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Impact of Yogic Practices on Selected Physiological Variables among College Men

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Abstract

Yoga breathing is considered as an intermediary between the mind and body which owes great potentials and comprehensive utilization of the prana system. As the pranayama and bandhas have vital role in the yogic breathing practices, the investigator analyzed the effect of pranayama and bandha practices on selected physiological variable among college men. To achieve this purpose, three groups of twenty college men each were randomly selected as subjects and named as 'bandha group', (BG) 'pranayama group' (PG) and 'combined group' (CG). BG and PG underwent selected bandha and Pranayama practice respectively whereas CG underwent the combination of both pranayama and bandha practice for six weeks. The selected subjects were tested before (pre test) and after (post tests) the practice period on the selected variables for the research work and were statistically treated by applying ANACOVA and Scheffe's Post Hoc test. The result of this study was proved that selected bandha and pranayama practice could make significant changes on the physiological functions among college men. Daily practice of yoga is one of the prime and easiest ways to maintain the physiological functions attain physical fitness and free from diseases especially among college men.

Keywords: Yoga, Pranayama, Bandha, Physiology, College Men.

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Introduction

Yoga is a spiritual technique and system of philosophy, but it is also the oldest and most thoroughly tested form of physical and mental exercise known as humanity. Yoga breathing is considered an intermediary between the mind and body. Yoga breathing owes their great potentials to prana. Regular practice of yoga breathing gives maximum benefits through complete and comprehensive utilization of the prana system (Nancy, 1986). Yoga science of breathing is called pranayama. Oxygen is the most vial nutrient to our body. It is essential for the integrity of the brain, nerves, glands and internal organs. It is a systematic exercise of respiration, which makes the lungs stronger, improves blood circulation makes the man healthier and bestows upon him the boon of a long life. It aids the respiratory system function at its best whereby the life force can be activated and regulated in order to go beyond one's normal boundaries or limitations and attain a higher state of vibratory energy (Iyengar, 1981).

Bandha is a lock, meaning a closing off part of the interior body. These techniques speed up the raise of Kundalini energy, which allows the experience of higher states of consciousness. Bandhas thus direct the energy flow (prana) inside the body so that blockages of dammed up and repressed energy are alleviated, areas starved of prana are nourished, and the life force energy (prana) which leak out because of dissipative habits are harmonized, activated, and integrated (Ravishankar, 2004). Peak expiratory flow rate (PEFR) is the maximum flow rate generated during a forceful exhalation, starting from full lung inflation.

The peak expiratory flow rate measures how fast a person can breathe out (exhale) air. The number of movements indicative of inspiration and expiration per unit time is respiratory rate. Exercise increases the number, while rest diminishes it. The lower the resting respiratory rate, healthier the person is (Menon, 1984). Vital capacity is the maximum amount of air a person can expel from the lungs after a maximum inspiration. It is equal to the inspiratory reserve volume plus the tidal volume plus the expiratory reserve volume which are an invaluable tool in assessing the functional ability of the breathing system **(**Nancy, 1986). Breathing consists of a regular rhythmic contraction and relaxation of the diaphragm. Breath can be hold voluntarily for a while. Holding the breath during inhalation causes the air drawn inside the lungs gets more chance of mixing with stale air in those pockets. As more time is made available for air mixing, stagnant stale air is removed and supply of fresh air goes inside those pockets. Similar action takes place during exhalation also. The overall effect of these actions is that entire surface of alveoli, or air sacs inside the lungs gets larger amount of fresh air (Morehouse, 1986).

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Adolescence is a Latin word means "to grow up" is a transitional stage of physical and mental human development generally occurring between 12 years and 19years. Adolescence is a transitional stage of physical and mental human development generally occurring between puberty and legal adulthood. Dramatic changes in the body, a development in a person's psychology and transitions through one's academic career being occurs in this period. It is generally regarded as an emotionally intense and often stressful period. Yoga physiology is the study of how the body reacts and adapts to yogic exercise, in both the long and short term to a routine (Smith, 2007).

Methodology

As the pranayama and bandhas have vital role in the yogic practices, the investigator was interested to analyze the physiological changes among college boys due to selected yogic breathing practices. The objective of the study was to find out the effect of pranayama and bandha practices on selected physiological variables such as forced vital capacity, peak expiratory flow rate, resting respiratory rate, breathing holding time among college men. Three groups of twenty college men each were randomly selected as subjects from Cuddalore district and named as 'bandha group', 'pranayama group' and 'combined group'. Their mean age, height and weight were 18 to 22 years, 170 centimeters and 65 kilograms respectively. Pranayama and bandha practice was planned, administered and scheduled based on the results of the pilot study. The data on dependent variables such as Peak expiratory flow rate, Forced vital capacity, Respiratory rate and Breath holding time were collected by means of Wright Peak flow meter, Spiro-meter, Number of breath rate/min and Nostril clip respectively. The selected groups underwent the practice in the morning session only for three option days and six weeks in total. The selected subjects were tested before (pre test) and after (post tests) the practice period on the selected variables for the research work and were statistically treated by applying ANACOVA and Scheffe's Post Hoc test. The details of practice is shown in the following table-I.

Results and Discussion

The detailed procedure of analysis of data and interpretation were given below,

Table I. Analysis of covariance on forced vital capacity

Test	Bandha	Pranayama	Combined	Source of variance	Sum of squares	Df	Mean squares	Obtained f
Pre Test Mean	2.14	2.09	2.07	between	0.40	2	0.200	0.06
				within	204.00	57	3.58	
Post Test Mean	2.76	2.795	3.20	between	31.03	2	15.52	4.30*
				within	205.90	57	3.61	
Adjusted Post Test Mean	2.73	2.80	3.22	between	37.04	2	18.52	32.32*
				within	32.092	56	0.57	
Mean Diff	0.62	0.705	1.13					

***** Significant

From the result of analysis of covariance on forced vital capacity among selected groups, it was observed that the obtained 'F' value of 32.32 was greater than the table value of 3.23 with 2 and 57 degrees of freedom. From the post hoc analysis, it was clear that the combined group improved the forced vital capacity due to the effect of six weeks of combined (bandha and pranayama) practice. This study was in accordance with the study done by Sivapriya and Others (2010) to create awareness in the health benefits of pranayama and showed significant increase in PEFR, FVC, and FEV.

Table II. Scheffe's post hoc test scores on forced vital capacity

Means				Required C I
Bandha	Pranayama	Combined	Mean difference	
2.73	2.80	-	0.07	0.28
2.73	-	3.22	0.49*	0.28
-	2.80	3.22	0.42*	0.28

Table III. Analysis of covariance on resting respiratory rate

Test	Bandha	Pranayama	Combined	Source of variance	Sum of squares	Df	Mean squares	Obtained f
Pre Test Mean	22.30	22.4	22.50	Between	0.40	2	0.200	0.06
				Within	204.00	57	3.58	
Post Test Mean	19.40	19.35	17.85	Between	31.03	2	15.52	4.30*
				Within	205.90	57	3.61	
Adjusted Post Test Mean	19.49	19.35	17.76	Between	37.04	2	18.52	32.32*
				Within	32.092	56	0.57	
Mean Diff	2.90	3.05	4.65					

***** significant

The result of analysis of covariance of resting respiratory rate among selected groups showed that the obtained 'F' value of 50.52 was greater than the table value of 3.23 with 2 and 57 degrees of freedom. From the post hoc analysis, it was clear that the combined group improved the resting respiratory rate due to the effect of six weeks of combined (bandha and pranayama) practice. The study was in accordance with Varun, Monica, Shakuntala, Basvarajaih (2008) who analysed physiology of anuloma viloma pranayama and revealed that yoga significantly dropped the resting respiratory rate.

Table IV. Scheffe's post hoc test scores on resting respiratory rate

Means				Required C I
Bandha	Pranayama	Combined	Mean difference	
19.49	19.35	-	0.14	0.60
19.49	-	17.76	1.73*	0.60
-	19.35	17.76	1.59*	0.60

Conclusion

These practices help to boost, harmonise and refine the flow of Prana, thereby helping to maintain and enhance health. It is concluded that the present study had shows that selected bandha and pranayama practice had greater effect on physiological functions among the participants, which is very encouraging and significant.

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