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Analysis of interrelationship of selected physical variables with the performance of handball players

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Abstract
The aim of the present study was to analyze the interrelationship of selected physical variables with the performance of handball players. For the purpose of the present study, subjects were 30 male handball players who have participated in Intervarsity, State and National level competition in the year 2015-16. The age of the subjects ranged from 17-25 years. Selected anthropometric measurements were standing height, hand length, arm length, leg length and body weight. Whereas strength variables were leg strength, grip strength, explosive strength, abdominal strength and arm strength. Standing height and body weight were measured with the help of stadiometer and by weighing machine respectively. Leg length, arm length and hand length were measured by steel tape. Arm strength, grip strength and leg strength were recorded with the help of dynamometer. Whereas, abdominal strength was measured by sit-ups and standing broad jump test was employed to assess the explosive strength of the subjects.
The performance of the subjects was assessed with the help of panel of experts during the competition. In order to find out the relationship of selected anthropometric measurements and strength variables with the performance of Handball players. Pearson's Product Moment Method of Co-efficient of Correlation was applied for the analysis.

Keywords: Interrelationship, physical variables, handball players, anthropometric measurements, strength variables, dynamometer etc.

Introduction
The performance of the Handball has been all time matter of great concern for the coaches and sports scientists. Continuous efforts have been made in this direction. Tanner I, Sodhi and Sidhu 2 have stressed that the physique including size, shape and form play an important role in the performance.

Objective of the Study
The purpose and objective of the present study was to find out the interrelationship of selected physical variables with the performance of Handball players.

Methodology
For the purpose of the present study, the subjects were 30 male who have participated in intervarsity, state and national level competitions in the year 2015-16. The age of the subjects ranged from 17-25 years. Selected anthropometric measurements were standing height, leg length, arm length, hand length and body weight. Whereas strength variables were grip strength, leg strength, arm strength, abdominal strength and explosive strength. Standing height and body weight were measured with the help of studio meter and by weighing machine respectively. Leg length, arm length and hand length were measured by steel tape.
With the help of dynamometer, leg strength, arm strength and grip strength were recorded. Whereas, abdominal strength was measured by sit-ups and standing broad jump test was employed to evaluate the explosive strength of the subjects. The performance of the subjects was assessed with the help of panel of experts during the competition. To find out the interrelationship of selected anthropometric measurements and strength variables with the performance of Handball players, Pearson's Product Moment Method of Co-efficient of Correlation was applied for the analysis. Results are given in Table 1 and Table 2. As shown in Table 1 that performance of male Handball players had shown significant interrelationship

with the various anthropometric measurements such as, standing height. Leg length and arm length, the hand length and body weight did not revealed the significant values of coefficient of correlation with the performance of male Handball players.

As shown in Table 2 that performance of male Handball players had shown significant interrelationship with the various strength variables such as grip strength, explosive strength and leg strength. But the arm strength and abdominal strength did not revealed the significant values of coefficient of correlation with the performance of male Handball players.

It was evident from Table 1 and 2 that in case of male Handball players, the standing height, leg length and arm length has positive effect on the performance of the Handball players irrespective of any type of skill they used during playing situation, which may be attributed to the fact that greater the height longer will be the leg length and arm length which helps the Handball players in performing better in offence and easy to catch the ball, ball handling, shooting, dribbling, passing and protect goal post, intercept the ball, limit free space, limit space for cooperation in defensive position.

Though values of coefficient of correlation in case of hand length, body weight were quite higher but did not yield significant relationship with the performance of Handball players which might be due to the reason that hand length and body weight along do not contribute a lot to Handball performance.

Grip strength, leg strength and explosive strength has shown significant relationship with the performance of Handball players which establishes the significance of strength as the Handball game is dominated by this essential factor.

Table 1: Interrelationship of Selected Anthropometric Measurements with the Performance of Handball Players

S. No.	Variable (Unit)	Mean	Coefficient of Correlation
1.	Standing height (cm)	171.53	.659*
2.	Leg Length (cm)	89.62	.548*
3.	Arm Length (cm)	76.21	.712*
4.	Hand Length (cm)	19.5	.305
5.	Body Weight (kg)	61.5	.359

* Significant at .05 level r. 0.5 df (28) =.361

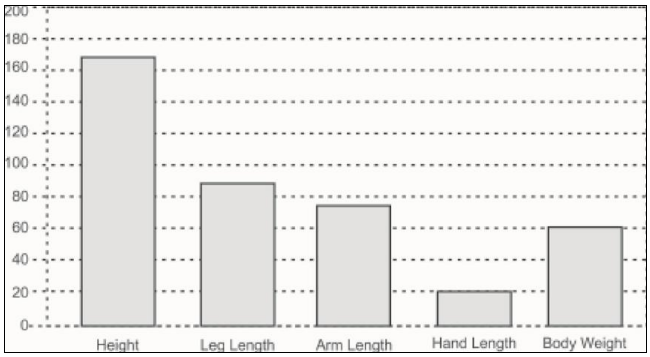

Fig 1: Mean Score of Selected Anthropometric Measurements

Table 2: Interrelationship of Selected Strength Variables with the Performance of Handball Players

S. No.	Variable (Unit)	Mean	Coefficient of Correlation
1.	Grip Strength (Kg)	46.58	.453*
2.	Arm Strength (Kg)	27.48	.348
3.	Leg Strength (Kg)	118.74	.659*
4.	Abdominal Strength (No.)	54.00	.356
5.	Explosive Strength (Cm)	20.9	.586*

* Significant at .05 level r. 0.5 df (28) = .361

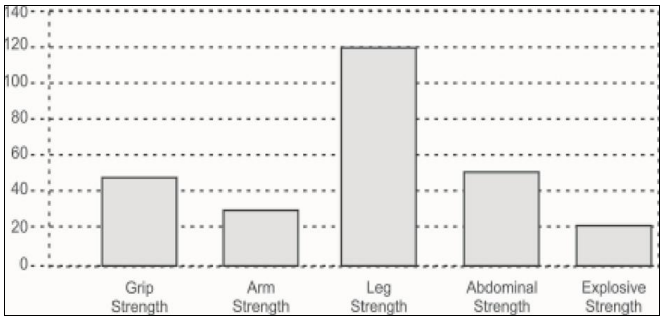

Fig 2: Mean Score of Selected Strength Variables

Conclusion

The present study within the limitations drawn the following conclusions:-

1. Performance of male Handball players had shown significant relationship with the various anthropometric measurements such as, standing height, leg length and arm length.
2. Hand length and body weight did not reveal the significant values of coefficient of correlation with the performance of male Handball players.
3. The performance of male Handball players had shown significant interrelationship with the various strength variables such as grip strength, explosive strength, leg strength.
4. The arm strength and abdominal strength did not reveal the important values of coefficient of correlation with the performance of male Handball players.

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