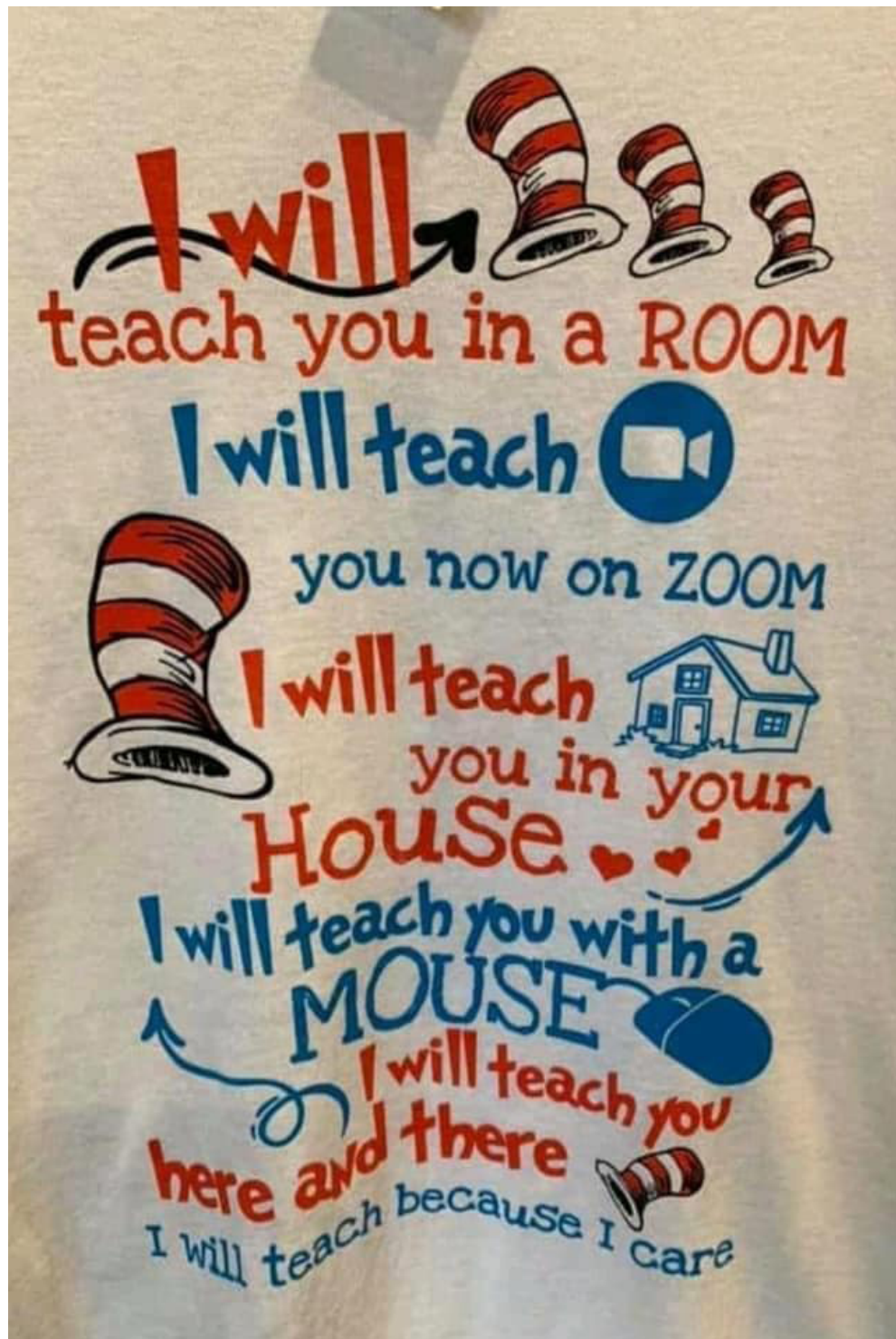


## METHODS UNMASKED

TRAINING AND THERAPY - VIRTUAL OR MASKED



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# METHODS UNMASKED

## Training or Therapy

### VIRTUAL or MASKED



Kimberly Steinhauer, Ph.D.  
President, Estill Voice International  
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#### Editor, Kim Steinhauer, Ph.D.

“Can you hear me now?” “Unmute first!” “Please repeat. Was that latte for **Kim** or **Tim**?” Welcome to top phrases uttered during a pandemic! Whether we are teaching online or ordering coffee through a mask, clear communication during COVID has been challenging. As requests to “Speak Up!” have increased, so have the complaints of vocal fatigue. And for this reason, this issue is devoted to tips for delivering virtual or masked training and therapy. From setting up the proper camera angle for a Semi Occluded



Vocal Tract protocol to favorite remote conference or Zoom settings, our authors propose a wide range of creative solutions. But there’s more! Tia Spagnuolo has recorded her timely voice exercises to accompany the text in our “Tools for your Voice Box.” And finally, you can thank Abigail Dueppen, Marco Guzman, Nathaniel Sundholm and Amanda Gillespie every time you employ their new strategies to brighten the long days of physically distanced voice teaching and treatment.



## Letter from the Editor

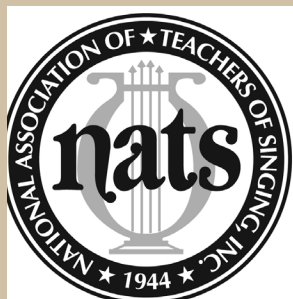
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# Pivot or Plummet

by Abigail Dueppen, MM, MS, CCC-SLP

The pandemic forced most, if not all, of us involved in voice care into the realms of teletherapy, online voice lessons, distance education, and distant clinician supervision. We were faced with the same challenge: pivot or plummet. Like many of my colleagues, I spent countless hours on the internet researching the best equipment, the best apps, and the best settings to make the outcomes (both clinical and educational) as effective as possible. At times, it honestly felt a bit overwhelming. **I am so thankful that we are involved in an interdisciplinary field and abundantly share our findings with one another; even if those findings during a pandemic are simply “tips and tricks” for online learning/practice.**

Two years ago, I developed a set of videos demonstrating various exercises to be used by professional voice users (PVUs). My initial goal was to use these

videos as part of an app, iVoice, that we developed at Lamar, to help educate PVUs on general vocal hygiene principles, an overview of anatomy & physiology, and the development of a vocal journal to examine their own habits. These videos proved to be an invaluable resource once we went totally online in the clinic and voice studio as I was able to share this information as part of their education. As we developed our distance education and clinic supervision formats, I found a licensed Zoom account to be particularly helpful, especially supervising graduate student clinicians. I would mute myself and type therapy probing/shaping instructions (never sensitive information) to my students via the private chat function. This allowed the students to incorporate clinical strategies and pinpoint the why, when, and what without my overt corrections. The students reported that this helped them feel more in

***“Overall, I have found myself listening more and modeling less, both in the voice clinic and in the voice studio.”***



control of their sessions.

Zoom has also proved helpful in the voice studio. At first, I think we all discovered and lamented the delay that it presented, but the updates since March (i.e. original sound and the others that followed) have improved this delay. (It's far from perfect, but certainly better!) The most effective way I have found to conduct voice lessons is to ask my students to submit a recording of a recent practice session, which includes all warmups and technical exercises as well as their repertoire via a shared folder. During their lesson, I share my screen and computer sound (this is an important box to check in Zoom when sharing videos) and we talk through their video. I find this approach to be more effective with time and a chance to improve the student's aural and kinesthetic awareness in addition to their technique. We also use Zoom to host our weekly

studio classes. This presents the opportunity to watch masterclasses, clinics, and master singers, as well as members of our own studio in a more traditional studio class and talk through the performance or lecture. I believe this is helping to build a solid pedagogical foundation.

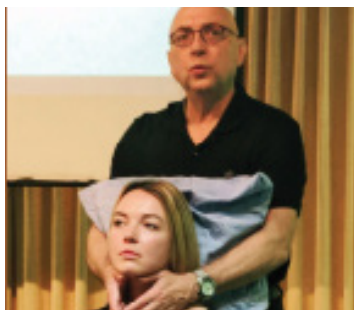
Overall, I have found myself listening more and modeling less, both in the voice clinic and in the voice studio. This has challenged me to describe in words what I might typically only model with my voice. The pandemic has presented the chance to continue with vocal rehabilitation for our patients, habilitation for our voice students, and education for our graduate students, but only if we are ready and willing to learn and implement what works best for all.



## Abigail Dueppen, MM, MS, CCC-SLP



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# Practical Modifications for Voice Therapy via Telepractice

by Marco Guzman, PhD

Voice therapy is a complex auditory, visual, motor and sensory process that requires clinicians to master several monitoring skills. Because of the COVID-19 pandemic, telepractice for voice rehabilitation has become a worldwide popular practice. Conducting voice rehabilitation exercises through synchronous telepractice poses several challenges. These challenges are related to body movements and laryngeal manipulations, as well as auditory and visual monitoring. The following small, but important modifications are presented to maintain the efficacy of some voice exercises during therapy. Some of them will be presented in this text.

Auditory monitoring can be impacted by low quality audio systems and poor internet connection, as well as acoustic filters of the online-meeting

applications commonly used for telepractice. By default, frequency range and sensitivity are set for regular human connected speech in most applications. Default audio settings of these applications do not favor an extended pitch range, falsetto register, vocalizations with several synchronous oscillatory sources, soft voice production, and other sounds usually produced during voice therapy. Semioccluded vocal tract exercises (SOVTE) are popular evidence-based exercises for voice training and rehabilitation. There is a subgroup of SOVTE called **double source of vibration SOVTE**, where the first source is the vocal folds oscillation and the secondary source could be water bubbling, tongue trills, or lip trills. Some oscillating positive expiratory pressure devices could be also included in this group. All of the double source of vibration SOVTE produce oral pressure

oscillation, which in turn, is capable of moving facial, pharyngeal, and laryngeal tissues, causing a massage-like sensation. This effect is likely to reduce muscle tension sensation, phonatory effort and sensations associated to vocal fatigue. When utilizing the default acoustic filters of most online-meeting applications, vocal fold fundamental frequency may be masked by the secondary source of vibration when patients engage in exercises such as water resistance therapy (WRT) or any other double source of vibration SOVTE. This issue worsens when patients are asked to produce high pitches (e.g. ascending glissandos).

Since voice exercises are not magical, per se, but need to be adequately performed and taught, clinicians must always control execution. What can we do to properly monitor the patient's voice during produc-

tion of these types of exercises in telepractice? The following modifications have been helpful: 1) remove or change all default acoustic filters in the software used for telepractice, 2) always remind the patient to keep an adequate microphone-to-mouth distance, 3) use an external audio interface to control sound gain, and 4) compliment practice with cellphone audio messages to ensure proper execution during

voice therapy procedures.

Another challenge that arises in telepractice when patients are performing WRT is loudness-level monitoring by the clinicians. Since loudness is greatly affected by subglottic pressure, it should always be monitored when teaching a voice exercise. Excessive subglottic pressure could be a sign of underlying phonatory effort, specially at the beginning

of the therapeutic process. Water bubbling frequency can be an indirect indicator of subglottic pressure and therefore an indirect way to control vocal intensity. One of the variables impacting bubbling frequency may be glottal airflow rate. The higher the airflow rate, the higher the bubbling frequency. Since airflow rate is, in turn, directly affected by subglottic pressure, it can be assumed that when clinicians cannot aurally distinguish bubbling frequency (due to high bubbling frequency), patients may be using a high degree of subglottic pressure and airflow rate. Therefore, bubbling rate could be a practical indirect way to control vocal intensity (both high and low) and this can be easily monitored during telepractice.

As stated before, visual control is also quite challenging during voice therapy via telepractice. Visual observation is exacerbated by treatments that do not fit entirely on the computer screen. Water resistance therapy is a good example as this exercise is usually performed using a 35 cm flexible tube inside a plastic bottle filled with



water. It is well known that depth of immersion is an important aspect to control since it determines the degree of airflow resistance, thereby impacting oral pressure, subglottic pressure, transglottal pressure, and vocal fold impact stress. Therapists should try to monitor and control bottle position to ensure the correct depth of immersion. The tube and the bottle do not usually fit entirely on the computer screen, but clinicians should not rely on the patient's report of depth of immersion and bottle position. One way to observe both the face and the bottom of the bottle is to ask the patient to move away from the computer, so that their face and the bottom of the bottle fit on screen. Another option is to constantly move the laptop screen

up and down in case the patient is limited by an external wired microphone. Either way or any other should be always implemented.

SOVTE are wonderful tools for voice therapy, but several variables need to be controlled during the execution. Lack of control could negatively impact the motor learning process. Even though voice therapy via telepractice is more challenging, we need to think about possible practical solutions not to lose control of therapeutic variables.



## Marco Guzman, PhD

Associate professor,  
Department of Communication Sciences and Disorders  
Universidad de los Andes, Chile





# Tools for Your Voice Box



## Enjoy Experimenting with Breath Cycle and Aryepiglottic Sphincter Narrowing

by Tia M. Spagnuolo, M.S., CCC-SLP [Watch Tia Spagnuolo's Youtube "how to" video](#)

EXERCISE	HOW TO DO IT	WHY WE DO IT
<b>BREATH CYCLE</b>	<ol style="list-style-type: none"> <li>exhale a quick, small breath through pursed lips. (Imagine you are blowing out a match.)</li> <li>Slurp in a quick, small breath with the back of your tongue high in your mouth (/i/ position). (It should sound noisy and feel like a high, quick breath rushing past your palate.)</li> <li>Count aloud, saying two numbers at a time. Voice therapist should model a voice quality that is clear, anchored, and has balanced airflow rate (e.g., twang RVT-like, or similar to talking while whining, crying, or sobbing).</li> <li>Begin the cycle again, repeating every two numbers, until you reach 10.</li> </ol> <p>Blow out, slurp in, say "one, two." Blow out, slurp in, say "three, four." Repeat. Practice this a few times. Once the pattern feels comfortable, the facilitators can be faded and the exercise can be utilized in other contexts, like reading aloud, conversational speech, and singing.</p>	<p><i>The quick exhale through pursed lips creates a semi-occluded vocal tract and facilitates breath management. Use when wearing a mask or working virtually to avoid our body's instinct is to strain loudly, increase airflow rate, exhale past a tidal volume exhale, and then respond with a deep, gaspy recoil breath in. (Have you ever had your mask suck into your mouth while you're talking?)</i></p> <p><i>Take-away: Exhale first, only take a small inhale, shorten your phrase length. You need less air than you think for vocal power and efficiency.</i></p>
<b>AES NARROW</b>	<p>Identify the facilitator(s) you like best to produce aryepiglottic sphincter (AES) narrow or epilaryngeal narrowing:</p> <ul style="list-style-type: none"> <li>Say "meep meep" like Roadrunner</li> <li>Say "beep beep" imitating the sound of a bike horn, robot, or basketball buzzer</li> <li>Mimic characters like SpongeBob, Fran from "The Nanny," Janice from "Friends"</li> <li>Talk with a Twang Quality.</li> </ul> <p>Using your facilitator, count from 1-10, say the days of the week, or months of the year while maintaining a twangy, bright vocal quality.</p>	<p><i>Aryepiglottic sphincter (AES) narrow is produced by drawing the epiglottis closer to the arytenoid cartilages. This epilaryngeal narrowing increases spectral energy between 2500-3500 Hz, a frequency region that resonates very well in the ear canal, and results in a clearer and louder voice. AES narrow, also imbedded in Estill Voice Training Twang Quality, allows us to increase vocal intensity efficiently by increasing medial compression and vocal fold closure, without increasing airflow or strain.</i></p> <p><i>Take-away: AES narrow helps us get louder and clearer with low physical effort. Twang quality can make you be heard more clearly through your mask and can help to minimize strain when doing teletherapy.</i></p>







# Tia M. Spagnuolo, MS, CCC-SLP

Speech-Language Pathology Department

Misericordia University

[Watch  
Tia Spagnuolo's  
"how to"  
Youtube video](#)

## The Aryepiglottic Sphincter (AES)?

The aryepiglottic folds, together with the epiglottis and arytenoids, form a little tube over the vocal folds that acts as a sphincter. This tube comprised of muscle, tissue, and cartilage helps seal off the area so that food and liquid pass safely behind the larynx into the esophagus. In singing literature, the tube made by the aryepiglottic fold has many names. It is called the epiglottic funnel in Complete Vocal Technique (CVT)<sup>1</sup> and the aryepiglottic sphincter in the Estill Voice Model (EVM).<sup>2</sup> Titze refers to it as the epilaryngeal tube.<sup>3</sup> This tube can be wide open or narrowed until completely shut for swallowing. AES narrowing can be done at will and is correlated with the perceptual voice quality called twang.<sup>1,4</sup> In the EVM, the narrowing of the aryepiglottic sphincter (Narrow AES Figure) is a necessary trait in the "Voice Quality" called "Estill Twang."<sup>5</sup>

### How do you pronounce Aryepiglottic Sphincter?

[The Voice Foundation's Audio Pronunciation Guide](#)

#### References:

1. Sadolin, Cathrine. Complete vocal technique. Shout Publications; 2008.
2. Yanagisawa E, Estill J, Kmucha S, et al. The contribution of aryepiglottic constriction to "ringing" voice quality. J Voice. 1989;3(4):342-350.
3. Titze IR. Regulating glottal airflow in phonation: Application of the maximum power transfer theorem to a low-dimensional phonation model. J Acoust Soc Am. 2002; 111:367-376.
4. Sundberg J, Thalen M. What is twang? J Voice. 2010;24(6): 654-660.
5. Steinhauer K, Klimek M, Estill J. The estill voice model: theory and translation. Pittsburgh (PA): Estill Voice International; 2017.



# Utilizing

## Conversation Training Therapy Techniques to Optimize Masked and Virtual Communication

**Nathaniel Sundholm, MS, CCC-SLP**

**Amanda I. Gillespie, PhD, CCC-SLP**

At the outset of the COVID-19 pandemic, communication environments immediately changed. Mask-wearing became ubiquitous and virtual communication unavoidable. These communication modalities replaced almost all typical in-person personal and professional interactions.<sup>1</sup> For public-facing occupations that rely on prolonged, loud communication, such as restaurant wait staff, grocery store clerks, physicians, nurses, teachers, and therapists, facemasks and virtual communication likely have a negative impact on vocal well-being. In an attempt to overcome the dampening effects of facemasks,<sup>2</sup> speakers may increase vocal intensity, frequency, strain, and effort above sustainable levels.<sup>2-5</sup> Such adaptive strategies are also applied in virtual environments

like teleconferences, teaching online, and prolonged phone conversations.

In response to these new communication demands, our team at the Emory Voice Center developed free customized, virtual, workshops for public-facing professional speakers. Example audiences include educators at the pre-school through university level, museum docents,

zookeepers, religious leaders, food service, and healthcare employees. These experiences are tailored for the speaking demands and environments of the needs of the audience (i.e. the needs of a zookeeper are distinctly different from a line chef).

In these preventative, educational workshops, we include evidence-based communication techniques that focus on immediate



application and implementation in a wide variety of contexts. **Conversation Training Therapy (CTT)** is a voice treatment approach that focuses solely on replacing aberrant vocal mechanics with healthy, balanced ones in connected speech from the very first session. Through application of techniques commonly used in CTT,<sup>6,7</sup> voice professionals can independently implement strategies into their communicative environments and overcome the vocal burden of masks and virtual contexts. For example, in CTT, speakers are trained to use clear speech, focus on precise articulation and anterior consonant energy, increase intonational variety, reduce speech rate and increase pauses for breaths. These strategies help



overcome the increased vocal effort, reduced pitch variance, and increase in vocal intensity observed with masked and virtual speech. These skills can be introduced and made accessible to professional speakers via a virtual classroom

environment, focusing on the nature of speech/voice production and how to maximize efficiency in the face of known boundaries. Our community partners continue to shape and improve our approach to education by informally providing post-workshop feedback.

**Table 1** demonstrates some of the language we use in these sessions to achieve the best voice outcomes for a wide range of professionals.

**References**

1. Bureau USC. American Community Survey. <https://www.dol.gov/agencies/wb/data/occupations>. Published 2017. Accessed 02/26/2020, 2020.
2. Goldin A. WB, Shiman N. How do medical masks degrade speech reception. 2020. <https://www.hearingreview.com/hearing-loss/health-wellness/how-do-medical-masks-degrade-speech-reception>. Published 4/1/2020. Accessed 7/8/2020.

**Table 1**

GOAL	PROMPT
Improved intelligibility.	Speak in a crisp, clear manner – as though you were leaving an important voicemail.
Appropriate mask-fit.	When trying on new masks, yawn and over-articulate. The mask should continue to cover both your mouth and nose.
Reasonable intensity and self-monitoring for vocal strain.	Speak more clearly, not necessarily with more volume. Big mouth movements are as effective as big volume.
Maximizing respiratory, articulatory, and resonance support in all contexts of communication.	Let your equipment do the work. Talk to your microphone, not to the class. Your virtual office set up should be comfortable and supportive.



3. Bottalico P, Graetzer S, Hunter EJ. Effects of speech style, room acoustics, and vocal fatigue on vocal effort. The Journal of the Acoustical Society of America. 2016;139(5):2870.

4. Rantala LM, Hakala S, Holmqvist S, Sala E. Associations between voice ergonomic risk factors and acoustic features of the voice. Logopedics, phoniatrics, vocology. 2015;40(3):99-105.

5. Rantala LM, Hakala S, Holmqvist S, Sala E. Classroom Noise and Teachers' Voice Production. Journal of speech, language, and hearing research. 2015;58(5):1397-1406.

6. Gillespie AI, Yabes J, Rosen CA, Gartner-Schmidt JL. Efficacy of Conversation Training Therapy for Patients With Benign Vocal Fold Lesions and Muscle Tension Dysphonia Compared to Historical Matched Control Patients. Journal of speech, language, and hearing research. 2019:1-18.



7. Gartner-Schmidt J, Gherson S, Hapner ER, et al. The Development of Conversation Training Therapy: A Concept Paper. Journal of voice. 2016;30(5):563-573.



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