Prediction of Volleyball Playing Ability from Anthropometric Measurements

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Abstract

The purpose of the study was to predict the Volleyball playing ability from selected anthropometric measurements. To achieve the purpose of the study, total of eighty Inter -university Volleyball men players are selected as a subjects. The anthropometric variables such as Height, Weight, Leg length, Arm Length, Forearm length, Fore arm circumference, Upper arm girth, Chest Girth, Thigh Girth & Calf Girth was selected as independent variables and volleyball playing ability was selected as dependent variable for this study. The selected independent variables were tested by using standardized test items were tested by using gullick tape. Here the height measured by stadiometer, weight measured by weighing machine, volleyball playing ability of the subjects was assed by the application of a Volleyball rating scale for 45 points. After the assessment of the performance in the match situation the average score of 3 experts were consider as volleyball playing ability of the subjects. To determine the relationship between dependent variable and independent variable Pearson product moment correlation and to find out the joint contribution multiple regression was used. The results of the present study indicate that Height, Leg length, Arm Length, Forearm length, Fore arm circumference, Upper arm girth, Chest Girth, Thigh Girth & Calf Girth are playing an important role for volleyball playing ability.

Key Words: Playing Ability, Volleyball, Anthropometric Measurements.

INTRODUCTION

Anthropometry is the branch of anthropology that is concerned with the measurement of human body. Anthropometry involves the measurement of external part of the body, including body diameters; body circumferences somatic types. Athletes' kinanthropometric profiles are widely addressed in the scientific literature. Such profiles are particularly important in volleyball because absolute size contributes a significant percentage of total variance associated with athletic success. As in other team sports, volleyball players' anthropometric attributes correlate with the game's tactical demands. Anthropometric properties of athletes represent important prerequisite for

successful presence at the same sport, effecting athlete's performance and are necessary in order to gain excellent performance of sports skills.

Volleyball game is an excellent all-around team sports, has been widely accepted as a highly competitive as well as recreational game all over the world. Now, it is a game of power and tactics and is played at a faster pace and this calls sharper thinking, high standard of skills and technical application. There are very fast action and accuracy in performance to technique, and tactics, optimal physique is apparently an advantage to volleyball performance. Only when a volleyball team is collectively equipped with all the ideal anthropometric characteristics can the team win the dominance in a game. Present-day volleyball requires from players quick reaction to changing situations in the game and accurate and precise movement for handling the ball.

STATEMENT OF THE PROBLEM:

The purpose of the study was to predict the volleyball playing ability from anthropometric measurements.

METHODOLOGY:

The purpose of the study was to predict the volleyball playing ability from anthropometric measurements. The purpose of the study, 80 Inter university volleyball men players are selected as a subjects. The age of the subjects were ranged between 18 to 25 years. The anthropometric measurements such as height, weight, leg length, arm length, forearm length, fore arm circumference, upper arm girth, chest girth, Thigh girth and calf girth were selected as independent variables and volleyball playing ability was selected as dependent variable for this study. The selected independent variables were tested by using standardized test items were tested by using gullick tape and volleyball playing ability was tested with subjective volleyball rating scale. To determine the relationship between dependent variable and independent variable Pearson product moment correlation, multiple correlations and multiple regressions was used as statistical techniques. The level of significance was fixed at .05level.

FINDINGS OF THE STUDY:

The data collected on the selected variables were analyzed and presented in the following tables.

Table 1. Relationship between Volleyball Playing Ability and Anthropometric Measurements

Dependent variable	Independent Variable	Pearson 'r' value
playing ability	Height	0.236
	Weight	0.017
	Leg length	0.288
	Arm length	0.397
	Forearm length	0.471
	Forearm circumference	0.514
	Upper arm girth	0.664
	Chest girth	0.327
	Thigh girth	0.365
	Calf girth	0.537

Above the table shows that Pearson's product moment correlation between the selected variables and playing ability of volleyball players.

Table 2. Regression Co- Efficient Of Volleyball Men Players. (Model Summary).

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.788[a]	.621	.567	5.65328

Obtained R Square 0.621, the contribution of all the independent variables on playing ability of volley ball men players was found to be 62.1 %. The Std. Error of the Estimate is 5.65.

Table3: Table Summary of Regression Co-Efficient For Playing Ability.

Model	Unstandardized Coefficients		Standardized Co-efficients	t	Sig.
	B	Std.Error	Beta		

(Constant)	-77.516	22.060		-3.514	.001
Height	-.132	.212	-.105	-.623	.535
Weight	-.287	.096	-.272	-2.997	.004
Leg length	.114	.232	.083	.492	.624
Arm length	.586	.264	.316	2.221	.030
Forearm length	.382	.320	.123	1.192	.237
Forearm circumference	-.161	.684	-.029	-.235	.815
Uperarm girth	2.518	.516	.532	4.881	.000
Chest girth	-.379	.172	-.217	-2.202	.031
Thigh girth	.198	.186	.101	1.068	.289
Claf girth	.970	.381	.259	2.544	.013

Table 4: Relative Contributions Of Predictor Variables On Criterion Variable (Playing Ability) Of Volleyball Men Players

Anthropometric measurements	Beta	R value	B*r	contribution in %
Height (X_1)	-.105	0.236	-0.02483	-2.48298
Weight (X_2)	-.272	0.017	-0.00463	-0.46279
Leg length (X_3)	.083	0.288	0.024016	2.401587
Arm length (X_4)	.316	0.397	0.125341	12.53406
Forearm length (X_5)	.123	0.471	0.057778	5.777801
Forearm circumference (X_6)	-.029	0.514	-0.01474	-1.47406
Upper arm girth (X_7)	.532	0.664	0.352948	35.29479
Chest girth (X_8)	-.217	0.327	-0.07094	-7.09402
Thigh girth (X_9)	.101	0.365	0.036918	3.691778
Calf girth (X_{10})	.259	0.537	0.139222	13.92222

The Total contribution of all the independent variables on Playing Ability of Volleyball Men players was found to be 62.1% in which, the contribution of Height (X_1)= -2.48%, Weight(X_2)= -0.46%, Leg length(X_3) = 2.40%, Arm length (X_4) =

12.53%,, Forearm length (X_5)= 5.78%, Forearm circumference (X_6) = -1.47%,, Upper arm girth (X_7) =35.30%,, Chest girth (X_8)= -7.09%,, Thigh girth (X_9)= 3.69%, and Calf girth (X_{10}) =13.92%. Therefore it is conclude that, The Upper arm girth (X_7)is the First Contributor/predictor followed by Calf girth (X_{10}), Arm length, (X_4),Chest girth (X_8), Forearm length (X_5),Thigh girth (X_9),Height(X_1), Leg length(X_3), Forearm circumference (X_6) and Weight(X_2) on Playing Ability of Volleyball Men players.

CONCLUSION:

1. There was a significant relationship between the selected anthropometric measurements (height, leg length, arm length, fore arm length, fore arm circumference, upper arm girth, chest girth, Thigh girth and calf girth) and volleyball playing ability of inter university players. It is significant at 0.05 level.
2. There was not a significant relationship between the selected anthropometric measurement weight & volleyball playing ability of inter university players.
3. The total contribution of anthropometric measurements such as Height, weight, Leg length, Arm Length, Forearm length, Fore arm circumference, Upper arm girth, ChestGirth,ThighGirth And CalfGirth of volleyball players in each variables. r squre values showed that about 62.1% of variation in playing ability.

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