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## The selected motor fitness variable leg explosive strength as predictor of playing ability of women volleyball players

**Aasma A Pttewale and Dr. KP Martin**

### Abstract

There are many different manifestations of fitness. Some examples include strength, stamina, speed, and flexibility. Certain types of fitness, such as an athlete's cardiac fitness level, are more important than others. An athlete needs to be aware of the various types of fitness to develop an effective training program that focuses on weak or important areas. Motor Fitness refers to the ability of an athlete to perform successfully at their sport. The components of motor fitness are At a Mintonette exhibition game in 1896, an observer named Alfred Halstead noted that the players were "volleying" the ball back and forth, from then on the game was named "Volley ball". Originally, the game was "volley ball" with two separate words, but "volley ball" slowly became one word. The game quickly spread around the US via branches of the YMCA in dozens of other states and cities around the United States. In the year 1900, a new ball was customized and made specifically for use in the game of volleyball.

**Keywords:** motor fitness, leg explosive strength, women volleyball players, Mintonette exhibition

### Introduction

Motor fitness is a term that describes an athlete's ability to perform effectively during sports or other physical activity. An athlete's motor fitness is a combination of five different components, each of which is essential for high levels of performance. Improving fitness involves a training regimen in all five.

There are many different manifestations of fitness. Some examples include strength, stamina, speed, and flexibility. Certain types of fitness, such as an athlete's cardiac fitness level, are more important than others. An athlete needs to be aware of the various types of fitness to develop an effective training program that focuses on weak or important areas.

Motor Fitness refers to the ability of an athlete to perform successfully at their sport. The components of motor fitness are:

- Agility
- Speed
- Co-ordination
- Explosive leg strength
- Explosive shoulder strength
- Endurance

The game of volleyball, originally called "mintonette," was invented in 1895 by William G. Morgan after the invention of basketball only four years before. Morgan, a graduate of the Springfield College of the YMCA, designed the game to be a combination of basketball, baseball, tennis, and handball.

The original rules of Mintonette called for a net in the size of 6 feet and 6 inches, a court in the size of 25 x 50 feet, any amount of players and a ball. A full Mintonette match consisted of 9 innings, with 3 serves of the ball made by each team in each inning. There was no limit to the number of times each team could hit the ball before sending it over the net to the other team's side. If a server was not able to hit the ball over the net properly, they were allowed one more try. Back then, ladies who played Mintonette were allowed to protect their delicate fingers by catching the ball and then throwing it back into play, instead of hitting the ball with their hands.

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**Relationship of Motor fitness variables playing ability in volleyball**

The physical fitness was the sum of five motor abilities namely speed, strength, flexibility, endurance and coordinative abilities and their complex form like strength, endurance, maximum strength, explosive strength, maximum speed and agility were the basic prerequisites of human motor action.

Therefore the sports performances depend to a greater extent on these abilities. The improvement and maintenance of specific physical fitness or condition is the main aim of sports training. Each sport requires different types of fitness training requiring for different sports. Some Sports like running requires a very high level of endurance and low level of other motor abilities. Sports like shooting and archery is not requiring high-level of physical fitness. Physical fitness was the capacity to carry out our various reasonable well forms of physical activities without being unduly tired and include qualities improvement in vigorous exercise increase physical Fitness is desirable for full productive life. Sedentary living habits and poor physical fitness have a negative impact on both health and daily living.

**Methodology**

The procedure adopted in the present study work is related to selection of subjects, selection of variable, selection of test, orientation of subjects, test administration and statistical techniques have been discussed.

**Selection of Subjects**

The purpose of the study to find out the Motor fitness variables as predictors of women volleyball players. To achieve these purpose 48 women in the age group ranging from 18-24years selected from southern part of India that is Karnataka, Maharashtra, Kerala and Tamil Nadu.

**Selection of Variables**

The researcher has reviewed the available relevant literature and discussed with the guide and experts in the field. Before selection of variables for the present research work. The researcher used the availability of proper techniques based on the data researcher done the analysis regarding considering other factors such as feasibility, availability and the outcome of the results taken before finalizing the variables. The variables selected for the present research work Motor fitness variables like that Speed, strength, endurance, agility, reaction

time, and explosive leg strength.

**Selection of Tests**

The test items were selected for this study after thorough review of related literatures as well as consultation with experts, Physical Education professionals, and research supervisors. The selection of tests and criterion variables are presented in the following table.

The following testing tools and measurement are as fallows.

**Table 1**

S. no	Test items	Motor Fitness components	Measurements
1	Running spike jump Sergeant jump Standing broad jump	Legs strength	marked wall, chalk measuring tape take off measuring tape

**Orientation of the subjects**

The researcher explained the purpose of the study and importance of the motor fitness for volleyball to the subjects.in order to get their co-operation as well as to secure reliable data.

**Collection of data**

The researcher wanted to know the Motor fitness variable as predictor of playing ability of women volleyball players. For the purpose pilot study the researcher selected 48 women subjects for the study. Motor fitness variables test was administered and recorded. Then the researcher analysis the data with Pearson’s product moment co-efficient of correlation Multiple step wise regression technique formulas. The result indicates the best predictors is running spike jump test for women volleyball players.

**Statistical Tools**

Analysis of data was used of Pearson’s product moment co-efficient of correlation to find out the relationship of overall volleyball playing ability of players with each of the motor fitness test variables. Multiple step wise regression technique was used to identify the meaningful motor fitness test variables affecting playing ability of volleyball players the combined contribution of the entire motor fitness variable to overall volleyball playing ability was obtained through multiple co-relations.

**Analyses and Interpretation of Data**

The aim of the research work was find out the motor fitness variables are predictors of women volleyball players. For the purpose of this research work 48 women state volleyball players in the age group of 18-24 years. Belonging to the subjects’ southern part of India that is Karnataka, Maharashtra, Kerala, and Tamil Nadu.

**Table 2:** Descriptive analysis of motor fitness test variables of women volleyball Women’s player Explosive Legs Strength

Variables	Test	Unit	Minimum	Maximum	Mean	SD	SEM	CV %
Legs Strength	standing broad Jump	centimetres	268.00	288.00	283.8542	3.27784	.47312	1.154762
	Sergeant Jump	Inches	216.00	249.00	225.4792	5.59916	.80817	2.483227
	Running Spike Jump	centimetres	14.00	19.50	16.4375	1.31531	.18985	8.001886

The descriptive analysis of standing broad jump test 283.85, standard deviation score is 3.277, standard error of mean score is .4731 and percentage of coefficient of variation score is 1.154.

The descriptive analysis of Sergeant Test mean score is 225.4, standard deviation score is .55991, standard error of mean

score is .8081 and percentage .of coefficient of variation score is 2.483.

The descriptive analysis of Quadrant test mean score is 30.89, standard deviation score is .3.102, standard error of mean score is. 44785 and percentage .of coefficient of variation score is 10.04.

**Table 3:** (a) Relationship between Explosive leg Strength performance and Volleyball Playing Ability.

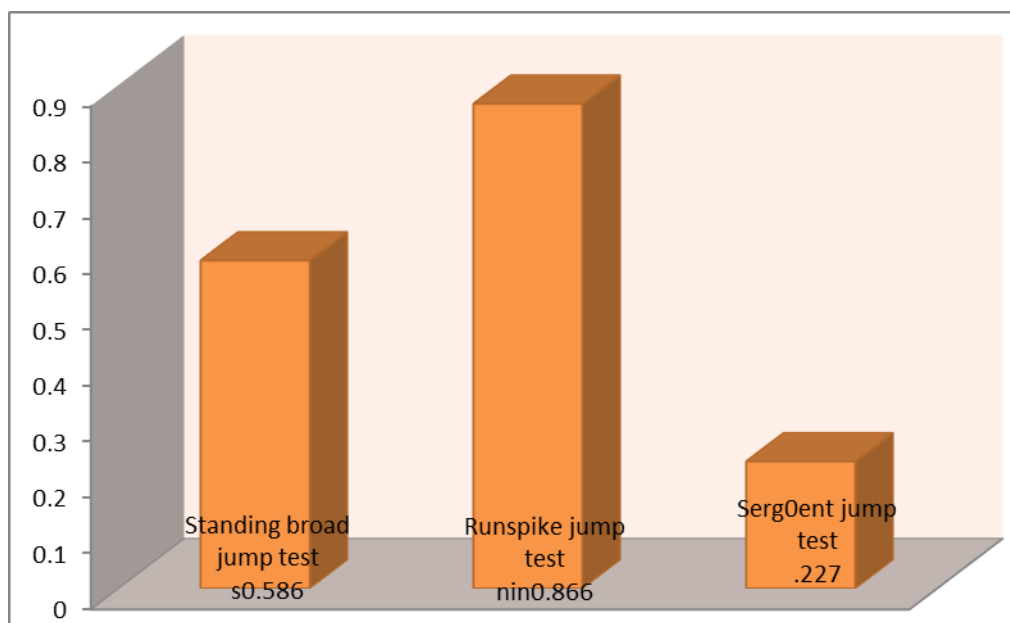
Motor fitness Variables (Explosive leg Strength)	Correlation coefficient	Level of Significance
standing broad jump	.586	<.01
sergeant jump	0.227	<.01
running spike jump	.866(**)	<.01

Significance level at 0.05

The above table 2 indicates that the co-efficient of correlation of standing broad jump test score is .586, sergeant jump test score is 0.277 and Running spike jump test score is.866 for explosive leg strength performance.

Standing broad jump test for explosive leg strength performance indicates high positive correlation with

volleyball playing ability, running spike jump test for explosive leg strength performance indicates high positive correlation with volleyball playing ability, sergeant jump test for explosive leg strength performance indicates low correlation with volleyball playing ability. The same has been displayed in figure 3 (a).



**Fig 1:** (a) Relationship between Explosive leg Strength performance and Volleyball Playing Ability.

The above figure 1(a) shows that standing broad jump test for explosive leg strength performance indicates high positive correlation with volleyball playing, running spike jump test for explosive leg strength performance indicates high positive correlation with volleyball playing ability, sergeant jump test for explosive leg strength performance indicates low correlation with volleyball playing ability.

**Summary**

The purpose of this paper was to find out the selected motor fitness variables leg explosive strength as predictors of playing ability of women volleyball players. For which 48 state women volleyball players from Karnataka, Maharashtra, Kerala, and Tamil Nadu as subjects there age ranged from 18-24 years old. The selected motor fitness, leg explosive strength and volley ball skill test used to assess the volleyball playing abilities of the selected subjects mean and standard deviation were used as descriptive statistics. Pearson product moment co-efficient of correlation between volleyball playing ability with leg explosive strength the results of the study indicated that there was significant relationship found in leg

explosive strength with volley ball playing ability.

**Conclusion**

Running spike jump test was found out as best predictors of women volleyball playing ability with maximum percentage of 75.65% contributions towards R2.

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