



P-ISSN: 2394-1685  
E-ISSN: 2394-1693  
Impact Factor (ISRA): 5.38  
IJPESH 2021; 8(4): 82-83  
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[www.kheljournal.com](http://www.kheljournal.com)  
Received: 07-05-2021  
Accepted: 09-06-2021

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## Comparison of selected anthropometric variables of sports persons and non-sports persons

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### Abstract

The purpose of the study was to compare different anthropometrical variables of sports persons and non-sports person. A total of 200 male youths were selected randomly (105 sport persons having represented in different team games at college level, 58 college level athletes and 37 young adults not involved in sport activities) were measured with selected anthropometrical variables in this cross-sectional study. It can well be inferred from the present study that, the leg, foot and arm length of individuals, not connected to sports and games were shorter than those of sports men. The variables, viz. thigh and calf girth, playing very important role in strength, recorded higher estimates among sports men than non-sports men.

**Keywords:** anthropometrical variables (Height, weight, chest, foot length, leg length, arm length, calf girth and thigh girth), sports persons and non-sports persons

### Introduction

Anthropometric studies today are conducted to investigate the evolutionary significance of differences in body proportion between populations whose ancestors lived in different environments. Population variation in anthropometric dimensions that may be ascribed to genetic differences occurs primarily in proportions and fat patterning (Lohman *et al.* 1988) [2]. Anthropometric data have also varied uses in public health including the assessment of nutritional status, cancer studies, as a risk factor for coronary heart disease (CHD) (Wang, 2003) [4], type-2 diabetes and hypertension (HT). Studies also showed that growth pattern and fat content of the human body has physiological and medical importance, furthermore, it can influence morbidity and mortality (Durwin *et al.* 1974; WHO, 1995; Stevens *et al.* 1998) [3, 5]. Keeping the above findings in backdrop, the purpose of the present study was to compare different anthropometrical variables of sports persons with non-sports person.

### Methodology

A total of 200 male youths were selected randomly (105 sport persons having represented in different team games at college level, 58 college level athletes and 37 young adults not involved in sport activities) studying in different departments of Kalinga Industrial Institute of Technology (Deemed to be University), Bhubaneswar, Odisha were measured in this cross-sectional study. The anthropometric measurements of all subjects were made by trained personnel followed by standard techniques. Height and weight were measured to the nearest 0.1 cm and 0.5 kg, respectively. Chest, Foot Length, Leg Length, Arm Length, Calf Girth and Thigh Girth measurements were made to the nearest 0.1 cm, using measuring tape. In order to understand whether there was any significant difference in anthropometric variables and indices of the subjects "F" (ANOVA) test was employed to assess the differences between means of three groups according to its necessity.

### Results

The minimum and maximum ages were similar in both the groups and the mean age of the sports persons was 22.4 and that of non-sports persons was 22.3. The means and standard error (SE) of the anthropometric variables of the three groups are presented in Table 1.

The results (Table 1) revealed that sport persons involved in games like football, volleyball and cricket were found to have an average height of  $170.90 \pm 0.39$  cm. Corresponding estimate among sport persons involved in track and field events like sprint, long distance and jump and throw events was  $168.33 \pm 0.52$  cm. However, the non-sport persons recorded the average height as  $167.32 \pm 0.80$  cm. Besides, both the groups involved in games and sports were significantly taller than the non-sport group, whereas there was no significant difference between the two sport groups practicing any of the games. Similar trend was observed in weight and chest measurements in the present study. Mean weight of game group, track and field group and non-sport group were  $70.10 \pm 0.59$ ,  $68.22 \pm 0.69$  and  $64.65 \pm 0.66$  kg, respectively. Corresponding values of chest were  $67.86 \pm 0.49$ ,  $66.47 \pm 0.64$  and  $61.51 \pm 0.53$  cm. Longer foot ( $20.09 \pm 0.27$  cm) was recorded among track and field sport persons. In contrast, significantly shorter foot ( $18.78 \pm 0.21$  cm) was observed among non-sport persons. Besides, intermediate length of  $19.51 \pm 0.14$  cm was

estimated among sports men involved in games with no significant difference between either of other two groups. Significantly higher average leg length of 37.54 cm was observed in game group compared with that of non-sport group, with estimated value of 36.59 cm. However, track and field group showed intermediate estimate of 37.10 cm with no significance in mean difference of this variable with other two groups. The arm length of  $28.54 \pm 0.15$ ,  $27.34 \pm 0.18$  and  $26.59 \pm 0.25$  cm were recorded in game group, track and field group and non-sports group, respectively with significant differences among them. Calf and thigh girths of game group was recorded as  $33.68 \pm 0.14$  and  $41.96 \pm 0.14$  cm. Corresponding estimates in track and field group were  $33.14 \pm 0.17$  and  $42.59 \pm 0.16$  cm and that of non-sports group were  $32.59 \pm 0.23$  and  $43.30 \pm 0.24$  cm, which were the lowest values among three groups for both the variables and significantly lower than game group. However, no difference of mean value in calf girth was recorded between track and field group and non-sports group, but the difference was significant with regard to thigh girth.

**Table 1:** Anthropometric variables (Mean  $\pm$  SE) of sport and non-sport persons

Variables	Game Gp (N = 105)	Track and Field Gp (N = 58)	Non-sport Gp (N = 37)	F ratio
Height (cm.)	$170.90a \pm 0.39$	$168.33a \pm 0.52$	$167.32b \pm 0.80$	13.170*
Weight (kg.)	$70.10a \pm 0.59$	$68.22a \pm 0.69$	$64.65b \pm 0.66$	13.677*
Chest (cm.)	$67.86a \pm 0.49$	$66.47a \pm 0.64$	$61.51b \pm 0.53$	24.991*
Foot Length (cm.)	$19.51ab \pm 0.14$	$20.09a \pm 0.27$	$18.78b \pm 0.21$	7.255*
Leg Length (cm.)	$37.54a \pm 0.15$	$37.10ab \pm 0.19$	$36.59b \pm 0.25$	5.924*
Arm Length (cm.)	$28.54a \pm 0.15$	$27.34b \pm 0.18$	$26.59c \pm 0.25$	28.952*
Calf Girth (cm.)	$33.68a \pm 0.14$	$33.14ab \pm 0.17$	$32.59b \pm 0.23$	8.794*
Thigh Girth (cm.)	$41.96a \pm 0.14$	$42.59a \pm 0.16$	$43.30b \pm 0.24$	13.404*

Means with different superscripts differ significantly within a row, \* $p \leq 0.01$

## Conclusion

It can well be inferred from the present study that, the leg, foot and arm length of individuals, not connected to sports and games were significantly shorter than those in sports men. The variables, viz. thigh and calf girth playing very important role in strength recorded higher measurements among sports men than non-sports men. Playing ability and/or exercise might have influenced or contributed higher estimates of these two variables. Height, weight and chest are the gross anthropometric characteristics of a sport man, which primarily contribute to the playing ability and performance of almost all the game and sports. In the present study the realization of higher estimates of such variables in sport persons may be attributed to the training, coaching and regular practice in the events besides genetic contributions.

## References

1. Durnin JVJ, Womersley J. Body fat assessed from total body density and its estimation from skinfold thickness: Measurements on 481 men and women aged from 16 to 72 years. *Br. J Nutr* 1974;32:77-97.
2. Lohman TG, Roche AF, Martorell R. Anthropometric Standardization Reference Manual. Human Kinetics Books, Chicago 1988.
3. Stevens J, Cai J, Amok ER, Williamson DF, Thum MJ, Wood JL. The effect of age on the association between body-mass index and mortality. *N. Engl. J Med* 1988;338:1-7.
4. Wang J. Waist circumference: A simple, inexpensive, and reliable tool that should be included as part of physical examinations in the doctor's office. *Am. J Clin. Nutr* 2003;78:902-903.

5. WHO: Physical Status. The Use and Interpretation of Anthropometry. Report of an Expert Committee. WHO, Geneva 1995.