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Prof. Dilip W. Malekar
Director, Department of
Physical Education & Sports,
Shri Gajanana Maharaj Arts &
Commerce College, Mukutban
Ta. Zhari (Jamani), Dist.
Yavatmal (MS), India

Relationship of selected anthropometric measurements and strength to kicking ability of soccer player

Prof. Dilip W. Malekar

Abstract

The purpose of the study was to determine the relationship of leg length, thigh girth, calf girth, leg strength and abdominal strength to kicking ability for distance in soccer. The researcher has expected some significant contributions of this study in the field of Soccer. The result of this study would indicate the relationship of selected parameters to the kicking ability for distance. The finding of this study would assist in designing a suitable training programme to improve the kicking ability. For the present study the data were collected on Football players of S.G.B. Amravati University Amravati, Inter collegiate Football Tournament, were selected as subject. The age of the subjects was ranging from 18-28 years and minimum achievements of the subjects were at least intercollegiate level participant. To find out the relationship in between dependent and independent variables the research scholar selected the test. For the present study the subject by adopting a simple random group design. The Statistical analyses of data pertaining to the study The performance on the tests of kicking ability for distance, Leg length, thigh girth, calf girth, explosive leg strength and abdominal strength were recorded as described in the preceding chapter. For the purpose to determine the significant relationship between the performance of kicking ability for distance, to leg length, thigh girth, calf girth, explosive leg strength and abdominal strength, coefficient of correlation were computed. The level of significance to check the relationship obtained by Pearson's product moment correlation was set .05 levels. Which was considered appropriate because the research processes adopted did not involve highly sophisticated equipment, demanding the application of more strength levels of significance. While using the product moment correlation a value of 0.273 was needed of being significant at .05 level of confidence for (N-2) 48 degrees of freedom. An analysis abdominal strength had significantly correlation to kicking ability ($r=0.299$) were statistically significant as the value obtained were much higher than the tabulated value (0.273) required, to be significant at 0.05 level with 48 degree of freedom. explosive leg strength had significantly correlated to kicking ability ($r=0.369$) which statistically significant with higher value than the tabulated value (0.273). calf girth of soccer players group was significantly correlated to kicking ability ($r=0.187$) which was not statistically significant as the value obtained were much less than the tabulated value (0.273) with 0.05 significant level. thigh girth of soccer players group was significantly correlated to kicking ability ($r=0.183$) which was not statistically significant as the value obtained were much less than the tabulated value (0.273) with 0.05 significant level. leg length had significantly correlated to kicking ability ($r=0.353$) which statistically significant with higher value than the tabulated value (0.273).

Keywords: Anthropometric Measurements and Strength to Kicking Ability.

Introduction

Technology permeates every aspect of life. A sport is no exception to it. Science applied to sports has enabled modern youth to develop physical capacities beyond anything earlier imagined. Sports have become part and parcel of modern life as millions participate in it to derive the benefits. Soccer is the most popular and ancient sport in the world. Soccer is game which calls for strenuous, continuous thrilling actions and therefore appeals to the youth world over. Soccer is a game which requires a high level of physical fitness and perfection in skills so as contribute one's best. This study was undertaken to find the relationship of kicking ability for distance to the leg length, thigh girth, calf girth, explosive leg strength and abdominal strength 50 male soccer players of Sant Gadge Baba Amravati University intercollegiate tournament were selected as subjects. Kicking ability for distance i.e. dependent variable was reassured by administrating high drive on a stationary ball, leg length, leg length, thigh girth and calf girth were measured by using steel tape, explosive leg strength and abdominal strength were reassured by applying standing broad jump and bent knee sit-up for one minute. Product moment method was used to compute correlations between depended

Correspondence:
Prof. Dilip W. Malekar
Director, Department of
Physical Education & Sports,
Shri Gajanana Maharaj Arts &
Commerce College, Mukutban
Ta. Zhari (Jamani), Dist.
Yavatmal (MS), India

variable i.e. kicking ability for distance to each independent variable of leg length, thigh girth, calf girth, explosive leg strength and abdominal strength.

Statement of the Problems

Soccer is a game which requires tremendous physical fitness as the duration of game is ninety minutes in which all the basic movements are to be performed. Strength is an essential component for taking powerful kicking are generated by the muscle size and length of the bone. Hence, the Researcher would like to undertake the present study was stated as **“Relationship of selected anthropometric measurements and strength to kicking ability of soccer player.”**

Purpose of the Study

The main purpose of the present study was to determine the relationship of leg length, thigh firth, calf girth, leg strength and abdominal strength to kicking ability for distance in soccer.

Significance of study

The researcher has expected some significant contributions of this study in the field of Soccer. They are as follows:

1. The result of this study would indicate the relationship of selected parameters to the kicking ability for distance.
2. The finding of this study would assist in designing a suitable training programme to improve the kicking ability.
3. The study would be of a great help for spotting and selection of soccer player by means of using the prediction equation.

Hypothesis

It was hypothesized that “There would be a significant relationship in between the selected independent variables and kicking ability for distance in soccer”.

Methodology

Sources of data

For the present study the data were collected on soccer players of S.G.B. Amravati University Amravati, Inter collegiate Football Tournament, and all those selected subjects of data.

Selection of subjects

For the purpose of this study 50 male soccer players of S.G.B. Amravati University Amravati, Inter collegiate Football Tournament, were selected as subject. The age of the subjects was ranging from 18-28 years and minimum achievements of the subjects were at least intercollegiate level participant.

Selection of test

To find out the relationship in between dependent and independent variables the research scholar selected the following test.

Dependent variable

Kicking ability for distance

Kicking with inside of instep or high drive were selected maximum distance covered by the subject was recorded in meters and centimeters.

Independent variables

1. **Leg length:** Measurement score of Leg length was in centimeters.
2. **Thigh Girth:** Measurement score on thigh girth was in centimeters.

3. **Calf Girth:** Measurement score on Calf Girth was in centimeters.
4. **Explosive leg strength:** Standing broad jump was administered and the score was recorded in centimeters.
5. **Abdominal Strength:** Bent-knee, Sit-ups test was administered and the completed sit-ups made in one minute were recorded in number.

Reliability test

The reliability of data was censured by establishing the instrument reliability tester competency and reliability of tests.

- 1) Instrument reliability: Therefore all the instruments used for the study to measure the performance of the subjects on different variables were considered reliable and precise for the collection of data.
- 2) Tester competency and reliability was evaluated together with the reliability of tests, the performance of 10 subjects selected at random on the selected at random on the selected variables were recorded by the scholar. A parson’s Product Moment Correlation was computed between two test scores,

Table 1: Reliability of coefficient test-retest scores of anthropometric measurements

Sr. No.	Independent Variables	Coefficient of Reliability
1	Leg Length	0.98
2	Thigh Girth	0.99
3	Calf Girth	0.99
4	Explosive Leg Strength	0.94
5	Abdominal Strength	0.96

N=10 Tabulated r.05 (8) = .576

Collection of Data

The data pertaining to this study were collected on 50 male soccer players of Sant Gadge Baba Amravati University Amravati Inter collegiate Tournament by administering the above mentioned test.

Tools and materials used

01	Measuring tape	02	Jump Pit
03	Chalk Powder	04	Stop watch
05	Score sheet	06	Football
07	The field of play	08	Mat

Design of the Study

For the present study the subject by adopting a simple random group design.

Statistical Analysis

The Statistical analyses of data pertaining to the study were collected on 50 male soccer players Intercollegiate Football Tournament of S.G.B. Amravati University, Amravati.

Scoring of Data

The performance on the tests of kicking ability for distance, Leg length, thigh girth, calf girth, explosive leg strength and abdominal strength were recorded as described in the preceding chapter. For the purpose to determine the significant relationship between the performance of kicking ability for distance, to leg length, thigh girth, calf girth, explosive leg strength and abdominal strength, coefficient of correlation were computed.

Level of Signification

The level of significance to check the relationship obtained by Pearson’s product moment correlation was set .05 level.

Which was considered appropriate because the research processes adopted did not involve highly sophisticated equipment, demanding the application of more strength levels of significance. While using the product moment correlation a

value of 0.273 was needed of being significant at .05 level of confidence for (N-2) 48 degrees of freedom.

Findings and Discussion

Table 2: Mean and standard deviation of all selected variables

Components	Abdominal Strength	Explosive Leg Strength	Calf Girth	Thigh Girth	Leg Length	Distance Kicking
Mean	40.08	2.24	0.37	0.52	0.92	44.21
SD	5.94	0.20	0.03	0.04	0.05	8.34

Table 3: Relationship of selected anthropometric measurements and strength to kicking ability of soccer player

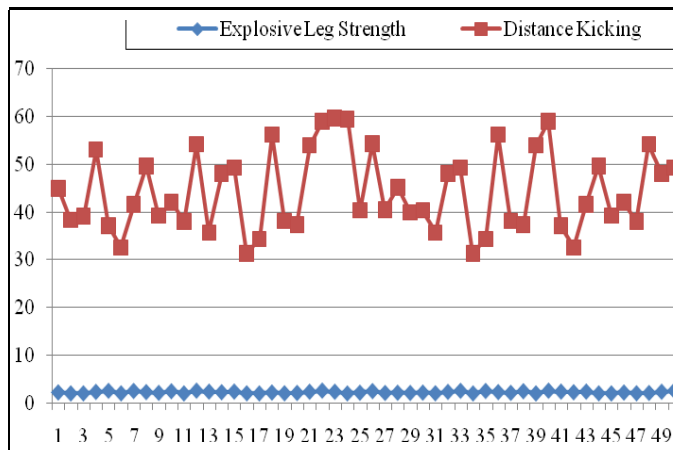
Sr. No.	Variable Correlated	Correlation Coefficient
1	Abdominal Strength	0.299*
2	Explosive Leg Strength	0.369*
3	Calf Girth	0.187
4	Thigh Girth	0.183
5	Leg Length	0.353*

An analysis as shown in table-III indicated that abdominal strength had significantly correlation to kicking ability (r=0.299) were statistically significant as the value obtained were much higher than the tabulated value (0.273) required, to be significant at 0.05 level with 48 degree of freedom.

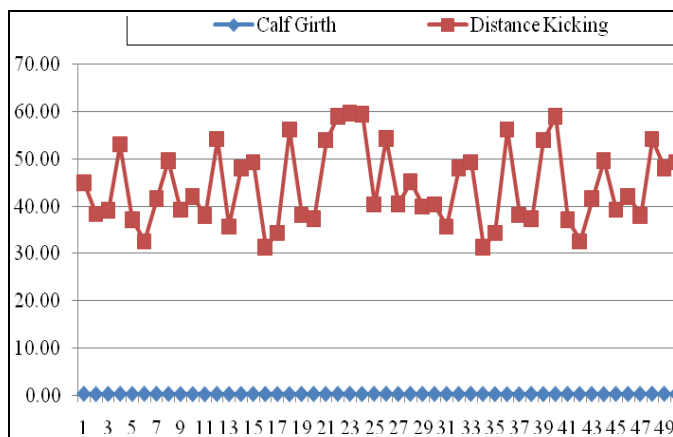
Table-III showed that explosive leg strength had significantly correlated to kicking ability (r=0.369) which statistically significant with higher value than the tabulated value (0.273). Table-III reveals that calf girth of soccer players group was significantly correlated to kicking ability (r= 0.187) which was not statistically significant as the value obtained were much less than the tabulated value (0.273) with 0.05 significant level.

Table-III reveals that thigh girth of soccer players group was significantly correlated to kicking ability (r= 0.183) which was not statistically significant as the value obtained were much less than the tabulated value (0.273) with 0.05 significant level.

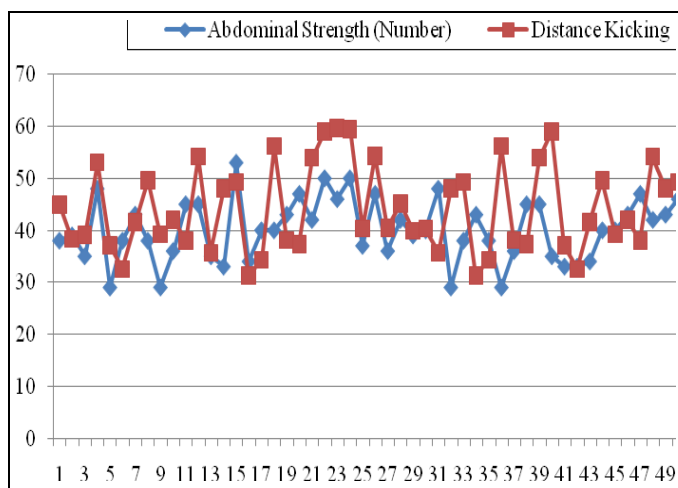
Table-III showed that leg length had significantly correlated to kicking ability (r=0.353) which statistically significant with higher value than the tabulated value (0.273)



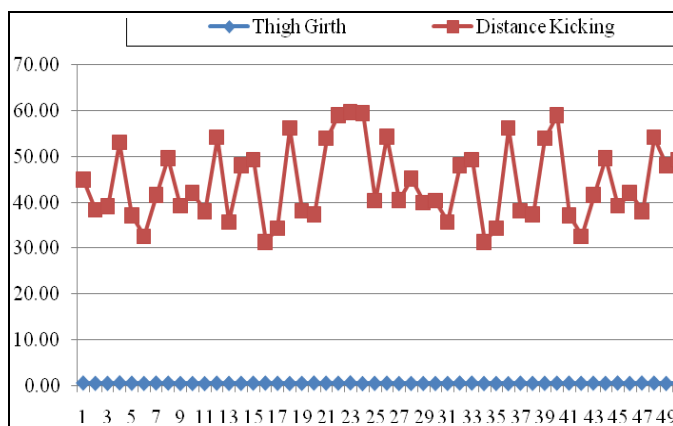
Graph 2: Relationship of Explosive Leg Strength to kicking ability of soccer player



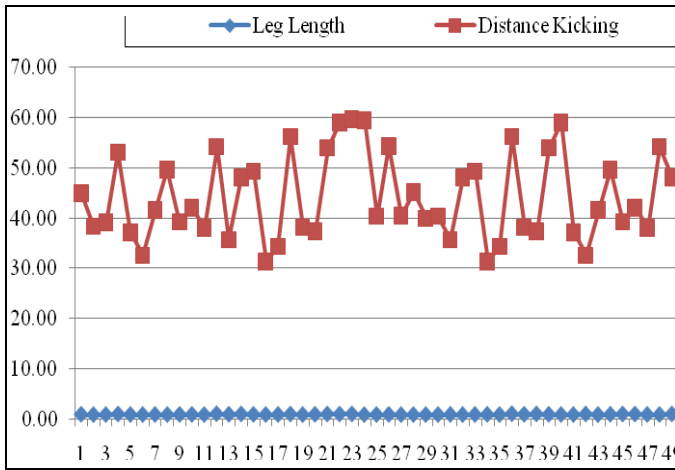
Graph 3: Relationship of Calf Girth to kicking ability of soccer player



Graph 1: Relationship of Abdominal Strength to kicking ability of soccer player



Graph 4: Relationship of Thigh Girth to kicking ability of soccer player



Graph 5: Relationship of Leg Length to kicking ability of soccer player

2. Conclusion

From the finding of the study it may be concluded that

1. By the light of the results of our study the kicking ability contribute highly significantly to explosive leg strength.
2. Leg Length, Calf Abdominal Strength and Explosive, Leg Strength were the most Significant independent measurements for kicking ability for distance in soccer.
3. Thigh Girth did not prove to be reliable when a single independent variable was correlated with the performance of kicking ability for distance.
4. A combination of all the significant independent variables. Such as leg length, calf girth abdominal strength and explosive leg strength was found most valid and reliable for predicting performance in distance for kicking ability.

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