Relationship of Leg Length and Angle of Pass Among the Soccer Players of Chandigarh

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ABSTRACT

The present study is explanatory type of research in which the observation method was used. The study was an attempt to find out the relationship between the leg length of the Soccer players and the angle of their kicking leg at the given target and off the target. The relationship of the leg length with the angles of kicking leg, between the two legs and non kicking leg at the time of stance, execution, contact, and follow through during accurate and non-accurate passes was seen. The sample of 15 Soccer players were randomly selected from the 45 Soccer players of national level from Chandigarh. The data was collected on the anthropometric variables and the skill level of the Soccer players. The researcher took anthropometric measurement of their leg. The subjects were to perform the Soccer skill i.e. push pass and the performance was recorded by using video camera. The recorded videos of their performance were analyzed biomechanically by using KINOVEA Biomechanical Movement Analyzing Software. With the help of this software the angles of their performance were drawn. The performance on Soccer skill of the players was measured by a test component from Van Rossum Soccer Skill test. On the basis above procedure the results of the study were drawn. The results of the study suggests that no relationship exists between the leg length and the angle of leg, during the execution of passing in Soccer, when analyzed in two different situations of accurate and non accurate passes.

INTRODUCTION

Sporting technologies are considered as ways developed to reach human comfort or achieve desired goals in sports. It is the knowledge and application of using specialised equipment and the latest technologies to perform tasks more professionally. Examples of sporting technologies include Golf clubs, Tennis rackets, pole vault poles, athletic sports gears like clothing and footwear, advanced computer programmes and motion capture equipments. More modern technologies such as motion capture analysis are also used to analyse athletic performance. This involves digitally recording the movements of athletes during sporting activities which can then be used for personal performance evaluation by the sportsperson, for enhanced spectator entertainment, and

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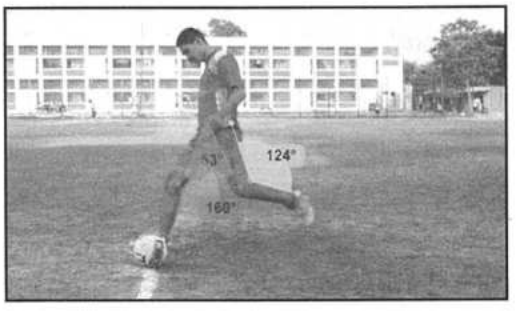
in some cases medical treatment. The objective of the study was to ascertain the relationship between the angle of pass and the leg length in push pass among the Soccer players of Chandigarh. Therefore, It was hypothesized that there is no significant relationship between the leg length of the Soccer players and the angle of their passing leg, non- passing leg and between the legs during stance, execution, contact and follow through position of the accurate and non–accurate passes of the Soccer players. The sub objective of the study was to see that if there was any relationship between the leg length and different angles while performing the skill.

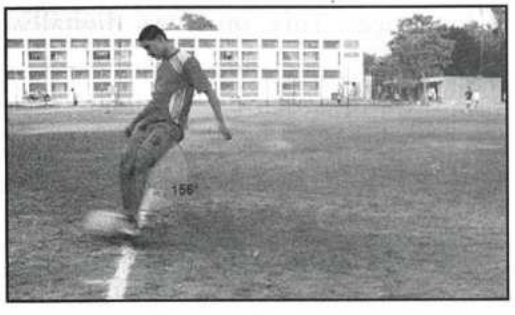
METHODOLOGY

The present study is explanatory type of research in which the observation method was used. The study was an attempt to find out the relationship between the leg length of the Soccer players and the angle of their kicking leg at the given target and off the target. The relationship of the leg length with the angles of kicking leg, at the time of stance, execution, contact, and follow through, during accurate and non-accurate passes was seen.

a. Stance Position



b. Execution Position



c. Contact Position

d. Follow Through

Fig.-1: - Illustration of skill performance.

Sample

The sample for the study was selected by using probability sampling technique in which simple random sampling method was adopted. Fifteen Soccer players of Chandigarh who had represented Chandigarh at national level competitions, approved by All India Football Federation, were selected randomly from fortyfive national level Soccer players. All the players were regularly practicing in their coaching center, at D.A.V. School Sector-8 C, Chandigarh. Permission to conduct the study was obtained from all the participants and their parents through a written request. Participation was voluntary and no extra credit was awarded for participation.

Tools

The following tests were used to measure the variables of the study:

1. Lower Leg Length: Anthropometric rod and measuring tape was used to measure the length of the leg. The distance between the anterior surface of the thigh (above the condoyle of the femur and about 4cm above the patella) and the sole of the foot was measured.
2. Biomechanical Analysis: The angle of performing the Soccer skills was drawn by using KINOVEA Biomechanical Movement Analyzing Software. The software measure the distance, speed, line length and angle of various joints act on a particular video with the help of Kinovea. The software has the feature which analyzes the video in slow motion so that the video can be seen frame by frame. This software supports almost all the formats. The angles can be drawn manually in the picture which is then converted by the software.
3. Video Camera: Nikon D5100 16.2 MP Digital Camera was used to record the performance of the Soccer players.
4. Passing for accuracy [Ground]: As per the test conducted by Van Rossun, a 5 meter long starting line is drawn and two cones (1.5 meter apart) were placed 30 meter away from the starting line. The subject has to kick the ball with his right foot; the ball must remain on the starting line. The ball must not rise up from the ground. The ball must enter between the two cones. Each subject was given five kicks (which constituted one trail). The total number of points for the trail was followed for kicking with the left leg.

Statistical Analysis

Normal distribution, outliers and missing values of the data was analyzed. No modifications due to normality were required. Next, in order to examine the

hypothesis of the study analysis was done by using descriptive statistics i.e., measure of central tendency (mean), and measure of variability by using Standard Deviation, to see the relationship between the variables Product Moment Correlation techniques was used. The level of significance was set at 0.05 level.

RESULTS & DISCUSSION

The leg length below the knees of the Soccer players was recorded and they were further asked to perform the skill. The angles of the kicking leg at stance, execution, contact, follow through and between the kicking and non -kicking leg were recorded.

The relationship between the leg length and angles was seen while performing the skill. The relationship was seen by using product moment correlation.

Table-1: Descriptive statistics of leg length, passing leg, between the two legs and non passing leg of accurate pass during stance position

	Accurate Passes Stance			Non Accurate Passes Stance	
Variable	**N**	**M**	**SD**	**M**	**SD**
leg length	15	51.50	2.58	51.50	2.58
Angle of Passing leg	15	176.86	6.89	173.86	11.11
Angle between the two Legs	15	57.26	16.98	25.00	10.16
Angle of Non passing leg	15	169.73	11.96	160.13	25.54

It can be seen from the Table that the mean scores of Soccer players on the leg length during stance in respect to accurate and non accurate passes are 51.50 with the standard deviation of 2.58. The mean scores of Soccer players on the angle of their passing leg, during stance in respect to accurate and non accurate passes are 176.86, and 173.86, with the standard deviation of 6.89 and 11.11. The mean scores of Soccer players on the angle between their two legs during stance in respect to accurate and non accurate passes are 57.26 and 25.00, with the standard deviation of 16.98 and 10.16. The mean scores of Soccer players on the angle of their non passing leg during stance in respect to accurate and non accurate passes are 169.73 and 160.13 with the standard deviation of 11.96 and 25.54.

Table-2: Correlation of leg length and angle of passing leg, non passing leg and between the two legs of accurate pass during stance position for accurate and non accurate

Variables	Accurate Passes r-value	Non Accurate Passes r-value
Angle of Passing leg	0.388	0.381
Angle between the two Legs	0.317	-0.273
Angle of Non passing leg	0.397	0.226

0.05> 0.534, (Degree of Freedom 14)

The Table reveals the relationship between the different angles of legs during stance phase of the skill with the length of the lower leg of Soccer players, in respect to accurate and non accurate passes. The r values 0.388, 0.317, 0.397 (accurate passes) and 0.381, -0.273, 0.226 (non accurate passes) are not significant which indicates that the relationship observed in the sample is not significant. Thus, the angle performed by the passing leg, between the two legs and non passing leg of Soccer players, during stance phase of the accurate and non accurate passes have no relationship with the leg length of Soccer players.

It can be seen from the Table that the mean scores of Soccer players on the leg length during execution in respect to accurate and non accurate passes are 51.50 with the standard deviation of 2.58. The mean scores of Soccer players on the angle of their passing leg during execution in respect to accurate and non accurate passes are 109.53 and 112, with the standard deviation of 16.40 and 14.64. The mean scores of Soccer players on the angle between their two legs during execution in respect to accurate and non accurate passes are 57.26 and 62.66, with the standard deviation of 16.98 and 10.91. The mean scores of Soccer players on the angle of their non passing leg, during execution, in respect to accurate and non accurate passes are 149.60 and 150.40, with the standard deviation of 9.21 and 9.13.

Table-3: Descriptive statistics of leg length, passing leg, between the two legs and non passing leg of accurate pass during execution position

		Accurate Passes Execution		Non Accurate Passes Execution	
Variable	**N**	**M**	**SD**	**M**	**SD**
leg length	15	51.50	2.58	51.50	2.58
Angle of Passing leg	15	109.53	16.40	112.00	14.64
Angle between the two Legs	15	57.26	16.98	62.66	10.91
Angle of Non passing leg	15	149.60	9.21	150.40	9.13

Table-4: Correlation of leg length and angle of passing leg, non passing leg and between the two legs of accurate pass during execution position for accurate and non accurate passes

Variables	Accurate Passes Execution r-value	Non Accurate Passes Execution r-value
Angle of Passing leg	0.027	0.167
Angle between the two Legs	0. 166	0.231
Angle of Non passing leg	0.379	-0.063

0.05> 0.534, (Degree of Freedom 14)

The Table reveals the relationship between the different angles of legs during execution phase of the skill with the length of the lower leg of Soccer players, in respect to accurate and non accurate passes. The r values 0.027, 0.166, 0.379 (accurate passes) and 0.167, 0.231, -0.063 (non accurate passes) are not significant, which indicates that the relationship observed in the sample is not significant. Thus, the angle performed by the passing leg, between the two legs and non passing leg of Soccer players, during execution phase of the accurate and non accurate passes, have no relationship with the leg length of Soccer players.

Table-5: Descriptive statistics of leg length and angle of passing leg, between the two legs and the non passing leg during contact position of accurate and non accurate passes

		Accurate Passes		Non Accurate Passes	
Variable	**N**	**M**	**SD**	**M**	**SD**
leg length	15	51.50	2.58	51.50	2.58
Angle of passing leg	15	146.93	12.05	146.46	12.62

It can be seen from the Table that the mean scores of Soccer players on the leg length during contact in respect to accurate and non accurate passes are 51.50, with the standard deviation of 2.58. The mean scores of Soccer players on the angle of their passing leg during contact phase of the skill in respect to accurate and non accurate passes is 146.93 and 146.46, with the standard deviation of 12.05 and 12.62.

Table-6 : Correlation of leg length and angle of passing leg, between the two legs and the non passing leg during contact position of accurate and non accurate passes

	Accurate passes Contact	Non accurate passes Contact
Variables	**r-value**	**r-value**
Angle of passing leg	0.038	-0.112

0.05>0.534, (Degree of Freedom 14)

The Table reveals the relationship between the angles of passing leg during contact phase of the skill with the length of the lower leg of Soccer players in respect to accurate and non accurate passes. The r values 0.038 (accurate passes) and -0.112 (non accurate passes) are not significant which indicates that the relationship observed in the sample is not significant. Thus the angle performed by the passing leg of Soccer players, during contact phase of the accurate and non accurate passes have no relationship with the leg length of Soccer players.

It can be seen from the Table that the

Table-7: Descriptive statistics of leg length and the angle of three phases of passing leg of accurate pass during follow through position

		Accurate Passes		Non Accurate Passes	
Variable	N	M	SD	M	SD
Leg length	15	51.50	2.58	51.50	2.58
Angle of passing leg	15	177.66	8.94	174.00	17.47
Angle of between the two legs	15	13.33	5.70	13.60	4.70
Angle of non passing leg	15	127.20	9.87	135.73	19.79

mean scores of Soccer players on the leg length during follow through, in respect to accurate and non accurate passes, is 51.50 with the standard deviation of 2.58. The mean scores of Soccer players on the angle of their passing leg, during follow through in respect to accurate and non accurate passes are 177.66 and 174.00, with the standard deviation of 8.94 and 17.47. The mean scores of Soccer players on the angle between their two legs during follow through, in respect to accurate and non accurate passes are 13.33 and 13.60, with the standard deviation of 5.70 and 4.70. The mean scores of Soccer players on the angle of their non passing leg, during follow through, in respect to accurate and non accurate passes, are 127.20 and 135.73, with the standard deviation of 9.87 and 19.79.

The Table reveals the relationship between the different angles of legs during follow through phase of the skill with the length of the lower leg of Soccer players in respect to accurate and non accurate passes. The r values -0.531, -0.147, -0.273 (accurate passes) and -0.010, -0.101, -0.074 (non accurate passes) are not significant which indicates that the relationship observed in the sample is not significant. Thus the angle performed by the passing leg, between the two legs and non passing leg of Soccer players, during follow through phase of the accurate and non accurate passes have no relationship with the leg length of Soccer players.

Table-8 : Correlation of leg length and the angle of three phases of passing leg, between the two legs and non passing leg during follow through of accurate and non accurate passes

Variables	Accurate Passes r-value	Non Accurate Passes r-value
Angle of Passing leg	-0.531	-0.010
Angle Between the two legs	-0.147	-0.101
Angle of Non passing leg	-0.274	-0.074

0.05>0.534, (Degree of Freedom 14)

The purpose of the study was to ascertain the relationship between the

angle of pass and the leg length in push pass among the Soccer players of Chandigarh. Therefore, It was hypothesized that there is no significant relationship between the leg length of the Soccer players and the angle of their passing leg, non- passing leg and between the legs during stance, execution, contact and follow through position of the accurate and non – accurate passes of the Soccer players. The sub objective of the study was to see if there any relationship between the leg length and different angles while performing the skill.

The attempt was made to ascertain the relationship of the leg length with the angle of stance, execution, contact and follow through in the passing skill i.e., push pass of Soccer players in accurate and non accurate passes. The result of the study showed that there was no significant relationship in the same. Therefore, it may be said that the leg length is not major contributing factor in passing skill. It may also be said that the role of leg length in learning of push pass is not very important. On the basis of the results of the study it may be said that the leg length should not be considered as an important contributing factor in the performance and learning of the push pass skill in the Soccer.

It may therefore be said that there is no significant relationship between the leg length of Soccer players and the angle of passing leg, between the two legs and the non passing leg, during the stance position of the accurate pass and no accurate pass. It may therefore be said that there is no significant relationship between the leg length of Soccer players and the angle of passing leg, between the two legs and the non passing leg, during the execution of the accurate pass and no accurate pass. It may therefore be said that there is no significant relationship between the leg length of Soccer players and the angle of passing leg, between the two legs and the non passing leg, during the contact of the accurate pass and no accurate pass.

It can further be said that the notion that the coaches, physical educationists and even players themselves carry in their mind regarding the significance of anthropometric variables in relation to the skill execution can be changed as the present research has proved that the leg length of the player has no relationship with the angle of their legs in various stages of skill performance for the accurate and non accurate passes.

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