Research article

STUDY ON RELATIONSHIP OF SELECTED PHYSICAL FITNESS VARIABLES WITH BASKETBALL SHOOTING ABILITY AMONG ETHIOPIAN BASKETBALL PLAYERS SEARCH IN AMHARA REGION

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Abstract

The aim of the study was to find out the relationship among physical fitness variables with shooting ability of basketball players. To achieve the purpose of the study one dependent variable namely shooting ability and six independent variables, hand strength, leg strength, flexibility, agility, speed and power were applied. Two hundred male basketball players with age range of 18 up to 28 ages were selected as study subject by using proportional allocation across the region. The physical fitness variables assessed by hand strength (Dynamometer), leg strength (Standing broad jump), flexibility(sit and rich test), agility(shuttle run), speed (50 meter run) and power (vertical jump) where as the shooting ability administered by AAHPED basketball skill test(1984) was employed. Statistical Package for Social Science (SPSS) was used for data analysis; Pearson product moment and backward regression method were applied to determine the relationship between the dependent variable and independent variables. The result of the study indicated that there were statistically significant relation between physical fitness variables and shooting ability politely and negatively.
Key words: shooting ability, vertical jump, broad jump

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INTRODUCTION

Basketball game is a fast game which engages in both teams physical quality. The game of basketball requires different activates in the court like high jump for rebound, for blocking and speedy running to fast break and from offensive position to defensive position to make strong protection, to make good pass, and power dribble for penetration of opponent players' physical fitness is the most appropriate prerequisite. It is a known fact that basketball is highly competitive game throughout the world and it demands a high degree of physical fitness like speed, agility, strength, speed endurance, coordination and balance etc. In basketball game with in second, things are changed from attack to defense, from losing of the ball to gaining the position of the ball. The game is a speed game with in the last few second period determine the wing team. Basketball players must have high degree of physical fitness abilities to overcome the challenges from opponent and score points. According to Sujatha (2010), the game of basketball is speedy and emotional game. Decisions are made in fraction of seconds. A player can lose his concentration at anytime.

Basketball is a highly competitive game and it demands high physical qualities. The prime physical qualities are explosive strength, strength endurance, agility, speed, various coordinative abilities etc. Height without fitness or technical ability without endurance becomes a liability (Sudha, P, 2015). Any competitive sport performance is dependent on physical fitness, technique, tactic and skills but it varies sport to sport (Debnath, P, 2001). Variables that contribute to the success of performance in any sport event are broadly classified as physical, physiological, psychological and anthropometrical. The physical fitness variables may be speed, strength, agility, flexibility, power, endurance, balance and coordination, body composition and kinesthetic perception etc.

Therefore, basketball players are physically fit he /she have the ability to play longer, dribble better , pass accurately and shoot the ball confidently but the players have not physically fit he /she not applying the skill for longer time.

However, Physical fitness makes you feel mentally sharper, physically comfortable and more with your body and better able to cope with the demands that everyday life makes upon you (Sankar Reddy, A, 2010). It is to the human body what fine tuning is to an engine. It is a physical state of well being that allows people to perform daily activities with vigor, reduce their risk of health problems related to lack of physical activity (Daniel et al., 1993).

Therefore physical fitness for basketball players are a very important aspect for moving in the court during game without tired , repeatedly running , jumping for shooting, rebounding, jumping for receiving the ball and make faking etc. for a basketball players must have strength, speed, endurance, agility,

coordination, flexibility and balance for better performance. Physical fitness components are crucial for basketball to improve and enhance the skills ability in the court with and without the ball.

Basketball is a game which is played between two teams of five players each. The objective of the game is to score more points than the other team (opponent), with points being scored by shooting a ball through a basketball and protect own basket from offensive team , the basket (hoop) is located 3.05 meter above the ground. The two teams shoot the ball at opposite goals. Shooting in basketball is a very important skill to determine the winning team. Therefore the investigator focused on the relationship between physical fitness components with shooting ability.

METHODS AND MATERIALS

Research design and study period

Explanatory research design was employed to identify the relationship among physical fitness variables with the shooting ability of basketball players in 2017.

Selection of subjects

Population of the study: Male basketball players found in Amhara regional state aged above 18, who participated in different basketball competition that are registered in the respected clubs and university teams.

Subject of the study: Male basketball players aged between 18-28 who had participated in regional, zonal, and university competition were selected as a study subject. 200 hundred male Amhara basketball players from four zones and four universities were selected as subjects by using purposive sampling methods and proportional allocation across the region

Variable of the study

Dependant variable: speed spot shooting (AAHPED basketball skill test 1984) Independent variables: physical fitness variables including hand strength, leg strength, flexibility, agility speed and power.

Physical fitness variables

Physical fitness variables were measured by the following tests. Hand strength by Dynamometer, leg strength was assessed by standing broad jump, flexibility by sit and rich test, agility by shuttle run, speed assessed by 50 run and power tested by vertical jump. But basketball shooting ability of the players was assessed through the administration of AAHPERD basketball skill test (1984).

Statistical Analysis

To analyze the dependent and independent variables of the data statistical Package for Social Science (SPSS) version 20 was employed for analysis of the collected data. Pearson product moment correlation coefficient was applied to determine the relationship between dependent variable and independent variable and to identify the major determinant factors binary logistic regression model, bivariate analysis was used to identify the confounders. All

variables were entered to multivariable logistic regression (Backward Logistic regression) to identify factors which have

statistically significant association. The level of significant was p-value of   0.05.

RESULTS

The physical fitness variables in relation with speed spot shooting

TABLE-I
CORRELATION BETWEEN PHYSICAL FITNESS VARIABLES AND SPEED SPOT SHOOTING

S. No.	Physical fitness variables Vs speed spot shooting	coefficient of correlation
1	Hand strength	.910**
2	Leg strength	.905**
3	Flexibility	-.738**
4	Agility	-.881**
5	Speed	-.901**
6	Power	.907**
** - Correlation is significant at the 0.01level (2-tailed).		

It can be seen in table-I, all physical fitness variables indicated statistically significant relationship with speed spot shooting. The selected physical fitness variables, hand strength with speed spot shooting (r= .910, P< 0.01), leg strength with speed spot shooting (r= .905, P< 0.01), Flexibility with speed spot shooting (r= -.738, P< 0.01) and agility with speed spot shooting (r= -.881, P< 0.01), speed with speed spot shooting (r= -.901, P< 0.01) and power with speed shooting (r= .907, P< 0.01) were observed. There was a negative relationship between flexibility, agility and speed with speed spot shooting of basketball players and positive relationship between hand strength, leg strength, and power. Therefore basketball players shooting ability is negatively and positively influenced by physical fitness components and statistically significant.

Regressions analysis on physical fitness variables

Having found the relationship of speed spot shooting with physical fitness Variables, to find out which selected physical fitness variable were contributed the shooting ability of the players. The obtained data subjected to statistical analysis using regression analysis (backward regression method). The backward regression methods are methods that enters all the variables in to the model then eliminated step by step or one by one which the variable that has the largest probability of "F" removed until all variables have a P value equal to or less than 0.100.

TABLE-II
BACKWARD REGRESSION METHOD OF VARIABLE ENTERED AND REMOVED

Model	Variables Entered	Variables Removed	Method
1	Vertical jump, Flexibility Agility, Hand grip strength, Leg strength, speed	.	Enter
2	.	Speed	Backward (criterion: Probability of F-to-remove >= .100).
3	.	Agility	Backward (criterion: Probability of F-to-remove >= .100).
4	.	Flexibility	Backward (criterion: Probability of F-to-remove >= .100).
a. Dependent Variable: speed spot shooting			
b. All requested variables entered.			

Table-II, point out that the backward regression method to remove the variables based on the criteria defined for "F" to remove the predictor variables were P value >= .100. Based on these criteria the following predictor variables . were removed i.e. in model 2, speed, in model 3, agility, in model 4, flexibility were removed one by one. Other variables are collectively contributing the shooting ability of basketball players as the F' value was significant.

TABLE-III
BETA UNSTANDARDIZED COEFFICIENT AND SIGNIFICANCE OF EACH BACKWARD SELECTED PHYSICAL FITNESS VARIABLES

	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
4	(Constant)	-15.089	7.426		-2.032	.044
	Hand grip strength	.285	.071	.389	4.011	.000
	Leg strength	.118	.048	.261	2.486	.014
	Power	.193	.071	.288	2.713	.007
a. Dependent Variable: speed spot shooting						

From the above table the following regression equations were formed for the shooting ability basketball players. Shooting ability = -15.089+.285 (Hand strength) +.118 (Leg strength) +.193 (Power). The regression equation of the predicted variable of shooting ability of basketball players of hand strength (.285, p< .0.01, Leg strength (.118, P<.05) and Power of (.193, p<.05). the combined effect of physical fitness variables with shooting ability were significant

CONCLUSION

On the basis of the results the following conclusions were drawn:

From the analysis of the data there was a significant relationship between physical fitness variables and shooting ability of basketball players such as hand strength, leg strength, flexibility, agility, speed and power have seen statistically significant relation.

It was also concluded the multiple regression analysis found significant association between physical fitness variables, hand grip strength, leg strength and power with shooting ability of basketball players and the equation obtained was Shooting ability = -15.089+.285 (Hand strength) +.118 (leg strength) +.193 (power).

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