



Breath of Life - Pranayama: Its Uses and Benefits For the Practice Room, Studio, and Stage

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Vocalists are aware of the importance of breath to their art. They spend years fine tuning their breathing mechanism. Due to many factors that include stress, mental health, or physical illness and injury, one may find a lost sense of connection to the breath. Including the ancient yogic practice of pranayama in the vocal regimen can be vital to a vocalist's well-being as an artist and as a human being. Pranayama strengthens the connection between body and mind. It promotes relaxation and mindfulness. Pranayama also aids in healthy lung function, blood pressure, and cognitive abilities. These are all important factors in a vocalist's physical and mental ability to sing and perform.

As one investigates pranayama and considers it as a part of their vocal routine, it is important to understand its roots and functions through the yogic perspective of the subtle energetic body. Equally beneficial is exploring the studies and research into pranayama conducted by modern science. There are many different pranayama practices. The research done for this paper and resulting presentation focused on *Belly Breathing* or *Diaphragmatic Breath*, *Bhramari* (Humming Bee Breath), *Nadi Shodhana* (Alternate Nostril Breath), and *Ujjayi* (Ocean Breath).

Pranayama Through the Yogic Perspective

Yoga is derived from the sanskrit root *yug* which means "to attach, or yoke." It can be translated as "union." One may continue this translation of unions to include the body and mind, the body and soul, and the individual self with the universal self.¹

A Brief History of Yoga

Yoga is an ancient practice first mentioned in the Vedic Period (roughly 1500 to 800 BCE) specifically in the Rig Veda, a collection of Sanskrit hymns. In this period, yoga is a ritual practice. As the centuries passed, yoga moved inward and became more of a way of life as opposed to ritualistic and religious practice. In the Classical Period (roughly 500 BCE to 800 AD) *The Yoga Sutras* compiled by the Sage Patanjali established the "Eight Limb Path" or "Ashtanga Yoga." The *Sutras* are a collection of one hundred and ninety-five verses.² Sri Swami Satchidananda in his *Translation and Commentary of the Sutras* describes them as concentrated and terse. They are a practical handbook. They are to be practiced. Practice is the most important factor in yoga. Within the space of these short sutras, the entire science of yoga is clearly delineated; its aim, the necessary practices, the obstacles along the path, their removal, and the

results. Each limb leads to the next on the journey of enlightenment.³ Pranayama is the fourth limb of this path.

1. *Yamas* - Restraints outward or one's interaction with the world - sometimes considered the equivalent of the "Golden Rule"
2. *Niyamas* - Inward observances and self-discipline
3. *Asana* - Physical postures
4. *Pranayama* - Breathing techniques
5. *Pratyahara* - Withdrawal of the senses
6. *Dharana* - Concentration
7. *Dhyana* - Meditation or contemplation
8. *Samadhi* - The state of ecstasy, enlightenment, and the connection to the divine.⁴

Within the Post-Classical Yoga Period (800 to 1700 AD) is the text, *The Hatha Yoga Pradipika* by Swami Swatmarama written in 1350. It expands upon the *Sutras* and focuses on asana, pranayama, mudras, and samadhi. Both texts are main staples in modern yoga teacher training and highly influence modern practice.⁵

What is Pranayama?

Pranayama is the union of two words in Sanskrit, *prana* and *ayama*. In *Essential Pranayama*, Jerry Givens describes prana as "the animating life force energy within all things."⁶ In *Light on Pranayama*, the great yoga teacher, B.K.S Iyengar, translates it as "the energy permeating the universe at all levels." Ayama means to stretch, extend, expand, lengthen, prolong, and control. Literally translated, pranayama means to extend life force energy.⁷

According to yogic teaching, the direct channeling of prana heals the body and the mind. It can boost the immune system, it clears the mind, and it helps access the wisdom within. *The Hatha Yoga Pradipika* states the following from the second chapter:

When the breath is disturbed, the mind becomes disturbed. By regulation of breath, the Yogi gets steadiness of mind.

As long as there is breath in the body, there is life. When breath departs, so too does life. Therefore, regulate the breath.⁸

The Subtle Energetic Body

Ancient yogis understood that better breathing meant a better and healthier life. The four aspects of the breathing cycle within pranayama are:

1. *Puraka* - Inhalation
2. *Rechaka* - Exhalation
3. *Antaranga Kumbhaka* - Retention after inhalation

4. *Bahiranga Kumbhaka* - Retention after exhalation.

The movement of prana is visualized through the subtle energetic body with the concept of the *vayus*, the *nadis*, the *chakras*, and the *bandhas*. There are five main movements of prana in your body called *vayus* (translated to wind) that manage your overall system:

1. *Udana Vayu* - The upward and outward movement of energy which governs enthusiasm, inspiration, expansion, and ascension and is affected by controlling the inhalation of the breath and any retention of the breath after inhalation
2. *Prana Vayu* - The inward and upward movement of energy which governs the intake of prana into the body, as well as inhalation, eating and drinking, sensory impression, and mental experiences and is affected by controlling the inhalation side of the breath and its capacity in the body
3. *Samana Vayu* - The assimilating, inward-spiraling movement of energy which governs the assimilation of food, oxygen, and all experiences into the system and is affected by balancing the lengths and capacity of both inhalation and exhalation
4. *Apana Vayu* - The downward and outward movement of energy which governs the elimination of waste, exhalation, energetic grounding, childbirth, and the removal of negative emotional and psychological experiences and is affected by controlling the exhalation side of the breath
5. *Vyana Vayu* - The expanding and circulating movement of energy which governs the circulation of nutrients in the blood and bodily fluids, emotions and thoughts, and engagement in the wider world and is affected by controlling the capacity of both inhalation and exhalation.

Sometimes these movements can be lacking when there is not enough prana in the body. Through pranayama practices, one can increase the prana in the body and dictate the movements of energy that need more pranic support.

The *nadis* or channels are visualized as thousands of fine, wirelike structures that conduct prana throughout the body like the function of blood vessels or the body's vast network of nerves.

There are three main nadi within the body:

1. *Ida* - Terminates at the left nostril, oversees feminine energy, is cooling and receptive, and is the activating channel of the right hemisphere of the brain
2. *Pingala* - Terminates at the right nostril, oversees masculine energy, is heating and active, and is the activating channel of the left hemisphere of the brain
3. *Sushumna* - The central channel located at the center of the spinal column and when prana flows evenly throughout the other two nadis, it can then enter this channel which allows consciousness to flow through the *chakras*.

Using the logic of the *vayus*, pranayama helps regulate and control the movement of prana through the *nadis* and brings prana to the *chakras* in need.

The *chakras* are visualized as tiny spinning vortices throughout the body containing prana. There are seven main chakras that run along the path of the Sushumna Nadi. The first six are intersection points of the Ida, Pingala, and Sushumna Nadis:

1. *Muladhara* (Red - Root) - It governs the need for basic stability, survival, tribalism, and overall safety
2. *Svadhithana* (Orange - Sacral) - The center of preference which governs attraction, repulsion, creativity, sensuality, sexuality, rejuvenation, and delight in the senses
3. *Manipura* (Yellow - The Navel or Solar Plexus) - It is the seat of fire and clarity which governs self-esteem, empowerment, confidence, commitment, and decisiveness
4. *Anahata* (Green - Heart) - The spiritual center where no pain can enter which governs compassion, acceptance, forgiveness, joy, peace, and wisdom
5. *Visuddha* (Blue - Throat) - The seat of truth which governs communication, reason, self-expression, and truth
6. *Ajna* (Indigo - Third Eye) - The seat of intuition and higher knowledge which governs cognition, visualization, imagination, perception, clairvoyance, and intuition
7. *Sahasrara* (Violet - Crown) - The point of transcendence which governs connection to divinity, cosmic consciousness, transcendence of space/time, and boundlessness.

The bandhas or energy locks are perceived as ways to collect and concentrate prana energy in the body. This helps direct prana through the nadis to specific chakras or to change or direct the vayu.

- *Jalandhara Bandha* - The chin lock, which caps energy at the throat and is engaged in inhalation
- *Uddiyana Bandha* - The navel lock which collects energy in the core of the body and is engaged with exhalation
- *Mula Bandha* - The root lock which caps energy at the base of the torso and is easiest to engage in exhalation.⁹

Pranayama Through the Modern-Day Scientific Perspective

Science now corroborates what has been passed down from ancient yogic teachings. Numerous studies show consciously controlling the breath can have beneficial effects. This includes:

- Regulation of the nervous system
- Mental and emotional wellbeing
- Mindfulness
- Efficient digestion
- Respiratory function
- Immunity response

- Cardiovascular health
- Body awareness.

These are not cures but are meant to assist in one's overall care program. The paper and presentation highlight a few of these benefits and why they are useful for vocalists and teachers of singing.

The Autonomic Nervous System

The Autonomic Nervous System (ANS) is the part of the nervous system that controls involuntary functions throughout the body. The ANS is divided into two functional systems:

1. Sympathetic Nervous System (SNS)
2. Parasympathetic Nervous System (PSNS).

The SNS is known as the “fight or flight” or “stress” response because it helps one deal with stressful situations. The PSNS is known as the “rest and digest” or “relaxation” response because it creates a restful state of optimal function.¹⁰

Pranayama and the Vagal Response

The vagal response is the stimulation of the vagus nerve, which runs down along the anterior portion of the spine from the brain to the internal organs. When this nerve is stimulated, a signal is sent to the brain to reduce blood pressure and calm the body and mind, reducing stress and helping to manage chronic illness. For instance, when the fear center of the brain, the amygdala, is agitated it triggers the SNS and the “fight or flight” response. Once triggered, the response can last at least twenty minutes. According to Internist, Dr. Mladen Golubic at the Cleveland Clinic's Center for Integrative Medicine, when in this state one takes shallow chest breaths, sometimes halting the breath completely.¹¹ Ann Swanson, Certified Yoga Therapist and Mind-Body Science Educator, notes that consistently high levels of the stress hormone cortisol are related to increased amygdala activity and decreased hippocampus activity (the brain's memory center). When under these conditions, the hippocampus does not grow new neurons or connections well. Yogic practices, including pranayama, are shown to reduce cortisol levels and reverse these effects, which may contribute to improving memory. Pranayama promotes taking deeper and fuller breaths, especially allowing the abdomen to relax and expand. This stimulates the vagus nerve. The calming and stress-reducing response activates the PSNS. When the “fight or flight” response is calmed, one has more access to the prefrontal cortex of the brain, boosting the ability to think clearly and rationalize.¹²

While not every performer has experienced “stage fright,” many have dealt with a level of performance anxiety or have worked with a student who has. Anxiety can manifest on different

levels and in different situations, whether that be in front of an audience or as simple as answering a question in class. This anxiety can lead to shallow breathing, having an overall effect on the singer's ability to:

- Sing in tune
- Complete phrases
- Articulate diction
- Convey lyrical context of the piece(s).

The rise in cortisol levels can also affect the memory of the performer. Heather Lyle, states in her book, *Vocal Yoga*:

To be able to control these automatic reactions and sing, the performer has to first analyze his or her body's specific automatic responses. If you are unaware, you can become swept away in general, overall panic. It is important to begin learning how to mentally disconnect from the symptoms you experience, while watching the body's ANS in full swing.¹³

Pranayama promotes this awareness and gives a way to calm the mind.

The author coordinates and leads Vocal Colloquium at Valparaiso University. Vocal Colloquium is the public convening of students from each studio. It is an opportunity for regular performance, an exposure to a wide range of repertoire, a chance to observe a wider range of teaching techniques, and a weekly time to come together with others of common musical interest and problems to learn in a performance/laboratory setting. This past semester, she incorporated pranayama techniques. This was a result of many students not having performance opportunities on stage or in front of an audience for multiple years due to the Covid-19 pandemic. As the semester progressed, each student was able to come on stage, confidently announce themselves, and most importantly, access their breath to perform successfully. On their course evaluations, many students found that working on the breathing techniques gave them the means necessary to deal with anxiety about performing, or letting themselves move past a mistake that otherwise would have derailed a performance.

Pranayama and Respiratory Improvement

Studies show pranayama practice to be an effective way to enhance pulmonary functions, including increases in vital capacity, forced vital capacity, and peak inspiratory flow rate. Vital capacity is defined as a change in volume of the lungs after maximal inspiration followed by maximal expiration. Forced vital capacity is the maximum amount of air you can forcibly exhale from your lungs after fully inhaling. Peak inspiratory flow rate is the maximal flow rate, typically expressed in liters per minute.¹⁴

Pranayama's Possible Effect on Recovery from Respiratory Illness like Covid-19

To say Covid-19 has changed the world is an understatement. The effects range from respiratory to mental health, job security, social situations and interpersonal relationships. As the world continues to exist with Covid-19, health and wellness have been pushed to the forefront. The following information comes from Johns Hopkins Doctor of Physical Therapy and Clinical Specialist, Peiting Lien:

Covid-19 can lead to pneumonia and acute respiratory distress syndrome (ARDS). Recovering lung function is possible but can require months of therapy after the infection. Start simple - focus on breathing. Deep breathing exercises (like pranayama) can help restore diaphragm function and increase lung capacity. These breathing exercises can also lessen feelings of anxiety and stress as well as improve sleep quality.¹⁵

An interesting study published in the May 2022 *Journal of Ayurveda and Integrative Medicine*, shows a possible link between pranayama and immune response. In 2020, five hospitals located in India were included in the study. Two hundred eighty health care providers (HCP) began the study, and two hundred fifty completed it. All participants had comparable demographics and baseline characteristics. The study was comprised of two groups:

1. An intervention group which had twice daily pranayama practice done under the supervision of yoga instructors for twenty-eight days
2. The control group was advised to continue their normal daily routine, but no pranayama practice.

Each participant had to have a negative antigen test to begin. Participants who developed symptoms were given PCR or rapid antigen tests for confirmation of diagnosis. All participants were tested for antibodies to Covid-19 on the twenty eighth day to detect any asymptomatic infection. At the end of the twenty-eight days, nine participants in the control group developed Covid-19 while only one did in the intervention group. It is important to note that this study is over two years old, and the population has dealt with variants and sub variants of Covid-19. More studies will need to be conducted to show more substantial evidence.¹⁶

The author recently had a student contract Covid-19 in July 2022. This student is a 70-year-old woman who was fully vaccinated and boosted twice. It is assumed she contracted the Omicron sub variant of Covid-19. Her main symptoms were:

- Head congestion
- Fatigue
- Sore throat
- Headache
- Need to cough or a cough reflex when breathing.

After two weeks of including pranayama practice in lessons and personal practice sessions, the student reported the following:

- The lessening of head congestion
- Headaches less prominent
- An increased ability to take a deep breath without the sensation of needing to cough
- More resonance when speaking and singing.

The personal experiences of the author and the author's students furthers her understanding that pranayama can assist vocalists during their daily routines and in practice.

Body Awareness

In *Science of Yoga*, Ann Swansons explains two pathways:

1. Neurocognitive pathways (starting with mind then to the body) - Meditation, mindful movement, and intentional living increase your attention. Increased attention regulates your nervous system and helps maintain homeostasis efficiently
2. Neurophysiological pathways (starting with body then to the mind) - Yoga practices such as asanas, mudras, and pranayama, give you internal body awareness (interoception).

This interoceptive information affects your ANS which changes your thoughts and neural pathways, building your brain and improving self-regulation.¹⁷ For yogis and voice users alike, the internal body awareness, interoception, or kinesthetic sense, is used in practice of “body mapping.”

In the *Breathing Book for Singers*, Bonnie Draina writes about the kinesthetic sense and its relation to singing. She notes that to know what singers are doing while singing, they must pay attention to the kinesthetic sense. The kinesthetic sense receptors indicate if the muscles are contracting or relaxed, moving a lot or a little, easily or with effort. It offers information about the quality of the movements and the position and size of the body. For singers to be in top form, they must utilize inclusive attention.¹⁸ This can also be considered an aspect of mindfulness. When doing so, one allows the focus to flow easily from one point to another within a wider field of awareness that encompasses all the senses, including kinesthesia. Pranayama practice promotes this internal awareness. Being mindful of the breath, understanding it, the quality of inhalation and exhalation, is essential to vocal production.

The Practice of Pranayama

Precautions

As in any practice or activity, there are precautions to be taken into consideration. The author uses caution when introducing certain aspects of pranayama to beginning students. One of these is *Kumbhaka*. Kumbhaka is the retention or pause at the end of each inhalation and exhalation. The choice of words is important. She describes it as the pause or suspension between breaths. To add a musical context, she uses the analogy of it being like the space between notes. One should be:

- Mindful of gripping at the glottis
- Mindful of introducing it to students or themselves until mastering deep in and out breathing
- Mindful that kumbhaka can be done in stages and many pranayama practices can be done or started without it.

The author is also careful in using the concept of bandhas and the translation of them. As described earlier, bandhas are energy locks and are perceived as ways to collect and concentrate prana energy in the body. To a young singer, the idea of lock or grip can be very confusing and cause more harm than good. She chooses to use words like engagement or joining together of muscles. They are introduced gradually as a student becomes more practiced in pranayama.

Other precautions include:

- Respiratory illness
- Respiratory allergies
- Unregulated blood pressure
- A heavy menstrual cycle
- Pregnancy.

Some pranayama practices involve breathing vigorously, for instance, *Kapalabhati* or *Breath of Fire*. A practitioner who has high blood pressure, a heavy menstrual cycle, or is pregnant, should avoid these vigorous breathing exercises. Practice on an empty stomach.¹⁹ The practices highlighted were chosen for their safety and can be done without kumbhaka or use of a bandha, however if the sensation of lightheadedness or dizziness occurs, please take a break.

Requirements or Equipment Needed

One does not need to have a special yoga room to practice. It is recommended to allow:

- Space
- Time
- Patience

- Consistency
- Comfortable clothes.

Possible equipment or props can include:

- Yoga mat
- Towel
- A bolster or pillows
- Chair or yoga ball.

Each of the highlighted pranayama practices may begin without breath counts (planned time ratios such as inhale for four counts, exhale for six counts.) As the practitioner progresses, breath counts are highly beneficial. The exhale count may start the same as the inhale count. However, it is the goal to extend the exhale. This is very useful to vocalists as an extended exhale is what one aims for in phonation and phrasing.

Belly Breath or Diaphragmatic Breathing

This is a foundational breath practice and the practice the author uses to begin with any student. It can be done seated or in a supine position. When in a supine position, the asana, or posture recommended is *Savasana* (corpse pose) or *Modified Savasana* with props.

This pranayama is like Janice Chapman’s *SPLAT* technique. She uses diaphragmatic/belly-release inhalation or “Singers Please Loosen Abdominal Tension,” because it does not recruit any expiratory muscles during the in-breath but relies on a flexible abdominal wall. This allows the diaphragm to descend quickly, fully, and efficiently. If one holds their abdominal muscles inward on inhalation, the diaphragm cannot lower, and breathing will be impeded.²⁰

Just moving your belly in and out is not deep breathing. Yoga teacher Judith Hanson Lasater states that another misconception of diaphragmatic breathing is that pushing out your abdomen during breathing practice is “diaphragmatic breathing.” She jokes “Isn’t all breathing diaphragmatic? Can you actually breathe without using your diaphragm?” The diaphragm is the central muscle involved in respiration. Like the heart, the diaphragm does its job virtually nonstop, twenty-four hours a day without fatiguing. It only rests very briefly after each exhalation. Your posture can affect how well your diaphragm functions. If you slump, your dropped chest impedes the muscle’s ability to move. Tucking and distorting the curves of your thoracic and lumbar spine can also interfere with breathing.²¹

Practice:

1. Place the dominant hand on the belly, promoting a natural breath, avoiding pulling the belly in or pushing it out

2. Continue this awareness for five breath cycles
3. Soften any clenching, gripping, or holding of abdominal and pelvic muscles
4. As the muscles continue to relax, one may notice a sensation of the breath gathering in the belly, achieving the sensation of “belly breathing”
5. Relax or quiet the movement of your rib cage and chest (avoiding clavicular breathing)
6. Allow the movement of the body to be the soft expansion and release of the belly region
7. Try for five to ten minutes.

Benefits:

- A sense of calm
- Stress relief
- Improved digestion.²²

Bhramari Pranayama

Bhramari in Sanskrit means a large black bumblebee. It gets its name because one hums on the exhale in this practice. It is recommended to do this pranayama in a seated position. This practice does not utilize retention of the breath or a particular bandha and is good for beginners. It may be done while performing the *Sanmukhi Mudra*.²³ A mudra is a term with many meanings. In this instance, it refers to a gesture or position of the hands.²⁴

Practice:

1. Raise the hands to the face and the elbows to the level of the shoulders
2. Place the thumb tips in the ear holes to keep out external sounds and be mindful of the pressure
3. Close the eyes
4. Bring the fore and middle fingers over the eyelids, drawing the upper lids down with the pads of the middle fingertips to keep out the light, keeping the eyes passive and receptive and press them gently with the fingers
5. Press the nostrils with the ring-fingertips to narrow the nasal passages for slow, steady, rhythmic, and subtle breathing
6. Keep the little fingers on the upper lip to feel the flow of breath
7. Using the diaphragmatic breath technique, take a slow inhale
8. On the exhale, hum on a comfortable pitch
9. Try for five minutes.

Benefits:

- Calming
- Stress relief
- Mental clarity
- Improved cognitive functions

- Lowered heart rate
- Improved sleep.^{25,26}

A study from the September 2020 issue of the *Indian Journal of Otolaryngology and Head & Neck Surgery* found that this specific pranayama raises nitric oxide levels. Nitric oxide is anti-inflammatory and contributes to nonspecific host defense against infections. Nitric oxide improves the ventilation-perfusion ratio in the lungs along with relaxation of the bronchial tree smooth muscles, resulting in increased oxygen uptake and relief in bronchial asthma. It is the humming that increases the production of nitric oxide. It also acts as a sonic cleanser.²⁷ The author finds Bhramari pranayama useful as a vocal warmup because of this same humming.

Nadi Shodhana or Alternate Nostril Breathing

As presented earlier in regard to the subtle energetic body, the *nadis* are a tubular passageway for prana. *Shodhana* means purifying or cleansing. The full name can be translated as purification of the nerves.

Alternate Nostril Breathing employs two cycles of breath:

1. *Surya bhavana* - Which consists of inhalation through the right nostril and exhalation through the left nostril
2. *Chandra bhavana* - Which consists of inhalation through the left nostril and exhalation through the right nostril.

It is recommended to do this practice seated in a comfortable position. It may be done with or without planned kumbhaka (breath retention). There is a natural retention as the practitioner switches fingering for each nostril. This practice may also be done with a subtle jalandhara bandha by slightly lowering the head and stretching through the neck out the crown of the head. Nadi Shodhana also employs the use of the Vishnu Mudra.

Practice:

1. Establish the foundational diaphragmatic breathing technique first
2. Raise the right hand and bend the index and middle fingers into the palm
3. The thumb, ring and pinky fingers are extended
4. If this is uncomfortable, the ring finger may also be folded into the palm
5. Using the thumb, gently close the right nostril and inhale through the left nostril
6. Release the thumb and gently close the left nostril with the ring or pinky finger
7. Exhale through the right nostril
8. Keep the right nostril open and inhale
9. Release the left nostril and gently close the right nostril and exhale through the left
10. Repeat for at least six cycles
11. Recommended practice for 10 minutes.

Benefits:

- Brings balance to the body
- Mental clarity
- Improved focus
- Strengthened intuition
- Calming
- Stress relief. ²⁸

A study highlighted in the Yoga Alliance Continuing Education Seminar, *An Introduction to the Science of Yogic Breathing*, found that alternate nostril breathing, specifically left nostril, non-dominant breathing was associated with greater EEG (encephalopathy recording) power in posterior areas of the brain. This increased power has a history of occurring during eyes-closed conditions, relaxation, and restoration. This is associated with a subject entering a more restorative and meditative state. Yogic practices suggest, and scientific evidence demonstrates, that right nostril breathing is involved with relatively higher sympathetic activity (arousal states) while left nostril breathing is associated with a relatively more parasympathetic activity (stress alleviating state). This study finds alternate nostril breathing may affect overall cortical functioning.²⁹

Ujjayi Pranayama, The Ocean or Victorious Breath

Ud in Sanskrit translates as sense of superiority or power while *jaya* translates to victory. Ujjayi is known for the snoring sound produced resembling the sound of an ocean wave. Ujjayi can be done seated or reclined, with or without the use of kumbhaka and bandhas.

Practice:

1. Begin with exhalation
2. Establish the foundation of the diaphragmatic breath
3. Inhale through the nose and direct a stream of air to the back of the roof of the mouth and gently constrict the posterior wall of the throat
4. The throat passage is gently narrowed creating a gentle snoring sound
5. Take long, slow breaths noting the subtle sound and sensation in the throat
6. Recommended practice for 10 minutes.

Benefits:

- Calming
- Improved focus
- Improved circulation
- Balance
- Mental clarity. ³⁰

There are some precautions to take with Ujjayi pranayama. Too much focus has been made on the sound created as opposed to the process. Beginners often are encouraged to make a loud sound. This causes undue tension around the vocal folds and can be problematic and confusing for young or beginning students. Ujjayi should be practically soundless. A skilled practitioner should only have a faint sensation of vibration in the throat. Ujjayi should cause no vocal distress to the practitioner. If you are experiencing strain, reduce the volume or stop it altogether for a while.³¹ Because of these concerns, the author explored any existing research regarding the positive or negative effects of ujjayi pranayama for vocal users.

“Immediate effects of ‘Ujjayi Pranayama’ on aerodynamic, acoustic, and self-perception parameters of voice in teachers,” published in the *Journal of Ayurveda and Integrative Medicine*, acknowledges the already existing findings on ujjayi and hypothesize that this specific pranayama can bring change in the quality of voice in professional voice users with or without laryngeal pathology. The study looked for improvement in voice and its quality through practicing ujjayi by analyzing the acoustic, aerodynamic and self-perception of normophonic female participants who are involved in teaching children.

The study involved twenty female teachers aged twenty to twenty-five years, who were teaching a minimum of three years and who felt their voice quality was changing due to their profession. The exclusion criteria are as follows:

- Non-yoga practitioners
- No history of laryngeal pathology, asthma, allergies, or recent respiratory tract infections
- No intake of alcohol, smoking, or oral contraceptives.

The data was collected during the 5th-15th day of the menstrual cycle. The participants were instructed by the same researcher to first achieve deep breathing and then perform ujjayi breathing. They would perform the breathing with twelve cycles of three sets with a minute break in between each.

The participants underwent pre-recording of acoustic and aerodynamic parameters three hours after breakfast. Immediately following the pre-recording, they were instructed to do the ujjayi breath. During post recording, they were asked to do a self-perception test of a rating on a 4-point scale (0-3) based on ease of phonation or no strain. All participants were instructed to phonate on [a] [i] and [u] vowels.

Three trials each of all sustained phonation were recorded as voice samples before and after ujjayi. The best sample was used for analysis. Maximum phonation duration was calculated by taking the best of the three trials. Other parameters like forced expiratory volume, forced vital capacity, and peak expiratory flow were recorded with the handheld spirometer.

In this study, acoustic parameters improved in the post recording values. Mean values of

fundamental frequency and intensity increased compared to pre-practice of ujjayi. There was a decrease in the perturbation variables of jitter and shimmer in the post values, significantly the jitter percentage. They believe that this pranayama helps channel the breath and airflow, which results in a better voice quality with lowered perturbation parameters. The researchers also believe ujjayi can have the same effects as warm-up exercises for voice rehabilitation like straw phonation, effective in bringing down the tension and rigidity of the muscles.

As far as self-perception is concerned:

- 5% of the participants rated their experience as having no difference
- 10% rated their experience as improved ease of phonation
- 5% rated their experience as better voice
- 80% rated their experience as both easy phonation and better voice quality perception compared to before practicing ujjayi.

The researchers have concluded that the immediate effects of ujjayi are beneficial, with significant differences in acoustic variables such as intensity and jitter, along with decreased mean values of voice perturbations. There was improvement of maximum phonation duration, estimated subglottal pressure, laryngeal resistance, and conductance along with the self-perception test. They would like to suggest adopting ujjayi as a vocal warmup for voice rehabilitation. They acknowledge that further investigation should be planned on the long-term effects on voice, as well as studying other groups and different pathologies.³²

Breathing is a unique automatic function. Without it, there is no life. It is essential to vocal art. Without it, there is no voice. The breathing process continues whether or not one is paying attention to it. However, when learning pranayama and/or singing, the student discovers how to control this vital energy, as well as how beautifully dynamic breathing can be. Pranayama has many health and mental benefits shown both through the yogic perspective and teachings, and through scientific research. Adding the practice of pranayama as part of one's ongoing vocal and personal development will improve quality of life, resulting in the improved ability to learn, sing, and perform.

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