Tinnitus Handbook
What is tinnitus?

Tinnitus is often described as “ringing in the brain,” but it can take many different forms. The sound, the intensity, and the level of annoyance can all vary.

People report everything from random episodes that don’t bother them to a constant noise that affects their daily life. A person may hear ringing, chirping, whooshing or clicking sounds. It can occur a few times a month or many times in one day. It can last for a few moments or several hours, or it can be constant—even while sleeping. For some, tinnitus has a pulsing or repeating pattern.

Tinnitus is not a disease, but it can be a symptom of some medical conditions. (The way that pain can be a symptom of a broken arm.) Since tinnitus may signal certain medical conditions, it should never be dismissed.

Is tinnitus real?

Yes. Tinnitus is very real. The person with tinnitus is hearing a sound, even if someone else can’t hear it. The sound is just heard inside their head.

- The brain activity of someone hearing tinnitus is the same as someone hearing a sound through their ears.
- Tinnitus is involuntary—the person who hears it cannot make it happen.

Is tinnitus common?

Most people have tinnitus at some point, even those with normal hearing. It can occur when exposed to loud noise, such as a rock concert. After a few hours or the next morning, it may go away. It can occur suddenly, and then disappear just as suddenly. Many experts think this is a part of normal hearing. But when tinnitus starts to impact one’s day-to-day routine, medical help is needed.

- About 15 out of 100 people report having tinnitus often.
- Of these, one-fourth (roughly 3 out of 15 people), suffer enough to seek medical treatment.
- These numbers are likely to grow: Tinnitus affects about one-third of people over age 65 (30 out of 100 people).
Do I need to see a hearing provider?

Most cases of tinnitus are harmless. See a hearing care provider if you have tinnitus that:

- Is constant
- Is heard only in one ear
- Includes dizziness or balance problems
- Affects your day-to-day activities

What causes tinnitus?

Tinnitus may be related to the nervous system or psychological effects. We consider both of these possibilities when trying to find you relief. In many cases, an exact cause is never found.

Common causes of tinnitus

- **Inner-ear cell damage.** Tiny, delicate hairs in your inner ear move from the pressure of sound waves. This triggers the release of electrical signal to your brain. Your brain interprets these signals as sound. If the hairs inside your inner ear are damaged, the signals change. The brain may misinterpret the signals, causing the perception of tinnitus.

- **Ear problems, chronic health conditions, and injuries** that affect the nerves in your ear or the hearing center in your brain.

- **Hearing loss due to age.** Hearing gets worse with age, usually starting around age 60.

- **Exposure to loud noise.** Heavy equipment, chain saws and firearms are common sources of noise-related hearing loss. Music devices can cause hearing loss if played loudly for long periods. Tinnitus caused by short-term exposure, such as attending a loud concert, usually goes away.

- **Earwax blocking the eardrum.** Too much earwax can cause hearing loss or irritate the eardrum.

- **Ear bone changes.** Stiffening of the bones in your middle ear may cause tinnitus.

- **Medicines.** A number of medicines may cause tinnitus or make it worse. Sometimes the noise decreases or goes away when you stop these medicines. Some common medicines are:
  - Antibiotics: polymyxin B, erythromycin, vancomycin and neomycin
  - Chemotherapy: mechlorethamine and vincristine
  - Water pills (diuretics): bumetanide, ethacrynic acid or furosemide
  - Quinine medicines used for malaria or other health conditions
  - Certain antidepressants
  - Aspirin in very high doses (12 or more a day)

Other causes of tinnitus

- **Meniere’s disease.** Tinnitus can be an early sign of Meniere’s disease, an inner ear disorder.

- **TMJ disorders.** Problems with the joint where your lower jawbone meets your skull.

- **Head injuries or neck injuries.** Injury to the head or neck can affect the inner ear, nerves or brain function linked to hearing. These injuries tend to cause tinnitus in only one ear.

- **Acoustic neuroma.** This is non-cancerous tumor that grows on a nerve in the inner ear. The inner ear controls balance and hearing. This condition generally causes tinnitus in one ear.

- **Blood vessel disorder.** This is a rare cause of tinnitus.
What is hyperacusis?

Hyperacusis is a disorder often found along with tinnitus. People with hyperacusis are bothered by everyday sounds that don’t seem to bother other people. For example: a running faucet, car engine, refrigerator fan, walking on leaves, and the shuffling of papers. High frequency sounds may be most annoying.

Hyperacusis is treated with some of the same methods as tinnitus.

What is habituation?

We all filter out sound every moment of every day. This is because sound passes into the ear and up to the hearing center of the brain. Then, the autonomic nervous system (ANS) decides how to handle it.

• If a sound is new, we will hear it because the ANS thinks it’s important.

• If the ANS judges a sound to be unimportant (such as a new refrigerator), it will soon filter it out, so we no longer hear it. This is the basic concept of habituation. This is why millions of people are not bothered by their tinnitus. They filter out their tinnitus because their ANS tells them it is meaningless.

For some people, the autonomic nervous system (ANS) in the brain judges tinnitus as something to be concerned about. When concern, stress, anxiety or fear develops, the tinnitus now has meaning. This keeps the tinnitus at a high level of perception because the ANS has decided this is a sound that needs to be tracked.

An example of habituation. In the first photo, the contrast between the frog and its background makes the frog easy to see. In the second, the same frog has adapted to the background—it blends in and is harder to see. The aim of sound therapy is to teach the brain to think of tinnitus as an unimportant sound that blends into the background.
Can my tinnitus be cured?

In some cases, when the cause of tinnitus is known (such as a side effect of medicine), it is possible to manage or even reduce the tinnitus. For most patients, there is no known cure, but there are many ways to help you manage it and get relief.

- Always talk to a hearing care expert before trying any vitamins or herbal remedies. There is little proof that these work.
- A hearing provider can tell you about ways to manage tinnitus. It is important to find the plan that works best for you.

How can I manage my tinnitus?

Sound therapy

Sound therapy can help lower the strength of the tinnitus signal by adding sound to your environment. While it can't get rid of your tinnitus or change it, sound therapy can make you less aware of it.

It may help to think of your tinnitus like a bright candle in a dark room. Adding more light to the room will make the candle light less noticeable. Sound therapy works in much the same way. Adding sound to your environment makes you less aware of your tinnitus.

Learning to cope with tinnitus is a process. It should be handled carefully and treated over a period of time.

There are a number of devices available for sound therapy. When developing a plan to manage your tinnitus, it is important to think about your needs and lifestyle.

Tinnitus sound generator (TSG)

A TSG is a device or an app that sends sound to the ear to “mix with” the tinnitus. The goal of a TSG is to lessen the strength of the tinnitus signal by “covering it up” with the noise from the device. This filters out the tinnitus like other unimportant sounds.

- A TSG comes in a variety of shapes and sizes.
- You are able to alter the noise from the device.
- Combination TSG and hearing device: You can get a TSG combined with a hearing aid in the same device. You may choose different levels of technology.

Sound pillow / head band

- Two stereo speakers are buried within a comfortable hypoallergenic pillow or head band that connects to a smart phone.
- Plays slow music with no sudden tempo changes or loud volume to disrupt sleep.
- Play pre-loaded sounds, or stream sounds from your smart phone.

Independent therapy

Independent therapy is used to embed your tinnitus in sound, 24 hours a day. You notice the tinnitus less and it is less disturbing.

- Patients select the music or sound that gives the greatest benefit for them during daytime hours.
- At night or when sleeping, many patients find it more restful to use a sleep sounds machine to lessen tinnitus.
Health psychology

Health psychology is a specialty that helps people cope with the stress and anxiety that often come with illness or injury. We focus on serving people with sudden, ongoing and life-changing medical conditions.

We have licensed health psychologists who can help you take an active role in your health care. We offer practical steps to deal with illness, medical treatment, self-care programs, emotional issues and healthy behaviors. We provide psychological assessment and treatment for a broad range of concerns. Our health psychologists use a wide range of approaches, including cognitive-behavioral therapy.

How health psychology can help

- **Coping**—We help you with the emotional issues of your illness.
- **Challenges**—Difficult challenges seem to increase during illness. We can teach you steps and strategies for managing stressful situations.
- **Feelings**—We help you deal with anger, anxiety, confusion, depression, fear, frustration, grief, loss of control, sadness, uncertainty and motivation.
- **Behaviors**—When you are ill, it can be harder to take care of yourself. We can help you manage your weight, learn how to relax and quit smoking.
- **Counseling**—We offer several types of counseling and can build a plan that meets your needs. Our practice works with individuals, couples, or families.