

Correlation of Selected Anthropometric and Physical Fitness Variables to Basketball Performance

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Abstract

The aim of the study was to determine the relationship of anthropometric and physical fitness variables with Basketball performance. Basketball is a game of applied athletics and it requires well proportionate physique and great amount of physical fitness level. To achieve the objectives of the study six anthropometric and seven physical fitness variables were included as independent variables and playing ability as dependent variable, which was assessed through subjective rating, by three experts, during the tournaments and the average was taken as criterion score. Forty five male Basketball players, who had participated the University of Rajasthan Basketball tournament in 2010-2011 seasons, were selected as subjects. Person's product moment correlation (zero order) was used as a statistical tool to find out the result and it revealed that the anthropometrics variables of height, weight, arm length, leg length, palm span and sum of four skin folds and physical fitness variables of speed, agility, explosive power, shoulder strength, strength endurance and endurance were having significant relationship with Basketball performance and only flexibility was not having significant relationship with Basketball performance.

Keywords:

Introduction

All the movements are based upon the basic forms of running, jumping and throwing. These movements require well proportionate physique and all types of physical fitness qualities on the part of every player.

A good physique of the Basketball players plays a vital role in the Basketball game. Height has the

potential placement and preferable pre-requisites in the performance excellence in many sports and games. It is an asset in Basketball game. Players must have optimum weight to do both offensive and defensive movements. Leg length has definite decisive advantage in Basketball. Longer strides are possible with longer leg length and it will helpful

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to run fast from one end to another end. Like leg length, arm length also helpful to players in catching, passing, shooting and to do defensive and offensive actions besides the opponent's hindrance. Bigger size of palm span is useful to hold the ball firmly without slipping or jerking while executing passing and shooting.

Basketball is a game of movements. Players should have running speed to move forward, sideward and backward both for offence and defence. Successful performance and basketball requires agility and coordinative abilities facilitate rapid changes in direction, sudden stops, bends, twist, falls, and dives. It is essential for every player to play the match with various types of movements for forty minutes, with two minutes quarter & five minute half time brake, with varying pace from slow to fast, according to the situation of the ball, as well as opponent movement, which requires endurance capacity.

Power to throw the ball helps to elevate the players to perform a successful through on basket and throw the ball longer distance with high speed at the time of initiating the fast break. Most of the throw on basket are performed either lay-up shot or jump shot high which requires explosive power.

As per the performance structure in Basketball, the players should have the 12% of constitutional factor, 14% physical abilities, 38% technical and individual tactics, 18% collective tactics and 18% moral and will power

quantities. The performance of Basketball players is influenced by motor abilities, such as strength, agility, speed, endurance, flexibility, explosive, power and coordinative abilities; the body constitutional factors such as height, weight, body proportions, limbs length, palm span and body fats; the techniques of catching, passing, dribbling, and psychological, factors such as will power, killer, instinct, fear, anxiety, stress, anger, over, excitement, conflicts and motivation.

It is certain that the mere skill alone never assures victory. Higher level of Basketball performance depends upon the body constitution, physical fitness, technique, tactics and psychological factors. All are interrelated and inter-linked, for the higher performance. The present study was undertaken with the theme of the above factors and number of studies were conducted in these aspects and found its importance. Chauhan M.S.(2003), Srhoj.V.(2002), Van Den Tillar (2002) Uppal A.K.(1986) Hassarani S.S (1989) Madhusoodhanan Nair (1991) Muralidharan Pillai (1993), Bindu C.M. (2002), Khosla T.(1983), Bright Selva Kumar (2002), Musaiger (1994), Gopinathan (2007) in various sports and games.

Methodology

Forty-five men inter-collegiate Basketball players, from four Colleges, were selected as subjects; during the University of Rajasthan inter collegiate Basketball tournaments, in 2010-2011

session. All the subjects belonged the age group of 18 to 25 years. The subjects were tested for the anthropometric variables of heights, weights, arm length, leg length, palm span and sum of four skin folds including triceps, supra-iliac, sub-scapula and abdomen; and the physical fitness variables of speed (50 mts. dash), agility (4*10 mts. Shuttle run), explosive power (standing broad jump), shoulder strength (3 kg medicine ball put), strength endurance (push-ups), flexibility (sit and reach) and endurance (1500 mts run).

The dependent variable was playing ability; which was assessed through subjective rating, by three experts. The average of three experts was the individual criterion score.

Person's products moments correlation

(zero order) was used to find out the relationship of selected anthropometrics and physical fitness variable with Basketball performance. The level of significance was set at 0.05. SPSS package was used for statistical analysis.

Results and Discussion

The anthropometric variables in relation with Basketball performance are given in table 1. It revealed that the height, weight, arm length, leg length and palm span were positive and significant correlation with Basketball performance. This negative sign is due to less to less adipose tissue with higher efficiency. So, all the anthropometrics variables were having significant correlation with Basketball performance. All the anthropometric variables contribute to the performance of basketball. Among

Table 1: Mean, standard deviation and correlation value between Anthropometric and Basketball Performance

S.No.	Anthropometric variables correlated to Basketball performance	Mean	SD	Co-efficient of correlation
1.	Playing ability	58.3	8.71	0.710*
	Height	1.69	2.51	
2.	Playing ability	58.3	8.71	0.297*
	Weight	65.5	14.22	
3.	Playing ability	58.3	8.71	0.682*
	Arm length	83.9	1.14	
4.	Playing ability	58.3	8.71	0.536*
	Leg length	97.4	0.69	
5.	Playing ability	58.3	8.71	0.493*
	Palm length	22.3	6.85	
6.	Playing ability	58.3	8.71	0.414*
	Sum of four skin folds	21.4	4.67	

Significant at .05 level ($r_{0.05(43)} = .286$)

these the height and Basketball performance (0.710) and the lowest correlation was found between weight and Basketball performance (0.297).

The physical fitness variables in relation with Basketball performance are given in table-2 and it revealed that the speed, agility, explosive power, shoulder strength, strength endurance and endurance were having significant correlation. Among these speed, agility and endurance were negative but significance correlation with basketball performance. The speed, agility and endurance are time factor. Decrease in time higher the performance. Due to this, all three variables were negative sign but

having significant correlation with basketball performance. Only flexibility was not having significant relation with basketball performance. It was not having the required value of .286. In these analyzes, the highest correlation was found between agility and basketball performance (-0.692).

Conclusion

It is concluded, from the present study, that the performance of players influenced by the well built physique and higher level of physical fitness standard. Further, the results of the study are of great value in designing the training programme of players.

Table 2: Mean, standard deviation and correlation value between physical fitness and Basketball performance

S.No.	Physical Fitness variable correlated to Basketball performance	Mean	SD	Co-efficient of correlation
	Basketball performance			
1.	Playing ability	58.3	8.71	-0.548*
	Speed (50 mts Dash)	7.04	0.42	
2.	Playing ability	58.3	8.71	-0.692*
	Agility (4*10 mts shuttle run)	11.6	0.38	
3.	Playing ability	58.3	8.71	0.583*
	Explosive Power (Standing Broa Jump)	2.27	0.08	
4.	Playing ability	58.3	8.71	0.416*
	Shoulder Strength (Medicine ball put)	5.86	4.06	
5.	Playing ability	58.3	8.71	0.615*
	Strength Endurance (Push-ups)	28.2	12.19	
6.	Playing ability	58.3	8.71	0.278*
	Flexibility (Sit and reach)	19.2	7.84	
7.	Playing ability	58.3	8.71	-0.504*
	Endurance (1500 mts run)	5:01.24	3.25	

Significant at 0.05 level. (r 0.05 (43)= 286

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