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Impact of Yoga Breathing Exercises on Total Lung Capacity among Women Soccer Players

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Abstract

The purpose of the study was to find out the impact of yoga breathing exercises on total lung capacity among women soccer players. To achieve the purpose of this study, 18 women soccer players were randomly selected as subjects from the Rani Anna College, Tirunelveli, Tamilnadu, India. Their age ranged from 18 to 22 years. The selected participants were randomly divided into two groups such as Group 'A' yoga breathing exercises (n=9) and Group 'B' acted as control group (n=9). Group 'A' underwent yoga breathing exercises for five days and one session per day and each session lasted for an hour for six week. Control group was not exposed to any specific training but they were participated in regular activities. The data on total lung capacity were collected by administering by standardized test items. The total lung capacity was assessed by spirometer test. The pre and post tests data were collected on selected criterion variables prior and immediately after the training programme. The pre and post-test scores were statistically examined by the dependent't' test and Analysis of Co-Variance (ANCOVA) for selected variable. It was concluded that the yoga breathing exercises group had shown significantly improved in total lung capacity. However the control group had not shown any significant improvement on total lung capacity.

Keywords: Yoga Breathing Exercise, Lung Capacity, Spiro meter and soccer.

Introduction

Yoga is a very ancient discipline. It is recognized as one of the most important and valuable gifts of the Indian heritage. Today the world is looking to Introduction 25 yoga for solving the various problems men are facing. At no time in the past yoga has attracted so much attention from people in so many places in the world as it today. Yoga is an indigenous physical and mental training. French scholar, Masson Oural, has described yoga as the permanent basis of Indian culture. Hence it has its varieties and diversions as it has its right and discipline, the different kinds of yoga have played a vital role in forming the spirit of modern India (Chandrasekaran, 1999). 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.

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The specificity of exercises conducted in pranayama training program and fact that this group received proper breathing techniques to improvement mechanics might have resulted in the development of more functional and relevant motor programs that control the complex intramuscular coordination. 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). Pranayama is an important component of yoga training. Pranayama (controlled breathing exercise) improves the airway reactivity in the asthmatic individuals. It was noted that high frequency breathing exercise resulted in more than 10 fold increase in expired minute ventilation (Frostell, et al., 1983).

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). 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). The game soccer is the world's most popular team game. Soccer is the game requiring high level of fitness. It is one of those rare games which demands not only speed but agility, strength, power, and endurance along with skill. Training is essentially a preparation of the individual athlete so that he can with stand competition stress when he encounters and perform to maximum effectiveness. The soccer training process is partly designed to improve the capacities of individual players to ensure a capability to cope with the loads that competitive match play involves. A high level of physical demand is required for match play, which involves kicking, short sprinting, throwing, catching, trapping etc. The activities of the game include short sprinting as well as casual recovery movements. As the players have to cover a big area in the ground during attack and defense therefore, the game demands for aerobic as well as anaerobic fitness (Reilly, 1996; Reilly et al., 2000).

Statement of the Problem

The purpose of the study was to find out the impact of yoga breathing exercises on total lung capacity among women soccer players.

Methodology

To achieve the purpose of this study, 18 Women soccer players were randomly selected as subjects from the Rani Anna College, Tirunelveli, Tamilnadu, India. Their age ranged from 18 to 22 years. The selected participants were randomly divided into two equal groups of eighteen subjects. Group-A (n=9) underwent Yoga breathing exercises and Group-B (n=9) acted as control group. The total lung capacity was measured by spirometer. The data was collected before and after six weeks of training. The data was analyzed by applying dependent 't' test and analysis of co-variance (ANCOVA) technique to find out the impact of yogic practices training programme. The level of significance was set at 0.05.

Table I. The summary of mean and dependent 't' test for the pre and post tests on total lung capacity of experimental and control groups (in litters)

S.No	Group	Number	Pre Test		Post Test		t-value
			Mean	SD	Mean	SD	
1	Experimental Group	9	5.31	0.07	5.85	0.08	12.47*
2	Control Group	9	5.37	0.08	5.40	0.08	1.01

*Significant at 0.05 level. The table value required for significance at 0.05 level with df 9 is 2.26.

The table I shows that the obtained 't'- ratio value between pre and post test means of experimental group on total lung capacity is 12.47 which is greater than the table value of 2.26 required for significant at .05 level of significance with df 9. Therefore, it was concluded that the experimental group had significantly improved the total lung capacity. However control group showed not significant improvement on total lung capacity. Analysis of covariance (ANCOVA) on total lung capacity of experimental and control groups have been analyzed and presented in table II.

Table II. Analysis of covariance (ancova) on total lung capacity of experimental and control groups (In Liters)

Adjusted Post Test Means		Source of variance	Sum of squares	df	Mean square	F – ratio
Experimental Group	Control Group	Between	2.82	1	2.82	141.17*
5.85	5.40	Within	0.30	15	0.02	

* Significant at 0.05 level. (The table value required for significance at 0.05 level with df 1 and 15 is 4.54)

Table II shows that the adjusted post test means values on total lung capacity of experimental and control groups are 5.85 and 5.40 respectively. The obtained f-ratio of 141.17 for adjusted post test mean is greater than

the table value 4.54 with df 1 and 15 required for significance at 0.05 level of confidence. The results of the study indicate that there is a significant mean difference exist between the adjusted post test means of experimental and control groups on total lung capacity.

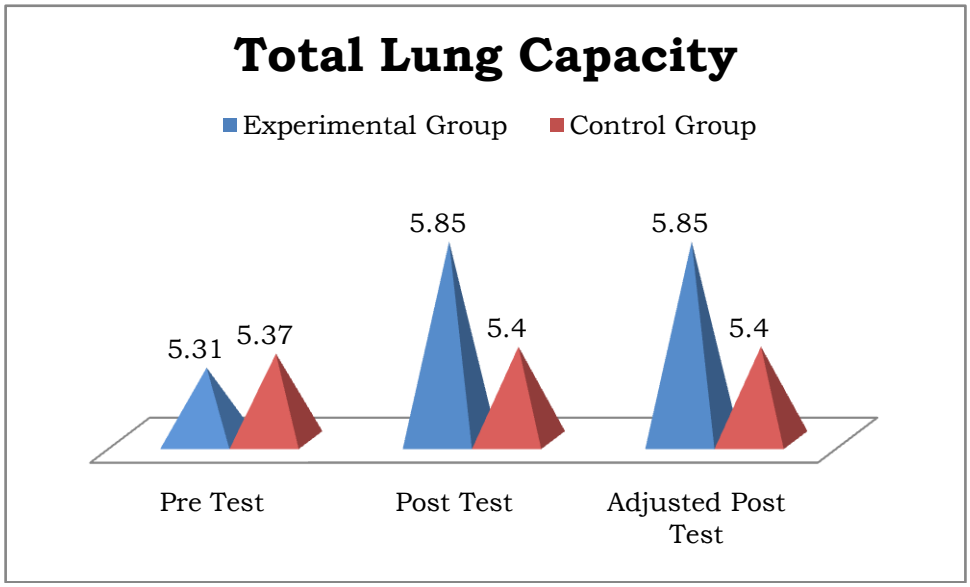

Figure I. Mean values for the pre, post and adjusted post tests on total lung capacity of experimental and control groups

Discussion on findings

The findings of the present study have strongly indicates that yogic breathing exercise of six weeks has shown significant improvement in total lung capacity of women soccer players. Zeyad Tareq Abdul Razzaq., et al., (2016) examined the effect of training and sport type on pulmonary function parameters among Iraqi Soccer and Futsal Players. The result of this study showed that although both soccer and futsal are categories of football games, player's trainings are different and as lung function improved due to an exercise, Iraqi soccer players showed the higher levels of lung function with better body characters than futsal players.

Conclusions

From the analysis of data, the following conclusions were drawn.

1. The experimental group showed significant improvement in total lung capacity after underwent six weeks of yogic breathing exercise.
2. The control group did not show significant improvement in total lung capacity.

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