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## A study on selected anthropometric and physical fitness variables between Hooghly and Birbhum district volleyball players

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### Abstract

The study was conducted to find out the selected Anthropometric and Physical Fitness Variables between Hooghly and Birbhum District Volleyball Players". For the purpose of the study 24 state level women volleyball players were purposively selected from Hooghly and Birbhum districts, West Bengal, India as the subject. Among them 12 were purposefully selected from each district. The variables selected for the study were Anthropometrics variables- height, weight, BMI, Arm-Length, Leg-Length, Thigh girth and calf girth and the Physical Fitness variables- explosive strength, agility and flexibility. Standard tests were applied to collect the data. To find out the result of the study, descriptive statistics was used. After checking normality of the data independent t-test was used. The level of significance was set at 0.05 level. The result revealed that the Hooghly district women volleyball players were significantly better in both selected anthropometric and physical fitness variables while compared to the Birbhum district women volleyball players.

**Keywords:** Anthropometrics, physical fitness, volleyball player

### Introduction

Volleyball is a sport played by two team on a playing court divided by a net. The object of the game was to send the ball over the net in order to ground it on the opponent's court, and to prevent the same effort by the opponent. The team has three hits for returning the ball. The ball was put in play with a service; hit by the server over the net to the opponent. The rally continues until the ball was grounded on the playing court, "out" or a team fails to returns it properly. In volleyball, the team winning a rally scores a point (rally point system). When the receiving team wins a rally, it gains a point and the right to serve, and its players rotate one position clockwise. Physical fitness play vital role in the life of any person as well as players. Physical fitness was a state of health and well-being and, more specifically, the ability to perform aspects of sports, occupations and daily activities. Every individual should develop physical fitness for a happy and effective living. The game of volleyball is such where fitness is one of the key factors to decide the winner. The researcher reviewed 26 related literatures but not a single literature compare the fitness variables between the Hooghly and Birbhum district women volleyball players. Therefore the researcher had selected the topic a study on selected anthropometric and physical fitness variables between Hooghly and Birbhum district volleyball players

The objective of the study was to compare the selected anthropometric and physical fitness variables between Hooghly and Birbhum district volleyball players

### Methodology

**Subjects:** For the purpose of the study twenty four women volleyball players were selected purposively as the subject. Among them 12 were selected from Hooghly district and 12 were selected from Birbhum district, West Bengal, India.

**Variable**

Anthropometric variables selected for the study were height, weight, BMI, Arm length, Leg length, Thigh girth and Calf girth.

Physical fitness variables selected for the study were Explosive strength, Agility and Flexibility.

**Test and Criterion Measure**

To measure anthropometric variables standard tools and methods were applied. The score of height, weight, BMI and other anthropometric measurements were recorded in meter, kg, kg/meter<sup>2</sup>, cm respectively. To measure Physical fitness variables explosive strength was measured by standing broad

jump test and the score was recorded in meter. Agility was measured by 4X10 meter shuttle Run Test and the score was recorded in sec and flexibility was measured by Sit & Reach Test and the score was recorded in cm.

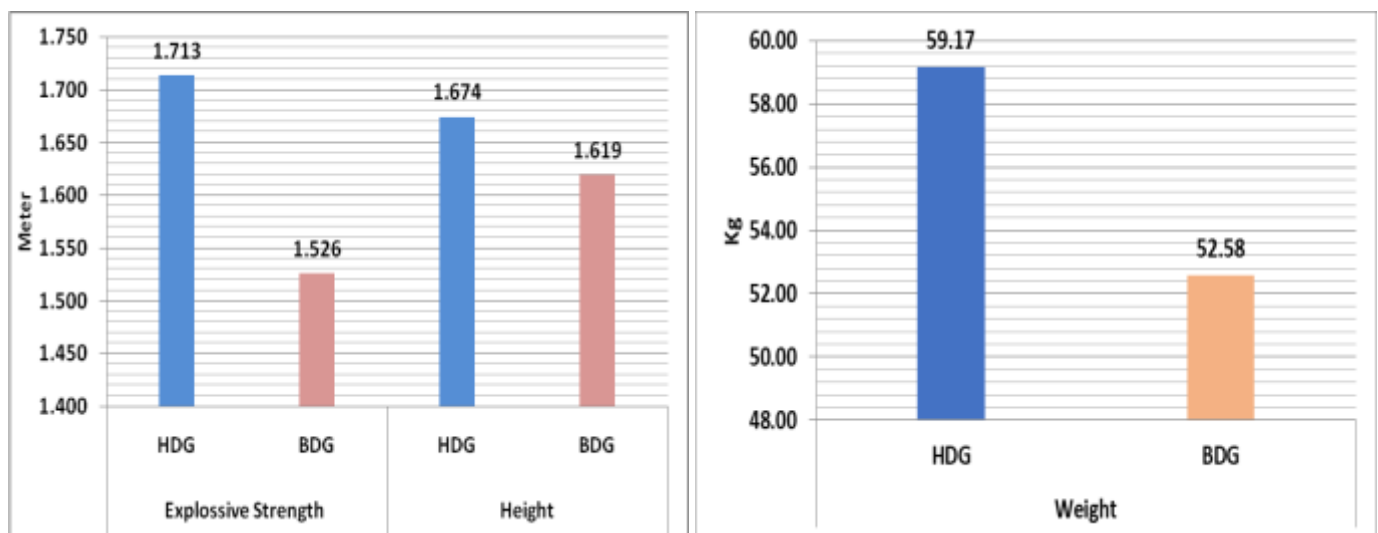
**Statistical Analysis**

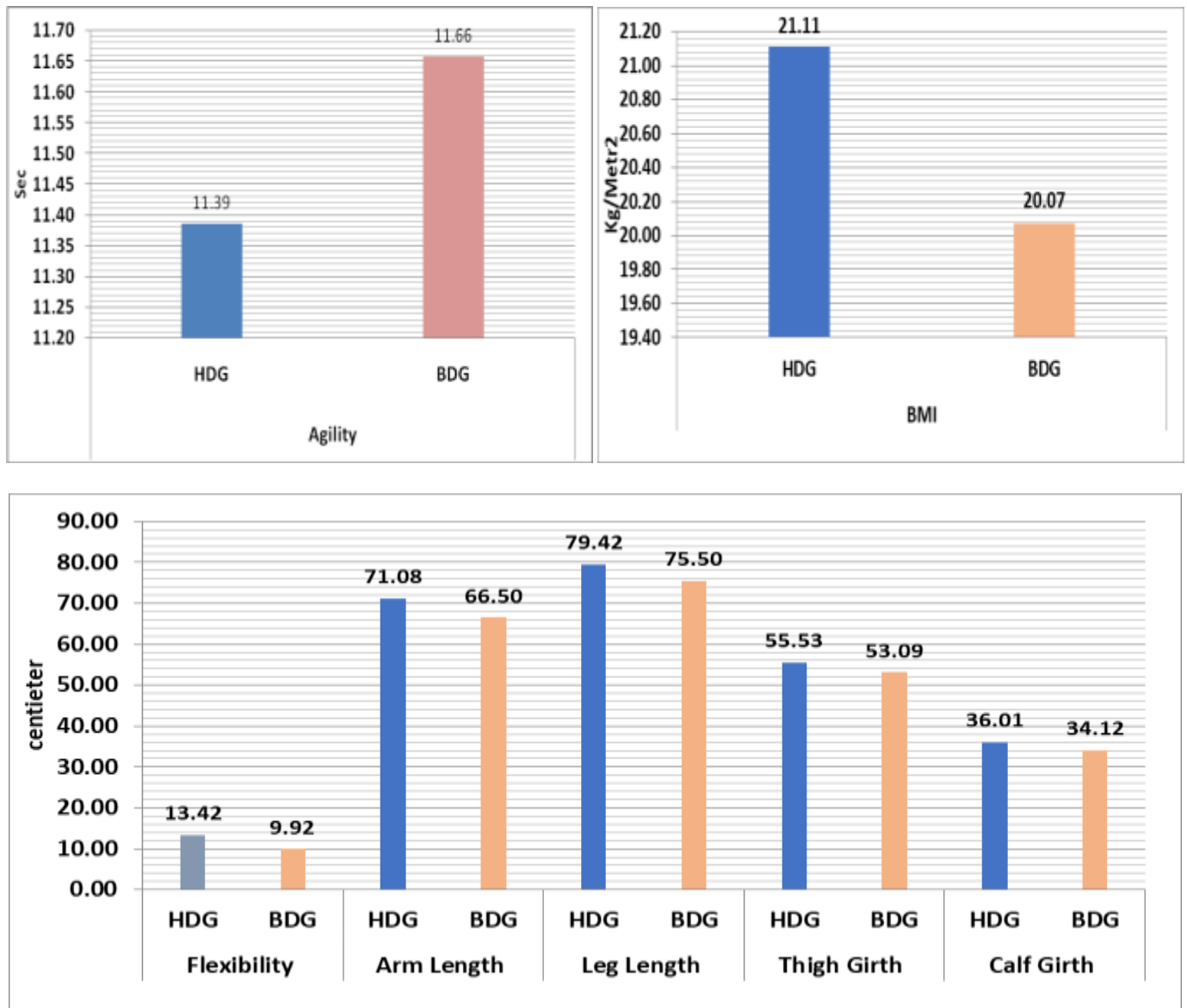
Descriptive statistics-mean value, Std deviation, best score and the worst score were used. After checking the normality of the data through Skewness, Kurtosis independent t-test was used. The level of significance was set at 0.05 level.

**Result and Discussion****Table 1:** Descriptive Statistics of Selected Variables of the Two Groups

Group		N	Mean	Std. Deviation	Std. Error Mean	Skewness	Kurtosis	Best Score	Worst Score
Explosive Strength (Mt)	HDG	12	1.713	0.138717	0.040044	0.539922	-0.31786	1.98	1.51
	BDG	12	1.526	0.164729	0.047553	0.560852	-0.40759	1.85	1.29
Agility (sec)	HDG	12	11.386	0.371911	0.107361	0.123284	-1.02445	10.8	12
	BDG	12	11.658	0.323696	0.093443	-0.43613	0.480559	11	12.2
Flexibility (cm)	HDG	12	13.417	2.998737	0.865661	1.142801	1.100974	20	10
	BDG	12	9.917	2.574643	0.743235	0.148525	-1.30179	14	6
Hight (Meter)	HDG	12	1.674	0.050715	0.01464	0.27473	-0.69878	1.76	1.6
	BDG	12	1.619	0.054848	0.015833	0.319822	0.322768	1.73	1.53
Weight (kg)	HDG	12	59.167	3.904155	1.127032	0.289848	-0.33108	66	53
	BDG	12	52.583	3.579191	1.033223	0.837517	0.051766	60	48
BMI (kg/mt <sup>2</sup> )	HDG	12	21.110	1.057142	0.305171	-0.52202	0.417679	22.83737	19.03114
	BDG	12	20.072	1.243946	0.359096	-0.12287	-0.57892	21.98989	17.92822
A.L (cm)	HDG	12	20.072	2.35327	0.67933	-0.52097	-1.28339	74	67
	BDG	12	66.500	3.2891	0.949482	-0.12877	-0.86285	72	62
L.L (cm)	HDG	12	79.417	3.629634	1.047785	0.075254	-0.61172	86	74
	BDG	12	75.500	2.876235	0.830298	1.155357	1.061434	82	72
T.G (cm)	HDG	12	55.525	1.832596	0.529025	-0.00918	-0.33718	58.5	52.6
	BDG	12	53.092	1.91238	0.552057	-0.63261	-0.68135	55.7	49.8
C.G (cm)	HDG	12	36.008	1.758335	0.507588	0.035213	-1.10127	38.8	33.2
	BDG	12	34.117	2.083194	0.601366	-0.66729	-0.77535	36.8	30.6

Table 1 describes the mean, standard deviation, Standard error, Skewness, Kurtosis, Best score and Worst score of subjects.





**Fig 1, 2, 3, 4 & 5:** Graphical Representations of Selected Anthropometric and Physical Fitness Variables of Hooghly and Birbhum District Women Volleyball Players

**Table 2:** Independent Sample t-Test between the Hooghly and Birbhum District

Women Volleyball Players																																																																																											
Variable	Groups	df	Mean	Mean Difference	Std. Error Difference	t-Value	Sig. (2-tailed)																																																																																				
Explosive Strength (Meter)	HDG	22	1.713333	0.1875	0.062168	3.016031*	0.006354																																																																																				
	BDG		1.525833					Agility (Sec)	HDG	22	11.38583	-0.2725	0.14233	1.91456	0.068643	BDG	11.65833	Flexibility (cm)	HDG	22	13.41667	3.5	1.14095	3.067618*	0.005635	BDG	9.916667	Height (Meter)	HDG	22	1.674167	0.055	0.02156	2.550495*	0.018233	BDG	1.619167	Weight (kg)	HDG	22	59.16667	6.583333	1.52897	4.305728*	0.000286	BDG	52.58333	BMI (kg/mt <sup>2</sup> )	HDG	22	21.1101	1.038507	0.47125	2.203715*	0.03831	BDG	20.07159	Arm Length (AL) (cm)	HDG	22	71.08333	4.583333	1.16748	3.925841*	0.000723	BDG	66.5	L.L (cm)	HDG	22	79.41667	3.916667	1.33688	2.929708*	0.007757	BDG	75.5	T.G (cm)	HDG	22	55.525	2.433333	0.76461	3.182436*	0.004307	BDG	53.09167	C.G (cm)	HDG	22	36.00833
Agility (Sec)	HDG	22	11.38583	-0.2725	0.14233	1.91456	0.068643																																																																																				
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\*Significant at 0.05 level

Table-2 expressed the t-value of the selected physical fitness & Anthropometric variables between the Hooghly and Birbhum District Women Volleyball Players. For physical fitness & anthropometric variables the t-value of explosive strength, agility, flexibility, height, weight, BMI, arm-length, leg-length, thigh-girth and calf-girth were 3.016, 1.914, 3.067, 2.55, 4.305, 2.203, 3.925, 2.929, 3.182, 2.403 respectively and except agility all the t-value of the selected variables were found significant at 0.05 level.

From the result it was cleared that the Hooghly district women volleyball players group was in upper side in respect to the selected physical fitness variables like explosive strength, flexibility and selected anthropometric variables like height, weight, BMI, arm-length, leg-length, thigh-girth and calf-girth than the Birbhum district women volleyball players group. The agility was found insignificant as there is not much role of agility in the game of volleyball and both the teams were not much giving stress on it. The result may be due to the continuous proper scientific training done by the Hooghly district women volleyball players and also exposure to various tournaments in and nearby Kolkata The study was supported by the study of Shankarappa (2021) <sup>[4]</sup> who compared and investigated the selected anthropometric measures of state and national level male volleyball players.

### Conclusion

On the basis of the result, it may be concluded that the Hooghly district women volleyball players are better in explosive strength, flexibility and selected anthropometric variables like height, weight, BMI, arm-length, leg-length, thigh-girth and calf-girth than the Birbhum district women volleyball players group

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