

The breath from *Yogic* perspective for *Pranayama*

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Abstract:

With the fast-growing popularity of yoga all over the world, yoga has made entry to home based practice rapidly. Many videos, posts are available on social media which are used for the practice. In the current covid pandemic, the pranayama among the eight limbs of yoga, has been come into the spot light even more to increase the strength of lungs. But it's important to understand that without proper training into the practice of pranayama, it may have negative effects too in the body. Breath is the basis of pranayama. May be pranayama is not familiar with everybody but its sure that breathing is known by everybody. Still, there are very few who knows the correct technique to breath. Its also important to learn and practice correct way of breathing before starting actual pranayama. A person can start to learn correct breathing by understanding a little physiology of it and may practice first with five types of breathing techniques- natural, abdominal, thoracic, clavicular and yogic breathing. A common person can benefit himself only by practicing these too. For yoga practitioners understanding the yogic perspective of the breath may lead them to faster and correct essence of Pranayama.

Key Words: Breath, Pranayama, Yogic breathing, Lungs

Introduction:

Pranayama is generally defined as breath control. The word Pranayama is compromised of two root words "prana" and "ayama". Prana means the vital force not mere oxygen only. Whereas ayama means "expansion" or "extension". Thus, pranayama can be translated as the extension or expansion of the dimensions of prana. According to Patanjali Yoga Darshan chapter 2-49 pranayama is defined as "*Tasminsati Shvaspravasayorgaticchedah pranayamah.*". Pranayama is the pause in the movement of inhalation and exhalation⁽¹⁾, which is generally known as Kumbhak (retention of breath). "Svasa" means inspiratory breath and "prasvasa" means expiratory breath. Breath is gross concept and prana is subtle concept, but two are intrinsically connected.

It is witnessed in the last few decades that asana and pranayama has made into household terms, but the essence and depth of the practices remain unexplored for most practitioners. The breath being the important medium of pranayama it really becomes very important to understand the correct way of breathing. It's true that there are very few who know the right way of breathing. Most of the times, the breathing is very shallow, disturbed, not up to the actual vital capacity of the lungs causing different lung pathologies. If anybody wants to practice Pranayama to its full essence it becomes important to learn the conscious and right breathing. This article will put light on the physiology of breathing, understanding the Prana deeply, in yogic perspective.

Cell Model to Understand Breathing:

A cell which is the most basic unit of human body can be used to explain the breathing in terms of yogic perspective. A cell is separated from the external environment by its cell membrane. Extracellular space contains nutrients, and this nutrient has to cross the membrane to enter into intracellular space. The cell metabolises the nutrient for its vitality or function and gives away the waste generated through metabolic activity into extracellular space again. In any circumstances, if this cell membrane is unable to function in its ideal way, the nutrients and waste cannot be exchanged and may lead to death of the cell via starvation or toxicity.

For this successful function, certain conditions have to exist in cell for this exchange. The structure of the membrane has to be permeable, elastic to allow this exchange. If by any chance, the permeability of cell alters, this exchange may hamper, cell wall loses its integrity, may result into explode of cell from the pressures from within or outside. In the cell, the principle that balances permeability is stability. All successful living things must balance containment and permeability, rigidity and plasticity, persistence and adaptability, space and boundaries⁽²⁾. This is the teaching of Hatha Yoga, balance in the two forces, balance in feminine and masculine energies. Same physiology is happening in the body in terms of Prana, the cosmic prana is nutrient for the body prana. Breath is one of the mediums to the exchange of this energy. If breath is not proper the exchange may be poor causing imbalance in the body resulting to diseases,

depression, anxiety, etc. To understand this deeper let us see the Prana in detail.

Prana- The Vital Force:

Any motion possible in the whole creation, whether it be in the cosmic world or in humans such as: the blink of eye, the budding of a flower, the splitting of atoms or the fall of the meteor is due to the Prana⁽³⁾. Prana exists as the energy that drives every action, voluntary & involuntary, every thought, every level of the mind and body. Prana also exists in the world, causing motion, growth and decay at this level. From the yogic point of view, the entire cosmos is alive, throbbing with prana.

Prana is the hub of Wheel of life. Everything is established in it. It permeates the life-giving Sun, the clouds, the winds, the earth and all forms of matter. It is being(*sat*) & non-being (*asat*). It is the source of all knowledge⁽⁴⁾. It is the cosmic personality (the Purushas) of Sankhya Philosophy. It is said in *Kathopnishad* (2:3:3)- “*Yadidam kim cha jagatsarvam prana aejati nihsrutam.*” This whole world which vibrates having originated from prana.

Derivation of “Prana”-

The Sanskrit word “prana” was first referenced in 3000 years old *Chandogya Upanishad* text and was further refined and described in later Upanishads. “Prana” is made up of combination of two syllables- “pra” and “na” which denotes constancy, a force in constant motion⁽⁵⁾. Prana is mostly translated as “breathing”, “vital-energy”, “vital force”. However, prana is not the oxygen or the air one breathes. Many researches have been done in past on yogis who can stop breathing for long periods of time and yet continue to live. Not only this if oxygen was the prana, then the one who is on ventilators in ICUs given continuous supply of oxygen would never die, or already dead if given oxygen may live again. Prana is far deeper concept which is yet needed to explore and understood by yoga practitioners. Scientific research describes prana as a complex multidimensional energy: a combination of electrical, magnetic, electromagnetic, photonic, ocular, thermal and mental energies.

It is understood that every human being is born with specific quantum of prana. This quantum is later nourished by breathing, eating, thought process. Here we will consider the breathing only. The air we breathe, contains prana in itself, when inhaled the cosmic prana nourishes our body. Its similar that no energy is created or destroyed, its always that one form of energy converts into another form. Also, energy flows from higher pressure/ volume to lower pressure/ volume. Human body being lower in energy terms, the vital force/ prana from the cosmic world flows in. Hence, prana is associated with breathing process.

Relation of Prana-Apana In Breathing:

The prana is experienced differently in different parts of the body. Hence prana has been categorized according to its five aspects as the *Panchapranas*. The five pranas are also known as prana *vayus*. They are as follows: *Prana, Apana, Samana, Udana, Vyana*. But lets only discuss here about prana and apana in view of breathing physiology.

1. Prana: This refers to the energy currents located in the thoracic region. This force maintains the heart and lungs, and all the activities in the chest region such as breathing, swallowing and circulation of blood. Prana is experienced in the form of light particles moving upwards in the chest region.
2. Apana: Apana is the second prana, which operates in the pelvic region. It is responsible for the expulsion of gas, wind, faeces, urine, semen, ova, foetus. Apana is experienced in the form of light particles moving downwards from navel to perineum. This is mostly related to excretion.

Now, understanding that for breathing, which is fundamental for pranayama, Prana & apana works differently. When the prana is taken inside, during inhalation, the air remains upward up to the diaphragm. But after the absorption of oxygen from the air this prana or air need to expel out the same pathway it came in. For this apana must be able to operate freely in upward direction different from its original downward direction. That is also why any inability to reverse apana’s downward push will result in an incomplete exhalation. So, when asked to exhale completely, most of the people will squeeze in and push down their breathing muscles as if they are urinating or defecating. In the practice of yoga, the direction or movement of prana and apana are changed.

Role of Diaphragm In Breathing:

Here detailed anatomy or physiology of diaphragm won’t be discussed. But it will be more focused on its role in breathing and its relation with Yoga.

The diaphragm is a dome shaped muscle which divides the torso into two cavities- Thoracic and abdominal, the diaphragm is the principle muscle of breathing and responsible for the shape and volume change of the two cavities. The muscular fibres of diaphragm are oriented primarily along the vertical axis of the body, and this is the direction of the movement of this muscle. When one inhales with the inflation of the lungs the dome shape of the diaphragm is pushed downward making it flat, which in turn increases the pressure in the abdominal cavity making it to bulge out. Similarly, during exhalation the dome shape of the diaphragm is retrieved again pulling the diaphragm upwards and decreasing the pressure in the abdomen making its shape change.

If we look properly there is three-dimensional change in the cavities during breath- Antero- posterior, sideways and up-down. This three- dimensional shape change is not just due to diaphragm but it happens with the help of other accessory muscles too⁽⁶⁾. The only direct control we have over the diaphragm is its timing. To control the power of the breathing, and to guide it into specific patterns, accessory muscles are too required along with the diaphragm. Once all the other musculature of the body is co-ordinated and integrated with the action of the diaphragm, breathing will be efficient and effective. Practicing the conscious breathing is important to learn correct technique. During this it becomes important to focus on the movement of diaphragm to have full breathing. Not only this, the movement of abdomen and chest simultaneously is important to be focused on to learn conscious breathing.

Other Two Diaphragms:

Along with the respiratory diaphragm, breathing involves the co-ordination of pelvic and vocal diaphragms. Let us see the action of these two in yogic perspective:

1. **Pelvic floor/ diaphragm:** Pelvic floor is made of few sets of muscles, which can be divided into deep layer and superficial layer. Superficial layer is more associated with the anal and urethral sphincters, and the fibres of the muscles run side to side (ischia to ischia). Whereas the muscle fibres of deeper layers run front to back (pubic to coccyx). As we have seen earlier that according to yogic perspective for right breathing the relation of Prana-Apana is required, the change of the direction of apana to upward is necessary for the complete exhalation⁽⁷⁾. Here, the superficial layer is mostly related to downward force of the apana helps in expulsion. The deeper layer is more necessary for the upward push of the apana. The Mulbandha, which is one of the practices of yoga, is originally to change the direction of apana and unite it to prana⁽⁸⁾ actually needs to work on the level of deeper muscle.
2. **Vocal Diaphragm:** The glottis is the space between the vocal cords, which is the respiratory passage. Yoga practice can actually regulate this space in various ways based on type of breath, posture or voices. During restorative postures in yoga, the cords are relaxed too, making glottis not too enlarged or too restricted. When doing breathing exercise like bhasrika, kapalbhati where forceful, deep and rapid breathing is required the cords are pulled away or contracted making the glottis enlarge and giving much space to pass the air⁽⁹⁾. Similarly, when any yoga posture is practiced where slow and deep breath is important the glottis can be partially closed, only open at the back. During the mantra chanting practices, the cords are pulled together into the phonation position,

making the air to vibrate cords and creating different sounds. Jalandhar bandha is also one important practice in yoga⁽¹⁰⁾ related to the vocal cords. Normally when there is a decrease in oxygen and increase in carbon dioxide in the body leads to an increased heart rate and heavier breathing. This is initiated by the pressure on the carotid sinuses. But Jalandhar bandh practice, exerting subtler pressure on these sinuses, these tendencies can be reversed allowing decreased heart rate and increased breath retention capacity.

Five Types of Breathing:

It's important to understand the five types of breathing technique that should be practiced before practicing actual pranayama. One can master one by one and can proceed for perfect practicing of pranayama. They are follows:

1. Natural Breathing:

This is the simple technique which introduces practitioners to their own respiratory system and breathing patterns. In this one practices to observe the natural flow of own breath. It can be done in sitting position or shavasana, and become fully aware of the natural and spontaneous breath. The breath should not be controlled in any way, the flow should not be altered. A person must observe as a detached witness the flow, speed, depth, route of the breath in own body.

2. Abdominal breathing:

Abdominal or Diaphragmatic breathing is practiced by the action of the diaphragm and minimizing the action of the ribcage. During inhalation the diaphragm moves downward, pushing the abdominal contents downward and outward. During exhalation, the diaphragm moves upward and abdominal content move inward. It should be practiced in such a way that the breathing causes the movement of abdomen outwards and inwards, the awareness should be on the diaphragm movement rather than the chest.

This breathing uses mostly the lower lobe of the lungs. The proper use of diaphragm causes equal expansion of the alveoli, improves lymphatic drainage from the basal parts of the lungs, massages the abdominal organs⁽¹¹⁾. It exerts the positive effect on the cardiac functions and improves oxygenation of the blood and circulation.

3. Thoracic breathing:

Thoracic breathing utilizes the middle lobe of the lungs by expanding and contracting the rib cage. This is practiced by bringing awareness to the chest area, expanding it while inhalation to its full extent and again bringing it back to normal shape while exhaling. To make it more of control one cover the ribcage with the fingers spreading forward and thumb pointing back to ensure the change in

shape of chest.

It is important to know that this type of breathing consumes more energy rather than abdominal breathing and this type of breathing is associated to physical exercise and exertion, stress, tension⁽¹²⁾. Even after this situation is passed on, there is a tendency that many people still continue to follow this type causing bad breathing habit.

4. Clavicular breathing:

This breathing is the final stage of total ribcage expansion, it covers the upper lobes of the lungs for more ventilation. It occurs after the thoracic inhalation. The clavicular bone and upper ribs are pulled up by the muscles in the neck to make more space for expansion. In daily life this type of breathing is hardly practiced by anybody, it is used only in extreme physical exertion or in asthmatic people. This can be practiced by inhaling a little more air after the complete thoracic breathing. Awareness should be on shoulders and collar bone that they move upwards. To make it more under control one can place two fingers on the collar bone to experience the movement of clavicle bone.

5. **Yogic breathing:** This is most important type of breathing and its purpose is to gain control of the breath in all three lobes of lungs, correct poor breathing habits and increase oxygen intake. Yogic breathing is combination of all the breathing which are abdominal, thoracic and clavicular. This helps in the situations like high stress, anxiety, anger to make one calm. Yogic breathing is required for the practice of pranayama and hence it should be practised properly before starting the pranayama.

Discussion:

Breath is understood as only the movement of air into the chest specifically through nostrils. There is no awareness about the difference in temperature of the air during inhalation or exhalation, passage of the air in respiratory system, movement of chest or abdomen necessary for breathing, role of the three diaphragms and accessory muscles. This causes the bad breath and the lungs cannot act up to its full capacity. Conscious and deep breathing is important for good absorption of oxygen and complete expiration. Incomplete expiration causes stale air to stay in which results into respiratory pathologies. It is advisable to learn to practice the conscious breathing at least two times a day and more till it becomes involuntary. Only the practice of conscious breathing, not actually pranayama, has shown tremendous positive effects on body like good lung capacity, reducing stress, anxiety, depression, good concentration and grasping power as the voluntary deep breath activates the Vagus nerve resulting into parasympathetic system activate. A person can start with the practice of the five types of breathing mentioned above one by one and then go for pranayama.

Conclusion:

Hence, it becomes important to understand the correct way of breathing in daily practice to a normal person or yogic practitioners. Any yoga class can be started first with the teaching of technique of breathing till a student becomes perfect rather than jumping to directly on pranayama practices.

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