IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Effect Of Yogic Breathing Practices On Vital Capacity Among Basketball Players

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Abstract: To achieve the purpose of this study, 20 men basketball players were randomly selected as subjects from the St. Xavier's college, Palayamkottai, Tirunelveli, Tamilnadu, India. Their age ranged from 18 to 25 years. The selected participants were randomly divided into two groups such as group 'A' yogic breathing practices (n=10) and group 'B' acted as control group (n=10). Group 'A' underwent yogic breathing practices for five days per week and each session lasted for an hour for eight week. Control group was not exposed to any specific training but they were participated in regular activities. The "vital capacity" in liters was used to measure spirometer were selected as variables. The pre and post tests data were collected on selected criterion variables prior and immediately after the training program. The pre and post-test scores were statistically examined by the dependent't' test and Analysis of co-variance (ANCOVA). The level of significant was fixed at 0.05 level. It was concluded that the yogic breathing practices group had shown significantly improved in vital capacity. However the control group had not shown any significant improvement on vital capacity.

Index Terms – Yogic, Breathing, Vital Capacity, Basketball Players

1. INTRODUCTION

Yoga, as an ancient discipline that applies a combination of practices including asana, breath work, and meditation, has recently shown potential as an intervention targeting a number of consequences related with lifestyle-related health conditions Marshall, L. (1978).Yoga is the science of physical and mental health. It synchronizes the functions of the muscle and the mind. It is the only path that can lead to holistic health Charles Batch, (1987). Asanas are special patterns of postures that stabilize the mind and the body through static stretching. Regular practice of sun salutation regulates pingala nadi (right nostril), whether it is underactive or overactive, thus leading to a balanced energy system at both the mental and physical levels. Vital capacity, the maximum amount of air that can be exhaled after a deep inhalation, is a key indicator of lung efficiency. Basketball requires high levels of cardiovascular endurance, making lung function a critical component of athletic performance. Yogic breathing techniques, particularly Pranayama, have been reported to enhance lung capacity by strengthening respiratory muscles, improving oxygen uptake, and reducing stress-induced breathlessness. The objective of this study is to assess the impact of yogic breathing practices on the vital capacity of basketball players. Basketball is a limited contact sport played on a rectangular court. Basketball is a sport played between two teams normally consisting of five or more players. Each team has five players on the basketball court at any given time. The objective is to score more points than the other team, with points being scored by shooting a ball through a basketball hoop (or basket), which is located ten feet above the ground. The two teams shoot at opposite goals. In order to move while in possession of the ball, a player must be dribbling, or bouncing the ball. The purpose of the present study was to find out the effect of yogic practices on selected physiological variables among basketball players.

2. METHODOLOGY

To achieve the purpose of this study, 20 men basketball players were randomly selected as subjects from the St. Xavier's college, Palayamkottai, Tirunelveli, Tamilnadu, India. Their age ranged from 18 to 25 years. The selected participants were randomly divided into two groups such as group 'A' yogic breathing practices (n=10) and group 'B' acted as control group (n=10). Group 'A' underwent yogic breathing practices for five days per week and each session lasted for an hour for eight week. Control group was not exposed to any specific training but they were participated in regular activities. The "vital capacity" in liters was used to measure spirometer were selected as variables. The pre and post tests data were collected on selected criterion variables prior and immediately after the training program. The pre and post-test scores were statistically examined by the dependent't' test and Analysis of co-variance (ANCOVA). The level of significance was fixed at .05 level of confidence, which was considered as appropriate

3. RESULTS AND DISCUSSIONS

TABLE-1
MEANS AND DEPENDENT 'T' TEST FOR THE PRE AND POST TESTS ON DIASTOLIC VITAL CAPACITY OF EXPERIMENTAL AND CONTROL GROUP

criterion variables	Test	ExperimentalGroup Mean	Control Group Mean
VITAL CAPACITY	Pre test	2.98	3.00
	Post test	3.33	3.14
	't'test	**14.67***	**1.44**

***Significant at .05 level. (Table value required for significance at .05 level for 't'-test with df 9 is 2.26)

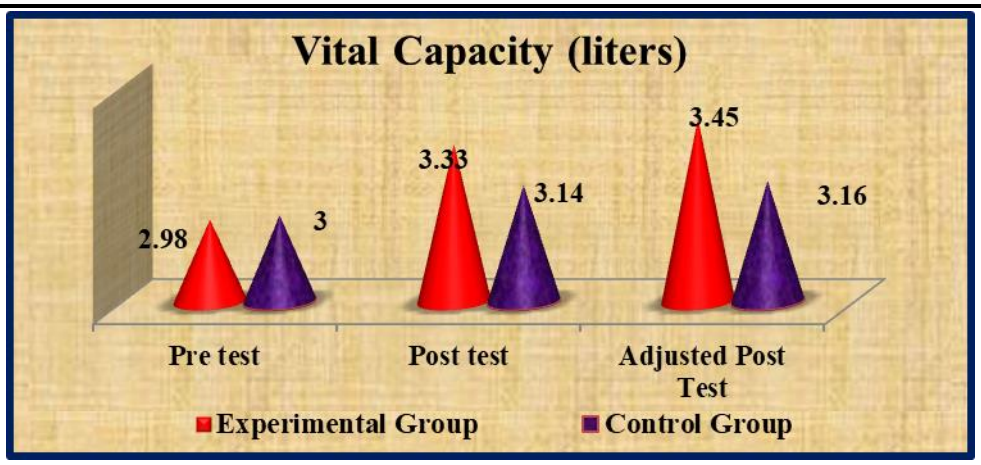
The table-1 shows that the pre-test mean value of experimental and control groups on vital capacity are 27.14 and 26.37 respectively and the post test means are 32.01 and 27.98 respectively. The obtained dependent t-ratio values between the pre and posttest means of yogic practices and control groups are 7.28 and 1.34 respectively. The table value required for significant difference with df 9 at 0.05 level is 2.26. From the above table the dependent't'-test value of vital capacity between pre and post tests means of experimental group was greater than the table value 2.26 with df 9 at .05 level of confidence, it was concluded that the experimental group had significant improvement in the vital capacity when compared to control group.

TABLE-2
COMPUTATION OF MEAN AND ANALYSIS OF COVARIANCE VITAL CAPACITY OF EXPERIMENTAL AND CONTROL GROUPS

	Experimental Group	Control Group	Source of Variance	Sum of Squares	Df	Mean Square	F
vital capacity (Adjusted PostMean)	3.45	3.16	BG	17.90	1	17.90	**20.11***
			WG	15.13	17	0.89	

* Significant at 0.05 level. Table value for df 1, 17 was 4.45

Table-2 shows that the adjusted post test means values on diastolic blood pressure of experimental and control groups 32.12 & 27.84 respectively. The obtained f- ratio of 24.95 for adjusted post test mean is greater than the table value 4.45 with df 1 and 17 required for significance at 0.05 level of confidence. The results of the study indicated that there was a significant mean difference exist between the adjusted post test means of yogic breathing practices and control groups on vital capacity.



The bar diagram figure-1 shows that the mean values of pre, post and adjusted post tests on vital capacity of yogic breathing practices and control groups.

4. DISCUSSION ON FINDINGS

The present study demonstrates a statistically significant improvement in vital capacity among male basketball players who engaged in yogic breathing practices. These findings are consistent with previous research by Singh, L. S., Singh, S. O., Devi, O. P., Singh, W. J., & Singh, S. S. (2022), Firdous Ahmed, L. & Nisar Ahmad, H. (2019), Banstola D. (2016), and Vinayak PD et al. (2012), all of whom reported the positive effects of yogic breathing techniques on lung function and overall respiratory efficiency. Basketball is an aerobic-intensive sport that requires players to sustain high levels of endurance, rapid bursts of movement, and effective oxygen utilization. Improved vital capacity—the maximum amount of air that can be exhaled after a deep inhalation—is crucial for enhancing cardiovascular endurance and reducing fatigue during intense gameplay. The significant improvement observed in this study suggests that yogic breathing practices (Pranayama) contribute to optimizing pulmonary function, leading to better oxygen intake and utilization. Yogic breathing techniques such as Anulom Vilom (alternate nostril breathing), Bhastrika (bellows breath), Kapalabhati (cleansing breath), and Bhramari (humming bee breath) likely played a major role in strengthening respiratory muscles, improving lung elasticity, and increasing overall lung capacity. These techniques facilitate enhanced diaphragmatic movement, reduced airway resistance, and improved alveolar ventilation, all of which contribute to better endurance and performance in basketball players.

5. CONCLUSION

Within the limitations and delimitations of this study the following conclusions were drawn from the result.

1. There was significant improvement on vital capacity due to the effect of yogic breathing practices among basketball players.
2. However the control group had not shown any significant improvement on any of the selected variables.

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