearing loss. Training stimulates the body's production of anti-oxidants. And one can add anti-oxidant foods and supplements to the diet.

“Reactive oxygen and reactive nitrogen species formed in the inner ear in response to high-intensity noise are thought to play an important role in noise-induced hearing loss. Reactive oxygen species appear rapidly and transiently in the inner ear during and following noise exposure, while hair cell loss progresses over time stabilizing two or more weeks after insult.”

“.....we suggest that initial hair cell damage after noise may primarily reflect mechanical events plus transient intense reactive oxygen species formation, while continued formation.....contributes to the long-term hair cell loss.

D Yamashita, et.al
Delayed Production Of Free Radicals Following Noise Exposure

Brain Research.....Volume 1019 #1-2.....September 3, 2004.....pages 201 - 209

TheETG Hearing Training Schedule

--- Television Across The Room [2 days each week]

Set the TV volume at a relatively low level. Make sure the TV volume is set at the same level each time you do this workout.

Turn to a channel that has a consistent volume of talking [ie. cable news channels, financial news channels]. Stand or sit on the other side of the room.

Make an effort to pick up on what is being said even if its just bits and pieces.

Begin the with short intervals of training [1 - 3 minutes]. Limit the workout to a maximum of 4 repetitions of this with a rest and relaxation period in between each.

Overtime, if you find that you can hear more of whats being said, progress to setting the volume lower or moving further away.

--- Quite Room [2 days each week]

Sit in a relatively quiet room. Focus on hearing the sounds inside and/or outside the room or building.

Begin the with short intervals of training [1 - 3 minutes]. Limit the workout to a maximum of 4 repetitions of this with a rest and relaxation period in between each.

--- Outdoor listening [2 days each week]

Sit in a space outside. Focus on hearing the sounds around you [birds, planes, cars, people talking, etc], and on identifying what direction those sounds are coming from.

Start with things that seem close by and work your way to things further and further away.

Begin the with short intervals of training [1 - 3 minutes]. Limit the workout to a maximum of 4 repetitions of this with a rest and relaxation period in between each.

Break Period = Day 26 to final day of month

Supplemental Exercises [several days each month]

1 ----- Talking on the phone

.....Place earpiece to the opposite ear that you usually use.

2 ----- Crowded room

Use a crowd room or outdoor place where many people are talking amongst themselves. Focus on listening in to other people's conversations.