

# Tinnitus Activities Treatment

## Summary session

TAT Summary 1

- This is a summary or condensed version of Tinnitus Activities Treatment that is intended to be covered in a single session, lasting about 30 minutes.
- It is advised that you also administer the Tinnitus Primary Functions Questionnaire to determine the specific areas of difficulty for your tinnitus patient.
- The four broad topic areas are included in Tinnitus Activities Treatment because they are associated with functional impairments such as social and work problems.
  - Thoughts and emotions
  - Hearing and communication
  - Sleep
  - Concentration
  - In the full version, there is a session for each of these areas, plus review of homework activities.

Tinnitus Activities Treatment using picture-based counseling, has several advantages for tinnitus management, including

- The sessions proceed in an orderly fashion
- The clinician does not overlook important concepts

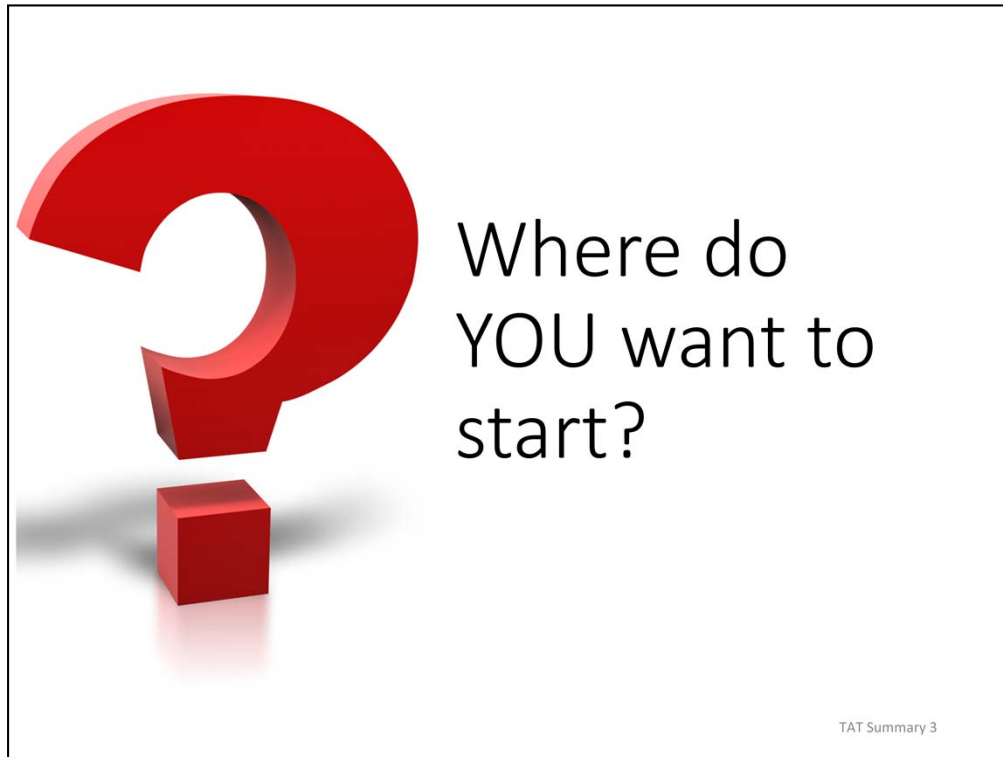
- It is easier for the patient to understand concepts
- Treatment can be easily used by other clinicians
- Sessions can be adapted to the needs and interests of the patient

## Overview

1. Thoughts and Emotions
2. Hearing and Communication
3. Sleep
4. Concentration

TAT Summary 2

The condensed version provides an overview of each area included in Tinnitus Activities Treatment, plus introductory slides to get to know your patient.



Listen to the patient and ask:

- What is most important for the patient?
- Why is the patient here?
- What does he or she expect from therapy?
- Is the patient alone, or does he/she have support?

Because we cannot assume we know what is best for the patient, probing questions can help obtain information for your counseling sessions.



## How has tinnitus influenced your life?

TAT Summary 4

- Have the patient describe how tinnitus has affected his or her life to learn about their specific problems.
- You might also ask them to make a list of the difficulties that they think have been caused by tinnitus. List those in order of importance.

## There Are Many Different Causes of Tinnitus



TAT Summary 5

- Same things that cause hearing loss, cause tinnitus
- However, hearing loss does not cause tinnitus and vice versa
- May have hearing loss but not have tinnitus
- May have tinnitus but no hearing loss

# Part 1. Thoughts and Emotions

1. Hearing, hearing loss, and tinnitus
2. Attention, behavior, and emotions
3. Changing your reactions to tinnitus

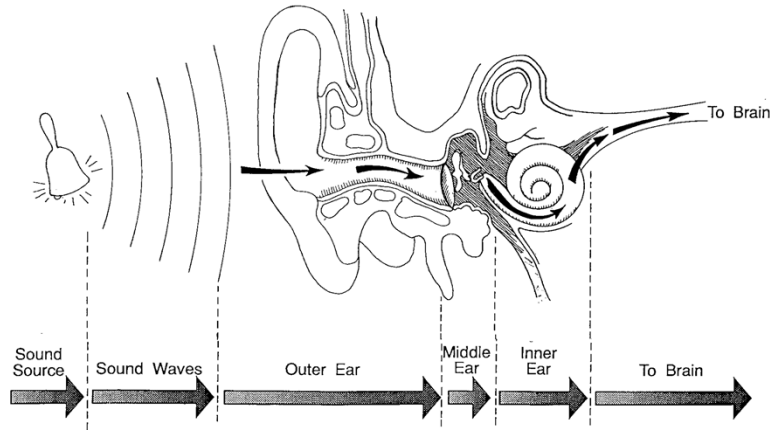


TAT Summary 6

The thoughts and emotions module provides information on

- tinnitus and hearing loss to remove the unknowns, misconceptions, and fears
- Hearing and attention to teach patients to ignore their tinnitus
- Thoughts and emotions to change how we think about and react to tinnitus.

# 1. How We Hear

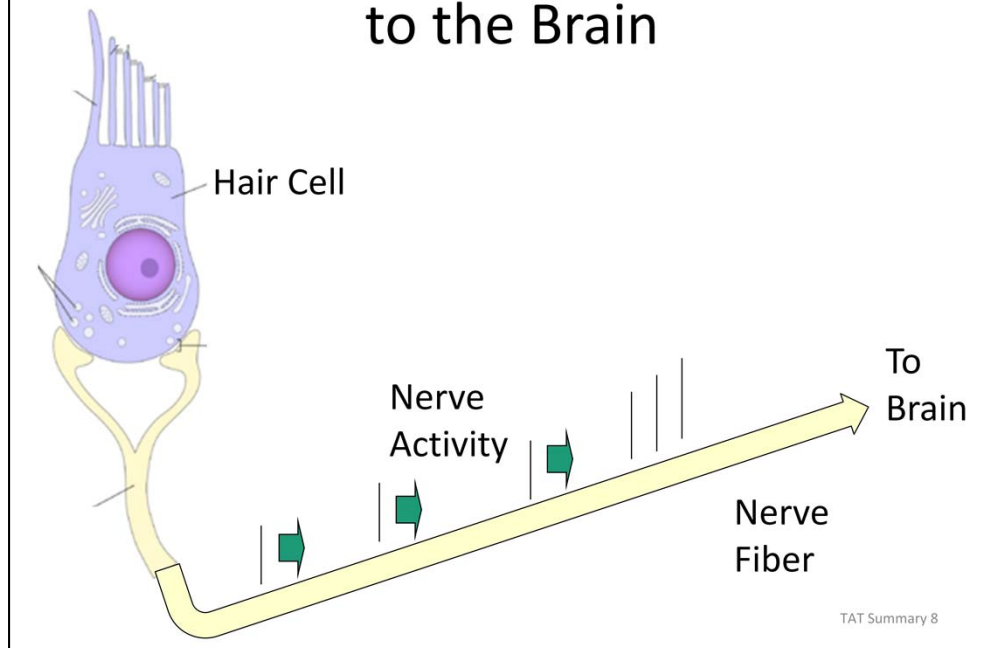


TAT Summary 7

- Sound causes movement of air molecules
- Air molecule movement causes air pressure in ear canal to increase
- Air pressure in ear canal causes eardrum to vibrate
- 3 bones connected to eardrum also vibrate
- Bones connected to inner ear
- Inner ear made up of snail shaped cochlea
- Cochlea has hair cells and nerves which react to sound
- Cochlea is filled with fluid
- Vibration of ossicles causes fluid to move
- Movement of fluid causes hairs cells to move
- Hair cells send message to auditory nerves
- Auditory nerves deliver message to brain
- Brain interprets message as sound

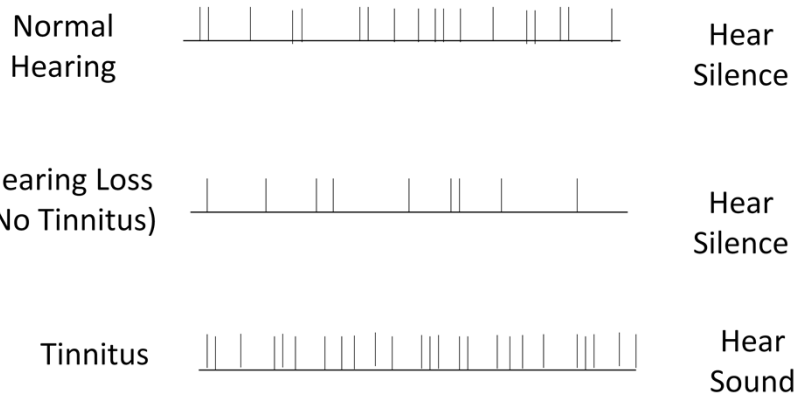


## Nerve Activity Carries Information to the Brain



- Vibration of bones causes fluid in cochlea to move
- This causes tiny hairs on top of cell to move
- There is a chemical reaction between the hair cell and the nerves which causes the nerves to become active
- The nerve activity goes to brain
- Brain interprets nerve activity as sound
- Loud sounds activate more nerves than soft sounds

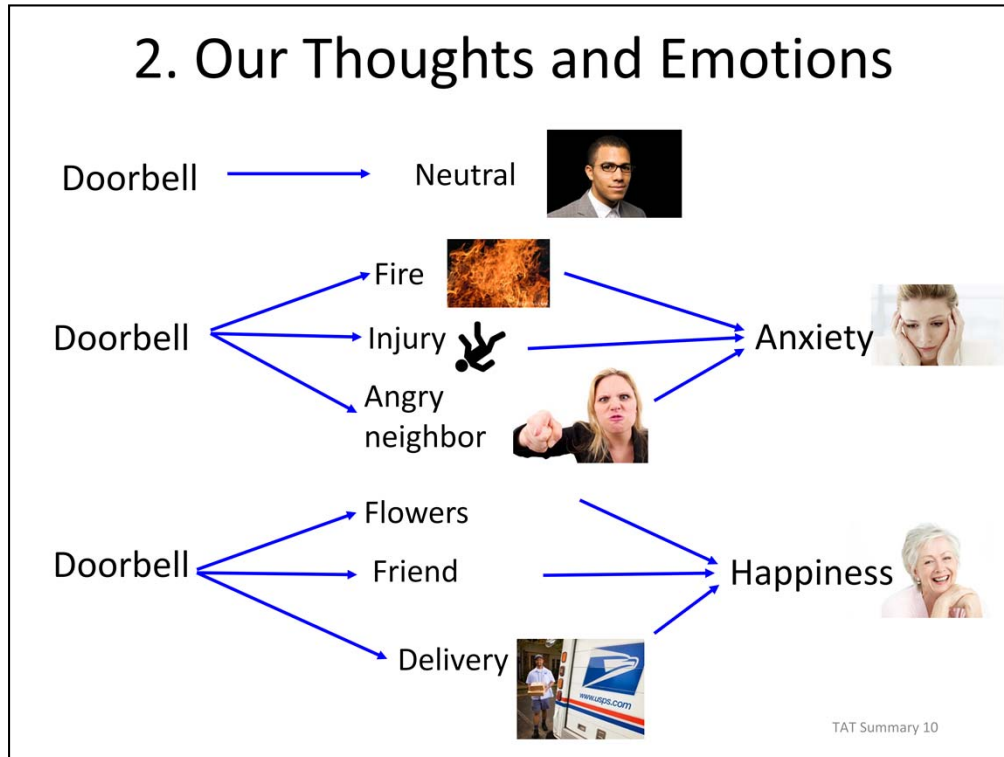
## Tinnitus is an Increase in Spontaneous Nerve Activity



TAT Summary 9

- Recall that neural impulses are what code the sounds we hear and transmit them to the brain.
- Line 1 - In normal hearing, there is spontaneous nerve activity (which we typically do not hear, but can measure)
- Line 2 - In cases of hearing loss, this spontaneous activity decreases because not all nerve fibers transmit the impulses to the brain.
- Line 3 - Tinnitus causes an increase in spontaneous activity and fills in more gaps. Instead of hearing silence, we hear the tinnitus sound.

## 2. Our Thoughts and Emotions



- The brain can “learn” a response to a sound
- The brain can also learn different response to same sound
- The brain automatically attaches an emotional reaction to doorbell depending on the consequence
- Same sound produces opposite reactions of the body depending on the context and the interpretation of what is going on.
- In a similar fashion exactly the same sound of tinnitus might produce an entirely different reaction depending on the context.

# Things That Capture Our Conscious Attention



Unusual



Important



Scary

Unexpected



TAT Summary 11

- The things that capture our attention are those that are unusual, important, scary or unexpected.
- Tinnitus is all of these things. It is often unusual because it is not typically there, it is scary because we don't know what it means, it is unexpected because we don't often know that this could happen, and it is important because our limbic system tells us so.
- It goes straight up to your conscious attention and remains there.
- We can take it away but we can start to understand it to not be scary, we can get used to it to not be unusual, and to expect it to decrease its importance.

## We Notice Important Things And Ignore Unimportant Stimuli



Refrigerator: Ignore



Lion: Cannot ignore



Crowd: Monitor information automatically

TAT Summary 12

- Neutral sounds that do not carry any significant information will be ignored
- Important sounds such as an alarm, a lion roar, etc. that carry with them an emotional reaction, will not be ignored
- Some sounds will be monitored automatically and not attended to consciously

# Tinnitus and Attention

If brain determines  
**tinnitus is not important,**  
the tinnitus can be ignored



If brain determines  
**tinnitus is important,**  
we will pay attention to it



TAT Summary 13

- Consider the 2 types of attention - subconscious and conscious attention
- Brain monitors background sounds all the time—this is normal
- We pay attention to important, strange, fearful sounds
- Sounds we interpret as important (siren, baby cry) will be monitored more closely
- If tinnitus is not important, it is less likely you will pay attention to it
- By decreasing the attention given to tinnitus, this can help you to be less bothered by it.

### 3. How to Change Our Reaction to Tinnitus

- Change Interpretation of Importance
- Change Emotional Reaction
- Refocus on Other Activities
- Reduce Contrast Between Background Sound and Tinnitus



TAT Summary 14

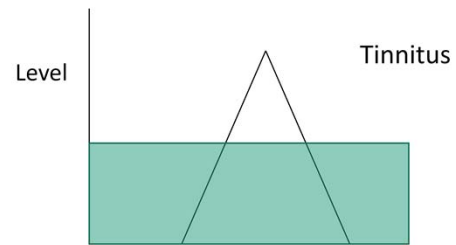
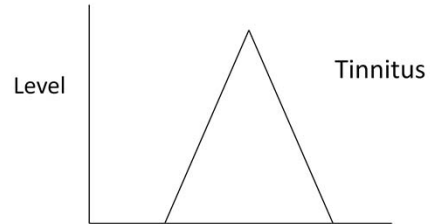
We can change our reactions to tinnitus. Remember that having tinnitus and your reaction to tinnitus are two separate things.

- Change your interpretation of the importance of tinnitus by recognizing that
  - Tinnitus is likely the result of increased neural activity
  - Tinnitus is common
  - Tinnitus is not threatening your health or hearing
  - You can change your reaction to it by first decreasing its importance
- Change your emotional reaction
  - You can change your emotional reaction through a conscious effort
  - When engaging in negative thoughts, encourage the patient to challenge these thoughts.
  - Recommend that they engage in constructive thoughts
- Refocus on other activities
  - Discuss what hobbies they have, and what activities help them to ignore their tinnitus.
  - Discuss the reasons for activities that patient is involved in.

- Encourage them that activities need some intrinsic value also
- Reduce the contrast between background sound and tinnitus
  - Use of low-level background sound will make it easier to filter tinnitus out.



## Decrease Prominence of Tinnitus



TAT Summary 15

- Small candle in dark room = very noticeable
- Similar to tinnitus in a quiet room
- Put candle in front of brightly lit window and it is not as noticeable
- Similar to tinnitus with low level noise

## Background sound masks unwanted sounds



TAT Summary 16

The background sound can partially mask the unwanted sound we hear.  
Here, a barking dog is the unwanted sound, and the fan is the background sound that helps us hear the dog less.

## Part 2. Hearing and Communication

1. Hearing and communication difficulties
2. How tinnitus can affect hearing
3. How to improve your hearing



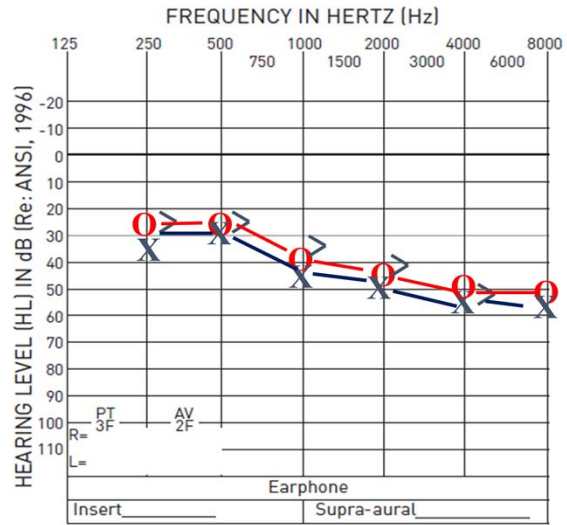
TAT Summary 17

In the hearing and communication module, we will

- Briefly explain how the auditory system works to better understanding hearing
- Talk to the patient about how the auditory system is affected by hearing loss
- Discuss the difficulties that they may experience due to hearing loss

There is an emphasis on how tinnitus affects hearing, and how to improve hearing and reduce stress via amplification and management of hearing loss

# 1. Your Audiogram



TAT Summary 18

- Review pt's audiogram
- Teach this section like you would to a graduate student; more detail the better
- Point out area of probable cochlear damage

## Factors that Affect Communication

- Hearing loss
- Background noise
- Ability to see the talker
- Familiarity with talker
- Familiarity with topic of discussion
- Stress level

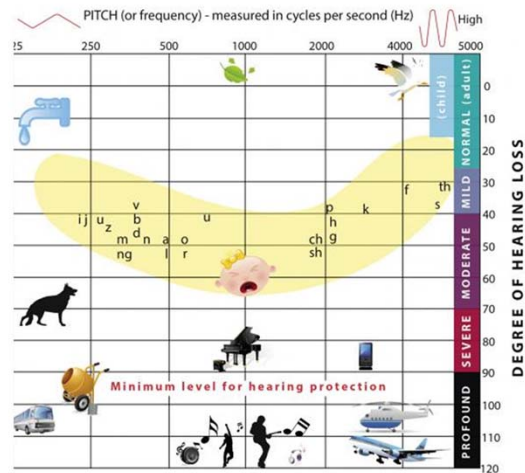


TAT Summary 19

There are many different factors that affect communication. Many of these can be actually demonstrated, not simply discussed.

# How Hearing Loss Affects Communication

- Some sounds are not heard at all (high pitches)
- Some sounds may be distorted and less clear
- Low-pitched sounds are usually louder, so a high-pitched loss often is not noticeable
- May experience fatigue from struggling to communicate



TAT Summary 20

- Depending on the severity and configuration of hearing loss, some sounds are not heard at all (often in high pitches). Other sounds may be distorted and will be less clear.
- Discuss the effects of high-frequency hearing loss on audibility of high-frequency sounds, and the impact on communication abilities.

## 2. How Tinnitus Can Affect Hearing



- Tinnitus is not damaging your hearing
- Tinnitus can make it harder to hear sounds and distract one from listening
- Tinnitus can also mask some sounds

TAT Summary 21

- Tinnitus does not cause hearing loss.
- It can make it harder to hear and distract one from listening.
- The tinnitus sound can mask of some environmental sounds.
- Also, the tinnitus sound can be confused with external sounds when they have the same pitch.

### 3. Use Amplification

- Improve hearing and communication
- Reduce stress of effortful listening
- Hearing aids often help tinnitus:
  - Facilitates positive reactions to tinnitus
  - Helps to mask tinnitus sound



TAT Summary 22

- Hearing aids help to improve hearing sounds and speech, and also reduce the amount of effort we have to put into listening.
- Hearing aids also help tinnitus
  - Less stress, facilitates positive reactions to tinnitus
  - Background noise that is amplified creates partial masking and masks tinnitus sound
- Available at our clinic or other audiologists



## Part III. Sleep

1. Normal sleep patterns
2. Tinnitus and sleep
3. Activities to facilitate sleep
4. Waking up at night



TAT Summary 23

Therapy for sleep is important given that sleep disturbances are very common in tinnitus patients. In the sleep module, we will

- Discuss normal sleep patterns
- Explore factors that affect sleep
- Talk about arranging the bedroom to promote sleep
- Talk about avoiding certain activities before bedtime
- Recommend background sound to reduce the prominence of tinnitus

# 1. Normal Sleep Patterns



- The amount of sleep varies greatly from one individual to another
  - 6.5-9 hours/night
- Normal sleep includes several periods of light sleep or awakenings
  - Older adults have more awakenings
- Tinnitus doesn't usually wake people

TAT Summary 24

- Though most adults need 8 hours of sleep, this average varies from 6.5-9 hours depending on the individual.
- Uninterrupted sleep is best, though normal sleep includes several periods of awakenings or light sleep. ***These increase in duration and number as we age.***
- Tinnitus doesn't usually wake people, but when they wake and hear tinnitus, it may create difficulties getting back to sleep.

## 2. Things That Affect Sleep

- Stress and emotions
- Environmental factors
  - Noise
  - Light
  - Temperature
- Irregular work schedules
- Learned sleeplessness patterns
- Jet lag/time zone changes



TAT Summary 25

There are many things that affect sleep, such as:

- Stress and emotions (depression and anxiety)
- Environmental factors such as the noise in the room, lighting, and temperature
- Irregular work schedules (working the night shift, or a flexible shift)
- Learned sleeplessness patterns (waking up at night)
- Jet lag/time zone changes



## Things That Affect Sleep, continued

- Physical conditions (sleep apnea, restless leg)
- Medications
- Caffeine (coffee, tea, cola, chocolate)
- Nicotine (smoking)
- Alcohol (excessive)
- Tinnitus

TAT Summary 26

There are many things that affect our sleep, including

- Physical conditions
- Medications
- Diet
- Nicotine
- Alcohol
- And tinnitus

### 3. Activities to Facilitate Sleep

- Avoid napping
- Get regular exercise
- Create a curfew separating day and night
- Avoid food, drink, stress or exercise right before bed
- Go to bed only when you are tired enough to sleep





TAT Summary 27

- The best daytime activities to facilitate sleep are to avoid napping, and get regular exercise.
- If you have a bad night of sleep, don't try to "recover" by sleeping during the day. Rather go about your day as normal
- Creating a curfew or dedicated bedtime, and sticking to it
  - This is best 1 ½ hours before bedtime, such as 8pm
- After that time avoid the behaviors that may keep you up
- Go to bed only when you are tired enough to sleep

## Preparing for Sleep

1. Listen to low-level background sound
  
2. Use Relaxation techniques to ease stress and tension

TAT Summary 28

- Using low-level background sound is an excellent option to reduce the prominence of tinnitus.
  - Sounds from a fan, humidifier, etc., are all ways to add a low level background sound in the environment.
  - Listening to recorded material, such as sound apps, CDs, nature sounds, and music can help
  - A sound generator that plays white noise or other static or modulated sounds may be helpful.
- It is helpful to control the level of sound, such as setting a timer to shut off after you will be asleep
- Learning relaxation exercises, including progressive muscle relaxation and visual imagery are great techniques to facilitate sleep.

## 4. Waking Up At Night

- Do not lie in bed if you are unable to fall or stay asleep
- Find something to do and return to bed when you feel tired
- Use background sound



TAT Summary 29

- If you do not fall asleep in the first 30 minutes of going to bed, do not lie in bed. Instead, get up and try a relaxing activity or change to a new location.
- Return to bed only when you feel tired.

## Part 4. Concentration

1. Things that affect concentration
2. How tinnitus affects concentration
3. Strategies to improve concentration



TAT Summary 30

In the concentration module, we address three areas to improve concentration:

- Providing information about concentration difficulties
- Learning how tinnitus affects concentration and how to decrease the prominence of the tinnitus
- Increasing attention to the task at hand



# 1. Things That Affect Concentration

- The environment (noise, temperature)
- Your physical state (hunger, fatigue)
- Your emotional state (anxiety, fear)



TAT Summary 31

- There are many things that affect concentration, including those in
  - our environment
    - Noise
    - Lighting
    - Temperature
  - our physical state.
    - Hunger/thirst
    - Fatigue
    - Current health status
  - our emotional state:
    - Anxiety
    - Fear
    - boredom

## 2. How Tinnitus Affects Concentration

- When we focus attention to our tinnitus, it is harder to concentrate on other things
- Observe effects of tinnitus on concentration for simple and complex tasks
- Complex tasks are more demanding—tinnitus is less noticeable



TAT Summary 32

- Not all people are distracted by tinnitus
- However, if it is distracting, focusing attention to tinnitus will make it more difficult to concentrate on particular tasks or other problems.
- Consider the task difficulty:
  - Simple tasks may not be stimulating enough--tinnitus fills in gaps
  - Complex tasks are more demanding—tinnitus is less noticeable
  - Effects vary person to person

### 3. Strategies to Improve Concentration



1. Interpret tinnitus as not important
2. Eliminate distractions
3. Stay focused
4. Adjust work habits
5. Decrease prominence of tinnitus
6. Take control of your attention

TAT Summary 33

- Fortunately, there are many strategies to improving concentration such as
  - Interpreting tinnitus not important (A good understanding of the mechanisms and causes of tinnitus can help people feel less threatened about tinnitus)
  - Eliminating distractions (Eliminate unwanted noise)
  - Staying focused during a meeting (**Actively participate, take notes**)
  - Adjusting work habits (work in shorter time spans of 20-40 minutes, taking breaks when needed)
  - Decreasing the prominence of tinnitus (through sound therapy)
  - Taking control of attention - next slide

## Take Control of Your Attention

- The focus of our attention is largely under voluntary control
- You can learn to control the focus of your attention under various conditions
- By bringing the focus of attention under control, tinnitus-related distress will be reduced at certain times



TAT Summary 34

- Taking control of your attention is something you can learn to do. This is called attention diversion and is applied to help tinnitus patients.
- Tinnitus is not threatening your health or hearing
- Tinnitus is the result of increased spontaneous activity
- If tinnitus is important, it will be monitored
- When you decide tinnitus is not important, you can begin to not attend to it
- Distress caused by tinnitus will be reduced as you learn to control the focus of attention away from tinnitus.