

ORIGINAL RESEARCH ARTICLE

**A PILOT STUDY ON THE SHORT TERM EFFECT OF BHASTRIKA PRANAYAMA TO ENHANCE THE BREATH HOLDING CAPACITY OF STUDENTS**

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**ABSTRACT**

*Yoga* is a technique towards the improvement of total health by acting on physical and mental level. This present study has been undertaken to examine the effect of *BhastrikaPranayama* on breath holding capacity of students. Ten students of B.A.M.S. were randomly registered voluntarily, aged 18-28 years to participate in this study, from *Yoga* unit of Swasthavritta department of national institute of Ayurveda, Jaipur, Rajasthan. The breath holding capacity was measured twice before *Bhastrika* and during *Bhastrika*. During *Bhastrika Pranayama*, breath holding capacity was increased near about double of its normal duration. Difference between mean of breath holding time, before and during *Bhastrika Pranayama*, is about 31.6 and T value is 6.0733 and P value is <0.001 and it is highly significant on statistical parameters. In *BhastrikaPranayama* the rate of exchange of air in alveoli and the ventilation at the lower areas of lungs increase, which increases the oxygen and decreases the carbon di-oxide level in blood, which increased the breath retention during the practice of this *Pranayama*.

**KEY WORDS:** *Bhastrika Pranayama*, Breath holding capacity, *Yoga*.

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## INTRODUCTION

*Yoga* is one of the most popular sciences of the present era. It included all aspect of health i.e., physical, mental, social and spiritual. *Yoga* means the cessation of mental modifications or *Chitta-vrittiof* mind, intellect, and ego. <sup>[1]</sup> This can be attained only with the practice of Yogic techniques. The yogic techniques are well described in *Patanjala Yoga Sutra* in the form of eight stages i.e. *Yama, Niyama, Asana, Pranayama, Pratyahara, Dharana, Dhyana, Samadhi.* <sup>[2]</sup>

Among these practices, *Pranayama* is a technique of breath control. It included three stages i.e., *Puraka* (inhalation), *Kumbhaka* (breath holding) and *Rechaka* (exhalation). <sup>[3]</sup>*Kumbhaka* are further devided into eight types i.e., *Suryabhedanam, Ujjayi, Sitkari, Shitali, Bhastrika, Bhramari, Murchha* and *Plavini.* <sup>[4]</sup>In the present study *Bhastrika Pranayama* has been considered to show its short term effect on breath holding capacity. In *Sanskrita, Bhastrika* means ‘bellows, this is characterized by continual, fast and deep inhalation and exhalation of breath, producing a sound similar to a blacksmith’s. <sup>[5]</sup> The breath holding is a voluntary act. A longer breath holding time indicates good concentration of oxygen in blood and a lesser concentration of carbon dioxide in blood. Breath holding time can be increased by the regular practice of *Pranayama.* In present study the instant effect of *Bhastrika Pranayama* was observed to enhance the breath holding capacity. The

central respiratory rhythm appears to continue throughout breath-holding. Humans cannot therefore stop their central respiratory rhythm voluntarily. Instead, they merely suppress expression of their central respiratory rhythm and voluntarily ‘hold’ the chest at a chosen volume, possibly assisted by some tonic diaphragm activity. <sup>[6]</sup>

## AIMS AND OBJECTIVES

In this present time where nothing is safe regarding the human health, everybody search for the techniques to promote the health and prevent the diseases. *Yoga* is such a technique towards the improvement in total health. Various researches have been conducted to see the effect of different *yogic* practices. In this channel the present study has been undertaken to examine the effect of *BhastrikaPranayama* on breath holding capacity of students.

## MATERIALS AND METHODS

Following materials and methods were adopted for conducting present study.

**Materials:** Ten students of B.A.M.S. were randomly registered voluntarily on dated 18-02-13, aged 18- 28 years to participate in this study. The cases having any systemic disease, abnormal vitals were excluded from the study. Observations were analyzed by using Paired T test.

**Methods:** First, subjects are asked to sit comfortably in easy and steady posture i.e., *Padmasana*, keeping head, neck and trunk erect, eyes closed and rest body reasonably loose. The breath holding capacity was

measured twice before *Bhastrika* and during *Bhastrika*.

- (1) Before *Bhastrika*: subject is directed to inhale and exhale normally without any force through both nostrils. Then he asked to hold breath for as much time as possible and duration was recorded.
- (2) During *Bhastrika*: subjects were directed to fast, forcibly and deep inhalation and exhalation like bellows through both nostrils. The procedure was repeated for 20 times. After the completion of this inhalation and

exhalation, subjects were asked to take a deep breath with right nostril keeping left nostril closed, to hold it as much as possible and then to exhale with left nostril keeping right nostril closed. Duration of breath holding was recorded. This is one cycle of *BhastrikaPranayama*.<sup>[7]</sup>

### OBSERVATION AND RESULT

The study was conducted to determine the effect of *Bhastrika Pranayama* on the breath holding capacity of students and following findings were recorded.

**Table no. 1- effect of Bhastrika on breath holding time**

S.N.	Registration numbers	Breath holding time in seconds (Before <i>Bhastrika</i> )	Breath holding time in seconds (During <i>Bhastrika</i> )
1.	762	32	65
2.	763	40	82
3.	938	34	60
4.	939	26	51
5.	940	27	41
6.	941	27	53
7.	942	45	67
8.	943	29	64
9.	944	39	90
10.	945	43	85

**Table no. 2- Effect of Bhastrika on breath holding time**

No. of volunteers	Breathe holding time in seconds (Before <i>Bhastrika</i> )	Breathe holding time in seconds (During <i>Bhastrika</i> ) Mean±S.D.	Difference of means	T value	P Value

	<b>Mean±S.D.</b>				
10	34.2±7.0993	65.8±15.82403	31.6	6.0733	<0.001

**Fig. 1 Effect of Bhastrika on breath holding time**

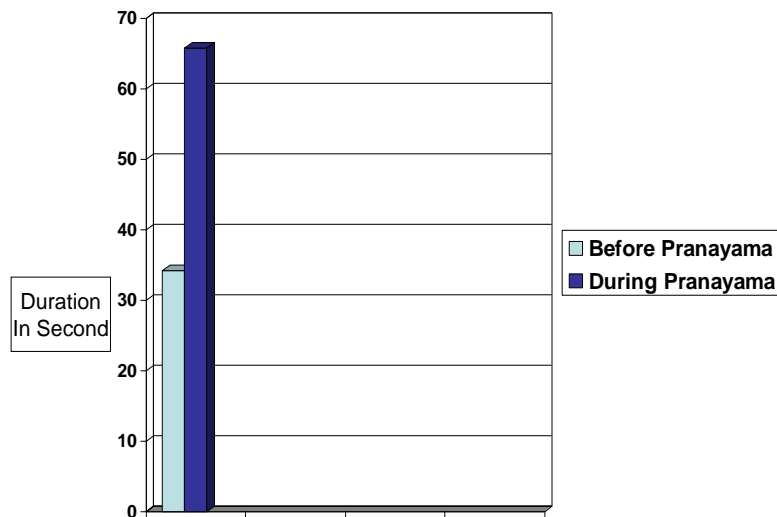


Table and diagram show that during *Bhastrika Pranayama*, breath holding capacity was increased near about double of its normal duration. Difference between mean of breath holding time, before and during *Bhastrika Pranayama*, is about 6.0733 and P value is <0.001 and it is highly significant on statistical parameters.

### **DISCUSSION**

*Yoga* is a technique to control the fluctuation of mind, and to concentration in *Atma-tatva*. In the process of *Yoga* there are many hurdles, respiration is one of them. Therefore control over respiration is one of the priorities in *Yogic* techniques achieved through *Pranayama*.

*Pranayama* is regularly practiced to smoothen the inhalation (*Puraka*) and exhalation (*Rechaka*) and to enhance the period of breath retention (*Kumbhaka*) to minimize the disturbance in the process of *Dharana*, *Dhyana* and *Samadhi*.

In *BhastrikaPranayama* forceful and deep inhalations and exhalations are carried out. This *Pranayama* increases the rate of exchange of air in alveoli and increases the ventilation at the lower areas of lungs, which increases the oxygen and decreases the carbon di-oxide level in blood. Finally, the period of breath retention is increased during the practice of this

*Pranayama*. This study also supports this hypothesis.

### CONCLUSION:

In this pilot study of single practice of *Bhastrika Pranayama*, very significant result was observed. Therefore, a lot of scope of work regarding *Pranayama* is there. Study should be conducted to see the long term effect of *Bhastrika Pranayama* on breath holding capacity, pulse rate, B.P., respiratory rate, functional capacities of lungs etc.

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