

## **Effect of Nadi Sodhana and Bastrika Pranayama on Selected Physiological Variables of Tribal Female**

**Badshah Ghosh<sup>a</sup>, Binod Chowdhary<sup>b</sup>**

<sup>a</sup> Asst. Prof. Panskura Banamali College, Panskura R.S., Purba Medinipur, W.Bengal India

<sup>b</sup> Asst. Prof. Seva Bharati Mahavidyalaya, Kapgari, Paschim Medinipur, W. Bengal, India

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### **Abstract**

The purpose of the study was to investigate the effect of Nadi Sodhana and Bhastrika Pranayama on physiological variable of tribal female. The subjects for this study were thirty tribal females students selected from Seva Bharati Mahavidyalaya, Kapgari, Paschim Medinipur district. The subjects were equally divided into three groups namely two experimental and one control groups. The two experimental treatments were assigned at random to two groups i.e. one for Nadi Sodhana and another for Bhastrika and the third group served as control. The treatment schedule was prepared for eight weeks. The experimental treatments were employed for 20-30 minutes a day in five days a week during eight weeks. Pre and post-test data of all the subjects from three groups were collected before and after the experimental treatment period of 8 weeks. The variables selected for the purpose of this study were vital capacity and positive breath holding capacity. The data was analyzed by employing analysis of covariance at the 0.05 level of significance. The result of the study indicated that practice of both Nadi sodhana and Bhastrika Pranayama had significant effect on vital capacity and positive breath holding capacity of the subject after the practice of Nadi sodhana and Bhastrika Pranayama during eight weeks.

**KEYWORDS:** Nadi Sodhana, Bhastrika, Vital capacity and Positive Breath Holding Capacity.

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### **1. Introduction:**

Many people do not breathe properly and are unaware of this fact. Proper breathing profoundly improves our whole physical and mental wellbeing. The breath is intimately connected with our state of health and improper breathing will often reflect various disturbances of body and mind. The breath is perhaps the only physiological process that can be either voluntary or involuntary. One can breathe with awareness and control the breathing process consciously or one can ignore it and breathe reflexively or unconsciously. If the breath is unconscious, it falls under the control of primitive parts of the brain, where emotions, thoughts and feelings of which we have little or no awareness become involved. In this way the regularity and rhythm of the breath are disturbed and it flows in an uncoordinated way, creating havoc in the body and mind.

Ordinarily when people talk about pranayama they generally mean those yogic practices, which involved some kind of manipulation of the breathing activity. But when one looks at the tradition of the yoga, one finds that the concept of pranayama has much

greater width and its techniques include vast array of very subtle elements apart from the simple manipulation of breathing activity.

Pranayama is not just automatic habitual breathing process to keep body and soul together. Through the abundant intake of oxygen by its disciplined techniques, subtle chemical changes take place in the practitioner's body. The practice of asanas removes the obstructions which impede the flow of prana (breath, life force), and the practice of pranayama regulates the flow of prana throughout the body (Choudhary and Ghosh, 2012). It also regulates the entire practitioner's thoughts, desires and actions, gives poise and the tremendous willpower needed to become a master of one.

Pranayama is an art and has techniques to make the respiratory organs to move and expand intentionally, rhythmically and intensively. It consists of long, sustained subtle flow of inhalation, exhalation and retention of breath. Puraka stimulates the system, rechaka throws out vitiated air and toxins; kumbhaka distributes the energy throughout the body. The movements include horizontal of the lungs and the ribcage. This disciplined breathing helps the mind to concentrate and enables the practitioner to attain robust health and longevity (Ghosh and Choudhary, 2014).

Another important reason about the importance of pranayama is that proper breathing is one of the most important ways through which we are able to get rid of waste products and toxins from our body.

Bhastrika is the most powerful of all breathing exercises for raising kundalini bhastrika. Bhastrika or bellows is a series of pumping followed by the breath like kapalbhati. Bhastrika is primarily consists of forced rapid deep breathing which serve as a basis for many varieties of exercise, all of which may be described by the same name. Although air is forced both in and out, the emphasis is placed upon the expulsion or explosion of air. A series of such expulsions, each following the other in quick succession without either full or empty pause, is called 'A round'. Beginners should limit a round to about five explosions, though the number may be increased to ten, or even more if needed to obtain the desired effect. The desire effect ranged from increased ventilation, increased blood circulation, cleaning of nasal passages and increased thinking capacity to eliminating of all mental disturbances.

If you don't do anything else, this is a simple yoga breathing exercise that can be done virtually anywhere, anyplace. The name alternate nostril breathing (Nadi sodhana) is due to the fact that we alternate between the two nostrils when do the breathing (Birkel and Edgren, 2000). Yogis believe that this exercise will clean and rejuvenate your vital channels of energy, thus the name nadi sodhana (purification of nadis or channels). With this exercise, we breathe through only one nostril at a time. The logic behind this exercise is that normal breathing does alternate from one nostril to the other at various times during the day. In a healthy person the breath will alternate between nostrils about every two hours. Scientific studies on nadi sodhana and Bhastrika pranayama revealed that this practice is related to the composition of alveolar air, breath holding time and urinary output. Several researches have come up on Pranayama today but many of the areas are unexplored.

### *1.1 Objective of the study*

To purpose of the study was to find out the effect of Nadi Sodhana and Bhastrika Pranayama practice on the Vital capacity and Positive Breath holding capacity of tribal female.

### *1.2 Hypothesis*

It was hypothesized that there would be significant changes on the vital capacity and positive breath holding capacity as the result of practicing Nadi Sodhana and Bhastrika Pranayama.

## **2. Methodology**

The porpose of the study was to find out the effect of certain yogic kriyas on selected physiological variables so that the yoga instructors can instruct and advice the practitioners about the ways and benefits of yogic kriya.

### *2.1 Subjects*

Thirty under graduate female subjects were selected randomly from Seva Bharati Mahavidyalaya, Kapgari, Paschim Medinipur, W. Bengal. Their age ranged from 19-23 years. The subjects were selected randomly from the entire tribal students of the college. It was insured by the scholars that the selected subjects did not participate in any other activity apart from the experimental program. The scholars did not select the students of physical education. Two experimental groups ( $N=10$  in each), namely Nadi Sodhana (G1) and Bhastrika pranayama (G2) were divided and the third group ( $N=10$ ) served as control.

### *2.2 Treatment Schedule*

The treatment schedule was prepared for eight weeks. The experimental treatments were employed for 20-30 minutes a day in five days a week for the period of eight weeks. The third group served as control groups (G3). Physiological Variables chosen for the study were vital capacity and Positive breath holding Capacity.

### *2.3 Statistics Employed*

Standard test and measurement procedures were adopted to collect data for the study. Pre and post test data of all the subjects from three groups were collected before and after the experimental period of eight weeks. The data was analyzed by employing analysis of covariance at the 0.05 level of significance.

## **3. Finding**

In order to identify the significant differences among three groups on selected variables, collected pre and post data were analyzed using the analysis of covariance. The findings of the study are as follows:

**Table -1 Analysis of covariance for Vital Capacity**

|          | Nadi Sodhana | Bhastrika | Control | S.V       | df | SS    | Mss   | F-Ratio |
|----------|--------------|-----------|---------|-----------|----|-------|-------|---------|
| INITIAL  | 2.574        | 2.682     | 2.854   | Among Gr  | 2  | 0.265 | 0.135 | 0.790   |
|          |              |           |         | Within Gr | 18 | 2.897 | 0.166 |         |
| FINAL    | 2.736        | 3.042     | 2.346   | Among Gr  | 2  | 0.285 | 0.148 | 0.698   |
|          |              |           |         | Within Gr | 18 | 3.757 | 0.210 |         |
| ADJUSTED | 2.840        | 3.061     | 2.845   | Among Gr  | 2  | 0.169 | 0.085 | 5.581*  |
|          |              |           |         | Within Gr | 17 | 0.263 | 0.016 |         |

\*Significant at 0.05 levels.

F( 2,17) =3.59

The table-1 of analysis of covariance for vital capacity of Nadi Sodhana, Bhastrika Pranayama and control group indicated in significant F-ratio of 0.790 and 0.698 for the initial and final test of means respectively. However, the F-ratio for the adjusted final test mean reveal a value of 5.581 which was significant as it was greater than the F-value of 3.59 required for significant at 0.05 level. This indicates that there was significant difference from the adjusted final means of Nadi Sodhana, Bhastrika Pranayama and control groups in the vital capacity.

**Table -2  
Paired Adjusted Final Mean and Difference between Means of Three Different Groups of Vital Capacity**

| MEAN         |           |         | MEAN DIFFERENCE | CRITICAL DIFFERENCE |
|--------------|-----------|---------|-----------------|---------------------|
| NADI SODHANA | BHASTRIKA | CONTROL |                 |                     |
| 2.840        | 3.061     |         | 0.221           | 0.180               |
| 2.840        |           | 2.845   | 0.005           | 0.180               |
|              | 3.061     | 2.845   | 0.216*          | 0.180               |

Table-2 indicates that the difference between the paired adjusted final means of Nadi Sodhana, Bhastrika Pranayama and control groups in vital capacity indicated significant value of 0.216\* which emphasis greater mean gain observed for Bhastrika group as compared to the control group.

**Table -3**  
**Analysis of covariance for Positive Breath Holding Capacity**

|          | Nadi Sodhana | Bhastrika | Control | S.V       | df | SS    | Mss   | F-Ratio |
|----------|--------------|-----------|---------|-----------|----|-------|-------|---------|
| INITIAL  | 1.1          | 0.786     | 0.771   | Among Gr  | 2  | 0.483 | 0.241 | 2.292   |
|          |              |           |         | Within Gr | 18 | 1.896 | 0.105 |         |
| FINAL    | 1.47         | 1.086     | 0.846   | Among Gr  | 2  | 0.355 | 0.178 | 3.990*  |
|          |              |           |         | Within Gr | 18 | 0.801 | 0.045 |         |
| ADJUSTED | 1.051        | 1.31      | 0.897   | Among Gr  | 2  | 0.195 | 0.098 | 3.967*  |
|          |              |           |         | Within Gr | 17 | 0.419 | 0.025 |         |

\*Significant at 0.05 levels.

F (2, 17) =3.59, F (2, 18) =3.55

The table-3 of analysis of covariance for Positive Breath holding capacity of Nadi Sodhana, Bhastrika Pranayama and control group indicated insignificant F-ratio of 2.292 for the initial test of means. However, the F-ratio for the adjusted final test mean reveal a value of 3.990 and 3.967 which was significant as it was greater than the F-value of 3.59 and 3.55 required for significant at 0.05 level. This indicates that there were significant differences from the final test and the adjusted final means of Nadi Sodhana, Bhastrika Pranayama and control groups in the Positive Breath holding capacity.

**Table-4**  
**Paired Adjusted Final Mean and Difference between Means of Three Different Groups of Positive Breath Holding Capacity**

| MEAN         |           |         | MEAN DIFFERENCE | CRITICAL DIFFERENCE |
|--------------|-----------|---------|-----------------|---------------------|
| NADI SODHANA | BHASTRIKA | CONTROL |                 |                     |
| 1.051        | 1.131     |         | 0.08            | 0.225               |
| 1.051        |           | 0.897   | 0.154           | 0.225               |
|              | 1.131     | 0.897   | 0.234*          | 0.225               |

Table-4 indicates that the difference between the paired adjusted final means of Nadi Sodhana, Bhastrika Pranayama and control groups in Positive Breath holding capacity indicated significant value of 0.234\* which emphasis greater mean gain observed for Bhastrika group as compared to the control group.

### Conclusion:

On the basis of result of the study following conclusions are drawn:

1. Both Nadi Sodhana and Bhastrika Pranayama had significant contributing role over the vital capacity of subjects as a result of eight weeks yogic training.
2. The effect of eight weeks practice of Nadi Sodhana and Bhastrika Pranayama were significant enough to bring about the change in the positive breath holding capacity.

So it is recommended from the findings of the study is that anyone who regularly perform the yogic kriyas following the techniques get benefit. These kriyas can be performed by anyone and at any place and even at any time of the day. Literatures have shown that the various asanas and kriyas can be performed at any age and all those who practice the yogic kriya live long healthy life.

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