

Broadband Noise Is Still the King

Summary by John A. Coverstone, AuD

For decades, clinicians have used broadband noise (white noise is one type of broadband noise) as a component in the treatment for tinnitus. By presenting a low-level noise to the patient, tinnitus is no longer the only—or most prominent—sound, and the volume of tinnitus may be decreased.

Recently, researchers at the University of Auckland, New Zealand, sought to compare the effects of broadband noise to nature sounds for tinnitus management. They theorized that the unpredictable acoustic characteristics of nature sounds would result in better tinnitus management than the constant and emotionally neutral broadband noise. To test the theory, they recruited 18 subjects with tinnitus and had them listen to either broadband noise or nature sounds on MP3 players or headphones for eight continuous weeks. After the eight-week period, subjects were given three weeks of no sound therapy, to eliminate any long-term effects of the sound therapy. Then a new eight-week course of treatment began with the other type of sound.

To measure the results of each type of sound therapy introduced—broadband noise or nature sounds—researchers used multiple measures, including the *Tinnitus Functional Index* (TFI)—the primary outcome measure—tinnitus loudness measures, and minimum masking levels (the minimum noise necessary to make



tinnitus inaudible), as well as emotionality, anxiety, depression, and stress measurements. These measurements were conducted multiple times during each of the eight weeks of sound therapy.

When compared to the baseline score, broadband noise yielded a greater improvement of TFI scores than did nature sounds. Tinnitus loudness level was measured at a lower level after eight weeks of broadband noise, where there was little change after use of nature sounds. Minimum masking levels did not change after any sound therapy, but positive effects of sound therapy were noted for tinnitus, emotion, attention, and psychological states. The authors also noted that patient preferences for

type of sound therapy did not correlate with outcome measurements.

The authors concluded that use of broadband noise shifts internal weighting of sound away from tinnitus, resulting in lower tinnitus loudness. However, nature sounds appear to have a positive effect primarily on the secondary aspects of tinnitus (emotion, perception, anxiety). The authors noted a great deal of individual variation in subjects and recommended management protocols based on individual preferences and responses to sound therapy. 

Durai M. Searchfield GD. A Mixed-Methods Trial of Broad Band Noise and Nature Sounds for Tinnitus Therapy: Group and Individual Responses Modeled under the Adaptation Level Theory of Tinnitus. *Frontiers in Aging Neuroscience*. 2017 Mar 9; 9:44.