

A PILOT STUDY TO EVALUATE THE EFFECTS OF PRANAYAMA ON VITAL CAPACITY OF LUNGS

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ABSTRACT

As the new world is conquering new heights of technological advancements in various sectors of medicine, it is imperative that *Ayurveda* also provides its share of achievements that are visible. This article is an attempt in that direction. *Ayurveda* as a medical and health discipline involves the use of many ancient sciences as a tool to improve the health of human beings-one being *Pranayama* and *Yoga*. *Yoga-darshana* as visualized in the context of *Ayurveda* has been helping *Ayurveda* physicians in assisting in treating as well as preventing diseases of the body and mind. A pilot study was thus emphasized to evaluate the effects of *pranayama* on select individuals to study their lung capacities. Only healthy individuals were taken and the study was conducted for three days. Marked improvement was seen.

Keywords- *Ayurveda, Pranayama, Yoga, Yoga-darshana, Pilot study, vital capacity, lungs*

INTRODUCTION

The role of every medical discipline in the world is to alleviate the sufferings of individuals from the effects of diseases, ill-health or various other infirmities. *Ayurveda* emphasizes and practices the similar doctrine of alleviating the diseased from diseases

and preventing the healthy from being affected by diseases. To apply the doctrine of keeping people healthy, *Ayurveda* uses the principles of *Dina-Charya* [Daily Regimen or Routine], *Rutu-Charya* [Seasonal Regimen or routine], *Sadvrutta* [Moral values],

Vyayama [Exercise], *Yoga-niyama* and many others.

As a sub-branch of *Yoga*, *Pranayama* entails the control of *Prana-Vayu* [the vital air responsible for normal respiration or in simple terms- breathing]. Thus as one controls breathing many positive effects can be seen in the body- both bodily as well as sub-consciously. The mind seems to get stronger in positive decision making, stress level decreases, digestion improves and a resolve to stay healthy begins in an individual. Thus relying on this principle a pilot study was conducted to evaluate the difference in lung capacity before and after *Pranayama*.

Pranayama means the control of *Prana-Vayu*. *Prana-vayu* is the most essential element of the human being which gives *Prana* or life to every living being. Without *Prana-vayu* there is no life, no vigour, no vitality but only stasis or death. Thus, every *Yoga* individual tries to control or restrain or regulate this *Prana-vayu* with a sense of gaining control over one's sub-consciousness. The same principle is used in *Ayurveda* to help individuals in controlling their body so that they remain healthy. In ancient texts like

Charaka Samhita or *Sushruta Samhita* or *Ashtang Hridaya Samhita*, *Pranayama* has not been mentioned. But, *Prana-vayu* as the main type of *Vayu* or energy that controls life has been mentioned. It is one type of *Vata Dosh*. This *Prana-Vayu* resides in the head and it moves in the chest, throat. It controls *Buddhi* [motor functions], *Hridaya* [the heart], *Indriya* [Senses] and *Chitta* [Subconscious]. These are the mental functions, whereas the body functions include- *Sthivana* [Salivation or spitting], *Kshavathu* [sneeze], *Udgaara* [Belching], *Niha-Shwaas* [Inhalation] and *Anna-Pravesha* [swallowing of food or Deglutition][Ref-Vagbhat 12]. Along with *Prana-Vayu* there are four other *Vayus*- *Udana Vayu*, *Samana Vayu*, *Vyana Vayu* and *Apana Vayu*. Out of these five *Prana Vayu* is more important because it controls both the respiration and heart. Thus it controls life. But *Pranayama* does not entail the control of only *Prana Vayu*. It seeks to control all the *Vayus* because all these *Vayus* complement each other. Regulating or controlling a single *Vayu* is not beneficial as all the *Vayus* together work as a common entity in

controlling all the functions of the human body.

The *Udana Vayu* resides in the chest and moves in the nose, umbilical region and neck. It controls the following motor functions- *Vacha* [voice], *Prayatna* [desire to work or perform any body function], *Urja* [energy or vigour], *Bala* [strength], *Varna* [colour of the skin] and *Smriti* [memory].

The *Samana Vayu* resides in the Duodenum and moves in the abdomen. It controls and regulates the *Anna-Grahana* [movement of food in duodenum], *Pachan* [its digestion], *Vivechayati* [absorption] and *Munchati* [assimilation].

The *Vyana Vayu* resides in the heart and moves in the whole body. It controls the *Gati* [speed of all fluids in the body], *Apakshepana* [the downward movement of body entities], *Utkshepana* [the upward movement of body entities], *Unmesha* [opening of eyelids], *Nimesha* [closing of eyelids] and all other body movements and activities.

The *Apana Vayu* resides in the colon and moves in the pelvis, urinary bladder, urethra and thighs. It controls the ejaculation of *Shukra* [semen] and

excretion of *Artava* [menstrual fluid], *Mala* [Stool], *Mutra* [urine] and *Garbha* [Fetus].

All these Vayus signify the life-form of human beings and control all body functions. Thus control over them means control over the body. *Pranayama* thus enlightens us to gain control over our body which in turn will keep us free from diseases both mentally and physically.

According to BKS Iyengar-

"*Prana* means breath, respiration, life, vitality, energy or strength."

"*Ayama* means stretch, extension, expansion, length, breadth, regulation, prolongation, restraint or control."

"*Pranayama* thus means the prolongation of breath and its restraint."

This control is exercised via various breathing exercises. They are-

1. *Ujjayi Pranayama*
2. *Surya Bhedana*
3. *Nadi Shodhana*
4. *Bhastrika*
5. *Bhramari*
6. *Sitkari*
7. *Shitali*

In this study a combination of these exercises was performed by selected

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individuals and their vital capacity was determined by spirometer.

BACKGROUND

Breathing exercises have a profound effect on the well-being of individuals. Also *Yoga* and *Pranayama* have been an essential part of *Ayurveda* since some centuries. *Patanjali Yoga Sutras* have been elucidated and *Yoga Darshana* has been well established and studied to explain concepts of *Vayu* and *Vata Dosha* in the human body.

MATERIAL AND METHODS

Three healthy individuals with age 19yrs to 21yrs were selected. Their heights and weights were measured. They had no history of any respiratory disorder since childhood and also their family history was non-specific. These individuals included two males and one female. They were given a set of pranayama exercises to perform daily for a period of 7 days. Previous to this their vital capacities were calculated using a simple spirometer. Observations were duly noted.

OBSERVATION

Sr. No.	Subjects	Vital capacity before pranayama	Vital capacity after pranayama
1.	Boy1	3200ml	3700ml

2.	Boy2	3100ml	3800ml
3.	Girl1	2600ml	3100ml

CONCLUSION

As we can observe Boy1 showed an improvement of 500ml capacity, Boy2 showed 700ml improvement and Girl1 showed an improvement of 500ml.

On the basis of the above observations it can be stated that this pilot study showed marked improvement in the vital capacities of the above individuals. As this is a pilot study, to establish conclusive evidence a large sample study should be done.

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