

“Hyperacusis Activities Treatment”

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Terminology

- Loudness Hyperacusis
 - Some moderately loud sounds are very loud
- Annoyance Hyperacusis
 - Some sounds are annoying (not always loud)
- Fear Hyperacusis
 - Patients are afraid of some sounds (not always loud)
- Pain Hyperacusis
 - Sounds evoke pain sensation

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Other Terms

- Hypersensitivity
- Select-sound sensitivity
 - Sensitivity refers to threshold
- Misophonia
 - Dislike of sounds

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Less confusion if

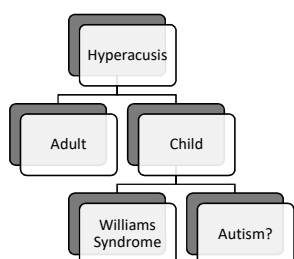
- Choose simple terms with clear distinct definitions
- Avoid temptation for everyone to make up new terms

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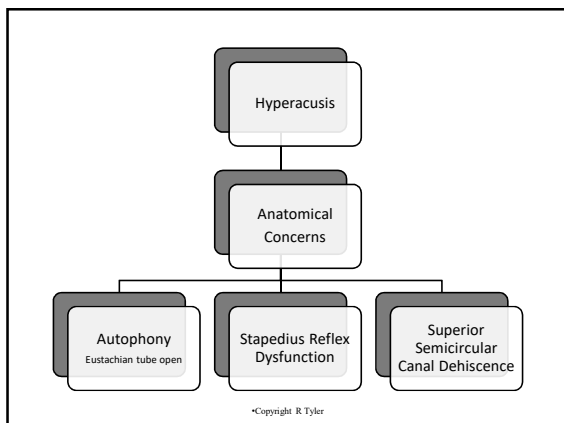
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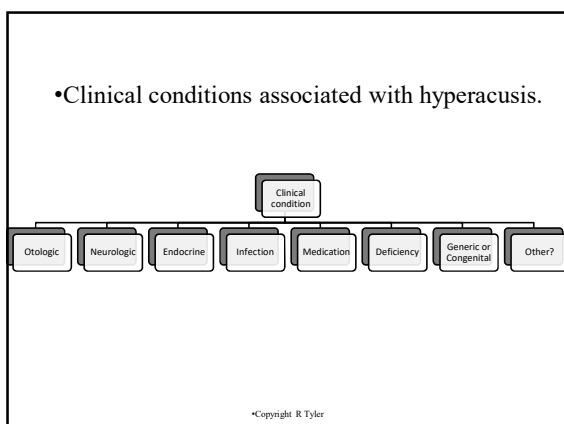
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Many different causes

- Most unknown
- few diseases and syndromes associated with hyperacusis.
- For example;
 - migraine, depression, post-traumatic stress disorder, head injury, Lyme disease, William's syndrome, fibromyalgia, Addison's disease, autism, myasthenia gravis and middle cerebral aneurysm (Katzenel and Segal, 2001)

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Hyperacusis and Hearing Loss

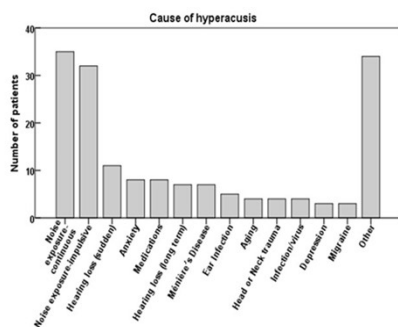
- About 40% do not 'think' they have a hearing loss
- Likely most (90%?) do
- Hyperacusis is bigger problem than hearing loss and usually tinnitus
- Hyperacusis often occurs with mild hearing loss
- Similar to tinnitus, many hyperacusis patients seek audiological help for hyperacusis, and many end up with hearing aids (Kochkin and Tyler, 2008)

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Possible causes of Hyperacusis

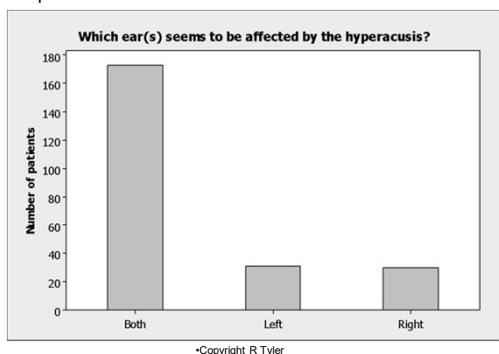
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Patients perspective...



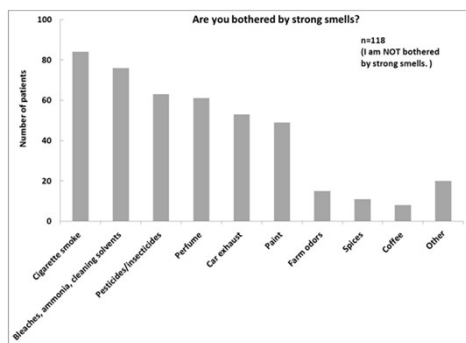
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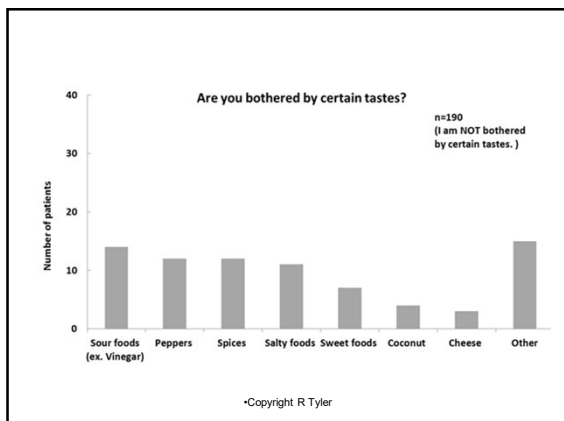
Peripheral mechanism in some?



Hyperacusis and Other Sensory Systems

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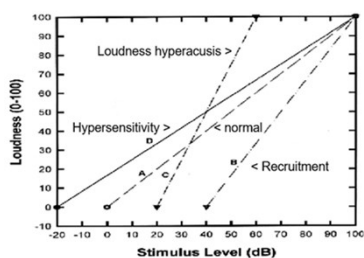


Hyperacusis and Tinnitus

- First linked by
 - Tyler and Conrad-Armes (1983)
- Must have common mechanisms in some
- But also
 - hyperacusis without tinnitus
 - Tinnitus without hyperacusis

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Loudness Hyperacusis – magnitude estimation



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Related problems

- Unable to enjoy music
- Annoyance, Fear and/or pain in places where loud sounds are likely to occur
- Avoidance of being in these places
- Withdraw from socialization and communication
- if desire tinnitus maskers
 - noise might make hyperacusis worse
- If require hearing aids
 - Amplification can make hyperacusis worse

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Open-ended questionnaire

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Open-ended questionnaire (Tyler and Baker, 1983)

- Please list the difficulties you have as a result of your Hyperacusis
- List them in order of importance
- Allows patient to describe what is important to them

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Hyperacusis Questionnaire

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Which of the following sounds or events are often too loud for you?

<ul style="list-style-type: none"> a. Baby crying/children squealing b. Crowds/large gatherings c. Dishes being stacked d. Dog barking e. High pitch voices/screaming f. Lawnmower g. Music (loud rock concerts) h. Music (religious service) i. Music (symphony, quartet, etc.) 	<ul style="list-style-type: none"> a. Power tools b. Restaurants c. Sporting events d. Telephone ringing e. TV/radio f. Vacuum cleaner g. Whistle/horn/siren h. Other _____
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Pain Hyperacusis

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Dull Ache / Wound

- "The sound of putting on clothing feels like lightly blowing on an open wound."
- "My ear feels raw and vulnerable to sound as if it were an open wound"
- "Setting a coffee mug on a wooden table feels like a thumb pressing hard on broken bone, deep in the ear."
- "Walking on gravel feels as if I am pressing the gravel into my wounded ears."

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Sharp pain descriptions

- "Clinking dishes feel like an icepick stabbing deep into my ears."
- "High frequency noises feel like needles stabbing my eardrum"

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pain hyperacusis often associated with tinnitus

- 55% prevalence of pain hyperacusis in tinnitus patients
 - Scheckmann M, Landgrebe M, Langguth B: **Phenotypic characteristics of hyperacusis in tinnitus**. *PLoS One* 2014, 9(1)
- 63% prevalence of pain hyperacusis in tinnitus patients
 - Scheckmann, et al., 2015 Validation of Screening Questions for Hyperacusis in Chronic Tinnitus BioMed Research International

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Hyperacusis; different symptoms

- Only specific sounds
- All loud sounds
- unexpected sounds
- frequency and ear dependent
- specific circumstances

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Treatments

Sound Therapy

1. Hazell & Sheldrake (1989, 1992)
 - Reduce central gain
2. Vernon & Press (1998)
 - Desensitization
3. Tyler et al. (2000, 2009)
 - Tinnitus Hyperacusis Treatment
4. Hearing Aid Adjustments
5. Use of hearing protection

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Hazell & Sheldrake (1989, 1992)

- based on their theory of need to reduce central gain (Hazell, 1987)
- Bilateral noise generators devices
- Continuous exposure low-level noise
- See also Formby and Gold (2002)

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Vernon & Press (1998)

- Desensitization
- Pink noise, 2 hrs/day earphones
- Increase level gradually
 - to Loudness Discomfort Level
- Requires 3 months to 2 years

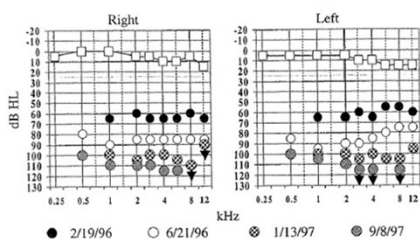
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Tyler et al., (2000; 2009)

Hyperacusis Activities Treatment

- picture based
- Desensitization
- Record specific sounds that are too loud
- play back at low levels in peaceful environment
- gradually increase levels and duration
- Gradually work into realistic situations

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*Formby and Gold,
2002

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Ear plugs?

- Many patients use earplugs throughout the day in everyday listening situations (not necessarily with high-intensity sounds)
- The use of earplugs becomes part of their everyday life
- It is not improving their condition
- Limiting exposure to sound could make hyperacusis worse
- Therefore, recommend not to use unless intense noise present
- Must be gradual reduction in use for some

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Hearing Aids

- Hearing aids (with closed canal earmolds) can reduce sound by (at most) ~ 30 dB
- Reduce maximum output of hearing aids so that high level sounds are peak-clipped or compressed
- Adjust input/output (gain) so that low-level sounds are amplified, but not high-level sounds
- Followed by gradual transition (over months) to 'normal'

- Sammeth, C. A., Preeve, D. A., and Brandy, W. T. (2000). Hyperacusis: Case studies and evaluation of electronic loudness suppression devices as a treatment approach. Scandinavian Audiology. 29, 28-36.

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HYPERACUSIS ACTIVITIES TREATMENT

SAMPLE SLIDES

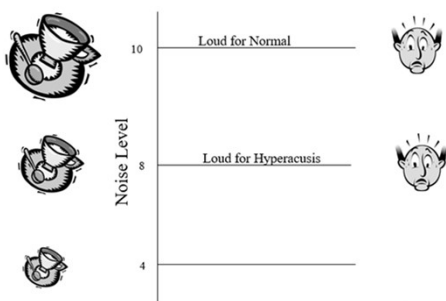
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Where do you want to start?



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Hyperacusis



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Your reaction to sound?

- Loud
- Annoying
- Fearful of sounds
- Painful
- Loud sounds make tinnitus worse
- Loud sounds cause pain

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- Can you provide examples of sounds that bother you or are too loud?
- Are there times during the day when you are particularly bothered?
- Are there times during the day when you are not bothered?

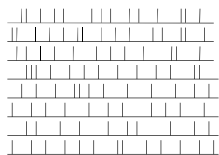
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- What have you tried for your hyperacusis?

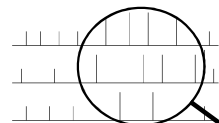
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Random Nerve Activity

Normal
Hearing

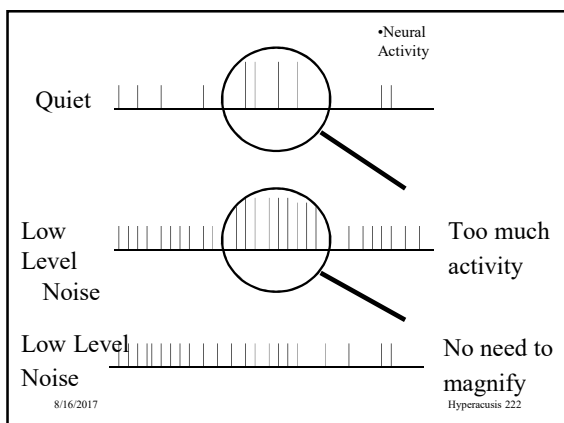


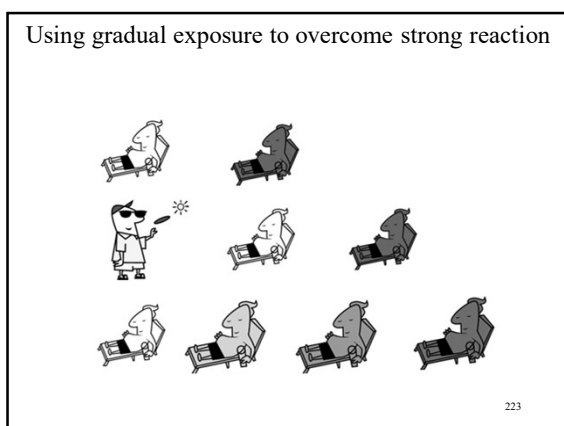
Hearing
Loss



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Tinnitus/Hyperacusis Treatment

- To download pictures go to:
- <http://www.medicine.uiowa.edu/oto/research/tinnitus/>
- Search "Iowa tinnitus clinic"

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Establishing a Tinnitus Clinic

Richard S. Tyler

The University of Iowa

Advantages of Tinnitus Clinic

- Help patients
- More complete overall service
- Increase referrals
- Many will require and benefit from hearing aids

Disadvantages of Tinnitus Clinic

- Need a plan for treatment
- Time commitment
 - Some patients require extensive counseling
- Services often not covered by insurance
- Some patients require great emotional support

Background Information on Tinnitus

- Workshops
 - e.g. Management of the Tinnitus Patient (U of Iowa)
- Books
 - Henry and Wilson
 - *Psychological Management of Tinnitus*,
 - Tyler (Ed).
 - Tinnitus Handbook (2000)
 - Tinnitus Treatments; Clinical Protocols (2007)
 - Consumer Handbook of Tinnitus (2016)
- Journal articles
 - Tyler, R.S., Haskell, G. Gogle, S. Gehringer, A. (2008) Establishing a Tinnitus Clinic in Your Practice. *American Journal of Audiology*, 17: 25-37.
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Evaluation

- What are the individual patient's needs?
 - Hearing aids
 - Counseling
 - What level of help needed
 - What problems exist
 - What are patient expectations
 - What has the patient tried already
 - Hyperacusis present?

Different severities requiring different approaches

- Curious
 - basic information (10 minutes)
- Concerned
 - require time to discuss their specific situation and problems
 - more detailed information on the physiologic and psychologic components
 - Provide some self-directed management strategies (1 hour or more)
- Distressed
 - detailed analysis of individual needs
 - Individualized treatment based on Thoughts and Emotions, Hearing and Communication, Sleep, and Concentration (several visits)

Group Sessions

- Good introduction to treatment options
- Cost effectiveness
- Possible to include spouses, parents and children of the patient
- Appreciation that related problems are shared by many with tinnitus
- See Newman and Sandridge (2006)

Highly Distressed Patients

- recognize patients in crisis
- suicidal risk
- referral of patients,
 - Psychiatry, psychology, Crisis Services

handouts and resources for patients

- American Tinnitus Association brochures
- Self-help books
- Instructional materials on relaxation techniques, stress reduction, sleep hygiene
- Information on local support group, stress management courses, psychological counseling, yoga, etc.
- Tinnitus handouts and diaries
 - Part of Tinnitus Activities Treatment

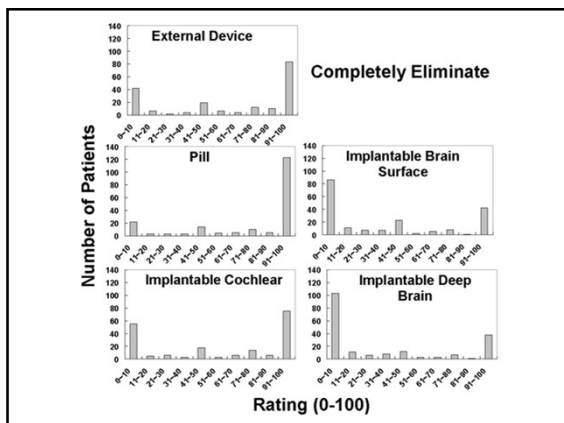
Demonstration devices

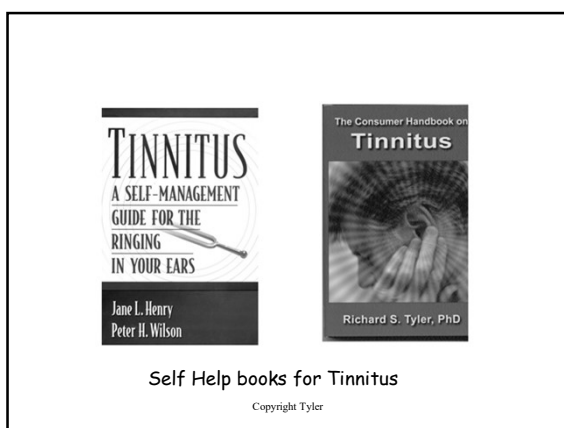
- Hearing aids: open-fit programmed to mild high frequency loss
- Ear level sound generators for tinnitus therapies you are using
- Sound machine
- Sound pillow
- Music therapy CDs
- Apps for tinnitus

Treatments Patients Want

- How willing would you be to accept a this treatment, if it were to **completely eliminate your tinnitus**?
- Respond from 0-100 %
 - 0% - you would never consider it
 - 100% – you would absolutely try it.

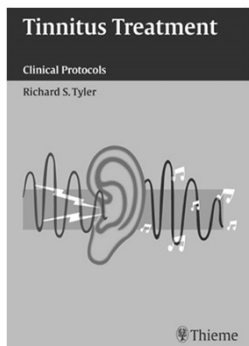
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Summary

- Prepare yourself
- Evaluate tinnitus and reaction to tinnitus
- Develop a counseling and sound therapy strategy
- Consider individual needs of patient
- Group and individual sessions



Recent review of a variety of clinical protocols

26th Annual International Conference on
**Management of the Tinnitus and
Hyperacusis Patient**



June 14-15 2017
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Diagnosis, Treatments, Medications, Psychiatry,
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