



International Journal of Physical Education, Sports and Health

P-ISSN: 2394-1685
E-ISSN: 2394-1693
Impact Factor (ISRA): 5.38
IJPESH 2021; 8(2): 14-19
© 2021 IJPESH
www.kheljournal.com
Received: 10-01-2021
Accepted: 12-02-2021

Harekrishna Das
Research Scholar,
Department of Physical
Education, University of
Kalyani, West Bengal, India

Dr. Saikot Chatterjee
Assistant Professor,
Department of Physical
Education, University of
Kalyani, West Bengal, India

Corresponding Author:
Harekrishna Das
Research Scholar,
Department of Physical
Education, University of
Kalyani, West Bengal, India

Comparison of anthropometric profile between national level volleyball and football players

Harekrishna Das and Dr. Saikot Chatterjee

Abstract

Anthropometry is a specialized branch of science dealing measurement of body parts of living organisms. There is a further specialized branch of anthropometry dealing with measurement of human body part when they are involved in movement or locomotion or more clearly speaking the athletes. Stature of a person or his anthropometric profile to a great extent influences his sport performance. Different game or sporting event has a specific demand for stature or anthropometric structure. Considering the importance, the scholar premeditated to conduct a study on "Comparison Of Anthropometric Profile Between National Level Volleyball And Football Players". The purpose of this study was to compare anthropometric profile between national level male volleyball and football players. To achieve the purpose of this study, total 67(sixth six) National level players (33 male volleyball players and 34 football players) were selected as the subject from various clubs, university and associations of west Bengal. Initially descriptive statistics was calculated and further "t"-test was computed for observing the degree of difference between the means. The level of significance was fixed at 0.05 level of confidence. Data analysis revealed that there exists significant difference between the length measurements variables such as Standing Height., Sitting Height, Arm Length R, and Arm Length L i.e. the volleyball players were superior than the footballers with respect to length measurements mentioned above but there was no significant difference with respect to girth measurements.

Keywords: anthropometric, volleyball, football

Introduction

Anthropometry is a specialized branch of science dealing with measurement of body parts of living organisms. There is a further specialized branch of anthropometry dealing with measurement of human body part when they are involved in movement or locomotion or more clearly speaking the athletes. Stature of a person or his anthropometric profile to a great extent influences his sport performance. Different game or sporting event has a specific demand for stature or anthropometric structure. Still now in India experts in the field of Physical Education and sports science raise their voice against the method or procedure of talent search in sport, they also point out several defects or anomalies in the process of talent search. Anthropometry in true sense play a significant role in the area of sports talent search. On the other hand, anthropometry or kinanthropometry can be used as a valuable tool for assessment or prognosis of sports talent. Different game or sporting event has a specific demand for stature or anthropometric structure. Considering the importance, the scholar premeditated to conduct a study on "Comparison Of Anthropometric Profile Between National Level Volleyball And Football Players".

Purpose of The Study

Purposes of this study are as follows:

- i. To compare the length measurements of national level male volleyball and football players.
- ii. To compare the girth measurements of national level male volleyball and football players.

Methodology

The Subject

The total 67 national level male players were selected for this study 33 players from volleyball and 34 players from football were selected from various different club, university and association of west Bengal. Their age range was 18 to 25 years who were actively involved in daily practice for their respective field.

Criterion measures to conduct the present study the following measurements were taken

Circumference variables	Length measurements variables
Head	Standing Height
Neck	Siting Height
Forearm	Arm Length (R)
Wrist	
Chest	Arm Length (L)
Waist	
Hip	Leg Length (R)
Thigh (Gluteal)	
Mid-Thigh	Leg Length (L)
Calf	

For the purpose of data analysis, the employed statistical procedures were-

Mean, SD and “t”-test for observing the difference of mean between the selected groups. The level of significance was set at 0.05 level of confidence.

Result and Discussion

In this part of the paper the author tried to portray the results derived through data analysis and related discussion based on those.

Table 1: Descriptive Statistics of personal data of volleyball players

Personal Data	N	Minimum	Maximum	Mean	Std. Deviation
Age	33	19.00	25.00	21.58	±1.94
Weight	33	51.90	83.90	65.65	±7.91
Standing Height	33	149.00	196.00	177.65	±10.01
Sitting Height	33	128.00	143.00	136.34	±3.93
Valid N (List Wise)	33				

From the table 1 it is clear that the mean of the age, weight, standing height and sitting height of the volleyball players were 21.58, 65.65, 177.65 and 138.77 and their sd were 1.94, 7.91, 10.01, and 3.93 respectively.

Table 2: Descriptive Statistics of personal data of football players

Personal Data	N	Minimum	Maximum	Mean	Std. Deviation
Age	34	18.00	25.00	21.15	±2.39
Weight	34	45.00	78.00	61.84	±8.32
Standing Height	34	156.00	190.00	170.78	±7.10
Sitting Height	34	122.00	141.00	132.10	±4.08
Valid N (list wise)	34				

From the table 2 it is clear that the mean of the age, weight, standing height and sitting height of the football players were 21.15, 61.84, 170.78, and 132.10 and their sd were 2.39, 8.32, 7.10 and 4.08 respectively.

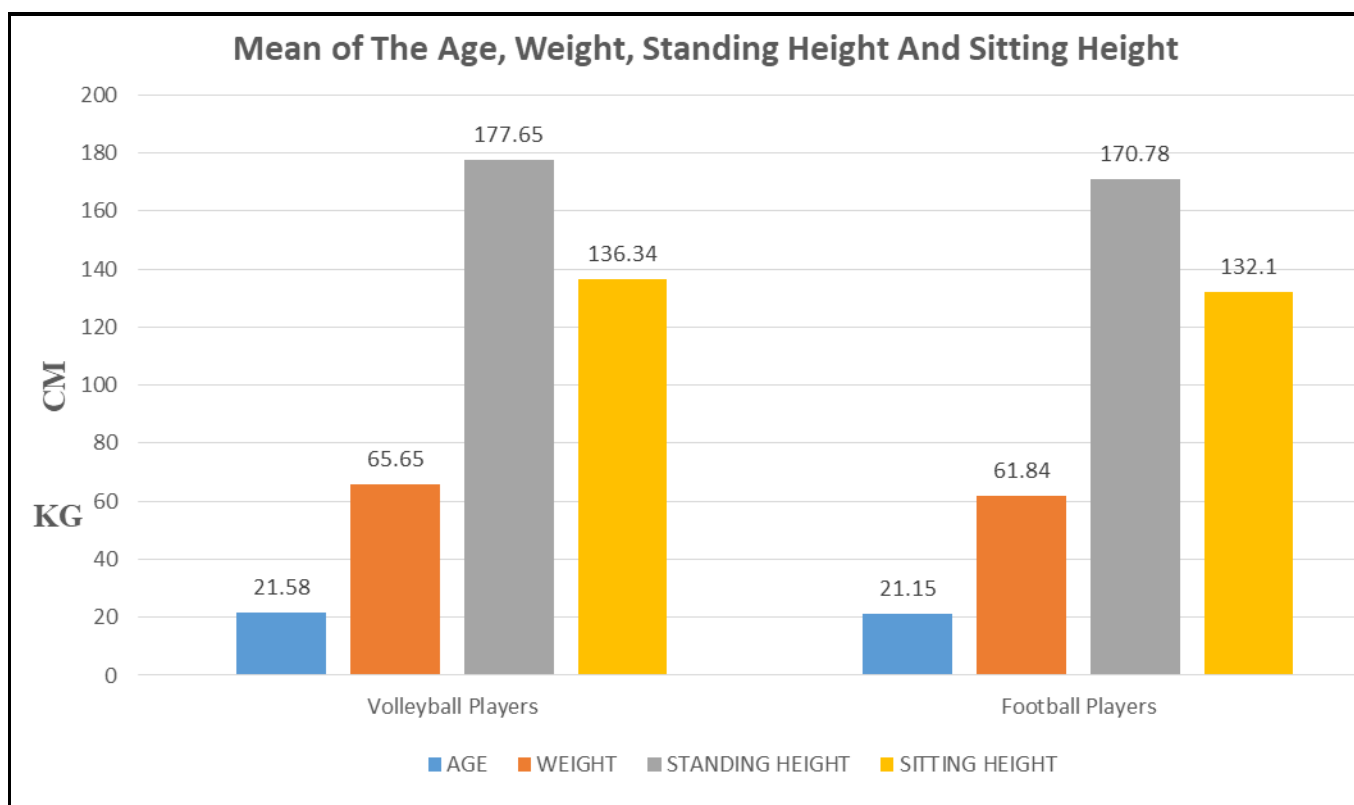


Fig 1: Descriptive statistics of personal data of Volleyball and Football Players

From the above column chart it is somehow clear that there is no huge difference between the Volleyball and Football Players with respect to there are height and body weight. Thus

it can be uttered that the subjects are homogenous in nature in relation to their age, height and body weight.

Table 3: Descriptive Statistics of Circumference of volleyball Players

Circumference	N	Minimum	Maximum	Mean	Std. Deviation
Head	33	50	56	53.12	±1.36
Neck	33	27	38	34.39	±2.09
Forearm	33	15	29	24.36	±2.46
Wrist	33	9	18	15.82	±1.42
Chest	33	72	94	83.94	±5.62
Waist	33	65	89	74.58	±5.88
Hip	33	68	104	85.76	±8.05
Thigh(Gluteal)	33	39	64	52.39	±5.39
Mid-Thigh	33	33	59	49.30	±4.79
Calf	33	28	41	33.33	±2.57
Valid N (list wise)	33				

From table 3 it is clear that the mean of Circumference variables Head ,Neck ,Forearm, Wrist Chest, Waist Hip, Thigh(Gluteal), Thigh (Mid) and calf of volleyball players were 53.12, 34.39, 24.36 15.82, 83.94, 74.58, 85.76, 52.39,

49.30 and 33.33 and their Sd were ±1.36, ±2.09,±2.46,±1.42,±5.62,±5.88,±8.05,±5.39,±4.79 and ±2.57 respectively.

Table 4: Descriptive Statistics of Circumference of Football Players

Circumference	N	Minimum	Maximum	Mean	Std. Deviation
Head	34	50	56	53.21	±1.67
Neck	34	30	39	34.15	±2.06
Forearm	34	20	32	23.88	±2.10
Wrist	34	14	18	16.09	±0.90
Chest	34	70	91	81.53	±5.07
Waist	34	61	83	72.88	±5.45
Hip	34	77	97	86.38	±5.09
Thigh(Gluteal)	34	44	60	52.65	±4.39
Thigh (Mid)	34	42	56	49.18	±3.56
Calf	34	30	38	33.35	±2.15
Valid N (list wise)	34				

From table 4 it is clear that the mean of Circumference variables Head ,Neck ,Forearm, Wrist Chest, Waist Hip, Thigh(Gluteal), Thigh (Mid) and calf of football players were 53.21, 34.15, 23.38, 16.09, 81.53, 72.88, 86.38, 52.65,

49.18 and 33.35 and their Sd were ±1.67, ±2.06,±2.10,±0.90,±5.07,±5.45,± 5.09,± 4.39,± 3.56 and ±2.15respectively.

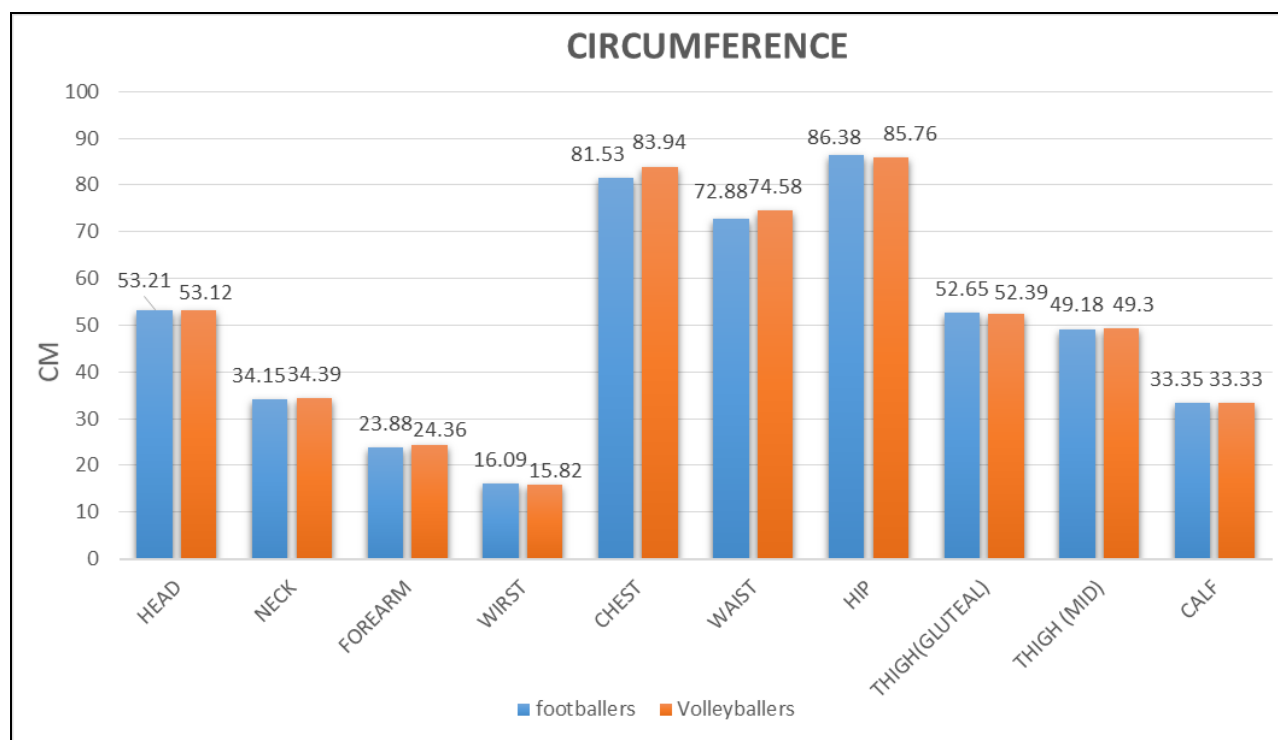
**Fig 2:** Graphical representation of circumference measurement of national level male volleyball and football Players.

Table 5: Descriptive Statistics of Length measurements of volleyball Players

Length measurements	N	Minimum	Maximum	Mean	Std. Deviation
Standing Height	33	149	196	177.61	±10.00
Siting Height	33	128	183	138.73	±11.63
Arm Length (R)	33	46	67	60.48	±4.69
Arm Length (L)	33	46	68	60.45	±4.55
Leg Length (R)	33	75	99	87.03	±5.66
Leg Length (L)	33	75	98	87.15	±5.75
Valid N (list wise)	33				

From table 5 it is clear that the mean of Length measurements Standing Height, Siting Height, Arm Length (R), Arm Length (L), Leg Length (R) and Leg Length (L) of volleyball players

were 177.61, 138.73, 60.48, 60.45, 87.03 and 87.15 and their Sd were ±10.00, ±11.63, ±4.69, ±4.55, ±5.66 and ±5.75 respectively.

Table 6: Descriptive Statistics of Length measurements of Football Players

Length measurements	N	Minimum	Maximum	Mean	Std. Deviation
Standing Height	34	156	190	170.68	±7.06
Siting Height	34	122	141	132.12	±4.10
Arm Length (R)	34	55	84	67.06	±9.60
Arm Length (L)	34	54	83	66.82	±9.58
Leg Length (R)	34	74	108	87.56	±11.51
Leg Length (L)	34	75	109	87.91	±11.50
Valid N (list wise)	34				

From table 6 it is clear that the mean of Length measurements Standing Height, Siting Height, Arm Length (R), Arm Length (L), Leg Length (R) and Leg Length (L) of football players

were 170.68, 132.12, 67.06, 66.82, 87.56 and 87.91 and their Sd were ±7.06, ±4.10, ±9.60, ±9.60, ±11.51 and ±11.50 respectively.

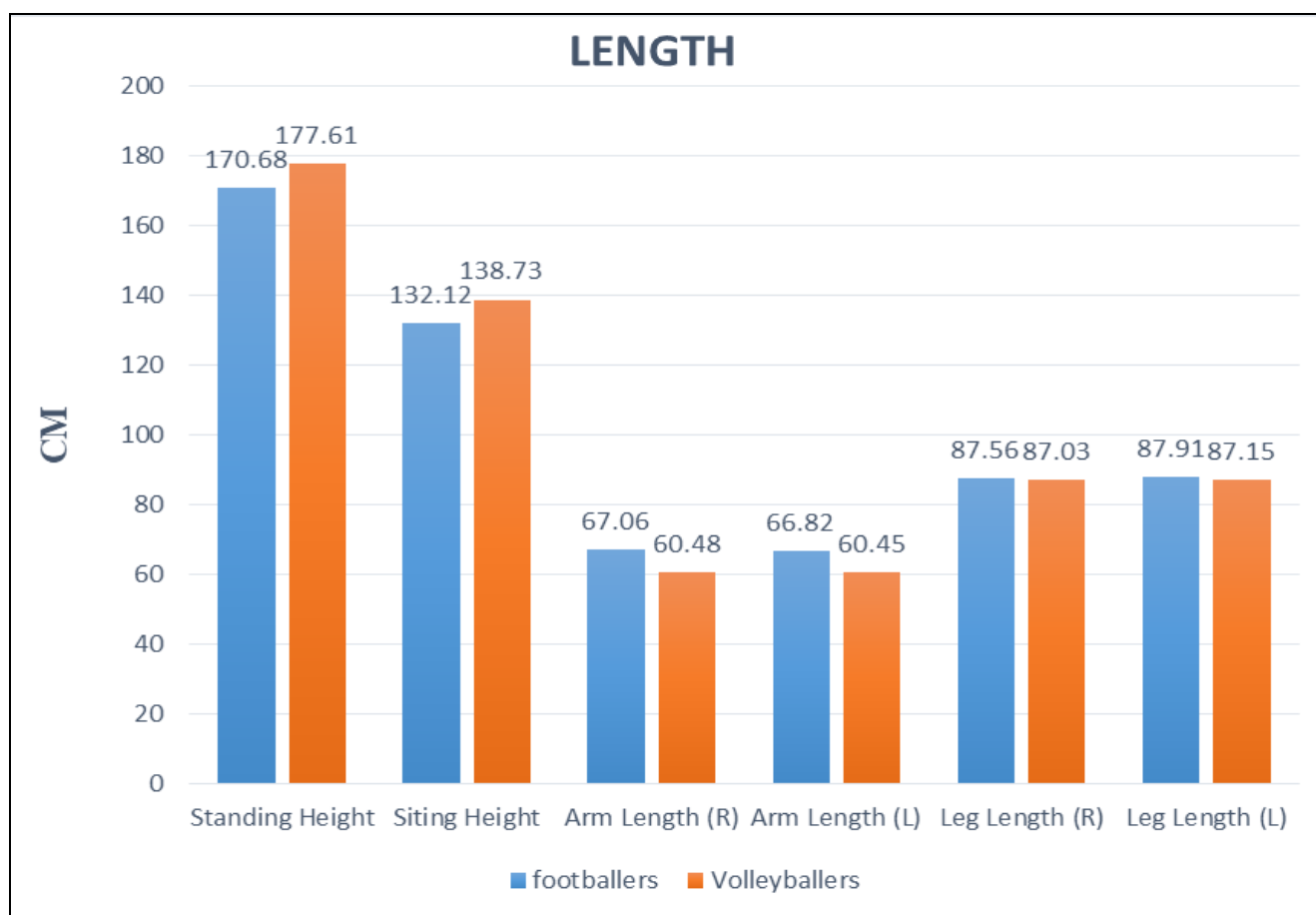
**Fig 3:** Graphical representation of Length measurements of national level male volleyball and football Players

Table 7: Group Statistics on Circumference variables between Volleyball and Football players

variables	Group	N	Mean	Std. Deviation	Std. Error Mean
Head	volleyball	33	53.07	1.35	0.24
	Football	34	53.19	1.60	0.27
Neck	volleyball	33	34.37	2.10	0.37
	Football	34	34.13	2.10	0.36
Forearm	volleyball	33	24.41	2.45	0.43
	Football	34	23.85	2.02	0.35
Wrist	volleyball	33	15.73	1.42	0.25
	Football	34	16.02	0.94	0.16
Chest	volleyball	33	83.91	5.63	0.98
	Football	34	81.57	5.08	0.87
Waist	volleyball	33	74.57	5.90	1.03
	Football	34	72.89	5.44	0.93
Hip	volleyball	33	85.73	8.06	1.40
	Football	34	86.41	5.11	0.88
Thigh(Gluteal)	volleyball	33	52.41	5.39	0.94
	Football	34	52.67	4.41	0.76
Thigh (Mid)	volleyball	33	49.32	4.76	0.83
	Football	34	49.16	3.54	0.61
Calf	volleyball	33	33.35	2.60	0.45
	Football	34	33.35	2.18	0.37

From group statistics between volleyball and football players presented in table 7 it is clear that there were few differences between the means with respect to the circumference

variables. With a view to assess the degree of difference between the means independent samples test was computed.

Table 8: Independent samples statistics on Circumference between Volleyball and Football players

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	Df	Sig.(2-tailed)
Head	Equal variances assumed	1.948	.168	-.343	65	.732
	Equal variances not assumed			-.344	63.812	.732
Neck	Equal variances assumed	.168	.683	.456	65	.650
	Equal variances not assumed			.456	64.941	.650
Forearm	Equal variances assumed	.177	.675	1.021	65	.311
	Equal variances not assumed			1.018	61.972	.313
Wrist	Equal variances assumed	.066	.798	-.969	65	.336
	Equal variances not assumed			-.963	55.367	.340
Chest	Equal variances assumed	.205	.652	1.786	65	.079
	Equal variances not assumed			1.783	63.902	.079
Waist	Equal variances assumed	.136	.713	1.213	65	.229
	Equal variances not assumed			1.212	64.214	.230
Hip	Equal variances assumed	3.240	.077	-.413	65	.681
	Equal variances not assumed			-.410	53.875	.683
Thigh(gluteal)	Equal variances assumed	.343	.560	-.215	65	.830
	Equal variances not assumed			-.214	61.809	.831
Thigh (mid)	Equal variances assumed	1.229	.272	.147	65	.883
	Equal variances not assumed			.147	59.079	.884
Calf	Equal variances assumed	.470	.495	-.008	65	.994
	Equal variances not assumed			-.008	62.470	.994

From group statistics data presented in table 7 and independent samples t-test result presented in table no 8 it is evident that there was no significant difference on

Circumference variables between volleyball and football players.

Table 9: Group Statistics on Length measurements between Volleyball and Football players

Variables	Group	N	Mean	Std. Deviation	Std. Error Mean
Standing Height	volleyball	33.00	177.65	10.01	1.74
	Football	34.00	170.78	7.10	1.22
Sitting Height	volleyball	33.00	138.77	11.68	2.03
	Football	34.00	132.10	4.08	0.70
Arm Length R	volleyball	33.00	60.56	4.62	0.81
	Football	34.00	67.04	9.62	1.65
Arm Length L	volleyball	33.00	60.52	4.55	0.79
	Football	34.00	66.85	9.56	1.64
Leg Length R	volleyball	33.00	87.03	5.66	0.98
	Football	34.00	87.53	11.52	1.98

Leg Length L	volleyball	33.00	87.16	5.74	1.00
	Football	34.00	87.92	11.49	1.97

From group statistics between volleyball and football players presented in table 9 it is clear that there were exist difference between the means with respect to the Length measurements variables Standing Height., Sitting Height ,Arm Length (R),

Arm Length (L) .With a view to assess the degree of difference between the means independent samples test was computed.

Table 10: Independent samples statistics on Length measurements of volleyball and football Players

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig.(2-tailed)
Standing Height	Equal variances assumed	2.314	.133	3.248	65	.002
	Equal variances not assumed			3.232	57.566	.002
Sitting Height	Equal variances assumed	3.039	.086	3.136	65	.003
	Equal variances not assumed			3.099	39.478	.004
Arm Length R	Equal variances assumed	29.765	.000	-3.501	65	.001
	Equal variances not assumed			-3.534	47.794	.001
Arm Length L	Equal variances assumed	30.751	.000	-3.442	65	.001
	Equal variances not assumed			-3.475	47.534	.001
Leg Length R	Equal variances assumed	26.910	.000	-.224	65	.823
	Equal variances not assumed			-.226	48.355	.822
Leg Length L	Equal variances assumed	26.803	.000	-.338	65	.736
	Equal variances not assumed			-.341	48.825	.734

From group statistics data presented in table 9 and independent samples t-test result presented in table no 10 it is evident that the volleyball players were better than the football players on the variables Standing Height., Sitting Height, Arm Length (R), Arm Length (L) but there does not exist any significant difference between the Leg Length (R) and Leg Length (L) Variable.

Conclusion

As an important indicator for sports performance especially concerned to games like football and volleyball the length and girth measurements of national level players were accumulated and compared. From analysis it is clear that there does not appear any significant difference on girth measurements between the footballers and volleyball players but with respect to length measurements there are significant difference between the groups. More clearly speaking volleyball players were significantly better than the football players on the variables Standing Height., Sitting Height, Arm Length (R), and Arm Length (L).

Reference

1. Devanand P, Reddy KN. A comparative study of anthropometric measurements between handball and volleyball players of Telangana state. International Journal of Physical Education, Sports and Health 2018;5(3):40-42.
2. Meetei AB, Singh M. Anthropometric and physical fitness ability profile of elite and non- elite boxers of Manipur. International journal of sports and health sciences 2017;11:8.
3. Sawant OV. Comparative study of selected anthropometric measurement of inter-collegiate basketball and handball players. International Journal of Physical Education, Sports and Health 2016;3(2):140-142.
4. Stewar A, Marfell-jones M, Olds T, Ridder DH. International Standards for Anthropometric Assessment. ISAK 2011.