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RESEARCH ARTICLE

COMPARISON OF SELECTED PHYSIOLOGICAL VARIABLES AMONG THE UNIVERSITY LEVEL FEMALE PLAYERS OF INDIVIDUAL AND TEAM SPORTS

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ABSTRACT

The purpose of the study was to compare the selected physiological variables among the university level female players of individual and team sports. For this purpose, sixty female players (individual sports: 30 and team sports: 30) of 18-25 years age were randomly selected from different colleges affiliated to Guru Nanak Dev University, Amritsar, Punjab, India. The subjects volunteered to participate in the study. The age of each subject was considered from the date of birth as recorded in the respective institute. The height, weight, heart rate, systolic and diastolic blood pressures of the subjects was measured by using respective techniques and equipments. The between-group differences were assessed by using an independent samples t-test. The level of $p \leq 0.05$ was considered significant. An independent samples t-test revealed that team sports players had significantly higher resting heart rate ($p<0.05$) than individual sports players. No statistically significant difference was observed in body mass index, systolic and diastolic blood pressure among the players of the two groups.

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INTRODUCTION

Physiology is the study of the functions of the normal human body. It is closely linked with the study of all living things in the subject of biology; with the chemical reactions and behavior of cells under different conditions in biochemistry and with physics in the study of the physical reactions and movements taking place in the body, Evelyn C. Pearce (1993). Exercise physiology is the study of the acute responses and chronic adaptations to a wide range of physical exercise conditions. Various metabolic and physiological changes occur in human body for successful adaptation to environmental extremes. The physiological characteristics play an important role for the attainment of high level of sports performance that can ultimately be realized by taking into consideration the various physiological variables.

MATERIAL AND METHODS

Subjects

The present study was conducted on 60 female players (individual sports: 30 i.e. 10 each of Athletics, Judo and Swimming, and team sports: 30 i.e. 10 each of Hockey, Volleyball and Softball) of 18-25 years age. The subjects were randomly selected from different colleges affiliated to Guru Nanak Dev University, Amritsar; Punjab, India and they volunteered to participate in the study. A written consent was obtained from the subjects. The study was approved by the local ethical committee.

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Selection of Variables

1. Weight
2. Height
3. Heart Rate
4. Systolic Blood Pressure
5. Diastolic Blood Pressure

Tools used for data collection

1. Weighing Machine
2. Anthropometric Rod
3. Stop Watch
4. Sphygmomanometer
5. Stethoscope

Methodology

The age of each subject was considered from the date of birth as recorded in the respective institute. The height of the subjects was measured with anthropometric rod to the nearest 0.5 cm (HG-72, Nexgen ergonomics, Canada). The weight of

subjects was measured by using portable weighing machine to the nearest 0.5 kg. Body mass index (BMI) was calculated by the following formulae:

BMI (Kg/m^2) = (Body mass in kg)/ (Stature in m^2) (Meltzer *et al.,* 1988)

Heart rate was measured by counting radial pulse for a minute while the player was in a complete resting state. Three readings were taken and their average was recorded. Both systolic and diastolic blood pressures were measured with the auscultatory method by using sphygmomanometer and stethoscope. Blood pressure was recorded after making it sure that the player was in a state of at complete physical and mental rest. Three readings were taken and their average was recorded.

Data Analysis

Values are presented as mean values and SD. The Student t' test was used to compare parameters within groups. Data was analyzed using SPSS Version 16.0 (Statistical Package for the Social Sciences, version 16.0, SPSS Inc, Chicago, IL, USA).

Table 1: Demographic characteristics of female players of individual sports and team sports

Variables	Groups	N	Mean	SD	t-value
	Individual Sports	30	21.033	2.747	
Age(yrs)	Team Sports	30	20.633	1.973	0.64
	Individual Sports	30	161.95	6.05	0.89
Height (cm)	Team Sports	30	163.45	6.91	
	Individual Sports	30	54.36	7.79	1.89
Weight (kg)	Team Sports	30	57.40	4.04	

Table 2: Comparison of Physiological Variable of female players of individual sports and team sports

Variable	Groups	N	Mean	SD	t-value
Body Mass Index	Individual Sports	30	20.71	2.58	1.45
	Team Sports	30	21.53	1.65	
Resting Heart Rate	Individual Sports	30	71.10	6.65	2.05*
	Team Sports	30	75.00	7.99	
Systolic Blood Pressure	Individual Sports	30	107.33	11.35	0.054
	Team Sports	30	107.5	12.71	
Diastolic Blood Pressure	Individual Sports	30	87.33	11.04	0.159
	Team Sports	30	87.83	13.17	

* indicates $p< 0.05$

Table-1: shown the Demographic characteristics of female players of the individual sports and team sports. The mean age of individual sports players was 21.033 years and the age of the players of team sports was 20.633 years. The mean height of individual sports players was 161.95 cm and the height of the players of team sports was 163.45 cm. The mean weight of individual sports players was 54.36 kg and the weight of the players of team sports was 57.40 kg. Further it revealed that there were no significant differences in age, height and weight of the players of two groups. There was no significant difference among the athletes of two groups. Table-2: shown the comparison of Physiological variables of the players of the individual sports and team sports. The mean values of the body mass index of the players of the individual sports and team sports were 20.71 and 21.53 respectively. There was no significant difference in body mass index between the players of two groups. The mean values of heart rate of players of individual sports and team sports were 71.10 beats/min and 75.00 beats/min respectively. The players of team sports were found to have significantly greater heart rate when compared to the players of individual sports. The mean values of systolic blood pressure of the players of individual sports and team sports were 107.33 and 107.5 respectively. No statistically significant difference was observed in systolic blood pressure among the players of the two groups. The mean values of diastolic blood pressure of the athletes of individual sports and team sports were 87.33 and 87.33 respectively. No statistically significant difference was observed in diastolic blood pressure of players of individual sports and team sports.

DISCUSSION

When other abilities of players are almost the same, it may be attributed to the fact that a good height is of extra advantage. Differences in weight would normally be prevailed between the players of different games depending upon the requirements of different games. Resting heart rate is a good indicator of cardio – pulmonary efficiency of any individual. Laird *et al.* (1998) revealed that Resting heart rate was 7 beats/min lower in subjects who exercised for at least 20 minutes 3 or more times per week than the average and the study was in lines with the results of this study, the players of individual sports had more cardio – pulmonary efficiency than the players of team sports as they are having lower Resting heart rate. Tasi *et al.* (2003) showed a decrease in systolic blood pressure and diastolic blood pressure by giving a 12 week training of Tai Chi exercise programme. The cardio – pulmonary efficiency was observed to be the best with lower value of systolic blood pressure and vice versa. Diastolic blood pressure, an indicator of resistance to flow of blood in blood vessels.

Conclusion

There were no significant differences in age, height and weight between the players of individual sports and the players of team sports. The players of individual sports had more cardio – pulmonary efficiency than the players of team sports as they are having lower Resting heart rate.

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