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Effect of Six- Weeks Kapalbhati on Vital Capacity of Male Handball Players

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Abstract – The purpose of the study is to examine the effect of six- weeks Kapalbhati on vital capacity of Male Handball Players. The science of Kapalbhati deals with the control and enrichment of the vital capacity which results in rhythmic respiration, calm and alert state of the mind. To serve the purpose of the investigation 20 male handball players of age group 18-25 were selected randomly. Subjects were selected from the students of Lakshmibai National Institute of Physical Education, Guwahati at under graduate level. The win spirometer was used as instrument for measuring vital capacity of handball players. The statistical technique applied in order to examine the hypothesis of the study was descriptive statistic such as mean and standard deviation and comparative statistical technique Analysis of Covariance (ANCOVA) was used. The level of significance was set at 0.05. The results indicated that there is significance difference in vital capacity among handball players and it may be because of the Kapalbhati the subjects had given.

Key Words: Kapalbhati, Experimental (Training Group) and Control Groups

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INTRODUCTION

The science of Kapalbhati deals with the knowledge, control and enrichment of this vital force which results in rhythmic respiration, calm and alert state of mind. The word Kapalbhati is made up of two words: Kapal meaning 'skull' (here skull includes all the organs under the skull too) and bhati meaning 'shining, illuminating'. Kapalbhati helps to detoxify lungs and respiratory tracts, boosts the supply of oxygen and purifies blood and helps to tone up the abdominal muscles. It is also helpful in reducing abdominal fat, improvises concentration span.

Yoga is originated in India over thousands of years. Body and mind work perfectly after yoga, physiological changes can be explained by scientifically. It is said to help in increasing longevity and to have a therapeutic and rehabilitative effect. As the age increase the efficiency of respiratory system and ventilation declines due to various factors. In yoga pranayama is well known and has beneficial effects on respiratory efficacy. These exercises help to increase blood circulation and emptying in alveoli, leading to increased development of respiratory musculature, as is recorded in terms of Forced Vital Capacity (FVC). Joshi et al reported significant increase in FVC and Peak Expiratory Flow Rate (PEFR) following 6 weeks of Pranayama practice. Makwana et al reported significant increase in FVC & Forced Expiratory Volume in one minute (FEV1) following 10 weeks of yoga trainer Dr.Narendra Gupta Assistant Professor, Department of Physiology, Rohilkhand Hospital, Vital capacity was measured before and after 17 weeks of regular practice of yoga postures and breathing exercises in a large group of college students in the USA, and the study showed statistically significant increase in vital capacity across all categories over time. Bijlani and others have also reported similar observations.

In view of the above background the present study was conducted to study the effect of Six- weeks of Kapalabhati training on Vital Capacity.

METHODOLOGY

Selection of Subjects: To serve the purpose of the investigation, 20 male handball players for experimental and control groups of 18-25 age groups were selected randomly. Subjects were selected from the students of Lakshmibai National Institute of Physical Education, Guwahati.

Administration of the Test:

Purpose: This test aimed at measuring the vital capacity.

Procedure: It was ensured that the pointer of the scale was at the zero mark at the beginning of the test. The subject took deep breath before starting the test, and then after fullest inhalation the subject place the mouth piece attached to the nose connected to the drum of the Spirometer, in his mouth, taking care of that no air escaped through

the edges of the mouth piece. The subject exhaled through slowly and steadily while bending forward slightly until the max volume of the air could be expelled without taking in a second breath. The subjects were instructed to take care that they blow out only through the mouth and not by nose even partially. The nose of each subject was clipped by a nose clip to prevent a air escaping through the nose

Scoring: The score of vital capacity for each subject was recorded in litres. Three trails were given to each subject and the average value was recorded.

Statistical Technique: In order to find out the effects of Kapalbhati on the selected physiological variable,Analysis of Covariance (ANCOVA) test was employed at level of significance 0.05.

RESULTS

In order to examine the effect of Kapalbhati on vital capacity of handball players, statistical technique Analysis of Covariance (ANCOVA) were employed and level of significance was set at 0.05.

Table 1: Descriptive Statistics for Kapalbhati on vital capacity of handball players

Groups	Experimental Group		Control group	
	Pre Test	Post Test	Pre Test	Post Test
Mean	2.75	3.54	2.74	2.80
Standard Deviation	0.31	0.27	0.25	0.16

Table 1 indicates mean and standard deviation of vital capacity of experimental and control group. Mean and SD of pre-test and post-test of experimental group is 2.75 ± 0.31 & 3.54 ± 2.80 respectively and Mean and SD of pre-test and post-test of control group is 2.74 ± 0.25 & 2.80 ± 0.16 respectively.

Table 2: Levene's test of equality of error variances

F	df1	df2	p- value
1.132	1	18	0.301

To test the equality of variances vital capacity, Levene's test was used. The F-value was insignificant as the p-value (0.301) was more than 0.05. Thus the null hypothesis of equality of variances might be accepted, and it was concluded that the variances of the two groups were equal. The results were presented in Table 2.

Table 3: ANCOVA table for the post test on vital capacity

Source	Type III Sum of Squares	df	Mean Square	F	p- value
Pre test	0.545	1	0.545	17.307	0.001*
Groups	2.621	1	2.621	83.174	0.000*
Error	0.536	17	0.032		
Total	204.090	20			
Corrected Total	3.746	19			

*significant at 0.05 level

Table 3 shows the F- value for Pre is insignificant as p-value (0.001) is less than 0.05. It shows that the initial conditions of both the groups are different.

The f- value for comparing the adjusted means of the two groups (experimental and control group) during post testing. Since p-value of statistics is 0.000 which is less than 0.05, it is significant. Thus the null hypothesis of no difference among the post means of the data on vital capacity of both groups may be rejected at 5% level.

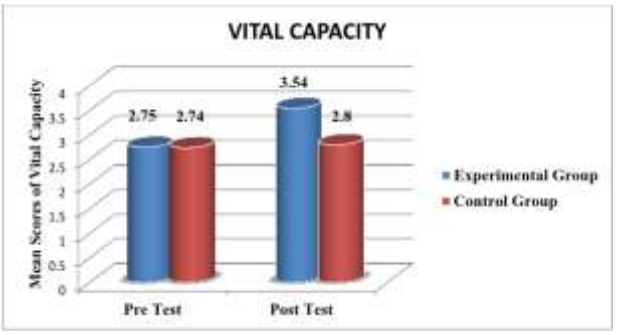

Fig 1: Graphical representation of pre-test scores and post-test score of mean Vital Capacity

DISCUSSION AND FINDINGS

Above results clearly reveals the pair wise comparison of the experimental group and control group of Kapalbhati on vital capacity of handball players during their pre-test and post-test there will a significant difference occurs. Stimulation of pulmonary stretch receptors by inflation of the lung reflexely relaxes smooth muscles of larynx and tracheo bronchial tree. Probably, this modulates the airway caliber and reduces airway resistance (Keele, Neil, & Joel 2003) .Previous investigators demonstrated the effect of pranayama on enhancement of the respiratory muscle efficiency and lung compliance due to reduction in elastic and viscous resistance of lung (Srivastava, Jain,& Singhal, 2005).Significantly higher improvement in PFT parameter (FEF25-75) in Kapalabhati group can be hypothesized to the reason that breathing during fast pace like in Kapabhati requires breath coordination at higher rate and hence, higher rate of respiratory muscle activity. This produces

strengthening of the respiratory muscles and therefore improvement in the effort produced by the subjects. Our study further substantiates the claim that Kapalabhati practice is beneficial on the vital capacity of handball players.

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