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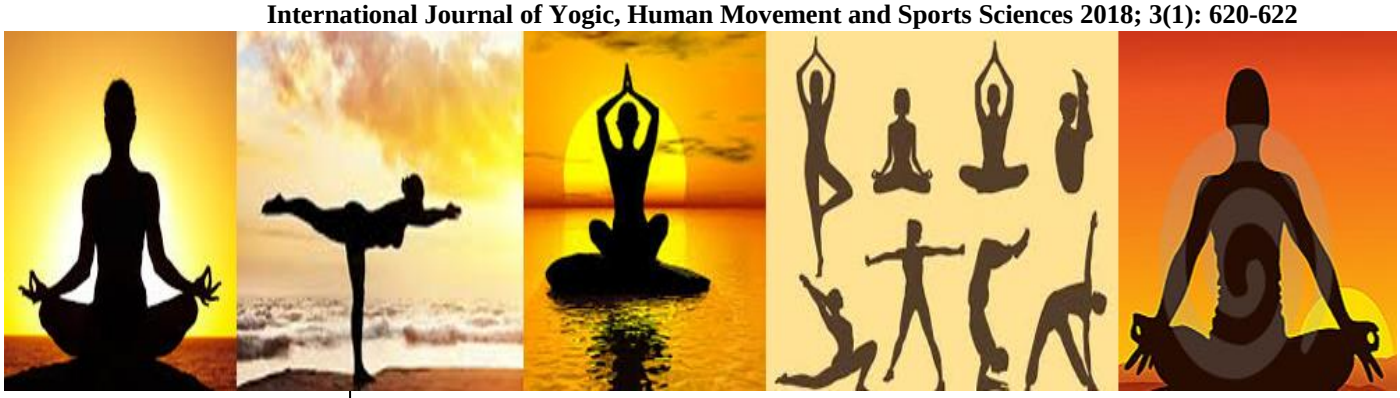

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Effectiveness of anthropometric variables in relation with performance of field hockey players

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Abstract
The purpose of the study is to see the relationship between various anthropometric predictors with performance in hockey. Another objective of the study was to identify the essential predictor variable related to performance in hockey. To fulfil the purpose, the investigator has collected the data on 148 male hockey players from the north zone of India. The age of the samples was in between 12-14 years. After collecting data, the SPSS 22 version was employed to extract the information from raw data by using multiple correlation. The result of the study conferred that there is no relationship between anthropometric predictors and performance. Hence the null hypothesis fails to reject. Based on the result, it is concluded that anthropometric variables are independent of field hockey performance.

Keywords: Anthropometric predictors, performance, independent variables

Introduction
Anthropometry is an essential aspect of sports performance identification. It is the science that deals with measuring the human body's size, weight, and proportions. Because devices are portable and affordable, they are frequently utilised in health evaluation and can be employed in clinical and field settings. The procedures are straightforward, non-invasive, and quick. According to the World Health Organization technical study (WHO, 1995) [15], one of the goals of employing anthropometric measures is to identify individuals and populations at risk of developing health problems. Numerous research studies have looked into the relationship between anthropometry and obesity-related health issues such as cardiovascular disease and metabolic syndrome. (Hotchkiss and Leyland, 2011; Li and McDermott, 2010; Misra and Khurana, 2011) [5-7].

Anthropometric measurements and physical traits are important factors in determining a sportsperson's success (Wilmore and Costill, 1999) [16]. In contrast, the halves did not differ significantly from backs and goalkeepers. There might be a mechanical Introduction 12 advantage of the short stature and the long upper extremities among the forwards and the halves. Being attackers, especially the formers, had to do the maximum groundwork, including dribbling, therefore, needed closeness to the ground. The proportionally longer trunks of the halves also seemed to contribute to the object (Sodhi *et al.*, 1974) [13]. According to prior research, specific anthropometric features are required for a specific sport, and these characteristics enable the athlete to compete at the highest level possible. (Bourgois *et al.*, 2000; Reilly *et al.*, 2000; Gabbett, 2005; Ackland *et al.*, 2003; Slater *et al.*, 2005) [1, 2, 4, 10, 11]. These anthropometric measurements are sensitive indications of athletes' physical growth and nutritional state, allowing them to perform at their best (Wilmore and Costill, 1999) [16]. In field hockey, physical fitness, anthropometric measurements and body composition are crucial (Montgomery *et al.*, 2006; Quinney *et al.*, 2008; Tarter *et al.*, 2009) [8, 9, 14]. Based on the above limitations, the investigator has framed the topic “Effectiveness of anthropometric variables in relation with performance of field hockey players" to see the relationship of anthropometric variables with performance.

Objectives of the study

- To see the relationship between various anthropometric predictors with performance in hockey.
- To see the essential predictor variable in respect to performance in hockey.

The hypothesis of the study

There will be a significant relationship between anthropometric predictors and performance in hockey.

Significances of the study

The study will help to detect the most essential and suitable anthropometric predictor related to Hockey performance.

This study will help future researchers identifying suitable anthropometric variables in their study.

Methodology

To fulfil the purpose of the study, the investigator has chosen the purposive sampling technique to draw out the samples from the various academies selected to collect the data from the north zone of India.

This study was delimited to the male field hockey players of 12-14 years of age from the north zone of India, further, this investigation was delimited to the selected anthropometric variable i.e. Bodyweight, Thigh Girth, Upper Arm Girth and Standing height.

The data was collected with steel tape however, the data was recorded in Centimeters for measurements and body weight in kilogram. Statistical package for social sciences is used to draw out the inferences from the raw data by using multiple correlations.

Table 1: Descriptive statistics for all the variables

	Mean		Std. Deviation	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Statistic	Std. Error	Statistic	Std. Error
Body weight	51.9203	.76417	9.29653	.034	.199	-.167	.396
Standing height	165.443	.59396	7.22582	.037	.199	-.588	.396
Thigh Circumference	47.3804	.36321	4.41869	-.066	.199	-.314	.396
Upper arm girth	24.50	.14	2.12	-.083	.169	-.278	.396
Fore arm girth	23.70	.10	1.48	-.228	.169	-.213	.396

This table depicts the mean, standard deviation, skewness and kurtosis value for all the anthropometric variables and their standard error. The standard error of mean is least for Fore Arm Girth and maximum for body weight. Certain assumptions need to be fulfilled for applying any statistical technique. The investigator uses multiple correlations to draw the inferences from the data where it is necessary to check normality assumption to use this mentioned statistical technique. The normality is checked by skewness and kurtosis. Skewness shows the symmetry city of the data, whereas kurtosis shows the spread of scores. The output of results showed that there is no violation in the data to apply multiple correlation.

Table 2: Pearson product-moment correlation between anthropometric variables and performance in hockey

	Performance	Bodyweight	Standing height	Thigh circumference	Upper arm girth	Forearm girth
Performance	1.000	.025	.074	.028	.131	-.007
Bodyweight	.025	1.000	.705	.847	.347	.069
Standing height	.074	.705	1.000	.530	.299	.103
Thigh circumference	.028	.847	.530	1.000	.362	.100
Upper arm girth	.131	.347	.299	.362	1.000	-.013
Forearm girth	-.007	.069	.103	.100	-.013	1.000
Performance		.381	.185	.369	.056	.468
Body weight	.381		.000	.000	.000	.202
Standing height	.185	.000		.000	.000	.106
Thigh circumference	.369	.000	.000		.000	.114
Upper arm girth	.056	.000	.000	.000		.436
Forearm girth	.468	.202	.106	.114	.436	

The above table is used to show the correlational value .025, .074, .028, .131 and -.007 for all the variables Bodyweight, Standing height, Thigh circumference, Upper arm girth and Forearm girth selected in the study. The one-tale test showed no relationship between all the selected variables with the dependent variable because the correlational value for all the variables is greater than the 0.05 level of significance.

Conclusion

The study aims to see the relationship between various anthropometric predictors with performance in hockey and find out essential predictor variables regarding performance in hockey. After analysing the data through SPSS 22 version, it was clear that all the variables have shown an insignificant relationship with the dependent variable performance. Based on result, it is concluded that the null hypothesis, there is no significant relationship between anthropometric predictors and performance, is failed to reject. Because all the variables have shown an insignificant relationship with performance, against the alternative hypothesis that there will be a significant relationship between anthropometric predictors, hence this can be concluded that all the anthropometric variable are independent of the performance or have nothing to do with the performance.

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