International Journal of Yoga, Physiotherapy and Physical Education
ISSN: 2456-5067
Impact Factor: RJIF 5.24
www.sportsjournal.in
Volume 2; Issue 6; November 2017; Page No. 166-168

Relationship between various anthropometric variables and accuracy of netball players of Chandigarh

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Abstract
The main purpose and objective of the present study is see the relationship between selected Kinanthropometric variables and physical fitness components (independent) performance in Netball test (dependent variables) For the present study 100 School Netball players from Chandigarh, age ranging from 15 to 19 years having minimum State level participation or position holders in Netball competitions have been selected. The random sampling technique has been used to collect the required data. To test the hypotheses, the level of significance was set at 0.05. All the measurements were taken according to Weiner and Lourie (1969). For physical fitness of the school Netball players, the AAPHER Youth Physical Fitness Test (1976) was used. Test battery of H.CRONISH (1949) was conducted for accuracy of Netball players Thirty-second Volley test (Accuracy) Before administering the test validity and reliability of tests was checked.

Keywords: kinanthropometric, physical fitness, netball players

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 Netball 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 Netball 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 Kinanthropometric measurements of the successful Netball players. The present study was attempeted to provide guidelines about the relationship of selected Kinanthropometric variables and Netball performance and physical education teachers and coaches can be benefited to inform their trainees about the specific qualities that should possess for each Netball player.

Methodology
For the present study 100 School Netball players from Chandigarh, age ranging from 15 to 19 years having minimum State level participation or position holders in Netball competitions have been selected. The random sampling technique has been used to collect the required data. Various Kinanthropometric variables, Height, Sitting height, Trunk Length, Leg Length, Thigh Length, Lower leg Length, Total Arm Length, Upper Arm Length, Fore-Arm Length, Hand Length, Foot Length, various bony diameters, girth circumferences and skinfold measurements. All the measurements were taken according to Weiner and Lourie (1969). For physical fitness of the school Netball players, the AAPHER Youth Physical Fitness Test (1976) was used. Test battery of H.CRONISH(1949) was conducted for accuracy of Netball players Thirty-second Volley test (Accuracy) Before administering the test validity and reliability of tests was checked**.**

Statistical analysis
The relationship between selected Kinanthropometric variables and physical fitness components (independent) performance in Netball test (dependent variables) were established, for each event, by computing Pearson's product moment coefficient of correlation. Multiple correlations and corresponding multiple Regression Equations were computed using Wherry - Doolittle Methos to find out the combined effect of independent variables, (Clarke, H.H. and Clarke, D.H. 1972).

Results and discussion
Relationship between selected Kinanthropometric and motor fitness variables with Accuracy performance, combined contribution of selected Kinanthropometric and motor fitness variables with Netball performance and other statistics denoting their relationships are presented in a set of six tables each.

Table 1: Correlations of Kinanthropometric variables with the performance in Thirty second volley Accuracy Test of Netball players

Sr. No.	Variables Correlated	Coefficient of correlation
1	Height and Accuracy test	.174**
2	Sitting Height and Accuracy test	- .056
3	Trunk Length and Accuracy test	-.052
4	Leg Length and Accuracy test	.181**
5	Thigh Length and Accuracy test	.141*
6	Lower Leg Length and Accuracy test	.084
7	Total Arm Length and Accuracy test	.173*
8	Upper Arm Length and Accuracy test	.173*
9	Fore Arm Length and Accuracy test	.094
10	Hand Length and Accuracy test	.176*
11	Foot Length and Accuracy test	.106

N= 200** Significant at 1% r= .181
df= 198* Significant at 5% r= .138

Table 1 indicates that Leg length, height, thigh length, total arm, upper arm length, and hand length have correlated positively significant and with score of Accuracy test at 1% and 5% level respectively. It implies that with the increase of height, leg length, thigh length, total arm, upper arm and hand length improved the performance of Thirty second volley Accuracy of Netball players.

Table 2: Correlations of Body Girth Measurements with performance in thirty second volley Accuracy test of Netball players. df=198

Sr. No.	Variables Correlated	Coefficient of correlation (r)
12.	Arm Girth and Accuracy test	.184**
13.	Chest Girth and Accuracy test	.091
14.	Abdomen Girth and Accuracy test	- .078
15.	Hip Girth and Accuracy test	.051
16.	Thigh Girth and Accuracy test	- .152
17.	Knee Girth and Accuracy test	.101*
18.	Calf Girth and Accuracy test	- .135*

N= 200** Significant at 1% r = .181
df= 198* Significant at 5% r = .138

Table 2 clearly shows that Arm girth, have positive and significant correlations at 1% level whereas thigh girths and calf girths has negative and significant correlation at 51% with the performance score of Accuracy test. Other variables have no significant correlations with performance in Accuracy test. It implies that, the increase of Arm, improve the Accuracy performance and decrease in thigh and calf girths increases the Thirty second volley Accuracy performance of Netball players.

Table 3: Correlations of Body Diameter measurements with performance in thirty second volley Accuracy test of Netball Players df=198

Sr. No.	Variables Correlated	Coefficient of correlation (r)
19	Shoulder Diameter and Accuracy test	-.103
20	Elbow Diameter and Accuracy test	.182**
21	Wrist Diameter and Accuracy test	.186**
22	Hip Diameter and Accuracy test	-.065
23	Knee Diameter and Accuracy test	.032
24	An Ankle Diameter and Accuracy test	-.141*

N= 200** Significant at 1% r = .181
Df = 198* Significant at 5% r = .138

It is evident from table - 3 that Elbow and wrist diameters have positive and significant correlations with the performance in Accuracy test at 1% level. Whereas ankle diameter has negative and significant correlation at 5% level. Others variables have no significant correlations with the performance in Accuracy test. It shows that with the increase in Elbow and wrist diameter improved the performance score of Thirty second volley Accuracy test.

Table 4: Correlations of Skinfold measurements with performance in thirty second volley Accuracy test of Netball players df=198

Sr. No.	Variables Correlated	Coefficient of correlation (r)
25	Biceps skinfold and Accuracy test	- .183
26	Triceps skinfold and Accuracy test	-.105
27	Sub scapula skinfold and Accuracy test	- .136*

28	Suprailliac skinfold and Accuracy test	.071
29	Chest skinfold and Accuracy test	.081
30	Mid Axillary's skinfold and Accuracy test	- .089
31	Thigh skinfold and Accuracy test	.041
32	Calf skinfold and Accuracy test	- .145*

N = 200** Significant at 1% r = .181
Df = 198* Significant at 5% r = .138

Table 4 clearly indicates that sub scapula & calf skin folds has negative correlation but significant at 5% level. Biceps has negative and significant correlation at 1% level. Other variables of the skinfold measurement have no significant correlations with the Thirty second volley Accuracy test of school Netball players.

Table 5: Correlations of Motor fitness components with performance in thirty second volley Accuracy test of Netball players df =198

Sr. No.	Variables Correlated	Coefficient of correlation (r)		
33	50-meter-run and Accuracy test	- .153*		
34	Standing broad jump and Accuracy test	.08335	Straight knee sit-ups and Accuracy test	.086
36	Pull ups and Accuracy test	.128		
37	Shuttle Run and Accuracy test	-.179*		
38	Softball throws for distance and Accuracy test	.181**		
39	600 meter Run and Accuracy test	- .124		

N = 200** Significant at 1% r = .181
Df = 198* Significant at 5% r = .138

Table 5 reveals that Netball throws have significant and positive correlations at 1% level. It further shows 50-meter run, and shuttle run have significant and negative correlations at 5% level respectively with the performance of Thirty second volley Accuracy test.

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