2017 Signia Expert Series

signia
.life sounds brilliant.

July 11, 2017 at 12 PM ET
Over-the-counter hearing aids - opportunity or disaster?
Presented by Catherine Palmer, Ph.D.
How to position your practice and your thinking to embrace over-the-counter hearing aid sales will be discussed. Strategies to engage patients at all points of entry into hearing health care will be explored based on the current evidence base.

August 3, 2017 at 12 PM ET
Hearing aid speech mapping verification: Some explanations for puzzling outcomes.
Presented by H. Gustav Mueller, Ph.D.
Speech mapping has become a routine method to verify prescriptive fittings. Sometimes, however, things just don't look right, and we wonder… is it the equipment, the hearing aid, the patient, or me? In this course, we'll take a look at some of these unusual findings, and see if we can determine who the culprit really is.

August 16, 2017 at 4 PM ET
Tinnitus Activities Treatment.
Presented by Richard Tyler, Ph.D.
This protocol is focused on collaborative counseling in the four areas affected by tinnitus: thoughts and emotions, hearing, sleep, and concentration. Principles of cognitive behavior therapy, acceptance and mindfulness, are included. TAT is picture-based to facilitate ease and interaction with client. Low-levels of partial masking are included.

August 25, 2017 at 12 PM ET
Nonlinear Frequency Compression for the Busy Clinician.
Presented by Joshua Alexander, Ph.D.
The purpose of this talk is to empower the busy clinician by reviewing the hearing aid fitting process as it relates to nonlinear frequency compression. Goals for using frequency lowering for different hearing losses will be reviewed, factors that may influence its effectiveness will be briefly described, and general guidelines for verification using probe microphone measurements will be discussed.

signia
.life sounds brilliant.

Tinnitus Activities Treatment

Richard Tyler, Ph.D.

signia
.life sounds brilliant.

- This course is offered for Continuing Education Units (CEU)s for Total Access Online members.
  - Stay logged in for the duration of the course to be eligible to earn CEU credit.
  - Take the exam following course completion to earn credit.
  - For questions or assistance, contact 800-753-2160.
- Please visit the AudiologyOnline website for other live and recorded events from Signia.

  http://www.audiologyonline.com/ce/signia-siemens

Hearing Systems
SIEMENS

Course Objectives

signia
.life sounds brilliant.

1. After this course, participants will be able to Administer Tinnitus Activities Treatment.
2. After this course, participants will be able to appropriately fit hearing aids to patients with tinnitus and hyperacusis.
3. After this course, participants will be able to appropriately fit sound therapy devices to patients with tinnitus and hyperacusis.

Hearing Systems
SIEMENS

Richard Tyler, Ph.D.

signia
.life sounds brilliant.

Tinnitus Activities Treatment

Richard Tyler, Ph.D.

The University of Iowa

- What is it like to have tinnitus?

8

What if you heard a sound that wasn't supposed to be there?

- Unpleasant
- No control over it
- No cure!
- Nobody understands!
- Sign of serious illness?
- There for life?

9

DEFINITION OF TINNITUS

(AFTER McFadden, 1982)

- PERCEPTION OF SOUND
  - must be heard
- INVOLUNTARY
  - not produced intentionally
- ORIGINATES IN HEAD
  - not super hearing of an external sound

- Tinnitus is a symptom, like hearing loss

Categories of Tinnitus

- Middle ear
  - Originates in the middle ear
- Sensorineural
  - Originates in the sensorineural system

- Parallels how we diagnose and treat hearing loss

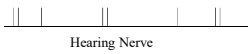
SENSORINEURAL TINNITUS

- **COCHLEAR**
  - VASCULAR
  - MECHANICAL
  - SENSORY
  - NEURAL
- **RETROCOCHLEAR**
  - NEURAL
  - BRAINSTEM
  - CENTRAL

Physiological Models of Tinnitus

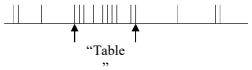
- Perception, must be in Temporal Lobe
  - Increased spontaneous activity
    - fed by increase, decrease, or edge
  - Cross-fiber correlation
    - normal or increased spontaneous activity (Eggermont, Moller)
  - More fibers with similar best frequency following hearing loss (Salvi et al.,)
- Reaction to Tinnitus
  - Amygdala, autonomic nervous system

Theories of Tinnitus increased spontaneous activity



Hearing Nerve

Spontaneous activity in quiet
normal



"Table
"

The word "table"
Normal perception of sound

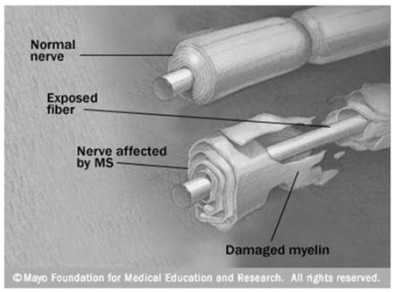
Quiet with lots of random activity
Activity is heard (tinnitus)

No external sound - Tinnitus

Theories of Tinnitus – cross fiber correlation

Normal Unrelated Activity

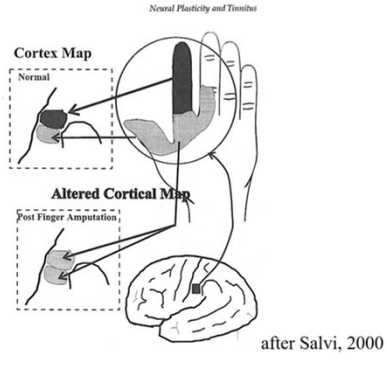
Related Activity
Across
Nerve Fibers



Auditory Brain Reorganization After Hearing Loss

(AFTER SALVI, LOCKWOOD AND BURKARD)

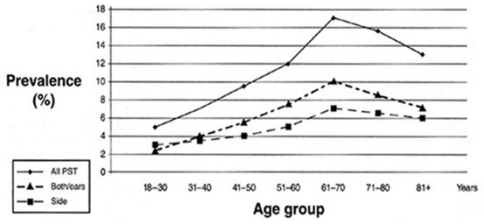
- Hair cells destroyed
- Corresponding silent regions in brain
- After months, silent neurons respond in normal way, but to same frequencies as adjacent regions
- Over-representation of these frequency regions in brain



TINNITUS PERCEIVED

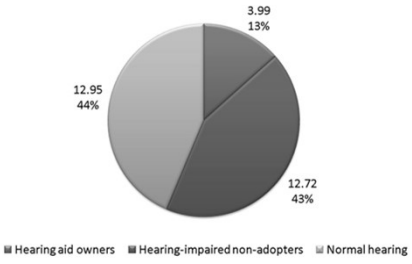
STOUFFER AND TYLER, 1990

- **UNILATERAL 37%**
- **BILATERAL 52%**
- **HEAD 10%**
- **OUTSIDE 0.6%**



Davis and Rafaie (2000)

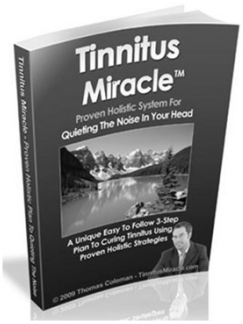
Figure 1. Tinnitus population (millions, 2008)



Kochkin, Tyler & Born (2011)

Current Medical Treatments

- At this time, there are no widely accepted cures for tinnitus,
- There are no studies that have shown a cure that have used appropriate research designs and have been replicated by others

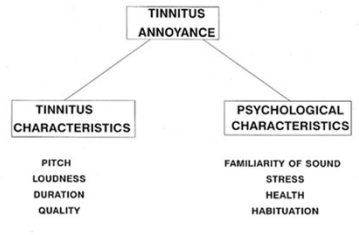


Medications OK for

- Anxiety
- Depression
- Sleep

24

THE PSYCHOLOGICAL MODEL OF TINNITUS



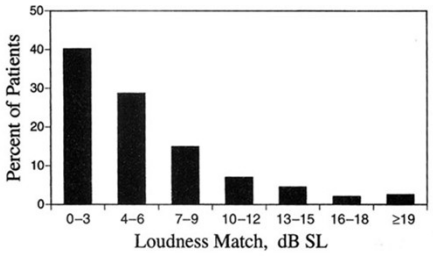
Dauman, R. and Tyler, R.S. (1992)

PITCH

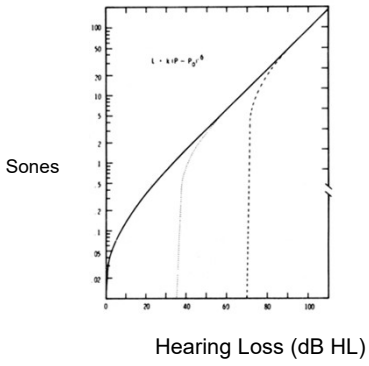
- Adjust my tone so that it has the same pitch as the most prominent pitch of your tinnitus
- Method of limits, or adjustment or an adaptive method
- Test in ipsilateral or contralateral ear
- Test with monaural stimuli
- Can be highly variable

LOUDNESS

- Adjust my tone so that is has the same loudness as your tinnitus
- Methods of limits, adjustment or an adaptive method
- Test in ipsilateral with monaural stimuli
- Sensation level is **not** loudness



Vernon and Meikle (2000)



Tyler, R.S. and Conrad-Armes, D. (1983)

MASKING

- Adjust my noise so that it just covers your tinnitus
- Methods of limits, adjustment or an adaptive method
- Can test with monaural or binaural stimuli
- Can test in ipsilateral or contralateral ear

CLINICAL APPLICATIONS OF MEASUREMENTS

- patient knows you understand
- quantify change
- pitch, loudness, minimum masking level

4 possible primary functions affected by tinnitus…

–What are they???

32

4 possible primary areas involved

– Emotional

37

4 possible primary areas involved

– Emotional
– Hearing

38

4 possible primary areas involved

– Emotional
– Hearing
– Sleep

39

4 possible primary areas involved

- **Emotional**
- **Hearing**
- **Sleep**
- **Concentration**

40

Tinnitus Questionnaires

Open-ended questionnaire

(Tyler and Baker, 1983)

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

Tinnitus Handicap Questionnaire
(Kuk, Tyler, Russell, & Jordan, 1990)

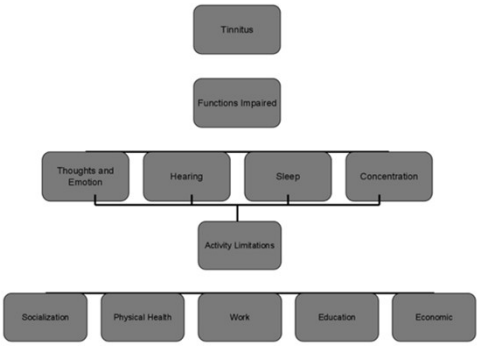
- Validated n= 275
- 27 items, scored from 0-100
- used worldwide, translated in many languages (Google Iowa tinnitus)
- Validity & reliability independent verified by Newman et al (1996) and Dauman et al. (1998) in French
- Designed to test treatment effectiveness

Tinnitus Functional Index

- Meikle et al. (2012)
- Scored 0-10
- BUT !!!!! includes questions on Quality of Life
  - How much has your tinnitus interfered with your enjoyment of social activities?
  - Your relationships with family, friends and other people?
  - Do you feel in control in regard to your tinnitus?
- **Therefore TFI not recommended**

Problems Resulting from Tinnitus

World Health Organization model



Tinnitus Primary Activities Questionnaire

- Four categories (3 questions per area)
  - Thoughts and emotions, hearing, sleep, concentration
- e.g. "I have difficulty focusing my attention on some important tasks because of tinnitus"
- Scoring form available
  - Search "Iowa Tinnitus)

Three responses to tinnitus

- Defeat
  - overwhelmed
- Control
  - Some habituation
  - Wishing for it's cessation
- Accept
  - habituate

48

Nurturing Expectations to Help Tinnitus Patients

Tyler, R.S., Haskell, G., Preece, J., and Bergan, C. (2001). Nurturing patient expectations to enhance the treatment of tinnitus. **Seminars in Hearing, 22**(1): 15-21.

Expectations

- Negative
  - Less likely to seek and benefit from treatment
- Positive
  - More likely to engage in treatment and be helped
- Patient expectations are influenced by YOU

Being Perceived as a Knowledgeable Professional

- confidence in therapist and self-confidence
- well educated, degree

Demonstrate That You Understand Tinnitus

- articulate, professional, well educated with respect to tinnitus
- knowledgeable about tinnitus
- has previous successful experience with tinnitus patients

Provide a Clear Therapy Plan

- feelings of mastery - can influence outcome
- hope that patient can be helped
- provide a plan to reduce effects of tinnitus
- make patient key part of the plan
- have patient participate in designing plan

Be Sympathetic Towards the Individual

- Understand their tinnitus and the personal problems that have resulted from it

Show that You Sincerely Care

- Take time to listen
- Schedule follow-up visit
- Call if questions or difficulties arise

Counseling for Tinnitus

Rich Tyler, Ph. D.