

Robert T. Sataloff, Associate Editor

Sudden Sensorineural Hearing Loss: A Guide to Causes, Treatment, Problems, and Coping Strategies

Christine Isley-Farmer



Christine Isley-Farmer

A COMPREHENSIVE DESCRIPTION OF THE various types of hearing loss singers can experience, authored by Drs. Amanda Hu and Robert Sataloff, appears in an earlier issue of the *Journal of Singing*. In it, the following types of hearing loss are discussed: Conductive (CHL), Sensorineural (SNHL), Mixed (MHL), and Occupational (OHL).¹ Sudden Sensorineural Hearing Loss (SSNHL) is a designated type of Sensorineural Hearing Loss (SNHL). This article discusses the definition of SSNHL, causes, treatment, problems resulting from SSNHL onset, and coping strategies during treatment and after treatment. Portions of the article are written from a personal perspective, since I was diagnosed with SSNHL in January 2015 and treated until March 2015.

DEFINITION OF SSNHL

Unlike many cases of hearing loss that progress over a span of time, SSNHL can manifest within a matter of seconds or progress over several days. Incidence of SSNHL is estimated to be 1 in 5,000 Americans each year.² Any age group can be affected, but incidence seems to be higher in the fifth and sixth decades of life.³ Onset manifests unilaterally in most cases; bilateral or simultaneous bilateral onset is infrequent.⁴ Associated symptoms with SSNHL onset are tinnitus (ringing in the ear), aural fullness (plugged ear), and vertigo (dizziness). Loss can be frequency range and pantonal.⁵ Considered an ear emergency, SSNHL requires early intervention. Patients with this condition have a short window to begin treatment. Delaying treatment for longer than two to four weeks after onset results in irreversible hearing loss.⁶

In my case, SSNHL onset occurred while practicing singing. Sound in the left ear suddenly became muffled. Inserting a wax solvent into the ear several times did not resolve the plugged feeling by the following morning. Believing there might be embedded wax or water in the ear, I went to a walk-in clinic. Blood pressure had spiked to 150, which was abnormal for me. The nurse said she saw a bit of fluid in the ear but no wax. She prescribed a nasal spray and a course of prednisone in case of infection. I was scheduled to judge a competition for the next two days. During the competition, which was over a weekend,

Journal of Singing, September/October 2021
Volume 78, No. 1, pp. 75–81
<https://doi.org/10.53830/ZDFI3924>
Copyright © 2021
National Association of Teachers of Singing

there was no improvement in hearing. Stressing that hearing had suddenly changed and not returned despite treatment, I was able to get an appointment with an ENT on the fifth day after SSNHL onset. The audiometry results (Figure 1) show speech discrimination as 100% in the right ear. Left ear speech discrimination is 12%. Loss of hearing in the left ear is diagnosed as severe to moderately severe at 90+dB.

CAUSES OF SSNHL

In a research study of SSNHL published in 2010, researchers divided into two research groups. The first group examined 23 articles in which multiple etiologies (causes) were identified; the majority were idiopathic (unknown cause). The second group evaluated SSNHL patients with specific diagnostic tests. The results revealed 71% of the cases to be idiopathic. Other diagnoses ranged from 2.2% to 12.8%, with infectious disease having the highest percentage after idiopathic. Attempts to pinpoint a specific cause or causes for SSNHL in this study remained unconfirmed.⁷

Since most causes of SSNHL onset are generally idiopathic, patients may undergo screenings and/or treatment for several possible disorders. They are as follows: viral ear infection, vascular impairment, autoimmune disease, inner ear problems, and central nervous system abnormalities. In the latter, an MRI is the most useful method for identifying temporal bone or intracranial pathology when SSNHL is the primary symptom.⁸ I was referred to a rheumatologist for testing for autoimmune disease and underwent an MRI after SSNHL diagnosis.

SSNHL studies at Radebeul Hospital in Germany from January 2004 to December 2009 led to an interesting discovery. Of 489 SSNHL patients with a male to female ratio of 1:1.24, a slight predominance of left side hearing loss in female as opposed to male patients was discovered. Although the cause was unclear, researchers proposed the slight predominance of sudden deafness in the left ear in females might indicate greater left inner ear vulnerability due to hormonal factors.⁹

TREATMENT OF SSNHL

Corticosteroids have emerged to the forefront for SSNHL treatment. A tapering course of corticosteroids, either prednisone or methylprednisolone, has become

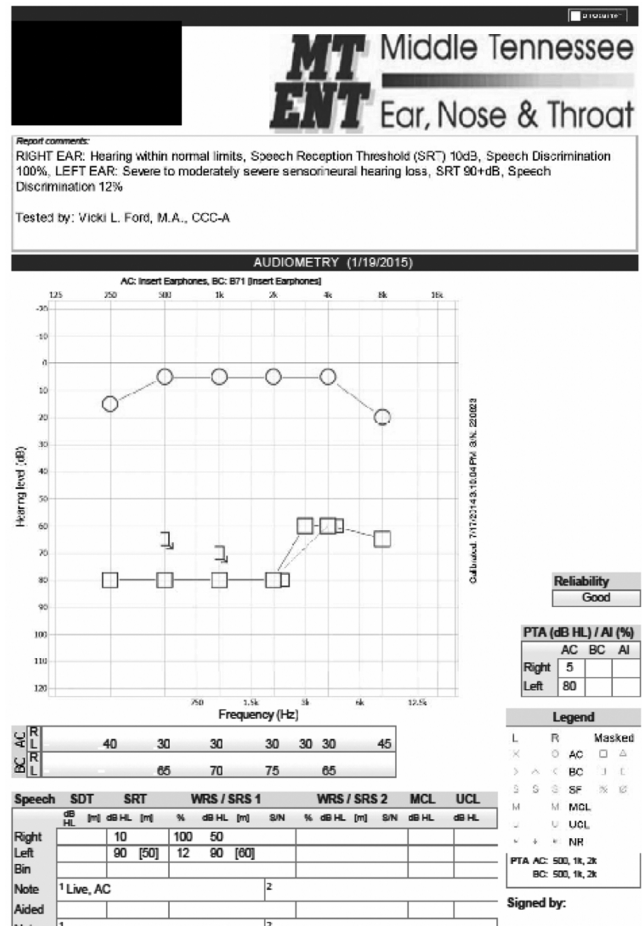


Figure 1. Audiometry, January 19, 2015.

standard. Although duration of corticosteroid treatment varies, typical treatment would be 60 mg/day for 14 days, followed by a five-day taper, decreasing 10 mg each day. Even though other treatments have been used (antiviral drugs, drugs to reduce blood clotting or increase circulation, hyperbaric oxygen, and inhalation of gases to increase circulation), oral steroids have proven to be more effective over time.¹⁰

The most recent steroid treatment to come into play is intratympanic steroid injections. Injections are made directly into the middle ear by a needle inserted into a numbed eardrum. Physicians choose various options with intratympanic steroid injections. These options include treating SSNHL solely with injections, simultaneously with oral steroids, or as a last step treatment to salvage hearing after failure of oral steroid treatment.¹¹

Figures 2 and 3 show results from tests that were taken in January and February 2015 during my simultaneous

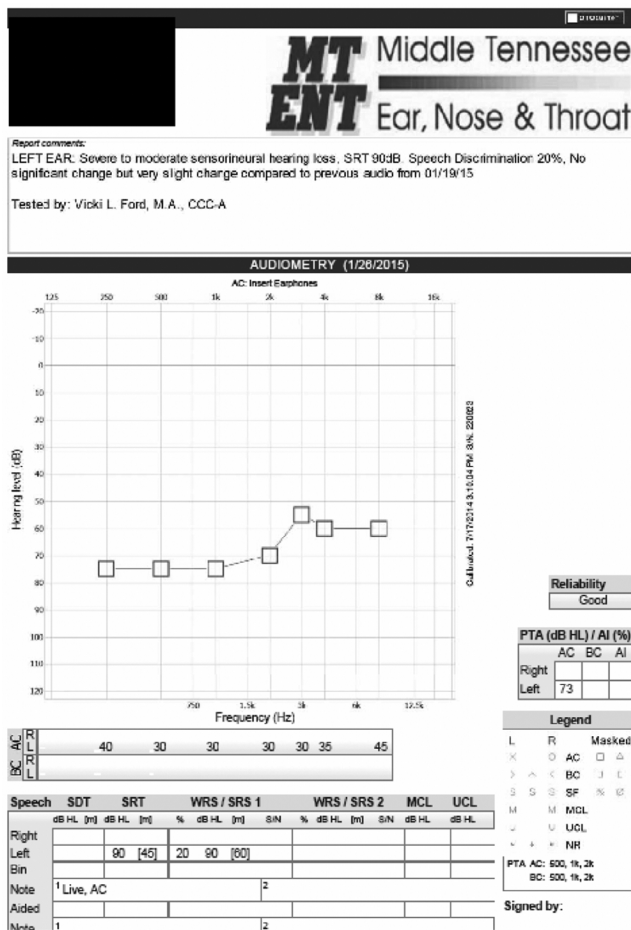


Figure 2. Audiometry, January 26, 2015.

oral steroid and antiviral drug (valacyclovir) treatment. Although the ENT physician had prepared me for the possibility of intratympanic injections at treatment outset, progress during this period led him to decide intratympanic steroid injections would not be necessary. By March 16 (Figure 4), audiometry showed my speech discrimination had improved from 12%, when first diagnosed, to 90–100%.

PROBLEMS RESULTING FROM SSNHL

Common problems resulting from SSNHL are aural fullness, tinnitus, and in some cases, vertigo. Commonly described as ringing in the ear, tinnitus can also manifest in the ear as roaring, hissing, clicking, or buzzing. Sounds may be loud, high pitched, or low pitched.¹² Sudden loss of hearing and vertigo affecting balance is known as labyrinthitis. Although vertigo usually resolves

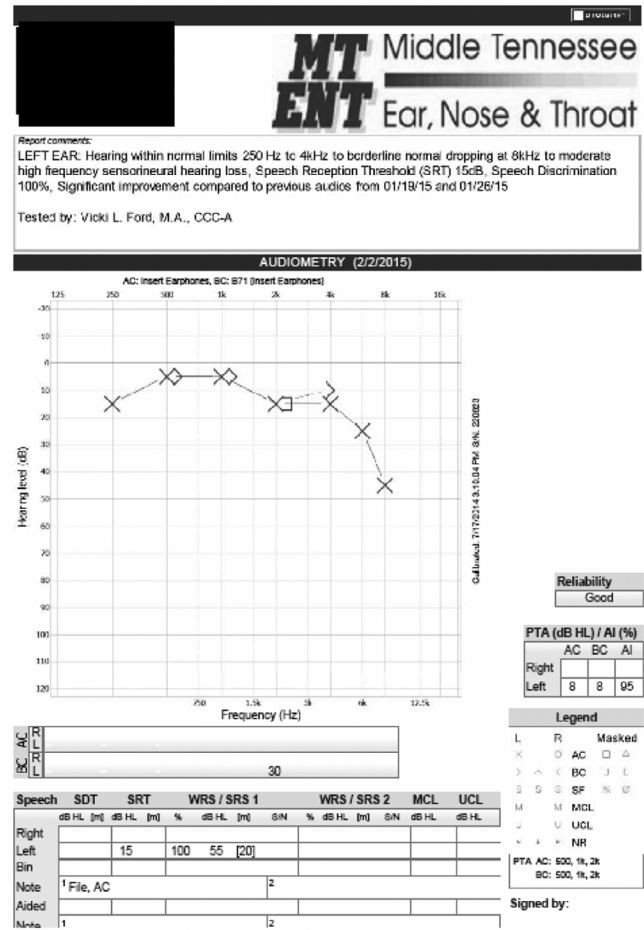


Figure 3. Audiometry, February 2, 2015.

over a period of time, hearing rarely recovers.¹³ Loss of hearing in one ear can also affect the ability to adapt to hearing aids. People who have lost hearing in both ears adapt more easily to hearing aids than those who have unilateral hearing loss.¹⁴ Additionally, SSNHL sufferers are almost always bothered more by loudness than those with conductive hearing loss or normal hearing.¹⁵

COPING STRATEGIES DURING TREATMENT FOR SSNHL

During the period when I was under treatment for diagnosed SSNHL, I used various strategies to cope with the emotional stress and anxiety the diagnosis produced. Due to steroids, sleeplessness, a byproduct of steroid treatment in addition to anxiety, became problematic. Coping with day to day responsibilities around teaching, performing, and personal responsibilities in the home

added to already heightened emotional and physical stress. I started my morning with meditative walking using positive affirmations (I am an avid walker). Training as an Alexander Technique (AT) teacher proved invaluable. For Constructive Rest (CR), which was taught in my AT training, I used guidelines for CR set up and practice in Park's *The Art of Changing*.¹⁶ CR was incorporated into my schedule before work, especially on days when weather or early meetings prevented walking. While at work, breaks in the schedule allowed for additional short CR. In the evenings, CR and breathing exercises with gentle movement followed by stillness were especially helpful before sleep. Hendricks's *Conscious Breathing* was a useful source for breathing work.¹⁷

The relationship of AT to ear structure is an important one, since SSNHL is a disorder of the inner ear. The two main structures of the inner ear are the cochlea, which governs hearing, and the vestibular system (three semicircular canals and saccule and utricle sacs), which aids balance.¹⁸ Since the inner ear helps to establish postural elasticity and readiness for action, freedom of neck muscles and a properly balanced head on the top two joints, atlas and axis, can affect and improve hearing effectiveness.¹⁹ Supine position (on the back) of CR promotes release of neck muscles, which encourages movement of the head away from the spine while simultaneously lengthening the spine. The torso is invited to widen and lengthen. These actions free the body from the gravitational pull of downwardness. Coming to standing after 10–15 minutes in supine position with more freedom and ease in the body brings awareness of ease to other activities; its use also counteracts the “Red Light” (startle) response associated with fear and anxiety.²⁰

In the teaching studio, I made some minor adjustments. I asked students not to stand facing me as I played piano to vocalize them, but to stand to my right side, so that they sang into the unaffected ear. When an accompanist came into the room, I stood and angled my body in such a way that I could still see the student and have the student sing into the unaffected ear. For master classes, which were held in a larger space, I stood in closer proximity to the students with my body angled so that the right ear was the primary sound conduit.

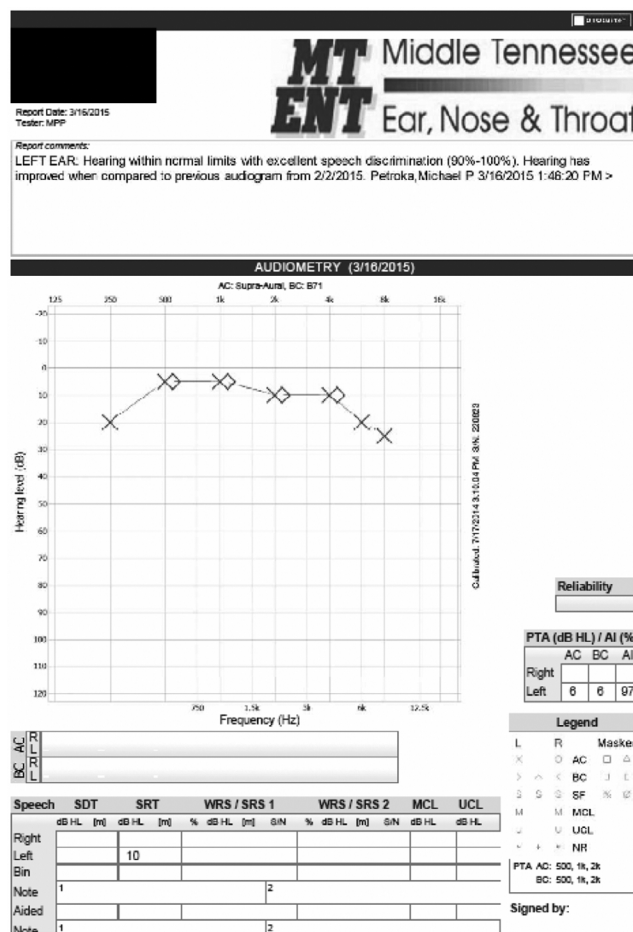


Figure 4. Audiometry, March 16, 2015.

Additionally, I sometimes plugged the left ear to help tinnitus hissing on especially difficult days.

I had a scheduled duet recital at another university shortly after the audiometry taken on March 16. Hearing results from that audiometry showed additional hearing improvement, so the recital was not cancelled. No changes were made in the program; however, practicing and rehearsals were consistently monitored by microphone recording and playback. Additionally, my rehearsal accompanist for the recital was asked to give feedback during rehearsals. I practiced singing with my duet partner standing to the left and to the right. I settled on positioning myself with my left ear nearest her. Since she was singing primarily in the lower register, this positioning posed no problem with loudness or tinnitus. Subsequent singing in the intervening years since SSNHL onset has not proved difficult due to tinnitus,

although I have chosen to select music more carefully to avoid overexposure to high, loud pitches.

COPING STRATEGIES POST-TREATMENT FOR SSNHL

The final audiometry showed mild loss at 250Hz and 8000 Hz in my left ear but within normal limits for 500–4000Hz bilaterally (Figure 5). Speech recognition was 100% in both ears. Some residual tinnitus, however, in the form of hissing in my left ear, was discussed with the audiologist and physician. I was told it could lessen or disappear. Slight tinnitus remains at the writing of this article. Most days I do not notice it, and it has not noticeably interfered with singing, teaching, or listening to music at moderate volume levels.

Residual tinnitus in my case did not involve the need for biofeedback or maskers. However, since SSNHL resulted in sensitivity to loudness, I carry silicone ear plugs to events and locations where loudness may be an issue. These plugs, soft and pliant, seal the ear canal and block noise effectively. Concerts, movies, and gyms are especially fraught with challenges. I changed gym membership to a location where loud noise levels did not necessitate noise blocking devices. A personal decision was not to use in the ear or over the ear earbuds or headphones while walking/running on the treadmill or for outside walking/running to listen to music or books.

At the end of a long teaching day, my tinnitus can become exaggerated. However, for sufferers of more severe tinnitus, changing the way SSNHL sufferers think about and react to it in addition to techniques that can be practiced on their own to make tinnitus noise less noticeable may be helpful. Hearing aids, wearable sound generators, tabletop generators, acoustic neural stimulation, and cochlear implants for people who have severe hearing loss may be recommended. Antidepressants and antianxiety drugs are sometimes prescribed to improve mood and sleep. Although there are over the counter medications available at pharmacies and on the Internet, none of these have proved effective in clinical trials.²¹

Even though residual tinnitus was not severe in my case, I became interested in finding methods to possibly improve or offset some of the effects associated with tinnitus. My search led to Iyengar’s writings on the subject.

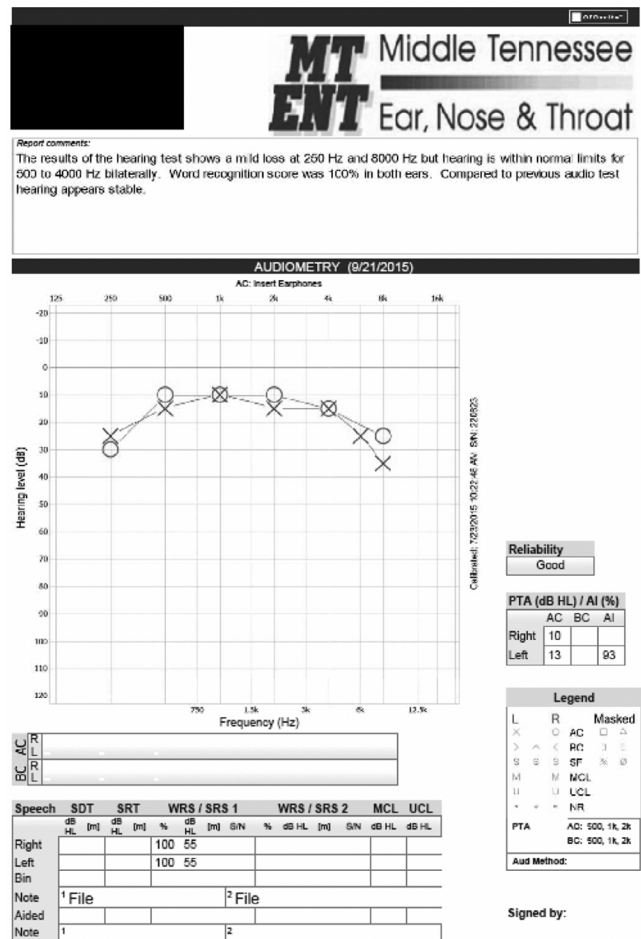


Figure 5. Audiometry, September 21, 2015.

His book *Tree of Yoga* contains a chapter about hearing loss and tinnitus. Iyengar recommends three āsanās (postures) be practiced for tinnitus. They are the following inverted poses: *sarvāṅgāsana* (shoulder stand), *halāsana* (plough pose), and *setu-bandha-sarvāṅgāsana* (full bridge pose). He states these poses can help the condition but must be done correctly to be effective.²²

In *Light on Prāṇāyāma*, Iyengar describes a type of *prāṇāyāma* (breath work), called *bhrāmarī* (bumble bee), which involves soft humming on the exhalation. (I attended a tinnitus workshop where *bhrāmarī* was taught by a certified Iyengar instructor who, as a musician, suffers from tinnitus.) This *prāṇāyāma* should be done in two stages, one lying and one sitting. In the class, *bhrāmarī* was done lying down only. As preparation, two tri-folded blankets are placed lengthwise on a mat to support the spine. One tri-folded blanket is then placed

across the top of the two folded blankets to support the head. Both left and right hands and arms are used.

Directions for the method are as follows: Raise hands to the face and elbows to the level of the shoulder. Place the thumb tips in the ear holes to keep out external sounds. Make sure to use the tips of the thumbs gently to seal the ears; pain should not be present. (Thumb tips should be used to gently massage the ear holes to encourage a rounded instead of oval shape.)²³ Use the fore- and middle fingers to close the eyes gently. The middle finger tips draw the lids down, while the fore-finger tips cover the remaining space to keep out the light. Using the ring finger tips, press the nostrils at the base of the nose to gently narrow the nasal passages for slow and steady breathing. The little fingers are placed on the lips to feel the flow of breath. Make sure not to hold the breath.²⁴

CONCLUSIONS

As a performer and teacher of singing, I always had taken my hearing for granted. A serious wake-up call came on January 19, 2015, when I was diagnosed with SSNHL. Fear, anxiety, and shame that I had a hearing disability became a part of life. Hearing loss meant I had to make lifestyle changes and become more vigilant about my environment.

SSNHL, depending on severity, possibly can mean the end of a teaching and performing career. Since most singers are unfamiliar with this condition, it is of utmost importance immediately to make an appointment with an ENT when experiencing any hearing change. Lack of early diagnosis and intervention can lead to permanent hearing loss. The most effective and successful treatments are tapered corticosteroids and intratympanic steroid injections. Meditation and/or meditative walking, Alexander Technique, and yoga are proposed methods of dealing with the emotional and physical stress of hearing loss, though there are other modalities beyond the scope of this article, which may also prove effective. With SSNHL hearing loss, lifestyle changes to adapt to the loss and to prevent further hearing loss will be necessary and important.

Each person's experience with SSNHL will be different, and my experience is only one of many. However, the goal of this article is to share that experience with

the hope that singers diagnosed with this condition have information that may prove helpful in dealing with sudden deafness. Meeting the challenge of hearing loss is a difficult one. Meeting the challenge with information in hand can make a possible difference in outcome and provide valuable tools for coping with physical and emotional issues that accompany SSNHL.

Acknowledgement

I would like to thank Dr. Robert T. Sataloff for his editorial comments in the preparation of this article.

NOTES

1. Amanda Hu and Robert Sataloff, "An Update on Hearing Loss in Singers," *Journal of Singing* 71, no. 5 (May/June 2015): 597–600.
2. <http://dana.org/reversingsuddendeafness> (accessed July 2018).
3. Justin K. Chau, June R. J. Lin, Shahnaz Atashband, Robert A. Irvine, and Brian D. Westerberg, "Systematic Review of the Evidence for the Etiology of Adult Sudden Sensorineural Hearing Loss," *Laryngoscope* 120, no. 5 (May 2010): 1011–1021.
4. *Ibid.*, 1011–1012.
5. *Ibid.*
6. <http://cc.bingj.com/cache.aspx?q=sudden+deafness+articles+mass+eye+and+ear&d=4796243419202324&mkt=en-US&setlang=en-US&w=sYau09bRJsaffCozRicdUjdud2S W7leD> (accessed September 2018).
7. Chau et al., 1011.
8. *Ibid.*, 1019–1020.
9. Michael Reiss and Gilfe Reiss, "Laterality of Sudden Sensorineural Deafness Hearing Loss," *Ear, Nose, and Throat Journal* 93, no. 8 (August 2014): 318–320.
10. See note 6.
11. See note 2.
12. <https://www.nicd.nih.gov/health/tinnitus> (accessed July 2017).
13. See note 6.
14. René H. Gifford, telephone interview with author (August 14, 2015).
15. Richard Rosenthal, *The Hearing Handbook* (New York: St. Martin's Press, 1975), 91.
16. Glen Park, *The Art of Changing* (Bath, GB: Ashgrove Press Limited, 1989), 19–33.

17. Gay Hendricks, *Conscious Breathing* (New York: Bantam Books, 1995), 111–114.
18. <http://hearnet.org.au/hearing-loss/how-hearing-works> (accessed May 2019).
19. www.kayhogan.com/articles/24-the-ear-and-the-alexander-technique (accessed January 2019).
20. Thomas Hanna, *Somatics* (Reading, MA: Addison-Wesley Publishing Company, 1988), 49–59.
21. See note 12.
22. B. K. S. Iyengar, *The Tree of Yoga* (Oxford, GB: Fine Line Books, Ltd., 1988), 106–112.
23. B. K. S. Iyengar, *Light on Prāṇāyāma* (New York: The Crossword Publishing Company, 2005), 152–153.
24. Iyengar, *The Tree of Yoga*, 110.

Christine Isley-Farmer is Professor Emerita of Voice at Middle Tennessee State University, where she served as Voice Area Coordinator. Prior to

her academic career, Dr. Isley-Farmer sang professionally in the United States and Europe. She holds the Doctor of Musical Arts degree from the University of Illinois at Champaign-Urbana and the Master of Music and Bachelor of Music degrees from the University of North Carolina-Greensboro. Dr. Isley-Farmer is a certified teacher of the Alexander Technique and a member of Alexander Technique International. Portions of research for her article have been presented at the Seventh International Conference on Health, Wellness, and Society in Denver, Colorado, and at Freedom to Make Music, an Alexander Technique Conference for Musicians, in New York City.

Since retiring from her position at Middle Tennessee State University, Dr. Isley-Farmer has published the first book in her chapter book series for children, “Boomer’s Tales.” The first book, *Finding My Yip*, launched on March 2, 2021 and incorporates music as a bonding element between a child who stutters and a puppy that is unable to yip. Her second book, *A Hard Nut to Crack*, includes music and is a mystery. It launches on November 9, 2021.

Robert Yekovich, Dean, The Shepherd School of Music (appointment extended until September 30, 2021)
Matthew Loden, Dean Designate, The Shepherd School of Music (appointment begins October 1, 2021)

The Shepherd School of Music at Rice

The Shepherd School of Music at Rice University offers pre-professional training for musicians, combining the intensity of a conservatory experience with the educational excellence of a renowned private university. The voice faculty dedicates themselves to cultivating the talents and skills of each individual student. The School is now accepting applications to its undergraduate and graduate programs for Fall 2022. To learn more about our illustrious faculty and extraordinary performance opportunities, please visit music.rice.edu.

Robert Yekovich, Dean

The Shepherd School of Music

Voice



Robin Rice, Chair



Ana María Martínez



Nova Thomas

Opera Studies

Miah Im, Director
 Debra Dickinson
 Susan Lorette Dunn

Vocal Coaching

Thomas Jaber
 Bethany Self



RICE

The Shepherd School of Music • Rice University, Houston, TX • music.rice.edu