



WIDEX **ZEN THERAPY**

Five easy steps

1

2

3

4

5

CONTENTS

INTRODUCTION	3
WHAT IS WIDEX ZEN THERAPY ?	5
1. THE INTAKE PROCESS	7
2. ESTABLISH A TREATMENT PLAN	11
3. UTILIZING COMPONENTS OF WIDEX ZEN THERAPY	15
4. ASSESING PROGRESS	25
5. FOLLOW-UP SCHEDULE	27

Disclaimer:

The Widex Zen Therapy protocol is Widex's attempt to provide systematic guidelines for clinicians to manage people with tinnitus. It is based on Dr. Robert Sweetow's expertise and our cumulative research findings on the use of Zen, which are explained fully in the WIDEX ZEN THERAPY – MANAGING THE EFFECTS OF TINNITUS manual, and in an abridged version here.

Widex Zen therapy is not intended to be a substitute for individual medical advice, diagnosis, or treatment by a physician or any healthcare professional who is aware of the person's medical history. It is important that the person consult with a physician to rule out any medical treatable conditions before starting the Widex Zen Therapy. It should also be noted that Widex Zen Therapy is not a "cure" for tinnitus. Rather, it is a program designed to help people manage their reaction to this annoying symptom.

The individual person's response to Widex Zen Therapy may vary. Some require all components of the protocol while others may only require one or two components. Furthermore, some will notice immediate benefits while others may require a month or so to start noticing improvement. If a person with tinnitus notices any significant worsening in hearing, tinnitus or ear-related medical conditions during the Widex Zen Therapy, s/ he should contact the healthcare professional immediately for appropriate resolution. Sometimes, referrals to other professionals may be necessary.

INTRODUCTION

Widex Zen Therapy was first introduced by Widex in 2012. Since the initial introduction, the method has been widely accepted as a comprehensive and professional way of managing tinnitus.

Widex Zen Therapy (WZT) provides systematic guidelines for tinnitus management by hearing care professionals, often using Widex hearing aids equipped with Zen technology. WZT is unique because it is an integrated program, addressing all major dimensions of tinnitus distress: the auditory aspects, attention and emotion. WZT includes various components that can be used individually or combined, depending on the needs of the individual tinnitus sufferer. People with tinnitus who have minimal or no negative reactions may not require all the components of WZT.

The Widex Zen Therapy Five easy steps manual condenses the elements of WZT, into a practical user-friendly guide to how to implement WZT in your clinic. If you prefer a more detailed description of WZT, please see the full manual: “WIDEX ZEN THERAPY – MANAGING THE EFFECTS OF TINNITUS”.



THE WIDEX ZEN THERAPY PROCESS

1

INTAKE PROCESS

Learn about the person in front of you, by interviewing, counselling and using subjective questionnaires. This is so you can plan the best possible treatment plan.

2

ESTABLISHING A TREATMENT PLAN

Establish a treatment plan by using the information from the intake process to ascertain tinnitus distress level and plan the overall level of WZT components, as well as the treatment goals.

3

UTILIZING THE COMPONENTS OF WZT

Choose the relevant components of WZT based on the individual client's needs: cognitive behavioral intervention, amplification, relaxation and sleep management.

4

ASSESSING PROGRESS

Assess the individual client's progress based on improvement of quality of life and reduction of negative thinking about the tinnitus.

5

FOLLOW-UP

Follow up on the progress of the individual client by scheduling a number of consultations to ensure that the client is supported throughout the process.

WHAT IS WIDEX **ZEN** THERAPY?

WZT is unique because it is an integrated program addressing all major components of tinnitus distress: auditory, attention, and emotion. The overall objective of WZT is to ensure that presence of tinnitus does not negatively impact the person's quality of life. This is done by incorporating key treatment elements into one holistic approach. The following elements are included in WZT:

1. **Counseling**

Counseling is used to educate the tinnitus sufferer and assist in altering the negative interpretation of the tinnitus. Cognitive and behavioral intervention is used when appropriate.

2. **Amplification**

Amplification is used to stimulate the ears and brain in order to reduce the contrast between the surrounding sound and the tinnitus, if hearing loss is present.

3. **Fractal tones**

Fractal tones are a novel, proven acoustic stimulus delivered dichotically in a discreet, inconspicuous and convenient manner, via Widex hearing aids. Fractal tones are designed to both relax and provide acoustic stimulation.

4. **Relaxation strategy program**

The relaxation program is a strategy for utilizing behavioral exercises and sleep management in order to improve overall quality of life.

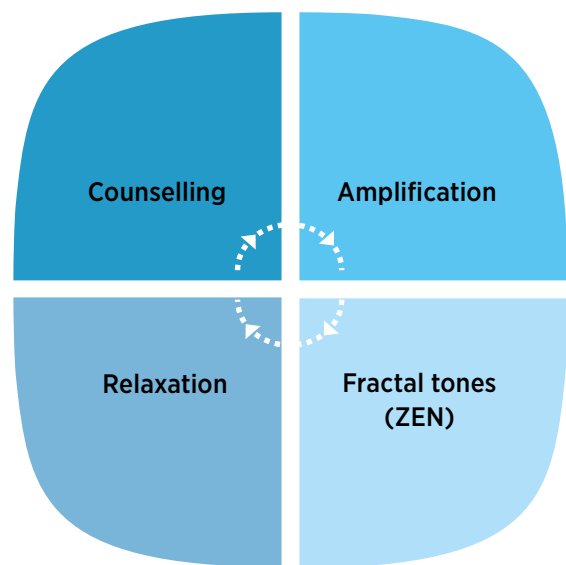


Figure 1. The components of Widex Zen therapy

The process of implementing WZT in a clinical setting can be seen as consisting of 5 stages:

1. **Intake process**

2. **Establishing a treatment plan**

3. **Utilizing the components of WZT**

4. **Assessing progress**

5. **Follow-up**

These stages, and thereby the implementation of WZT, will be explained in this manual.

1

INTAKE PROCESS

2

3

4

5



1. THE INTAKE PROCESS

- learning about the person in front of you

Before you decide which components of WZT to incorporate in the treatment plan, you need to understand the history, needs, fears and expectations of the person with tinnitus, so you can individualize the therapy. The first step in this process is to administer the intake questionnaires, perform an audiological evaluation, and an initial face to face personalized interview.

The purpose of the intake process is to understand the person's history, needs, fears, and expectations so that you can individualize the WZT for that person. You can conserve time by sending the WZT Intake questionnaire and the subjective tinnitus measures to the person before the appointment, or having the person complete it in the waiting area. Results can then be discussed directly with the person during the personalized interview.

QUESTIONNAIRES

WZT intake questionnaire

The WZT Intake questionnaire (Appendix A) gathers information regarding the following topics:

- Tinnitus and medical history
- Previous treatment for tinnitus
- Lifestyle
- Reaction to tinnitus

SUBJECTIVE SCALE MEASURES

Subjective tinnitus severity measures are designed to:

1. Quantify how the person is reacting to the tinnitus and how it is affecting quality of life;
2. Identify aspects of the tinnitus and related behaviors and attitudes that are most bothersome to the person; and

3. Establish a baseline score from which you can assess progress.

This information is not only important for counseling purposes but also for establishing which components of WZT are necessary.

Four commonly used measures are:

Tinnitus Functional Index

The Tinnitus Functional Index (TFI) is useful for scaling the severity and negative impact of tinnitus, for use in intake assessment and for measuring treatment-related changes in tinnitus. It also provides comprehensive coverage of multiple tinnitus severity domains.

Tinnitus Handicap Inventory

The Tinnitus Handicap Inventory (THI) provides specific clinical classifications. The THI uses questions that assess three primary areas; 1) limitations (e.g. difficulty concentrating); 2) emotional issues (e.g. anger); and catastrophic reactions (e.g. desperation).

Tinnitus Reaction Questionnaire

The Tinnitus Reaction Questionnaire (TRQ) looks for general distress (feeling helpless, interference with ability to work), severity (interference with sleep), and avoidance (noisy situations). The TRQ does not classify the total score in terms of severity of the tinnitus reaction; however, answers to individual questions can provide you with further insight about how the tinnitus is affecting the person.

Tinnitus Handicap Questionnaire

The Tinnitus Handicap Questionnaire (THQ) looks at aspects of the hearing problem in addition to the tinnitus problem. An individual's scores may be compared to the normative values to estimate severity and need for treatment.



Copies of all four measures can be found in “WIDEX ZEN THERAPY – MANAGING THE EFFECTS OF TINNITUS”, appendices B, C, D, and E.

Any of the above can be effectively utilized. It is however important to be consistent, in other words if the TFI is used to establish baseline, also use that scale to assess progress.

AUDIOLOGICAL EVALUATION

In addition to the information obtained from the questionnaire and subjective measures, it is important to obtain test information regarding the status of the person’s hearing and auditory system.

Among the test procedures useful in the diagnostic audiological test battery are:

- Audiogram (to ascertain the degree and configuration of hearing loss as well as to identify potential causes of the tinnitus, e.g. hearing loss).
- Tinnitus characterization (some refer to this as matching) establishes an acoustical representation of the person’s perceived subjective experience. While not essential in determining the required components of the WZT, the process is appreciated by many people with tinnitus because it provides validation of their acoustical experience. It may also be useful to present a reproduction of the tinnitus experience to a family member so that others have the general familiarity of what the person perceives.
- If other audiological procedures utilizing high intensities (e.g. immittance, acoustic reflexes, LDLs, etc.) are employed for diagnostic purposes, proceed cautiously to minimize risk of exacerbating the tinnitus or raising the person’s anxiety over further damage.

INITIAL INTERVIEW

Once the intake questionnaires and audiological evaluation has been completed, the initial interview is performed. This is a dialogue with the patient, to ensure that you have all of the information you need to create a treatment plan. In the interview you:

- Review the findings
- Educate the person regarding the probable cause and potential development of the tinnitus
- Provide appropriate reassurance that the tinnitus does not represent a grave illness or a progressive condition (based on the outcome of already conducted medical examination)
- Establish the individualized plan for the WZT.

Counseling requires establishing a trusting relationship with the person with tinnitus. S/he needs to understand that you care about more than simply the hearing status. Your role is to guide the person through a journey based on scientific evidence in order to reach a status where the tinnitus is not negatively affecting quality of life. Be honest, and supportive, providing hope, but not promising goals you cannot achieve. Inform the person that progress will not only be based on the tools and techniques you will provide, but also on the person's active participation and willingness to engage in attitude and behavioral adjustments.

There are typically two types of counseling involved: instructional and adjustment-based. Instructional counseling entails providing information directly related to the person's hearing loss and tinnitus and an explanation of the relationship between tinnitus, hearing loss, and stress. Adjustment-based counseling is defined as helping the person identify and challenge irrational and maladaptive thoughts, beliefs, attitudes and behaviors that contribute to distress and fear of tinnitus.

Instructional counseling may include the following aspects:

- Review the WZT intake questionnaire and severity scale results, as well as the audiological evaluation results.
- Present the basic overall facts of tinnitus and provide reassurance.

- Discuss basic anatomy of the peripheral and central nervous system and establish the relationship between hearing loss and tinnitus.
- Discuss other factors that may be contributing to the tinnitus.
- Describe the physiologic relationship of emotions to the perception of tinnitus and the fact that there is a clear feedback loop between tinnitus distress and increased tinnitus.
- Explain the natural process of habituation.
- Explain to the person that the objective of the WZT is to address all the components that produce tinnitus distress:
 - Initiate tinnitus habituation by helping the brain reclassify the tinnitus as a non-important signal.
 - Provide amplification as well as the use of fractal tones to stimulate the brain.
 - Relaxation exercises to reduce stress.
 - Sleep exercises to facilitate sleep.
- Establish realistic expectations for the outcome of the treatment.

Once the person understands the connection between the tinnitus itself and the reaction to tinnitus, which was explained in the instructional counselling, it is important to also integrate adjustment based counseling. The adjustment based counseling is bi-directional. That is, it firstly helps you understand the person's perspective and thereby what he or she brings in terms of experiences, knowledge, opinions, feelings and prejudices towards the tinnitus; and secondly helps the person identify and challenge irrational and maladaptive thoughts, beliefs, attitudes, and behaviors that contribute to distress and fear of tinnitus.

1

2

**ESTABLISHING A
TREATMENT PLAN**

3

4

5

2. ESTABLISH A TREATMENT PLAN

Based on the intake process, you now have an understanding of the person in front of you. Together, you share responsibility for the treatment process. The problems, expectations and hopes related to tinnitus are known to you and you are aware of what the unique problem is. This knowledge, combined with the review of not only the total scores, but the individual responses to the questionnaire and subjective scales (TFI, THI, THQ or TRQ), will facilitate the choice of an appropriate treatment plan, since it is the knowledge conveyed to you by the person that provides the foundation for all the recommendations you choose to put forward.

TINNITUS DISTURBANCE LEVEL

Based on the individual responses in the intake process, it is possible for you to ascertain at which level of distress the person is and how to best facilitate habituation of the tinnitus. There are basically three different types of people with tinnitus for whom WZT may be appropriate:

1. People for whom tinnitus is the main focus with associated significant distress in their lives.
2. People for whom tinnitus is the main focus, but without significant associated emotional distress.
3. People for whom hearing loss is the main focus and tinnitus is secondary. The tinnitus does not cause significant emotional distress.

Figure 2 provides a general guideline using the subjective scale score to help determine at which level of tinnitus distress the person in front of you most likely is experiencing. Keep in mind that this is just a guideline and that there is substantial overlap between the cut-off scores and classifications.

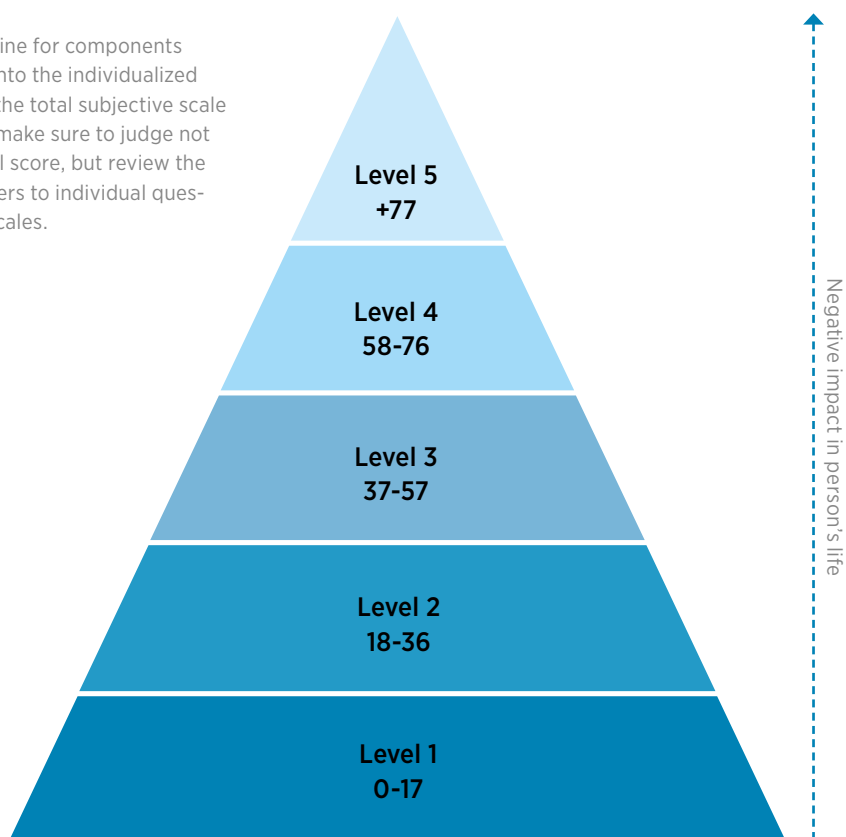
DETERMINING THE OVERALL LEVEL OF COMPONENTS OF WIDEX ZEN THERAPY

Experienced tinnitus practitioners will often determine which WZT components are required based on the intake process. However, for those clinicians who are new to the process, it may be helpful to utilize the baseline subjective scale score for making this determination. Guidelines for which components to incorporate into the individual treatment plan can also be seen in figure 2.

Persons who have significant tinnitus related distress will most likely require extensive management of their attitudes and behaviors. For these individuals, several of the WZT components are appropriate, such as extensive counseling, cognitive-behavioral intervention, amplification/ avoidance of silence, Zen options (fractal tones and / or noise) for passive listening and relaxation exercises.

Those who do not have emotional distress from their tinnitus will most likely benefit from being provided with simple reassurance, basic instructional counseling about the cause and likely course of the tinnitus, and hearing aids, when the amount of hearing loss warrants amplification and/or Zen options for quiet environments.

Figure 2: Guideline for components to incorporate into the individualized WZT based on the total subjective scale scores. Always make sure to judge not only by the total score, but review the individual answers to individual questions and sub-scales.



- Level 5: catastrophic tinnitus reaction with or without hearing loss;**
 Instructional and adjustment based counseling, cognitive behavioral intervention, amplification (when hearing loss exists), avoidance of silence, Zen all day, relaxation exercises 2-3 times a day.
- Level 4: severe negative tinnitus reaction;**
 Instructional and adjustment based counseling, cognitive behavioral intervention, amplification (when hearing loss exists), avoidance of silence, Zen all day, relaxation exercises.
- Level 3: moderate negative tinnitus reaction;**
 Instructional and adjustment based counseling, cognitive behavioral intervention, amplification (when hearing loss exists), avoidance of silence, Zen all day. Relaxation exercises might be useful.
- Level 2: mild negative tinnitus reaction;**
 Instructional and adjustment based counseling, amplification (when hearing loss exists), Zen for quiet environments. Relaxation exercises might be useful.
- Level 1: minimal or no negative tinnitus reaction;**
 Basic counseling about the cause and likely course of tinnitus, amplification (when hearing loss exists). Zen might be useful for quiet environments.



TREATMENT GOALS

When discussing the outcome of the treatment it is important to have realistic goals. The treatment goals themselves are based on the themes discovered in the intake process. Examples of realistic goals are:

- Decreasing tinnitus awareness and/or annoyance
- Increasing sense of control over tinnitus
- Improving ability to concentrate regardless of tinnitus
- Improving ability to fall asleep and stay asleep
- Hearing speech and conversation more clearly
- Decreasing anxiety and stress levels and enhance ability to relax
- Improving overall quality of life

Generally, the criteria for determining whether the person is progressing are based on improvement of quality of life and reduction of negative thinking about the tinnitus, rather than on changes in the perceived loudness of the tinnitus.

1

2

3

4

5

**UTILIZING THE
COMPONENTS OF WZT**

3. UTILIZING COMPONENTS OF WIDEX ZEN THERAPY

Depending upon the individual clients needs different components of WZT are relevant.

- Cognitive behavioral intervention
- Amplification
- Relaxation
- Sleep management

COGNITIVE BEHAVIORAL INTERVENTION

Cognitive-behavioral therapy (CBT) is commonly utilized for treating depression, anxiety, and tinnitus. When people are in distress, their thoughts may be distorted in an unrealistic and unhelpful manner. CBT helps people identify and evaluate the validity of their maladaptive thoughts and behaviors via numerous techniques and through a potentially time intensive approach. Therefore, it might be beyond the scope and expertise of many hearing care professionals.

In order to address these important aspects of maladaptive thoughts and behaviors in the tinnitus treatment, Cognitive Behavioral Intervention (CBI) has been incorporated into WZT. CBI is, like CBT, designed to identify unwanted thoughts and behaviors hindering natural habituation, challenge their validity, and replace them with alternative and logical thoughts and behaviors. The objective is to remove inappropriate beliefs, anxieties and fears and to help the person recognize that it is not the tinnitus itself that is producing these beliefs; rather it is the person's thoughts and reactions. It is basically, a condensed version of CBT focused on logical counseling well within the scope of practice of trained hearing health care professionals. CBI, like CBT, is based on cognitive theory. Cognitive theory

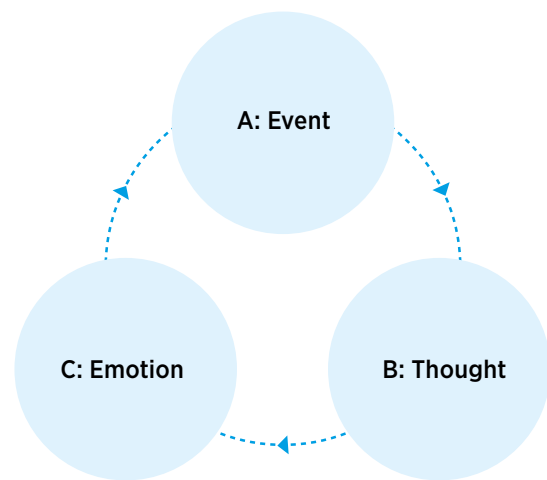


Figure 3. A refers to the situation or event a person experiences. B refers to the thoughts, beliefs, and perceptions the person has about the situation and C refers to the emotional state (Henry, Wilson, 2001).

states that the thoughts we have regarding situations or events influence how we feel emotionally. In other words, it is not the event (in this case, presence of tinnitus) itself that creates our emotional response but the content of the thoughts concerning the tinnitus that creates the emotional response (and subsequent behaviors). (See Fig 3).

The integration of cognitive behavioral intervention is best implemented when combined with strategies to enhance the ability to relax and reduce stress. Tools to achieve this will be described later in this manual.

The basic processes in cognitive-behavioral intervention are:

1. Explain the rationale behind the cognitive behavioral intervention to the person and introduce the concept and description of maladaptive thoughts (also called cognitive distortions).

Explaining the rationale behind the Cognitive Behavioral Intervention is important, as it is more likely that people will use the techniques if they understand why these techniques are being suggested.

2. **Identify negative thoughts.** See table 1.

The person needs to understand that the way s/he thinks about tinnitus impacts emotions, and subsequently physiologic reactions. Thus, it is essential to distinguish between the tinnitus itself, thoughts, concerns, and fears about the tinnitus, and emotions, reactions, and behaviors.

3. **Identify and challenge maladaptive negative thoughts.** See table 2.

Ask the person suffering from tinnitus to look at his/her own negative thoughts, identify thought errors,

and then produce alternative thoughts. If the person is unable to do so, gently guide the person in the right direction. Note that it is not essential for the person to initially accept the alternative thought, only to acknowledge that it is a possible option.

If the person with tinnitus persists in maintaining maladaptive thoughts, it may be helpful to politely, but firmly, challenge the negative thoughts by asking questions such as:

- What evidence do you have to back up your statement?
- Are you considering all the facts?
- Is there anything you might do differently about these situations?

4. **Identify maladaptive behaviors and list alternative solutions.** See table 3.

Not all of the steps and worksheets described above are necessary for each person. Tailor the CBI to the needs of the person based on that individual's maladaptive thoughts and behaviors.

Event	Thought	Feeling
Invitation to a social gathering	I can't go. My tinnitus will get worse	Hopelessness, despair, frustration
Tinnitus is getting louder	I can't go on with this. I would rather be dead	Depression, suicidal feelings

Table 1. Examples of identifying negative thoughts.

Negative thought	Thought error	Alternative thought
My life used to be perfect before I had tinnitus, now it is horrible	All or nothing thinking	Life is never perfect, I had some problems before, and I still have some good things about my life now (like my grandchildren)
I was having a good time at the party, but hearing my tinnitus ruined everything	Mental filter	Many people struggled to hear at that noisy party but still had a good time. I could have moved toward a corner of the room that wasn't so noisy

Table 2. Examples of thought errors and alternative thoughts.

Maladaptive behavior	Alternative strategy
When I hear my tinnitus in the morning, I stay in bed all day, avoiding sound, and feeling depressed	Being active makes me think less about my tinnitus. I should go to a mall, put on other sounds in my house so that the tinnitus isn't so apparent, and do anything except nothing!
I have trouble falling asleep so I lay in bed worrying about how I will feel tomorrow	If I can't sleep in 30 minutes, I will get up and read on the sofa, or will watch some quiet TV show, or get some extra work done that I have been putting off

Table 3. Examples of maladaptive behavior and alternative strategies.

AMPLIFICATION

Hearing aids can be very effective in decreasing the perception of tinnitus because

1. They increase stimulation sent to the cochlea and auditory cortex and ultimately may minimize the brain's attempt to "overcompensate" for the lack of stimulation;
2. They may mask or partially mask tinnitus;
3. They may reduce contrast between tinnitus and silence.

While most well fitted, high quality hearing aids can help tinnitus sufferers with hearing loss, Widex hearing aids are particularly effective because of their low compression thresholds, broad bandwidth, precision fitting procedure (Sensogram), and in situ verification (SoundTracker).

Compression threshold (CT)

Many tinnitus treatments advocate the avoidance of silence. Therefore, in order to minimize these situations, maintaining some background sound is advisable. Widex hearing aids have the lowest CT in the industry, thereby producing more gain for even the softest inputs. Therefore, if the person suffering from tinnitus is in a quiet environment, rather than perceiving silence, the hearing aid will provide amplification to reduce the contrast of the tinnitus to the background environment.

Bandwidth

Tinnitus is typically most pronounced within or near the frequency range of the hearing loss, and it is believed that at least part of the reason for perceiving tinnitus is due to the brain's attempt to overcompensate for the lack of sound from the impaired auditory system. Therefore, it makes sense to amplify sound in the entire hearing loss region. Therefore, it is best to utilize hearing aids that amplify the broadest bandwidth possible to provide high frequency input to the auditory system.

Sensogram and Sound Tracker

In order to provide auditory stimulation, it is necessary to ensure that amplification is actually being received at the eardrum. The Widex Sensogram and Sound Tracker ensure that the settings programmed into the hearing aids actually are being received by the listener. In addition, you should choose to perform the Sensogram in as many bands as possible when there is hearing loss at inter-octave frequencies, a sharply sloping hearing loss (differences in threshold between frequencies of more than 10 dB), or if the tinnitus pitch match occurs at frequencies other than 500, 1000, 2000, or 4000 Hz. Use of probe microphone measures can also provide the needed information.

Other fitting considerations for people suffering from tinnitus

- Earmold coupling: keep the ear canal as open as possible (without sacrificing important acoustic information).

- Expansion: expansion minimizes gain for soft inputs, and is thus not optimal for most people with tinnitus.
- Noise reduction: noise reduction can be useful for comfort, and may provide psychological reassurance to the person who is concerned about potential hurtful effects from noise exposure and amplification.
- Soft Level noise reduction: Widex has a Soft Level noise reduction feature. This feature is, by default, not active in the Zen programs and one should generally consider if it should be deactivated in other programs as well, in order to allow soft sounds to be heard.
- Multiple programs: The availability of multiple programs is often beneficial for persons with tinnitus; some programs can be set to maximize speech perception, some to maximize tinnitus reduction, some to maximize relaxation, etc.
- Sound Diary: Logging the actual use of the hearing aid allows you to discuss the person's actual wearing pattern when he or she returns for follow up.
- Maximum output and IG loud settings: since many people with tinnitus have loudness perception issues, including fear of excessive loudness, setting the maximum power at a level below the individual's personal loudness discomfort level is important.
- Feedback management: similar to the discussion on maximum output, high intensity levels may be generated during the feedback test. This may create discomfort for some people.
- Acclimatization: if loudness concerns persist, consider adjusting acclimatization settings.

Zen fractal tones

Tinnitus and stress are highly correlated. When stress increases, the perception of tinnitus typically increases, and when tinnitus increases, stress often increases. Thus, there is a vicious cycle for which any disruption might be beneficial. Listening to music can result in physiological changes correlated with relaxation and stress relief and thus break the vicious cycle. Music is believed to be helpful in reducing stress because of the wide range of neural structures that are activated.

However, it can be argued that the use of music for subconscious relaxation and reduction of stress, should not be actively distracting. Also, since there are personal preferences, neutral music should not have emotional associations.

An alternative approach to pre-recorded music that incorporates the benefits and rules of music but avoids these potential limitations is the use of fractal tones. Fractal technology (Zen tones) ensures that no sudden changes appear in tonality or tempo. They repeat enough to sound familiar and follow appropriate rules, but vary enough to not be predictable.

There are five available Zen tone styles. Each of them can be further adjusted for tempo, pitch and volume. The basic spectrum and intensity level will be based on the Sensogram, so you don't need to make extensive initial adjustments to the settings.

Having choices has been proven to be important in a series of experiments at Widex and multiple universities. The five Zen styles differ in terms of pitch, tonality, dynamic range, and tempo and are shown in Figure 4 to provide an overview of the differences between the Zen styles.

In addition, a broadband noise option is available that can be used either with the Zen tones, or alone. Also, the Zen signals and noise can be played with the hearing aid microphone on or off. This option may be useful when initially combined with the Zen tones, or in lieu of the Zen tones for those people who do not find the fractal tones pleasant.

The greatest success with persons suffering from tinnitus will often be attained when the hearing care professional exercises flexibility in order to fit the individual person's needs. For example, some people will demonstrate a clear preference for a different tempo or pitch, which can easily be adjusted. Some people may also need individual changes in their Zen program set-up.

Fractal styles	Default pitch				Tonality		Dynamic range		Default tempo		
	Low	Medium low	Medium high	High and reverberant	Major	Minor	Restricted	Broad	Slow	Medium	Fast
Aqua	●				●		●		●		
Coral			●			●		●	●		
Lavender			●		●			●			●
Green				●	●		●			●	
Sand			●		●			●			●

Figure 4: The pitch, tonality, dynamic range and default tempo of the five Zen styles.

FITTING THE HEARING AID FOR WIDEX ZEN THERAPY

Before the selection of the appropriate Widex hearing aids is made for the person suffering from tinnitus, the concept of WZT should be reviewed.

- Remind them about the relationship between tinnitus and hearing loss, and the relationship between tinnitus and stress.
- Explain the use of background sounds to stimulate the brain.
- Reiterate that music and relaxation exercises will combat the stressful effects of tinnitus.
- Explain why unfamiliar, but pleasant, background musical tones filtered to accommodate the person's hearing loss can be more effective in inducing habituation than familiar music.

In general the selection of the style and model of the hearing aid for WZT should be based, firstly, on the requirements of the hearing loss, and secondly with a view to the widest possible frequency response. Also, make sure that the chosen model has Zen+ as an option and that a volume control and a program button are accessible either on the hearing aid or via a remote control.

Basic fitting

- Complete the Feedback test and Sensogram
- If the person does not require amplification: Set the Sensogram to a flat 10-15 dB hearing loss so the intensity of the Zen tones will be properly established.
- After you have completed the feedback test and the Sensogram, go to the Program manager.
- The Universal program adjusted to best address the hearing loss is kept in Program slot 1.
- Select the Zen+ option.
- Go to Fine tuning and select Zen+ in the Program starter.
- Fine tune the Zen+ program:
 - a. Zen Aqua + mic for all day sound stimulation
 - b. Zen Aqua + noise + mic for all day sound stimulation in periods where tinnitus is more bothersome
 - c. Zen noise + mic, which might be found effective in reducing tinnitus awareness early in therapy.
- If the person does not need amplification: turn off the microphone in all the Zen+ programs.
- Remember to verify that:
 - the Zen tones are audible, but relatively soft
 - the Zen tones do not interfere with conversational speech
 - the volume of the Zen tones is set so that the annoyance level of the tinnitus should just begin to decrease

- When the fitting is completed, instruct the person to access Zen+ by making a long key press either on the hearing aid program button (if it has one) or on the remote control program shift button. Also, instruct the person to adjust the volume of the Zen tones or Zen noise by using the volume control on the hearing aid (if it has one) or on the remote control. (The default setting of the volume control in Zen+ is that the person's volume adjustments adjust the Zen tones and noise independently of amplification).

If the person does not like the Aqua Zen style:

1. Use the Zen style library and let the person listen to the different default Zen styles for approximately 30 seconds each.
2. Ask the person to decide which style is most relaxing and produces the least tinnitus awareness. The criterion is NOT which style has the best sound or most pleasant rhythm.
3. Add the selected style in slot A. Select the same style in slot B and add noise.
4. If necessary, you can further individualize the Zen styles by adjusting the tempo, pitch and volume.

If the person needs a relaxation program

Slot C can be used as a relaxation program, where the microphone is turned off in order to provide active listening to the Zen tones. Zen aqua (or other Zen styles) or Zen noise can be chosen depending on the person's preference.

If the person needs a sleep program

Slot C can be used as a sleep program, where the microphone is turned off and limited play time is activated to help manage sleep problems. Zen Aqua (or other Zen tones) or Zen noise can be chosen depending on the person's preference.

Instructions for everyday use

The person with tinnitus should be instructed to have a Zen program turned on all day. Thus, the default

program for them should be the first or second slot in Zen+.

People should be discouraged from making frequent changes to the volume of the programs. Basically, they should set it and forget it. There may be situations, however, when they either want the microphone off (for quiet relaxation – and this is the only time when active listening is recommended) or the Zen tones or noise off (for critical hearing periods).

People who initially do not like the Zen tones, or feel they interfere with their ability to concentrate or understand speech, should be instructed to turn the Zen on for a few hours a day (the time can be broken up into shorter periods, but never for less than 15 minutes) for the first two weeks, with the understanding that if they still don't like it after two weeks, it will be turned off. People should always use the Zen tones or Zen noise when their tinnitus is highly bothersome.

One additional point should be made. It is widely believed that the central nervous system increases its internal gain when it is cut off from expected stimulation. In addition, the perception of tinnitus is most prevalent (for most persons suffering from tinnitus) in quiet environments. Therefore, it is highly recommended that persons with tinnitus should be instructed to avoid silence as much as possible when they are engaging in their quest to habituate to tinnitus. When not wearing hearing aids or being exposed to the Zen option, they should maintain some extent of sound stimulation, which may take the form of background sound from radio, TV, or a fan.

RELAXATION STRATEGY PROGRAM

Relaxation exercises are an important component in the integrated WZT. The Zen acoustic signals will provide the listener with a relaxing background, but if the person with tinnitus is going to truly break the vicious cycle of tinnitus and stress, proven relaxation exercises should be used. Therefore, we suggest that each



person who has a negative reaction to tinnitus or who demonstrates the need for stress reduction, be prescribed and taught relaxation techniques. While there are numerous good relaxation techniques, we will focus on three simple but effective procedures, each of which only requires 5-10 minutes of training and less than 20 minutes of practice per day. Remind the person with tinnitus that the Zen Therapy is designed to address not only the acoustic aspect of the tinnitus, but the emotional and attention as well. Use of these exercises has been shown to aid in focus, concentration, and stress relief. The exercises listed below are available on a CD made by Widex as well as the Widex Zen - Tinnitus management App for smart phones and tablets.

General suggestions for the relaxation exercises:

- Perform the exercises while sitting in a comfortable chair in a quiet place with no distractions.
- Do the exercises while listening to the Zen tones, but if you are too distracted, turn off the tones.

- Remove your shoes and wear loose, comfortable clothing.
- Don't worry if you fall asleep.
- After finishing the exercise, close your eyes, relax for a few minutes, breathe deeply and rise up slowly.

Note: inform the person that if s/he has any medical conditions that may cause discomfort, a physician should be asked before doing these exercises.

Methods

Progressive Muscle Relaxation (PMR):

PMR consists of deliberately alternating tensing muscle groups and then releasing the tension. The idea is to progress systematically starting with the head and progressing all the way down to the feet (or vice versa depending on preference).

Relax for about 10-15 seconds and repeat the progression. The entire exercise should take about 5 minutes.

PMR can help the person identify and subsequently recognize when and where tension is being manifested.

Deep breathing:

This is the simplest of the relaxation procedures. It simply requires the steps listed below with deep, rhythmic breathing. The cycle should be repeated 20 times:

1. Exhale completely through the mouth.
2. Inhale through the nose for four seconds.
3. Hold breath for four seconds.
4. Exhale through the mouth for six to eight seconds.
5. Repeat the cycle 20 times.

The entire process will take approximately five to seven minutes.

Guided imagery:

After achieving a state of relaxation via PMR and deep breathing, instruct the person to keep eyes closed and continue the deep breathing while imagining him or herself in a personally relaxing environment (perhaps lying on the beach, floating in the water, or floating on a cloud).

MANAGING SLEEP PROBLEMS

One of the most common problems expressed by persons with tinnitus is difficulty falling, or staying, asleep. It is important to address these issues, as they will have an effect on the person's ability to learn to cope with tinnitus. Sometimes, however, people have unrealistic expectations or an unrealistic estimate of their sleep issues. Keep in mind that adults average eight hours of sleep and that sleep requirements sometimes change as one gets older. It is important to rule out medical



conditions contributing to sleep problems, such as apnea or depression, and if such conditions are suspected, refer to a sleep clinic or sleep specialist. Also, realistically discuss the use of sleep medications. These can be very important, particularly in the early stages of dealing with tinnitus.

Sleep management suggestions to discuss with the person with tinnitus:

- Maintain a standard bedtime for each day.
- Set your alarm for the same time each day.
- Walk or exercise for at least ten minutes a day, but not right before going to sleep.
- Set your thermostat for a comfortable bedroom temperature.
- Use a fan or white noise machine to interfere with your tinnitus.
- Close your curtains/drapes and maintain a bedroom dark enough to sleep.
- Don't watch TV, eat or read in bed
- Sleep on your back or on your side. Try to avoid sleeping on your stomach.
- Take prescription medicines as directed, but only if required.
- Have a set pre-bedtime routine. Start relaxing as you go through your routine.
- Take a warm bath or shower as part of your pre-bedtime routine.
- When you go to bed, take a deep breath and just relax. Feel your muscles relax.
- Once you're in bed, focus on a pleasant experience and use it like a mantra. Use the same thoughts each night.
- Don't engage in any activities before bed that stimulate your body or your mind. For example, planning a big speech, watching a favorite TV program, or participating in a hobby activity.
- Avoid food and drinks that contain caffeine. Caffeine is present in many sodas, coffee, tea, hot chocolate, and chocolate candy.
- Don't take a late afternoon or early evening nap. If you find yourself extremely tired in the afternoon, take a brisk walk, instead of a nap.

- Don't drink alcohol within an hour or two of going to bed.
- Don't lie awake for more than half an hour. If you find yourself wide-awake, do some other quiet activity away from the bed and bedroom. Go to bed only when you're relaxed and ready to sleep. This reduces the time you are awake in bed.

Using Zen for sleep

The Zen acoustic signals provide people with a relaxing background and might be helpful for those experiencing difficulties falling or staying asleep. Fit the hearing aids with the person's preferred Zen tone program (microphone off) with limited playtime (depending on the person's needs). After the selected time the tones will automatically stop playing. Persons who experience sleep difficulties might be advised to attempt to utilize Zen all night through – for these persons limited play time should not be activated. It is important to ensure the comfort and safety of wearing hearing aids while sleeping. Since the microphone is turned off, it may be reasonable to provide a different, more open, earmold coupling system that persons can utilize for sleep conditions.

1

2

3

4

5

ASSESSING PROGRESS

4. ASSESING **PROGRESS**

The criteria for determining whether the person is progressing are based on improvement of quality of life and reduction of negative thinking about the tinnitus, but NOT on changes in the perceived loudness of the tinnitus. Progress is best quantified by comparing the baseline subjective score to current scores. Therefore, it is recommended to have the person fill out these scales before therapy begins, and at two weeks, one month, three months and 6 months following the beginning of therapy. This can be done during appointments or by mail.

Other things the tinnitus sufferer can look for:
An overall reduction in the time spent feeling bad about having tinnitus; for example, if the person orig-

inally reported on the intake questionnaire that s/he negatively thinks about the tinnitus 90% of the time, it is an improvement if s/he indicates now only thinking about it 60% of the time. An increase in the intervals between episodes of thinking negatively about the tinnitus; if the person initially indicates that not more than one hour passes between episodes of thinking about the tinnitus, but now claims there are times when he or she doesn't think about it for several hours at a time, that is improvement. On this matter, suggest to the person that any time he does begin to think about the tinnitus, it means that he or she wasn't thinking about it a moment earlier. This may help frame the negative time spent more accurately.



1

2

3

4

5

FOLLOW-UP

5. FOLLOW-UP SCHEDULE

The requirement for follow-up services is typically higher for people with tinnitus than for people with hearing loss alone. These follow-up consultations are very important because there is likely to be peaks and valleys in progress and it is crucial to reassure them of your professional support.

Typically, it is beneficial to phone the person with tinnitus 2-3 days after the fitting. Further appointments (which should be scheduled at the time of the fitting) should be confirmed during which the TFI, THI, THQ or TRQ (whichever was used for baseline measures) is

administered and progress is reviewed. Finally keep in mind that all phases of the Widex Zen Therapy should be discussed: cognitive behavioral monitoring, hearing aid usage, fractal tone usage, and adherence with the relaxation exercise regimens. In addition, of course, consultations will be important to answer ongoing questions and make necessary adjustments.

A reasonable follow-up schedule should include appointments following the initial fitting at 2 weeks, 1 month, 3 months, 6 months, and one year.

APPENDIX A
THE WIDEX ZEN THERAPY INTAKE QUESTIONNAIRE

Name: _____ Age: _____ Date: _____

Hearing Loss and tinnitus

1. How long have you had tinnitus? _____

2. What do you think caused your tinnitus?
Please, explain _____

3. Do you have a hearing loss? Yes No Not sure

If so, which is more of a problem for you, the hearing difficulty or your tinnitus?

Hearing difficulty Tinnitus Both Not sure

4. Have you been exposed to loud noise? Yes No

If so, when? Military services Work Recreation Other: _____

Have you worn ear protection when exposed to loud noise? Yes No

Please, explain _____

5. Have you ever worn a hearing aid? Yes No

6. If so, how does using a hearing aid affect your tinnitus?

Makes tinnitus softer Makes tinnitus louder No effect

If you don't wear your hearing aids, why did you stop? _____

7. Are you bothered by loud sounds? Yes No

Please, explain: _____

Tinnitus Characterization

8. Where is your tinnitus primarily located?

left ear right ear both ears equally Inside my head

9. Using the scale below, indicate the loudness of Your tinnitus in the last week

0 1 2 3 4 5 6 7 8 9 10

10. Using the scale below, indicate the pitch of your tinnitus. (It might help to imagine the scale as if it were a piano keyboard.)

0 1 2 3 4 5 6 7 8 9 10

11. How would you describe your tinnitus? Check all of the boxes that apply below:

- | | | | |
|-----------------------------------|-------------------------------------|--|---------------------------------------|
| <input type="checkbox"/> hissing | <input type="checkbox"/> ringing | <input type="checkbox"/> cricket-like | <input type="checkbox"/> whistle |
| <input type="checkbox"/> steam | <input type="checkbox"/> whistle | <input type="checkbox"/> pounding | <input type="checkbox"/> pulsating |
| <input type="checkbox"/> clanging | <input type="checkbox"/> buzzing | <input type="checkbox"/> sizzling | <input type="checkbox"/> clicking |
| <input type="checkbox"/> bells | <input type="checkbox"/> ocean roar | <input type="checkbox"/> high tension wire | <input type="checkbox"/> Other: _____ |

12. Has your tinnitus loudness changed over time? Yes No

Please, explain _____

Tinnitus reaction

13. Using the scale below, please indicate how much you have been bothered by your tinnitus during the past week?

0 1 2 3 4 5 6 7 8 9 10

Please explain: _____

14. What makes your tinnitus worse?

- | | | | |
|----------------------------------|-----------------------------------|--|---------------------------------------|
| <input type="checkbox"/> Fatigue | <input type="checkbox"/> Stress | <input type="checkbox"/> Anxiety/nervous | <input type="checkbox"/> Loud noise |
| <input type="checkbox"/> Alcohol | <input type="checkbox"/> Caffeine | <input type="checkbox"/> Nicotine | <input type="checkbox"/> Other: _____ |

15. When are you most bothered by your tinnitus?

- | | | |
|---|---|---|
| <input type="checkbox"/> when I walk up | <input type="checkbox"/> When I go to bed | <input type="checkbox"/> When I have to concentrate |
| <input type="checkbox"/> At work | <input type="checkbox"/> Social activities around noise | <input type="checkbox"/> Other: _____ |

16. Does your tinnitus interfere with any of the below activities? Check all that apply.

Work Family Social activities Leisure activities Sleep Physical Other: _____

Please, explain _____

17. Are you depressed, tense or nervous? Yes No

If so, are you currently in treatment for depression or anxiety? _____

If you are depressed or anxious, is your tinnitus related to this? Yes No

Please, explain _____

Work

18. Are you employed? Yes No

If so, what is your occupation _____

19. Does the tinnitus influence you negatively at work? Yes No

Please, explain _____

20. Have you discussed your tinnitus with friends or family members? Yes No

If so, what was their reaction? _____

Treatment history

21. Have you been examined by a doctor or other professional regarding your tinnitus? Check all that apply

Physician ENT doctor Hearing care professional Other: _____

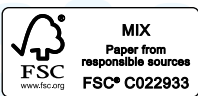
Please, explain: _____

22. Please list all of the treatments (including psychiatric or psychologic) you have undergone for your tinnitus (provide a date if possible).

Please list any surgeries you have had (that may be related to your tinnitus)?


23. Do you have any or any ear, nose or throat diseases?

24. Do you have any other comments or concerns related to your tinnitus?



Printed by KLS/2017-05. 9 502 4556 001 #03

Widex is trademark of Widex A/S.

 Widex A/S, Nymoellevej 6, DK-3540 Lyngø

WWW.WIDEX.PRO

WIDEX[®]
HIGH DEFINITION HEARING