Sound-based Methods of Tinnitus Management

James A. Henry, Ph.D.1, Tara L. Zaugg, Au.D.1, Paula J. Myers, Ph.D.1,2, Martin A. Schechter, Ph.D.3
VA RR&D National Center for Rehabilitative Auditory Research, VA Medical Center, Portland, Oregon, USA, 1Department of Otolaryngology/Head and Neck Surgery, Oregon Health & Science University (OHSU), Portland, Oregon, USA, 2James A. Haley VA Medical Center, Tampa, FL

ABSTRACT

Since there is no cure for tinnitus, it must be managed to prevent its exacerbation and to minimize its impact on daily life activities. Sound-based tinnitus management generally involves some combination of the following basic elements: educational counseling, stress reduction, and the use of therapeutic sound. We will focus on the latter element (therapeutic sound), which can involve three distinct objectives: (1) producing an intense sense of relief from tinnitus-associated stress (using “soothing” sound); (2) passively diverting attention away from the tinnitus by reducing contrast between tinnitus and the acoustic environment (using “background” sound); and (3) actively diverting attention away from the tinnitus (using “interesting” sound). Each of these goals can be accomplished using three different types of sound—broadly categorized as environmental sound, music, and speech—resulting in nine different combinations of uses and types of sound to manage tinnitus. The different sound-based methods of tinnitus management (Tinnitus Masking, Tinnitus Retraining Therapy, Neuromonics Tinnitus Treatment, and Progressive Audiologic Tinnitus Management) each use sound differently, which can be conceptualized with respect to the nine combinations.

EFFECTS OF SOUND ON THE PERCEPTION OF TINNITUS

• Effects of sound on the tinnitus percept generally are reflected as a masking or suppression effect (Fig. 1).

THREE STRATEGIES FOR USING SOUND TO MANAGE TINNITUS

Soothing Sound
• Induces a sense of relief from stress or tension caused by your tinnitus (a “soothing” sound).
Background Sound
• Reduces contrast between tinnitus and the acoustic environment (passive attention diversion) (Fig. 2).
Intersting Sound
• The goal is to shift attention away from tinnitus and onto the interesting sound (active attention diversion). Demonstrating the Three Uses of Sound to Patients

Sound Plan Worksheet

THREE TYPES OF SOUND

Each of the three uses of sound can involve one of three different types of sound (environmental, music, speech).

Tinnitus Masking
• Patients normally use ear-level devices that generate wide-band noise (noise generators or combination instruments)—some patients use hearing aids.
• Main objective is to use sound to provide a sense of relief from tension or stress caused by tinnitus.
• Accomplished with complete masking for some people, partial masking for others, and sometimes even with no masking (Fig. 1).
• With respect to the Grid, the use of sound with TM is an example of using environmental sound as soothing sound (Fig. 4).

Tinnitus Retraining Therapy
• Patients normally use ear-level devices that generate wide-band noise (sound generators or combination instruments)—some patients use hearing aids.
• Patients are instructed to maintain therapeutic sound at a level just below the “mixing point” (Fig. 7).
• With respect to the Grid, the use of broadband noise with TRT is an example of using environmental sound as background sound (Fig. 6).

Neuromonics Tinnitus Treatment
• Involves at least 6 mo using a proprietary, wearable listening device 2-3 hr per day.
  • Similar to an MP3 player—plays relaxing Baroque and New Age music.
  • During initial training, the Neuromonics device (which sounds like white noise) is added to music.
  • Objective of stage 1: attain a sense of relief and control over tinnitus.
  • Reducing the volume, the use of sound during stage 2 is an example of using a combination of music and environmental sound (Fig. 8).
  • During stage 2 (4 mo) wide-band noise removed from music.
  • Patients instructed to gradually reduce music’s volume.
  • The use of sound during stage 2 is an example of using music as soothing sound, transitioning to using music as background sound prior to discontinuing use of the device (Fig. 7b).

Progressive Audiologic Tinnitus Management
• Use of sound with PATM is flexible to accommodate the large variations in individual preferences and circumstances.
• Different tinnitus-problem situations often dictate different sound-management strategies.
• With PATM, all nine combinations of uses and types of therapeutic sound can be used (Fig. 3).
• Patients need to be educated extensively about the variety of sounds available, different ways to think about the goals of using sound, and the varied approaches of delivering sound in a practical and individualized manner.
• The main goal of PATM is for patients to learn how to develop and implement individualized plans for using therapeutic sound to manage their tinnitus.
• The Sound Plan Worksheet (Fig. 5) is used to facilitate the process of identifying sounds that should be effective in managing a specified tinnitus problem situation.
• The initial objective is for patients to complete the process of writing a plan with the Workbook, carrying out the plan, evaluating the effectiveness of the plan, and then modifying the plan to improve its effectiveness.
• Patients create a sound plan to manage just that particular situation using sounds and sound devices that are easily accessible (e.g. a radio, CD player, or electric fan that the patient already owns).
• In this way, patients are empowered in creating a sound plan that can be implemented with minimal effort and usually at no cost to address their most bothersome tinnitus situation.
• After patients have gained experience and confidence with the process and the concepts, then additional bothersome tinnitus situations can be addressed and more complicated and sophisticated technology can be incorporated.
• Patients are encouraged to use the Worksheet on a regular basis to refine and improve their sound plans.

CONCLUSIONS

• Using sound is a common form of therapy for tinnitus, although specific uses of sound vary between methods.
• Research has not yet shown which methods are most effective, nor do we know what components of each method provide the greatest benefit to the individual patient.
• In general, a viable approach to managing tinnitus is to use sound in a manner that provides the most benefit to the individual patient, and to supplement the use of education with education and stress-reduction techniques and, as needed, psychological and/or medical management.

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1VA RR&D National Center for Rehabilitative Auditory Research, VA Medical Center, Portland, Oregon, USA, 2Department of Otolaryngology/Head and Neck Surgery, Oregon Health & Science University (OHSU), Portland, Oregon, USA, 3James A. Haley VA Medical Center, Tampa, FL