"In *Tinnitus: Questions and Answers* Vernon and Sanders join forces to produce a book that is extraordinarily broad in scope and meticulous in depth, yet so lovingly composed that it makes for an 'easy read.' This volume is a must for those affected by tinnitus—patients, family, and friends—as well as for hearing healthcare professionals like me, whose jobs have just become that much easier."
– Stephen M. Nagler, M.D., FACS, Director, Alliance Tinnitus and Hearing Center, Atlanta, Georgia

In *Tinnitus: Questions and Answers*, authors Vernon and Sanders answer hundreds of real questions clearly and accurately on topics of urgent interest to people with tinnitus. Such topics, based on referenced research and the experiences of thousands of patients, include drug treatments, new research, alternative remedies, hearing loss, hyperacusis, Ménière's disease, masking, and tinnitus retraining therapy.

Dr. Jack Vernon is a longtime champion of the tinnitus patient. Shortly after his first tinnitus research began in 1968, he established the first tinnitus clinic in the United States. His passionate interest in tinnitus prompted the founding of the American Tinnitus Association (ATA) in 1971, now a national research-funding organization. Barbara Tabachnick Sanders began writing investigative articles about tinnitus in the early 1990s and is editor of the ATA's acclaimed journal *Tinnitus Today*. Vernon and Sanders' collaboration has produced this thorough and optimistic book for patients and healthcare professionals alike who want *or need* to know more about tinnitus.

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TINNITUS
QUESTIONS AND ANSWER

JACK A. VERNON
BARBARA TABACHNICK SANDE

31

Masking: Using External Sounds to Quiet Tinnitus

Q What is masking?

A Masking is the introduction of an external sound to a tinnitus ear with the intent of completely or partially covering (or masking) the internal tinnitus sound. Many people with tinnitus experience a perceived reduction of their tinnitus loudness in the presence of the masking sound. The masker sound—a "shhhh" sound, like static on an FM radio—is generally a broadband sound from 2000 to 8000 Hz.

Q What forms of masking are available? And how can an audiologist determine which is the best kind of masking for me?

A There are several different forms of masking. Ear-level masking can occur with an in-the-ear, behind-the-ear, or in-the-canal masker and also with a hearing aid or a tinnitus instrument (a device that combines a hearing aid with a masker). Environmental masking can occur with a tabletop sound-generating machine, an FM radio set between stations, a fan, an aquarium, a waterfall, the ocean, or any external sound source that provides a steady, monotonous, low-level noise that interferes with the perception of tinnitus.

When attempting to relieve tinnitus with masking devices, it is very important to know the pitch of the tinnitus and the degree and frequency location of hearing loss. Figures 31.1 through 31.4 show audiograms for a variety of hearing and tinnitus circumstances and give suggested therapies. Ideally, every tinnitus patient should have the opportunity to try every available sound device in an attempt to find the very best one or at least one that helps

Also see Chapter 40, Residual Inhibition: An Aftereffect of Masking, and Chapter 46, Tinnitus Instruments: Devices for Tinnitus Control.

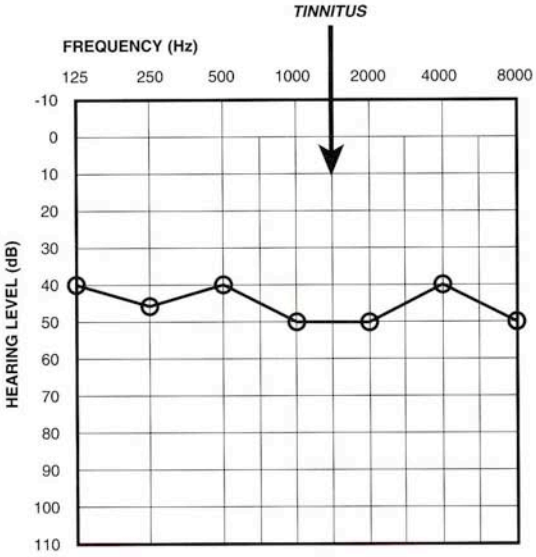

FIGURE 31.1 *Audiogram of low-frequency tinnitus and flat hearing loss. Suggested therapy: hearing aid.*

at all. A few clinics offer device sampling to their patients. In the absence of this, you and your clinician can use these audiogram charts to guide your decision.

But keep an open mind. Some patients experience tinnitus relief with sound levels nowhere near what should be working according to these charts. There are no absolute statements that can be made about masking and tinnitus relief. In the final analysis, you are the only one who can tell if what you are trying is helping.

Q My tinnitus was in my right ear, and when it was masked, it was substantially reduced. I was able to sleep without pills. I was in control of my

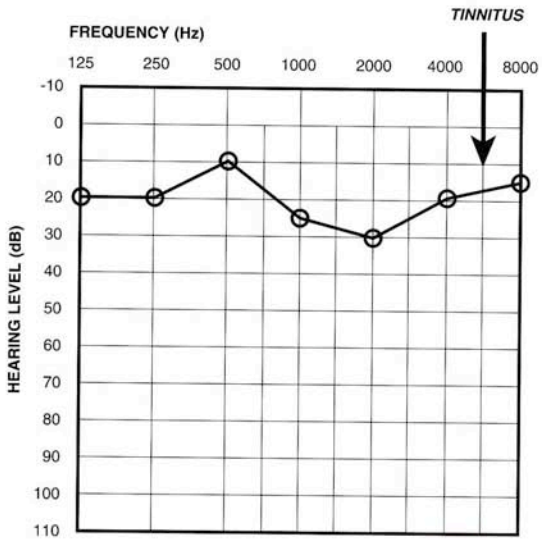

FIGURE 31.2 *Audiogram of high-frequency tinnitus and no hearing loss. Suggested therapy: High-frequency tinnitus masker.*

tinnitus and my life. Recently at a dinner party, my immediate table neighbor dropped a metal knife on her plate. It was like a gunshot! I awoke that night with increased tinnitus in my right ear and tinnitus in the left ear as well. I feel as if I'm back where I started and on an emotional roller coaster. The tinnitus seems to go from inside the head to outside the head. My physician has put me on Valium to help me sleep. Do you think there is any way to relieve my greatly increased tinnitus?

A First, it is very likely that your tinnitus will return to its original level. It could take weeks and possibly months, but the chances are good that it will come back down. Hearing damage that results from noise exposure is the product of the length of the exposure *and* of the loudness of the noise. The

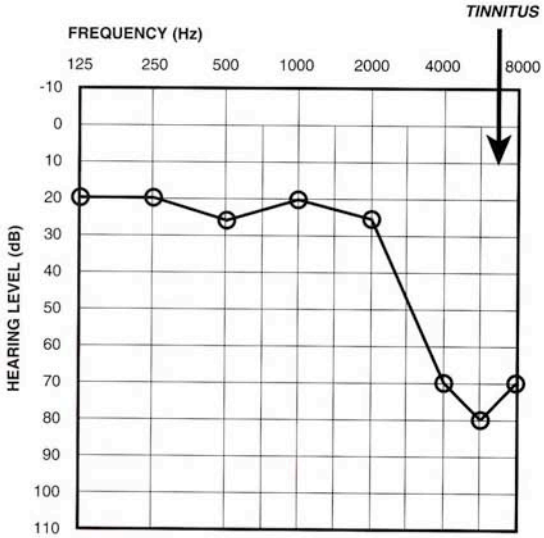

FIGURE 31.3 *Audiogram of high-frequency tinnitus and high-frequency hearing loss. Suggested therapy: tinnitus instrument.*

knife-on-the-plate sound to which you were exposed was fortunately very brief in length and of a relatively nondamaging intensity.

The fact that your tinnitus appears to be in the head might be due to balanced tinnitus signals coming from both ears, or possibly from both auditory pathways. Instead of using one masker, you might find that two maskers would bring the tinnitus under control.

Q **I was fitted with an unusual tinnitus masker about 20 years ago. It did not produce a noise like most maskers. Instead, it produced a pure tone of 5600 Hz that exactly matched my tinnitus and that I have used with great success for all these years. Recently, the masker quit working and I had it**

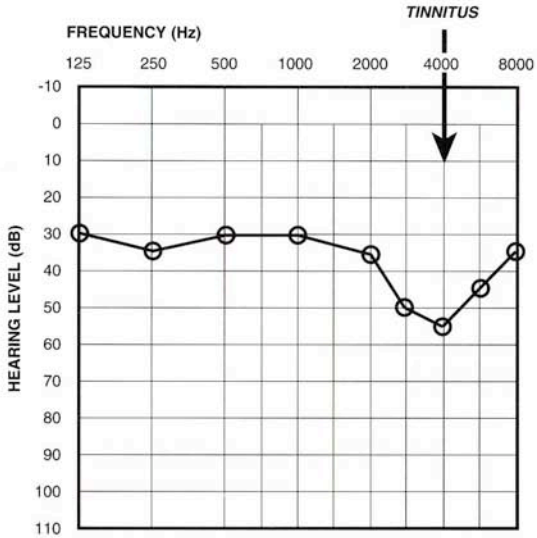

FIGURE 31.4 *Audiogram of 4000-Hz tinnitus and 4000-Hz "noise-notch" hearing loss. Suggested therapy: tinnitus instrument or high-frequency tinnitus masker.*

repaired. But when I got it back, it had been "fixed" so that it now produces a noise and not the 5600-Hz tone. Do you know of anyone who can provide me with a pure tone masker?

A Twenty years ago, we tried the idea of pure tone masking on four patients. But when we got improved noise-type maskers, the other three patients switched to the newer maskers. We had forgotten all about you! The electronics in a hearing aid are said to last only about 5 years. You got a great deal more service than we would have expected. In any event, the technicians who made the original pure tone maskers have long since retired, but we do know one way to provide you with a pure tone masking sound.

We will have an audio engineer produce a digital CD of a 5600-Hz pure tone for you. You will need a portable CD player with earphones, which will undoubtedly be different from your in-the-ear masker of years past. You might feel a little odd going out wearing headphones. But so many people use them to listen to music that you will probably blend right in. More importantly, it might work.

[One week after receiving the CD, this patient reported that it was very helpful in relieving his tinnitus. He listened to it on an inconspicuous CD player with small earphones and had already gotten used to it. He thought that, in some ways, the pure tone CD was better than the in-the-ear device. It had a cleaner sound, and he felt that the volume level of masking that he needed with the CD was lower than the volume level he had needed with the masker. He was beginning to experience periods of residual inhibition lasting 30 minutes to several hours.

Four weeks later, the patient reported great improvement. He no longer used the masking CD during the day. Instead, he rigged the CD player as a bedside unit so that it provided pure tone masking sound all night long. Initially, he had trouble getting to sleep (and his wife didn't fare any better), but after four nights they were both used to it. When he woke up in the morning, his tinnitus was completely gone and it remained that way throughout the day.

Eight weeks later, he reported that the CD was not working as well for his tinnitus as it had been. It is possible that the pitch of his tinnitus has changed. We have asked him to have it retested, and we will have a new pure tone CD track made for him if it is warranted.]

Q I can hear people talk when I wear my hearing aids, but I can't understand what they are saying. As for my tinnitus, I was told that my hearing was so impaired that masking could not help me.

A Speech comprehension is a common complaint, especially among elderly patients with hearing losses. The act of understanding speech involves not only hearing the speech sounds, but also processing those sounds in the brain. The processing actually requires a certain amount of time to achieve. Apparently, as we age, our ability to process speech sounds (like many other things) simply slows down. And it doesn't have to slow down much for speech to become quite incomprehensible. David Lilly, Ph.D., conducted a speech comprehension study in which the time interval between utterances was increased by only 250 milliseconds. This delayed timing significantly improved speech comprehension for the elderly test subjects who were hearing impaired. Unfortunately, there is no wearable electronic device available that can slow down the presentation of words. It might be helpful for you to ask people to speak to you not louder but slower.

There are so many variables to consider regarding masking: the degree of your hearing loss, the tinnitus pitch, the type of tinnitus sound you hear, and the masking instrument used. We have never been able to judge in advance with total accuracy which device and setting will work. We encourage you to conduct a trial. And as is true for all therapies, success with masking is enhanced when it is administered by skilled and knowledgeable clinicians.

Q I've been wearing a masker and it has improved my tinnitus significantly. This new problem seems minor, but ever since I got the masker, people have been telling me that I talk too loud. Is there a connection and, if so, what can I do about it?

A Yes, there is a connection. You are "overtalking" the masking sound. (People often do this when they wear earplugs.) It seems like a minor problem, but we know it is not. When our ears are occluded, we tend to raise our voices. Make a conscious effort to speak more softly. Very often it is easier to speak more softly if we speak more slowly.

Q I am 84 years of age. Does my advanced age make it impossible to relieve my tinnitus?

A There is no reason why age alone would influence the choice of procedures used for tinnitus relief. At any age, it is safe to introduce a quiet, neutral external sound to the affected ear or ears with either in-the-ear, behind-the-ear, or tabletop sound-generating devices. If you are currently taking medications, your drug choices for tinnitus relief might be limited. Your doctor can help you to decide. If your manual dexterity is limited, you might find that it is easier to adjust a behind-the-ear device than an in-the-ear device. (The controls are a little bigger and easier to reach.) We encourage you to give a trial to any procedure that is recommended or approved by your primary care giver.

Q My maskers work very well to relieve my tinnitus. But when I'm wearing them I have trouble understanding conversation. Can this situation be corrected?

A It is true that masking can sometimes interfere with hearing, and it can do this in two different ways. First, some units block the ear canal so that speech signals have a reduced opportunity to reach the eardrum. Second, the masking sound itself might be interfering with your ability to pay attention to the conversation. However, because masking (and tinnitus) sounds are more commonly high-frequency sounds, it is not as likely that they will block speech sounds, which are made up primarily of lower-frequency sounds.

If you do not have a hearing loss, it could help your speech comprehension to use an open earmold or behind-the-ear configuration of tinnitus masker or the non-occluding Tranquil™ masking device made by General Hearing Instruments. These do not block the ear canal. Therefore, incoming speech and other sounds are not occluded. Another thing to try: use one masker instead of two.

If you also have some hearing loss, replace the tinnitus maskers with tinnitus instruments, combination units containing a tinnitus masker and a hearing aid. Adjust the hearing aid portion of the tinnitus instruments first and then adjust the masker. This way you will have compensated for the hearing loss and made it possible to use lower levels of masking to achieve tinnitus relief. And, obviously, the lower the volume of the masking sound is, the less sound there is to interfere with the speech sounds that you want to hear.

Q I wear two tinnitus instruments through the day, which works well for me. However, each morning I wake up with an extremely loud and high-pitched tonal tinnitus. It takes at least half the day to calm it down with the tinnitus instruments. What could I try to bring the tinnitus into control faster in the morning? And what could I use to quiet the tinnitus at night?

A Typical bedside maskers will probably not cover a high-pitched tonal tinnitus. Petroff Audio Technologies manufactures digitally mastered CDs that produce a variety of tinnitus-alleviating sounds, including a high-pitched band of sound with very little low-frequency sound in it. With digital technology, more precise choices of sounds can be produced. Consider using this at night with the volume of the CD adjusted to the lowest level that still provides tinnitus relief. Leave it that way through the night. Some people awaken with temporarily quieted tinnitus (residual inhibition), rather than louder tinnitus, when they use low-level, all-night-long sound stimulation. Residual inhibition might not occur right away, but give it time.

One patient reported that the Moses/Lang CD covers up his high-frequency tinnitus completely with track 7, a bandwidth of sound from 10,000 to 14,000 Hz. (This CD has seven masking tracks of varying bandwidths.) He even occasionally experiences a temporary cessation of tinnitus after the masking sound is removed. However, it is the low-frequency pink noise (200 to 6000 Hz) on track 1 that he finds to be much more pleasant, even though it does not completely mask his tinnitus.

As a matter of course, it is best to avoid extremely quiet environments, day or night.

Q I've been prescribed a masker for my tinnitus. But I'm concerned about caring for it. (It seems like a lot of work.) How do I care for it and what maintenance will it require?

A The circuitry of a masker is as delicate as that of a hearing aid. Therefore, these devices should be handled as carefully as hearing aids. If you have a behind-the-ear masker with an earmold, disconnect the earmold from the masker and wash the earmold once a week with warm water and gentle detergent. Let it dry thoroughly before reattaching it. Remember that our ear canals change shape as we age and even as we gain or lose weight. Have the earmold checked periodically to guarantee a continued good fit. When the behind-the-ear tubing starts to harden, replace it. The masker will work better that way.

Your audiologist will give you tools that are specially designed for removing earwax from hearing aids and maskers. Do this chore daily with the tools provided. To ensure healthy ear canals and masker longevity, put only clean and wax-free maskers in the ears.

It is also important to keep maskers away from moisture and humidity, which is not easy to do since we perspire. To help this along, you can buy a special drying kit that fits inside the overnight storage container. It does take a moderate amount of effort to tend to a masker. But if the masker helps the tinnitus, it is worth it.

Q I've tried the "faucet test" and my tinnitus can be heard above the sound of the water. Does that mean that masking is not a possibility for me?

A It might mean that your tinnitus is the kind that cannot be masked. Or it might mean that you have hearing loss in the high-frequency range to the degree that you are unable to appreciate the high-frequency portions of the water sounds that so often cover the sound of tinnitus. Tinnitus instruments might work for you since they contain both high-frequency-emphasis hearing aids and tinnitus maskers. Adjust the hearing aid portion first, and then add in just enough masking sound to cover up the tinnitus.

Q Isn't masking merely trading one sound for another? What good could that do? As an engineer I think I should be able to understand masking, but I don't.

A This comment is a common one. Tinnitus is an internal auditory effect. Masking, on the other hand, is an external auditory event, something that we are accustomed to. We have all spent a lifetime ignoring unimportant external sounds, like the hum of the refrigerator or the whir of an overhead fan. These sounds are constant, quiet, and generally boring, which is a rather accurate description of the sounds produced by maskers and noise generators. When the boring outside masker sound fully or even partially covers the inside tinnitus sound, we are able to ignore the outside sound along with the inside tinnitus sound because we have been ignoring boring sounds all our lives.

Second, the tinnitus sound is most commonly a high-pitched tone, whereas the masking sound is a band of noise, esthetically more pleasing by comparison and usually much more acceptable than a single tone. Another reason why masking sounds are often quite acceptable: the brain prefers hearing an outside sound rather than an internal sound.

Perhaps the greatest benefit of masker therapy is that, for many patients, it provides immediate relief from tinnitus, and the patient is always in control of when that relief will happen. The added benefit of residual inhibition, when it happens, can be a boon to the patient.

Q After I had ear surgery to enlarge my ear canals (tubes were inserted through both eardrums), I was left with severe high-frequency (7330 Hz) tinnitus and, I'm afraid, severe bouts of depression. I was fitted with bilateral hearing aids, but they have not helped my tinnitus. I do get some relief from a Walkman™. Why did the hearing aids fail to provide tinnitus relief?

A The fact that your tinnitus is at 7330 Hz means that it is well above any sounds that most hearing aids would amplify. (And there are very few environmental sounds in that frequency range *to* amplify.) Most patients with high-frequency tinnitus do not find relief with regular hearing aids. However, some do, which is why you did the right thing by trying.

You might need masking sounds in the 7000-Hz region to effect relief. Tinnitus instruments (combination high-frequency hearing aid and tinnitus masker units) could provide this needed condition for you. You might also consider using a tabletop bedside masker for sleeping. Marpac makes the Marsona® device with environmental sounds like waterfall, surf, rain, and wind. Although these are not very high-frequency sounds, they are often relaxing and distracting enough to aid sleep. A bedside CD player with Petroff's Dynamic Tinnitus Mitigation™ CDs or Personal Growth Technologies' Tinnitus Relief CDs could also help the sleep process. For your depression, which seems very much related to your having tinnitus, you could try a nontricyclic antidepressant like Wellbutrin or the herb St. John's wort. (Tricyclic antidepressants often worsen tinnitus.) Once your tinnitus is relieved, it is safe to assume that your depression will leave too.

Q I have noticed that I cannot hear my tinnitus when I'm standing near the refrigerator when the motor is running. The refrigerator motor is so low-pitched that I really don't hear it; I only feel it. Is it possible that sounds that are too low pitched or too high pitched to be heard by the human ear might produce "silent masking"?

A We tested a similar idea many years ago. We reasoned that if ultrasonic sound (which the human ear cannot hear) could mask tinnitus it would be the ideal condition for tinnitus relief. Several tinnitus patients were first tested to see which high-frequency region they could *not* hear. Then they were tested to see if masking in that frequency region could mask their tinnitus. As it turned out, if they could not hear the sound, their tinnitus could not be masked by sound in that frequency range. Recently, there was a new twist on this approach.

Hearing Innovations, Inc., developed the HiSonic® device, a high-frequency bone conduction hearing instrument for people who are profoundly hearing impaired. A modified version of the HiSonic was studied at the Oregon Hearing Research Center's Tinnitus Clinic to see if it could be used as a superhigh-frequency tinnitus masker. This modified device generates frequencies up to 36,000 Hz, way beyond what we are able to hear. Of the 20 tinnitus patients tested, 90% experienced some degree of masking, and 85% of them had a slightly longer duration of residual inhibition (although just minutes longer in most cases) than when conventional maskers were used. We don't know exactly what the HiSonic stimulates, since most of the profoundly deaf people who can hear with it have few if any functioning cochlear hair cells. Perhaps it stimulates the vestibular hair cells. Perhaps we need to investigate this further!

A Prisoner's Story

This is an extended account of an interaction with one tinnitus patient. There are many questions, answers, and comments, and it all got started in the following manner.

Q I am a prisoner in a federal prison, but my incarceration is not nearly as disturbing as my tinnitus. An explosion about 5 years ago initiated my tinnitus prior to my being an inmate. According to hearing tests conducted here, I have very little hearing loss and I certainly do not experience any hearing problems. The only problem with my ears is the ringing tinnitus that interrupts and prevents sleep. I am irritable, cannot concentrate well, and have difficulty maintaining attention long enough to do any prolonged reading. I probably will have to read your letter (if you answer this) a little at a time. My question is, can you help me with my tinnitus problem? The prison doctor says that there is no treatment for tinnitus and that I simply will have to learn to live with it. Is that true?

A Your doctor's statement is not true, although many doctors tell tinnitus patients the same thing. There are treatments and medications that bring relief. One treatment, called masking, is readily available and effective for at least 65% of the people who try it. You can experience what masking is like by doing what is called the "faucet test." Stand near a sink with the water running full force. If the sound of the running water makes it impossible for you to hear your tinnitus, then it is likely that wearable tinnitus maskers will provide relief. Do the faucet test and write back with the results.

Q I did the faucet test and it works! In fact, it worked so well that I was reluctant to turn the water off, it felt so nice not to hear that [deleted word] tinnitus. Once you pointed it out, I also noticed that the shower noise had the same effect. But how do I arrange to have that water sound available all the time? I can't stand by the sink all day even though I'm tempted to try it. What do we do next?

A If you were a patient here in our clinic, we would fit you with a pair of tinnitus maskers. The masker looks exactly like a hearing aid and indeed is enclosed in

(continued)

A Prisoner's Story Continued

a hearing aid case. Do you have any vanity problem about wearing what appears to be a hearing aid?

Q I have absolutely no problem about wearing a set of devices that look like hearing aids. But given my circumstances, how can I get these maskers?

A We will send the tinnitus maskers to you, but first we need molds of your ear canals. Each earmold needs to have a hole in it so that tubing from the masker can be inserted into it. The tinnitus masker fits behind your ear and a tube extends from the masker to the earmold. This is how the masking sound is directed into your ear. Dental acrylic is one type of material that can be used to create the impressions of your ear. Can you arrange to have earmolds made? Each earmold needs to have a hole drilled through its center that is the length of your ear canal.

Q I am sorry about the delay in getting back to you. I had to escape from prison in order to have the earmolds made and then I had to escape (inscape?) back into prison. Please don't let any of the officials see this letter. I went to see the dentist who comes to the prison every year to treat prisoners. I showed him your letter and asked him if he would be willing to make earmolds for me. He agreed to try and was even able to drill the holes while the molds were in my ears. The sound of the drilling was a bit loud, but other than that there was no problem. I await the tinnitus maskers to see if these earmolds are adequate.

A Enclosed is a pair of Starkey maskers and two packages of extra batteries. You will see that there is a volume control on each masker. Put the maskers on and insert the tubing into your earmolds. Increase the volume of the masking sound until you cannot hear your tinnitus or until you feel that you are getting relief from your tinnitus. Once you have determined the loudness level that is appropriate for you, just leave the units set at that level all day. To turn the maskers off, simply open the battery compartment. And, speaking of batteries, as the batteries wear down the high frequencies of the masking sound are lost. It happens gradually at first, but a progressive loss of the remaining frequencies follows. If at any time you notice that the maskers are not providing tinnitus relief, even though you can still hear the masking sound or at least some part of the masking sound, change the batteries. The battery life depends on the extent to which you use the devices. In short order, you will learn when a battery change is needed. Give the maskers a try and write back if adjustments are needed.

Q No adjustment is needed, and the relief is wonderful. Now I wonder if I can use the maskers during sleep.

A Yes, you can use the maskers during sleep provided you can get to sleep with those units behind your ears!

Q I used several extra pillows and sort of encased my head so that I looked straight up while lying flat of my back. I got to sleep very easily and quickly. Lately, though, I have been wearing the maskers just during the day (every waking daytime hour) because I no longer need help getting to sleep. The relief is significant.

Recently I had to change batteries during the day, and when I took the maskers off I noticed that the tinnitus was gone. It stayed away for 10 to 15 minutes and then it came back. I am not at all sure that it came back to its usual loudness. Am I imagining things?

A You are experiencing residual inhibition, a phenomenon that occurs in 83% of the patients we have tested. Residual inhibition can increase in duration for some patients as they continue to use masking. Residual inhibition is an intrinsic part of masking, but we do not know how to extend it.

Q It is about 6 months since I last wrote. The purpose of this short note is to inform you that my residual inhibition has grown. There are times when I remove the maskers and my tinnitus does not return for half a day. Is that length of residual inhibition unusual? Unusual or not, let me tell you it is wonderful.

A We don't know how many people get extended residual inhibition like yours. But we know that it occurs. It might even continue to expand, so enjoy it.

Q A year has passed and much good has happened. I came up for parole 3 months ago. In the past, I was always refused parole on the grounds that I was far from a model prisoner. I am sure that much of my "unmodel" conduct was due to the tinnitus. But this time, I passed with flying colors. When the parole board asked what had so dramatically changed me, I said it was you. Of course, I went on to explain about the effects of tinnitus and about the relief through masking that I was able to get. Needless to say, I did not reveal my escaping escapades.

I now work in a prisoner rehabilitation program that helps newly released prisoners adjust to the conditions of normal life. I feel that I am especially helpful to these prisoners because of the difficulties I had adjusting to tinnitus. It is very nice to be on the outside and involved in a worthwhile activity. Please know that you have my undying gratitude.

That is the end of a story and the beginning of a life.

Q Sometimes the masking sound can become an irritant even though it is a preferred sound over my tinnitus sound. When this happens, I add in the environmental sounds from the Marsona TSC-350 sound generator. In effect, I "mask the masker." Why doesn't Starkey or some other hearing device company produce the same sounds in their wearable maskers?

A In some cases, very high-pitched tinnitus requires very high-pitched (and unacceptable) sound to mask it. Your invention of "masking the masker" is a great idea and possibly another way to assist others who have high-pitched tinnitus. Most people need to have their tinnitus frequency included in the masking sound to experience relief with it. Not surprisingly (since there is no one thing that works for everyone), some people have tinnitus that can be masked by any sound. Have your tinnitus evaluated to determine what works for you.

We have not heard from others who have experienced this. If more individuals report the same or similar results, we would take that information to Starkey Laboratories and General Hearing Instruments, both makers of tinnitus masking devices. Thank you for this comment and potentially significant observation.

Resources

Schleuning, A. J., Johnson, R. A. Use of masking for tinnitus, *Int. Tinnitus J.*, 1997; 3(1):25–29.

Vernon, J., Griest, S., Press, L. Attributes of tinnitus and the acceptance of masking, *Am. J. Otolaryngol.*, 1990; 11:44–50.

Wayner, D. *Hear What You've Been Missing*, Chronimed Publishing, Minneapolis, MN, 1998.