



A COMPARISON OF THE SELECTED PHYSIOLOGICAL VARIABLES AMONG TEAM GAMES OF UNIVERSITY MALE PLAYERS

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Abstract:- The purpose of the study was to find out the differences on the selected physiological variables among Hockey, Handball and Football players of university male players. The subjects in this study were 60 athletes (20 from each group) of age 19±25 years chosen from Guru Ghasidas University, Bilaspur (C.G.) and shortlisted through purposive sampling. The variables tested in this study were vital capacity (VC), Peak expiratory flow rate (PEFR), resting pulse rate (RPR) and resting respiratory rate (RRR). The dry Spiro-meter and the methods selected for the collection of the data were highly valid and reliable. The statistical technique employed for this study was mean, standard deviation and one way ANOVA was employed to find the significant difference among the groups. After the data analysis, insignificant difference was found in selected physiological variables (VC, RPR, RRR and PEFR) among team games university players.

Keywords: Vital Capacity, Peak Expiratory Flow Rate, Resting Pulse Rate, Dry Spiro-Meter.

INTRODUCTION

Modern sports are based on physical, technical, tactical and psychological preparations. In Modern era of competition, no one can afford to neglect any aspect of game/ sports such as mastery of skills, techniques involved, physical fitness components and psychological abilities. All these aspects are to be developed on the scientific lines. Handball is a modern ball game, which belongs to the family of team sports. It combines the best features of different branches of sport, that is, the advantages of physical abilities, technical skills and tactical knowledge. In this game movement patterns are characterized as intermittent and change continuously in response to different offensive and defensive situations in which anthropometric characteristics and high levels of strength, muscle power, aerobic capacity and handball throwing velocity are the most important factors that give a clear advantage for successful participation in elite levels of handball leagues (Bobbert and Van Ingen Schenau, 1988). Handball game is played by seven players on a hard surface area bigger than a basketball court. The basic skills of running, jumping, catching and throwing are combined into a fast moving exciting game. Object of the game is to score more goals than your opponents by throwing the ball into their netted goal. Elements of basketball, soccer, hockey and water polo can all be seen in this Olympic Game that has become the second most popular game in the world. Team games were sports where size, shape, body composition and fitness all play an important part in providing distinct advantage for specific playing positions particularly at the higher level, where there is a high degree of player specialization (Dey, Kar & Debray, 2010). More skilful team games present the researcher with more complex problems. Handball is concerned with court games, which call for a variety of individual skills that are executed in the context of competitive match play (MacLearn, 1990). Hoare (2000) mentioned, "Given the complexity of basketball, it was understandable that a degree of skepticism exists as to the relevance of talent identification, however this assumption is largely untested". Likewise, top-class Hockey players have to adapt to the physical demands of the game, which are multi-factorial. Hockey is an intermittent endurance sport involving short sprinting as well as movement with and without ball (Manna et al. 2009). Successful performance in hockey is influenced by morphological and anthropometric characteristics such as body size and composition, functional parameters

(physical capacity) (Withers and Roberts 1981; Bale et al. 197) Players may not need to have an extraordinary capacity within any of the areas of physical performance but must possess a reasonably high level within all areas. This explains why there are marked individual differences in anthropometric and physiological characteristics among top players. Various measurements have been used to evaluate specific aspects of the physical performance of both youth and adult Hockey players. The positional role of a player is related to his or her physiological capacity. Thus, midfield players and fullbacks have the highest maximal oxygen intakes and perform best in intermittent exercise tests. On the other hand, midfield players tend to have the lowest muscle strength. Although these distinctions are evident in adult and elite youth players, their existence must be interpreted circumspectly in talent identification and development programs. A range of relevant anthropometric and physiological factors can be considered which are subject to strong genetic influences (e.g. stature and maximal oxygen intake) or are largely. Soccer players have to adapt to the requirements of the game to compete at the highest standard. Thus, the physical capacity of top-class players may give an indication of the physiological demands of the game. This review focuses on the anthropometric and physiological characteristics of elite soccer players. This multi factorial is sketched from observations on anthropometric, physiological and performance measures. Knowledge of these characteristics can give clues as to the existence of biological prerequisites for playing at the highest standard. To excel in a physically competitive sport, the player must possess such dimensions of body characteristics are known to be of fundamental importance for individual development to achieve Olympic level performance in a sport. The tasks in some events, such as throwing, hitting or high jump, are quite specific and different from each other and so are the successful physiques. This process whereby the physical demands of a sport lead to selection of body types best suited to that sport is known as "morphological optimization" (Bloomfield et al., 1995).

The purpose of the study is to find out, whether there is a significant difference in Hockey, Handball and Football players on the selected physiological variables i.e. VC, RRR, RPR and PEFR.

METHODOLOGY

Selections of the subjects:

For this study, sixty male players (20 from each team games) were selected by purposive sampling from Guru Ghasidas University, Bilaspur (C.G.). Hockey, Handball and Football groups of players were selected for the purpose of the study. The average age of the subjects was 19±25 yrs. All the players of different sports were engaged in the preparation of inter-varsity competition for two months.

Variables and Materials:

The purpose of the study was briefed to participants before testing. All variables were measured and obtained scores on each player individually during rest hours with the help of standard scientific instruments. The physiological variables on which the data was collected were VC, RRR, RPR and PEFR and 100% provided permission to use data from class project for research purpose. To compare selected physiological variables among Hockey, Handball and football, players, one way ANOVA was applied at the significance level of 0.05. Vital capacity: VC is the maximum amount of air a person can expel from the lungs after a maximum inhalation. It is equal to the inspiratory reserve volume plus the tidal volume plus the expiratory reserve volume. Maximal volume forcefully expired after maximal inspiration was measured with the help of dry Spiro-meter in cubic centimeters. Resting respiratory rate: RRR of each of the subject was recorded in the morning on their bed, just after the sound sleep. It was recorded through palpation method. Resting pulse rate: RPR of each of the subject was recorded in the morning on their bed, just after the sound sleep. It was recorded through the radial artery. Peak expiratory flow rate: PEFR is the maximum flow rate generated during a forceful exhalation, starting from full lung inflation. Peak flow rate primarily reflects large airway flow and depends on the voluntary effort and muscular strength of the patient (Bheekie A, 2001). The PEFR of the subjects was measured with peak flow meter. It was recorded in liters per minute.

Data Analysis

For data, analysis responses were expressed as mean and standard deviation. One-way ANOVA was performed for comparison between groups at $p < 0.05$ and it was considered statistically significant. Data analysis was performed using SPSS 17.0 software under windows.

RESULTS

Finding pertaining to the descriptive statistics of the players from selected groups on the selected physiological variables has been presented in table- 1 with graphical representation. To test the Homogeneity of the

variances of all the selected groups on the selected variables, Levene’s Test was employed, is shown below in the Table 2. Further to test the significance difference among groups has shown in ANOVA table-3.

Table-1
Group Statistics of Hockey, Handball and Football players on physiological variables

Variables	Groups	N	Mean	Std. Deviation
RRR	Hockey	20	12.24	2.01
	Handball	20	14.12	2.12
	Football	20	13.06	1.03
RPR	Hockey	20	54.14	4.09
	Handball	20	54.40	4.01
	Football	20	56.63	5.01
VC	Hockey	20	3987.56	509.00
	Handball	20	3810.01	423.65
	Football	20	3806.47	422.15
PEFR	Hockey	20	604.04	56.06
	Handball	20	627.33	52.02
	Football	20	576.03	47.67

Graphical Representation of Mean on selected variables among Team Games

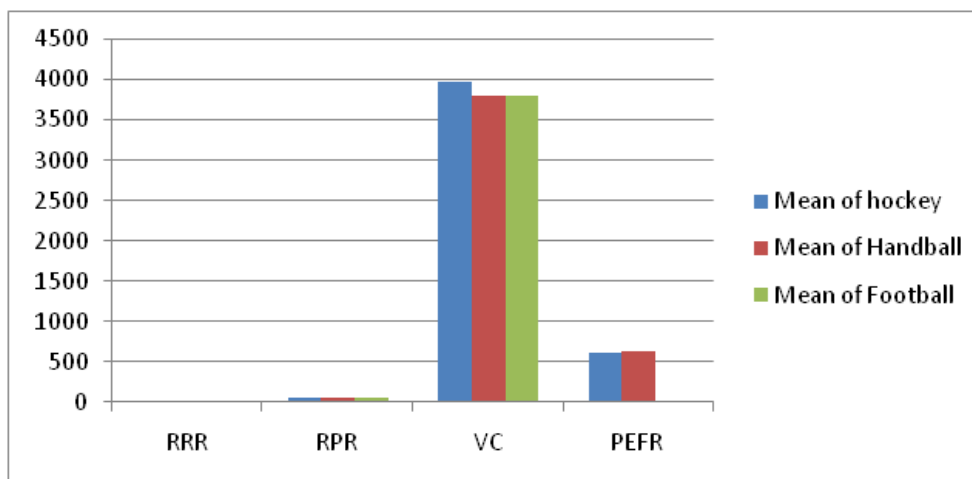


Table 2

Test of Homogeneity of Variances				
	Levene Statistic			P - value
RRR	3.10*			.027
RPR	1.01			.374
VC	.097			.968
PEFR	.87			.598

Significant at 0.05 level of significance p-value 4.266

The Table of ANOVA has been shown in the table 3.

Table 3
ANOVA Table For The Selected Groups On RRR, RPR, VC And PEFR

		Sum Of Squares	Df	Mean Square	F	P-Value
RRR	Between Groups	13.15	2	6.58	1.615	0.179
	Within Groups	304.96	57	5.35		
RPR	Between Groups	87.15	2	43.57	1.779	0.172
	Within Groups	1908.33	57	33.47		
VC	Between Groups	379686.8	2	189843.39	0.951	0.376
	Within Groups	16127333.3	57	282935.67		
PEFR	Between Groups	38402.2	2	19201.1	3.09	0.061
	Within Groups	231856.6	57	4067.65		

DISCUSSION OF FINDINGS

The purpose of the present study was to compare the selected physiological variable among Hockey, Handball and Football players. The results of the study are as follows, firstly Levene’s statistic was found insignificant in all the cases except RRR. Homogeneity of variance is an assumption for applying Analysis of Variance. After this, one-way analysis of variance was employed by the researcher for the comparison of means of selected groups on the dependent variables. The result reveals that there is no significant difference between selected Physiological variables i.e. RRR (.179), RPR (.172), VC (.376) and PEFR (.061). All the dynamic functions of the lung depend upon the compliance of the thorax-lung system, airway resistance and muscular strength of the respiratory muscles (Cotes, 1975). This might be insignificant due to the same nature of the activity. The selected games require extent of aerobic capacity as required so the training also does include the endurance training and anaerobic training.

CONCLUSION

The study demonstrates that there is no significant difference on concerned physiological variables of selected team games university male players and it also includes that the same general conditioning programme may be emphasized to the games taken under consideration in the present study. The common training programme for the development of aerobic potential may also be introduced for the selected team games.

RECOMMENDATIONS

- The findings of this study may be useful in preparing the training programme for players, which may be designed to suit the particular needs of the players of the country at every level.
- The same study may be repeated with some more variables.
- The same study may be repeated with some other games and sports.
- The results of this study may help the coaches and administrators in planning and training of Players for the upliftment of standard of games.
- The outcomes of the study may help the coaches and physical education teachers to develop and run common general conditioning programme for various games.

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