

# **A User's Manual for the Aging Voice**



# A User's Manual for the Aging Voice

Martha Howe

With contributions by Karen Brunssen,  
Barbara Fox DeMaio, Lisa Popeil, Sharon L. Radionoff,  
Martha L. Randall, Brenda Smith, Jennifer Trost

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This book is dedicated  
to everyone whose voice has gone rogue  
at one time or another.





# Acknowledgements

First and foremost, I wish to acknowledge Noel McPherson for bringing the idea of this book to my attention, and then his endless patience as I slowly pulled it together. In the same breath, my heartfelt thanks go out to the wonderful (and also quite patient) contributing authors:

Barbara Fox DeMaio, PhD, was the first to send me her chapter, compiled from her doctoral thesis studying the research on the effects of menopause. Her thesis, which she kindly and generously shares, has entered that golden land of being a major source document in the field. Karen Brunssen amazingly pulled her chapter together while touring the world with NATS National and learning the multi-faceted, consuming job of President of NATS and also publishing her own book, *The Evolving Singing Voice* with Plural Publishing. It has been a great joy to get to know the vibrant, ever resourceful Lisa Popeil and to have time to sit and share ideas with her during breaks at a NATS conference.

Sharon L. Radionoff, PhD, Martha L. Randall, and Brenda Smith, DMA, are gifts to my life from The Voice Foundation symposia. I am honored that these wonderful women have shared their fascinating, extensive knowledge and experience in the field. And last, but certainly not least, thanks to Jennifer Trost who kindly expanded upon a workshop she and Mary Saunders Barton presented at the 2016 NATS National Conference in Chicago on retraining for the demands of evolving repertoire.

I also wish to acknowledge two women who were interested in writing chapters, but who died suddenly and unexpectedly before we could pull it together. Pauline Tweed was a preacher's daughter and sang beautifully from her infancy to her hospital bed in her eighties, continually praising God and sharing her brilliant light, humor, love, and energy. She was an inspiring teacher, wonderful performer in multiple genres, and the mainstay of many a soprano section. A firm believer in 'Use It or Lose It', she warmed up for twenty minutes each day before teaching. Singing with her was a lovely, inspiring thing to do and after spending time with her, my step always felt lighter, and my own light brighter.

Tara Yvonne Potter was my dear friend for over half a century. We met while singing together in the alto section, and she went on to become a pharmacist, a chiropractor, and an energy healer. She was going to explain how our thoughts and actions imprint into our muscles, bones, and energy meridians and can cause blockages and areas of tension. These become our new 'normal' and can cause many different kinds of problems. I have covered some of that in my chapters, pulling from what I learned from her and her journey. I miss her insights, wisdom, and company.

And I deeply appreciate the encouragement and support from my sister and her husband, Dimaris and Art, my son Mark, his wife Amy, my three inspiring grandkids Hannah, Michael and Jack, and all my wonderful friends that helped me move through bouts of prescription-side-effect induced brain fog, grief, several huge moves, rogue knees, and the vocal changes that come with mid-sixties and beyond.

This has been a fascinating process for me, I have learned a great deal along the way, and again, thank you Noel for inviting me on this journey!

*Martha Howe, Vienna 2019*

# About the Authors

## Martha Howe



After an extensive performance path beginning with folk and church music, passing through the baroque, concert work and over fifty recitals, landing squarely in Wagner, Strauss and 20th–21st century opera, with over a hundred roles on major stages, Martha Howe began teaching voice and acting while singing in a Musicals school in Vienna, before returning to the U.S. in 2007. She moved back to Vienna at the end of 2018. Her stylistically wide-ranging studio includes Skype students in Europe and the U.S., and she coaches business people on their presentation skills.

Attending her first Symposium in 2011 was a revelatory experience. She found it fascinating to discover the science behind the vocal traditions. Vocally and technically, things were coming full circle. In 1907, Maude Douglas Tweedy stopped her concert career and began to work with Dr. Frank E. Miller, the leading laryngologist in New York City. By 1912, she had her regular studio of professional singers and was also what would be known today as Dr. Miller's Singing Health Specialist, working with his patients to clear vocal injuries while retraining them to prevent future injuries. Mme. Tweedy died in 1985, at the age of 98, after 70 years of teaching. Martha was one of Tweedy's last students. She then worked with master teacher Jane Randolph (presently at the San Francisco Conservatory) who inherited and refined Mme. Tweedy's technique. So it is not surprising that the science has only supported and clarified, never contradicted, this technique.

Martha has been writing for publication since 1998 and received a Master of Arts in Literature through the British Open University in 2008. In 2015, her book on the tumultuous beginnings of voice science, *Broadening the Circle, the history and future of The Voice Foundation*, was published by Compton Publishing on behalf of The Voice Foundation. You are invited to visit her website: [marthahowe.com](http://marthahowe.com)

## Karen Brunssen



Karen Brunssen is Associate Professor of Music at the Bienen School of Music, Northwestern University in Evanston, Illinois where she teaches voice and is Co-Chair of Music Performance. She is a recipient of the Excellence in Teaching Award, and is a frequent teacher, clinician, and adjudicator for organizations, colleges, and universities throughout the United States, Canada, and Europe. Her presentations chronicle how changes in respiration, vibration and resonance impact realistic, age appropriate expectations for singing throughout a lifetime. She has done teaching residencies at Cambridge University, returns regularly to teach at the Zürcher Sing-Akademie in Switzerland, has presented or been a panelist for NATS, Opera America, ACDA, IFCM, NCCO, and Chorus America, and taught at the International Institute of Vocal Arts in Italy, and the Castleton Music Festival.

She began her two-year term as president of the National Association of Teachers of Singing in June 2018, has served as a Master Teacher for the NATS Intern Program, was 2016 NATS National Conference Program Chair, Governor of Central Region NATS, President of Chicago Chapter NATS, and is a member of the American Academy of Teachers of Singing.

Her busy singing career spanned over thirty years throughout the US and Europe. She received her undergraduate degree from Luther College and has done graduate work at Yale University and Kent State University. In 2013 she was presented with the Weston Noble Award by Luther College. Karen is the author of *The Evolving Singing Voice, Changes Across the Lifespan* (Plural Publishing, 2018)

## Barbara Fox DeMaio



American Soprano, Barbara Fox DeMaio, has a deserved international fame. Her vast repertoire includes all the great roles of a Puccini and Verdi soprano, performed in theatres in Italy, Switzerland, Germany and France; Tosca, Lady Macbeth, Turandot, Aida, Abigaille in *Nabucco*, and also Amelia in *Ballo in Maschera*, Elvira in *Ernani*, Lucrezia in *I Due Foscari*, Leonora in *La Forza del Destino* and Odabella in La Scala's *Attila* directed by Riccardo Muti. She is also a noted interpreter of Norma, the Bellini heroine. Since

returning to the United States she has added new shows to her repertoire; Bolcom's *Medea* and Hoiby's *Bon Appetit!* as well as the Witch in Humperdinck's *Hansel and Gretel*, Domina in *Forum*, Mama Rose in *Gypsy*, Grandma Helene in *Freaky Friday* and Costanza in the play *Enchanted April*.

DeMaio is currently an Asst. Prof. of Voice at the University of Central Oklahoma, teaching both Opera and Musical Theatre styles, Executive Director of Painted Sky Opera and a Level III Somatic Voicework© teacher. In October 2016, she was honored to be named as a Member Laureate by Sigma Alpha Iota. Her DMA Vocal pedagogy degree at Shenandoah University included dissertation research on the effect of menopause on the elite singing voice that she has since presented in the form of workshops and presentations across the US, and also in October 2017, at La Voce Artistica in Ravenna, Italy.

## Lisa Popeil

Lisa Popeil, MFA in Voice, is one of LA's top voice coaches with over 50 years of voice study and 40 years of professional teaching experience. She is the creator of the Voiceworks® Method, Total Singer DVD, Daily Vocal Workout for Pop Singers CDs, is a co-author of the book *Sing Anything – Mastering Vocal Styles*, conducts voice research, and is an international lecturer and vocal health consultant. In addition, Lisa is on the Advisory Board of The Voice Foundation, an organization dedicated to 'Care of the Professional Voice' and is a voting member of NARAS, (the Grammy organization) ASCAP, SAG/AFTRA and the National Association of Teachers of Singing. She has contributed to *The Oxford Handbook of Singing*, *The Oxford Handbook of Music Education*, the "Journal of Voice" and the "Journal of Singing". Her interests focus on analysis of vocal genres, the mechanism of healthy belting, Contemporary Commercial Voice and vocal health strategies for touring professionals.



Ms. Popeil's extensive experience as a performer, recording artist, session singer, songwriter, musician and teacher makes her the go-to vocal consultant in Los Angeles. Her celebrity clientele includes singers from TV, film, Broadway and the pop music world. [www.popeil.com](http://www.popeil.com)

## Sharon L. Radionoff, PhD



Dr. Radionoff had early exposure to many kinds of music through church/community choirs, concert/marching band as well as piano study and performance. Her love for music and teaching grew as she studied music in college. Although voice was her main instrument, she continued studies of trombone and piano and performed in recitals, operas, musicals, choirs, bands and orchestras. Upon graduating with her BME from Eastern Michigan University, she became a Middle School/High School band director.

During this time, she attended an MENC conference at the University of Michigan where she heard Dr. Robert T. Sataloff lecture on “Care of the Professional Voice.” This one lecture fueled her passion and changed the course of her life and, as they say, ‘the rest is history.’ This passion provoked her into knowing not just how to get desired vocal results but what allows these results to occur in the healthiest way. This zeal for voice care continued through her master’s degree study at Southern Methodist University in Dallas and upon graduation she taught a variety of choirs, directed musicals and taught a full studio of voice students at Co-Lin Jr. College and then Southwestern Michigan College. She also directed community and church choirs.

Six years after their initial meeting, Dr. Sataloff invited her to complete a professional fellowship at the American Institute for Voice and Ear Research in Philadelphia, PA. Post fellowship and Ph.D coursework, she became the singing voice specialist at the Texas Voice Center with Dr. C. Richard Stasney. While there she conducted her dissertation research and was awarded her Ph.D. from Michigan State University in 1996. She has taught undergraduate and graduate vocal pedagogy, vocal pathways and studio voice students at University of Houston and vocal pedagogy at Rice University. Currently she is Singing Voice Specialist and Director of the Sound Singing Institute as well as being a Voice Care Team Member at the Texas Voice Center.

As a Singing Voice Specialist, Dr. Radionoff has a unique viewpoint in the field of Arts Medicine. Her education and experience as both teacher and performer as well as her motivation to know the why and the how, have created a platform of practical knowledge which enables her to empower singers to find healing and fulfilment.

Dr. Radionoff may be contacted at the Sound Singing Institute, [www.SoundSinging.com](http://www.SoundSinging.com).



## Martha L. Randall

Martha Randall, (Soprano, B.M., M.M. from the University of Kansas, Fulbright Scholar), attended her first Symposium for the Care of the Professional Voice in 1976 and has been a regular attendee since that time. A student of Todd Duncan for many years, she teaches voice and voice pedagogy at the University of Maryland in College Park. She also maintains a small private studio and works with both amateur and professional singers. She has appeared at the Kennedy Center, Constitution Hall, the Phillips Gallery, and performed with the National Symphony, Washington Bach Consort, and Kansas City Philharmonic. Former students have appeared at the Met, Covent Garden, New York City Opera, Glimmerglass and Central City. She was president of NATS from 2006-08 and at the 2014 NATS Conference in Boston, collaborated with Physical Therapist Jodi Barth and Gincy Stezar, PTA, in a pre-conference workshop. She is a member of the American Academy of Teachers of Singing, now serving as chair. She collaborated with Jodi Barth and Gincy Stezar at the 2012 and 2013 Voice Foundation Symposiums.



She was on the faculty of the Voice Pedagogy Institute at Westminster Choir College in July of 2014 and was an invited participant and discussion leader on teaching language, diction, communication, and artistry for a Pedagogy Summit at Ohio State University in 2015. Email [mrandal@umd.edu](mailto:mrandal@umd.edu)

## Brenda Smith

Dr. Brenda Smith, DMA, a lyric soprano, teaches studio voice, singer's diction, and vocal pedagogy at the University of Florida in Gainesville, FL. She is widely recognized for her contributions to the concept of lifelong singing through proper voice care. She works regularly as a consultant, clinician, and conductor of amateur and professional choirs. She has collaborated with Dr. Robert T. Sataloff on a variety of projects to promote vocal health through choral singing. Dr. Smith and Dr. Sataloff have co-authored two textbooks that unite voice science, vocal pedagogy with choral conducting. (Choral Pedagogy, 3rd ed. and Choral Pedagogy and the Older Singer). In recognition of demonstrated excellence in teaching and her interest in voice science, Dr. Smith received the Van



Lawrence Fellowship in 2000, presented by the Voice Foundation and the National Association of Teachers of Singing.

## Jennifer Trost



Associate Professor, Jennifer Trost joined the Penn State School of Music voice faculty in 2005 and is currently the coordinator of the Voice Area. Trost earned a BA in Music Education at Albion College in Michigan, a MM in Applied Voice at Michigan State University, and took advanced courses at the doctoral level at the University of Southern California. Prior to Penn State, she taught studio voice at the University of California in Santa Barbara, and the Richard Strauss Conservatory in Munich, Germany.

Trost is a young-dramatic soprano with a fifteen-year career as an opera singer. She spent two years with Los Angeles Opera as a resident artist; four years with the Wuppertal Opera in Wuppertal, Germany; and nine years with the Bavarian State Opera in Munich, Germany. She was privileged to work regularly with well-known conductors such as Lorin Maazel, Wolfgang Sawallisch, James Levine and, especially, Zubin Mehta, the General Music Director of the Bavarian State Opera.

From 2016–2018, Trost toured nationally with Judith Cloud's *Beethoven's Slippers: A Monodrama*; a one-woman show that she commissioned for this express purpose. She performed the work in both the piano quartet and piano/voice versions.



# Introduction

Somewhere in the fifth or sixth decade of life, we start to notice that our body is just not letting us get away with as much any longer. Things we used to push through before suddenly start to push back. If you want to avoid the weaker, scratchier, old-person speaking voice, sing regularly. Singing, just like exercise, becomes much more important as the decades roll on. It will help maintain your ability to use your breath efficiently and effectively and keep more warmth and energy in your speaking voice.

In my late fifties, I had a group of Ave Marias scheduled on an upcoming recital and the various opening /a/s were all giving me grief. When did ‘that’ start? Why was that happening? A week before the performance date I had a serious conversation with myself; ‘Martha, this isn’t just because you’re not warmed up, this keeps happening, and you have to deal with it NOW or you and the audience are in for a rough ride.’ That was my personal introduction to what I now call ‘hitting the gravel’. I had officially entered that phase of singing and of life where I had to really start paying attention to what my body and voice needed in the moment.

Each body has its own strengths and vulnerabilities, and each voice has its individual timing and responses. This book is a gathering together of experiences from a group of respected pedagogues and clinicians who let the reader in on what they do in their studios when working with older voices. You are welcome to take what you find useful from all the vocalises and tips and see how they work in your own experience.

The first chapters lead us through how the aging process affects every voice, plus the hormonal effects of menopause on the body and voice. Then we look at the impact on the voice of some common ailments and their medications, asking ‘What should we look for?’, ‘What should be monitored?’, ‘Do I have a choice?’

The next chapters look at what to do about the changes in overall posture and strength, physical and vocal flexibility, and offer information on stabilizing the voice, excess vibrato, breath, maintaining your range, reestablishing the joy in singing, and keeping a strong speaking voice.

Finally, we look at the opportunities presented to keep singing through changing repertoire, evolving our expectations, finding new solutions, and enjoying new vocal territory.

Whether or not you consider yourself to be a singer, singing is one of the healthiest things you can do for yourself as the decades progress. It doesn't matter if you sing in your shower or in your car, if you are a karaoke star, sing on stage, or serenade yourself while cooking or working on projects, perform recitals, or participate in choirs. Fill your lungs with air, and sing. It has wide-reaching health benefits for everyone, including improved pulmonary function, the release of oxytocin, serotonin, dopamine, and endocannabinoids, plus increased production of immunoglobulin to boost your immune system and fight infections. You might notice that you have less need of pain medications, better concentration, and fewer symptoms of depression. It will keep your speaking voice strong and clear. All of this together means that singing, in whatever form works for you, helps brighten your outlook on life.

Hopefully this book will assist you to enjoy your aging voice more, communicate more easily, and make music longer than you thought possible. Why not expand your range in your eighties? Explore new modes of expression in your nineties? Sing your way into a century?

With the right care, and knowing what to expect down the road, you can keep your voice as long as you wish and help others extend their vocal range and abilities.

*Martha Howe, Vienna, 2019*

## What's under the hood?

Martha Howe

Singing can feel like a magic act because it happens primarily in the autonomic system, the one we don't directly control. So, although there is a robust body of vocal science around singing and speech, when it comes to the act of singing, this knowledge however helpful it may be, gives way to imagery, feeling, and experiencing. During the decades I was performing, I had a mistrust of 'too much science', thinking that it was all well and good but didn't directly relate to what I was doing in rehearsal and performance. Much like just wanting my car to work, but not wanting to know the mysteries under the hood.

However, as my car gets older, it can be very helpful to understand what is making it clunk, how serious the clunk is, and how to keep it from shuddering at high speeds. So, let us 'lift the hood' on this instrument that allows us to communicate and to make music, and keep it running as smoothly as possible for as long as possible.

These illustrations are for reference when structural terms are used in the following chapters. First, a simple drawing of the larynx with the major elements identified. This view is directly from the front. You can think of the "V" shape in the center of the thyroid cartilage as the bit that can be seen in men as the 'Adam's Apple' (Fig. 1).

The next image is the back of the larynx (Fig. 2) as though looking through the back of the neck. You can see all the muscles that move the vocal folds that are protected by the thyroid cartilage and not visible from the front.

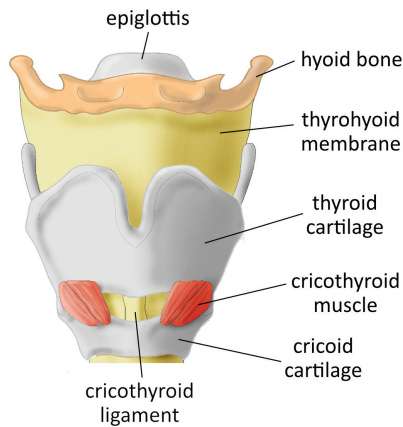


Figure 1. The larynx viewed from the front. Image copyright N Harrison and A Watson (2020) *A Singer's Guide to the Larynx* (reproduced with permission)

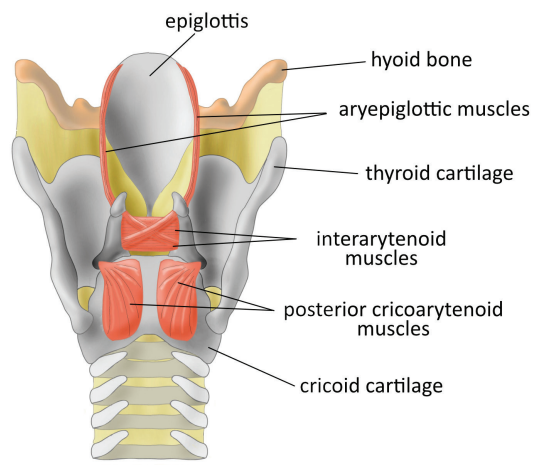


Figure 2. The larynx viewed from behind. Image copyright N Harrison and A Watson (2020) *A Singer's Guide to the Larynx* (reproduced with permission)

Then we have a view of the vocal folds from above (Fig. 3), looking down on the vocal folds, which are at the entrance to the trachea and keep food and liquid from entering the lungs when they are not being employed to make sound. Finally, a side view of the head (Fig. 4) to see where the larynx sits in the throat.

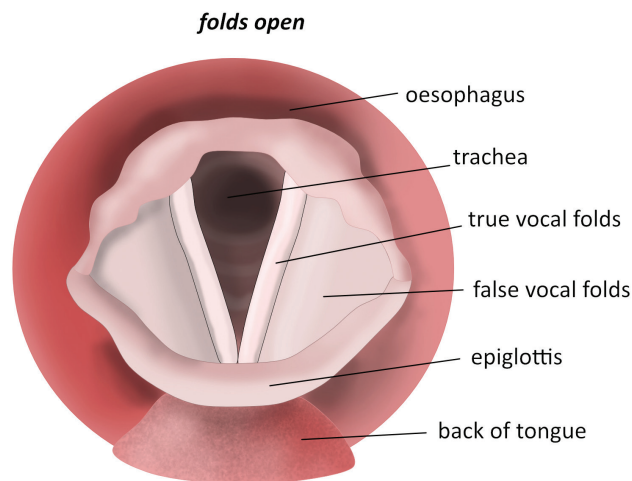


Figure 3. The vocal folds viewed from above. Image copyright N Harrison and A Watson (2020) *A Singer's Guide to the Larynx* (reproduced with permission)

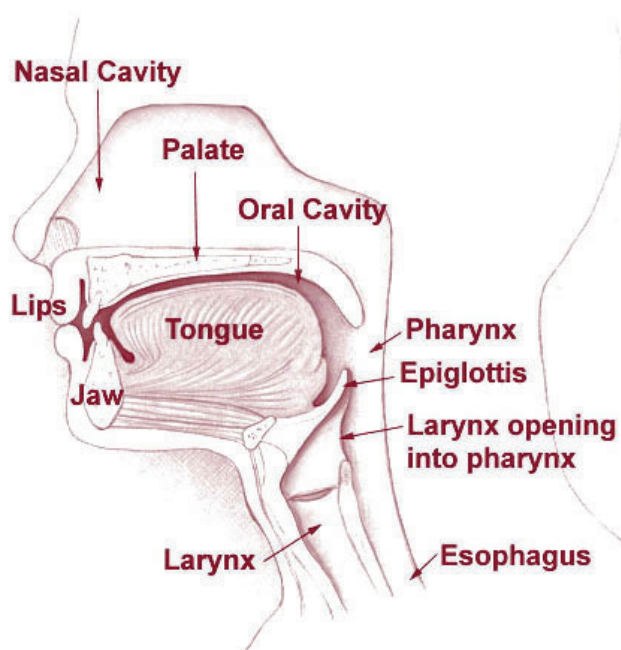


Figure 4. Side view of the head and neck showing the position of the larynx in the neck

## Does it feel like your larynx is changing? It is.

When we are born, our larynges are up behind our noses before they begin their journey after the first three months and for the next three years down into the throat. Then there are major changes for both males and females during puberty in the size of the larynx, length of the vocal folds and the vocal tract (the 'tube' from the vocal folds through the throat and mouth to the lips). This cascade of hormones at puberty also triggers the structure of the vocal folds themselves to change, with the epithelium dividing into three parts. Small wonder that male voices go through such drastic changes and female voices can be breathy one day and not the next, as everything in the larynx works to find balance in a continually morphing environment.

## Ossification of the laryngeal cartilages

Tradition and perceived wisdom maintain that you finally get your full voice at around the age of thirty-two, especially larger voices, with the voice growing in strength into your late forties and fifties. From then on, it's anyone's guess if the voice will hold or start to deteriorate, often depending on technique, use and abuse, practicing,

and adaptability as the vocal coping mechanisms we've developed in our youth stop working so well. The science behind this timeline is the slow process of the structures of the larynx turning from cartilage to bone. The hyoid cartilage begins to ossify (become bone) at the age of two, as the larynx is descending. This is necessary as so many muscles are anchored to the hyoid and the larynx hangs from the hyoid. It has also been noted that our entire breathing apparatus, bronchi and lungs, hang from the larynx.

After the hormonal cascade of puberty, in the twenties the cricoid and thyroid cartilages begin to ossify. This is a slow process, taking around forty years, working from the front around to the back. The arytenoid cartilages join the process during the thirties. This ossification strengthens a voice during the thirties and forties, giving you the feeling that you can sing or speak 'bigger, louder, longer'. There will be a trade-off of loss of flexibility in bigger, heavier voices and in those who don't keep working on flexibility and agility.

Luckily, the cuneiform and corniculate cartilages on the thyroid cartilage, which are important for producing pitch and sound, are the last to ossify. In general, the laryngeal skeleton ossifies by around sixty-five in both men and women.

This is a growing challenge to singers and speakers, as the entire laryngeal structure and finally those very important tiny joints producing pitch and sound continue to harden, affecting flexibility and range. The aging process causes changes not only in the laryngeal cartilages, but also with the breakdown of collagen fibers, and changes in the cricoarytenoid joint surface, which becomes rougher. Plus, there are changes in the strength and flexibility of the muscles in the inner parts of the larynx, the covering of the vocal folds, and how quickly the nerves tell the larynx what to do. This process can be frustrating when it feels like nothing works as well, but an up-side is that it is rare for an older person to develop nodes, polyps, or hemorrhages on their vocal folds.

It is good to know what is going on as your speaking and singing voice changes over time. For example, gravity works on the throat and its muscle tone, so it becomes harder for the epiglottis to keep food and liquid out of the 'wrong tube'. Therefore, it is important to help the epiglottis by keeping your neck in good alignment when you eat. If you don't, you may have trouble swallowing and quite possibly, could cough more than you would like to during a meal.

These are cause and effect issues. When you understand more of the causes, the effects are not as surprising and there is a better chance of dealing with them directly, rather than thinking that your voice is falling apart on you. The following chapters have excellent tips and information on what to do about these changes and how to adapt to your new normal.

## Gender differences, similarities, and transitions overview

Martha Howe

The information in this book applies to male, female, and transitional bodies. The physical changes in the larynx, voice, mind, nerves, muscles, and throughout the body due to aging are true for **all** bodies as they age. The slow changing of the cartilages in the larynx to bone happens to everyone over time. Male bodies have been found to have more ossification at the front of the thyroid cartilage than female bodies, so the peak that forms the male Adam's apple is stiffer, which is possibly an evolutionary protective device.

Even the effects of changing hormone levels are not that different between genders. When male hormones, androgens, are introduced into a body, they lower the overall pitch of a voice. This is true of all bodies. The cascade of androgens at puberty causes the male voice to drop in pitch. After menopause, female bodies are no longer producing the estrogen that was countering the small amount of progesterone (an androgen) produced each month, so the female voice may drift down over time. Females should be aware that androgen supplements will definitely lower their voice. When a person in a female body is transitioning to a male body, these androgens are a blessing. If you depend upon your higher range for singing or speaking, you will want to avoid them.

It has been noticed that older male voices tend to rise in pitch. Although there is a gradual lessening in testosterone in the later decades, the research on the reasons for the rise in pitch point more toward muscle-mass weakening in the vocal folds and surrounding muscles, plus pulmonary insufficiency. So weaker muscles in the larynx, thinner vocal folds, and not making the best use of the lungs are why older men's voices start to rise.

Androgens will lower a voice, but estrogen won't raise the overall pitch of a voice. Boys' and girls' voices are very hard to tell apart, and they have the same ranges, so we all started with a typical female range. The overall pitch of adult male and female voices is the result of the dimensions of the throat and length of the vocal folds. Simply put, once a voice has dropped due to androgens, be it a male or female voice, it will stay there.

People in male bodies transitioning to female bodies will sometimes wish to raise the overall pitch of their voice. Surgery has not proven to be a very effective nor a long-lasting solution. What is recommended instead, is to work with a Speech Language Pathologist on tone and delivery. In truth, many women have low-pitched speaking voices and men can have quite high-pitched speaking voices. Rather than looking at pitch, perhaps it is better to focus on delivery. Sometimes a breathier speaking voice is effective for feminizing a voice, and Dr. R.T. Sataloff also recommends becoming aware of how you speak: "Shall we go to dinner?" instead of, "Let's go to dinner!".

Adding estrogen to the body will not raise the pitch of a voice, but the sudden stopping of estrogen certainly has a dramatic impact. There is a lot of information throughout this book on the effects of menopause because it is such a huge transition for female bodies. There are estrogen receptors on the vocal folds, and as you will read in the chapters, "The menopausal voice – singing through the storm" by Barbara Fox DeMaio, PhD, and "Aging, HRT, and stabilizing the voice" by Lisa Popeil, menopause can wreak havoc on the female voice. So, what is to be done?

The effects of menopause is a theme that winds through all of the chapters, but that should not distract you from the wealth of information on aging voice that applies equally to everyone moving into their fifties, sixties and beyond. Just as regular exercise is recommended to keep your body stronger, singing is good exercise for all voices and one of the healthiest things you can do for your self, your body and your mind. There is a broad spectrum of information in the following chapters that will guide you in using your speaking and singing voice wisely, comfortably, and enjoyably, and instruct you in strengthening your voice and your breath so that you won't sound old.



## The menopausal voice – singing through the storm

Barbara Fox DeMaio

What happens during menopause for the singer? It depends on a lot of factors, mostly involving hormones and also normal aging. Not all singers have the same experience; some singers lose range, others notice a change in vocal color and still others experience both. Singers who use “head-dominant” production (as in classical voice) are particularly vulnerable during menopause, as the first signs of vocal deterioration are often noted in high notes and pianissimos (Abitbol, 1999). These changes can also be distressing for singers who aren’t professionals, but who do enjoy singing in choir and performing in community theatre.

For all women, admitting to menopausal symptoms brings up the topic of aging, and in the youth-oriented culture of today, aging in a taboo subject (Bernstein, 2005). Male singers can sing well into their 60’s and beyond with very little change in the voice, but women start to experience changes as early as 35 or 40, depending on when menopause begins (Abitbol, 1999). Historically, menopause has been treated as a disease, rather than a natural part of the aging process. Feminist writings of the last 20 years have begun to attack the stigma attached to this time of life (McCrea and Markle, 1984), but despite recent research, over the years there has been an alarming amount of gender bias and misinformation both in research methods and the reporting of symptoms (Pinkerton and Zion, 2006).

During the time of the Greeks, 400 BC, women rarely lived past the age of 27, and menopause was uncommon. It is only since the 1800’s that the life expectancy has increased to a point that menopause has become a regular part of the female experience. A young woman born in 1980 can expect to live to the age of 92; this means that a woman experiences menopause for about half of her lifetime (Abitbol,

2006). Now that women commonly experience menopause, scientists have begun to research the challenges that this transitional period brings and look for treatments for the symptoms.

## The building blocks of the vocal mechanism

The voice consists of an energy source (the breath), a vibrator (the vocal folds) and a resonator (the vocal tract) (Doscher, 1994). The vocal folds reside in the larynx, which consists of the cricoid cartilage that sits on top of the trachea, the thyroid cartilage that is a shield-like cartilage that sits on top of the cricoid cartilage, the arytenoid cartilages that are located inside of the thyroid cartilage, the hyoid bone and the epiglottis. This complex mechanism is in a constant state of change from birth to death. The hyoid bone starts to ossify (turn into bone) at the age of two, the cricoid and thyroid cartilages begin to ossify in the 20s, and the arytenoids cartilages ossify in the early 30s. Except for the cuneiform and corniculate cartilages on the thyroid cartilage, the entire laryngeal skeleton ossifies around the age of 65 in both men and women (Sataloff and Linville, 2006). Ossification may actually be beneficial to the larynx in the third decade. Ingo Titze, a leading voice scientist, speculates that this hardening of the laryngeal framework supports the tension of the vocal folds more efficiently than cartilage, since cartilage can deform under stress (Titze, 1992). This would explain why dramatic voices tend to mature later; the vocal folds of a dramatic voice need a sturdier framework in order to vibrate efficiently.

Hormones contribute to changes in the voices of both men and women throughout life. A child's voice is sexless; little boys and little girls are vocally indistinguishable. At puberty, sex hormones appear – estrogens and progesterone in girls, androgens in boys – and this triggers the development of the third layer of epithelium cells on the vocal folds. This final development of the striated muscle of the vocal folds helps a girl develop both higher and lower harmonics as she becomes a woman.

At five months, the ovary of the female fetus has 7 million follicles. At puberty, there are only 300,000 follicles. By forty there are only 25,000 follicles; by the time a woman is 55, none remain. This lack of follicles means a lack of progesterone (Abitbol, 2006). Without progesterone, and with decreasing levels of estrogen, the antagonist receptors of the female hormones on the vocal folds and elsewhere cease to function. They will be affected by the male/androgen hormones thanks to the sex hormone binding globulin, a small molecule that will bring androgen to all of the receptors (Abitbol, 1998).