

# RELATIONSHIP OF ANTHROPOMETRIC VARIABLES WITH PLAYING ABILITY OF VOLLEYBALL PLAYERS OF HARYANA

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Received: February 02, 2019

Accepted: March 07, 2019

**ABSTRACT:** *The purpose of the present study was to find out the relationship between selected Anthropometric Variables with playing ability of Volleyball players of Haryana. 96 University Volleyball players from Haryana, age ranging from 17 to 25 years having minimum North Zone Inter University level participation or position holders in Volleyball competitions have been selected. The random sampling technique has been used to collect the required data. The relationship between selected Anthropometric variables and performance in Volleyball test (dependent variables) were established, for each event, by computing Pearson's product moment coefficient of correlation. The results showed that there is a significant relationship between Anthropometric Variables and playing ability of Volleyball players.*

**Key Words:** *Anthropometric Variables, Playing ability, Volleyball*

## INTRODUCTION

Performance in any sports depends upon certain factors i.e. physique and body composition, physiological and psychological etc. out of these physique and body composition are most important. Similarly, many researches have been conducted in Volleyball showed that it dependent upon physiques, general physical fitness, specific physical fitness, skill involved in the game, tactical jollities and competitive abilities etc. of players (Milvi 2007). From these studies it is concluded that physique, body composition and physical fitness are essential ingredients for excellence performance at different levels of participation in Netball. Since physique and body composition provide a suitable raw material for specific game and sports, without proper parameters of size, shape and body composition, it is useless to spend lot of money and time on such type of Volleyball players for their conditioning and training programs who are not suitable for this game. The selection and training can be done better with adequate knowledge of Anthropometric measurements of the successful Volleyball players. The present study was attempted to provide guidelines about the relationship of selected Anthropometric variables and Volleyball performance so that physical education teachers and coaches can be benefited to inform their trainees about the specific qualities that should possess for each Volleyball player.

## METHODOLOGY

For the present study 96 University Volleyball players from Haryana, age ranging from 17 to 25 years having minimum North Zone Inter University level participation or position holders in Volleyball competitions have been selected. The random sampling technique has been used to collect the required data. Various Anthropometric variables, i.e. Height, Weight, BMI, Arm span, Hand span, Upper Arm circumference, Forearm circumference, Thigh circumference, Calf circumference. To assess volleyball playing ability Five point rating scale with fifty points was used, which have the following items:

- Attacking
- Blocking
- Setting
- Floor defense

## STATISTICAL ANALYSIS

The relationship between selected Anthropometric variables and performance in Volleyball test (dependent variables) were established, for each event, by computing Pearson's product moment coefficient of correlation.

## RESULTS AND DISCUSSION

The relationship of playing ability with anthropometric parameters of Volleyball players was established by Pearson's correlation co-efficient.

**Table 1.1 : Correlation matrix for relationship between playing ability and Anthropometric parameters**

	Playing ability	Height	Weight	BMI	Arm span	Hand span	Upper arm circumference	Fore arm circumference	Thigh circumference	Calf circumference
Playing ability	-									
Height(cm.)	0.193	-								
Weight(cm.)	-0.093	0.219*	-							
BMI(Kg./m <sup>2</sup> )	-0.229*	-0.615**	0.633**	-						
Arm span(cm.)	0.189	0.856**	0.275**	-0.459**	-					
Hand span(cm.)	0.247*	0.340**	0.166	-0.137	0.352**	-				
Upper arm circumference(cm.)	0.181	0.174	0.115	-0.043	0.258*	0.105	-			
Fore arm circumference(cm.)	-0.022	0.103	-0.021	-0.105	0.033	-0.074	0.033	-		
Thigh circumference(cm.)	0.034	0.159	0.120	-0.037	0.179	0.008	0.000	0.268**	-	
Calf circumference(cm.)	-0.116	-0.117	-0.022	0.071	-0.087	0.176	0.185	0.014	0.136	-

\*. Correlation is significant at the 0.05 level (2-tailed).

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

In above Table 1.1, correlation matrix presents very weak relationship of playing ability with selected anthropometric parameters. Among all anthropometric parameters Height(r 0.193), Arm span(r 0.189), Hand span (r 0.247), upper arm circumference(r 0.181) and Thigh circumference(r 0.034) were positively correlated. Whereas negative relation was portrayed by Weight(r -0.093), BMI(r -0.229), Forearm circumference(r -0.022) and Calf circumference(-0.116). All the relationships were non-significant except BMI(p<0.05) and Hand span(p<0.05).

**Table 2 : Relationship between playing ability of players and anthropometric parameters**

	Average (n-27)		Good (n-69)		Total (n-96)	
	Mean ± SD	R	Mean ± SD	r	Mean ± SD	r
Playing ability	32.85 ± 0.62	-	38.93 ± 2.80	-	37.22 ± 3.64	-
Height(cm.)	194.78 ± 4.83	0.220	195.59 ± 4.16	0.225	195.37 ± 4.35	0.193
Weight(cm.)	87.10 ± 4.45	0.212	85.53 ± 3.79	0.056	85.97 ± 4.02	-0.093
BMI(Kg./m <sup>2</sup> )	22.98 ± 1.39	-0.009	22.98 ± 1.39	-0.135	22.54 ± 1.30	-0.229*
Arm span(cm.)	195.90 ± 5.08	0.163	197.20 ± 4.51	0.163	196.84 ± 4.69	0.189
Hand span(cm.)	23.75 ± 1.27	0.206	24.07 ± 1.33	0.278*	23.98 ± 1.31	0.247*
Upper arm circumference(cm.)	24.88 ± 1.28	0.189	24.39 ± 1.41	0.089	24.24 ± 1.39	0.181
Fore arm circumference(cm.)	16.01 ± 2.01	0.479*	15.93 ± 1.92	-0.055	15.95 ± 1.93	-0.022
Thigh circumference(cm.)	47.40 ± 3.40	0.168	48.02 ± 2.70	-0.092	47.84 ± 2.91	0.034
Calf circumference(cm.)	32.61 ± 2.72	0.251	31.79 ± 2.33	-0.029	32.02 ± 2.46	-0.116

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

\*. Correlation is significant at the 0.05 level (2-tailed).

The relationship of anthropometric parameters with average and good playing ability is depicted in Table 2. Increase in average height of players strengthened the correlation with playing ability. More mean height (M-195.59) of players was visible in good playing ability players showing more correlation coefficient ( $r$  0.225). Although total players showed negative correlation ( $r$  -0.093) with weight, yet average and good playing ability had positive  $r$  coefficient. BMI was clearly having very weak negative correlation with playing ability. Also Arm span was equally correlated with average and good playing having weak positive relation. The larger hand span (M-24.39) was more positively ( $r$  0.278) correlated to playing ability. More positive correlation ( $r$  0.189) was observed for larger upper arm circumference (M-24.88). The fore arm circumference of volleyball players was negatively correlated to playing ability. Not only the overall correlation coefficient was negative but Maximum mean forearm circumference (M-16.01) was moderately positively correlated ( $r$  0.479) in average playing ability group. No relationship could be established between thigh circumference and playing ability. Calf circumference was negatively correlated to playing ability for total players ( $r$  -0.116) as well as good playing ability group ( $r$  -0.029).

### CONCLUSIONS OF THE STUDY

1. It was concluded from obtained outcomes that height of players has negligible positive relationship with playing ability. Good Height can enhance a bit playing ability of players.
2. Weight of players was found negligibly negatively correlated to playing ability. Increased weight somewhat negatively affect playing ability of volleyball players.
3. BMI of players showed very weak significant negative relationship with playing ability thus increased BMI can negatively impact playing ability of volleyball players.
4. It can be concluded from very weak positive relationship of playing ability and arm span that wider Arm span can help to improve playing ability of volleyball players to some extent.
5. Hand span of players was showing significant weak positive relationship with playing ability. Thus larger hand span ensure rather better playing ability among volleyball players.
6. Negligible but positive relationship existed between playing ability and upper arm circumference. More upper arm circumference is a little beneficial for playing ability.
7. Forearm circumference had nearly no but negative relationship with playing ability. But average playing ability players established significant low positive relationship with forearm circumference. It can be concluded that broader forearm circumference facilitate improving playing ability in volleyball.
8. No to very weak correlation was visible between thigh circumference and playing ability. Nothing concrete could be established regarding relationship of thigh circumference and playing ability in the present study.
9. The correlation coefficient of calf circumference and playing ability represented very weak negative relationship. Larger calf circumference produced positive correlation coefficient with playing ability thus indicated positive relationship between the two.

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