CHAPTER FIVE

VOICE CULTIVATION

1.1 INTRODUCTION

The Voice may be regarded as the first musical instrument known to man because he was endowed with it, even before the invention of instruments. It is a universal instrument of music. It is the only musical instrument common to all musical systems in the world.

The human voice is a delicate, sympathetic and perfect musical instrument according to a musician. It is a highly complex mechanism involving muscles of respiration, phonation and articulation. Unless all these muscles act in perfect coordination with each other, there will be problems in sound production. The human voice does not have a definite range and the range can be extended with practice. The shape of the resonators can be modified by muscular movements which enable it to make hundreds of phonetic sounds. One of the unique features of the human voice is that the size and shape of the resonators are under the conscious control of the performer, enabling him/her to produce variety of tone colors. No other instrument can duplicate the intensity of feelings the voice puts forth. The extreme flexibility of the control of the frequency, the timbre and the output in the voice make the instrument express all emotions.

According to Cicely Berry “It is obviously difficult to talk about voice in general terms, because the voice is absolutely personal to the individual, it is the means by which you communicate your inner self, and there are many factors both physical and psychological that have contributed to its making”.

A high quality voice is necessary for every singer in order to produce good music. It is a known fact that a good voice bears a tremendous impact on the listeners. In the musical literature also wherever the merits of singers are expounded, the possession of a good voice is considered as one of the necessary qualities of good singing. Therefore, it is very important for singers to keep their voice sweet and melodious at all times. It should be able to do more than merely produce
sounds. It must be capable of producing a wide range of controlled frequencies and be able to sustain them for the necessary length of time at various ornaments related to the particular style of music. The vocal mechanism is brought into complete obedience to follow the will of the mind through training.

This process of bringing the voice under control, looking into traditional and using modern scientific techniques is known as Voice Culture in the field of music. The methods of training of voice vary with the system of music. Voice culture in music is relatively a new term and has come up recently few decades ago. It is a branch of knowledge which deals with the techniques of right voice production. Musical study and vocal study are two separate things. Where musical study involves the science of music, knowledge of ragas, compositions, training of gayaki and complex rhythmic patterns Vocal study deals with the right way of voice production, flexibility of muscles and total health of the vocal apparatus. Voice Culture involves Traditional and Scientific Methods to improve the quality of the voice. Scientific methods of voice training need to be introduced for further improvement with our present day empirical methodology. The process of enriching the voice is known as Voice culture. It involves training the voice to sing or speak in a particular desired way. It is a procedure where one learns to master one’s voice. This study includes traditional and scientific methods to improve the quality of voice.

Narada Shiksha uses the word gatra –vina (bodily lute) in place of saritavina. In our Sanskrit literature Voice has been described very beautifully. The Sanskrit treatise Aitereya Aranyaka describes the voice as deyvivina or divine lute saritavina or bodily lute. The idea that the throat (mitaru or kanam) was considered as bodily lute is clearly stated in one place in Jivakachintamani as narampotuvina navinavinrat. The Sanskrit idea of considering throat or as vina was also accepted in the Indian literature. The voice commentator of Shilapadikaram explains miteru (literally throat) as kantappadal (the song of the throat) in one place and sarira vina in another place \(^2\). Jivakachintamani, also uses the term miteru and the commentator has explained the term as saritavina (bodily lute).

The voice consists of sound made by a human being using the vocal folds for talking, reading, singing, laughing, crying, screaming etc. The human voice is specifically a part of human sound
production in which the vocal folds (vocal cords) are the primary sound source. The vocal folds, in combination with the articulators, are capable of producing highly intricate arrays of sound. The tone of voice may be modulated to suggest emotions such as anger, surprise, or happiness. Singers use the human voice as an instrument for creating music.

Generally speaking, the mechanism for generating the human voice can be subdivided into three parts; the lungs, the vocal folds within the larynx, and the articulators. The lung (the pump) must produce adequate airflow and air pressure to vibrate vocal folds (this air pressure is the fuel of the voice). The vocal folds (vocal cords) are a vibrating valve that chops up the airflow from the lungs into audible pulses that form the laryngeal sound source. The muscles of the larynx adjust the length and tension of the vocal folds to ‘fine tune’ pitch and tone. The articulators (the parts of the vocal tract above the larynx consisting of tongue, palate, cheek, lips, etc.) articulate and filter the sound emanating from the larynx and to some degree can interact with the laryngeal airflow to strengthen it or weaken it as a sound source.

First of all, let’s look into the definition of Voice Culture and how voice culture is different from voice training? Or difference is only in using the term culture? Different voice experts had various views on this.

*Dr S A K Durga* – “Voice culture is science that involves scientific methods with traditional methods.”

*Prof B R Deodhar*, He has accepted it as a science – Voice culture.

*Dr T Unnikrishnan* – “It is a branch of knowledge, which deals with the technique of right Voice production”.

*Dr Ashok D Ranade* – His own approach towards voice culture is based on these findings on Anatomy, Physiology, Psychology, different branches in acoustics, and Yoga.
Ananth Vaidhnathan – “Voice culture is the unlocking of the natural potential of the human singing voice”

Fundamentally voice culture refers to the methodology adopted to train or control the voice to sing effectively. The dynamism, perfect control and freedom of the voice and the uplifting and inspiring effect of the performance. Voice Culture is based on Anatomy, Physiology, Psychology and different branches in Acoustics and Yoga. The entire vocalizing mechanism involves coordinated action of various muscles initiated by the brain combined with a sense of purpose to express a thought or idea. Voice culture is the coming together of an understanding of science (to a high degree) with the physical feel of the voice. We will have to understand the terms anchoring, focusing, erection and fusion of the voice itself. Voice culture is very important for all aspiring vocalists, from beginners to advanced practitioners. A beginner would face challenges very different from those faced by an advanced student. For example, a beginner would be more focused on singing in tune, understanding the pitch variance of various notes, and being able to hold a note steadily amongst other things. An advanced student faces issues such as voice fatigue, hoarseness, lack of clarity in singing and reduction in vocal range. To avoid or mitigate such issues a vocalist needs both a proper understanding of good voice techniques and an in depth understanding of his/ her own unique voice.

Scientific and theoretical issues and diagnosis of voice and what is defective voice/speech? What are the main causes of vocal/speech defects? What can be done to bring about improvement? How to stabilize these improvements? To recommend and teach specific voice/speech exercises and prescribe certain self study procedures is basically the purpose or aim of Voice Culture.

1.2 DIFFERENT SOURCES OF VOICE CULTIVATION IN ANCIENT INDIA

Voice is responsible for abstract creativity. A sweet, melodious, loud enough, energetic, smooth, steady, effective and flexible speaking or singing voice is always appreciated. Good voice helps to harmonize the head and the heart, Inner and Outer, manifested etc. It was seen as an excellent means for realization of God.
The singing voice is considered as the first instrument which can influence and rebalance the mind, bringing it back to its bright essence and open inner energies. Voice is the medium of communication and expression.

Hindu scriptures are the first in recorded history to mention vocal music or method of using the voice for music as a science. Indian Music possesses a special character of its own and it differs from music of other countries in its structure, temperament and method of improvisation and has the most striking feature of being a synthesis between these four things Philosophy, Psychology, Spirituality and Aesthetics. The science of vocal music was developed to a considerable extent from Vedic period and it is conclusively proven. The role of vocal music in ancient India was to assist in the performance of religious ceremonies. Even today most of the daily devotional duties of the Hindu are performed in chant or in rhythmical movements of the body.

Sarande\text{v} in his text Sangit Ratnakar (13th century A.D.) gave more than thirty qualities of the voice. He says that basically voice is of three types, which bear the qualities Kapha, Pitta and Vata. Further, he says, they can be combined into infinite qualities of mishraka (combination) out of which he has started only thirty due to limitation of space.

In ancient time the singer’s voice is denoted by the term Sarira. It has been defined as that which can bring out the beauties of a Raga without undergoing any training and has come out with the body is Sarira. The most ancient and authoritative Indian text which talks about good voice is NatyaShastra (around 200B.C.) by Bharat Muni, also called as Natyaveda. Bharat Muni has stated following six qualities of good voice for singers and actors, which are applicable to all of us.

\textit{Shraavakotha ghanah snigdo madhuro hyavadhaanavaan tristaanashobhItyevam tu shatkangasya guNaah smarataah}

\textit{Meaning} – voice which can be well heard (loud enough), well tuned and richly textured, smooth and that which is not harsh, is sweet and harmonious, a voice well tuned and a voice which is
balanced in all the three octaves and registers remember these are the six limbs or qualities of good voice.

**Sholakas on Voice**

Natyashastra by Bharatmuni;

1. hRdaattam (duraatu) shrUyate
yasmaattasmaacchraavaka uchhyate shraavakah susvar

2. arukshadhvanisanyuktah snighastajjnaih prakIrtitah
Maanapralhaadanakarah sa vai madhura uchyate

3. Svaredhike cha hIne cha hyaviraktovidhaanavaan
shirahkaNtheShabhihitam tristhaanamadhurasvaraih

4. TristhaanashobhItyevam tu sa hi tajjnaih prakIrtitah
Kapilo vyavasthitaschaiva tathaa sandaShTaevacha

Sangita Ratnakar By Sarangdeva ;

1. Chaturbhedo bhavechhabdah khaahulo naar Taabhidhah
Bombako mishrakashcheti tallakshaNamathochyate.

2. Kaphajah khaahulah snigdhamadhurah soukumaaryayuk
aadilla eSha eva proudashchenmandramadhyayo

3. Tristhaanaghanagambhirallnah pittodbhavo dhvanih
Naaroto bombakastu syaadantarnihrataayutah

4. paruShochchaistarah sthUlo vaatajah shaangIrNoditah
EtatsammishraNaadukto mishrakah saannipaatiakah
In ancient Indian text they use different Sanskrit name for musical voice.

**In Natyashastra**

Hrdaattam (duraattu?) shruyate Yasmaattasmaacchraavaka uchhyate Shraavakah susvrao yasmaadchchidrah sa ghanah smrtah

In Aitereya Aranyaka uses the term Daivi vina (divine lute) and Sariri Vina (bodily lute) to donote voice. Narada Siksha calls the voice by the name Gatra Vina (bodily lute).

The phenomenon of voice production has been explained in *Rig prathisakhya* as follows: When there is an effort (iha to speak) on the speaker, the air (in the form of) breathing Prana which is the emission (anupradhana) from the lungs (kostya) becomes breath or voice according to the aperture (Kha) of the throat (i.e. larynx) which is open or closed.

In *Taitterya pratisakhya* the statement

*Samvruti kante nadah kriyayate vivrute svasah*  

They also explain that when aperture is made to contract (*samvrute*) the sound or voice comes out whereas it is placed apart (*vivrute*) the breath comes out.

**Other Ancient Texts**

These are many other texts which talk about good voice and good song (ganam) which includes qualities of voice also. But all of them talk about same or similar qualities e.g., *Nsradaiya Shiksha, Paniniya Shiksha, Sangeeta Samayasara of Parshvadeva, Manasollasa* of Raja Someshwar, etc.

**1.3 VOICE PRODUCTION AND METAPHYSICS**
According to the metaphysical theory, the primal will of every being is said to reside in the Muladhara or Kundalini. This has been known as cosmic will by the Sankhya and Vedanta texts. The subject Voice production has been treated metaphysically in the Yogic, Tantric, Sankhya, and Vedanta texts. The Tantra philosophy describes figuratively this primordial will and makes it dynamic which is otherwise static. The Kundalini or the sleeping serpent awakens and comes upwards from the Muladhara to the throat. The Prana or air passes through the six Chakras which are described as centers of mystical power with petals. The HathaYoga shastra call them Satchakra (six wheels) and identify as temporal wheel. The six chakra are named as Muladhara or Kudalini or Siras, Svadhistana, Manipura, Anahata, Visudhdha and Agna. Each chakra is said to consist of 12,000 Nadis to communicate the feelings to the brain. The different chakras are different levels of consciousness. The will which rises upwards gets different experiences in the levels.

Sharandeva in his text Sangita Ratnakar, (13th Century) A.D.), has elaborated on the metaphysical aspects of voice and music. He explains how any sound is produced from subtlest to subtle, and from subtle to gross, i.e., from Para to Vaikhari. He has also explained the importance of Chakras in music. He has emphasized the necessity of knowledge and understanding of the depths and the nontechnical and nonmaterial view of music as a whole and its relative terms like Shruti, Grama, Moorchana, etc.

The production of sound as described by these ancient music texts can be summarized as follows; First in the subtlest part of our body is a desire is produced to produce a sound (in the brain). This gives inspiration to the mind. The mind stimulates the Agni (fire elements). The Agni i.e the fire, pushes and stimulates the Vayu i.e. the air element. This Vayu travels from the Brahma Granti (a knot in the Kundalini, at the Mooladhar) upwards crossing the paths of the Chakras. The subtlest form of sound is produced at Brahma Granti. This sound travels upwards from the different path. For Example:

1) Navel
2) Heart,
3) Throat
4) Head
They again travel downwards and are produced as Voice from the mouth. The subtest sound becomes grosser and grosser in this process, till it reaches the mouth where it becomes so gross that it can be heard by the normal human ear. This path of sound is from Para to Vaikharai through Pashyanti and Madhyama.

Like Sharangdeva, many renowned musicians of the ancient times have emphasized on the metaphysical aspect of music and its importance in learning music. Bharata in his treatise NatyaShastra, Pandit Ahobil in his treatise Sangita Parijat, Sangeetacharya Ramavtar Veer in his Book Bhartiya Sangeet ka Itihas, Pandit Vasant Madhav Khadilkar in his book Gandharva Veda are few examples among those who have also emphasized on knowing these practitioners of Yoga, and had a deep knowledge of many other sciences like Ayurveda, Sphotavada, Astronomy, Mathematics, etc. Their view to music was a holistic one. They emphasized that any musician or performer should have a thorough insight of all the aspects of Music the practical, theoretical and metaphysical, all together.

**Panch Karmendriya’s or 5 Motor Organs for Voice Production**

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<th>Jnanendriya</th>
<th>Karmendriya</th>
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Prithvi/Bhumi Gandha

Sound or Word which is termed as Nada by the Yogis is the quality present in any and every thing in this universe. This gives rise to the termed as Nada Brahma, which is used in the Upanishads. Thus,

Shabda
Sparsha= **Shabda** + Sparsha
Roopa= **Shabda**+Sparsha+Roopa
Rasa= **Shabda**+Sparsha+Roopa+Rasa
Gandha= **Shabda**+Sparsha+Roopa+Rasa+Gandha

**Aakash Mahabhoota** is present in all the five Mahabhootas. Let us extend this fact to the aspect of all sense organs, the Jnanendriyas to the storing and memorizing of sound by our brain. The senses of touch, seeing, taste and smell include the aspect of hearing in a subtle manner. Thus,

Hearing
Touch= **Hearing**+ Touch
Seeing=**Hearing**+ Touch+ Seeing
Taste=**Hearing**+ Touch+ Seeing+ Taste
Smell=**Hearing**+ Touch+ Seeing+ Taste+ Smell

This is how sound is stored in the brain by sense of touch, seeing, taste and smell.

Similarly, this fact extends to the actions of all motors organs, the Karmendriyas for voice production. The motor actions of hands, legs, Urino Genitals and Anus include the aspect of voice in a subtle manner. I.e. these organs also speak in a subtle language. Thus,

Voice
Hands = **Voice** + Hands
Feet = **Voice** + Hands + Feet
UrinoGenitals + **Voice** + Hands + Feet + Urino Genitals
Anus = **Voice** + Hands + Feet + UrinoGenitals + Anus  

This is how all senses and all actions, both voluntary and involuntary have a hidden Voice in them. That is why they are equally important in voice production.

**Nadis, Sthanas (registers) and Shruti Nadis:**

*Nadis* are energy channels in our Pranic body. They are numerous in number. Yogic texts claim them to be 72,000 in number. Among them 14 nadis are important.

The Indian texts have used the word *Sthana* for registers. Sthana, in Sanskrit means the residing place. Sangeet Ratnakar has briefed about these sthanas. The heart or hridaya is the sthana of *mandra saptaka* i.e. the middle octave and head or Mastaka is the sthana of *tara saptaka* i.e. the higher octave. The three Sthana were recognized during the period of Rig Veda itself. *Mandra, Madhaya and Tara.*

In *Panini Shiksha* and *Taittereya prathisakhya* Mandra tone comes out from chest, Madhya tone is come out from the throat, Tara tone is come from the head.

The terms Mandra, Madhya, and Tara are used in the sense of intensity and quality of the voice as low or soft, medium or normal and high or loud. They are also used in the relative signified. Paniniya Siksa says that in the morning the hymns should be uttered with a voice from the chest (low) which is deep toned as the growl of a tiger, in the afternoon, it should be read with a voice from the throat (medium) which will be like that of a chakra vaka, and in the evening it should be recited in the high pitch from the head (high) which will sound like the tone of peacock or hamsa reveals that the terms Mandra, Madhya, and Tara are used in the sense of intensity and quality.

**Shrutis** – At the heart sthana there are 22 smaller nadis branching from the *Ida* and *Pingala*. Air or Prana flows from these nadis, due to this friction 22 microtones called as *Shruti’s* are sounded.
Shruti, in Sanskrit means, that which can be heard. These can be heard by well trained ears or by developing inner awareness. Similarly, by the friction sound of the Prana from 22 nadiis each at the throat and head sthana, shurtis can be heard. All the 3 octaves thus have 22 shrutis each. At every chakra, there are thousands of nadiis branching from the Ida and Pingala. Though, sound is generated at each nadi, majority sound frequencies cannot be perceived at the gross level of Nada, the Vaikhari nada. This is the sound level useful for performance, expression and communication with the society. So for general and social use of speech and music, we can use only 22 shrutis, other shrutis and sounds are useful for self development.

**Merits and Demerits of voice in Ancient period:**

The merits and demerits of the voice are expounded in Shiksas, Sweetness, Clarity in pronouncing words, Fearless and Ability in time measures These are considered as merit of recites.

**Merits of Voice**

In Yagnavalka Siksa and Paniniya Siksa Narada Siksa gives the following ten merits for ganam which means the chanting.

- **Raktam** (harmonious)
- **Purnamalankrtam** (properly embellished)
- **Prasannam** (well composed)
- **Vyaktam** (clear and expressive voice with sweetness in producing high notes)
- **Vikrstam** (fullness in expression in both upper and lower in slow and fast rhythm)
- **Slaasanam samam** (even ness)
- **Sukumaram** (beauty) and
- **Madhuram** (sweetness)

These ten qualities are considered as merit of ganam or a vocalist. These qualities are very important for a vocalist and singing. In modern period also these qualities are considered as merit of a vocalist. Taittereya prathisakhaya also says that the tension, hardness and constriction of the
aperture causes the high note while the low note is effected by laxness, softness and widening of the aperture.

_Ayamo dharunyamanuta khasaityuccaih karani sabhddhasya_
_Anvavasargo mardhavamuruta kasyeti niceyh karani_ 17

Taitterya prathisakhya denote the resonators as pratisrutkani and urad (chest), sirah (head), mukham (face) and nasika (nose) are given resonators.

**Demerits or “Dosah” of Voice:**

Regarding the dosah or demerits of the voice or reciters, Yagnavalkya Siksa advocates the following 14 (fourteen) factors as demerits;

*Saikaitam* (shyness)
*Bhitam* (fear)
*_Udghostam* (very loud tone)
*_Avyaktam* (indistinctness)
*_Saunasikam* (nasality)
*_Kakasvaram* (throatiness)
*_Sirsagatam* (thin voice)
*_Sthan vivarjitam* (tone production in incorrect svarasthanas)
*_Visvaram* (harshness)
*_Virasam* (ugly)
*_Vislistam* (unevenness)
*_Visamahatam* (undue separation of words)
*_Vyakulam* (hastiness) and
*_Taluhinam* (lack of rhythmic ability) 18

_Guna Dosa according to “Natyashastra:“_
Bharata and Sarandeva are the two great luminaries who have dealt with the Guna Dosa of Sarira, and the others have more or less followed Bharata and Sarandeva.

**Guna (Merits)**

Bharata includes in his list of Sarira Gunas the attributes;
- *Sweetness* (Narada Siksa and Paniniya Siksa also include),
- *Steadiness* (Narada Siksa),
- *Richness* (Narada Siksa, Yagnavalkya Siksa and Rig Veda Prathisakhya) and *Brilliance* (Narada Siksa).

**Dosa (Demerits)**

Regarding the demerits of the voice Bharata gives these qualities;
- *Kaki* (Narada Siksa and Yagnavalkya Siksa),
- *Thumbi* (Narada Siksa, Yagnavalkya Siksa, Rig veda Prathisakhya), *Sandastakam* (Rig veda Prathisakhya and Paniniya Siksa) and
- *Kapilah* (Narada Siksa and Yagnavalkya Siksa).

**Sarma Dosa according to “Sangita Ratnakara”:**

Sarangdev gives the merits and demerits of the voice or Sariram;
- *Visvarta* (Narada Siksa and Yagnavalkya Siksa)
- *Kakitvam* (Narada Siksa and Yagnavalkya Siksa) and
- *Sthanaviccuith* (Narada Siksa and Yagnavalkya Siksa).

**Voice has four stages:**

Voice or Sound occurs in four levels and dimensions. These four levels of Voice relate to frequency, fineness, perceiving level and strength. The voice is said to consist of four stages *Para, Pasyanti, Madhya, and Vaikhari.*
Para, is in an atomic stage in the navel which is to be imagined. Para is also called transcendent sound.

Pasyanti, lies between navel and heart and twice the Para which is also to be imagined. It is also called the visualized sound.

Madhyama lies between breast and larynx which is audible if one closes the ears with the fingers. Madhyama is called the mental sound or voice. With even little practice of Music or Yoga, a common man can hear, understand and feel this level of Nada. To understand the concept of shruti, we should practice inner awareness to reach this level.

Vaikari lies on the topmost parts of the windpipe and this type is said to be used for the purpose of speaking and singing. It is called the coarse (ordinary, audible, material) sound. It is this level of Nada that is used in speaking or singing.

1.4 VOCAL STUDY AND MUSICAL STUDY

Vocal Study includes the following:

1. Study of the right Voice production techniques
2. Rehabilitation of voice
3. Voice Hygiene

Whereas, the Musical study involves the following:

1. The science of music
2. Variety of Ragas
3. Compositions
4. The training of complex rhythm patterns.

Traditional methods included Kanth Sadhana and Yoga whereas modern scientific methods include Physiology, Physics and Psychology.
When a trained Classical Vocalist sings by heart and soul, it becomes spiritual. There is no evidence of calculation, of carefully directed effort, of attention to the workings of the voice in the tones of a perfect singer and his composition. But, in the scientific way of Voice culture this semblance of spontaneity in the use of the voice can result only from careful and incessant attention to mechanical rules. That the voice must be managed or handled in some way neither spontaneous nor instinctive is the settled conviction of almost every authority on the subject. All the teachers and authorities of Voice Culture believe that this manner of handling the voice must be acquired by every student of singing or vocal music, in the course of carefully directed study. This training in the use of the voice is the most important feature of education in Vocal Music or singing. Fundamentally voice culture refers to the methodology adopted to train or control the voice to sing effectively. In Hindustani music we also call this Kantha Sadhana. Voice culture is a very important topic for all aspiring vocalists, be it beginner or advanced. A beginner would have challenges very different from an advanced student. For example, a beginner student would be more focused on singing in tune, understanding the pitch variance of various notes, and being able to hold a note steadily among other things.

These are basics of Classical Music;

1. Ability to sing in tune with the correct place of Swara and Shruti – A fundamental requirement.
2. Ability to sustain a note without wavering as long as possible. Good rounded tonal production throughout the range.
3. Ability to render ‘Gamakas’ and ‘Nuances’ with control and mastery at any speed.
4. Ability to traverse at least two and a half octave comfortably
5. Proper articulation of lyrics.
6. Since voice is the medium that translates the ideas from the brain into music, the actual flow of ideas need to happen effectively and could also be considered to be an essential aspect of voice training.

Scientific methods of voice culture include the traditional methods also to culturing the voice. A vocal musician has to exercise his vocal chords to bring them under the command of the musical impulses of the brain. Such exercises undertaken to make the vocal cord music worthy are
known in musical parlance as sadhana. Any determined effort focused towards attaining perfection is called sadhana.

The art of voice culture is necessary so as to bring out the smooth transition of notes, artistic twists and various tonal shades which are the principle requisites of good singing. A gifted voice also has to pass through the rigors of practice to gain proficiency to bring out the deep nuances abounding in the Indian classical systems of music. Bade Ghulam Ali Khan said –A voice is not just a readymade gift from the God, one has to earn it, polish it and gain absolute command over it by Sangeet Sadhana. Understanding of good voice techniques especially needs an in depth understanding of their own unique voice is absolutely necessary. Even an advanced student faces issues such as voice fatigue, hoarseness, lack of clarity in singing, reduction in range etc without a proper understanding of voice. The fundamental techniques for good voice production can apply effectively to all systems. Once the fundamentals are understood, we should then strive to work on the specific aspects of that music system and strengthen the foundations, awareness of the vocal anatomy and the highly integrated and coordinated actions of various physical processes that need to happen to sing effectively. In order to improve vocal technique, it is essential to understand the basic fundamentals of voice production and seek the help of a qualified voice teacher. The fundamental aspects of mechanics of the voice and some techniques advocated by various western voice experts with some links to relevant material, all these are covered by voice culture. Voice Culture embraces the correct management of the vocal organs. Vocal training has indeed come to be considered synonymous with training in the correct use of voice. Every method of instruction in singing must contain as its most important element some means for dealing with the problem of tone production. Vocal pedagogy is the study of the art and science of voice instruction. It is used in the teaching of singing and assists in defining what singing is, how singing works, and how proper singing technique is accomplished. A proper understanding of the structure and foundation of the physiological mechanism, acoustical principles of voice emission and psychological factors of the individual help to deduce scientific facts which would guide through the tangle of confusion which has beset the art of Voice Culture.

Vocal training is an important facet of a musician's career. In order to sing well a vocalist must be able to get the right intonations and sound without having to strain his voice. Almost every
successful musician has to undergo rigorous vocal training in his career. Correct method of Voice training is absolutely necessary to achieve perfection. It improves singing abilities tremendously. Just like a person trains and exercises his muscles to play football or cricket, the more a person trains his vocal cords, the better he or she will sound and perform. All these can be achieved by following a scientific way of Voice Culture regime comprising of various exercises. This voice building exercise is very similar to a body building exercise. This voice building exercise is very similar to a body building exercises. Just as an athlete or sportsperson who has to indulge in physical exercises to tame the body muscles and joints. The Voice training method in Indian Classical Music both in Hindustani and Carnatic is founded purely on the basis of traditional teaching. Hence Voice Culture is absolutely necessary for every dexterity through forced practice by means of Exercises and Technical forms until their voices becomes supple to produce what they intend to sing.

1.5 VOICE CULTURE AND RELATED ASPECTS

Voice Culture is a detailed analysis of the Physiological, Physics and Psychological aspects of the Voice as musical instrument. In fact, even the greatest singers cannot claim to be experts in the area voice culture, if they are not aware of the Vocal anatomy and the highly integrated and coordinated actions of various physical processes that need to happen to sing effectively along with the musical knowledge. In order to improve vocal technique, it is essential to understand the basic fundamentals of voice production and seek the help of a qualified voice teacher.

Voice Culture involves these Five important factors

These Five important factors are

1) Physiology or Anatomy,

2) Physics

3) Psychology

4) Yoga and
5) Music

**Physiology or Anatomy**

*Physiology* is about how the voice works. A vocalist should know the basics of Physiology of Voice. Then he can control and expand the voice according to the musical form or the singing style. Teaching voice should ideally be teaching the student to know his/her own voice well, what the options are and how to use them for a free and healthy sound. *Anatomy* is the parts of voice or voice box. A professional singer should know these basic Anatomy of the voice, because this is the first step in understanding how to care and maintain the voice throughout one’s professional career.

*Larynx*

*Pharynx*

*Trachea*

*Esophagus*

*Spinal column*

*Diaphragm*

*Vocal Folds or Vocal Cords*

**Physics**

*Harmonies*, it decides the quality of the voice and Timbre How the voice box works. The voice box or larynx is a funnel shaped organ held together by rubbery cartilage, it houses the vocal cords and throat muscles, and connects the base of the neck to an air tube called the trachea. Air from the lungs strikes the vocal cords to produce sound. Physical factors, decides the range of the voice, such as the length of the vocal tract (the distance from the larynx to the lips) and vocal cords.
**Psychology**

Next important thing is the mental fitness of a performer, because when the mental status of a Vocalist will be sound then he can give the best performance. Many disorders of voice and failure of successful performance are due to psychological reasons. One has to condition the mind to get rid of all negative aspects of mind. Techniques of Auto Suggestion, Visualization etc are incorporated to enhance the unconscious competence and also to build high self esteem.

**Yoga**

Indian music is always associated with Pranayam and Yoga. Proper yoga techniques can be used as remedies for voice disorders. All yoga techniques should be adopted under able guidance of an expert. Today Yoga is a very important and essential part of Voice Culture for Indian Classical music. It covers the breathing techniques and different breathing exercises very efficiently. Without proper breathing no one can sing long Aalap and Taan in Indian Classical Music, and Yoga is very helpful for this. Yoga is a solution to all these problems together, as it works on the body and the mind together.

**1.6 SPEAKING AND SINGING**

Singing can be defined as the musical expression of feeling through the medium of vocal organs and the organs of speech. The singing voice and the speaking voice are two very different kinds of vocal systems. While speaking is an action that doesn't need any conscious effort (Do not refer to speaking as in stage orations), singing does demand. The anatomy of speech and singing is the same. The difference lies in the physiology, the techniques of voice production for singing is more complex. Singing requires a more delicate control of the muscles.
Voice is produced by a physiological organ, which is used for both speaking and singing. But the technique of voice production for singing is more complex. Singing can be defined as the musical expression of feeling through the medium of vocal organ and the organ of speech. Our speaking and singing voice are created from the same exact anatomical structures. The respiratory system (lungs diaphragm and abdominal muscles), laryngeal mechanism (vocal folds, laryngeal cartilages, muscles and nerves) and the supra glottic tract (the spaces above the vocal folds, including the back of our throat, mouth, nasal passages and sinus cavities) all work to produce the beautiful sounds we make. Our speaking and singing voice sound almost identical and in our speaking voice the pitch range of singing also shows. But speaking doesn't require as much lung pressure as singing particularly in classical singing. Though we lack precise data as to when man began to sing, singing should have existed since speaking was known to man. In Greek philosophy singing is regarded as the first form of speaking. History reveals three transitional phases in the evolution of singing speech, speech song (or chanting) and singing. But the theories regarding the origin of singing supported either by psychological study or historical enquiry are only speculative and no definite conclusions can be attempted from the evidence furnished by them. Though the same instrument, voice, is used for both speaking and singing, the technique of voice production for singing is more complex. Singing requires a more delicate control of the three sets of muscles those of inspiration and expiration (respiratory muscles), those of phonation (intra and extra laryngeal muscles) and those of articulation (the muscles of tongue, jaw, lips and the soft palate). The great teacher of voice training Prof. Mackenzie has remarked that the difference between the act of speaking and singing is the same as the difference between walking and dancing. Voice production for singing consists of fifteen ingredients, the first twelve of which are equally applicable to effective speaking also: Breath. Effective control of breath is very necessary for both speaking and singing, though singing requires a much more delicate control.

*Flexibility* of the vocal mechanism and the speech organ should be flexible to enunciate the words and to produce the different musical phrases,

*Resonance,* Audibility and good quality are required for both speaking and singing which can be acquired only though proper adjustment of the resonators,
Mouth Shape, As the resonator influences the voice quality the mouth shape plays an important role in imparting quality to the tone.

Vocal range. The range is more limited for speech than for singing, however, speaking requires the vocal range to avoid monotony,

Inflection Vocal inflections are different for speaking and singing. Later the inflections become more elaborate and formalized.

Enunciation Clear diction is very necessary for effective speaking and singing.

Phrasing, Correct phrasing is required for speaking to make the sentence intelligible and effective whereas in singing in singing the careful phrasing adds beauty to the music of the singer,

Speed, Agility of the articulation organ and tempo influence the voice quality in speaking and singing.

Volume, Adequate loudness so as to reach a large audience is one of the important factors in speaking and singing, the carrying power of the voice and loudness depend upon pitch level, resonance adjustment and breathe control.

Hearing, Hearing plays an important role in production of voice for speaking and singing. It is the most vital means of stimulation. As hearing helps to regulate the pitch intensity and timbre of the voice, it acts as a guide,

Imagination, The brain is the integrator of active forces. The mental perception or imagery awakens the motor centre of the brain for the adjustment of the vocal mechanism. The mental perception of the words or tones is very necessary for an individual to utter a word or note. The vocal cords are more guided by the mental perception of the sound. In getting the proper resonance also imagery is required, Prolongation of vowel sounds; definite pitch relation and Dynamics are the three additional features of singing which gives the musical element.

Prof Frederick Husler explained the nature of the singing voice, In the introduction to their book called, Singing: The Physical Nature of the Vocal Organ, by Professor Frederick Husler and Yvonne Rodd Marling, Rodd Marling says, "Singing is a highly physical happening, a unique
form of communication produced by muscle movements set in motion by a fundamentally emotive desire to express beauty." Singing is a book that has been an inspiration to singers and their teachers throughout the world. The broad aspects of the technique and training are as follows: Singing, not speaking, is the nature of the voice. So voice engineering is a process of 'unlocking' the innate abilities in a voice existing by its very anatomical and physiological nature. The anatomical areas which are relevant to the working of the singing voice are the breathing apparatus abdominal, thoracic and clavacular breathing. The suspension system of the larynx the web of muscles which hold the larynx in place from four different directions and the implications of the consequent positioning of the voice box and the freedom of movement of the vocal chords. The vibration mechanism of the vocal chords and the membranes, their individual and conjunct working, and the implications on registers, timbre, sheen of the voice etc, the resonating system abdominal, chest, throat and head resonances.

Voice the amalgam of sound and mechanics. Modulating our voice means moving the pitch up and down. The alternative is to keep an even pitch throughout the sentence, which at best will sound odd and at worst dull, boring or confusing. The main difference that can be noticed in the use of voice for speech and song are isochronisms of vibration is never prolonged in speech so as to make it understandable as a musical note. Secondly the control of the breath flow is more delicate in voice production for song as the singer has to sustain a note for a long period and must execute lengthy musical phrases. Thirdly, in speech, only one third of the compass which lies below the centre of the complete vocal range is utilized whereas in song, the middle and upper registers which lie mostly above the centre of the compass are used profusely. In singing, a wide compass of two and a half octaves is made to use of whereas in oratory, the range of the voice extends only up to one and a half octaves. Fourthly, in speaking no fixed scale is adhered whereas singing does not exist, without a scale. In speaking the voice inflection falls in glides and is not controlled voluntarily whereas in singing, the vocal inflections and modulations are produced artistically through defined Steps or musical intervals. The quality of the voice in singing cannot be entirely different from the natural quality of the speaking voice. No doubt, the voice mechanism is the first put into use in process of speaking before a man attempts to sing. The speech organs therefore establish the development of singing. Distinct and clear articulation of vowel and consonants influence the quality of the voice in speaking. Singing also requires perfect articulation of vowels as they accompany the musical note throughout its length and good
pronunciation of consonants to enunciate the words of the song distinctly. The quality of the voice in speech and song is conditioned by the anatomical peculiarities, language, culture and civilization. Firstly, this instrument is fixed within the human body. Hence the physiology set up of the laryngeal mechanism, breathing mechanism and resonators plays a vital role in determining the quality of the voice. Secondly, the tonal quality is partly dependent upon the structure of the voice mechanism and partly on the way we operate the mechanism. The operational methods vary with the structure of the language. For instance, languages which contain more nasalized consonants call for the decided nasal resonance in tone production. As voice production is based upon motor act and becomes habitual by repetition, the abundance of nasalized consonants of that particular language tempts the person to phonate even the vowels with a nasalized tone. The habituation of speaking with a nasalized voice in turn influences the quality of the voice in singing. Research survey by the present writer on the influence of one's mother tongue on the influence of one's mother tongue upon the quality of the voice in singing reveals that fourteen persons out of twenty produce their voice in singing as the pronounce the vowels and consonants of their mother tongue. Sir Wilson also has illustrated at the Music Academy Conference at Madras in 1956 that how the language, French, Italian, German, and English influence the quality of the voice in singing. With a little care, one may improve the forms of pronunciation but the general habit are so deep rooted as to become part of acquired nature of the voice.

Hence it may be said that language and speech have an indirect impact upon the quality of the voice. Language and speech also affect the studying of songs where consonants are concerned. For instance, A Bengali whose mother tongue is Bengali which consists of more rounded consonants sings with rounded tone. A Keralite, those mother tongue is Malayalam, which consists of more nasalized consonants sings with nasal tone whereas a native of Andhra whose mother tongue is Telugu which contains more vowels sings with full throated richness without any nasality. A Tamilian pronounces the consonant ‘bha’ as ‘ba’ and ‘dha’ as ‘da’ because he is not used to pronouncing the Mahapranah (aspirates) which the Tamil language does not make use of. Lastly culture and civilization largely influence voice production. The primitive people produce their voice with hoarseness and only with the advancement of civilization; men are trained to use their voice in an artistic manner in speech and song.
1.7 DEVELOPING SINGING VOICE

Singing is a skill that requires highly developed muscle reflexes. Singing does not require much muscle strength but it does require a high degree of muscle coordination. Individuals can develop their voices further through the careful and systematic practice of both songs and vocal exercises. Vocal pedagogists instruct their students to exercise their voices in an intelligent manner. Singers should be thinking constantly about the kind of sound they make and the kind of sensations they are feeling while they are singing. Vocal exercises have several purposes, including

1. Warming up the voice extending the vocal range
2. "Lining up" the voice horizontally and vertically; and Acquiring
3. Vocal techniques such as legato
4. Staccato
5. Control of dynamics
6. Rapid figurations
7. Learning to sing wide intervals comfortably
8. Singing trills
9. Singing Melismas and
10. Correcting vocal faults

Developing the singing voice Singing requires a more delicate control over the muscles. These are the bare requirement for singing Effective control of breath, flexible speech organs, Adjustments of resonators, wider range, mental perception, etc. These are the features wherein the voice is trained. Voice production for singing consists of other features also, in which fields the voice has to be trained. They are like: The shape of the mouth, Effective pronunciation of the
words, adjusting the voice to different tempos or speeds, controlling of volume or amplitude as the background of presentation demands.

Vowel pronunciation is a very important feature of developing imaginative power to improvise. In the case of verbal communication skills, voice plays an important role. After all, one may be knowledgeable in their domain area but conveying their knowledge may seem like a mammoth task. This is the reason why as a part of communication skills training there is ample emphasis laid on voice culture. One aspect of culturing the voice is understanding intonation. This is the rise and fall in pitch, which occurs as we speak. There are various patterns of intonation. For instance, there is singsong, monotone, jump up and step down (JUSD), etc. When one intonates one puts music, melody and rhythm into the way they speak. In the book, *Dr. Mario Marifiotti* explain Caruso’s Method of Voice Production (1937) the scientific culture of the voice. These principles come from the Italian School of Singing and Voice Training called *Bel Canto* School. Dr. Mario Marafioti’s principles: from Caruso’s Method of Voice Production.

**First Principle** – Voice is speech, and is produced by the mouth, not by the vocal cords. The vocal cords produce only sounds (primitive vibrations) which are transformed into vowels and consonants by a phonetic process taking place in the mouth, and giving origin to the voice.

**Second Principle** – The full extension of the natural range of the voice is produced only by using the minimum tension of the vocal chords and the minimum breath required for each tone. This establishes a correct mechanism of voice production.

**Third Principle** Breath is an indispensable factor in voice production, but it is not the essential power which develops the voice as it is taught today. On the contrary, the function of singing develops the breathing apparatus and its power, just as any physiological function develops the organ from which it takes origin. Therefore, singing develops breathing, not breathing singing.

**Fourth Principle** Resonance is the most important factor in voice production. It furnishes to the voice volume and quality, and emphasizes it loudness. To rely on resonance rather than on force is essential for producing a big and pleasing voice.

**Fifth Principle** Speaking and singing are similar functions, produced by the same physiological mechanism; therefore they are the same vocal mechanism. The speaking voice acts as the
substantial factor of the singing voice and constitutes its real support. Singing, it its very essence, is merely speaking in musical rhythm; hence no correct singing can exist without a correctly produced speaking voice.

**Sixth Principle**

There are no registers in the singing voice, when it is correctly produced. According to natural laws the voice is made up of only one register which constitutes its entire range.

### 1.8 SCIENCE OF VOICE PRODUCTION

The anatomy and physiology of all the main organs of the human body related with the production of speech and singing. The anatomy of speech and singing is the same. The difference lies in the physiology. Singing needs far more complex coordination and functional abilities. The parts of the body which contribute to voice production are connected to many other parts of the body’s muscular and skeletal system, the way we align the whole body and the amount of muscle tension or relaxation in the body will influence the voice.

Voiced speech is produced by air streaming from the lungs through the vocal cords, setting them into an oscillating movement. In every oscillation, the vocal folds are closed for a short period of time. When the folds reopen the pressure under the folds is released. These changes in pressure form the waves called (voiced) speech.

**Role of voice organs in Voice production**

<table>
<thead>
<tr>
<th>System</th>
<th>Voice organ</th>
<th>Role in Voice production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air pressure system</td>
<td>Diaphragm, chest muscles, ribs, abdominal muscles, Trachea,</td>
<td>Provides and regulates air pressure to cause vocal folds to vibrate</td>
</tr>
<tr>
<td></td>
<td>Lungs.</td>
<td></td>
</tr>
<tr>
<td>-----------------------------</td>
<td>------------------------------------------------------------------------</td>
<td></td>
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<tr>
<td><strong>Vibratory System</strong></td>
<td>Voice box (larynx)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vocal folds</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vocal cords</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vocal folds vibrate, changing air pressure to sound waves producing &quot;voiced sound,&quot; which is frequently described as a &quot;buzzy sound&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Varies pitch of sound</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Regulates pitch of sound</td>
<td></td>
</tr>
<tr>
<td><strong>Resonating System</strong></td>
<td>Vocal tract: throat (pharynx), oral cavity, nasal cavities, sinuses, abdomen</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Changes the &quot;buzzy sound&quot; into a person's recognizable voice. Regulate the timbre' Texture of voice.</td>
<td></td>
</tr>
<tr>
<td><strong>Modifying System</strong></td>
<td>Oral Cavity (teeth, gums, cheeks, hard palate), lips, tongue, soft palate, pharynx</td>
<td></td>
</tr>
<tr>
<td><strong>Articulators</strong></td>
<td>Changes the phonated vowel to consonants. They modify The voiced sound. The articulators produce Recognizable words. Regulate language 33</td>
<td></td>
</tr>
<tr>
<td><strong>Sensory Input, receiving System</strong></td>
<td>Ears, all sense organs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hearing, listening, Perceiving</td>
<td></td>
</tr>
<tr>
<td><strong>Master Organ</strong></td>
<td>Brain</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Regulation and Coordination of all Sense and Motor Functions, Memory</td>
<td></td>
</tr>
</tbody>
</table>

Physiology is all about how the voice works. Air comes out of the lungs, through the trachea and into the larynx. The air makes the vocal folds vibrate. When the vocal folds vibrate, they alternately trap air and release it. Each release sends a little puff of air into the pharynx; each puff of air is the beginning of a sound wave.
Anatomy of voice, it is all about the Parts of voice or voice box. These are the most important parts of voice. Larynx, Pharynx, Trachea, Esophagus, Spinal column, Diaphragm, Vocal folds or Vocal cords are the most important parts of voice.

**The Larynx:** The larynx is positioned in the anterior neck, slightly below the point where the pharynx divides and gives rise to the separate respiratory and digestive tracts. Because of this location, the larynx plays a critical role in normal breathing, swallowing and speaking. Damage to the larynx or its tissues can result in interference with any or all of these functions. The larynx is the body's voice box, containing the vocal cords, which vibrate to produce speech. As such, it is an extremely delicate instrument, but it also has another less complex function of guarding the entrance to the lungs by a valve called epiglottis. The vocal cords lie in the centre of this framework in an anterior posterior orientation.

**Functions of the Larynx:**

The larynx functions in swallowing, breathing, and voice production. The production of voice can be thought of in terms of three components:

1. The production of airflow
2. The generation and resonance of sound
3. The articulation of voice

*Production of Airflow*

The lungs first supply adequate airflow to overcome the resistance of the closed vocal cords. The vocal cords are finely tuned neuromuscular units that adjust pitch, loudness, and tone by altering their position and tension.

*Sound Production*

The vocal cord vibration cycle that occurs 200 to 400 times a second during sound production (phonation). The rapid opening and closing of the vocal cords occur in a vibratory pattern and are
responsible for sound production. Thus, any structural, inflammatory, or neo plastic lesion of the vocal cord affects voice production and quality

A. Vocal cords closed immediately prior to phonation (voice production).

B. Air pressure develops below vocal cords because of air from lungs during exhalation.

C. Vocal cords separate briefly with the release of air. (1) Arrow points to the upper edge of the vocal cord.

D. Vocal cords re approximate. (2) Arrow points to the lower edge of vocal cord.

E. Vocal cords together again.35

Articulation of Voice

Final modification of the voice occurs in the mouth, nose and throat, where the tongue, palate, cheek, and lips are involved in articulation (speech production).

Production of Airflow

The lungs first supply adequate air to overcome the resistance of the closed vocal cords. The diaphragm, intercostals muscles and other chest muscles control the flow and pressure of air. This control helps to regulate the delicate control over the voice, a must for all singers. The vocal cords are finely tuned neuromuscular units that adjust pitch and tone by altering position and tension.

This diaphragm illustrates the vocal cord vibration cycle that occurs during sound production. The rapid opening and closing of the vocal cords occur in a vibratory pattern and are responsible for sound production. Thus any structural, inflammatory, or neo plastic lesion of the vocal cord affects voice production and quality.

The Respiratory System
The voice is produced by the vibration into the larynx of the air coming from the lungs, vibration which is modified by resonances in the mouth and in the nose. The voice is therefore determined by three systems.

1. Production of air, which involves the lungs, the diaphragm and the muscles of the chest;

2. The air vibration into the larynx, produced by the vocal cords,

3. The resonance of this vibration in the mouth and in the nose whose configuration will change the tone of voice.

Singing will involve the use and control of these three systems.

Figure VI – The vocal apparatus of Human body
Pharynx, The pharynx is the throat. It goes up from the larynx and divides into the laryngeal pharynx (just above the larynx), oropharynx (going into the mouth) and nasopharynx (going into the nose).

Trachea, The trachea is your windpipe. It's the tube that connects your lungs to your throat.

Esophagus, The esophagus is your food pipe. It's just behind the larynx and trachea. Your pharynx carries both air and food/water. The air goes through the larynx and trachea, and food and water go into your esophagus.

Spinal column, the spinal column is behind the esophagus. You can feel it by pressing the back of your neck.

Diaphragm, The diaphragm is underneath the lungs, inside the rib cage. It's shaped like a dome. The diaphragm is your main muscle for controlling respiration (breathing) 36.

Music student and Musicians should understand the techniques of voice production scientifically along with the traditional voice training. It is necessity to retain quality voice. A vocalist should use the anatomy and physiology of voice. These help in relaxing the muscles and ligaments of the larynx give energy for singing and ability to manipulate effectively to get the required voice.
Voice Culture embraces the correct management of the vocal organs. Vocal training has indeed come to be considered synonymous with training in the correct use of the voice. Every method of instruction in singing must contain as its most important element some means for dealing with the problem of tone production. A proper understanding of the structure and foundation of the physiological mechanism, acoustical principles of voice emission and psychological factors of the individual help to deduce scientific facts which would guide through the tangle of confusion which has beset the art of Voice Culture. Voice Culture covers all the necessary elements related to voice training.

For the art of Voice Culture, following must be reviewed and analyzed.

*The sciences of Anatomy*

*Mechanics,*

*Acoustics,* and

*Psychology*

The variables that a voice can work with are Pitch, Head and Chest registers, volume control, sounds (vowels and consonants) and vocal quality 37; it is depending on the style of music we are singing. Voice lessons will help us to become aware of these qualities and how to balance and manipulate them within our voice. Different vocal qualities and music usually bring up a wide gamut of strong emotions in the vocalist. It is important to recognize that the voice is meant to be a communicative device closely connected to our spiritual selves. The more options the speaker or singer has available within their voice, the more they are able to express the gamut of human emotions. By expanding our voice, we expand the range of emotions we are able to express. This is the true goal of voice lessons.

Improvement of our voice is a gradual process. We are teaching our muscles new ways of responding. The process will become automatic, but it takes daily practice and often several years of study, depending on the student. Typically, at first we will be able to produce healthy changes during voice lessons. Gradually these improvements will carry over into practice at home. The next step is getting so used to the new way of using our vocal and breathing muscles (while relaxing the constrictors) that this will become second nature to us during performances or
in public speaking. Training the Voice, means learning to coordinate and strengthen the muscles in our larynx so we can sing with speech level posture over a wide pitch and dynamic range. These things are all by products of speech level singing. They happen automatically when we condition our larynx not to move, by relaxing our outer muscles and by allowing our vocal cords to thin and then shorten for higher notes to insure that our outer muscles stay relaxed. Practice, dedication and good communication with a trusted Guru or Voice teacher are the ingredients for success. We will get out of voice training exactly what we put into it. It’s a wonderful journey of self growth, exploration and exciting possibilities.

1.9 A SCIENTIFIC VIEW OF QUALITY OF VOICE

Voice quality is the result of a combined action of basic function of the vocal organs (vocal tract configuration) and developed components by scientific and systematic training and practice. We must remember, too, that first of all the voice is a vital instrument. The physical condition affects most noticeably the quality, strength, and movement of the voice. Hence we see that physical health is essential to a good voice, and the proper use of the voice is itself one of the most invigorating exercises that can be practiced. All the vital organs are called into healthful action through this extraordinary manipulation of the breath, and the nervous system, both vitally and emotionally, receives invigoration. Genetically determined factors of the vocal mechanism cannot be changed but with the help of the techniques one can manipulate them to make the voice more melodious. Each person’s voice is unique. Voice is an image arising in the mind of a listener on hearing a person’s speech or singing (sound or acoustic signal). Voice is the sound to image mapping of a person. Some believe that voice reflects a person's personality. A good voice ‘reflects speaker's confidence’. It makes a positive impression on the listener. A vibrant voice can make atmosphere lively. Of course, one could say if the voice is confident or depressed or cheerful etc. Looks of a person is determined by face (static), posture (quasistatic), and gestures (dynamic – example: facial expressions, walking style). Similarly, there are some static and dynamic factors associated with voice. Voice quality is the result of a combined action of basic function of the vocal organs (vocal tract configuration) and developed components by scientific
and systematic training and practice. Genetically determined factors of the vocal mechanism cannot be changed but with the help of the techniques one can manipulate them to make the voice more melodious.

**Diagnosis of voice**

It is important to remember that voice quality depends not only on the functioning of the voice box or the larynx but also on articulation (enunciation or pronunciation), rate of speech (too rapid or too slow), intonation, pauses etc. Some of the factors are: Practicing voice professionals use some broad terms to describe the voices:

*Bright*: Higher loudness without effort (not shouting)

*Confident*: Steady Pitch and Loudness level – opposite of wavering

*Melodious*: Good correlation between Pitch and loudness

*Resonant*: Articulation tuned to Pitch – Ringing

*Hoarse*: Presence of noise component – absence of harmonics

*Pressed*: Long closed phase in vibration cycle

*Breathy*: Steep spectral slope, strong fundamental

*Nasal*: Heavily damped resonances

*Rate of speaking*: Number of words per breath, Number of words per minute

*Rhythm of Speech*: Accent and Inflections (Pitch range)

*Breathing Pattern*: Speech as during fast walking Vs relaxed

*Pitch Level*: Habitual F0 or Pitch

*Loudness level*: Deafening (too loud) Vs Whispering (too soft)

*Mood State*: Sudden changes in pitch level, loudness and rhythm

*Clarity of Speech*: Good articulation habit
Factors responsible for reducing voice quality

Some important factors that affect voice quality are:

Air Quality: The most common air quality problem is dust; Dust from chalk, carpet, household dust, outside dust, dust from construction projects etc. Dust is an irritant to your airway, the wet or moist lining of our nose, throat, and vocal cords. When irritated, these air passages may become red and swollen, often causing a change in pitch and quality of your voice.

Humidity: Too high or too low humidity can be enemy to our natural voice. An ideal humidity for voice is about 40-50%.

Noise: Noise is considered the biggest air pollutant of all. The extra effort required to speak in noisy environments involves using more air for a louder voice, a higher pitch and greater precision in enunciation. This can severely tax our vocal equipment and prevent us from using our natural voice.

Speaker Listener distance: Ideally speaker should use appropriate loudness level and not speak too loudly or softly. The loudness of our voice should continually adjust to the changing noise level around us, to the physical distance between us and our listener, and to the social circumstances.

Hormonal changes: The dramatic voice changes in puberty experienced by both boys and girls are evidence of impact of sex hormone on vocal tract and are normal. Puberphonia is retaining pre puberty pitch.

Fatigue/stress: Voice is light, higher in pitch and lower in volume than usual. At these times it is not possible to have the kind of voice you would like to have. Stress causes us to make unusual demand on our vocal folds.

Aging: Natural changes in Pitch.

Allergies and infections: For people with severe airway allergies, the swollen and inflamed membranes of the throat and nose can produce hoarseness and even complete loss of voice.

Fear: Pressed voice with higher Pitch, wavering, slower rate of speech.
Hydration: A dry larynx (vocal tract) doesn’t function as well as moist one.

Medication: Among over the counter drugs, the primary enemies of the vocal tract are aspirin and antihistamines. Continuous usage of aspirin can result in slight hemorrhaging of small blood vessels on the vocal cords, which will lower pitch and produce hoarseness.

Recreational drug: Smoking is a primary enemy of developing a better voice. All these defects of voice quality can be changed by Voice culture (proper speaking and singing habits), Voice therapy (proper vocal exercises) and in extreme cases by Phono surgery (Botox injection to laryngeal muscles, surgery of larynx).  

1.10 BASICS IN VOICE CULTIVATION

The four fundamental guidelines for Voice culture for singing include:

Practice

Hearing

Mental and Physical fitness

Breathe Control

The techniques of voice production for singing are more complex, in the sense that singing requires a more delicate control over the muscles. Effective control of breath, flexible speech organs, adjustments of resonators, wider range, mental perception, and so on, are the features by which the voice can be trained. Singing voice culture integrates several other features in which voice fields would need to be trained. For instance the mouth shape, good word pronunciation, voice adjustment for various speeds, tempos. In addition there is the control of amplitude and volume depending on the background that is being used for presentation, vowel pronunciation as well as improvising which is a very important aspect. Voice culture for singing is supposed to be trained in accordance with the category of singing that a person chooses, for instance Semi Classical, Classical, Rock, Pop and Folk among others. The reason for this is that every kind of
music has its own demands in terms of voice production and style. Males and females have got
distinctively different organs for producing organs. Therefore the training techniques are bound
to be different. The voice could be the only natural instrument for music. Everyone has their
special techniques therefore; all voices vary from one person to another. It is vital to establish
that it is only this instrument that cultured, improved and cultivated through pitch variation, tonal
quality (timbre), intensity as well as the features mentioned above. We can say that these are the
basics of voice culture

**Hearing:**

Imitation is the first step towards learning. This statement applies to voice training, too.
Concentrated listening is the basic requirement. By listening more and more, the brain creates
and stores a mental image of the music. The notes, the tunes, the rhythm, the speed, the words,
the volume, the tonal quality of the voice or instrument, etc. are stored in the brain. When we try
to sing, these mental images coordinates with the laryngeal muscles to produce the music
required. Thus, it can be easily understood that, the more we hear, the more we listen, there will
be a better ability of voice production. We should listen with all the aspects of the musical form
in our minds like, tonal quality, phonetic quality, time intervals, the microtones (shrutis),
expressional effects of the voice, etc. The more deeply we listen, the better quality of music we
will sing. Better the mental and physical coordination better will be the voice production.
Though this is the first, basic fundamental and unavoidable step towards learning, we should
remember that this is not the only step. It is not enough by itself. Simulation happens to be the
initial step to learning and the same applies to vocal training. A key requirement is to involve
listen keenly and by doing this, one’s brain makes up and maintains a mental picture of music.
This includes the tunes, notes, speed, rhythm, volume, lyrics, voice tonal quality instruments and
many others.

**Control of Breath:**

This aspect is imperative when moving towards Voice culture for singing. If we could control
out breath then we could simply master our singing voices. Control of breath offers steadiness
clarity as well as good voice phonation. Breath Control gives fineness, clarity, steadiness and
confident phonation to the voice. There are four types of breathing: Clavicular (shoulder), Costal
(chest), Diaphragmatic and Abdominal. Clavicular breathing is useful to sing very shrill notes. Costal breathing is used to sing high pitched notes. Diaphragmatic breathing is useful for every singer. When a singer cultivates this type of breathing, unnecessary and unwanted wobbling or shaking of voice can be controlled. Abdominal breathing helps to sing the lower notes effectively. Also, this type of breathing helps a singer to reach the subtler heights of singing. The intensity of the voice depends upon the breath force which determines the amplitude of the vibrations of the vocal cords.

Riyaz (Practice):

Every person knows that practice makes perfect therefore the practice should be separated into two types:

1. Attempting what we are unable to do but wish to sing
2. Going over what we know and ensuring that it is perfected.

By constantly practicing the system of muscles and the whole system of voice production are physically trained. These exercises differ according to the genre of music which is sung. Voice aspects such as pitch control, articulation, and phonation also vary with the form of music. The time allocation for practice is not standard and is mainly dependent on the singer’s performance. With classical music there is plenty of improvisation which is integrated into the performance. For this reason a lot more time should be devoted. In such a case the Voice culture for singing practice sessions could even take up to three hours at a time. By regular practice of singing, we give physical training to all the muscles and the voice production system on the whole. This training will vary with the type of music chosen for singing. The aspects of the voice, phonation, articulation, pitch control vary with the style of music, so will the factors to be emphasized during practice vary. The time period that should be given for practice will again vary with the expected time period of the performance. In classical types of music where improvisation is a part of the performance, it is necessary to devote more time, even 23 hours at a stretch. Practice results in control over the vocal cords. Practice also develops confidence in the singer, which expresses itself in the voice.

Physical and Mental Fitness:
Singing is an activity of physical and mental movements. It is a synchronization of our physical and mental state. So, physical and mental fitness are necessary for good and happy singing. For the voice to be rich with harmonics, all the resonators i.e. the air cavities in our body should be clean and healthy. This includes the lung cavities, pharynx and nasal cavities, which are directly related to singing. These resonators should be free from coughs and colds, extra mucus and other infections, for a good voice production. Sometimes experience reveals that overwhelming emotions affect our voice controlling capacity. Negative emotions also affect the tonal quality of our voice. Negative emotions are a hindrance to the growth of voice production[^44]. Mental fitness leads to a better synchronization of the singing activities. Regular exercise, healthy and balanced diet and regular meditation or any tension releasing exercises are a necessity for our fitness. We see people around us who have reached considerable heights without practicing these four steps. This leads most of us to become lazy, or to lose trust on this path. We should remember that the above steps of culturing the voice help us reach the finer points of our own potential. Even if we do not follow the steps, we will be somewhere, but we will surely miss the highest potential of our own self. The growth of our talents is sure to be affected.

1.11 NEED AND IMPORTANCE OF VOICE CULTIVATION

For a vocalist the awareness of the vocal anatomy and the highly integrated and coordinated actions of various physical processes that need to happen to sing effectively. In order to improve vocal technique, it is essential to understand the basic fundamentals of voice production and seek the help of a qualified voice teacher to strengthen the foundations. Broad steps of voice culture are creating awareness about voice.

1. The human voice is a singing voice.

2 A person gifted with musical abilities has a naturally gifted voice apparatus and propensities that need to be unlocked, awakened and orchestrated.

3 Understanding and experiencing the distinction between the communicative (speaking), expressive (laughing, crying, hooting), semi expressive (shouting, calling) and singing voices.

[^44]: Mental fitness leads to a better synchronization of the singing activities. Regular exercise, healthy and balanced diet and regular meditation or any tension releasing exercises are a necessity for our fitness. We see people around us who have reached considerable heights without practicing these four steps. This leads most of us to become lazy, or to lose trust on this path. We should remember that the above steps of culturing the voice help us reach the finer points of our own potential. Even if we do not follow the steps, we will be somewhere, but we will surely miss the highest potential of our own self. The growth of our talents is sure to be affected.
4 Understanding the concept and natural tenets of a collapsed or flaccid vocal apparatus and an erected apparatus ready to sing.

5 The Professionals in Speech Language Therapy and Voice Coaching

6 Distinguishing between the tonal and mechanical dimensions of voice and voice training.

7 Understanding and achieving production of tones across the range, including so called chest, mid and head tones.

8 Understanding breathing and the relationship between breathing and singing in depth.

9 Achieving tone production as extensions into phrases and musical lines and passages – songs and improvisation.

10 Diagnosis of voices identification of problems perceived and not perceived by the singer.

11 Teaching techniques of breathing, attack, vocalization, registration etc, which will achieve the desired results. Evolving practice methods suitable to each voice, monitoring results.

12 Speak and sing stronger and with less effort

13 Correct Breathing

14 More efficient tongue function

15 Postural and breathing muscle skeletal balancing

16 Respiratory health assessing

17 Lengthen phrasing in a certain piece of music

18 Reduce or eliminate pre performance anxiety

19 Enjoy health benefits of better breathing a set of practice methods over a period

20 Voice care and hygiene

Voice Culture is basically a combination of scientific and traditional methods to improve the quality of voice. For all these voice culture involves different subjects like physics of singing,
anatomy of vocal chords, psychology etc. The basics of voice culture can be different methods of
music learning techniques. The benefits and need of voice culture is to train the voice to sing
beautifully and preserve the voice from disorders.

CONCLUSION

Voice cultivation or culture is a relatively new term and has come up recently few decades back.
This natural human instrument has such potential to move the world and positively affect a
singer, if trained in a proper and scientific manner. Voice culture is the starting point of a vocal
training which should never be overlooked. Even a trained singer needs to constantly keep
his/her vocal apparatus in shape and healthy condition. Musical training should always follow
Voice training as both are highly dependent and affect each other.

In the subsequent chapter we shall find out voice cultivation techniques in Hindustani tradition of
music and training and look into some authentic techniques which have bared the test of time.

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