

TINNITUS HABITUATION, AND THE THERAPEUTIC USE OF SOUND IN THE MANAGEMENT OF TINNITUS

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Habituation to tinnitus

Most people who develop persistent tinnitus will spontaneously habituate or adapt to their tinnitus over time, so that while the tinnitus may still be heard, attention is rarely given to it and emotional acceptance is achieved - the tinnitus is neither pleasant nor unpleasant. Habituation is a normal reaction to any persistent stimulus. For example, just after putting your clothes on in the morning they can be felt on the skin, but this sensation lasts only a very short time. During the day, you do not notice their touch, even though skin receptors continue to send signals to the brain about the sensation of your clothes against your skin.

As you move towards habituation, you will notice a gradual increase in the periods of time when you are not aware of your tinnitus, as well as a gradual reduction in any annoyance or distress it may have caused. Illness and stress can lead to moving backwards in this process. Sometimes people become stuck and are unable to habituate as fully to their tinnitus as they would like. An awareness and understanding of your individual pattern of coping with setbacks and trauma, as well as stress management, may be required for habituation to be achieved.

Most therapeutic approaches to tinnitus management, including Tinnitus Retraining Therapy (TRT) and Cognitive Behavioural Therapy (CBT), aim for a satisfactory level of tinnitus habituation to be achieved. TRT is based on the neurophysiological model of tinnitus, and is a treatment aimed at retraining the subconscious parts of the brain to ignore the tinnitus sound. CBT aims to alter unhelpful thoughts about tinnitus through behaviour modifications that may change an individual's reaction toward their tinnitus.

Sound Enrichment

Research has shown that almost everyone develops temporary tinnitus, if put in an abnormally quiet environment (such as a soundproof booth) and instructed to pay attention to any sound they may hear. You are more likely to notice or listen to your tinnitus in a quiet room. This increased awareness may lead to an increase in active monitoring of the tinnitus. This, in turn, may lead to an escalating cycle of increased irritation and distress, which will, in turn, increase the awareness and the intrusiveness of your tinnitus.

According to the neurophysiological model of tinnitus and hyperacusis, when people with tinnitus remain in a quiet environment for some time, the gain (or volume) in the central auditory pathway increases, resulting in enhancement of the tinnitus sound.

Our senses react not to the absolute value of a stimulus, but to the difference between the stimulus (or tinnitus) and the background. The tinnitus will not stand out as sharply and will be less obvious when surrounded by another sound.

Sound enrichment involves adding sound to your environment. The aim is to surround the tinnitus sound with a neutral sound which is easily ignored. Sound enrichment is

an important component of most approaches to tinnitus management and is an integral part of Tinnitus Retraining Therapy (TRT). For those people who have intermittent awareness of their tinnitus, sound enrichment can be restricted to times when the tinnitus is particularly noticeable or irritating. For people who are constantly aware of their tinnitus, 24-hour sound enrichment is recommended. This involves making sure there is always some sound present. By actively seeking to assert some control over the situation, the feelings of helplessness so often reported by people with tinnitus can be reduced.

You do not have to actively listen to the sound you choose. In fact, particularly when you do not wish to be stimulated by the sound, it is best to adopt a passive approach to the sound by ignoring it. I like to describe the sound as “acoustic wallpaper”.

If you wish to listen to TV, radio and music, you will be distracted from your tinnitus, as well as less likely to be able to hear it. As a result, it will become less prominent. However, most people don't want to be stimulated by these sounds for more than a few hours, let alone for 24 hours, and it is then appropriate to use less stimulating and blander sounds. The important thing is to have available a variety of sounds to suit your mood and the degree of stimulation you want.

There are many common sounds in our environment that are familiar, soothing, have pleasant associations or are at least neutral, and are fairly monotonous. For example, many people with tinnitus will not hear their tinnitus if walking on the beach, or in a park with the sound of birds and wind in the trees. This concept can be extended using an environmental sound generator, which typically produces a range of sounds such as ocean surf, bubbling river sounds etc. They can run on batteries as well as on mains electricity and are relatively portable.

Some people find FM radio static (the hissing sound heard when the radio is tuned between stations) an inexpensive, accessible neutral sound. Having your therapeutic sound made portable gives a huge advantage to ensuring your sound source remains stable. Now that many people own Smartphones, there are a range of apps which allow a huge variety of sounds to be downloaded. They can be used with lightweight headphones which can be positioned around the neck, rather than in the ears, to maintain ease of communication with others. If you have hearing aids, it is advisable to use them for most of the day to enhance your awareness of these environmental sounds.

The sounds used should never cause annoyance or be unpleasant in any way. Because these sounds are neutral and relatively bland, they are easy to ignore. As a result, most people readily habituate to them.

Masking - how is it different to sound enrichment?

The discovery that tinnitus could be masked or blocked out by external sounds has been credited to the ancient Greeks over 2000 years ago. Some people with tinnitus consider that sound therapy is not effective if it doesn't mask the tinnitus. In fact, many people with tinnitus are not able to mask their tinnitus sounds – the tinnitus appears to “compete” and “rise above” the masking sound.

Masking can provide relief in the short term by substituting a more pleasant sound for the tinnitus. During the course of the day, environmental sounds may mask or block out the tinnitus and this is a helpful coping strategy. However, this is not regarded as an effective treatment for tinnitus as it does not promote habituation - the tinnitus remains as bothersome as ever once the masking ceases.

The ideal volume level, when using a stable sound source, is where the volume is set slightly above “just audible”, so that you can hear both your tinnitus as well as the sound used. To assist habituation to your tinnitus you need to be able to hear it along with the sound chosen. For this reason it is advisable not to swamp or "mask" your tinnitus for prolonged periods of time.

While these low volume levels may seem unlikely to be beneficial as an auditory strategy, benefits will also take place at subtle neurological and psychological levels.

Sound enrichment during sleep

Constant low level neutral sound in the bedroom is recommended if your sleep is disturbed by your tinnitus. The tinnitus will not be as obvious when surrounded by another sound, whether you are trying to fall asleep or if you wake during the night. We have 3 or 4 periods of light sleep during the night, and some researchers claim that we are then able to hear our tinnitus. If your tinnitus causes you irritation or distress, hearing it could wake you up during those periods of light sleep. This is less likely to occur in the presence of other sound.

When trying to fall asleep, don't focus on the low-level sound but let it move into the background of your awareness. To stop you focusing on your tinnitus, use gentle distraction strategies that do not involve sound, such as reading, until you are sleepy. Active relaxation exercises during the day can be useful in helping you to sleep more deeply. These can include progressive muscle relaxation exercises, breathing exercises and positive visualization. Active relaxation exercises via an app can also help tip people into sleep at night.

Tinnitus and hearing loss - Hearing Aids

People with a hearing loss often blame their tinnitus for their hearing problems, particularly when communicating in groups and in background noise. The tinnitus is a symptom of the hearing loss, not the cause. If you have a hearing loss, then hearing aids will be effective in both the management of your hearing loss *and* your tinnitus.

Hearing aids, by amplifying external sounds around you, will result in your internal noise, or tinnitus, becoming less noticeable. To be effective in managing both the hearing loss and the tinnitus, hearing aids need to be worn for most of the day.

The effort of straining to hear a conversation and the resultant communication difficulties frequently lead to frustration, fatigue and stress. These are all major aggravating factors in tinnitus awareness and annoyance. Once you have adapted to the amplification provided by your hearing aids, you can expect a significant reduction in stress and fatigue.

Because your hearing loss is likely to have developed over some time, your concept of what is "normal " hearing has also slowly changed. When hearing aids are fitted for the first time,

and sounds are boosted to the level they should be heard, your concept of what is "normal" hearing will need to be adjusted. Many sounds will seem unnaturally prominent or noticeable for the first few weeks, as it takes time for the brain to relearn these sounds. This adaptation or adjustment period may last up to several months. For this process of adaptation to occur, it is advisable to use your hearing aids for most of the day.

Your hearing aid may be less effective as a tinnitus management tool when you are in a quiet environment. Sound enrichment can be helpful, using the strategies previously outlined. Most contemporary hearing aids incorporate a program in their hearing aids for those with tinnitus, producing a sound which can be used in quiet environments. This may be in the form of white noise, digitally generated environmental sounds with one manufacturer offering fractal tones, a relaxing sound similar to wind chimes, or streaming directly via Bluetooth from an app. It is important to remember, however, that most people with a hearing loss will have a reduced ability to hear a voice through background noise.

When you remove your hearing aids, you may notice your tinnitus appears more prominent. Don't be concerned about this; it is simply due to the lack of amplification of environmental sounds making your tinnitus seem louder by contrast. Try not to remove your hearing aids in a quiet environment; increasing the volume of environmental sound will help.

