

## Golden Research Thoughts



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### Abstract:-

The purpose of this study was to examine respiratory indices among male Indigenous game players. The present study was conducted on a sample of forty five (N=45) male Indigenous game players of age ranging from 18-25 years, which includes fifteen each kho-kho, kabaddi and mallakhamb players, who participated in inter-college competitions of Guru Nanak Dev University, Amritsar, India. All the participants were informed about objectives and methodology of the study and they agreed to participate in this study. Respiratory indices i.e. vital capacity, forced

## STUDY OF SELECTED RESPIRATORY INDICES AMONG INDIGENOUS GAME PLAYERS



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vital capacity and inspiratory capacity were measured with “Med-Spiror” a computerized spirometer. One way Analysis of Variance (ANOVA) was applied to find out the significance of differences with regard to selected respiratory indices among Indigenous games i.e. kho-kho, kabaddi and mallakhamb players. Scheffe’s post-hoc test (SPHT) was applied to see the direction and significance of differences where ‘F’ value found statistically significant. The level of significance was set at 0.05. Results revealed significant differences among inter-college level male Indigenous game (kho-kho, kabaddi, mallakhamb) players with regard to vital capacity ( $p < 0.05$ ), forced vital capacity ( $p < 0.05$ ) and inspiratory capacity ( $p < 0.05$ ). While comparing the means, it revealed that kho-kho players had better vital capacity, forced vital capacity and inspiratory capacity than their counterparts; kabaddi and mallakhamb players.

### Keywords:

Indigenous game, vital capacity, forced vital capacity, inspiratory capacity.

## INTRODUCTION

Kho-kho, kabaddi and mallakhamb are indigenous games. At present these games are very popular in India. Indigenous games of India are cost effective, feasible and easy to play and may have excellent application in school physical education programs (Haque & Ghosh, 2014). Kho-kho is a chase and tag game where a chaser chases the runner to dismiss him/her from the game. The game is called kho-kho because it is obligatory on the part of the active chaser to utter 'kho' behind a seated chaser to hand over chase to the seated chaser for the progress of the game, failure in its, is a foul (Kendre, 2005; Singh & Saini, 2014). Kabaddi is an intermittent type of sport and its demands can be met by an optimum level of aerobic and anaerobic capacity. Other cardiorespiratory fitness indices were observed to be better in the kabaddi players than in sedentary persons (Dey et al., 1993). The important body movements in this game involve catching, holding, locking and jumping. Athletic performance in kabaddi is a function of aerobic fitness, anaerobic fitness and lung capacity (Dey et al., 1993). The mallakhamb is one of the most ancient ones in physical culture. Malla (man) and khamba (pole) come together to create a dynamic and rigorous display of yoga-like poses. Mallakhamb is seen in India as a sport in itself (Bal et al., 2012). The physiological variables involved in sports performance have long been of interest to players, coaches, sport physiologists and sports scientists. From a physiological point of view, the respiratory function tests, like other physiological tests must be of the utmost importance for measuring the fitness of an athlete (Astrand & Rodahl, 1970). Hence, the purpose of this study was to compare respiratory indices among male Indigenous game players.

## MATERIALS AND METHODS

### Subjects:

A sample of forty five (N=45) male Indigenous game players of age ranging from 18-25 years, which includes fifteen each kho-kho, kabaddi and mallakhamb players, who participated in inter-college competitions of Guru Nanak Dev University, Amritsar, India was selected. All the participants were informed about objectives and methodology of the study and they agreed to participate in this study. Purposive sampling technique was used to select the subjects.

### Methodology:

#### Measurements of Respiratory Function variables:

By following the proper procedure respiratory indices were measured with a computerized spirometer "Med-Spiror". Before recording the respiratory indices tests, subjects were shown a demonstration of the tests. Consequently, a minimum of three readings were recorded for each test of every subject and the best of the three was considered for having reproducibility and validity of the recorded test (American Thoracic Society, 1995). The selected respiratory indices i.e. Vital capacity (VC), Forced vital capacity (FVC) and Inspiratory Capacity (IC) were taken into consideration for this study.

### Statistical Analysis:

The Statistical Package for the Social Sciences (SPSS) version 16.0 was used for all the analyses. One way Analysis of Variance (ANOVA) was applied to find out the significance of differences with regard to selected respiratory indices among Indigenous game i.e. kho-kho, kabaddi and mallakhamb players. Scheffe's post-hoc test (SPHT) was applied to see the direction and significance of differences where 'F' value found statistically significant. The level of significance was set at 0.05.

## RESULTS

**Table: 1. Mean and SD values of Respiratory Indices of Inter-College Level Male Indigenous Game (Kho-kho, Kabaddi, Mallakhamb) Players.**

Variables	Indigenous Games					
	Kho-kho		Kabaddi		Mallakhamb	
	Mean	SD	Mean	SD	Mean	SD
Vital Capacity (Lt)	4.37	0.23	3.99	0.22	4.09	0.26
Forced Vital Capacity (Lt)	4.98	0.20	4.69	0.22	4.80	0.21
Inspiratory Capacity (Lt)	3.30	0.28	2.74	0.28	2.85	0.45

Table 1 exhibited the Mean and SD values of selected respiratory indices i.e. Vital capacity, Forced vital capacity and Inspiratory capacity of male Indigenous game (kho-kho, kabaddi, mallakhamb) players. While comparing the means, it revealed that kho-kho players had better vital capacity, forced vital capacity and inspiratory capacity than their counterparts; kabaddi and mallakhamb players. However, kabaddi players had least vital capacity, forced vital capacity and inspiratory capacity than their counterparts; kho-kho and mallakhamb players.

**Table: 2. Analysis of Variance (ANOVA) among Inter-College Level Male Indigenous Game (Kho-kho, Kabaddi, Mallakhamb) Players with regard to selected Respiratory Indices.**

Variables	Source of variance	Sum of Squares	df	Mean Square	F-value	Sig.
Vital capacity (Lt)	Between Groups	1.133	2	0.566	<b>10.10*</b>	0.000
	Within Groups	2.355	42	0.056		
	Total	3.488	44			
Forced Vital Capacity (Lt)	Between Groups	0.658	2	0.329	<b>7.49*</b>	0.002
	Within Groups	1.844	42	0.044		
	Total	2.502	44			
Inspiratory Capacity (Lt)	Between Groups	2.664	2	1.332	<b>11.17*</b>	0.000
	Within Groups	5.007	42	0.119		
	Total	7.670	44			

\*Significant at .05 level of Confidence

F.05 (2, 42) = 3.22

Table-2 showed Analysis of Variance (ANOVA) results which revealed that significant differences were found between inter-college level male Indigenous game (kho-kho, kabaddi, mallakhamb) players with regard to vital capacity ( $p < 0.05$ ), forced vital capacity ( $p < 0.05$ ) and inspiratory capacity ( $p < 0.05$ ). Since the obtained F-values were found significant, therefore, the Post-hoc test (Scheffe's) was applied to see the direction and significance of difference between paired means of inter-college level male Indigenous game (kho-kho, kabaddi, mallakhamb) players with regards to vital capacity, forced vital capacity and inspiratory capacity. The results of Post-hoc test (Scheffe's) have been presented in table-4 below.

**Table: 3. Comparison of Mean Values of Post-Hoc Test (Scheffe's) among Inter-College Level Male Indigenous Game (Kho-kho, Kabaddi, Mallakhamb) Players with regard to selected Respiratory Indices.**

Variables	Indigenous Games			Mean Difference	Sig.
	Kho-kho	Kabaddi	Mallakhamb		
Vital capacity (Lt)	4.37	3.99		0.38*	0.000
	4.37		4.09	0.28*	0.012
		3.99	4.09	0.10	0.482
Forced Vital Capacity (Lt)	4.98	4.69		0.29*	0.002
	4.98		4.80	0.18	0.070
		4.69	4.80	0.11	0.356
Inspiratory capacity (Lt)	3.30	2.74		0.56*	0.000
	3.30		2.85	0.45*	0.004
		2.74	2.85	0.11	0.651

\*Significant at .05 level of Confidence

A glance at table-3 showed that kho-kho players have exhibited statistically significant ( $p < 0.05$ ) differences with kabaddi and mallakhamb players on vital capacity and inspiratory capacity. Kho-kho players have also shown statistically significant ( $p < 0.05$ ) differences with kabaddi players whereas insignificant ( $p > 0.05$ ) differences with mallakhamb players on forced vital capacity. However, kabaddi players have shown statistically insignificant ( $p > 0.05$ ) differences with mallakhamb players on vital capacity, forced vital capacity and inspiratory capacity.

### DISCUSSION

Respiratory system is an important system of human body where gaseous exchange takes place with diffusion of enormous amounts of oxygen into the blood during physical activity (Khurana, 2005). The results of the present study revealed significant differences among inter-college level male Indigenous game (kho-kho, kabaddi, mallakhamb) players with regard to vital capacity, forced vital capacity and inspiratory capacity. These differences may be the result of differences of the subject groups and the differences in the levels of training and sporting activity. Our findings revealed that kho-kho players had

better vital capacity, forced vital capacity and inspiratory capacity than their counterparts; kabaddi and mallakhamb players. These differences may be the result of differences in the sporting activity and levels of training. The exercise and sport training are very strenuous in kho-kho, therefore each player is require a better physical fitness. Physically fit athletes possess superior respiratory functions relative to less fit subjects (Johnson et al., 1981; Johnson et al., 1991). Lakhera et al. (1984) observed strenuous training benefits higher respiratory functions by respiratory muscle hypertrophy. Kho-kho players are engaged in regular exercise during game and training. Due to regular exercise, athletes tend to have an increase in respiratory capacity, especially when the exercise is strenuous (Adegoke & Arogundade, 2002). The results of the present study in line with the study of Haque & Ghosh, (2014). They observed that kho-kho players had better aerobic and anaerobic fitness than volleyball players. On the other hand, in the present study kabaddi players have shown statistically insignificant differences with mallakhamb players on vital capacity, forced vital capacity and inspiratory capacity. These findings of the present study are not in line with the study of De et al.(1982), who found respiratory function values were higher in inter-university kabaddi players than the Indian sedentary population (De et al.,1982). It is suggested by Dey et al.(1993), that kabaddi is an intermittent type of sport and its demands can be met by an optimum level of aerobic and anaerobic capacity. Other cardiorespiratory fitness indices were observed to be better in the kabaddi players than in sedentary persons (Dey et al., 1993). According to this study it was found out that players among Indigenous game ie kho-kho, kabaddi and mallakhamb had an impact on respiratory functions. We can consider that during the kho-kho game, chaser and runner repeat running movements. As well as in kabaddi, raider and catcher mostly repeat body movements involve catching, holding, locking and jumping movements and there might be differences in respiratory indices of the subjects in the Indigenous game groups.

#### CONCLUSIONS

It is concluded that significant differences were found among inter-college level male Indigenous game (kho-kho, kabaddi, mallakhamb) players with regard to vital capacity, forced vital capacity and inspiratory capacity. Kho-kho players had better vital capacity, forced vital capacity and inspiratory capacity than their counterparts; kabaddi and mallakhamb players.

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