

EXPLORING LEARNING AND UNLEARNING IN SINGING TECHNIQUE (BREATH)

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SUMMARY. The future belongs to those who will never stop learning² - this is a very modern mindset. Learning is a lifelong habit. It is a process, a work in progress for a lifetime. This process can have many stages and I want to explore them in this article, because becoming aware of them we can improve our knowledge and our benefits from learning. This information can be useful in pedagogy but also in the self-control of professionals, because this article is regarding the professional singer's development, focusing on the breathing technique in singing. The society we live in is an extremely dynamic one, changes are happening faster and faster, and knowledge is a must, a continuous process that does not stop with the completion of studies. Discovering one's own ignorance³ can be the start of progress. The most modern learning process admits and embraces the dynamic between learning, unlearning, and relearning - at whatever professional stage we are. The present article is not intended to be a new breathing technique proposal, nor an exposition or a debate of the multiple existing breathing techniques... but to state the main objectives of the optimal breathing of a professional singer and the possible defects that must be corrected. The focus of this article is the availability of learning, experimentation and permanent discovery of one's own body and mind - correlating them with the functionality of the technique, under the guidance of a teacher or in the individual study of each singer - in short, an invitation to make the rehearsals much more flexibles.

Keywords: learning, unlearning, relearning, singing technique, breath

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² Simon, Stefania, *The Future Belongs to Those Who Never Stop Learning*, Minimalist Brain, Medium, 2021.

³ "The greatest scientific discovery ever was the discovery of ignorance. Once people realized how little they knew about the world, they suddenly had a very good reason to seek new knowledge, which paved the way for scientific progress." (Harari, Yuval, *Homo Deus*, Polirom 2018, p.190)



Good breathing in singing is what is called a key competence for developing a lyrical career. It is necessary to become aware of our body-instrument and to prepare it for singing like a high-class Stradivarius violin, by vocalizing but also by physical exercises, sports, swimming, proper nutrition, the conscious⁴ assimilation of information and the acquisition of correct reflexes.

How we breathe influences all our body⁵ and is fundamental to develop the capacity of our lungs and all the breath management strategies and mechanism to achieve a professional career in singing.

Breath management consists of many techniques and exercises for an efficient inhalation and exhalation of the air, good posture, and good coordination of thoraco-abdominal muscles, to an optimal dosage, pressure, speed, and a good air support. Also, in more refined procedures, for mastering the apnea.

When we study a new score, it is not enough to memorize the music, the rhythm, the words and all the details of the score; it is equally important to fix in the memory of the body the breaths and the areas that will require a more intense support of the musical phrases. We note the breaths in sheet music at the very beginning of the study, as some milestones, and we will repeat identically every time to train our body to learn the musical phrases according to these breaths. The memory of the body also fixes the areas of intensive pressure on the air (for the necessary support in the difficult musical passages of coloratura or of a higher tessitura, for example) and of voluntary apnea.

Another aspect which cannot be neglected about singing training is the fact that everybody is different, and the students will react differently to training! Some techniques may be great for someone but harmful to another. The uniqueness of each student stands out from the biological peculiarities to his (hers) mental patterns, and to his (hers) level of training. Thus, the teacher's answers and approaches can be consistently different from student to student. This situation requires flexibility and creativity on the part of the teacher and the desire to know and experiment on the part of the student.

⁴ Radu, Cristina, *O viziune modernă asupra formării cântărețului de operă* (A modern perspective on training the opera singer), Editura Muzicală, București, 2017, p.258.

⁵ "How we breathe affects all things. breathing in different patterns really can influence our body, weight and overall health. Yes, how we breathe really does affect the size and function of our lungs. Breathing allows us to hack into our own nervous system, control our immune response, and restore our health." (Nestor, James, *Breath -The New Science of a Lost Art*, Penguin Random House, UK, 2020, Introduction, p.xix)

Breath, the Fundamental Element of Singing

Since ancient times, it was known that the art of singing is the art of breath. Inseparable from the mastery of conducting the air, the singing is more refined as the breath management is clearer and more functional. “The vibration of voice is inseparable from the using of breath, which plays a very important role in the singing skills of pronunciation, articulation, continuity, and integrity of the whole song. When singing, the different pitch, volume and the tension of the sound require different speed and depth of the breath that puffs the vocal cord. Only when the breath is full and stable, the resonance can be full, the tone can be unified, the emotion can be delicate, and voice and sentiment can be rich. It is the lifeline of learning vocal music, because if we leave it, everything is of no use.”⁶

Breathing is an action that is regulated by the autonomic nervous system. Many of the actions of the autonomic nervous system are involuntary (heart rate, respiration rate, digestion, salivation, perspiration, urination, sexual arousal); but some, including breathing, work in tandem with the conscious mind and can be performed with conscious control: we can actively control our breathing, stopping it and starting it at will, choosing how much air we will inhale or exhale in a given breath or deciding how rapidly or how slowly we will perform each phase of the breath cycle.⁷ There are many differences between the singing-breath and the breath we commonly use to take while when we needed to speak. From the larger volume of air required in singing, inhaling quickly, and exhaling slowly, to the use of muscle control and coordination in supporting the work of the diaphragm, to obtain the high-pressure levels required in exhalation, the constant pressure, or prolonged apnea – all indispensable in professional singing. And all this we can achieve through training, by actively developing our breathing skills.

Breath management strategies for singing can be very different from singer to singer⁸. There are many techniques used in pedagogy of singing

⁶ Jiang, Shansha, *Discussion on the Correct Method of Using Breath in Singing*, Proceedings of the 2nd international conference on culture, education and economic development of modern society (iccese 2018), Advances in Social Science Education and Humanities Research, Volume 205, p.697.

⁷ O'Connor, Karryn, *Correct Breathing and “Support” for Singing*, SingWise Academy, 2022.

⁸ “Breath management is without doubt among the most examined elements of singing pedagogy and voice science. Consensus of optimal breath management technique proves elusive. Viewing a single performance at a major opera house will confirm that successful singers do not all employ the same breathing strategy. Wide variations exist in the action of shoulders, thorax, abdomen, back, pelvis and buttocks.” (McCoy, Scott, *Breath Management: Gender-Based Differences in Classical Singers*, Folia Phoniatica et Logopaedrica, 2005, p.246)

and in the professional's performances⁹. The present article is not intended to be a new breathing technique proposal, nor an exposition or a debate of the multiple existing breathing techniques... but to state the main objectives of the optimal breathing of a professional singer and the possible defects that must be corrected.

The essential landmarks in singing-breathing

Air inhalation¹⁰

- Deep large breath – the ability to inhale large quantities of air. This allows singers to sing for extended periods of time, to perform long musical phrases in a controlled and relaxed manner. How we efficiently store air in the body: some call the procedure deep, Costo-Diaphragmatic breathing; others refer to Diaphragmatic breathing or abdominal breathing. Whatever you call it, it's the opposite of shallow shoulder breathing. "It turns out that when breathing at a normal rate, our lungs will absorb only about a quarter of the available oxygen in the air. Most of that oxygen is exhaled back out. By taking longer breaths, we allow our lungs to soak up more in fewer breaths."¹¹
- The ability to snatch a good breath quickly – to be able to grab a good, whole breath in a fraction of a second. This procedure can be crucially important to singing, especially when there is little time to breathe between quick sentences/phrases in a song, or you need to get enough air during a 16th or 32nd note rest to finish the phrase comfortably.¹²
- Nasal breathing more frequently used than mouth breathing – because "inhaling air through the mouth decreases pressure, which causes the soft tissues in the back of the mouth to become loose and flex inward, creating less space and making breathing more difficult. Mouth breathing begets more mouth breathing. Inhaling from the nose has the opposite effect. It forces air against all those flabby tissues at the back of the throat, making the airways wider and breathing easier. After a while, these

⁹ "The incredibly intricate and complicated muscular coordination required of professional singers. The exact balance of each of the muscle groups will vary from person to person, body type to body type, and teacher to teacher. Though the end result is often a similar muscular coordination there are, indeed, "many roads to Rome." (McCarther, Sean, *A Review of the Breathing Mechanism for Singing: Part I Anatomy*, Rider University, 2021, p.9)

¹⁰ "As the volume of the lungs increase, a vacuum is created, causing air to rush in and fill the lungs. This is called inhalation." (McCarther, Sean, p.2)

¹¹ Nestor, James, op.cit., p.81.

¹² Peasgood, Emily, *Vocal Technique for Singers: Breathing and Breath Control 101*, Sound Artist & Composer, 2014.

tissues and muscles get “toned” to stay in this open and wide position. The nose is crucial because it clears air, heats it, and moistens it for easier absorption.”¹³

- Mute (non-sonorous) versus sonorous (expressive) inhalation: Silent (inaudible) technical breaths are used in singing. Sound breathing is used only for dramatic, expressive purposes, to create tension, suspense, or other effects.
- Right posture: finally, we are interested in the singer’s posture for correct breathing. “The first step in developing vocal technique is to establish good posture for singing. Your body is your instrument and poor alignment, or unnecessary tension can affect how well you sing. Good posture enables good breathing.”¹⁴

Air exhalation¹⁵

- Long exhalation with constant air pressure – The ability to control the escape of breath, the continuity of vibration and the dosage of air expulsion results in a constant pressure in the sound emission.
- The full exhalation: the long and complete exhalation of the air transformed into a sung sound. It is necessary to exhale all the air before taking another breath to avoid hyperventilation. “Carl Stough spent a half century reminding his students of how to get all the air out of our bodies so that we could take more in. He trained his clients to exhale longer and, in the process, do what had long been considered biologically impossible. Emphysemas reported almost total recovery from their incurable conditions, opera singers gained more resonance and tone in their voices, asthmatics no longer suffered from attacks, and Olympic sprinters went on to win gold medals.”¹⁶
- The ability to use more efficient the breath should result in less breathiness or ‘airiness’ in the tone.
- The ability to concentrate or widen the volume of air during emission of sound – for different technical purposes (to obtain focus, speed, and agility in coloratura passages, versus legato singing in Bel Canto phrases).
- The ability to give a direction of the air in sound emission (imagining a perpetual progress, as a continuous advancement) and to controlling

¹³ Nestor, James, p.27,39.

¹⁴ Peasgood, Emily, op.cit.

¹⁵ “As the volume of the lungs decreases, air within the lungs is pushed out. This is called exhalation. Expelled air from the lungs passes through the trachea, past the vocal folds, into the back of the throat and out the mouth or nose.” (McCarthy, Sean, p.2)

¹⁶ Nestor, James, op.cit., p.209.

the speed of the air's exhalation in different vocal registers – to obtain fluency and the flow of musical phrasing.

Breath support

- In daily life, good breath support is how we regulate and coordinate airflow for different activities, from walking fast to running, swimming, or doing yoga, or to other activities like playing instruments or singing songs. In professional singing, the skill of breath support is in high demand to achieve. It is a way of using other parts of the body (the abdominal muscles for example) connected to the work of the lungs and larynx to produce better tone and to access the ability to sing extended phrases and sustain notes for longer. The successful connection between the musculature of the body (the abdomen and back primarily) and the larynx (for sound and tone production) is often referred to as “support”, “breath support” or “supporting the tone”¹⁷
- The breath support is responsible for an optimal emission of sound and for just intonation. It is necessary for a correct air pressure in each vocal register (especially in the upper register) and obtaining an adequate speed of the sound wave.
- Appoggio [from Italian verb appoggiare, ‘to lean on’, ‘to be in contact with’ or ‘to support’] is a breathing technique that involves slowing down the ascent of the diaphragm. It involves a concerted action on diaphragmatic movement by the muscles of the chest and the abdominal wall (the transverse abdominis, the internal oblique, the external oblique, and the rectus abdominis, although to a lesser extent). It results in better control over the breathing mechanism through training the muscles and enables the singer to pace the breath more efficiently and elongate the breath cycle during singing.¹⁸
- There are many breathing support techniques¹⁹, debates and sometimes opposite practices in the opera world. But one certainty is clear: the highest

¹⁷ O'Connor, Karryn, op.cit.

¹⁸ O'Connor, Karryn, op.cit.

¹⁹ The famous American opera singer *Renée Fleming* confess in her book *The inner voice, The Making of a Singer* (Viking Penguin, 2004, p.41): “How I hold my breath is relatively simple to explain, but in practice it's a difficult process to really coordinate. Once I've inhaled that optimal breath, and my abdominal wall is open, out and extended, along with as much of the rest of my torso as possible, I resist allowing these muscles to collapse again. "Resist" is the key word: if I keep pushing out, I'll lose breath connection and create tension in my throat; if I let it all collapse quickly, I'll have a broken tone and not enough air to sing even a short phrase. Another essential part of this formula is to keep the intercostal muscles out and prevent the chest from collapsing. I learned this particular technique by observing other

level of singing, the nuanced phrasing, the amazing performances, and vocal virtuosity cannot be imagined without breath support.

Apnea technique

- Like in swimming underwater, we need to know and use the power of apnea in singing practice. Apnea, the process by which someone holds his breath for a few seconds up to a few minutes, can be useful in singing practice, with moderation. In the beginning of long musical phrases (for a proper air dosage) or in coloratura technique (for more brilliance, speed, and accuracy) – the apnea is one of the most useful strategies in breathing management. There should be no tension in using of apnea – the throat should be relaxed as though in a surprised position.²⁰

Learning ...to Breath

I believe in the power of a mindset oriented to lifelong learning. This mindset seems to be more necessary than ever in our world. “The capacity of the human being for learning, unlearning and relearning is essential to scope with our fast-changing technology-driven world and he underlines the fact that change will be the only certainty: What worked for me yesterday may not work for me today and we don’t have the luxury to get complacent”²¹ Also, as a musician, you have to be open to the permanent education or continuing formation, a lifelong learner²² - being in contact with conductors, directors, other singers, teachers or colleagues, in productions of opera or other musical projects which involves a lot of creativity but also high standards.

singers, and there's a good reason why caricatures of opera singers so often depict them as pigeon-chested. When I sing comfortably, I can imagine my torso and breath doing all the work, while my neck is completely relaxed. Years of practice and experimentation have led me to this optimal combination, which allows me to play high-pitched pieces that are not inherently comfortable for me.”

²⁰ Peasgood, Emily, op.cit.

²¹ Schuckmann, Jelto, *Learn, unlearn, and relearn*, The Digital Transformation People, 2021.

²² “This is an intrinsic feature of the profession. S(he) incessantly accomplishes his/her personal learning techniques and procedures, accepting withal his/her colleagues’ good ideas, useful suggestions, as well as beneficial influences from any other activity, even from personal experience. There is about an unlimited sphere of innovation, of creative attempts, of personal, individual syntheses. A high-performance instrument player is continuously progressing and transcending his/her ever more higher limits, aiming at attaining the excellence of the live artistic act, taking place in concert, with audience.” (Drăgulin, Stela, *Viability of didactic principles in contemporary piano education*, STUDIA UBB MUSICA, LIX, 1, 2014, p. 136)

However, the willingness to learn should be counterpointed by moments of silence and self-awareness, accompanied by the critical reflex of discernment. The openness to change the perspective, to a reevaluation of the acquired knowledge, of the reality in which we live (permanently changing) and even the availability for a reset of our mental patterns of thinking and our perception filters... I think they are part of mental and behavioral hygiene, indispensable for an authentic learning process. To observe the connection of the mind with the body (through the emotions) is also fundamental in order not to get lost in abstractions and rumination of thoughts. Silent exploration, meditation and observation are good ways to renew and refresh the mind. I think it's good to not impose our "agenda" on everything, but to keep our awareness awake to the smallest details and changes... we can be surprised, even wonder, of new discoveries!

There are many methods, but we can define two major categories for learning (Stefania Simon): repetitive learning by association (or physical learning, that our unconscious mind can do when there's no need for an abstract model: cycling, driving, and so on) and abstract learning (superior learning which consists of creating abstract models about the world and using them in future situations). We use both in learning to sing.

We start singing naturally, without questioning ourselves too much about the entire process, using our physical ability and instinct, our innate musicality and the pleasure that singing itself gives us. When the rigor of professional singing interferes and the difficulties of musical scores arise, we begin to be more preoccupied with the technical mechanism of singing, like breath management. The teacher explains to students the fundamental elements of vocal techniques (abstract learning – the concepts, mechanism, information about anatomy and so on) and after exemplifies each model (of breathing, emission). But in singing abstract learning without repetitive learning does not function. It takes a long time of hard and constant physical training to transfer the know-how (the concepts about the vocal technique, assimilated by abstract learning) in our bodies and to obtain a proper and quick response. It takes a significant amount of time to create correct reflexes related to breathing or the correct emission in singing. Then associative or so-called stratified learning²³ takes place. And the most exciting process begins, after

²³ "We are capable of memorizing texts or formulas for a short-term period like we do when we have an important example or interview, but we instantly forget it afterward. To achieve the desired results when learning, we must link the new things we discover to the information that is already in our memory, and ideally that we care about. On the topic of passions, whenever we read a book, an article, or listen to a podcast related to the passion(s) we have, it instantly remains in our memory because connections are made between the new idea and something we already care about emotionally. This process is called stratified learning, where pieces of information are placed progressively on top of each other." (Simon, Stefania, op.cit)

mastering the vocal and technical procedures you can dedicate your study to in-depth documentation, musical score interpretation and creativity.

It should be mentioned, however, a very important aspect related to the training of a young performer. The guidance by a teacher is indispensable, but the process of learning and assimilating information is both a guided path and assumed individually, as self-taught. Hours of individual study, experimenting and rehearsing in solitude are essential in the training of any musician. The artist is both self-taught and active participant in his own musical training. "The principle of the active and conscious pupil/student participation in the educational process conveys the actual essence of learning in a modern view and decisively contributes to the formative efficiency of education. Under the teacher competent guidance, the pupil/student will succeed in discovering, by his/her own powers, the characteristic features of the musical pieces under study, their content, as well the means of optimally solve the technical difficulties of the score/musical text."²⁴

The teacher's experience is also relevant as "you can only teach what you really know and apply in practice. And, to really know, you must have gone through multiple shaping experiences, nourished by your dedicated time, energy, and genuine curiosity. (...) We should not teach our children anything that we cannot do ourselves."²⁵

Teachers also must deal with their own limit of knowledge²⁶, being open to improve and update the information they teach and to be creative enough to permanently adapt their teaching method according to the native data and the level of each student.

A good teacher will always teach his students how to learn by him(her)selves and will always stimulate in his/her student the development of an authentic artistic personality and the formation of critical thinking. Critical and analytical thinking, together with a trained discernment²⁷, are essential in the learning process throughout life. They can give us awareness and remove us from the harmful circuit of the process of operating on autopilot.

²⁴ Drăgulin, Stela, op.cit., p.134.

²⁵ Baconschi, Theodor, *Averea bunei educatii* (The wealth of good education), Ed.Univers, 2019, (p.57, 59)

²⁶ "And over time, I not only learned about how my students constructed the issues, but I also exposed the limits of my competence, the extent of my uncertainty, and the arrogance of some of my assumptions. In short, my own education as a teacher educator evolved with my ability and my willingness to call into question not only my students' assumptions and practices, but also my own. Over time I learned that taking an inquiry stance on my education as a teacher educator involved both learning and a great deal of unlearning." (Cochran-Smith, Marilyn, *Learning and unlearning: the education of teacher educators*, Pergamon, Teaching and Teacher Education 19 (2003), p.25)

²⁷ "Internet culture - the natural environment of digital natives - opens up all human knowledge, but it cannot give you discernment. You are in a labyrinth, only devoid of any Ariadne thread." (Baconschi, Theodor p.53)

It is inevitable to mention here an important aspect of the learning process, which if we do not become aware of, in time we can fall into the trap of various blockages and limitations that can arise from it. We are tempted to learn what we already know²⁸, due to the prejudices and mental patterns we have, which automatically discern and triage through the large volume of information, on autopilot. “The internal model” (as the French neuroscientist Stanislas Dehaene called it), stipulates that in cognitive science learning consists of forming an internal model about the outside world. “Basically, when we learn something, our brain builds an abstract model that our conscious mind can process, based on the experiences we lived, seen, and perceived, that can be reused in a new context.”²⁹ That is why it is necessary to keep an alert mind, trained in critical thinking and open to face other ways of thinking, other solutions and information outside of its sphere of competence. And because we live in the body, and the body is our instrument in singing, we must experiment in our training as carefully as possible and choose the optimal technical and interpretive solutions.

The training for professional singing is a complex one, involving both the mind and the body. The mind - through attention, focus, taking over and assimilating information, articulating clear and coherent tasks and commands; and the Body - by concretizing the intentions dictated by the mind. It is important to be aware of the slow answer of the body, compared to the high speed of the mind in processing information. The body needs time to be “taught” new habits, to form new reflexes, to respond adequately and quickly to the demands of a performance song. For this, time and consistency are needed to “build” new reflexes, to increase lung capacity, to decrease response time and to synchronize the mind with the body.

I mentioned above the essential landmarks in singing-breathing, necessary in supporting the demands of professional singing. To achieve these goals, a lot of physical training is necessary, for it being known that a new reflex needs almost a month of daily training to form (a new neuronal network). The problem is that the young people of “the digital age” are more and more absorbed in the virtual space and less willing to devote physical time to study routine exercises that require a lot of time, patience, and

²⁸ “We are more subject to our biases and prejudices than we might realize. And these biases play an important role in coping with the enormous wave of information that overtakes us every day. The human mind does an outstanding effort to withstand this ood of information... To deal effectively with this ood of information, we unconsciously and unintentional use lter mechanisms such as the confirmation bias. The confirmation bias helps us to process information by looking for and interpreting, information that is consistent with our existing beliefs. This helps us in our decision making, but this often results in ignoring inconsistent information. The task here is to consciously switch off our autopilot thinking at times and to question seemingly clear circumstances more deeply, and logical to make more conscious decisions.” (Schuckmann, op.cit.)

²⁹ Simon, Stefania, op.cit.

alertness. While becoming addicted of their electronical devices, their ability to concentrate has dropped drastically and they can keep their attention and curiosity awake for a relatively short time, after which a state of fatigue, boredom, reactions on auto-pilot sets in... That is a mental atmosphere totally unfavorable to learning or studying. You must be passionate and in love with what you do, or very ambitious, to find the motivation to turn off all electronic devices and stay active, awake, and available in the study room for several hours, training your body and the mind for a performance career. "The boundary between what all our ancestors perceived as reality and the virtual world is becoming more blurred. Virtual reality tends to colonize physical reality or even subordinate it. We already spend more time in the digital dimension of our existence (for business, studies, or relaxation) than in the physical one."³⁰

Unlearning and Relearning

In our days, unlearning and relearning are just as important as learning. It's no longer about continuous, acquisitive learning. Unlearning is giving up what is no longer true, or relevant, or helpful. In the dynamic process of learning - unlearning is one of the most difficult moments, especially if we talk about singers and body reflexes formed for breathing management or for the sound emission mechanisms.

If in a piece of music, you memorized a passage or entire phrases incorrectly, you can go through the unlearning and relearning process to correct it. You must split everything: to break down each phrase into its smallest component parts, to work sound by sound if necessary to (re)construct a passage, to study each part separately, to correct it and then to re-unify the entire musical phrase. With the help of concentrated training, patience, and acuity, you can restore the justice of a passage/phrase and relearn it correctly.

As for wrong reflexes in the breathing or emission mechanisms, that involve the participation of the body in singing process, their unlearning is much longer and more difficult.

The rewriting of correct reflexes can only be done after the subject has realized which habits are wrong, useless, or potentially damaging and he/she consciously wants to change them. It is very difficult to modify an old neural network (an already formed reflex), which performs certain commands in the body on auto-pilot-mode. But the good news is that nothing is impossible. We can learn at any age, and recent neuroscience studies talk more and more about the neuroplasticity of the brain and its ability to form new neural networks and new habits. However, a lot of will, perseverance and conscious

³⁰ Bachonschi, Theodor, op.cit, p.69.

training, with clear mental commands, capable of creating answers and new mechanisms in the body are necessary. “Unlearning is not about forgetting what we know, but it’s rather the ability to choose an alternative mental model in which we operate. If we want to learn and grow steadily, we must step out of our often-unconscious mental models. We must get over old convictions and embrace new information which doesn’t always fit in our existing thought pattern. A fundamental part of this learning journey is recognizing our biases and mental models. We must acknowledge other ways of thinking and other opinions. To learn, we must be ready to be challenged by others through conversations and unlearn our current ways of doing things or the way we think. When we achieve this, all paths are open to us to be successfully prepared for the future. But unlearning is an uncomfortable endeavor. Unlearning requires us to get out of our comfort zone and we all know how hard this can be and how unsafe that can feel.³¹ So, unlearning demands a very aware and courageous attitude. It is an approach reserved for truly mature people, aware of themselves, willing to evolve and reach a higher level³² in the profession they practice or in their abilities and state of consciousness and presence in the world.

Unlearning process is not identical to U-shaped learning³³, when information forgotten by the brain is recalled or rediscovered after a while in a new light. Unlearning is a difficult process, achievable in full awareness, in an active and conscious mode.

Unlearning Process Tips & Steps:

- Be open. Renew your mindset, be open to being challenged and to unlearn.
- Look for what is unfamiliar.
- Challenge your confirmation bias, mental models who can make you less open to discovering new ideas and ways of doing things.

³¹ Schuckmann, op.cit.

³² “The aim is to get out of our cozy comfort zone and thriving towards the growth zone which will help us to set new goals and feel more at ease more often in your life. To go on the journey of personal growth we need to set new goals and find a purpose, which drives us in our daily actions. The challenge is to expand our comfort zone and getting into the learning zone to gain new experiences by keeping control and the feeling of security. This is a continuous tightrope walk, but worth doing it for our self-development.” (Schuckmann, op.cit.)

³³ “U-shaped learning is a learning behavior in which the learner first learns something, then unlearns it and finally relearns it. Such a behavior, observed by psychologists, for example, in the learning of past tenses of English verbs, has been widely discussed among psychologists and cognitive scientists as a fundamental example of the non-monotonicity of learning. Previous theory literature has studied whether U-shaped learning, in the context of Gold’s formal model of learning languages from positive data, is necessary for learning some tasks.” (Carlucci, Lorenzo; Case, John; Jain, Sanjay; Stephan, Frank, *Memory-limited U-shaped learning*, Lecture Notes in Artificial Intelligence, Springer-Verlag Berlin, 2006, p.244)

- Do things differently and try new behaviors.
- Be aware and present here and now: shut down the auto-pilot-mode!
- Develop a growth mindset.
- Use your mistakes as learning opportunities.
- Learn from others and engage in meaningful discussions, dialog and feedback.
- Write your ideas.
- Be consistent, experiment the new ways and create new reflexes in the body.

In the training experience of singers, very often there are mistakes or habits acquired incompletely or wrongly, which over time make their effort ineffective or can even cause irreparable damage to the vocal cords and dramatically impact vocal longevity. Referring to the breathing of singers, here are some defects that must be discovered:

- Mouth breathing. Although in singing we breathe through the nose, through the mouth or mixed, the healthy and preferable one is breathing through the nose (see James Nestor).
- Clavicular (chest) Breathing - Superficial breathing³⁴, at the level of the chest and shoulders, when the singer allows shoulder girdles and clavicles to rise as he/she breathe. This method of breathing causes chest displacement, collapsing of the sternum, and a loss of contact between upper and lower torso muscle groups. There should be minimal displacement of the chest during inhalation (including breath renewal) and during phonation. The rib cage should not collapse at the end of every phrase. Though the upper body should not remain rigid, it should retain its 'noble' position throughout the breath cycle."³⁵ Clavicular breathing is often accompanied by poor body posture and body tension.
- Mistakes in the inhalation and the direction of breathing (clavicular breathing; abdominal breathing) and in air support techniques, which can be unnatural to the body, unhealthy, and ineffective.
- Lack of support: Lack of control over the exhalation of air – which can lead to many anomalies, from the shortening of musical phrases, faulty intonation, capretto or too wide vibrato, premature wear of the voice, inability to make nuances, rigidity in leading the voice, inability to achieve

³⁴ "About breathing, I'm sure you don't have to breathe high. I am not a singing teacher, but I know that it chokes you. You have to breathe lower, completely with the diaphragm. It's easy to say and hard to do, of course, but that's the basics of any good technique." (Callas, Maria, *Leçons de chant, Master classes a la Juilliard School 1971-1972*, transcrites par John Ardoin, Les Maitres de Musique, Fayard/ Van de Velde, 1991, p.119)

³⁵ O'Connor, Karryn, op.cit.

passages of coloratura and to approach a wide repertoire. “As the diaphragm controls how quickly we exhale our breath, our goal is to learn how to slow this process down. If exhalation occurs too quickly it can create tension as we won’t have enough breath to make a solid and consistent sound. This is where many vocal technique problems occur, and these problems are often referred to as lack of support.³⁶

- Tension in the body is not desirable in singing – it leads to forcing the voice, straining, lack of malleability in the sound and decreases the efficiency of breathing. The lack of training of the abdominal muscles and the rib area – who are responsible for correct support – leads to a poor use of them and the choice of alternative, defective ways of support (frowning of the eyebrows and forehead, tightening of the cervical, abdominal and trunk areas, stiffening of the mandible, or tightening of the tongue). In the end, all this can produce too much pressure and damage to the vocal chords... “In well supported singing, there is a complex balance between relaxation and antagonism between the various muscle groups that support the breath. Breathing for singing does require relaxation. Singers cannot support their voices well while there is excess tension in their bodies, or if they are attempting to force their breath out in unnatural ways.”³⁷
- Overventilation. It is useful for singers to learn to sing with less air, consuming it until the end. Thus, they will not be tempted to inhale too much air or to take additional air over the already existing and not fully exhaled air from the lungs.

The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn.³⁸ Flexibility in learning is not a skill available to everyone. The willingness to learn decreases considerably in many people after a certain age. And the content of knowledge assimilated and repeated endlessly creates mental and behavioral patterns that people tend to attach to and confuse over time with their own thinking. A constant reevaluation of knowledge, biases and mental models is fundamental for those who want to truly explore reality. A confrontation and humble acceptance of one’s own ignorance can be the way out of a blockage. Usually, this reevaluation occurs when a deadlock is reached: when the results are not

³⁶ Peasgood, Emily, op.cit.

³⁷ O’Connor, Karryn, op.cit.

³⁸ The original quote belongs to American writer Alvin Toffler (1928–2016): “By instructing students how to learn, unlearn and relearn, a powerful new dimension can be added to education... Tomorrow’s illiterate will not be the man who can’t read; he will be the man who has not learned how to learn.” (Toffler, Alvin, *Future Shock*, 1970)

what was expected, the evolution stagnates or, in more serious cases, some diseases have set in - affections of the vocal cords or the phonatory system. In this case, a temporary break of the vocal training helps the singers; sometimes this is also necessary for recovery from various occupational diseases, caused by the wrong use of the vocal instrument. An evaluation of the stage in which they are and of the causes that led to the various problems that arose – is necessary.

The next step, relearning, involves resuming the research and training process, with an open mind and the determination to re-approach the desired target, from another perspective, with other methods, exploring with other techniques.

As I wrote above, in the case of singers it is double training: mental and physical. Then fixing the re-learned information can be done by helping your body to assimilate through a sufficient sleep, physical exercise, or short walks; teaching or telling other people about the things we have just learned.³⁹

Conclusions

As in any human activity, there are good and bad habits on singing-breath. The current article focused on the availability of continuous learning, which inevitably involves re-evaluations and optimization of knowledge and unlearning of possible wrong habits that lead to wrong breathing manners.

Taking on the process of discovering and recreating new skills and reflexes may become necessary at certain stages of the training of a professional singer. As for continuous polishing of the breath technique - this is a work in progress for a lifetime, even when the singer has reached high levels in his artistic career. This perpetual training is necessary because the human body is a living organism that has daily state variations, and with time it inevitably ages. This fact brings permanent challenges to the singer, forcing him to constantly adapt to new conditions. The lung capacity and the flexibility of the thoraco-abdominal muscles decrease with age, which destabilizes the breathing mechanisms in singing.

³⁹ “A very useful trick is sleeping well and long enough, at least 8 hours a night even as adults because sleep facilitates this transfer of information from short-term memory to long-term memory. Physical exercise or short walks can also be efficient, as there are several case studies with famous thinkers who used to take walks during their creative work breaks. One of the most important strategies can be teaching or telling other people about the things we have just learned. The social process of passing on information helps people learn much deeper because anything we live in a tribe or group has a bigger impact when it comes to learning than what we live alone. In a large-scale context, we should change our perception and relationship with the subject of learning.” (Simon, Stefania, op.cit.)

A common cold for an ordinary person can be a small disaster in the life of a singer, sometimes forcing him to cancel opera performances or concerts for the preparation of which he sometimes worked for months. The good news is that a good breathing and support technique, doubled by constant training, can significantly help the singer to cope with these daily fluctuations in his body's condition, even in illness (when they are not too serious).

A mindset oriented towards knowledge, experimentation, and improvement; open to the idea of learning & unlearning; passionate about art and confident in his ability to evolve, but aware of his own level of ignorance and vulnerability - this is necessary for the contemporary singer, who lives in a constantly changing world.

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