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Comparative Study on Selected Anthropometrical and Physiological Variables between Intercollegiate Badminton and Tennis Players

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Abstract

The purpose of the paper is to identify the selected Anthropometrical and Physiological characteristics between Intercollegiate Badminton and Tennis players.To achieve the purpose of the study, 30 male students (Badminton – 15 & Tennis – 15) studying at AyyaNadarJanakiAmmal College (ANJAC) Sivakasi,VHNSN College, Virudhunagar, and Dr.Sivanthi Aditanar College of Physical Education Tiruchendur, were selected as subjects. A series of anthropometric variables namely height, weight, arm length, leg length, arm girth, thigh girth and calf girth; physiological variables as heart rate, systolic and diastolic blood pressure were selected as dependent variables in this study. The independent variables were badminton and tennis sports in this study. The collected data pertaining to the variables were examined by using independent "t" test. The level of significance will fix at .05 level confidences for all the cases. Statistical Package for Social Sciences (SPSS – 17th Version) was used to analysis the collected data. The result revealed that there was a significant difference exists in Anthropometric variables (Leg Length and Thigh Girth) for Badminton and Tennis players.

Key Words:*Badminton, Tennis, Anthropometric and Physiological Characteristics.*

Introduction

Sport has a very prominent role in a modern society and it is important to an individual, a group, a nation- indeed the world. Through vigorous muscular activities muscular system can be properly developed and can enable the child to perform his daily activities in a better way and can help him to lead a healthful living. Physical skills can be developed only if effective body coordination is achieved in the various movements of the body over a long period.Further sports and games also help a child in his ability to think and to interpret his knowledge(Chittawatanarat, et al., 2012). Badminton and Tennis are the sports that demands greater anthropometrical and physiological characteristics. Since from the inception of these games, due to rule modifications

these racket based sports addressed variety of areas that a player suppose to be played at elite level. Anthropometry is the science of measuring the size and proportions of the human body (Mihalache, et al., 2012).It is thus a means of the quantifying the size proportions and shape of the body, the number of measurements. Physiology is a science that deals with the functions of the normal human body (Lakhera, et al., 1984).Exercise physiology is a discipline that has traditionally focused on the study of how exercise alerts the structure and function of human body.Since 1992, Badminton has been an Olympic sport with five events: men's and women's singles men's and women's doubles, and mixed doubles in which each pair consists of a man and a woman. At high level of play, especially fitness players require aerobic stamina, agility, explosive strength, speed and precision. It is also a technical sport, reacquiring good motor and the development of sophisticated racquet movements**(**Cristóbal, et al., 2007**)**.The Tennis is a racket sport that is played between two players and such tennis games are known as singles, however, there is a combination of a man and man or a woman and a woman and such pairs will play against another pair and these games are known as doubles. For both racket based sports, size, structure, body composition as well as physiological characteristics play a vital role in determining the success of the players in their chosen sports. The purpose of the paper is to identify the selected Anthropometrical and Physiological characteristics between Intercollegiate Badminton and Tennis players.

Methodology

To achieve the purpose of the study, 30 male students (Badminton – 15 & Tennis – 15) studying at AyyaNadarJanakiAmmal College (ANJAC) Sivakasi,VHNSN College, Virudhunagar, and Dr.Sivanthi Aditanar College of Physical Education Tiruchendur, were selected as subjects. A series of anthropometric variables namely height, weight, arm length, leg length, arm girth, thigh girth and calf girth; physiological variables as heart rate, systolic and diastolic blood pressure were selected as dependent variables in this study. The independent variables were badminton and tennis sports in this study. The table – I shows the selected criterion variables and its test items with their respective unit of measurements.

Table – I
Criterion Variables and its Unit of measurement

S.No	VARIABLES	TEST ITEMS	UNITOFMEASUREMENT
1.	Height	Stadiometer	In Centimeters
2.	Weight	Weighing Machine	In Kilograms
3.	Arm length	Steel Measuring tape	In Centimeters
4.	Leg length	Steel Measuring tape	In Centimeters
5.	Arm Girth	Steel Measuring tape	In Centimeters
6.	Thigh Girth	Steel Measuring tape	In Centimeters

7.	Calf Girth	Steel Measuring tape	In Centimeters
8	Heart Rate(Melchiorri, et al., 2010)	Digitalized Blood Pressure Monitor	Numbers
9	Systolic Blood Pressure	Digitalized Blood Pressure Monitor	mmHg
10	Diastolic Blood Pressure	Digitalized Blood Pressure Monitor	mmHg

The collected data pertaining to the variables were examined by using independent "t" test. The level of significance will fix at .05 level confidences for all the cases. Statistical Package for Social Sciences (SPSS – 17th Version) was used to analysis the collected data.

Results and Discussions

Table – II

Summary of Mean, Standard Deviation and Independent't' Test for the Intercollegiate Badminton and Tennis Players on Selected Criterion Variables

Variables	Game	Mean	Standard Deviation (±)	't' - value
Height	Badminton	1.73	6.88	1.09
	Tennis	1.70	5.47	
Weight	Badminton	63.10	8.04	1.03
	Tennis	60.51	5.41	
Arm Length	Badminton	76.20	3.32	0.106
	Tennis	76.07	3.59	
Leg Length	Badminton	94.80	2.76	2.78*
	Tennis	90.67	5.05	
Arm Girth	Badminton	24.40	1.88	0.405
	Tennis	24.67	1.72	
Thigh Girth	Badminton	53.10	3.07	3.06*
	Tennis	49.07	4.08	
Calf Girth	Badminton	33.53	2.06	1.12
	Tennis	32.60	2.47	
Heart Rate	Badminton	75.20	7.64	0.049
	Tennis	75.07	7.28	
Systolic Blood Pressure	Badminton	1.24	13.50	0.245
	Tennis	1.25	13.31	
Diastolic Blood Pressure	Badminton	72.47	5.25	1.24
	Tennis	75.20	6.70	

(Table value required for significance at .05 level for't'-test with df 28 is 2.05)

From the table – II, showed that the selected anthropometric variables namely height (1.09), weight (1.03), arm length (0.106), arm girth (0.405), calf girth (1.12) were having insignificant difference exists since the obtained't' value is less than the table value of 2.05 with df 28 at 0.05 level of confidence, where as leg length (2.78*) and thigh girth (3.06*) were having

significance mean difference. On the other hand, regarding the physiological characteristics, the table showed that all the selected parameters namely heart rate (0.049), systolic blood pressure (0.245) and diastolic blood pressure (1.24) were having insignificant difference exists since the obtained 't' value is less than the table value of 2.05 with df 28 at 0.05 level of confidence.

Conclusions

On the basis of the findings of the study the following conclusion were drawn.

1. There was a significant difference in Anthropometric variables on Leg Length and Thigh Girth for Badminton and Tennis players.

2. There is no significant difference exists in the following Anthropometric variables such as Height, Weight, Arm Length, Arm Girth and Calf Girth for Inter Collegiate Badminton and Tennis players.

3. There was no significant difference in the selected Physiological variables Diastolic Blood Pressure, Systolic Blood Pressure and Normal Heart Rate for Inter Collegiate Badminton and Tennis players.

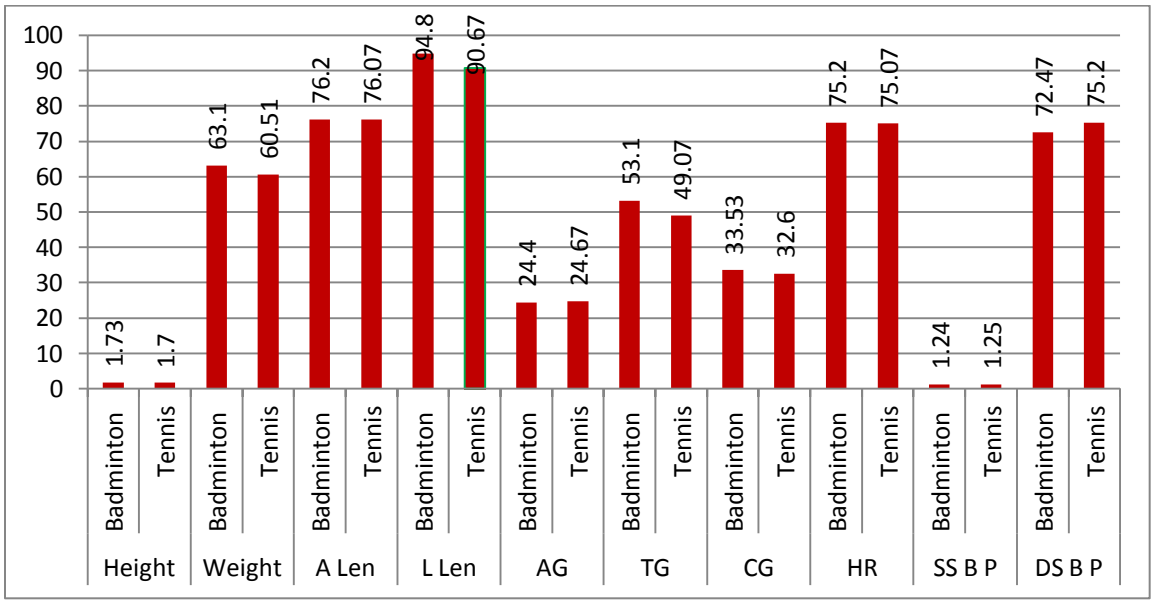

Fig – 1

Mean Values of Selected Criterion Variables among Badminton and Tennis Players

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