



EFFECT OF YOGASANA ON PULMONARY VARIABLES AMONG YOGA AND NON-YOGA STUDENTS IN PASCHIM MEDINIPUR DISTRICT

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ABSTRACT

Introduction:- The word 'yoga' is derived from the roots of Sanskrit 'Yuj' which means to join, to attach, to bind, yoke and a concentrate or one attention. The literal meaning of the word 'Yoga' is 'yoke'. It means for uniting the individual spirit with the Universal spirit or God. **Purpose:-** Purpose of the study is to find out the "Effect of yoga on Pulmonary Variables among Yoga and Non-Yoga students in Paschim Medinipur District". **Materials & Methods:-** To achieve the purpose, total Sixty (60) subjects whose age ranging between 19-22 years were selected for the study from various college in Paschim Medinipur district, West Bengal. The subjects were divided into two groups. They are Yoga Group and Non- yoga group. Each group contains 30 each. The Pulmonary variables were vital capacity (VC), Inspiratory reserve volume (IRV), expiratory reserve volume (ERV) and Tidal volume (TV) which were measured by Spirometer. The Yoga group were given the twelve (12) weeks yoga training in Paschim Medinipur district yoga centre. The training schedule was fixed in the morning session as well as in the afternoon session minimum time duration 60-90 minutes per session with various types of yogasana including slow warming up, warm down and resting time between and set of the exercises. Non-yoga group does not practice yoga training. They are involved in normal physical activities in that period. A pre-test mean score was taken on both groups and the scores were recorded. Similarly, after Twelve (12) weeks of yoga training a post-test mean score was taken and scores were recorded. The Independent Paired- 't' test was conducted for evaluate the data and the level of significance is fixed at 0.05 level of confidence. **Results & Discussion:-** The data was analyzed statistically by computing mean, standard deviation and 't' test. It was observed that the Post-test mean score of yoga group were better improved than the Post-test mean scores of Non-yoga group. It is also evident that the calculated value of pulmonary variables in yoga group is more than the table value at 0.05 level of significant. So, the result is significant due to yoga practice. On the other hand, the calculated value of pulmonary variables in Non-yoga group is less than the table value at 0.05 level of significant. So, the result is insignificant. The hypothesis is accepted since there was a significant improvement in pulmonary variables due to 12 weeks of yoga training programmes. **Conclusion:-** On the basis of the obtained result, I concluded that Yogasana helps to improve the pulmonary variables due to twelve (12) weeks of yoga training programmes. So, Yoga group was better than the Non-yoga group.

KEYWORDS : Yogasana, Pulmonary variables, College going students.

INTRODUCTION

"Yoga is a life of self-discipline. Yoga balances, harmonizes, purifies and strengthens the body, mind and soul. It shows the way to perfect health, perfect mind control and perfect peace with one's own self, the world, nature and God."

- Swami Vishnu-devananda

The word "YOGA" at once reminds us the knowledge of the self. It emphasizes on "Know the Self". It is nothing but the improvement of the body and mind. It is the means of attaining healthy body, mental strength, tranquillity of the mind. It is the methodical effort to attain perfection through the controlling of body and mind. "A healthy mind resides in a health body". Human beings always want sound body either taking medicine or practicing yoga. The question arises which of the two is most important. Medicine is no doubt for human being as it cures any diseases in no time and relieves human beings from painful situation for the time being but it has its side effects. Medicine affects the organs like heart, lungs, brain and blood vessels and thereby creates another problem. In nutshell, medicine is the mother of other diseases in human body. Man is a rational being. 'Yoga' concentrates our mind in every aspect of life and thereby human beings can gain healthy body. It helps the man to gain resistance power and normalize blood circulation. It also helps cleaning of blood veins and pumping of purified blood. The practice of Yoga in the Indian subcontinent has been documented as early as B.C. Regular practice of variety of Yoga techniques have been shown to lower heart rate and blood pressure in various population Ckuvalayananda 1968; Lakshmikanthan et al. 1979 and mahajan et al. 1999. All over the world scientists have extensively studied Yoga and claimed that it increases longevity C Marugeson et al. 2000; Mc Calfreyetal. 2005; Nagarathan and Nagendra 2003 and patel 1975). It has therapeutic and rehabilitative effects (Raubetal 2003. Schindf et al. 1998 and Selvam urthyetal 1999.

The Benefits of Yoga and Meditation:- Yoga practice has been documented for over 2,000 years (NCCAM, 2009) and was originally a branch of Indian philosophy. Indian philosophy remains the cornerstone of the modern yoga form known as Ashtanga yoga. The

holistic practice of yoga includes ethical, physical, emotional, and mental disciplines as well as the attainment of enlightenment (Burkett, 2006). Many modern yoga classes isolate specific aspects, such as posture holding, from the original holistic view of yoga. In the literature, there is a lack of consensus on the definition of yoga. For the purposes of this study, yoga is defined as an exercise that combines movements through a series of postures with regulated breathing (Salmon et al., 2009) and mindfulness meditation. Due to yoga's blending of physical activity and meditation, it is intriguing to examine its effects on the human body and psyche.

In addition to the many physiological benefits, several studies have asserted that physical activity has positive effects on various cognitive functions. According to Hillman, Erickson and Kramer (2008), physical activity was positively correlated with perceptual skills, intelligence quotient, achievement, verbal tests, mathematical tests, and developmental level/academic readiness in children. In another study, it was found that children who had high levels of aerobic fitness had an increased processing speed, attention, working memory, and response speed (Hillman, Castelli and Buck, 2005). Budde, et al. (2008) found that 10 minutes of coordinated exercise compared to 10 minutes of a standard physical fitness course had a statistically significant effect on raising scores of selective attention. Therefore, although physical activity has been demonstrated to have a positive effect on various cognitive functions, activity requiring coordinated movement may have an even greater effect.

In Bhagvad Gita, the main stress is on karma yoga (yoga by action). Work alone is your privilege, never the fruits thereof. Never let the fruits of action be your motive; and never cease to work. Work in the name of Lord, abandoning selfish desires. Be not affected by success or failure. This equipoise is called Yoga. A man who cannot control his mind will find it difficult to attain this Divine communion; but the self-controlled man can attain it if he tries hard and directs his energy by the right means. "Yoga is an art, a science and a philosophy. It touches the life of man at every level, physical, mental, and spiritual. It is a

practical method for making one's life purposeful, useful and noble.

Pulmonary Variables- There are many pulmonary variables. such as..
 FVC (Forced Vital Capacity),
 FEV 1 (Forced Expiratory Volume in one second),
 FEV 25-75 (Forced Expiratory Flow from 25% to 75%),
 MVV (Maximal Voluntary Ventilation),
 ERV (Expiratory Reserve Volume),
 VC (Vital Capacity),
 PEF (Peak Expiratory Flow)
 TV (Tidal Volume) etc.

Purpose Of The Study

The purpose of the study was to analyse the effect of twelve (12) weeks yoga training programmes on selected pulmonary variables of college going male students in Paschim Medinipur District.

Hypotheses

It is hypothesized that there will a significant difference found of twelve weeks (12) Yoga training programmes on selected pulmonary variables of college going male students in Paschim Medinipur District.

METHODOLOGY:-

Subjects:- Total sixty (60) college going male students were randomly selected for the study from various college in Paschim Medinipur district, West Bengal age ranging between 19-22 years. The subjects were divided into two groups. They are Yoga Group and Non- yoga group. Each group contains 30 each.

PROCEDURE:- Total Sixty (60) college going male students were randomly selected for the study from various college in Paschim Medinipur district, West Bengal age ranging between 19-22 years. The subjects were divided into two groups. They are Yoga Group and Non- yoga group. Each group contains 30 each. The Yoga group was given the twelve (12) weeks yoga training in Paschim Medinipur district yoga centre. The training schedule was fixed in the morning session as well as in the afternoon session minimum time duration 60-90 minutes per session with various types of yogasana including slow warming up, warm down and resting time between and set of the exercises. Non-yoga group does not practice yoga training. They are involved in normal physical activities in that period. A pre-test mean score was taken on both groups and the scores were recorded. Similarly, after Twelve (12) weeks of yoga training a post-test mean score was taken and scores were recorded. The Pulmonary variables were vital capacity (VC), Inspiratory reserve volume (IRV), expiratory reserve volume (ERV) and Tidal volume (TV) which were measured by Spirometer.

Statistical Analysis:- The Independent Paired-'t' test was conducted for evaluate the data and the level of significance was fixed at 0.05 level of confidence. To get the final result Mean, SD, Mean Difference and 't'-test were calculated.

Schedule Of Yoga & Pranayama Practice:-

1. Bhujangasana 9. Halasana, 2. Ardh-Shalabhsana 10. Ardh-Matsyedrāsana
3. Ardh-Halāsana 11. Shalabhasana, 4. Vakrasana 12. Viparitkarani
5. Chakrasana 13. Naukasana, 6. Paschimottan 14. Parvatasana
7. Dhanurasana 15. Makrasana, 8. Shavasana 16. Kapalbhāti
17. Anulom-Vilom, 18. Meditation.

Selected Variables & Their Measurement And Units:-

SL.NO.	PULMONARY VARIABLES	MEASURED BY	UNITS
1.	Vital Capacity (VC)	Spiro meter	Liter
2.	Inspiratory Reserve Volume (IRV)	Spiro meter	Liter
3.	Expiratory Reserve Volume (ERV)	Spiro meter	Liter
4.	Tidal Volume (TV)	Spiro meter	Liter

RESULTS & DISCUSSION:-

The result of the study is discussed under the following tables with the graphical presentation. Table-1 shows the significant difference and Table-2 shows the insignificant difference between pre-test and post-test scores on pulmonary variables of college going male students.

Table - 1 Significant Difference between Pre-test and Post-test Mean Scores on Pulmonary variables of Yoga Group after calculating the Mean, SD, MD and t-ratio of college going male students: -

Sl.No.	Pulmonary Variables	Test	Mean	MD	t- ratio	Sig.
1.	Vital Capacity (VC)	Pre - test	4.40	1.30	2.53	0.05*
		Post - test	5.70			
	Inspiratory Reserve Volume (IRV)	Pre - test	2.25	1.20	2.42	
		Post - test	3.45			
	Expiratory Reserve Volume (ERV)	Pre - test	1.05	1.10	2.25	
		Post - test	2.15			
	Tidal Volume (TV)	Pre - test	0.52	0.76	2.18	
		Post-test	1.28			

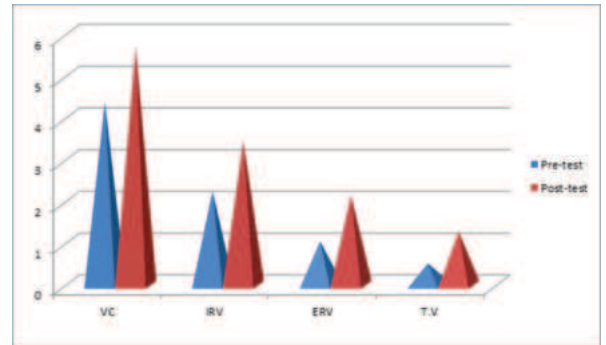


Fig.1:- Graph Showing the Significant Difference between Pre-test and Post-test mean scores of Yoga group on Pulmonary variables of College going male students.

Table - 2 Significant Difference between Pre-test and Post-test Mean Scores on Pulmonary variables of Non-Yoga Group after calculating the Mean, SD, MD and t-ratio of college going male students: -

Sl.No.	Pulmonary Variables	Test	Mean	MD	t- ratio	Sig.
1.	Vital Capacity (VC)	Pre - test	4.32	0.38	0.95	0.05*
		Post - test	4.80			
	Inspiratory Reserve Volume (IRV)	Pre - test	1.85	0.45	1.02	NS
		Post - test	2.30			
	Expiratory Reserve Volume (ERV)	Pre - test	0.80	0.25	0.75	
		Post - test	1.05			
	Tidal Volume (TV)	Pre - test	0.45	0.33	0.86	
		Post-test	0.78			

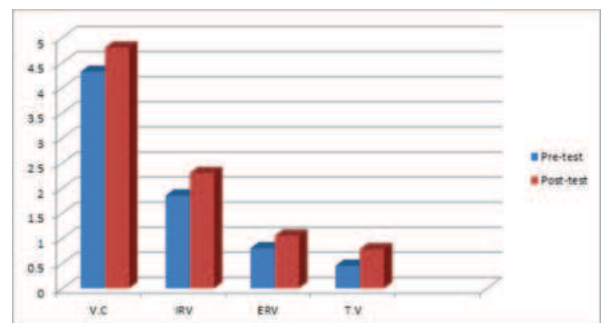


Fig.2:- Graph Showing the Significant Difference between Pre-test and Post-test mean scores of Non-yoga group on Pulmonary variables of College going male students.

DISCUSSION

It is observed from the table-1 that the pre-test mean score of pulmonary variables like vital capacity (VC), Inspiratory reserve volume (IRV), expiratory reserve volume (ERV) and Tidal volume (TV) are 4.40, 2.25, 1.05 and 0.52 respectively which are improved better in post-test, they were 5.70, 3.45, 2.15 and 1.28 respectively. It is also evident from the above table that the calculated value of the each variable i.e 2.53, 2.42, 2.25 and 2.18 are more than the table value at 0.05 level of significant. So, the result is significant. The hypothesis is accepted since there was a significant improvement in vital capacity (VC), Inspiratory reserve volume (IRV), expiratory reserve volume (ERV) and Tidal volume (TV) due to 12 weeks of yoga training programmes. On the other hand, It is observe from the Table-2 that the pre-test mean score of pulmonary variables like vital capacity (VC), Inspiratory reserve volume (IRV), expiratory reserve volume (ERV) and Tidal volume (TV) are 4.32, 0.80, 1.05 and 0.45 respectively

which are slightly changed in post-test, they were 4.80, 2.30, 1.05 and 0.78 respectively. It is also evident from the above table that the calculated value of the each variable i.e 0.95, 1.02, 0.75 and 0.86 are less than the table value at 0.05 level of significant. So, the result is insignificant. Bhole (1978) suggested that minute ventilation during Pranayamic breathing with the puraka, Khumbhaka and Rechaka phase was for 5, 10, 10 seconds respectively. Increased airway resistance in Pranayamic breathing was supposed to be responsible for this. Bhole (1988) selected a questionnaire with four parts consisting of a large number of questions and presented to examine one's understanding of the technique and effect of kapalabhati through the first hand experiences of yoga practitioners. Abraham (1980) investigated the effect of 6 weeks training programme on selected physiological variables (Haemoglobin, pulse-rate, vital capacity, cardio-vascular endurance and peak expiratory flow rate) of professional college students. The data was collected before and after the experiment and analysed with the help of 't' test. The study concluded that cardio-vascular endurance and peak flow rate was improved due to training. There was a significant reduction in resting pulse-rate of the subjects and there were no significant changes in haemoglobin content and vital capacity after 6 weeks of training. Hence, the researcher was motivated to take up the present study.

CONCLUSION

Many research studies have been done on the various types of training programmes. It is proved that 12 weeks yoga training programmes have a significant role on the pulmonary variables of the college going male students. On the basis of the results obtained from the present empirical investigation and within the limitation, the following conclusions may be drawn.

Yogasana helps to improve the pulmonary variables due to twelve (12) weeks of yoga training programmes among Yoga and Non-Yoga students in Paschim Medinipur District. So, Yoga group was better than the Non-yoga group.

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