

Relationship of Selected Physical Fitness Components and Anthropometric Variables to Playing Ability of Volleyball Player

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Abstract

The purpose of the study was to find out the relationship of selected physical fitness components and anthropometric variables to volleyball player's playing ability.

Sixty male volleyball players who had participated in "Ashwamegh Inter University, competition [Only universities belong to Maharashtra State] in 2018-19, were selected as subjects. Anthropometric measurements were collected by using weighing machine and anthropometric kits.,12 mins. Run /Walk for endurance, 4 x 10 meters. Shuttle run for agility, Vertical jump for explosive power, chin-ups for shoulder strength, sit and reach for flexibility were used to collect data on physical fitness Pearson's product moment correlation was used to find out the relationship between dependant and independent variables. The findings of the study reveals that the anthropometric variables e.g. height, weight, arm length, leg-length, calf girth, thigh girth and shoulder width shown significant relationship with playing ability of volleyball players. The level of significant was set at 0.05.

The physical fitness components of endurance, vertical jump, agility, explosive power and shoulder strength shown significant relations with playing ability of Volleyball players. Arm length in anthropometric and flexibility in physical fitness did not show significant relationship with volleyball player's playing ability.

KEYWORDS : Anthropometric measurements, Physical fitness components,

Introduction:

Volleyball is a dynamic sport, is widely accepted as highly competitive which create interest while watching. It includes natural athletic skills like jumping and some moments of athletics.

This game offer wider opportunity for the development of agility, flexibility, endurance, strength and coordinative abilities. Physical fitness is an important factor in sport achievement. Anthropometric variables almost related with physical performance.

The main aim of the study is to determine the relationship of selected Physical Fitness Components and Anthropometric Variables to playing ability of Volleyball player.

Methodology:

Sixty male Volleyball players to consider as subjects, all subjects are selected from all universities of the Maharashtra. The subjects were within the 18 to 25 age group.

The subjects were participated in “Ashwamegh” Intersvarsity tournament 2018-2019. Only five different games were considered in which Volleyball was the one of them. The main aim of this tournament is to promote the awareness moment about AIDS which was organized by Government of Maharashtra.

The subjects were tested under the anthropometric variables e.g. height, weight, arm length, leg length, calf girth, thigh girth and shoulder width.

The physical fitness components for endurance (12 minutes Run/Walk) agility [4x10-Shuttle run], explosive power [vertical jump], shoulder strength [chin-lips] and flexibility [sit and reach] The dependent variables was playing ability which was assessed through subjective rating by five experts. The average of five experts was the individual criterion score.

Pearson’s product moment correlation was used as a tool to find out the relationship of selected anthropometric variables and physical fitness components with volleyball playing ability. The level of significant was set at 0.05.

Result and Discussions:

The statistical analysis of the following table shows that the relationships of anthropometric variables and playing ability except shoulder width have shown insignificant correlation with Volleyball playing ability. All the values except shoulder width were above the table value of 0.303.

Height is an important aspect for volleyball performance as it enables than to have better reach towards the ball as the time of defensive as well as offensive play. The present study is also supported by highly significant relationship ($r=0.526$), between height and volleyball playing ability. Chauhan M.S. and Chauhan D.S. (2005) have bound that the height to be an important factor in determining volleyball playing ability.

The average and above average weight of players can perform well during playing. The present study also found the significant relationship with volleyball playing ability. ($r= 0.352$).

Table No. I

Correlation Coefficient of Anthropometric Variables with playing ability of Volleyball Players

Sr.No.	Anthropometric Variables correlated.	Correlation Co-efficient (r)
1	Height and playing ability	0.526*
2	Weight and playing ability	0.352*
3	Arm length and playing ability	0.346*
4	Leg length and playing ability	0.425*
5	Shoulder width and playing ability	0.301
6	Thigh girth and playing ability	0.318*
7	Calf girth and playing ability	0.326*

*Significant at 0.05 level

$r_{.05(58)} = 0.303$

Leg length and arm length has been found significant relationship with volleyball playing ability ($r=0.425$) and ($r= 0.346$) respectively. Though longer the leg length and arm length will be the more reach length then more distance will be covered while receiving the side ball and forward ball during defense. Also it helps to cover vertical distance while smashing and blocking the ball.

Calf girth and Thigh girth has been found significant relationship with volleyball playing ability ($r=0.318$ and ($r= 0.326$) respectively. Greater the muscle mass of calf and thigh contribute to the total body mass which enhance the momentum of the body segments and thus the additional force is transmitted to the movement of the object. Also greater the size of muscle greater the force will be generated which enhance the vertical jump during smashing and blocking in the game.

Shoulder width is also one of the important variables for the Volleyball player to perform well. It is a game, which the players have to use the shoulder power to strike the ball and also during service. If the size of the shoulder width is better will be power. However this assumption is insignificant because obtained value 0.301 is less than the table value of 0.303.

Table No. II

Correlation Coefficient of Physical fitness components with playing ability of Volleyball Players

Sr.No.	Physical fitness variables correlated.	Correlation Co-efficient (r)
1	Vertical Jump and playing ability	-0.460*
2	Agility and playing ability	-0.572*
3	Explosive power and playing ability	-0.469*
4	Shoulder strength and playing ability	-0.330*
5	Endurance and playing ability	-0.418*
6	Flexibility and playing ability	-0.302

*Significant at 0.05 level

$r_{0.5}(58) = 0.303$

Table II, shows the relationship of selected physical fitness components with volleyball playing ability.

Among the physical fitness components agility was found the highest relationship with Volleyball playing ability ($r = 0.670$). Volleyball is a game of Jumping, diving, frequently to change the body position and direction suddenly. Due to the good agility all these moments are possible.

Explosive power generated from the legs always helpful to the volleyball players to execute the spot jump or vertical jump, which is essential for players to score point by striking and blocking the ball.

The present study was found significant relationship with volleyball playing ability ($r= 0.469$). The result was supported the observation made by Clarke (1957).

Shoulder strength is most important factor for the Volleyball players because all the powerful strike becomes from the shoulder muscles. It enables the

player to apply more force during service and strike which helps to score the point. In the present study the shoulder strength has been found to have a significant relationship with volleyball playing ability ($r= 0.330^*$). This result find to support in the observation found by Janedle (1979) had found significant relationship in volleyball playing ability,

In this study Vertical Jump has also found significant relationship with Volleyball playing ability ($r=-0.460$). Better the vertical jump ability of a player, makes smash and block the ball effectively during the game. Joseph (1983) found the significant relationship between explosive strength and vertical jump.

Endurance is also found significant relationship with Volleyball playing ability ($r=0.418$) Volleyball is an endurance game. Players should play the game for 5 sets of 25 points each. To keep the constant performance endurance plays the important role.

Among the physical fitness components only flexibility does not show significant relationship with Volleyball playing ability($r= 0.302$). But while defense, it keeps some extend importance for Lebero player (The player make only defense).

Conclusion:

From the above results and discussions it is concluded that the selected Physical Fitness Components and Anthropometric Variable, except shoulder width and flexibility were insignificantly correlated with Volleyball playing ability.

Therefore Volleyball performance highly influenced by well built physique and high amount of physical fitness qualities.

Further the result of the study is helpful to the coaches to select the Volleyball players by giving importance in well proportionate physical structure and physical fitness standard.

Reference:

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