

# Tinnitus Guide 2023 Edition

Learn about the newest tinnitus  
treatments and management tips.



By Ben Thompson, AuD



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# Tinnitus Guide: 2023 Edition

New Report By Audiologists



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# Getting Proper Medical Evaluation

## Step 1

## Get A Hearing Evaluation.

Your audiologist will complete a standard hearing test, also known as an audiogram. The hearing test can identify potential problems of the eardrum, hearing organ (cochlea), or the hearing nerve. If you are presenting with tinnitus and your hearing test comes back as "normal" then you may consider asking your audiologist to test your hearing sensitivity at higher frequencies than on a standard test, and/or to run a test of otoacoustic emissions, or OAEs. These tests are often available at most audiology clinics, and can provide further information about the health of the function of cells in the cochlea. While these tests don't necessarily always point to causes of tinnitus, they can be helpful in understanding the role of your auditory system on your tinnitus. Based on all the audiological test results, your audiologist may recommend additional test procedures or make medical referrals. The most common referral is to an ear, nose and throat (ENT) physician, also called an otolaryngologist.



## Step 2

## Rule Out A Medical Cause.

An ENT physician is the best trained professional to determine if tinnitus is medically treatable. An ENT will look at your symptoms, your history, and available diagnostic tests (such as a hearing test) to determine if there is a possible underlying medical cause for the tinnitus. The physician may decide to order further diagnostic tests, such as an MRI, to evaluate or rule out conditions that may cause tinnitus. Additionally, referrals to other professionals may be made for concerns regarding temporomandibular joint (TMJ) dysfunction, neck problems, or neurological conditions. Unfortunately, few cases of tinnitus are 'curable' by medication or surgery; however, proper diagnosis is important, as there are some conditions that can cause tinnitus that do require medical attention and treatment. Proper diagnosis and management of underlying conditions can also help lead to better management of tinnitus symptoms.





### Step 3

## Find The Cause Of Your Tinnitus.

The three most common causes of tinnitus are cochlear, somatosensory, and stress-induced. Cochlear tinnitus is usually diagnosed when there are findings of hearing loss on a hearing test; however, it can still be a cause of tinnitus in people with normal hearing. Sometimes results from OAE tests indicate this cell dysfunction in people with normal hearing thresholds, but it may not always be apparent even on this test.

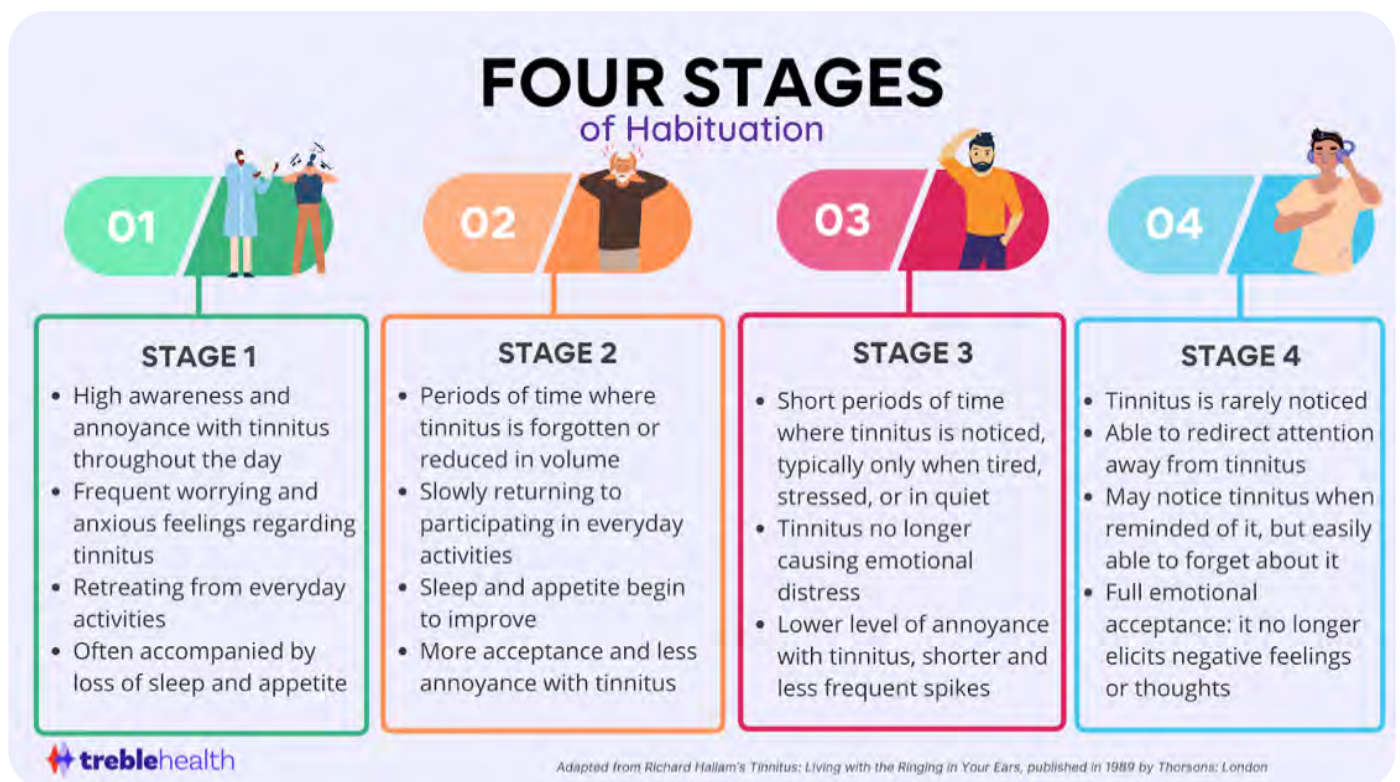
Somatosensory tinnitus can be caused by TMJ dysfunction, neck or shoulder issues, poor posture or postural abnormalities, cardiovascular issues, or a number of other medical conditions. If stress is a major cause of your tinnitus, this will be determined by an experienced clinician and is a diagnosis of exclusion, which means that other medical causes have been ruled out through testing or your history.



# Tinnitus Recovery Timeline

The term “habituation” refers to a natural brain process of learning, in which your response to a stimulus, in this case, tinnitus, is gradually reduced with repeated exposure. We habituate to stimuli in our lives all the time, especially once we learn that the stimulus is not dangerous. Tinnitus is not life-threatening, and it is something your brain can habituate to. A vast majority of individuals with tinnitus eventually habituate, which means that you are rarely aware of tinnitus throughout your day. The process of habituation is not all-or-nothing. It occurs gradually and in stages, typically over a period of six to eighteen months. For most people, this process occurs naturally, without any prompting.

For some people, tinnitus is not easy to habituate to, however, individuals should not be alarmed because there are



a large number of resources available to help in facilitating the habituation process. This can often be achieved with combinations of counseling, behavioral adjustments, and targeted sound therapy.

Once you start a comprehensive treatment plan for your tinnitus, you are likely to experience reductions in the awareness and annoyance of tinnitus within the first three to six months. During that time period, the volume level usually stays the same. Between six to eighteen months after beginning a tinnitus management plan, you will notice continued improvement in the awareness and annoyance of the sound.

Throughout the course of treatment, the volume of tinnitus typically gets softer too. By the end of your habituation period, you are likely to still hear some tinnitus, but it will no longer bother you.

Sometimes it may feel like habituation is taking a long time. Habituation to tinnitus typically takes at least six months, and often takes longer. Don't give up if you haven't reached your goal yet. Keep following professional recommendations for managing tinnitus and you are likely to experience further benefits as time goes on.

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There are three typical phases after a sudden onset of tinnitus. At Treble Health, we call them the urgent care, maintenance, and resolution phases. When appropriately managed, the urgent care phase can last up to three months, if at all. During the urgent care phase, you may be worried by or bothered by your tinnitus as your brain and body have not quite yet figured out if the tinnitus is something to be concerned about. This can be a difficult time as your brain is often focused on the tinnitus. For some people, this period does not last long, and they learn to habituate to the tinnitus during this time. For others, it may still be difficult to habituate this early on and a treatment plan can help them manage this phase and move on to the next. The maintenance phase typically lasts for between six and eighteen months. During the maintenance phase, you will learn to use coping strategies to get relief from your tinnitus and related stress, and learn how to promote the habituation process. The resolution phase is your habituated state, what some may call the “new normal” of living with non-bothersome tinnitus that does not affect your daily life anymore.

## Tinnitus Management Toolkit

Over time, your brain can stop perceiving your tinnitus as a problem. Brain habituation is so powerful that it will be possible to have periods of silence (total habituation) for hours to days at a time. However, attaining silence is not the goal for tinnitus, as it is expected that you will periodically perceive the tinnitus rising to your awareness once in a while. And your tinnitus may still provoke some negative emotions on occasion. Think about how we habituate to clothes we are wearing: For most of the day, you do not feel the clothes you are wearing on your body and are able to ignore them, even if they are a little uncomfortable. However, it is entirely possible for you to occasionally be aware of your clothes and even annoyed by them for brief periods. Nevertheless, you are generally able to go on through your day without much concern about your clothes. We are able to tolerate clothes and many other stimulations that our bodies and brain continuously receive during the day due to habituation, and this is the goal for how to change your brain's response to tinnitus.

There are tools you can use and learn to help promote this habituation process, and we recommend seeking the help of a professional to assist you in this goal.

During your tinnitus recovery process, you can do things to allow habituation to happen as quickly and easily as possible. Natural habituation is slow and scattered, while induced habituation with professional help is faster, safer, and directed.

In our opinion, the first and most important tool to



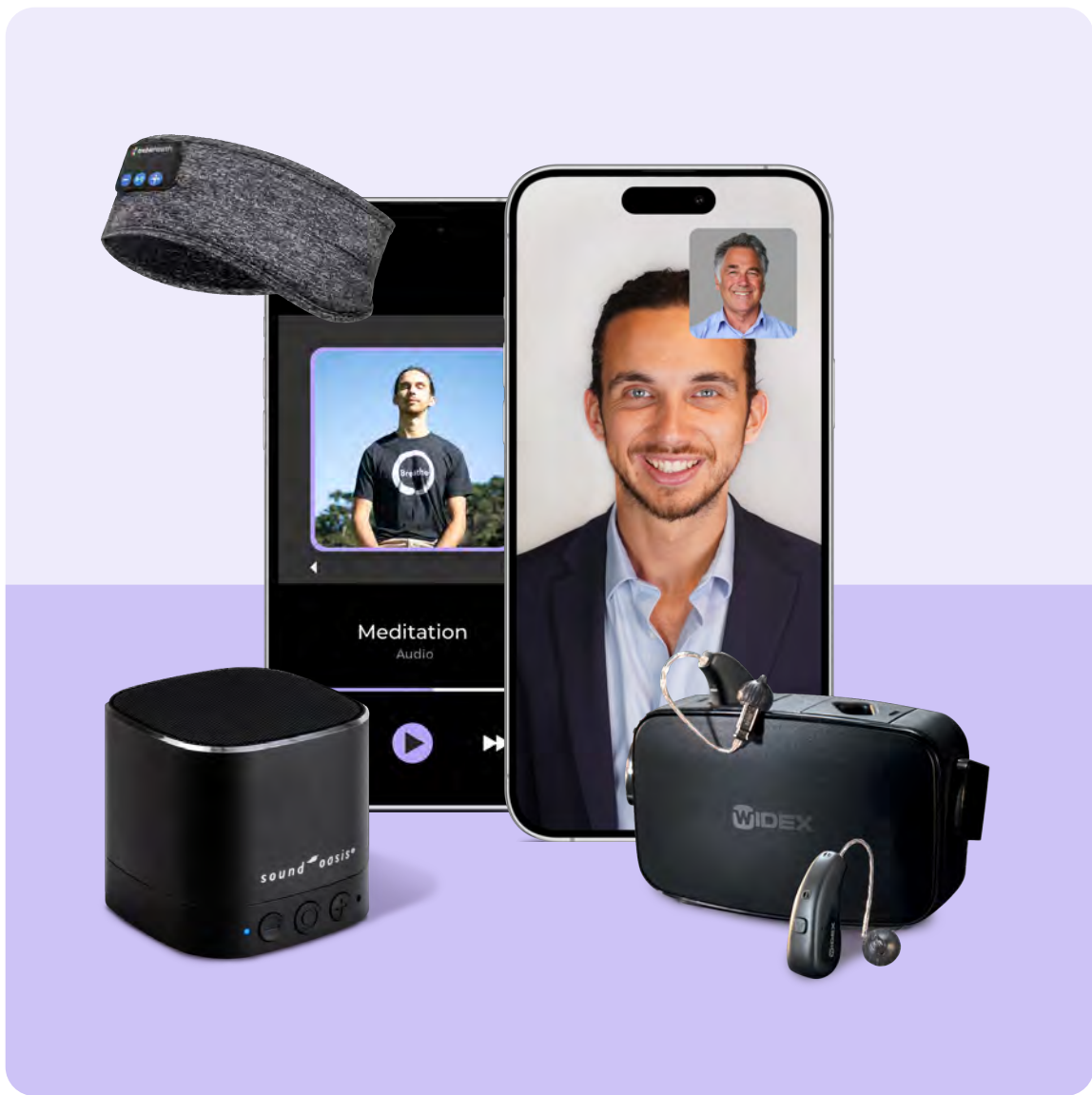
effectively manage tinnitus is sound therapy. This means that you always have low-level sounds entering your ears.

The most effective way to use sound therapy is through devices called tinnitus maskers. At Treble Health, we've found that 85% of patients reported reduced tinnitus after treatment with tinnitus maskers. Once you habituate, you do not need to use consistent sound therapy anymore.

Instead, you can use it occasionally as needed. Here is a list of our favorite types of sound therapy. If you have questions about which of these are right for you, please schedule an appointment with a Treble Health audiologist.

## **Different Types of Sound Therapy**

- **Tinnitus Maskers**
- **Hearing Aids**
- **Sound Machines**
- **Bone Conduction Headphones**
- **Music & Natural Sound Enrichment**
- **Sleep Headbands, Sleepbuds, or Sound Pillows**



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The second most important tool for tinnitus management is professional counseling. This helps reclassify tinnitus into the category of a neutral stimulus. Audiologists at Treble Health have undergone advanced training in tinnitus counseling. Expert audiologists are equipped to counsel a majority of individuals with tinnitus. Additionally, psychologists and psychiatrists can provide help with severe anxiety, stress, or depression.



The third most important tip to help you manage tinnitus is to follow a holistic approach. Modern psychological researchers have shown a strong connection between the mind and body. In general, eating healthily, exercising, and practicing good sleep habits can help improve your overall well-being, and put you in a better position to deal with stressors, including tinnitus. Practices like mindfulness and yoga have also been shown to help improve well-being and even manage some chronic health conditions. They can also help you learn to calm down stress responses with practice over time. This can be a great tool to use during the maintenance phase, when you learn how to adjust your behaviors and responses to tinnitus. To further help reduce negative responses to tinnitus, we recommend to stop looking at Facebook groups or online forums, and to stop searching the internet for information about tinnitus.

You may think that you're getting closer to solving your tinnitus, but often the opposite effect occurs, as this can lead you to ruminate about your tinnitus and reinforce negative thoughts and reactions to it.

## **Common Holistic Techniques For Tinnitus**

- Meditation
- Yin Yoga
- Tai Chi
- Guided Sleep Audio
- Walking daily for at least 30 minutes

[Schedule A Free Consultation](#)

# Covid-19 And Tinnitus

COVID-19, commonly referred to simply as “Covid,” is a virus that primarily causes respiratory issues, such as cough, shortness of breath, sore throat, and taste or smell changes. However, it can also impact other areas of the body, as neurological symptoms, central and peripheral nervous system manifestations, and skeletal muscle manifestations have all been reported.

Symptoms involving the auditory system such as hearing loss, tinnitus, dizziness, and ear pain have also been linked to Covid infection. It should be noted that these kinds of associated symptoms are not necessarily unique to Covid – as they may occur as sequelae to many different viral infections, of which Covid falls under the umbrella. What has demanded further investigation is whether there are any specific patterns of these symptoms, including tinnitus, that are unique or distinguishing to Covid. Research from a recent study shows that most of the individuals who experienced tinnitus after having Covid reported that the symptom began within 1 month of testing positive. However, limited data was available to make conclusions about how the individuals with tinnitus following Covid recovered.

## Changes In Pre-Existing Tinnitus After Covid

Another question that has come about is how Covid can impact individuals who already have tinnitus. Anecdotally,



there have been reports of worsening tinnitus following infection in some cases. Given that we know that Covid can impact the inner ear, it is not surprising that those who already experience tinnitus may notice a change following infection.

Other factors of the Covid pandemic have also been discussed as possible reasons why individuals may experience a change in their pre-existing tinnitus – not necessarily related directly to a Covid infection. For some, tinnitus severity was significantly increased for those who had lifestyle and mental stresses during Covid. Risk factors were loneliness, poor sleep, reduced exercise levels, and self-isolation.

## **Covid And The Impact On The Inner Ear**

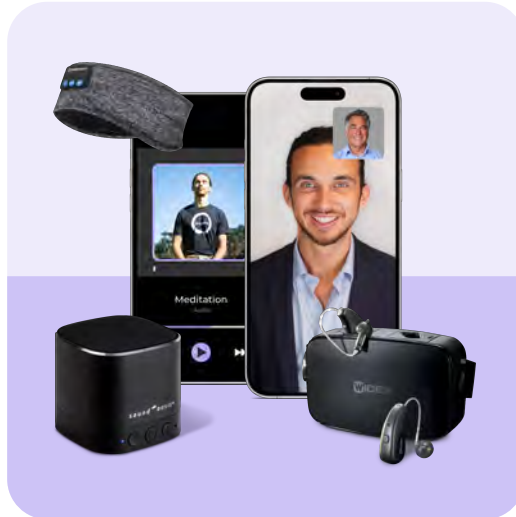
A study showed that Covid can actually infect cells in the inner ear – specifically hair cells that are responsible for hearing and balance. While it is well known that viral infections can impact the middle ear and cause conductive hearing loss, results support the notion that COVID-19 can actually infect the inner ear causing audiovestibular symptoms including sensorineural hearing loss and tinnitus. Data is continuously emerging and the link between Covid and tinnitus will be better understood as our understanding of how Covid affects the body grows.

Because tinnitus can be impacted by many different internal and external factors, it is challenging to pinpoint exactly what is driving the mechanism causing the tinnitus.

“Long Covid” or “long haul Covid” is when some people have symptoms of Covid that last for months or even years after becoming infected, and tinnitus is emerging as a possible symptom of long Covid. The most frequent symptoms lasting past six months included fatigue, post exertional malaise and cognitive dysfunction, however, a number of other symptoms were also reported, including tinnitus. Fortunately, tinnitus treatment has responded well for individuals who developed tinnitus related to Covid.

# Tinnitus Treatment Options

## #1 The Treble Masker Bundle



The best treatment we have for tinnitus is what the team at Treble Health currently offers to patients in the United States. This bundle combines sound therapy treatment, personalized coaching, and a comprehensive habituation protocol. Tinnitus maskers are the gold standard when it comes to tinnitus treatment, and are the closest thing that we have to a cure as of right now.

A research study conducted by Treble Health in 2022 followed 141 patients before treatment and then three months after treatment. We used something called the Tinnitus Functional Index (TFI), a questionnaire to measure the impact of chronic tinnitus in people. A clinically significant reduction in the TFI would be 13 points. The Treble Health study showed an average reduction of 22 points – two times higher than the amount needed to be a significant change. In the Treble Health study, 80% of total

patients who have completed two TFI questionnaires had a clinically significant reduction in tinnitus within three months of starting treatment.



Sound therapy treatment is done using tinnitus maskers and sound machines. You're able to listen to sounds such as white noise (different frequencies of sound played at once), pink noise (a milder version of white noise), natural water sounds, crickets, and other soothing sounds. You generally will listen to these for most hours of the day for the best help.

As part of the Tinnitus Masker Bundle, you receive tinnitus coaching sessions that are done every one to two weeks. You will often be given daily or weekly practice to do on your own at home. The tinnitus coaching at Treble Health includes cognitive behavioral therapy (CBT) techniques. We have found the best results for our patients when we include personalized coaching, education, and counseling. This includes masking options (sound therapy, music, fan noise, etc.), strategies for distraction, and information about therapeutic options.

It may also encourage people to avoid catastrophizing thoughts about tinnitus. This includes the idea that tinnitus is not dangerous and that most people become used to tinnitus. Tinnitus is not the problem, but our reactions to tinnitus may be.



## **Tinnitus maskers are discreet and comfortable.**

How does sound-based therapy work? Damage to the hearing system, even minimal damage from normal changes that happen to our ears over time, creates a lack of auditory input. When these sounds are not fully processed in the ear and through to our auditory system, the brain hears the phantom sound of tinnitus. The main goal of sound therapy is to reduce the strength of the tinnitus signal in your brain.

Sound therapy can accomplish this in a few ways. First, the sounds reduce the contrast between your tinnitus and background noise. Your brain perceives loudness based on a signal's relative strength to the background. The use of low-level background noise can reduce the loudness of tinnitus for some time.



The second way in which sound therapy helps reduce tinnitus perception is by providing input for auditory nerve fibers. Lastly, sound therapy can help reduce tinnitus perception by evoking a calming feeling, which helps reduce the negative feelings that tend to rev up when living with intrusive tinnitus.

You should still be able to hear your tinnitus when using sound therapy, because your brain can only habituate to something it can perceive. Remember, habituation is a learning process that occurs in response to repeated stimulation. Research has shown that 85% of Treble Health patients see significant improvement within three months of using sound therapy, in combination with coaching sessions.

## The Treble Masker Bundle



### Here is everything included in the Treble Maskers Bundle:

- Pair of Advanced Tinnitus Maskers
- Sound Oasis Tinnitus Sound Machine
- Tinnitus Sleep Headband
- Five Private Sessions With A World-Class Audiologist
- Six Group Sessions
- Three Months of the Treble Health Tinnitus Relief Web App For Only \$1/mo
- Guided Breathing & Relaxation Course
- Priority Email and Text

**That's everything you need to reduce tinnitus fast.**

**Have Questions? Call Us - (855) 873-2531**

## # 2

## Tinnitus Retraining Therapy (TRT)



Over the past three decades, Tinnitus Retraining Therapy (TRT) has been the leading program for managing tinnitus. Created in the late 1990s by Dr. Pawel Jastreboff, TRT is now taught every year to a handful of audiologists and is considered the ultimate neuroplasticity program for tinnitus. It has continued to be improved and tweaked over time using modern technology and research.

A vast majority of patients succeed with TRT, and it can be effective in helping patients habituate to their tinnitus in about 80% of cases. TRT consists of an 'active' behavioral adjustment through counseling and exercises, and a 'passive' facilitation of habituation through sound therapy. Sessions with your audiologist will provide you with a new frame of reference on tinnitus. Your audiologist will educate you on the mechanisms allowing tinnitus to take control of your emotions and attention, and demystify tinnitus over multiple sessions so it becomes 'boring' and elicits a neutral reaction from your brain. Your audiologist will also help you create a

plan to maintain a sound-rich environment in a way that works best for your lifestyle, as part of the passive facilitation of habituation.

During the treatment process, patients learn one thing very well: the key to habituation is to reduce your negative reactions towards tinnitus. While you don't have direct control over your tinnitus, you do have some control over your negative emotions and behaviors around the tinnitus. Sound therapy in this treatment is also used to help reduce the negative responses to tinnitus. When you are able to control these negative reactions to tinnitus, the perception of the loudness, quality, and annoyance of tinnitus can often improve over time.

[Schedule A Free Consultation](#)

### # 3

## Cognitive Behavioral Therapy (CBT)



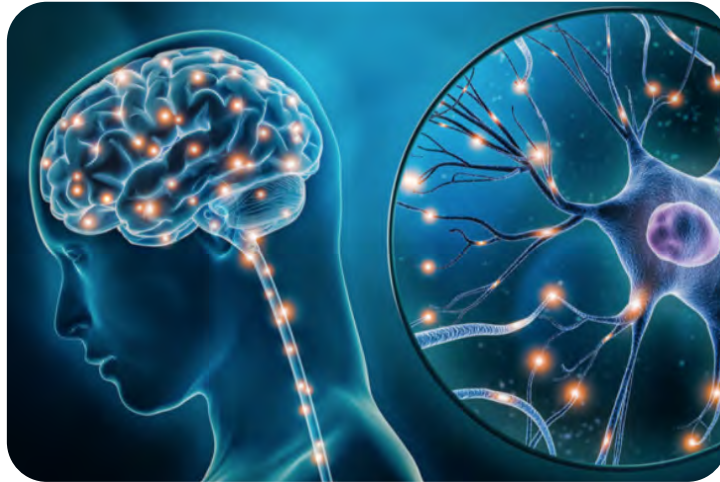
A commonly used approach to help facilitate habituation is Cognitive Behavioral Therapy (CBT). This psychological approach helps to improve negative reactions to tinnitus. Cognitive behavioral techniques work well to improve anxiety related to tinnitus. CBT has been studied and validated to improve tinnitus and associated psychological distress.

The psychology of negative thinking can bring you into a dark place. Cognitive behavioral therapy shows you how to approach what's happening from a more neutral, pragmatic place. When you do that, tinnitus can become more subdued. Typically, CBT is performed by a psychologist. If you work with a psychologist for tinnitus, try to find a provider with some knowledge of tinnitus.



## # 4

## Bimodal Stimulation



Another new treatment for tinnitus is bimodal stimulation. There are a few research groups that are in the process of submitting for FDA-approval of bimodal tinnitus treatment devices. Typically, sound therapy is played through the ears, and would be considered one mode of auditory stimulation. Sound stimulation comes in multiple forms, such as listening to music or sounds through an app, speaker, or simply listening to your surroundings. Pairing sound with a second mode of stimulation somewhere else in the nervous system—like in the skin, tongue, or neck—would create what is called bimodal stimulation, as it involves two modes. Recent neuroscience research suggests that pairing two modes of stimulation together with certain protocols can make positive changes to tinnitus.

## Lenire Device

A group called Neuromod based in Ireland has developed the Lenire device, which pairs stimulation on the tongue with stimulation in the ears. The research has shown positive results, and while it's not a complete breakthrough, it may complement treatments like the Treble Maskers Bundle or Cognitive Behavioral Therapy (CBT).

Lenire uses what looks like the original iPod and over-ear headphones. The tongue-tip provides a light electrical shock, similar to the candy that gently crackles when placed on your tongue. The tongue part of the device stimulates the trigeminal nerve. This is a nerve that provides numerous sensations for the face and mouth.

The Lenire device is recommended to be used for 30–60 minutes each day for at least 12 weeks, and can be done from the comfort of your own home.



[Learn About Treatment Options – Schedule A Free Consultation](#)

A recent study showed that 70% of participants stated they benefited from using the Lenire, 87% of them would recommend the device to people they knew who suffered from tinnitus, and 50% had a clinically significant change. This device is not a tinnitus cure, but will likely be used in combination with other treatments for tinnitus.

## **Michigan Tinnitus Device**

Another research group led by Dr. Susan Shore out of the University of Michigan has shown positive results for bimodal stimulation as a tinnitus treatment. They created a system that delivers light electric pulses to the neck or cheek. It pairs this neural input with sound stimulation delivered with headphones. Thus, you're getting two inputs, sound and electric pulses traveling through the somatosensory system. However, this device is not available commercially yet, and is still only an investigational device.

So far, the research behind the Michigan Tinnitus Device suggests that it may help in reducing tinnitus perception by stimulating changes in the way the central nervous system inhibits signals of tinnitus, or the way in which the central nervous system modulates tinnitus signals. Results from a research study showed that the loudness of tinnitus decreased after the actual treatment. There is a good scientific basis for these treatment methods, but further independent clinical studies will likely be needed to truly understand how effective these treatments are. The device will likely be submitted for FDA consideration under the company name Auricle.

## # 5 Sound Machines

Sound-based therapy refers to the use of neutral or positive sounds to help reduce the annoyance and awareness of tinnitus. It takes many forms, and can be something used on its own, but it is generally more effective when paired with counseling in a treatment program. Tinnitus Retraining Therapy (TRT), as described earlier in this guide, is a treatment plan that combines sound therapy with education and counseling. Sound plays an important role in TRT, and affordable sound machines can be a good start to getting help with tinnitus



Simple noise generators are a must-have around your home. We recommend starting with the BST-100 model from Sound Oasis. You can use this machine to feel relief from tinnitus during the day and at night. If you're having trouble falling or staying asleep due to tinnitus, even with use of a simple

table-top noise generator, then you should keep testing out different methods for providing sound therapy until you find what works best for you. We often recommend a combination of sleep headbands, sleepbuds, and sound pillows, as these devices allow sound to be heard while lying down with one of your ears on a pillow.

While sound machines can be helpful, they do not compare to the effectiveness of ear-level devices like tinnitus maskers or hearing aids for tinnitus. Ear-level technology is recommended for most patients. They provide a consistent level of sound that you can take with you everywhere you go, and they provide a safety-net so you don't have to worry about creating a sound-rich environment during the day.

Our new bundle includes everything needed to start the path to habituation.

**Speak With A Team Member - (855) 873-2531**



# Tinnitus Research Worth Knowing About

## Bimodal Stimulation



As mentioned earlier in this article, research on bimodal stimulation as a method for reducing tinnitus perception is probably the most promising area of tinnitus treatment development so far this decade. Research suggests that when the brain gets simultaneous stimulation of sound and another nerve, the brain can make changes to recognize that the phantom sound of tinnitus is a false alarm. This enables tinnitus to be recategorized and restructured in your brain.

There are many different approaches to managing tinnitus, and we see bimodal stimulation as a potential supplemental therapy. We don't recommend it to our patients in isolation as the only method of treatment. Treatments focusing on education, cognitive restructuring, and positive framing still have the most evidence behind them as methods for managing tinnitus. Tinnitus Retraining Therapy (TRT) and



Cognitive Behavioral Therapy (CBT) have been shown over and over again to be successful in reducing the impact of tinnitus. Bimodal stimulation, like any other treatment for chronic tinnitus, is unlikely to completely silence your tinnitus, and it may be another tool that can be used to reduce awareness of it in conjunction with counseling. Still, bimodal stimulation methods may help some people, and we are hopeful that further research can provide more evidence for successful tinnitus management.

The two research groups to follow are Dr. Susan Shore with the University of Michigan and Dr. Hubert Lim with Neuromod Devices.

## OTO-313



A company called Otonomy developed a drug called OTO-313, which it had hoped would treat tinnitus. The OTO-313 drug was injected to the ear through the eardrum. Early results from an initial clinical trial were promising, but the second phase of clinical trials completed in 2022 showed that the drug failed to improve tinnitus. Therefore, Otonomy has decided to stop development of this drug. The company is still developing other drugs in attempts to target cellular function in the inner ear, with their primary focus on hearing loss outcomes. While they are no longer focusing specifically on tinnitus, their continued research and development may be interesting to follow, due to the relationship between inner ear health and tinnitus. It is not likely that we'll see a tinnitus-specific treatment from this company any time soon.

## FX-322



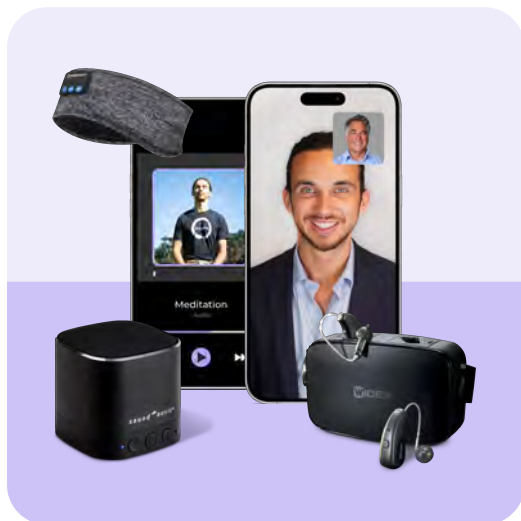
Another research technique that the tinnitus community has been following is regeneration of cells in the cochlea, the main hearing organ in the ear. One company to follow for cochlear hair-cell regeneration research is Frequency Therapeutics.

Frequency Therapeutics developed a drug called FX-322 to target regeneration of cochlear cells; this drug is also delivered to the inner ear by injection through the eardrum.

Unfortunately, a clinical trial of the FX-322 drug completed in early 2022 did not show a benefit for patients. The company suspects that the design of the trial may play a role in these disappointing results, and they are planning another clinical trial to evaluate effectiveness of the drug. The planned clinical trial is in progress now, with more rigorous methods, and with results planned to be released in the spring of 2023. At this time, however, there is no clear data on outcomes of this drug on tinnitus, and it seems unlikely to help people with tinnitus in the immediate future. We will continue to monitor its success in future trials.

Research developments aimed at alleviating tinnitus are welcome and encouraged. We're thankful for the researchers who are trying to fix a very hard problem. While these treatments have been cited as some of the most promising in the last few years, they do not appear to be breakthroughs at this point. It is likely that it will take a much larger body of research over years to demonstrate whether there are any true breakthroughs in tinnitus treatments.

## The Leading Treatment for Tinnitus



### Treble Health

The best treatment we have for tinnitus is what the team at Treble Health currently offers to patients in the United States.

We combine sound therapy treatment and tinnitus coaching, using techniques from cognitive behavioral therapy (CBT).

Our leading offer is the Treble Maskers Bundle.

## Here is everything included in the Treble Maskers Bundle:

- Pair of Advanced Tinnitus Maskers
- Sound Oasis Tinnitus Sound Machine
- Tinnitus Sleep Headband
- Five Private Sessions With A World-Class Audiologist
- Six Group Sessions
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