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## A study of anthropometric characteristics between power lifters and weightlifters

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### Abstract

The present study was focused to assess the level of Anthropometric Characteristics between Power Lifters and Weightlifters. For the purpose of the present study, forty (N=40) male inter-college Power Lifters and Weightlifters from D.A.V College, Amritsar between the age group of 18-25 years were selected as subjects. The subjects were purposively assigned into two groups: Group-A: Power Lifters (N<sub>1</sub>=20) and Group-B: Weightlifters (N<sub>2</sub>=20). All the subjects were informed about the objective and protocol of the study. Student's t-test for independent data was used to determine the significant differences between Power Lifters and Weightlifters; unpaired t-test was employed for data analyses. To test the hypothesis, the level of significance was set at 0.05. It is concluded from the above findings that significant differences were found between Power Lifters and Weightlifters with regard to the variable Anthropometric Characteristics. It has been observed from the above results that statistically significant differences ( $P < 0.05$ ) were found between Power Lifters and Weightlifters. The Power Lifters have demonstrated significantly better on the sub-variables; Lower leg length and Arm length than the Weightlifters. However, insignificant differences ( $P > 0.05$ ) were found with regard to the sub-variables; Leg length, Upper Leg length, Upper arm length, Lower arm length and Calf girth.

**Keywords:** Anthropometric characteristics, power lifters and weightlifters

### Introduction

Anthropometry has a rich tradition in sports sciences and sports medicine. Though, in different times, different terms were used like dynamic anthropometry, sports anthropometry, biometry, physiological anthropometry, anthropometrical, kin anthropometry etc. by scientists to establish some relationships between the body structure and the specialized functions required for various tasks. In fact, it is well established that each individual is unique. Anthropometry, a quantitative interface between anatomy and physiology, provides appraisal of an individual's structural status as well as provides quantification for different growth and training influences (Vipene and Victor, 2013). Several studies on the anthropometric characteristics and somatotype of basketball and volleyball players have been reported in literature (Fleck *et al.*, 1985; Hakkinen, 1993; Hosler *et al.*, 1978; Spence *et al.*, 1980; Sallet *et al.*, 2005; Apostolidis *et al.*, 2003; Gualdi and Zaccagni, 2001; Pelin *et al.*, 2009; Morques and Marinho, 2009; Gabbett, 2008) [3, 6, 9, 8, 1, 5, 7, 4]; Since performance in sports is a multivariate phenomenon, it may be influenced by physique in addition to physiological function, biochemical constraints, psychological state, environment and socio-cultural factors (Carter, 1985) [2]. However, similar studies in the context of India are limited. The present study has been conducted on Power Lifters and Weightlifters to evaluate their selected Anthropometric Characteristics.

### Material and Methods

#### Participants

For the purpose of the present study, forty (N=40) male inter-college Power Lifters and Weightlifters from D.A.V College, Amritsar between the age group of 18-25 years were selected as subjects. The subjects were purposively assigned into two groups: Group-A: Power Lifters (N<sub>1</sub>=20) and Group-B: Weightlifters (N<sub>2</sub>=20). All the subjects were informed about the objective and protocol of the study.

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### Selection of Tools

A feasibility analysis as to which of the variables could be taken up for the investigation, keeping in view the availability of tools, adequacy to the subjects and the legitimate time that could be devoted for tests and to keep the entire study unitary and integrated was made in consultation with experts. With the above criteria's in mind, the following variables were selected for the present study:

### Anthropometric Characteristics

- Leg Length
- Upper Leg Length
- Lower Leg Length

- Arm Length
- Upper Arm Length
- Lower Arm Length
- Calf Girth

### Statistical technique Employed

Student's t-test for independent data was used to determine the significant differences between Power Lifters and Weightlifters; unpaired t-test was employed for data analyses. To test the hypothesis, the level of significance was set at 0.05.

### Results

**Table 1:** Significant differences in the Mean scores of Power Lifters and Weightlifters on the variable Anthropometric Characteristics

Variables	Power Lifters =20		Weightlifters =20		t-value	Sig.
	Mean	SD	Mean	SD		
Leg length	95.90	3.61	95.50	3.80	0.351	0.73
Upper Leg length	45.40	1.95	44.05	1.46	0.690	0.52
Lower leg length	51.50	3.70	49.45	3.76	0.02	0.04
Arm length	76.00	4.09	75.65	4.25	0.03	0.01
Upper arm length	29.98	1.35	29.45	1.23	0.290	1.00
Lower arm length	46.70	2.84	45.35	2.97	0.567	0.70
Calf girth	37.35	3.77	36.10	3.85	0.569	0.83

\*Significant at 0.05 level Degree of freedom= 38

A glance at table-2 shows the results of Power Lifters and Weightlifters with regard to the variable Anthropometric Characteristics. It has been observed from the above results that statistically significant differences ( $P < 0.05$ ) were found between Power Lifters and Weightlifters. The Power Lifters have demonstrated significantly better on the sub-variables; Lower leg length and Arm length than the Weightlifters. However, insignificant differences ( $P > 0.05$ ) were found with regard to the sub-variables; Leg length, Upper Leg length, Upper arm length, Lower arm length and Calf girth.

### Conclusion

It is concluded from the above findings that significant differences were found between Power Lifters and Weightlifters with regard to the variable Anthropometric Characteristics. It has been observed from the above results that statistically significant differences ( $P < 0.05$ ) were found between Power Lifters and Weightlifters. The Power Lifters have demonstrated significantly better on the sub-variables; Lower leg length and Arm length than the Weightlifters. However, insignificant differences ( $P > 0.05$ ) were found with regard to the sub-variables; Leg length, Upper Leg length, Upper arm length, Lower arm length and Calf girth.

### Practical Application

The study will be considerably helpful to comprehend the Anthropometric Characteristics in Power Lifters and Weightlifters Performance. The coaches working with these areas will drive benefit from the findings of the present research and they can integrate the Anthropometric Characteristics variables in their training schedule from the very initial stages.

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