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RESEARCH ARTICLE

RELATION BETWEEN PHYSICAL FITNESS AND FOOTBALL SKILLS OF INTER COLLEGE LEVEL FOOTBALL PLAYERS

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ABSTRACT

Sports have become an integral part of society. The coaches and trainers all over the world are aspiring for better result of their trainees. This can be made possible by conducting studies on the relationship of motor ability and level of skill of the player with their playing ability. The purpose of the study was to find out relationship of football skills with the selected physical fitness component. The study was delimited to 150 male inter college level player is age group of 19-25 year. The subject was selected from the inter college football matches of three university of Punjab. The data was collected during the inter college matches of soccer. The Pearson's product moment correlation coefficient (r) method was used. The level of $p \leq 0.05$ was considered significant. The result show significant relationship of football skills with sprinting speed, agility, endurance and flexibility

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INTRODUCTION

Football has become one of the most widely played sports in the world (Inklaar, 1994; Tumilty, 1993). It is characterized by short sprints, rapid acceleration or deceleration, turning, jumping, kicking, and tackling, Bangsbo and Michalsik (2002); Wisloff, Helgerud and Hoff (1998). During the game, players are required to perform activities like jogging, running (forward, backward and sideways), kicking, turning, heading and throwing. Fitness is very important to everyone on the field. Football is one of those rare games which demands not only speed but also agility, strength, power and endurance. Players in football need not only physical fitness but also technical and tactical skills to succeed in their performances. Fitness is important at all levels of the game, while it is being essential for top level players, it is beneficial for beginners who will improve their performances through good standards of fitness. It is generally assumed that through the years, the game has developed to become faster, with more intensity and aggressive play. Elite football is a complex sport, and performance depends on a number of factors, such as physical fitness, psychological factors, player technique, and team tactics. Ball skills such as kicking for accuracy, kicking for distance, dribbling with change of direction, dodging with the ball, goal kicking, heading etc. are most essential skills in elite football. The performance ability of all those skills is depending upon the physical fitness of the players. It is evident from the review of literature that the performance in football is dependent on the skills, which is dependent on the physical fitness abilities of the players. It is further understood from the literature review that experts differ in their opinions about the impact of physical fitness on the performance of football players and no clear evidence is available in the literature about the impact of ball skill on the performance of players at college level football.

College level football players may not be getting trained on scientific lines throughout the year and as such they might not have developed the physical fitness parameters to optimum level and their ball skills also may not be to the level of elite footballers of professional clubs or national and international level players. No scientific research has also been conducted to find out the relation between physical fitness parameters and performance in football skills at college level football in India and reported in Literature. Hence, it is felt necessary to carry out a study to find out the relationship among the selected football skills and physical fitness component of inter college level male football players.

MATERIAL AND METHODS

A Study was conducted on the following 150 inter colleges Football players from Punjab Universities:- namely Punjabi University, Patiala; G.N.D.U. Amritsar and Panjab University, Chandigarh by administering the selected Physical Fitness tests constructed by observing all procedures. The Data collected was analyzed statistically to confirm whether the performance in physical fitness tests was having significant correlation with the football skills of the subjects. The following Physical Fitness tests were administered to the volunteered subjects.

A) Physical Fitness tests

The following physical fitness tests were selected for this study:

(I) Explosive Strength

Five Hops with Left Foot, Five Hops with Right Foot for assessing Explosive Strength Endurance of legs was administered, and the maximum distance covered by each subject was measured in meter with the accuracy of one hundredth of the meter, as followed by (Nagerkoti 1989, and Tarlok 2001).

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(ii) Sprinting Speed

40 meters Sprint, for assessing sprinting speed was administered to all subjects. The time was measured in seconds to the accuracy of one hundredth of the second, as suggested by (Malhotra *et al.*, 1979, Subramanian 1981, Nagerkoti 1989, Bala 2000 and Tarlok 2001).

(iii) Agility

6 x 10 meters shuttle run for assessing the agility of the subject was administered to all the subjects observing all precautions and the time was measured in seconds to the accuracy of one hundredth of the second, as recommended by (Malhotra 1979, Subramanian 1981, Nagerkoti 1989 and Bala 2000).

(iv) Endurance test

2.4 Kilo-meters run in 400 meters track for assessing the endurance level of the subjects was administered to all subjects, and the time taken to cover this distance was measured in minutes and seconds to the accuracy of one hundredth of the second, as recommended by (Malhotra *et al.* 1979, Subramanian 1981, Nagerkoti 1989, Bala 2000 and Tarlok 2001).

(v) Flexibility test

Bend and reach test for assessing the flexibility of the subjects, which was adopted by (Malhotra *et al.*, 1979, Subramanian 1981, Nagerkoti 1989, Bala 2000 and Tarlok 2001) was administered to all subjects and the measurement was carried out in centimeters marked on a scale.

B) Football Skill Tests

The tests, which are recommended by the Portuguese Football Federation and are traditionally used in Portugal, (Seabra *et al.*, 2001; Coelho Silva *et al.*, 2004) were adopted for this study after calculating their reliability and validity on the selected sample:

i) Ball control with the body

Within a 9 x 9 m square, The Subject was to keep the ball in the air without using the arms or hands. The number of hits of the ball before it fell to the floor was taken as score of this test. Counting was stopped when the ball hit the floor, or the subject moved out of the square or he touched the ball with the arms or hands. One trial for each subject was administered; however the subject was allowed to start the trial again if he failed to contact the ball three times in the initial attempt itself.

ii) Ball control with the head

The Subject was to keep the ball in the air using only the head within a 9 x 9 m. square. The number of hits of the ball before it fell to the floor was recorded as score of this test. Counting was stopped when the ball hit the floor, or the subject moved out of the square or he touched the ball with any part of the body except the head. One trial was administered to each subject, and the subject was allowed to start the trial again if he failed to contact the ball three times in the initial attempt itself.

iii) Dribbling with a pass

Four cones were placed in a line, 2.25 m apart, within the 9 x 9 m square, and a flat surface such as a bench 1.2 m wide, was placed on the end line as fifth mark. The participant was instructed to dribble the ball around the first four cones in slalom fashion, make a pass to the bench / board, which were fifth mark and receive/ control the ball, and dribble around the four cones back to the starting line. The objective was to complete the drill in the fastest time possible without knocking down the cones and without stepping out of the square, controlling the ball only with the feet. If a cone (mark) was knocked over, the subject

was told to place it upright and continue the test. Two stop watches were started by the timers at the starting signal and were stopped when the participant crossed the starting line. The average of the two values was taken as score for this test and used in the analysis.

iv) Dribbling (This test was conducted to access speed and accuracy of players)

A cone was placed on each corner of the 9 x 9 m square (four cones). A fifth cone was placed midway (4.5 m) on the line of the square where the test was begun. Thus, the near end was having three cones (one on each corner and the third midway) and the far end was having two cones (one at each corner). Beginning at one corner, the subject was instructed to conduct the ball with the feet (dribble) around the three cones (corner directly opposite the starting cone, the cone placed midway, and the cone diagonally opposite the starting cone) in slalom fashion, and then dribble the ball into the fifth cone (i.e. not with a pass). The objective was to complete the drill in the fastest time possible by controlling the ball only with the feet without knocking down the cones. If a cone was knocked over, the participant was to place it upright and continue the test. The overall slalom distance was about 40 m. Two stopwatches were used by the timers at the starting signal and stopped the watches when the ball was dribbled into the fifth cone. The average of the two values was used in the analysis.

v) Passing

Five targets were placed at 2.5 m apart at the end line of the 9 x 9 m square. The subject was instructed to stand outside of the square at the opposite line of the target. Two attempts at each target were allowed for a total of 10 attempts. The objective was to hit the targets with the kicked ball in succession from one to five; two attempts were permitted for each target. The score was the number of successful target hits; the maximum score possible were 10 points.

vi) Shooting

A 2 x 3 m goal was set up at the end line of a 9 x 9 m square. The target was divided by ropes into six sections. One rope was tied horizontally between the posts at a height of 1.5 m. Two ropes were dropped from the crossbar, 0.5 m from each post. Five points were allocated for the upper right and left sections, and two points for the upper middle section. Three points were allocated for the lower right and left sections, and one point for the lower middle section. While standing outside of the square at the opposite line of the goal, the player was to kick the ball into the goal. Total five attempts were allowed and hence the maximum score possible was 25 points.

RESULTS

The descriptive data of the subjects in the selected Physical fitness tests and Football skill tests are presented vide Table 1 and Table 2 respectively:

It can be seen from Table 3, the performance in 5 hops with Right leg was significantly correlated with the performance in Ball Juggling with feet($r=0.51$); with the performance in slalom dribble ($r=-0.46$), Passing tests ($r=0.39$), and performance in shooting ($r=0.68$). Though the performance in 5 hops with right leg was not significantly related with the performance with Ball juggling with head ($r=0.31$) and Dribbling with pass ($r=-0.33$). there was a tendency to become significant in the case of 'Dribbling: It can be seen from Table 3, the performance in 5 hops with Right leg was significantly correlated with pass' and 'Passing' test performances. The performance in 5 hops with Left leg was significantly correlated with the performance in Ball Juggling with feet($r=0.41$); Passing tests ($r=0.44$), with the performance in slalom dribble ($r=-0.48$) and performance in shooting ($r=0.59$). Though the performance in 5 hops with left leg was not significantly related with the performance with Ball juggling with head ($r=0.19$) and Dribbling with pass ($r=-0.32$) there was a tendency to become significant in the case of 'Dribbling with pass' test performances.

Table 1. Descriptive data of the subjects (N= 165) in the Physical Fitness Tests

S. No	Name of Test	Mean Score	S.D.
1.	Explosive Strength 5 Hops with Right Foot	10.36(Meters)	0.45
2.	Explosive Strength 5 Hops with left Foot	10.54(Meters)	1.28
3.	Sprinting Speed	6.20 (in Sec.)	1.18
4.	Agility	14.98 (sec.)	0.70
5.	Endurance	10.78(min.)	0.54
6.	Flexibility	10.36 (cm.)	3.59

Table 2. Descriptive data of the subjects (N= 165) in Football Skill Tests

S.No	Name of the Test	Mean Score	S.D.
1.	Ball control with the body(Ball Juggling) (Numbers)	114.85	82.19
2.	Ball control with the head (Ball Juggling)(Numbers)	11.66	10.04
3.	Dribbling with a pass(Sec.)	11.40	1.38
4.	Dribbling speed(Sec.)	14.31	1.45
5.	Passing (Points)	2.87	1.30
6.	Shooting(Points)	5.91	2.23

The relation between the performance in physical fitness tests and Football skill tests are presented Vide Table Nos. 3, 4, 5, 6 and 7.

Table 3. Relation between 5 Hops(Right Leg) test performance and Football Skill Tests

S.No.	Name of the Test related with	Value of ' r '	Significance
1	Ball juggling with feet & body(in numbers)	0.51	Significant
2	Ball juggling with heading(no)	0.31	Non- Significant
3	Dribbling with pass (seconds)	-0.33	Non -Significant
4	Slalom Dribble (seconds)	-0.46	Significant
5	Passing (Numbers)	0.39	Significant
6	Shooting (Numbers)	0.68	Significant

df = 163, $p < 0.05$, table value < 0.35

Table 4. Relation between 5 Hops(Left Leg) test performance and Football Skill Tests

S. No.	Name of the Test related with	Value of ' r '	Significance
1	Ball juggling with feet & body(in numbers)	0.41	Significant
2	Ball juggling with heading(no)	0.19	Non- Significant
3	Dribbling with pass (seconds)	-0.32	Non -Significant
4	Slalom Dribble (seconds)	-0.48	Significant
5	Passing (Numbers)	0.44	Significant
6	Shooting (Numbers)	0.59	Significant

df = 163, $p < 0.05$, table value < 0.35

Table 5. Relation between Sprint test performance and Football Skill Tests

S.No	Name of the Test related with	Value of ' r '	Significance
1	Ball juggling with feet & body(in numbers)	0.22	Not significant
2	Ball juggling with heading(no)	0.27	Not significant
3	Dribbling with pass (seconds)	-0.38	Significant
4	Slalom Dribble (seconds)	-0.37	Significant
5	Passing (Numbers)	0.09	Not significant
6	Shooting (Numbers)	0.20	Not significant

df = 163, $p < 0.05$, table value < 0.35

Table 6. Relation between performance in 6 x 10 Meters shuttle run test and Football Skill Tests

S. No.	Name of the Test related with	Value of ' r '	Significance
1	Ball juggling with feet & body(in numbers)	0.41	Significant
2	Ball juggling with heading(no)	0.37	Significant
3	Dribbling with pass (seconds)	-0.38	Significant
4	Slalom Dribble (seconds)	-0.47	Significant
5	Passing (Numbers)	0.29	Non- Significant
6	Shooting (Numbers)	0.32	Significant

df = 163, $p < 0.05$, table value < 0.35

Table 7. Relation between performance in 2.4 Kilo Meters run test and Football Skill Tests

S.No.	Name of the Test related with	Value of ' r '	Significance
1	Ball juggling with feet & body(in numbers)	0.36	Significant
2	Ball juggling with heading(number)	0.37	Significant
3	Dribbling with pass (seconds)	0.18	Non-Significant
4	Slalom Dribble (seconds)	-0.44	Significant
5	Passing (Numbers)	0.26	Non- Significant
6	Shooting (Numbers)	0.22	Non-Significant

df = 163, $p < 0.05$, table value < 0.35

Table 8. Relation between performance in Bend and Reach test and Football Skill Tests

Sr. No	Name of the Test related with	Value of ' r '	Significance
1	Ball juggling with feet & body (in numbers)	0.43	Significant
2	Ball juggling with heading(no)	0.47	Significant
3	Dribbling with pass (seconds)	-0.28	Non-Significant
4	Slalom Dribble (seconds)	-0.51	Significant
5	Passing (Numbers)	0.29	Non- Significant
6	Shooting (Numbers)	0.30	Non-Significant

df = 163, p < 0.05, table value < 0.35

The results presented in Table 5 reveal that the significant performance in 'Sprint Test' and 'Dribbling with pass' (r=0.38) and 'Slalom dribble'(r=0.37). However, insignificant relation were observed in case of Ball juggling with feet & body (r=0.22); Ball juggling with heading (r=0.27); Shooting (r=-0.20) and passing (r=-0.09). The results presented in Table 6 reveal that the skill tests, Ball juggling with feet & body (r=0.41), Ball juggling with heading (r=0.37) Dribbling with pass (r=-0.38) Slalom Dribble (r=-0.47) and Shooting (r=0.32) excepting the 'Passing' test (r=-0.29) were significantly related with the performance in 'Shuttle run' test. The results presented in Table 7 reveal that the performance in endurance test was significantly related with the performance in 'Ball juggling' with feet & body (r=0.36); Ball juggling with head (r=0.37) and 'slalom dribble' test (r=0.44). However, insignificant relation were observed in case of dribbling with pass (r=0.18); passing (r=0.26) & Shooting(r=0.22). The results show in Table 8 that the performance in 'Bend and Reach ' test was significantly related with the performance in 'Ball juggling' with feet (r=0.43), Ball juggling with heading (r=0.47) and in 'slalom dribble' tests (r=-0.51). It was not significantly correlated with Dribbling with pass (r=-0.28); Shooting (r=0.30) and passing (r=0.29). The results show in Table 8 that the performance in 'Bend and Reach ' test was significantly related with the performance in 'Ball juggling' with feet (r=0.43), Ball juggling with heading (r=0.47) and in 'slalom dribble' tests (r=-0.51). It was not significantly correlated with Dribbling with pass (r=-0.28); Shooting (r=0.30) and passing (r=0.29).

DISCUSSION

The result of study show in Table 3 the performance in 5 hops with right leg was significantly correlated with the performance in Ball Juggling with feet and body with the performance in slalom dribble, Passing tests, and performance in shooting skills and there was a tendency to become significant in the case of 'Dribbling with pass' and Ball control with head test as supported by the study conducted by. (Thomas 1979). Table 4 shows the performance in 5 hops with Left leg was significantly correlated with the performance in Ball Juggling with feet; Passing tests, with the performance in slalom dribble and performance in shooting skills and there was a tendency to become significant in the case of 'Dribbling with pass' and Ball control with head test as supported by the study conducted by. (Thomas 1979). The relationship between skill and 'Sprint Test' was found significant with 'Dribbling with pass' and 'Slalom dribble'. However, insignificant relations were observed in case of Ball juggling with feet & body; Ball juggling with heading; Shooting and passing (Eklom 1986). The results presented in Table 6 reveal that all the skill tests, excepting the ' Passing' test were significantly related with the performance in 'Shuttle run' test, which indicates that football players required to possess 'agility' to a higher level.

Conclusions

Based on the findings of this study, it can be safely concluded that: Performance in football skills of players is dependent on the physical

fitness abilities of the players. The performance in ball juggling is dependent on agility, endurance and flexibility. The slalom dribble is depending on all physical fitness components. The passing skill is depended on explosive strength. The performance of shooting skill of college level soccer players is dependent on agility and explosive strength.

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