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The Effect of Chandra Bhedi Pranayama (Left Nostril Breathing) on Cardiorespiratory and Autonomic Parameters

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Original Research Article

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Abstract: The effect of Chandra Bhedi Pranayama (Left nostril breathing) on autonomic functions were investigated in healthy male volunteers, The Left nostril breathing (LNB) Comprised 30 Males in age groups of 18-25-years. Initially, in subjects control Values of respiratory rate (RR), heart rate (HR), Systolic blood Pressure (SBP), and diastolic blood pressure (DBP) were recorded. The same parameters were recorded after 4weeks of training in LNB. After 4 Wks practice of Chandra Bhedi Pranayama, HR ($P<0.01$) decreased, SBP ($P<0.001$) declined more significantly and RR ($P<0.0001$) and DBP ($p<0.05$) decrement was maintained. The results suggest that there is a parasympathetic dominance evoked by LNB (Chandra Bhedi Pranayama).
Keywords: LNB (Chardra Bhedi Pranayama) Blood Pressure, HR, RR.

INTRODUCTION

In our bodies, the right and left Nostril do not function simultaneously [1] one of the nostril is always more congested than the other. This congestion alternates between the right and left nostril through the day and night [1].

In the yogic system of breathing the right nostril dominance corresponds to activation of 'Pingala' Nadi Subtle Energy channel of yoga also known as Surya Nadi It is related to sympathetic arousal and the Left nostril dominance to Ida Nadi also known as 'Chandra' Nadi Svara with parasympathetic activation [1].

According to yoga 72,000 nadis are said to Spread throughout the body each branching off into another 72,000, they move in every direction and have countless outlets and function. In these the three are most vital are the Susumna, Ida and Pingala [2].

METHODS

The present study was conducted on 30 healthy male medical students. Their ages ranged from 18-25 years. The experimental Protocol was explained to them and written consent obtained. Their Height, weight, age and dietary habits were recorded.

The entire subject ware healthy and free forms any cardiorespiratory illness. The subjects were non alcoholics and non-smokers. The subjects were of same socio-economic and nutritional status. Poor socio-economic and nutritional status is known to adversely affect respiratory and autonomic responses [3].

Experimental Protocol

The control RR/min, HR/min, SBPmmHg, DBPmmHg were recorded of the subjects on Day-1 before Started the Chandra Bhedi Pranayama practice the subjects were divided in three groups 10 in each. The students then practiced LNB for 15 min daily for 4 Wks.

Post training parameters were again recorded as each student completed his 4 wks training in LNB (Chandra Bhedi Pranayama).

MEASUREMENTS AND RECORDING DEVICES

Respiratory rate (RR) was recorded by movements of abdominal wall in lying down position. Heart rate (HR) was calculated from RR interval of

ECG in lead II. ECG was recorded by ECG Machine, (BPL model number T-108, Bangalore) in supine rest. Three standard limb leads ware recorded and lead II was analyzed for calculating heart rate and other changes. Blood pressure (BP) was recorded by automatic Blood pressure monitor and model Accu sure (Micro gene Diagnostic system pvt. Ltd., New Delhi) in Supine position.

Method for Chandra Bhedi Pranayama (LNB)

It was done in sitting posture. The subjects were asked to practice the following. To sit in a calm, quiet, airy place in an easy and steady posture with the head, neck and trunk erect and in a straight line and to keep the body still. For achieve this position vajrasana is suitable Asana so subjects were practiced pranayama in vajrasana.

Technique of Chandra Bhedi Pranayama

To bring the right hand up to the nose and close right nostril with the right thumb and then breathe slowly and deeply through left nostril only.

ANALYSIS OF DATA

Mean and standard deviation of the observation for all the parameters were calculated by applying students't' test (paired). Analysis was done by computer programming of 'Microsoft Excel'. Statistical significance was assigned at $p<0.05$, 'P' values were obtained by comparison of parameters of control with4 wks of pranayama practice.

RESULTS

The anthropometric parameters are summarized in Table I and the results of chanra Bhedi Pranayama (LNB) in Table II.

In subjects, RR ($P<0.0001$), SBP ($P<0.0001$), DBP ($P<0.05$) and HR ($P<0.01$) decreased significantly after 4 wks.

Table-I: The anthropometric parameters of the subjects

Groups	Ht(cms)	Wt(kgs)	BSA(/m^2)
LNB	172.8±6	62.1±7	1.75± 0.1

The values are means and ± SD

Table-II: Effect of Chandra Bhedi Pranayama (LNB) on different parameters in subjects

	RR (Breaths/min)	HR (Beats/min)	SBP (mmHg)	DBP (mmHg)
Control	16±2	72±9	117±9	68±8
After4wks	11±2	60±7	110±8	62±6

The values are means +SD

*P<0.05, **P<0.01, ***P<0.001, ****P<.0.0001.

P values are comparisons between controls with 4wks of LNB

DISCUSSION

These results with Chandra Bhedi Pranayama (LNB) are suggestive of parasympathetic activation. LNB significantly reduced RR, HR, SBP and DBP. The probable mechanism by which parasympathetic activation by Chandra Bhedi Pranayama (LNB) are;

- LNB appear to alter autonomic responses by increasing vagal tone and decreasing sympathetic discharge [4], [5].
- Yoga has shown to reduce stress arousal patterns, reduce stress hormones such as cortisol and bring stable autonomic balance in health and diseases [6].
- The Mechanism by which Yoga practices bring the changes in ANS can be explained by the Following two hypotheses –
- In one hypothesis, exercise training improves vagal modulation through angiotensin II and nitric Oxide (NO). The mechanism of increased vagal tone by exercise may be due to reduction of angiotensin II. Angiotensin II is known to inhibit cardiac vagal activity [7]. Exercise training suppresses angiotensin II expression [8].

In another hypothesis, Voluntary slow deep breathing and exercises reset the ANS through stretch induced inhibitory signals and hyperpolarization currents propagated through both neural and non-neural tissue which synchronizes neural elements in the heart, lungs, limbic system and cortex, During inspiration, stretching of lung tissue produces inhibitory signals by action of slowly adapting stretch receptors and hyperpolarization current by action of fibroblasts. Both inhibitory impulses and hyperpolarization current synchronize neural elements leading to the modulation of the nervous system and decreased metabolic activity i.e. parasympathetic state [9].

Changes in intraocular pressure induced by differential forced unilateral nostril breathing, a technique that affects both brain hemisphericity and autonomic activity [10].

The results suggest that there is parasympathetic dominance evoked by Left nostril breathing (Chandra bhedi pranayama).

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