TRT vs. Neuromonics
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This report highlights the similarities and differences between TRT (Tinnitus Retraining Therapy) and Neuromonics. While both approaches involve sound therapy and counseling, they have little else in common.

One of the most important differences lies in the fact that TRT is a treatment protocol; whereas Neuromonics is a for-profit company. The Neuromonics company wants as many audiologists as possible to recommend Neuromonics devices to their patients as often as possible - because that is how the Neuromonics company makes a profit and keeps its stockholders happy. There is no TRT company encouraging audiologists to recommend TRT. It is true that wearable devices are often used in TRT, but the companies that manufacture such devices are hearing aid manufacturers. Income from the sale of devices that can be used in TRT typically makes up a very tiny percentage of these manufacturers' profits, whereas income from the sale of the devices used in Neuromonics makes up 100% of the company's profits. There is not a single device manufacturer in the world that is promoting or advertising TRT to audiologists or to tinnitus sufferers. Contrast that with Neuromonics, where the entire focus is on promoting and advertising Neuromonics devices to audiologists and to tinnitus sufferers.

Neuromonics, Inc. currently makes three different devices. Its flagship device is the Oasis, which is the unit that provides proprietary spectrally-enhanced music tailored to the user's audiogram. Neuromonics has also come up with some lesser devices, the Sanctuary and the Haven. The company refers to the Oasis as its "gold standard" device, which presumably gives the best results or else why refer to it that way? For the purposes of this discussion, then, when I talk about Neuromonics, I will be talking about the Oasis device. After all, the only reason tinnitus sufferers would consider Neuromonics or TRT in the first place is because of the results they hope to achieve.

So let us discuss the proprietary (which basically means "secret") spectrally-enhanced music tailored to the user's audiogram that is the nuts and bolts of Neuromonics. The original concept of using spectrally-enhanced music was developed by audiologist Paul Davis while working towards his Ph.D. in audiology. Basically Neuromonics uses an algorithm that makes the music louder in the frequency ranges where your audiogram shows some hearing loss - and they mix in some "white noise" at the earlier stages of treatment. You listen to this music two to four hours a day. You do not have to concentrate on the music, but you are not supposed to drive a car or exercise when you are listening to it. Your audiologist can monitor how much you are using the device through the software platform and can also make various adjustments to the music, including whether or not to add in the white noise. You are supposed to use the device throughout the treatment period, which can be several months to a year (or possibly longer). The Neuromonics folks cite a number of internal studies that purportedly show that the proper use of their Oasis device will yield a higher success rate in a shorter period of time compared to broadband sound (like the sound used in TRT). The best truly independent study I can find was published in the Journal of the American Academy of
Audiology in 2012. The investigators, Dr. Craig Newman and Dr. Sharon Sandridge, are very experienced and highly respected in the audiological community. Their study, which was completed at the world-renowned Cleveland Clinic, found no therapeutic advantage to Neuromonics over broadband sound whatsoever. Specifically, in contradistinction to the company's claim, there was no difference in success rates, nor was there a difference in the time it took to achieve success. What the study did find was that Neuromonics was considerably more expensive. But let us set that particular independent study aside for a moment. To the best of my knowledge, even the Neuromonics folks have never run a controlled study demonstrating a therapeutic advantage to using their propriety spectrally-enhanced music played through an Oasis device over a similar music selection that is not altered in any way and played through an inexpensive MP3 player made to look like an Oasis device. And to be honest with you, that really bothers me - because such a study would be easy to design!

One more word about Neuromonics, and then we will turn our attention to TRT, which itself is certainly not immune to legitimate criticism. Neuromonics was first conceived of as a technology-driven approach to tinnitus habituation. TRT employs sound therapy and a one-to-one educational program called TRT counseling to facilitate habituation. (More about TRT counseling later on.) Anyway, the Neuromonics folks figured that if they could cut way down on the one-to-one educational piece and accomplish the same end, then audiologists could sell more and more devices while investing considerably less time per patient, a concept that would be extremely appealing to audiologists and, more than that, to the company's stockholders! So instead of the counseling piece, Neuromonics came up with something they referred to as bibliotherapy: They would give the patient a book to read about tinnitus, and call it counseling. The problem was that the bibliotherapy approach really did not work as well as intended. Indeed, it became readily apparent to many in the clinical community that those audiologists who had been trained and experienced in TRT counseling were having better results with Neuromonics than those who were doing the bibliotherapy - because the TRT clinicians were putting the same amount of time and effort into counseling their Neuromonics patients as they were with their TRT patients, and because they were basing much of their Neuromonics counseling on the same principles used in TRT counseling.

On to TRT, a treatment protocol devised by Dr. Pawel Jastreboff and based upon Dr. Jastreboff’s Neurophysiological Model of Tinnitus, which he first described in 1990. When discussing TRT it is helpful to keep in mind the fundamental principle of that model: In clinically relevant bothersome tinnitus neurological systems other than the auditory system are dominant (PJJ, 2012). The most important of these systems are the limbic system (emotion) and the autonomic nervous system (“fight-or-flight”).

Where did the name "Tinnitus Retraining Therapy" come from? Consider for a moment the chair you are likely sitting in right now. You have been sitting in it for quite a while, but until I mentioned it to you, you have been unaware of the pressure of the chair against your buttocks. You might have been aware of it just as you sat down, and you are aware of it now that I am pointing it out to you, but other than that you have been unaware of it. And within a few moments I can pretty much guarantee that you will be unaware of it again - unless I draw your attention to it. One might say that the reason you are unaware
of it is that you do not react to it. And the reason you do not react to it is that your brain classifies it as a neutral stimulus. The brain, even the brain at rest, is a very complex and busy organ. As such the brain must prioritize. The brain simply cannot attend to everything at once - so it places neutral stimuli way down on its priority list. What does all that have to do with tinnitus? Well, like the pressure of the chair against your buttocks, tinnitus is a stimulus. Of course, it's an internally-generated stimulus instead of an externally-generated one. And of course, there are a number of aspects of your tinnitus that make it far far different from the pressure of that chair. But in the final analysis, it is a stimulus, and if your brain can somehow be retrained to classify your tinnitus as a neutral stimulus, then you should largely cease reacting to it, and as a consequence it should largely fade from your awareness unless you purposely seek it. Just like the chair. And that is where the name Tinnitus Retraining Therapy came from.

As with Neuromonics, there are a number of TRT studies available for review; however, since there is no TRT company, none of those studies is internal. And even if you throw out Dr. Jastreboff's own studies on the grounds of potential bias, the others all pretty-much conclude the same thing - a success rate in the neighborhood of 85% with success defined as a significant decrease in reaction to tinnitus (Hr) and a consequent decrease in perception of tinnitus (Hp). TRT does not claim to make tinnitus less loud. It does, however, make it less bothersome regardless of how loud it might be (i.e., you react to it less.) The implication cannot be overstated, because - due to prioritization within the brain - a decrease in awareness is an inescapable consequence of a decrease in reaction. And if you are not aware of your tinnitus (see the chair example in the above paragraph), then what does it matter how loud it is?

TRT is a very specific protocol. It starts with an evaluation during which a person's "TRT category" is identified by his or her TRT clinician. There are five distinct TRT categories, which are inconveniently numbered 0 through 4. The numbering does not reflect severity; rather it is based on the presence or absence of hyperacusis, hearing loss, and a variety of other auditory factors. Sound therapy and TRT counseling (which used to be called "directive counseling") are the two essential elements in TRT. The particular form of sound therapy as well as the specific TRT counseling strategies are dictated by the TRT category. Thus, for instance, a Category 2 patient would receive completely different sound therapy and counseling recommendations from a Category 3 patient. Regardless of TRT category, the counseling is consistent with the Neurophysiological Model of Tinnitus and involves an in-depth description of the rationale behind habituation as well as how and why the brain classifies stimuli. The counseling involves an initial session and two to four "follow-up" sessions throughout the course of treatment - generally six to twelve months. The sound therapy might involve environmental sound, hearing aids, wearable broadband sound generators, or some combination thereof as determined by the patient's TRT category. The sound generators emit a soft "shhhhh" sound, the volume of which can be adjusted by the wearer, who is carefully instructed in how to set them each morning. The end result of the instructions is that (1) the sound does not suppress the tinnitus in any way, (2) the sound is not annoying, (3) the sound does not interfere with communication, (4) the sound does not elicit the stochastic resonance phenomenon (which can actually aggravate tinnitus), and (5) within the aforementioned constraints the
sound maximally facilitates habituation. The specific details of how sound therapy is employed in each TRT category and how devices are set (for the categories requiring devices) for each is well-described in a number of publications and is beyond the scope of this review. Suffice it to say that when wearable devices are used in TRT (a) they are inconspicuous, (b) they are comfortable, (c) the sound they emit is not annoying, (d) the sound they emit does not interfere with communication, and (e) within a few minutes the wearer becomes oblivious to them. The devices are worn as much as possible but for at least eight hours a day - but since the wearer quickly becomes oblivious to the devices and to the sound they emit, that is largely irrelevant. As with Neuromonics, at the conclusion of TRT the devices are no longer needed.

What is the difference in cost to the consumer between TRT and Neuromonics? Clearly there is considerable variation in this regard from clinic to clinic. But if you include the cost of evaluation, testing, counseling, all follow-up, and the device (the Oasis for Neuromonics and a pair of wearable broadband sound generators for TRT Categories 1, 3, and 4), Neuromonics generally runs along the order of $1500 to $2000 more than TRT.

Is Neuromonics more successful and quicker than TRT? The Neuromonics people would like you to think so, but the independent Cleveland Clinic study referred to earlier in this review concludes that there is no difference in either regard between the spectrally-enhanced music produced by the Oasis device and the broadband sound used in TRT.

Why is Neuromonics seemingly more popular among audiologists than TRT? Let us assume that you are a fully-trained and licensed audiologist who is interested in treating tinnitus patients.

1) You can contact the Neuromonics company, and they will offer to provide what is essentially a turn-key operation for the tinnitus part of your audiology practice. Moreover, they will provide all of the training you need at no cost. The training does not include instruction in TRT-type counseling.

- or -

2) Since there is no TRT company to contact, you can purchase a book on TRT and take a three-day intensive TRT course wherein in addition to sound therapy a great deal of emphasis is placed on TRT counseling. These courses (currently taught by Drs. Pawel and Margaret Jastreboff) are offered a couple of times a year in Maryland and will cost you around $2200 tuition in addition to hotel and travel. The TRT courses include extensive instruction in counseling techniques based on the Neurophysiological Model; the Neuromonics folks tell you that their treatment approach is technology-based and requires no such counseling. The Neuromonics folks tell you that Neuromonics is quicker and more successful than TRT, but they do not tell you that the Cleveland Clinic study says otherwise. Nor do they feel any obligation to tell you that experienced tinnitus clinicians have found that Neuromonics patients do better if TRT-type counseling is included as part of the treatment. And that about sums up the answer to the question posed at the beginning of this paragraph.

On the positive side for Neuromonics, the name is trademarked. You cannot purchase a Neuromonics device from anybody other than a hearing healthcare professional who has
gone through the Neuromonics training program, so there are some built-in quality controls in that when you "do" Neuromonics, you are undergoing the treatment protocol as intended by Neuromonics. Moreover all adjustments to the spectrally-enhanced music are controlled by the technology. So with Neuromonics, what you see is what you get.

With TRT, since the name is not trademarked, what you see is in many cases not what you get. And to my way of thinking, that represents an enormous problem for the tinnitus community. Anybody can call himself or herself a "TRT clinician." Moreover, since there is no credentialing or standardization in TRT, even if a clinician has read Dr. Jastreboff's book and taken his course, there is no assurance that he or she has retained the material or even understood it in the first place. Thus, not only are there many more Neuromonics clinicians than TRT clinicians, the challenge for tinnitus sufferers interested in TRT is further complicated by the aforementioned lack of credentialing and standardization. It should be noted that there is a "TRT Association" with members listed on Dr. Jastreboff's website, but Dr. Jastreboff makes a point of stating that it should not be treated as a referral list and that being a member of the TRT Association is not equivalent to certification. As I see it, at best the list should be viewed as a starting point. Moreover, I would be concerned about going to a clinician claiming to be "certified" in TRT. Such certification simply does not exist.

If I were considering TRT, I would want to know where and when the clinician actually took a TRT course. I would also want to know if he or she was using the original TRT protocol or some sort of "variation" of TRT. (Variations of TRT might or might not have merit, but they are not TRT and should not be expected to necessarily yield the same results.)

If I were considering Neuromonics, I would want to know if the treatment program was primarily based on the Oasis technology or if counseling about habituation was included (and, if so, how much?)

And while I am on the subject of questions to ask clinicians, regardless of the approach they are offering (TRT, Neuromonics, cognitive therapy, whatever), there are some very important questions prospective patients should be asking:

- What is the approach the clinician is recommending and why?
- What type of training has the clinician undergone in the use of that approach?
- How long has the clinician been using the approach?
- How many tinnitus sufferers has the clinician treated with the approach?
- What is the clinician’s success rate using the approach?
- How does the clinician define and measure success?

What if after considering both TRT and Neuromonics, you have decided on TRT, but after carefully researching the matter and making a number of phone calls, you have concluded that there are no truly knowledgeable and experienced TRT clinicians in your geographical vicinity? Well, those who do a lot of TRT are often set up to do the two to four follow-up counseling sessions by telephone or Skype. Only the initial evaluation-
fitting-counseling session need be done in person. Beyond that single visit there is generally no need to contemplate any traveling.

What if you are partial to the idea of listening to music as opposed to playing soft broadband sound in the background? Recall that the broadband sound used in TRT is purposely adjusted so that it is not at all annoying, and recall that within a few minutes you become unaware of it. But that said, if you have a strong preference for music and do not mind the additional cost, then Neuromonics may be the better choice for you.

Both TRT and Neuromonics are effective protocols for facilitating the habituation of tinnitus. Each has advantages and disadvantages. I hope that this review has provided the reader with some tools that will help in the decision process.

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