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A comparative study on basic anthropometric characteristics of junior soccer players and track and field athletes of Jharkhand State Sports Promotion Society (JSSPS) Khelgaon, Ranchi, Jharkhand

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Abstract

The purpose of the study was to compare basic anthropometric characteristics of junior soccer players and track and field athletes of Jharkhand State Sports Promotion Society (JSSPS) Khelgaon, Ranchi, Jharkhand. To conduct the study, 15 soccer players and 15 track and field athletes were selected as sample. The selected subjects were enrolled as a trainee in Jharkhand State Sports Promotion Society (JSSPS) Khelgaon, Ranchi, Jharkhand. The age range was 14 to 17 years. Standard anthropometric techniques were used to assess the height and weight of the selected subject. The BMI was calculated with the help of a formula. It was found that soccer players were significantly taller than track and field athletes. It was also found that although soccer players were heavier than track and field athletes, the result could not get statistical support. The difference in mean BMI of both the groups was not statistically significant and within the normal range. It was concluded that basic anthropometric measures in the form of height and weight do differ to some extent in players taking part in soccer and athletic events.

Keywords: Psychological burnout, hockey, national male players

Introduction

Anthropometric measurements include body size and its composition and structure. Depending upon the nature of sports there are various body shapes and compositions conducive to that particular sport. These mainly include height, weight, skinfold and circumference. Anthropometry is a vast area and as many as 50 measurements were included in it. Anthropometry is a science which involves measuring the human body in terms of size and proportion. Anthropometry has a significant role in the world of sport because several studies have shown that association between physical attributes and with performance capabilities of a sports person. In some games, physical characteristics have a distinct advantage and it gives a player added advantage during play. For example, in a sport like basketball, the importance of anthropometric measurements such as height and arm length plays a big part.

Anthropometry has a special place in allied sports sciences. Different terms were used to describe researchers while establishing the relation of anthropometric characteristics with sports performance. Keeping the individual difference in mind it has been suggested by authors namely Wilmore and Costill, 1999 [8]; Keogh, 1999 [6] that some sports events are more appropriate for a person with a specific body type. This notion is also supported in several studies that a player needs to possess certain anthropometric norms for achieving success at the highest level (Bourgeois *et al.*, 2000; Ackland *et al.* 2003) [3, 1]. Chatterjee *et al.* (2006) [4] reported that anthropometric assessments indicate the nutritional status of an athlete which is the basic thing for good physical performance.

In pursuance of the State resolution of the Department of Tourism, Art, Culture, Sports & Youth Affairs, Govt. of Jharkhand has established a sports university to promote state sports in association with CCL, Ranchi. To assess the basic anthropometric characteristics and nutritional status of subjects enrolled in this society and compare them across two sports this study was planned.

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Review of literature

Katralli and Goudar (2012) [5] studied the effect of anthropometric parameters on the performance of judo players. They found that body fat was negatively affecting the performance of the judo players.

Sharma and Nigam (2015) [7] determined the coordinative ability of soccer players based on their anthropometric measures. No significant association was found between coordinative ability and anthropometric measures except in calf circumference measures.

Bjelica *et al.* (2020) [2] compared anthropometric parameters and body composition of junior-level soccer and basketball players. It was found that the body mass index of soccer and basketball players was not significantly different however there was a significant difference in height and weight between the two groups.

Objectives

The purpose of the study was to compare basic anthropometric characteristics of junior soccer players and track and field athletes of Jharkhand State Sports Promotion Society (JSSPS) Khelgaon, Ranchi, Jharkhand.

Hypothesis

It was hypothesized that there will be no significant difference in height, weight and body mass index of junior soccer players and track and field athletes of Jharkhand State Sports Promotion Society (JSSPS) Khelgaon, Ranchi, Jharkhand.

Methodology

The following methodological steps were taken to conduct the present study.

Sample

To conduct the study, 15 soccer players and 15 track and field athletes were selected as sample. The selected subjects

were enrolled as a trainee in Jharkhand State Sports Promotion Society (JSSPS) Khelgaon, Ranchi, Jharkhand. The age range was 14 to 17 years.

Tools

Anthropometric Measurements

Height: Anthropometer was used to assess the height of selected junior soccer players and track and field athletes of Jharkhand State Sports Promotion Society (JSSPS) Khelgaon, Ranchi, Jharkhand. A standard procedure was used to measure the height of the selected subjects.

Weight: The weight of the selected junior soccer players and track and field athletes of Jharkhand State Sports Promotion Society (JSSPS) Khelgaon, Ranchi, Jharkhand was measured using a platform beam balance.

Body Mass Index: Body mass index was evaluated with the following formula:

$$\text{BMI} = \frac{\text{Body Weight (kg)}}{\text{Height (m}^2\text{)}}$$

Procedure

- To conduct the study, 15 football players and 15 track and field athletes were selected as sample.
- Anthropometric measurements were taken exactly as defined in tools.
- Height and weight of each subject were tabulated and placed in respective groups.
- The comparative statistics were calculated by the independent sample 't' test.
- Results are given in table 1.

Result and discussion

Table 1: Comparison of Selected Anthropometric Measurements of Junior Soccer Players and Track and Field Athletes

Anthropometric Variables	Study Groups						T
	Junior Soccer Players (N=15)			Track and Field Athletes (N=15)			
	N	Mean	S.D.	N	Mean	S.D.	
Height (cm)	15	167.36	5.62	15	163.06	6.26	1.97*
Weight (kg)	15	54.38	4.44	15	51.44	6.14	1.50 (NS)
Body Mass Index	15	19.40	1.15	15	19.28	1.43	0.26 (NS)

*, $p < .05$; NS Not Significant

A perusal of table 1 indicates that the mean height of junior soccer players was 167.36 cm whereas the mean height of track and field athletes was 163.06 cm. The mean difference of 4.30 was statistically significant at .05 level ($t=1.97$, $p < .05$). It shows that junior soccer players were significantly taller as compared to track and field athletes.

A perusal of table 1 indicates that the mean weight of junior soccer players was 54.38 kg whereas the mean weight of track and field athletes was 51.44 kg. Although the mean difference of 2.94 was statistically insignificant ($t=1.50$, $p > .05$) it clearly shows that the soccer players were heavier than track and field athletes.

The body mass index of a group of soccer players and track and field players lie within the normal range with a mean BMI of 19.40 for the soccer players group and a mean BMI of 19.28 for the track and field athletes group with no significant difference in BMI values ($t=0.26$).

Results revealed that there exists some difference in anthropometric characteristics as measured by height and

weight of junior soccer players and track and field athletes of Jharkhand State Sports Promotion Society (JSSPS) Khelgaon, Ranchi, Jharkhand. The results of the present study are consistent with the finding of Bjelica *et al.* (2020) [2]. As far as BMI is concerned the majority of the junior soccer players and track and field athletes lie in the normal range of BMI i.e. 18.5-25 showing that the nutritional aspect is taken care of very well in Jharkhand State Sports Promotion Society (JSSPS) Khelgaon, Ranchi, Jharkhand.

Conclusion

Based on the results, it can be concluded that basic anthropometric measures in the form of height and weight do differ to some extent in players taking part in soccer and athletic events. It may also be concluded that the nutritional status of junior soccer players and track and field athletes of Jharkhand State Sports Promotion Society (JSSPS) Khelgaon, Ranchi, Jharkhand is excellent.

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