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Comparison of the vital capacity of university level female athletes from different games in Kerala

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Abstract

The purpose of the study was to compare the vital capacity of University level female athletes from different games in Kerala, India. 180 University level female athletes from different games were selected as the subjects for the study. The subjects under the study were equally assigned to six groups. The six Groups are given below: Group A - Throw ball; Group B- Table Tennis; Group C- Volleyball; Group D- Badminton; Group E- - Basketball; Group F- Kho Kho. Wet Spirometer was used to measure the vital capacity of the subjects under the study. ANCOVA & Scheffe's Post Hoc test were used to determine the difference between the different groups under the study. The findings of the study indicated that the Players of Kho Kho, Basketball & Badminton showed better Vital Capacity than the Players of Throw ball, Table Tennis & Volleyball.

Keywords: Vital capacity, female athletes & wet spirometer

Introduction

All animals including human beings need to move. They are designed for physical activity. The want for movement is coupled with the fight of flight reaction. Primeval people have to run, climb, jump and throw to provide for their requirements and to flee from regular fear to their lives. They had to be healthy and fit and only the fittest will be survived. Biologically man tends to conserve energy. And with the advancement in technology and automation, the modern civilization consciously or subconsciously became less active and lazier^[14]. Health and Wellness backing includes hard work to alter personal life –style to improve the quality of life, just as physical fitness is altered by normal physical movement. Physical Fitness is multidimensional which includes speed, strength, cardio-respiratory endurance, flexibility, coordinative abilities and vital capacity^[13]. The purpose of the study was to compare the vital capacity of Female Athletes from different games in Kerala played at university level.

Methodology

Subjects

180 University level female athletes from six different games in Kerala were selected as the subjects for the study. The subjects under the study were equally assigned to six groups. The six Groups are given below: Group A - Throw ball; Group B- Table Tennis; Group C- Volleyball; Group D- Badminton; Group E- - Basketball; Group F- Kho Kho.

Tool

Wet Spirometer and Nose Clip

Purpose: To measure the vital capacity of the subject

Procedure

The Spirometer was attached with a standard mouthpiece. The test was conducted in standing position. The mouthpiece was disinfected by an antiseptic solution after use by each subject. The subject was asked to hyperventilate prior to the test, then after the maximum possible inhalation, the nose clip was placed and the subject exhaled in to the mouthpiece slowly and steadily bending forward, till all the air within control was expelled, care was taken to prevent

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air from escaping either through the nose or around the edges of the mouth piece and was also ensured that a second breath was not taken by the subject during the test. In case of doubt the test was repeated. Three trials were given and the best score was taken.

Scoring: The score was recorded to the nearest millilitre unit.

Procedure

180 University level female athletes from six different games were selected as the subjects for the study. The subjects under the study were equally assigned to six groups. The six Groups are given below: Group A - Throw ball; Group B- Table Tennis; Group C- Volleyball; Group D- Badminton; Group E- Basketball; Group F- Kho Kho. Prior to the test, a meeting of all the selected subjects were held and they were explained regarding the objectives of the study, test procedure and effort they had to put in. The necessary data will be collected by

administering the test for the chosen variable.

Statistical Analysis of Data

ANCOVA& Scheffe’s Post Hoc test were used to determine the difference between the different Groups under the study.

Results

The data pertaining to the vital capacity of university level Female Athletes from six different games in Kerala were analyzed by ANCOVA& Scheffe’s Post Hoc test with the help of SPSS version 17. Findings pertaining to the vital capacity of university level Female Athletes from six different games which were subjected to analysis of covariance have been presented in the table1. The mean difference of the vital capacity of the subjects under the study for the selected variable is presented in figure1.

Table 1: Difference in Means of the university level Female Athletes from six different games in Kerala in vital capacity

Variable	Sources of Variance	df	Sum of Square	Mean Square	‘F’ Value
Vital Capacity	Within group	173	706736.61	4085.18	101.81*
	Between groups	5	2079611.11	415922.22	

* Significant at 0.05 level of confidence
F 0.05 (5,173) = 2.21

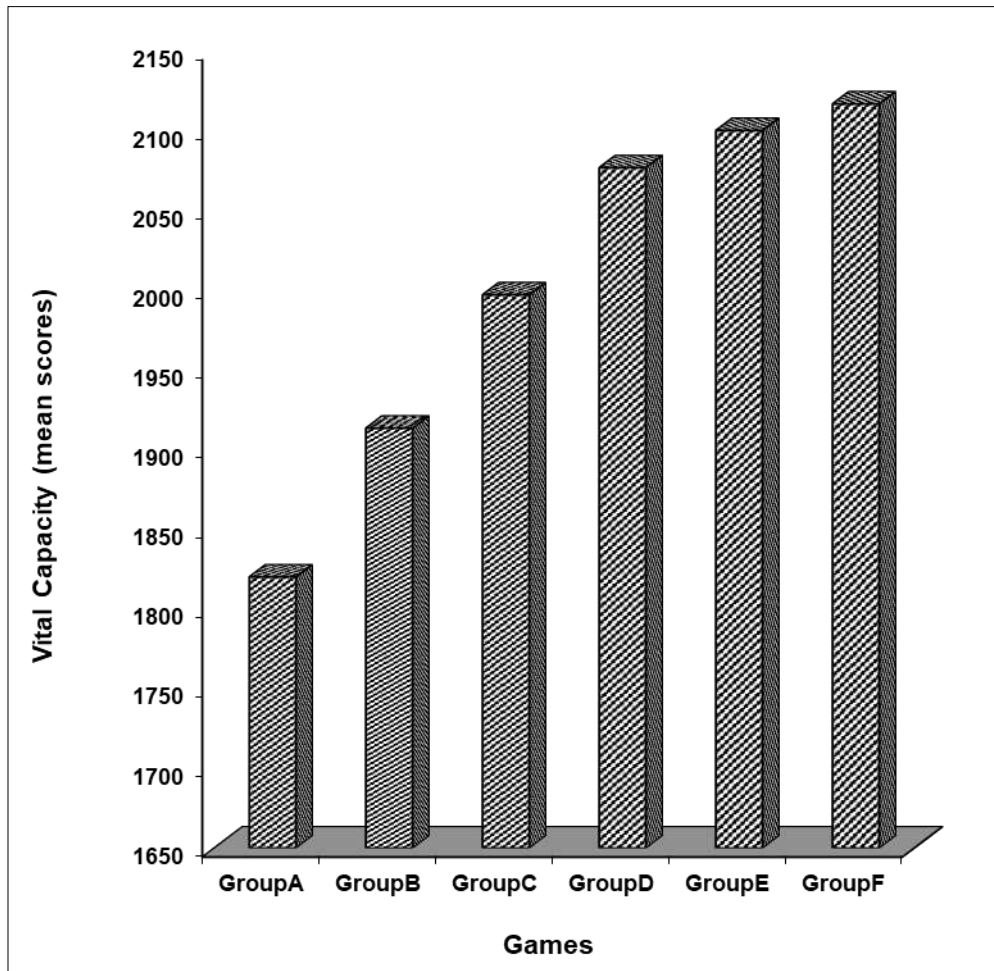
As the ‘F’ value was found to be significant in the case of the selected variable, the Scheffe’s Post Hoc test was applied to test the significance of the difference between the paired

means separately for the vital capacity of university level Female Athletes from six different games in Kerala which was presented in table2.

Table 2: Difference between the paired means separately for the Vital Capacity of the university level Female Athletes from six different games in Kerala

Group A	Group B	Group C	Group D	Group E	Group F	Mean Difference
1820	1913.33					93.33 *
1820		1996.67				176.67 *
1820			2076.67			256.67 *
1820				2100		280 *
1820					2116.67	296.67 *
	1913.33	1996.67				83.33 *
	1913.33		2076.67			163.33 *
	1913.33			2100		186.67 *
	1913.33				2116.67	203.33 *
		1996.67	2076.67			80 *
		1996.67		2100		103.33 *
		1996.67			2116.67	120. *
			2076.67	2100		23.33
			2076.67		2116.67	40
				2100	2116.67	16.67

* Significant at 0.05 level of confidence. The computed value of critical difference at 0.05 level is 0.97.
[Group A - Throw ball; Group B- Table Tennis; Group C- Volleyball; Group D- Badminton; Group E- Basketball; Group F- Kho Kho]



[Group A - Throw ball; Group B- Table Tennis; Group C- Volleyball; Group D- Badminton; Group E- - Basketball; Group F- Kho Kho]

Fig 1: Vital Capacity of the university level Female Athletes from six different games in Kerala (means in numbers) are presented in figure1.

Discussion

The analysis of the results revealed that Kho Kho, Basketball and Badminton Players have better vital capacity than Throw ball, Table Tennis and Volleyball Players. Vital Capacity is the amount of air that a person can expire after a maximal inspiration. Participation in the games like Kho Kho, Basketball and Badminton played an effective role in stressing the respiratory system and increasing the power of respiratory muscles and which may help to increase and maintain the potency of the respiratory pathways from nostrils to the bronchioles ^[10]. The longer duration of playing these games may result in better control of the volume of blood circulating in the lungs and maintenance of lung elasticity. Respiratory responses to physical activity represent the combined action of mechanical, neural and humeral mechanisms that regulate the ventilation of the lung in order to keep pace with the higher rates of oxygen consumption and carbon dioxide production that occur during the activity ^[12]. The metabolic demands are greater and the rate and depth of respiration is increased in the case of players of Kho Kho, Basketball and Badminton than the players of the other games. The respiratory muscles that include scalene muscles, which elevate the first two ribs, the sterno cleido mastoids, which elevate the sternum and diaphragm, bring about the increased depth of respiration in the case of players of Kho Kho, Basketball and Badminton than the players of the other games. All of these factors may contribute to enhance the Vital Capacity of Kho Kho, Basketball and Badminton Players than others. Research findings of Hepple ^[7] Brown ^[5] and Bhole ^[2]) agree with the findings of this study.

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