

Physical Characteristics and Level of Performance in Badminton: A Relationship Study

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Abstract

The aim of the present study was to establish a relationship between selected variables of physical characteristics and the level of performance of male badminton players. 20 male badminton players who represented State Badminton Championship were selected as the subjects for the study. The age of the selected subjects were ranged from 20 to 27 years of age. Arm strength, leg strength, agility, spine flexibility and wrist flexibility were taken as the variables of physical characteristics. Level of performance was recognized as the playing ability of the players. Rogers's formula was employed to estimate the arm strength of the selected subjects. Leg Strength of the subjects was taken by leg dynamometer to the nearest kilogram. To measure the agility of the subjects 4×10 yards shuttle run was administered and time was recorded to the nearest 1/10th of a second. Spine and wrist flexibility of the subjects was taken by flexomeasure with yard stick and it was recorded to the nearest inches. For determining the level of performance of the players they were asked to participate in a series of three matches, seven points each. The fixture of the matches was drawn on the basis of lottery system. The level of badminton performers were categorized on the basis of players' performance which was evaluated and rated by a panel of three experts on the court during the matches on a 10 points likert type rating scale having score from 1 to 10 points. Some more addition points were awarded according to the results of the matches i.e. 5 points for winning and 2 points for losing the match. The Person's Product Moment Coefficient of correlation was computed to determine the relationship between badminton performance and selected variables of physical characteristics. The results of this study indicated that there is a significant relationship between agility and wrist flexibility a variable of physical characteristics and level of performance where as an in significant relationship were observed between arm length, leg length and spine flexibility the variables of physical characteristics and level of performance at 0.05 level of confidence. The finding indicates that agility and flexibility of wrist of the subjects were important variables for better performance in Badminton.

Keywords: Physical Characteristics, Performance, Badminton

1. Introduction

Among the indoor games, badminton occupies a place of pride both as an individual as well as team sport inspite of frequent changes that have occurred in various aspects of competition pertained to the game including, fitness level, skills, strategies and tactics. Scientific pedagogies and innovative approach have

made the game more performance oriented than ever before.

Sports performance is based in a complex and intricate diversity of variables, which include physical (general & specific conditions), psychological (personality & motivation) sociological and physical characteristics (body morphology, anthropometry & body composition) factors (Campos et al., 2009). In games and sports different factors play a significant role in determining the performance level. However, great importance is assigned to biomechanical, psychological, physiological parameters in competitive sports.

For improving the performance of badminton players it is important to identify the specific traits and parameters, which contribute to the playing ability. Several studies have been conducted to find out the parameters required for badminton skill performance.

Badminton being a highly explosive sport, involves a unique movement technique and strength over a relatively small court area. The match is won normally by a perfect amalgam of physical condition, mental attitude, courage, intelligence and the player's technical skill and tactical efficiency. It calls for a co-ordinated functioning of the body and its reflexes. Studies have pointed out the importance of physical characteristics for different sports. However, few studies in the literature have investigated physical and physiological characteristics of badminton (Faude et al, 2007; Chint et al, 1995; Cabello and Gonzalez-Badillo, 2003) but the relationship between physical characteristics and level of performance is neglected. Thus this study was undertaken to establish a relationship between selected variables of physical characteristics and the level of performance of male badminton players.

2. Methods and Materials

2.1 Participants

For the purpose of this study 20 male badminton players who represented State Badminton Championship were selected as the subjects. The age of the selected subjects were ranged from 20 to 27 years of age.

2.2 Procedure of Data Acquisition

Arm strength, leg strength, agility, spine flexibility and wrist flexibility were taken as the variables of physical characteristics. Level of performance was recognized as the playing ability of the players. Rogers's formula was employed to estimate the arm strength of the selected subjects, for this height was measured in inches, weight in kilograms and push-ups & pull-ups in numbers. Leg strength of the subjects was taken by leg dynamometer to the nearest kilogram. To measure the agility of the subjects 4×10 yards shuttle run was administered and time was recorded to the nearest 1/10th of a second. Spine and wrist flexibility of the subjects was taken by flexomeasure with yard stick and it was recorded to the nearest inches. For spine flexibility modified sit and reach test was used and wrist elevation test was employed to measure the wrist flexibility. For determining the level of performance of the players they were asked to participate in a series of three matches, seven points each. The fixture of the matches was drawn on the basis of lottery system. The level of badminton performers were categorized on the basis of players' performance which was evaluated and rated by a panel of three experts on the court during the matches on a 10 points likert type rating scale having score from 1 to 10 points. Some more addition points were awarded according to the results of the matches i.e. 5 points for winning and 2 points for losing the match.

2.3 Statistical Technique

The Person's Product Moment Coefficient of correlation was computed to determine the relationship between badminton performance and selected variables of physical characteristics and the level of significance was set at 0.05 level of confidence.

Test-retest method was also employed to determine reliability of performance of the subjects. The performance of the subjects in arm strength, leg strength, agility and flexibility were recorded on two different days with a gap of one day in between.

3. Results and Discussion

Since results of any endeavour plays an important role to interpret and explain the current trend of the concerned field. The results of the present investigation are presented in the preceding tables.

Table 1: Relationship between test and retest scores' of physical characteristics

Variables	r values
Arm Strength	0.94*
Leg Strength	0.92*
Agility	0.95*
Spine Flexibility	0.82*
Wrist Flexibility	0.88*

*Significant at 0.05 level of significance with 18 df Tab r = 0.44

Form the above cited table 1 its seem that the score of test-retest has highly significant as all calculated r value are more than tabulated r value at 0.05 level of confidence with 18 degree of freedom.

Table 2: Relationship between variable of physical characteristics and level of performance of state level male badminton players

Physical Characteristics	Performance	N	df	
Arm Strength	0.32	20	18	Needed value of r for being significant at 0.05 = 0.44
Leg Strength	0.30			
Agility	0.49*			
Spine Flexibility	-0.11			
Wrist Flexibility	0.55*			

Table 2 reveals that wrist flexibility and agility (variable of physical characteristics) significantly correlates with badminton performance. The coefficient of correlation of wrist flexibility is 0.54 and agility is 0.49, whereas the coefficient of correlation of other independent variables i.e. arm strength, leg strength and spine flexibility were not found significant with performance at 0.05 level of confidence.

4. Conclusion

On the basis on results of this empirical investigation its seems reasonably fair to conclude that there is significant relationship between the wrist flexibility and agility to badminton performance therefore these variables are most trustworthy for the better performance in Badminton.

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