JEA
JAZZ
EDUCATION
ABROAD

PRESENTS

JAZZ WORKSHOP SERIES

Voice Master Class Basics of Vocal Sound Production

BY IOANNA TROULLIDOU

Executive Director

Professor of Voice and Jazz Performance
European University Cyprus

www.jazzeducationabroad.org

@jazzeducationabroad

Joannatroullidou@yahoo.com

- Singing is a basic human function.It is a response to the need for self-expression and self-exploration.

-The singer is one of the most complex structures imaginable for making music.You are both a virtuoso and a musical instrument.

-Learning how to sing is both an intellectual and a physical process, this process can be characterized as an athletic endeavour! It involves a lot of practicing, concentration and discipline, patience and love for singing.

-Learning to sing is a long -term commitment and challenge to becoming the best that you can be.

-Each part of the body involved in singing needs to be isolated , trained and then integrated as a functioning whole!

-Singing provides important stimulation to the nervous system and recharges the brain with energy.

- Why do we study singing?

-Understanding how your instrument works will help you develop proper breath management and a resonant tone, improving your voice by building stamina and vocal power.

- To acquire a good technique that keeps your 'instrument' healthy and your voice unforced, natural and flowing

-You can learn how to minimize vocal tension and get rid of bad vocal habits, while establishing a daily practice routine to keep you impoving and 'in shape'.

- To understand how your environment affects your voice and learn how to take care of your voice

-Singing is also meant to be fun and make you happy so don't forget to enjoy it out of the many technical stuff you will have to learn about it! :-)

Basics to good sound production and singing acting in synergy

All basic elements of tone production are interconnected, and mastering them in order to sing freely is the goal of understanding the singing process.

1 Breath management

2 correct body posture* and ear posture**=

*Good posture means good alignment -that maximizes lung capacity and releases tension- comfortably high chest, relaxed knees and feet-hip distance apart.

**Efficient body alignment activates listening and the listening posture in the ear is central to singing.

3 intonation- singing in tune, correct pitch

4 articulation, vowels, words- pronunciation, diction, text delivery

5 phrasing-melody/ rhythm/ lyrics

6 expression, sentiment and true emotion

7 timbre- voice colours

And as A.A. Tomatis mentions in his book , the hallmark of a high degree of mastery is that the spectator will not distinguish between the technical and musical elements of a performance.

<u>Overview of the singing process</u>

Your voice is powered by breath from your lungs (generator) that makes your vocal folds move (vibrator).

When you breathe your vocal folds open and allow air to pass through without resistance. During singing, your closed vocal folds resist the air being expelled, which causes them to vibrate in a fluttering motion. This initiates the process of

vocal sound production or phonation.The sound produced by this procedure is colored and amplified by resonance in your throat , mouth and nasal cavity.(resonators)

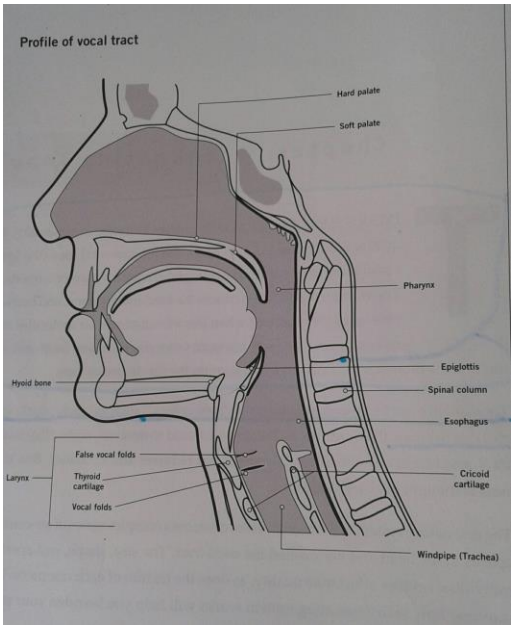
Also your mouth, teeth, tongue, lips , cheeks,hard and soft palate- a.k.a **Articulators**;participate in this process,giving singers the unique capability of combining words with music!

Sound production

The larynx is comprised of cartilage , ligaments, muscle, nerves and mucus membranes. The vocal folds are situated in the larynx and comprised of the arytenoid cartilages, the vocalis muscle (thyroarytenoid), ligaments and membranes.

Activated by the brain with the thought of speaking or singing , nerves control the muscles that close the arytenoid cartilage, bringing the vocal folds together!

This closure offers a resistant to overflow, which results in a "Buzz tone", the fundamental tone(= the basic sound produced by the vibrating vocal folds) of vocal production.



Resonance (tone enhancer) and Resonators

The throat ,the mouth, and nasal cavity are all parts of the vocal tract.

The fundamental tone reverberates in the resonator and enhances the tone.

Resonance colours and amplifies tone

Resonators>Pharynx, mouth, chest, larynx, nasal cavity

The pharynx and the mouth are flexible and together form your largest resonating cavities.You can affect your sound quality by changing the size and shape of your mouth using your jaw, cheeks, lips and tongue.(see Timbre)

Chest is not an efficient resonator , it contains many organs and the composition of its tissues makes it absorb sound.

Nasal cavity produces a very distinct feeling of vibration when your voice is freely produced.

Resonant Tone has carrying power and a clear ,ringing sound.

If your voice is resonating well, it will feel comfortable and flexible, any sensation of tickling in the throat ,tightness or pain indicates there's something wrong. Excess tension will interfere with tone and prevent it from resonating freely!

Words (articulators)

The tongue, jaw, cheeks, teeth, lips, and palates coordinate and produce speech sounds.

Breathing and Breath managment :one of the most important practices in vocal study

Good breathing is the basis for all good singing and proper breathing prepares the vocal mechanism for singing.

Mastery of the breath is fundamental to the acquisition of a Good singing technique.

Air powers your singing , and controlling the inflow and outflow of air requires the skilled use of breathing muscles and organs.

These include: the trachea, lungs, diaphragm, ribs (and associated muscles),and abdominal muscles!

Many vocal problems originate because of lack of sufficient breath support, and excessive muscular tension!

Breathing affects

intonation,

tone quality,

sustaining power,

range ,

dynamics,

expression,

flexibility,

phrasing and stylistic interpretation.

Steps of effective breathing

1 Align your body

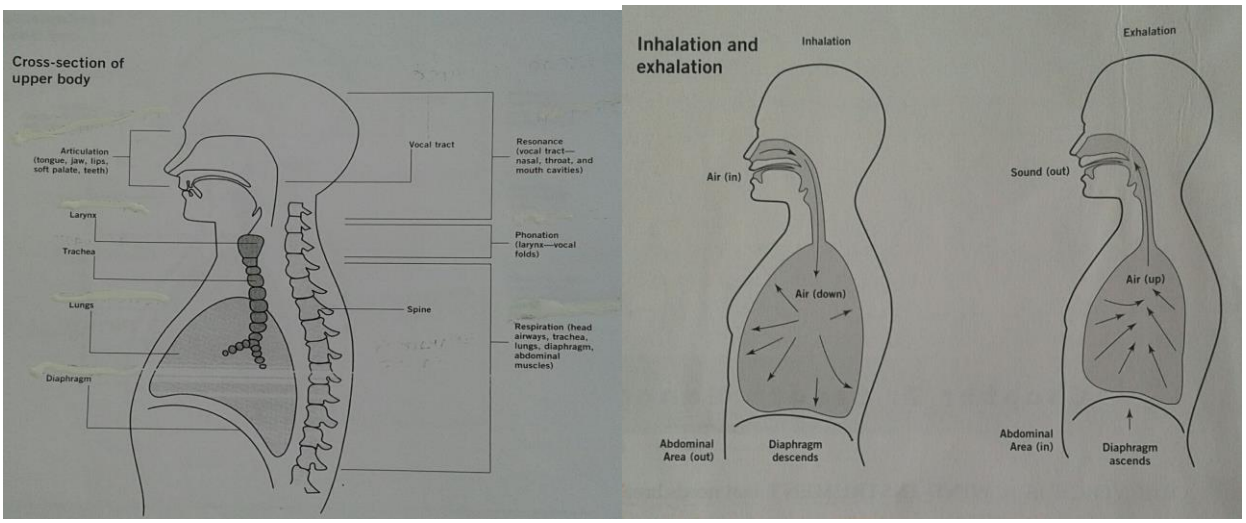
2 inhale and expand around your waistline and lower abdominal area=You take in a comfortable amount of air, retain it and let it flow with absolutely minimal pressure.The more slowly and regularly the flow emerges , the less underlying tension results and the more easily the larynx works.

3 exhale with firm abdominals-in singing the muscles of inhalation must resist those of exhalation or the air will rush out uncontrolled.

4 keep ribs and chest open and stable as you exhale

Which body instruments take part in the breathing process and different kinds of breathing.

Diaphragm, ribs, ribcage, intercostal muscles,external intercostal, abdominal muscles, lungs, thorax, back muscles.



Diaphragm

The diaphragm is a flat muscle, curved in a double-dome shape, that separates the chest cavity from the abdominal cavity. it is the floor of your ribcage.

Generally speaking all breathing is diaphragmatic, there can be no movement of air into or out of the lungs without the activity of the diaphragm, however in great singing the most dynamic activity is carried out by the diaphragm.The diaphragm flexes or tightens during exhalation and relaxes during exhalation. This flexion causes a partial vacuum in the lungs and air rushes in.

There is a quite different sensation in the normal muscle of energy of inhalation, and that of the controlled exhalation necessary for singing.

The diaphragm must be coordinated with its surrounding muscles for efficient respiration.

Supported singing= when ribcage stays open while abdominal muscles move in slightly. it enables the diaphragm to ascend to its high position at a slower rate, allowing you to sustain longer phrases and maintain better pitch control

Support depends depends on muscular tensions which oppose one another.

Ribs and lungs

Your ribcage is comprised of bone and cartilage. During breathing, the attached intercostal muscles open and close your ribcage, filling and emptying your lungs.

The external intercostals expand your ribcage during full breath while the internal intercostals force air out during exhalation. Singers try to resist the contraction of the internal intercostals to avoid running out of air. When you sing, steady flow of air to your vocal folds is achieved by opening your ribs and slightly contracting your abdominal muscles.

Awareness of the rib cage expansion

1.place your fists on your sides above your waist

2.take a full breath and feel the expansion of your ribcage, exhale

Abdominal muscles

These muscles cover the entire abdominal region running vertically and diagonally across your belly. Your lower abdominal muscles relax outward during inhalation and contract inward slightly during exhalation.

Different approaches to breathing

There are many ways that singers tend to breath but only one of them is widely considered to be effective

-chest breathing (limited effectiveness) =raising shoulders and chest for inhalation= breathy tone, strained, weak and out of tune

- rib breathing (limited effectiveness)= expansion of the ribs but not the lower abdominals this way restriction of full inhalation= lack of sustaining power, throat tension.

-rib/ abdominal breathing (most effective)= rib breathing combined with relaxation of your low abdominal muscles during inhalation, relaxed abdominal

muscles allow you to take a full breath and minimize throat and neck tension during exhalation.

Larynx

The larynx is the major organ of sound emission.Sound produced in the larynx is immediately controlled by the ear.

Your vocal folds are located in your larynx, which is comprised of internal and external muscles , cartilage and bone.

Your larynx, sits at the top of the trachea, a cartilaginous tube through which air passes to and from your lungs.

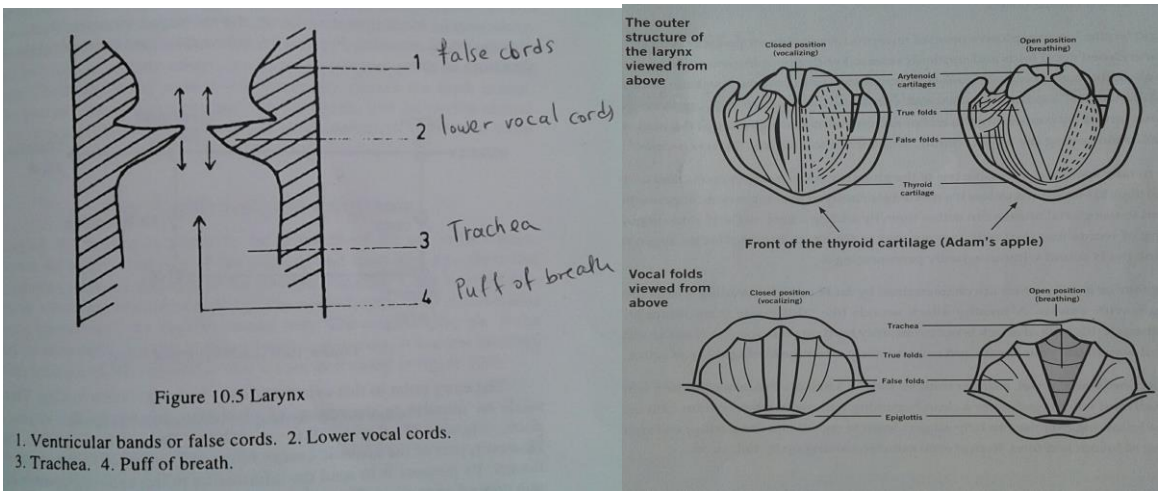


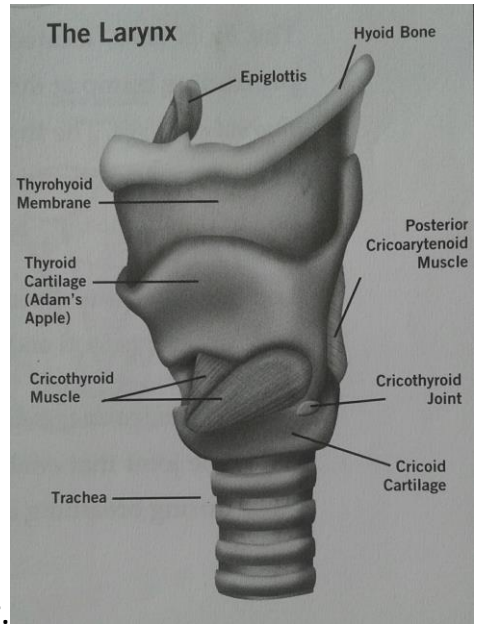
Figure 10.5 Larynx

1. Ventricular bands or false cords. 2. Lower vocal cords.
3. Trachea. 4. Puff of breath.

Although we can identify two sets of vocal cords, only the lower two are involved in singing. The upper cords are commonly called ventricular bands or False Vocal cords.In normal singing and speaking, the false vocal folds do not vibrate to make sound.

The two lower vocal cords are drawn together and vibrate throughout emission. The vibration is caused by air passing across the cords.

There is a space between the true and false folds called the ventricle, which is thought to be an important resonator.



The outer structure of the larynx is comprised of three major parts :

- the hyoid bone (located at the top of the larynx)

- the thyroid cartilage (the front part of the t. c is Adams's apple)

-the cricoid cartilage (located at the bottom of the larynx connects the voice box to the trachea).

Looking down into the larynx from above is a flap-like cartilage called epiglottis, which prevents food and liquid from going down the trachea and into the lungs.

The Arytenoid cartilages are positioned on top of the back of the cricoid cartilage with a flexible joint that enables complex motion. The Arytenoid cartilages open and close during breathing and phonation.

The Ear

The organ of control for singing is the ear and the whole system is under the control of the listening function.

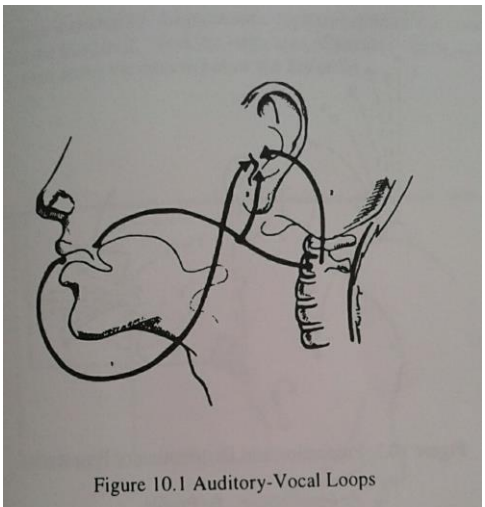


Figure 10.1 Auditory-Vocal Loops

1. From the mouth to the external ear through the auricle or pavilion. 2. From the larynx to the cervical spine to the ear. 3. From the mouth through the muscles and tendons to the ear. Ultimate control resides in the inner ear.

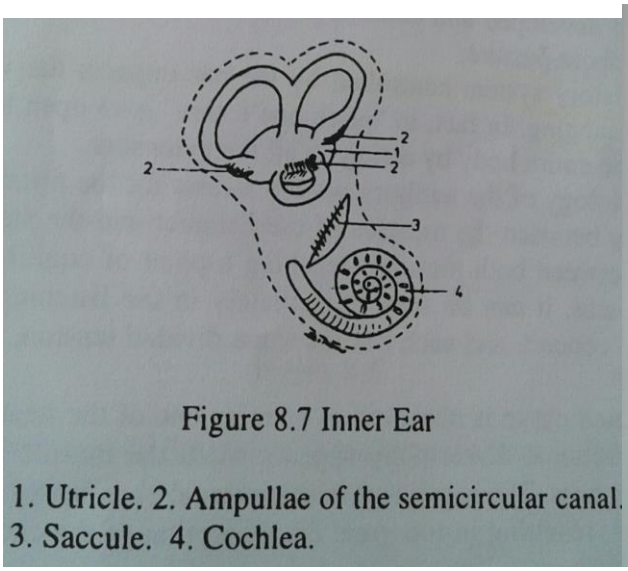


Figure 8.7 Inner Ear

1. Utricle. 2. Ampullae of the semicircular canal. 3. Saccule. 4. Cochlea.

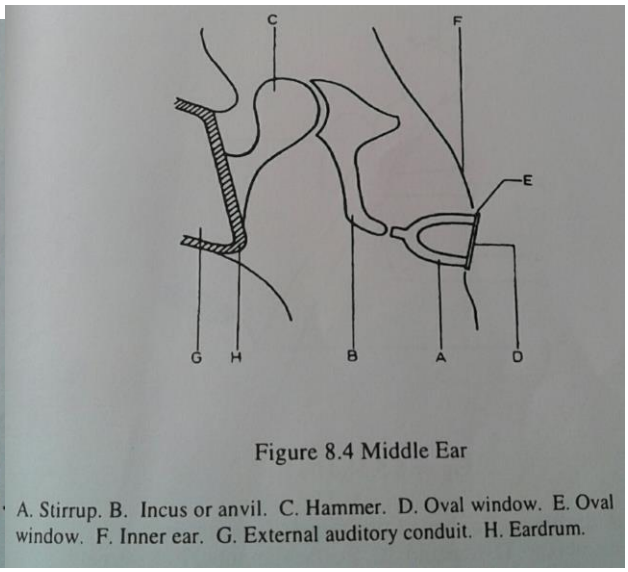


Figure 8.4 Middle Ear

A. Stirrup. B. Incus or anvil. C. Hammer. D. Oval window. E. Oval window. F. Inner ear. G. External auditory conduit. H. Eardrum.

The ear must be understood in relationship to all the organs involved in singing:the larynx, the lungs, and that part of the mouth and pharynx activated by phonation.

The anatomy and physiology of the ear is very complex , so I will only mention a superficial anatomy of it and some- out of many- of it's functions.

The regulatory system ccontrolled by the ear impacts the whole body and prepares it for singing

inner ear> located deep in the side of the skull> it looks like a bony pocket and it's called the labyrinthine vehicle or bony labyrinth, it contains the membranous labyrinth made up of the vestibule and th we cochlea>The function of the inner ear is to analyse movements, rhythms, and sequences of frequencies or pitch. It's the organ of listening, calling for specific posture, a dynamic interaction with the environment and very focused attention.

middle ear> is located between the external and inner ear**>**composed of three ossicles, the stirrup, the anvil, the hammer> fitness of muscles in the middle ear(on going coordination between the muscles of the hammer and the stirrup) make possible the optimal use of the inner ear

external ear>the visible part of the ear, it includes the auricle and the external auditory canal, which is sealed by tympanic membrane**>** it is both an amplifier and a filter, favouring the diffusion of certain sounds into the inner ear, especially high frequencies.

TIMBRE

Timbre refers to tone quality in music.

Tone quality is comprised of two parts : the fundamental tone (the lowest possible frequency) and higher frequency harmonic overtones.

The vibrating vocal folds create the fundamental tone, and harmonic overtones are produced when this vibration sets air molecules in the resonators in motion.

A resonant voice rings because harmonic overtones in the human resonators color and amplify the fundamental tone.

Tone quality can be described in terms of 'tone colors', such as bright, dark ,warm, clear or brilliant.

Chiaroscuro is an Italian word used to describe timbre that has both dark and bright characteristics, because it has richness and brilliance,this kind of tone is considered as well balanced.

The resonating system of the human voice contains a complex series of air-containing spaces in the head and neck called the Vocal tract.

The size , shape and aperture of individual cavities affect tone quality, as does the texture of each resonator.

VOCAL REGISTERS AND BLENDING

Vocal register is a series of consecutive pitches that have a similar tone quality and are produced using the same muscular actions of the vocal mechanism.

Registers can be likened to gears in a car transmission. This switching of gears in a voice is an adjustment in muscular action, which usually occurs automatically if it is not forced.

"Shifting smoothly" in singing requires muscular coordination and practice.Blending is a method of training your voice to coordinate through the transition of you range easily. It can be achieved by working on a combination of breath support and range exercises that employ legato movements between notes.

Two main muscle actions are responsible for vocal fold activity:

1) **Thyroarytenoid (TA) muscles** ,responsible for shortening and thickening the vocal folds. Resulting sound chest voice for both men and women.

2) **Cricothyroid (CT) muscles** are responsible for lengthening and thinning the vocal folds.Resulting sound is known as head voice for women and falsetto for men.

Mixed or middle voice is a term used to denote a coordinated use of both the TA & CT muscles.

Even though both muscle groups are active, the mix is TA -Dominant.

The transitional passage between registers is sometimes called the passagio!

Vocal health

Our instrument is in our body and our body is our instrument for singing.

Our voice is subjected to the effects of our emotions, eating and sleeping habits, use of medication and drugs ,and speaking, even the weather.

Mainting vocal health is not that difficult if you follow this simple suggestions:

1. Keep yourself **Hydrated**: many vocal problems can appear when we sing with dry vocal folds, so keep yourself hydrated and consequently your voice.

Avoid caffeine and alcohol before you sing and keep them generally in a moderate quantity., accompanied always by a lot of water.

2. **Always warm up** to prepare your instument for singing> your singing teacher can help you make an everyday schedule for warming up your voice and keeping a healthy practice routine! (see below an example of what a steady **practice routine** should or could include)

If you don't warm up your sound most likely will sound throaty etc and you might feel the need to push your larynx to make sound and that will result in tightening your larynx even further with consequences on your vocal health(well, if you keep acting like that).

3. Avoid smoky and noisy places, don't take your ear for granted, they are fragile too

4. **Sleep** well during the night, take short naps if you had a long day and no time to rest and you have to perform at night.

5. Keep a **healthy diet and eating habits.**

Singers should avoid food that tends to build up mucus that could cause trouble in ears, nose and throat.Avoid food that produces too much acid too like nuts, dairy products, sugar, starch,alcohol, meat.

6. **Moderate exercise** during the day keeps you healthy and energized and consequently your voice.

7. **If it hurts don't sing!**

If you have a sore throat or a cold, don't try to sing, Changes in voice quality, tightness, hoarsness, loss of high notes!

Rest instead to protect your voice and advice your doctor.

Avoid excessive use of medication especially use of antibiotics, if not necessary, advice from your doctor on this subject.

8. If you have a **bad technique it will result to many vocal problems**, find a good vocal teacher, that can help you focused on good elements of technique.

Mare sure that you are not forcing your throat when you sing, misusing your voice when tired, bad breathing management and poor support.

A good technique can help you maintain your voice for a lifetime.

Elements of good technique

- supported singing

- good intonation

-voice that moves with ease, flexibility, has flow and and feels and sounds unforced

-good articulation

-expression

Daily practice routine can keep you focused, in shape and help you keep making progress.(Always get suggestions form your vocal instructor, they can help you establish a good daily practice shedule).

It should /could include:

>warm-up first and always:-)>

> physical stretches(head rolls, neck tension release) and then breathing exercises (2-3 min)

>melodic and rhythmic warm up(5'-10'), short melodic patterns, hummings, lip trills ,scales

> vocal technique -targeted training, find things you need to improve and focused working on them separately.(10-20')

-If you feel tense stop and rest-

> work on a song, play it, hear it, learn it as it's written then try to sing it. (10-20

Remember also knowing how to sing comes from knowing how to listen to you self.

Concerning diffrent approaches/various techniques on how to sing, Alfred A. Tomatis mentions in his book.

There is more than one way to teach singing(or be taughted, I dare to add), but there is only one way to sing well!

Selected bibliography

●The contemporary singer, elements of vocal technique

Anne Peckham

● The ear and the voice, Alfred A. Tomatis

● Complete handbook of voice training, Richard Alderson