

# 12 STEPS IN TINNITUS MANAGEMENT

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## Information

Tinnitus is a very common symptom suffered to some extent by 70-85% of people with hearing impairment. For most it is more of an “irritant” than a major problem. Tinnitus can be perceived as many different sounds, such as humming, ringing or buzzing, and it can be constant or periodic and vary in loudness.

There can be many causes of tinnitus. Often the reason is unknown. Frequently it is noise induced, is related to medical disorders such as ear infections or Ménière’s disease, or may be caused by use of certain drugs. Regardless of the cause, there is a very high correlation between the presence of hearing loss and tinnitus. This correlation is probably related to the well-established principle that a peripheral disorder (such as a cochlear hearing loss) produces an increase in brain activity. In other words, the brain tries to compensate for the lack of stimulation from the inner ear.

Often, negative emotion is attached to the tinnitus, and increased attention is paid to it –making it difficult for the patient to cope. It is consequently important to talk to patients about their thoughts and concerns. Tinnitus is often more difficult to deal with when there is uncertainty or fear involved.

Once medical evaluation has ruled out a treatable or serious disorder, education and reassurance can be extremely valuable and may be sufficient for some people.

Fortunately the brain has the capacity to learn to ignore stimuli that are not essential for wellbeing.

# COUNSELLING ABOUT TINNITUS

For clients suffering from tinnitus that negatively impacts their daily life, tinnitus management procedures should be a part of the rehabilitation process.

For most clients, the following topics could be discussed:

- The incidence of tinnitus and how people might be affected by the symptom.
- The auditory system and possible causes of tinnitus.
- Why hearing loss causes tinnitus.
- The exacerbating effect of caffeine, alcohol and nicotine
- Common difficulties as a result of tinnitus, including stress
- The importance of receiving a thorough medical evaluation, preferably by an ENT specialist, to determine the cause of the tinnitus and whether it is medically treatable.
- The capacity of the brain to suppress perceptions, including tinnitus

(The Widex Zen and Zen Noise flip-over book can be used to explain this, pages 4-14)

Studies have shown that the relationship between the loudness of the tinnitus and the degree of tinnitus annoyance is fairly weak, and that it is the client's reaction to the tinnitus that is the major issue. This is one of the reasons why scales tests focusing on the consequences of the tinnitus are popular among hearing care professionals.

There are a number of good scales tests for measuring the client's reaction to tinnitus. Some examples are:

- THI (Tinnitus Handicap Inventory)
- THQ (Tinnitus Handicap Questionnaire)
- TRQ (Tinnitus Reaction Questionnaire).

Comprehensive hearing testing should be performed, and some professionals also find matching the tinnitus pitch and loudness to be useful.



## ASSESSING TINNITUS AND ITS EFFECTS

Determining how tinnitus affects a client's daily life is essential in deciding on the degree and nature of intervention. It is also important to measure the client's reaction to the tinnitus so that you have a baseline from which you can assess future progress. Subjective scales are available that can typically be completed by the client in the clinic in less than five minutes.

Before testing, the client should be told why testing is necessary, and the results of the test should be explained.

## Information

Providing stimulation to the auditory system may help the brain to 'turn down' its sensitivity and cease to seek out the stimulation it is lacking due to the hearing loss.

When the brain senses the tinnitus sound, which it cannot relate to a well-known sound source, it may react by producing stress hormones. Stress hormones are released because the parts of the brain that control emotions make the assumption that this is something dangerous that requires your reaction. Since the tinnitus does not disappear, stress hormones continue to be released, leading to chronic stress. This can have a considerable impact on, for example, the person's ability to fall asleep, mood and physical well-being.

By using sound in tinnitus management, it is possible to interrupt the constant release of stress hormones. Given the relationship between tinnitus and stress, another important aspect of the use of sound is that certain kinds of music can help you to relax.

The client should however be advised to avoid complete silence.

# THE **USE OF SOUND** IN **TINNITUS** MANAGEMENT

Most tinnitus management methods use a combination of counselling and sound stimulation. The purpose of using sound is to:

- minimise the contrast between the tinnitus and the surrounding sound environment
- reduce fatigue and stress
- shift focus away from the tinnitus

Sound stimulation can be delivered via a number of methods including:

- amplified sound from hearing aids
- broad-band or narrow-band signals from a noise generating device
- environmental sounds
- music

For many clients, amplified sound from hearing aids, a radio or television is sufficient to reduce the contrast.

## Information

The emotional control centre is also called the limbic system. The limbic system produces stress hormones, which from a biological point of view help us to react to a dangerous situation and escape a possible threat. When the dangerous situation is over, the limbic system stops the production of stress hormones.

These hormones are good and necessary, but when they are constantly being released due to tinnitus, adverse physiological conditions, such as hypertension, may occur.



# THE **LINK** BETWEEN **TINNITUS** AND **STRESS**

Perhaps the most exacerbating factor for tinnitus is stress. Tinnitus affects the brain in more than one way; it triggers the auditory centre, but it also affects the emotional control centre. When this occurs, stress hormones are released.

As a result, the person with tinnitus becomes more stressed due to the tinnitus, and just as importantly, the greater stress increases the perception of the tinnitus.

Explaining this to the client makes it possible to break this vicious cycle in which one negative symptom reinforces the other.

## Information

Music helps to induce relaxation because it stimulates the parts of the brain that release hormones that affect mood, as well as the area of the brain that produces tinnitus. It can also influence certain physiological functions that affect stress. While people may have individual preferences for certain types of music, there are a number of general rules that apply.

Slow music, for example, tends to produce a soothing effect, while fast music stimulates. Lower pitches produce calm, while higher pitches tend to excite. Major chords may induce a sense of happiness, while minor chords tend to induce sadness. Repetitive music can be considered pleasant, but might induce active listening, while music that never repeats itself may produce passive listening. Loud music and music with sudden changes in rhythm or volume has a stimulating effect, while slow music which does not vary much in overall rhythm or loudness is relaxing.

# MUSIC AND STRESS

Many people use music for relaxation and stress relief without thinking about it.

- Music has an influence on the human body.
- Our musical likes and dislikes are individual.
- In general, music with a fast tempo and sudden changes in rhythm or loudness can produce an alert state which is not conducive to relaxation and calmness.
- Soft, slow-paced music tends to be more relaxing.

With this in mind, it is easy to see how carefully selected music may provide an excellent way to help people with tinnitus to relax. This includes reducing stress, by breaking up the vicious cycle of tinnitus leading to stress and stress making the tinnitus worse.

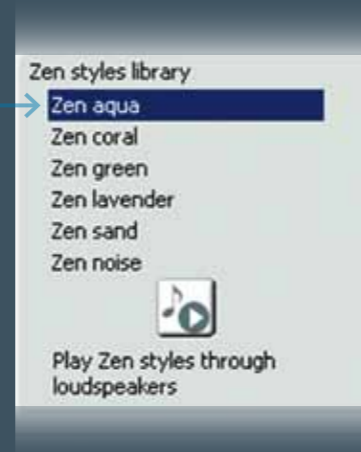
(The Widex Zen and Zen Noise flip-over book can be used to explain this, pages 18-20)

## Information

Widex hearing aids can be used to provide sound stimulation in several ways. They provide an excellent amplified sound, which for some hearing aid users is enough to reduce tinnitus annoyance to an acceptable level.

The Zen tones provide the flexibility to take account of individual needs by offering five styles which differ in tempo, pitch and rhythm, and which can be further adjusted to meet the client's preferences via the fine-tuning controls in the Compass fitting software. In addition, the Zen feature also offers a broad band noise option.

All of this adds up to the fact that with Widex hearing aids, the client requires only one system to provide the sound stimulation component of tinnitus management.



## INTRODUCING ZEN

The Zen option produces fractal tones that are generated in a manner based on the normal rules of music, but which are not predictable. The Zen sounds may be described as being self-similar, without ever becoming repetitive.

Some professionals prefer to introduce the Zen tones (such as the Aqua Zen style) in the background while counselling the client, though without calling the client's attention to them, while others wait to play the tones until they are discussing the Zen feature.

Either way, you should describe to the client how Zen can produce the desired effect.

Explain that:

1. Amplification can in itself have a positive effect on tinnitus.
2. Zen tones can help some people to relax, which is important for people with tinnitus, since they tend to suffer more from stress than most people.
3. Explain that the purpose of Zen is to invoke "passive listening", which is possible due to the nature of the fractal technology: there is no recognizable pattern in the order in which each tone is presented. Ordinary recorded music can also be relaxing, but may claim your attention.

(The Widex Zen and Zen Noise flip-over book can be used to explain this, pages 20-22)



In general, the selection of the style and model of the hearing aid should be based, firstly, on the requirements of the hearing loss, and secondly with a view to the widest possible frequency response, so as to stimulate the largest possible number of brain neurons. The bandwidths of the Passion hearing aids and ClearBand hearing aid models from Widex are among the broadest on the market.

Some professionals use binaural stimulation even for unilateral tinnitus (but bilateral hearing loss), for the purposes of diffuse brain stimulation.



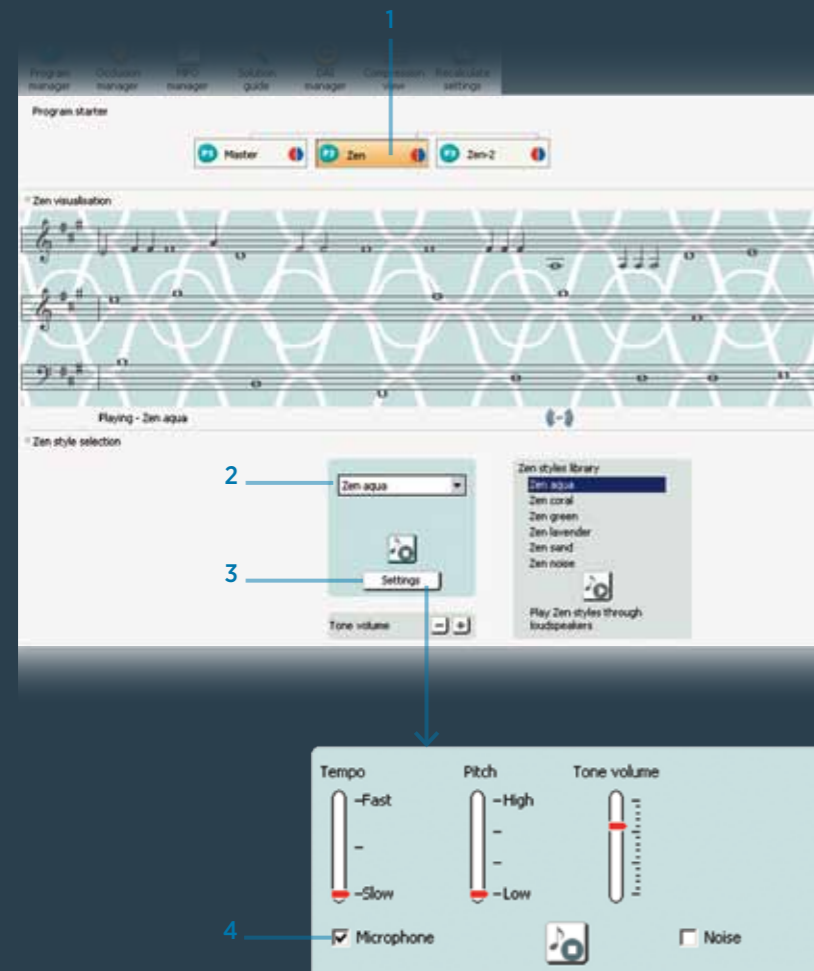
## SELECTING **HEARING AID** MODEL AND STYLE

Of course, as with other hearing aid fittings, it is essential to ensure that the client is comfortable with the appearance, physical fit, and cost of the devices. You don't want to add additional stress to this already stressful situation.

The essentials are:

- The Zen programs are only available in Widex hearing aids.
- A program shift on a remote control or on the hearing aid is necessary to access the Zen programs.
- A volume control is also very useful to give the client the opportunity to adjust the volume of the Zen tones and amplification.





## PROGRAMMING

When fitting the hearing aids, begin by programming the master program into Program slot 1 to achieve best hearing. If necessary, a second acoustic program can be placed in Program slot 2.

Then:

- Place Zen into the next two available slots (if only the master program is selected as an acoustic option, place Zen into slots 2 and 3) (1).
- Unless the client expresses a different preference, select Aqua (which research has shown to be the most preferred Zen style) for each of the two Zen slots (2).
- Go to settings (3). Adjust the volume for the first Zen program so that the fractal tones are audible, but relatively soft. They should never interfere with conversational speech. The annoyance level of the tinnitus should decrease slightly (i.e., tinnitus may still be audible).
- Select the microphone box so that the Zen tones will be presented at the same time as the amplification is on (4).

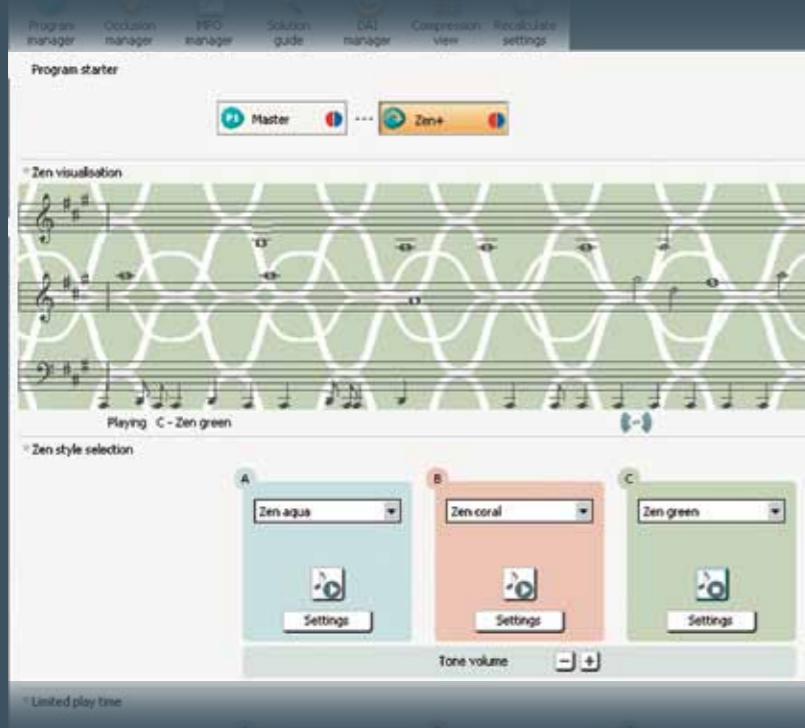
Also, let the client listen to a faster or slower tempo and a lower or higher pitch to determine whether settings other than the default are preferable.

Then go to the next Zen program and use the exact same settings with the exception of deselecting the microphone box. By doing this, the client can listen to Zen tones without the microphone turned on.

This program will be used when the client is in situations where it is not necessary to listen to external sounds, such as while meditating or reading. As stated earlier, tinnitus patients should preferably avoid complete silence.

## Information

Using the Zen+ option, the client can have access to five different Zen programs. The Zen+ option needs to be activated if you wish to change the Zen loudness independently of the amplification.



## FINE-TUNING ZEN

As you gain more experience with Zen and with tinnitus sufferers, you may find it useful to further fine-tune the Zen options. For example, you might present the various Zen styles to the client and let the client select the one or two Zen styles that are most relaxing and/or best suited to alleviating the tinnitus annoyance.

For some clients, it is also useful to activate the Zen+ program. This program selection will allow the user to add additional Zen programs without occupying slots used by acoustic programs.

Zen+ can be accessed by using a long key press on the remote control or the hearing aid program button.

In addition, some tinnitus sufferers will find the presence of the broadband noise to be useful in relieving tinnitus distress. The Zen noise option can be activated simply by selecting the noise box in Settings.

# WHEN AND HOW **TO USE** THE **ZEN PROGRAMS**

To obtain maximum benefit from the hearing aids and the Zen programs, the client needs to know when and how to use the different programs. The following guidelines are appropriate for most clients:

- Hearing aid standard acoustic programs: when hearing is essential.
- Zen + microphone: daily communication. Client should be instructed to “set and forget”.
- Zen without microphone: for relaxation or meditation – situations where hearing is not critical

The noise option can be used when tinnitus is particularly distressing and may be useful in the early stages of therapy. Long term use of the noise as a masking stimulus should be discouraged because it is unlikely to produce habituation.



Do not use the level of tinnitus loudness as a measure of whether the client is improving. As mentioned earlier, the loudness of the tinnitus is not the critical factor, but rather its negative impact on the client's quality of life. If the client is able to think less about the tinnitus, progress is being made.



## ESTABLISHING **REALISTIC** TIME-BASED **EXPECTATIONS**

Setting expectations is essential to all rehabilitation strategies. It is important to explain to the client that the effect of Zen or the hearing aid sound may not be immediate, although it can be, with some clients. Habituation to tinnitus can take several months and for some clients even a year or two. Most importantly, it should be emphasised that the client should continue to use Zen even if it does not seem to make an immediate difference. The only time the client should stop using Zen is if the tones are disturbing.

The client must understand that the objective of the sound stimulation and counselling is not to cure the tinnitus or to achieve a significant reduction in its loudness. The goal is rather to alter the clients' reaction to the tinnitus, so that it no longer has a negative effect on their lives. The client should strive to accept the tinnitus and recognise that it does not pose a danger to his or her well-being. A realistic goal is to reduce the amount of time wasted on negative thoughts about the tinnitus.

Talk with the client about what goals are important and what it will take to achieve them. Ultimately, quality of life is the main issue, and the use of amplification and Zen can help the client to achieve improvement in this area.





## FOLLOW-UP VISITS

The purpose of the follow-up sessions is to ensure that the hearing aid settings, including the choice of Zen style, and the Zen style settings are optimal. If the client has experienced any difficulties in using the hearing aid or the Zen program, fine tuning is required.

Always schedule follow-up visits. They will help build confidence that you are a partner in the client's battle with tinnitus. A follow-up plan (in person or by phone) could look like this:

- First follow-up session after 1 week
- Second follow-up session after 4 weeks
- Third follow-up session after 3 months
- Fourth follow-up session after 6 months

After the first six months, it is suitable to have a follow-up session every six months until termination.

Remember to assess progress by using the subjective measures or scales tests used to establish the baseline tinnitus handicap or reaction. Compare the scores to the pre-fitting scores, and discuss progress with the client.

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## If you would like to read more about tinnitus

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Widex Tinnitus Guidelines is developed by Widex A/S in co-operation with Dr. Robert Sweetow, Professor of Audiology, University of California, San Francisco