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## Prediction of performance ability of running in relation to selected anthropometric measurements

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### Abstract

The research aims to determine the correlation between running performance ability with anthropometric measurements. For the present research work, the **100**-meter male runners who played the Inter University of Sant Gadge Baba Amravati were select as subjects by the researcher. **15** subjects were selected for this study. Subjects were select by a simple random method. The 50 m run was used to measure the performance of the runners, and body part measurements included body height, body weight, arm length, leg length, upper leg length, lower leg length, Calf girth, Thigh girth These organs were measured. Descriptive Analysis, Correlations, Regression analysis to find anthropometric measurements of runners, these statistical techniques were used. The results of this study suggest that body part measurement contributes collectively to running performance ability. From this study, it was observed that body weight, body weight, arm length, leg length, lower leg length, calf and thigh girth was correlated, leading to improved sports performance and selection of athletes. Body part measurement It is very important for improving the performance of the players.

**Keywords:** performance, running, anthropometric measurements

### Introduction

Anthropometry it is a branch of science in which the human body, size, shape, weight and height are measured. The human body is done in anthropometry. It is done when the body is in stable position as well as in motion. When the body is in a state of motion, then its distance is measured. In this, the human body is measured from head to foot, in which the height of different parts of the body is measured, including body length, carvel height, shoulder height, shoulder width, nipple height, elbow height, west height, wrist height and circumference, height, knee gap, length of leg, circumference of neck, circumference of arm etc. study are done with that. We can say that systematic measurement of the human body is done in Anthropometry. The one who does all this measurement of by whom this process is done is called anthropologist. Research and the study of anthropometry is going on from the 19<sup>th</sup> century. In anthropometry measurement of dead body is also taken along with living body for example we can check the weight of the body, surface area, how much its volumes and also if we talk about the composition then how much amount of fat is in the body, how much water content is there, how much mass is in the body, this is also comes under the anthropometry does measure. Running is very important for sportsmen, and especially for runners, so the researcher's curiosity to know whether the body parts of a runner affect his sports performance, this study was done to find out.

### Methodology

For the present research work, the 100-meter male runners who played the Inter University of Sant Gadge Baba Amravati were select as subjects by the researcher. 15 subjects were selected for this study. Subjects were select by a simple random method. The 50 m run was used to measure the performance of the runners, and body part measurements included body height, body weight, arm length, leg length, upper leg length, lower leg length, Calf girth, Thigh girth These organs were measured.

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**Statistical Analysis**

Descriptive Analysis, Correlations, Regression analysis to find anthropometric measurements of runners, these statistical techniques were used.

**Table 1:** Descriptive Analysis of Anthropometric Measurements with 100 m run Performance of Runners

Variables	Mean	Std. Deviation	N
Performance	6.96	0.58	15
BH	1.66	5.05	15
BW	62.33	4.45	15
AL	71.32	2.96	15
LL	84.87	5.01	15
LLL	54.15	1.91	15
CG	36.63	1.14	15
TG	50.08	1.72	15

Table-1 indicates Descriptive analysis of Anthropometric measurements (Mean and S.D) with 50m run performance of Runners. The mean + Standard deviation of performance (6.96 + 0.58), Body Height (1.66 + 5.05), Body Weight (62.33 + 4.45), Arm Length (71.32 + 2.96), Leg Length

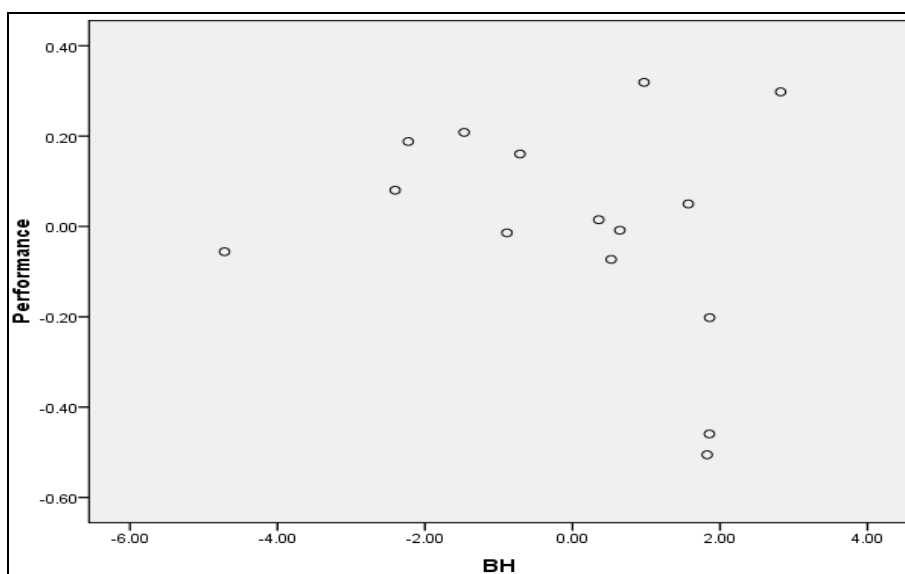
(84.87 + 5.01), Lower Leg Length (54.15 + 1.91), Calf Girth (36.63 + 1.14) and Thigh Girth (50.08 + 1.72) respectively.

**Table 2:** Relationship of running performance ability with anthropometric measurements

Variables	Correlation Coefficient	Multiple 'R'
Body height	-0.788*	0.913*
Body weight	0.753*	
Arm length	-0.681*	
Leg length	-0.533*	
Lower leg length	-0.734*	
Calf girth	-0.535*	
Thigh girth	-0.528*	

\*Significant at .05 level of confidence r .05 (13) 0.541

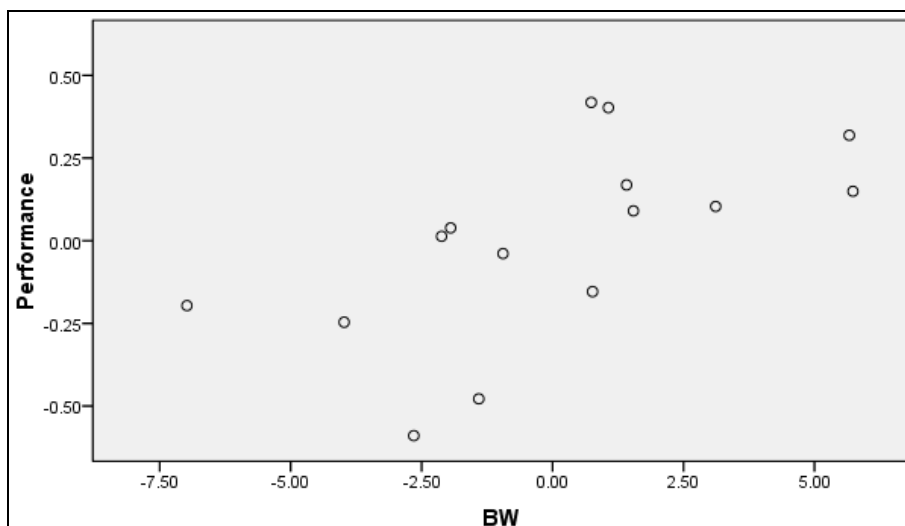
An analysis as shown in table-2 indicated that running performance ability had significantly correlation to body height (r=-0.788) were statistically significant as the value obtained were much higher than the tabulated value (0.541) required, to be significant at 0.05 level with 13 degree of freedom.



**Graph-1:** Partial Regression Plot for Body Height and Performance

Table-2 showed that running performance ability had significantly correlated to body weight (r=0.753) which

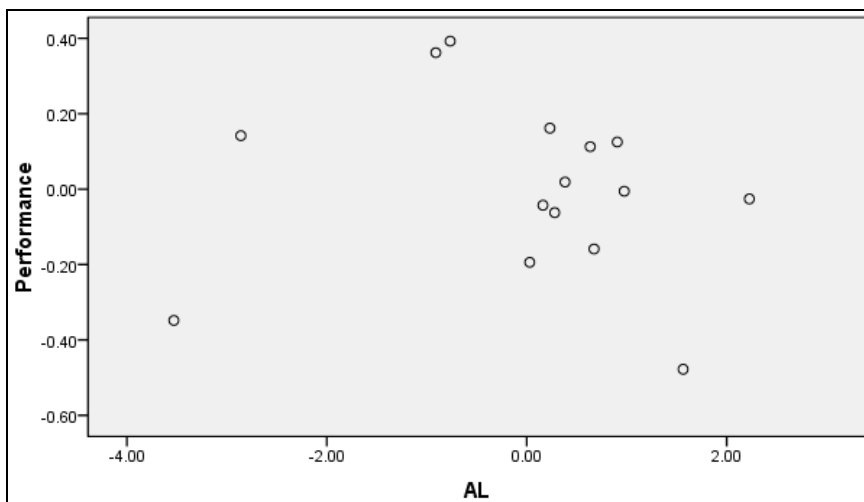
statistically significant with higher value than the tabulated value (0.541).



**Graph 2:** Partial Regression Plot for Body Weight and Performance

Table-2 showed that running performance ability had significantly correlated to arm length ( $r=-0.681$ ) which

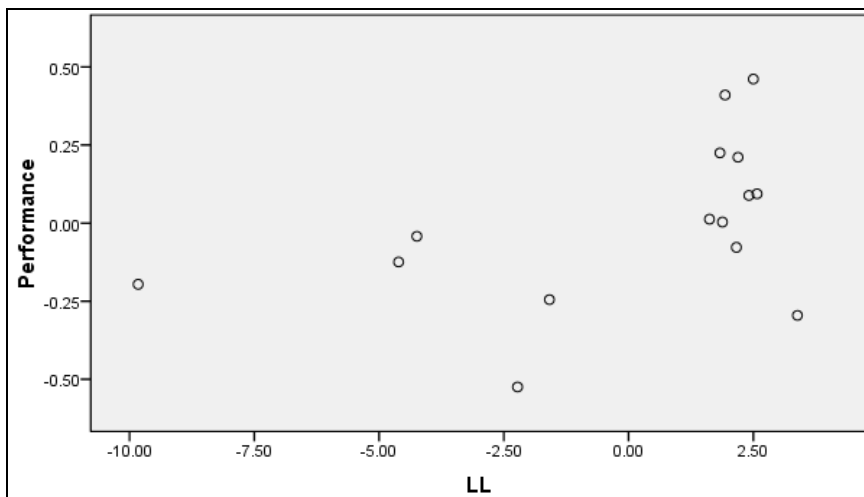
statistically significant with higher value than the tabulated value (0.541).



**Graph 3:** Partial Regression Plot for Arm Length and Performance

Table-2 showed that running performance ability had significantly correlated to leg length ( $r=-0.533$ ) which

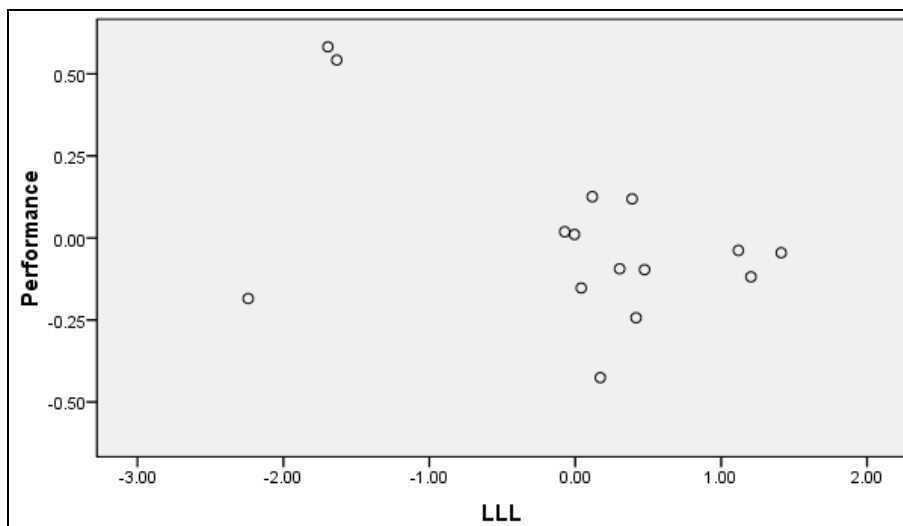
statistically significant with higher value than the tabulated value (0.541).



**Graph 1:** Partial Regression Plot for Leg Length and Performance

Table-2 showed that running performance ability had significantly correlated to lower leg length ( $r=-0.734$ ) which

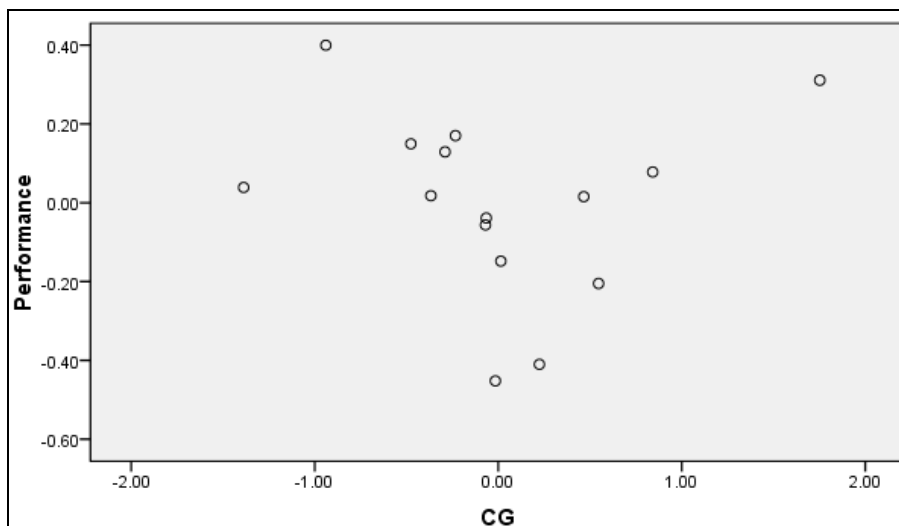
statistically significant with higher value than the tabulated value (0.541).



**Graph 1:** Partial Regression Plot for Lower Leg Length and Performance

Table-2 showed that running performance ability had significantly correlated to calf girth ( $r=-0.535$ ) which

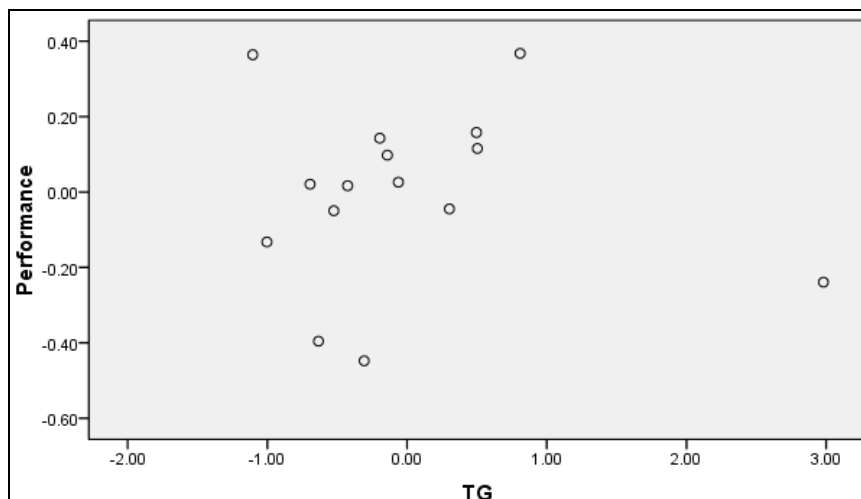
statistically significant with higher value than the tabulated value (0.541).



**Graph 1:** Partial Regression Plot for Calf Girth and Performance

Table-2 showed that running performance ability had significantly correlated to thigh girth ( $r=-0.528$ ) which

statistically significant with higher value than the tabulated value (0.541).



**Graph 1:** Partial Regression Plot for Thigh Girth and Performance

## Conclusion

The results of this study suggest that body part measurement contributes collectively to running performance ability. From this study, it was observed that body weight, body weight, arm length, leg length, lower leg length, calf and thigh girth was correlated, leading to improved sports performance and selection of athletes. Body part measurement it is very important for improving the performance of the players.

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