Relationship of Physical Fitness with Skill Performance of Ethiopian Basketball Players in Reference to Amhara Region

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Abstract – Basketball game requires physical fitness of the players. The purpose of the study was to investigate the relationship between physical fitness variables with the skill performance of Ethiopian basketball players search in Amhara regional state. The sample for this study consists of 200 male basketball players by proportional sampling method across different parts of the region. Aged 18-28 were select as a subject. The study consists of dependent variable, namely skill performance of basketball players assessed by AAHPED basketball skill test battery (1984) and eight independent variables namely hand strength, leg strength, endurance, flexibility, balance, agility, power and speed. the test selected for assessing the physical fitness variable were hand strength assessed by hand grip dynamometer, Leg strength assessed by broad jump, endurance assessed by 12 minute run, flexibility assessed by sit and rich test, balance assed by stork balance, agility assed by shuttle run power assessed by vertical jump and speed assed by 50 meter run. SPSS (Statistical Package for Social Science) version 20 was used for analysis. To determine the relationship between dependent variable and independent variable Pearson product moment correlation was used. Variables having p-value of ≤ 0.05 was considered as significant. The result indicted that all variables have positively and negatively correlated and statistically significant. Hand strength, leg strength, endurance, power and balance were highly significantly correlated with skill performance of basketball whereas flexibly, speed and agility were negatively and significantly correlated.

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Keywords; Physical Fitness, Skill Performance, Strength, Defensive Movement

1. INTRODUCTION

Physical fitness has been considered a vital part for players to reach the high level performance in the game of basketball. Powerful legs help a great deal in achieving good jump during rebounds in offense and defense. Arm strength gives greater force to fast breaks and shooting. Speed and agility are essential qualities to run faster and change the direction in the game situation, which is required most often in a game of basketball. Balance helps to control over the body keeps the balance during jump shooting and while taking rebounds either in offence or defense. Flexibility plays a vital role in performance of coordinated movements and provides the base for the development of certain other components like strength, speed, agility etcetera Excess weight or obesity may prove to be disadvantage for a player to move quickly and to propel the body into the air at any time during the game (Tanwar, B, 2013).. Fitness is important at all levels of the game while important for advanced players. This is useful for beginners who will increase their efficiency and enjoyment through a good fitness standard. Fitness allows players to solve the physical needs of the game, as well as allowing for the efficient use of his technical skills and techniques in the game (Babu, P. M., & Reddy, M. S. S, 2009).

The game of Basketball is a highly competitive game and it needs high level of physical qualities. The major physical qualities are explosive strength, agility, strength endurance, speed, various coordinative abilities etc.(Sudha, P, 2015). Basketball is a game that requires a high degree of movement, and the players should be physically fit to have a control over the game (Ramesh, T, 2015). A great amount of performance is dependent upon a number of identifiable set of basic factors. Muscular strength, explosive power, cardio respiratory endurance, speed reaction time, flexibility, and balance are fitness factors play an essential role in determining sport performance individual (Mahadevan, V, (1999). Physical fitness is an excellent performance determinant in sports. Physical fitness level varies with different sports for better performance. Physical fitness is possible through the

study of motor fitness. The motor fitness can be understood by analysis of its components like speed, strength, endurance flexibility, agility, coordination ability and balance (Renson et al, 1980). The various components of physical fitness ability such as speed, strength, flexibility, endurance, agility and coordination are the main factors influencing performance of an athlete in all types of physical activities. A sportsman having better physical abilities will always perform better in any type of game or sport (Sidhu, J. S, 2012). Excellent performance in sports at national and international level is the result of "fitness". Although several factors significantly contribute for the successful performance, physical fitness programme will take the centre stage. A highly physically fit player will be able to perform from the beginning of the game till the end by maintaining the same level of performance (Devaraju, C. T 2016).

Highly skillful techniques in basketball are dribbling, passing, laying up shooting, shooting at basket, rebounding including faking etc. But these skill need to be enriched with physical and physiological determinants like anthropological measurements, body composition, strength, endurance & power of leg muscles, aerobic capacity, flexibility and agility. All of these technical skills and fitness parameters are interdependent onto each other (Thani, Y, (1997). Physical fitness is necessary for achieving success in sports without a high level of physical fitness and individual will not be able to withstand the stress and strain caused to the body by various games and sports. To achieve success in the international competitions and to attain high sports performance superior physical fitness is a must (Praveen, A 2015).

The above mentioned physical quilts are the most important to came physical and motor improvement for top performance of basketball players. For the study, researcher has to investigate the skill performance of basketball players with physical fitness variables.

2. METHODS AND MATERIALS

2.2. Research design and period

Descriptive and explanatory research design was employed to identify the relationship among physical fitness variables with the skill performance of basketball in 2016-17.

2.3. Subjects of the study

Two hundred male basketball players, who were participated in different regional, zonal and university sport tournament in 2016-2017, were the study subjects. Subjects have been selected by proportional sampling method across the region. The age ranges of the subjects were between 18 to 28 years.

Before the data collection each test was properly explained and demonstrated to basketball players and present the necessary information about the study (purpose, procedure, risks etc) were explained for the study subjects and the subject fill the physical activity readiness questionnaire (PAR-Q) and return back, All of them were health without any history of disease and injuries. A warm up and stretching exercises were given thoroughly before performing physical fitness tests for about 7-10 minutes of low intensity aerobic exercise.

2.4. Procedures of data collection

A number of instruments were used for taking accurate measurements on the physical fitness and skill performance variables. Physical fitness components were measured by the following tests. Hand strength was tested by hand grip dynamometer, leg strength was tested by , broad jump, endurance was tested by 12 minute rune test, flexibility was tested by sit and rich test, agility was tested by shuttle run, balance was tested by stork balance power was tested by vertical jump and Speed was tested by 50 meter dash. While, skill performance of basketball assed by the AAHPED (1984) skill test. (Reuter 1984) compared tests in the two batteries with college men as subjects. In all instances he concluded that the new tests were an improvement over the previous tests (skill Performance ability = (speed spot shooting + accuracy speed pass - control dribbling - defensive movement). SPSS (Statistical Package for Social Science) version 20 was used for analysis. Descriptive statistics of the collected data was done for the study using statistical measurements. To determine the relationship between dependent variable and independent variable Pearson product moment correlation was used. The level of significant was p-value of ≤ 0.05 .

3. RESULTS

3.1. Socio demographic characteristics of study subject

A sample of 200 male basketball players was taken as a study subject and tested. The mean reported age of the study participants was 21.89 (S.D \pm 2.946). The minimum and maximum age was 18 and 28 respectively. Majority of the study participants were regional and zonal players (85%) and the remaining (20%) were university players.

Table 1, Descriptive statistics of selected Physical fitness variables of basketball players. (n=200)

Variables		Descriptive Statistics	
		Mean	S.D
	Hand grip strength	50.11	7.28
	Leg strength	230.41	11.76
	Endurance	2622.93	66.07
	Flexibility	10.09	2.63
Physical	Speed	6.89	.860
fitness variables	Agility	10.25	1.16
	Power	51.18	7.98
	Balance	43.80	9.28

It can be shown from table 1, the minimum, maximum, the mean and standard deviation of the selected physical fitness variables of the subject. The mean and standard deviation of the hand grip strength 50.11 kg. with standard deviation of 7.28, the leg strength of the participant 230.41 cm with standard deviation 11.76, endurance of the participant was 2622.93 meter with standard deviation of 66.07, flexibility was 10.09 cm with standard deviation of 2.63 , the speed of the participant was 6.89 second with standard deviation of .860, agility of the participant was 10.25 second with standard deviation of 1.16, power of the study participant was 51.18 cm with standard deviation of 7.98 and finally the study participants balance was 43.8 second with standard deviation of 9.28.

3.2. Relationship of physical fitness variable with skill performance.

Table 2. Pearson product moment correlation matrix within the selected physical fitness variables and skill performance of basketball players (n=200)

Sr. No.	Physical variables correlation with skill performance	Correlation co-efficient
1.	Hand strength	.914**
2.	Leg strength	.933**
3.	Endurance	.881**
4.	Flexibility	730**
5.	speed	973**
6.	Agility	911***
7.	Power	.918**
8.	Balance	.878**

** Correlation is significant at the 0.01 level (2-tailed).

It can be seen from table 2, the result of physical fitness variables were significantly correlated with skill performance. The association basketball between the skill performance ability with the selected physical variables as follows: Skill performance with Hand strength (0.914), Skill performance with leg strength (0.933), Skill performance with endurance (0.881), Skill performance with flexibility (-0.730), Skill performance with speed (0-.973), Skill performance

with agility (0-.911), Skill performance with power (0.918) and Skill performance with balance (0.878). There for, it was conclude that all variables were significantly correlated with basketball highly performance positively and negatively. Among these flexibility, speed and agility were negatively and significantly correlated and the other variables were positively and significantly correlated at the significant level of 0.01.

4. **DISCUSSION OF FINDING**

The purpose of the study was to investigate the relationship between selected physical fitness variables with skill performance of basketball players. The finding of the present study indicates that a significant relationship between physical fitness variables and skill performance of basketball, i.e. hand strength with skill performance, leg strength with skill performance, endurance with skill performance, agility with skill performance, balance with skill performance, fallibility with skill performance, power with skill performance and speed with skill performance have been a significant relationship obtained from the analysis data. The reason for this significance relationship was skill of basketball require the physical quality of the players. The physical quality of the players consists of the physical fitness components which is the health related fitness component and the skill related fitness component. Therefore basketball is a fast game played in a rectangular area of dimension 15metr by 28 meter with a minimum of 40 minutes, that needs a great amount of physical fitness i.e. Speed, power, agility, endurance, flexibility strength and balance. These variables were the most vital for basketball players during attacking and defending the area for opponents. Offensive players have been very fast to use their time within 24 second shoot or attempt to shoot live ball in to the basket and defensive players' as much as possible defense their area. There for physical fitness variables were the determinants of basketball performance

The results of the study were supported by Nagar, L., Meena, D. S., & Singh, B. (2012). Who conducted a research on the relationship of anthropometric and physical fitness variables with Basketball performance 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. Karthi, (20140 Reported that anthropometric measurements & motor fitness components would provide highest multiple correlations co-efficient with the criterion variable (basketball playing ability). Motor fitness components (back strength, leg strength, agility, flexibility, power, speed).

The finding of Varadharajan (2012). Pojskić Šeparović, Muratović & Užičanin (2014) Bhola, G. (2004) Support the present study who Investigated the relationship of selected physical, physiological, anthropometric and psychological variables with skill performance of university men basketball players. The playing ability of basketball players were selected as dependent variables. The independent variables selected for this study were speed, agility, leg explosive power, grip strength, anaerobic power, resting pulse rate, breath holding time, height, arm length, leg length, state anxiety, achievement motivation and aggression. Data were collected for the thirteen independent variables in relation to playing ability of basketball players. To determine the relationship between dependent variable and independent variables multiple correlation was also used. The Predictor variables namely height, anaerobic power, leg explosive power, agility and arm length were used to predict the basketball playing ability. There was a significant relationship between playing ability and height, anaerobic power, leg explosive power, agility and arm length.

5. CONCLUSION

It is concluded from the study that physical fitness is one of the dominant factors which influence the skill performance of basketball. From the analysis of data there was a significant relationship between hand strength, leg strength, endurance, agility, flexibility balance, power, and speed with the skill performance of basketball.

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