

Assessment of Predictive Variables for Soccer Playing Ability from Selected Skills, Physical, Physiological, Anthropometrical and Psychological Factors for University and State Women Soccer Players

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Abstract

The purpose of this study was to assess the predictive variables for soccer playing ability from selected skills, physical, physiological, anthropometrical and psychological factors for university and state women soccer players. The aim was to predict the subjects playing ability by relating this with the selected physical, physiological, anthropometrical and psychological variables and skill related test variables. One hundred university women soccer players from ten universities and one hundred state women soccer players from four states (Tamil Nadu, Andhra Pradesh, Karnataka and Kerala) were selected on random basis. Three experts assessed the football playing ability of the criterion variable. The independent variables are physical (Speed and power), physiological (pulse rate and vital capacity), anthropometrical (standing, height, leg length and thigh girth), psychological (self confidence and aggression) and skill related test variables (kicking for a distance and dribbling for timings). Pearson product moment correlation showed that there was a significant relationship between dependent and independent variables.

Keywords: Physical factors, Physiological factors, Anthropometric factors, Psychological variables.

Introduction

Soccer, chosen for the study is the most popular sport in the world at present soccer is not a matter of life and death. It is much more important than that. Too much people, too many countries, too much teams play it and of course too many people watch it. It is apparently one of the ancient sports and it is the direct ancestor of American football, Canadian football, Rugby and several other similar sports. Women football is very alive, and growing fast, Women football is evolving a style of its own. The women have inevitably adapted many elements of the men's game, but they have integrated into a distinctive women's style of play, characterized by a certain elegance which has prevailed over a more robust impersonation of the men's game. The women's football is growing so fast that we may justifiably expect that within the first decade of the next century there may be as many women playing as men as for as certain religious, social and cultural restrictions permit. The most exiting quality of soccer is that it is quick moving and fast flowing game. A football player must have speed endurance dexterity as well as the power and skills. The purpose of this study was the assessment of predictive variables for soccer playing ability from physical, physiological, Anthropometrical and physiological factors for University and state women soccer players.

Review of Literature

Mc David 1977 conducted a study on predicting athletic potential in football players in the first part of this study, the football of 67 – football potential test. The test battery consisted of motor ability items as well as football skill items (Mc clays classification index – strength, Power, time to hit audiovisual agility speed work out put)

Substantial corrections were obtained between most test items and test criterion. The sum of "T" scores size as depicted by Mcclay's Classification Index (CI) had a negative non – significant correlation with the criterion. The disseminative power of the battery was evidenced by the highly significant correlation between the tests criterion and the coaching staff ranking of individual players ($=0.840$). It was conducted that Athletic potential in football can be predicted by testing.

Uppal 1986 conducted a study on motor fitness components as predictions of soccer playing ability. Thirty male soccer players participated in this study in order to evaluate the extent to which the level of motor fitness can help to predict their performance in soccer. All subjects performed a series of five motor fitness component that tested speed, agility, Maximum and explosive strength and cardio respiratory endurance. A multiple regression analysis was performed and the results indicated that reasonably accurate prediction of soccer playing ability might be made on the basis of the 5 tests motor fitness components.

Katch freedom and Sody 1978 investigated the differences in actual predicated Vital capacity and residual lung volume in sixty – three male subjects who were classified as whether large medium or small using a sizing techniques based on weight and height. Criterion vital capacity and residual volume were significantly different ($P=0.05$) between the three different groupings of subjects (Small, Medium and Large) when attempting to predict vital capacity or residual volume from Height, Weight, Density, lean body mass, percent body fat, chest girth and the standard errors of prediction ranged ± 9 to 11 percent for vital capacity and ± 17 to 19 percent residual volume.

Withers et.al at 1987 conducted a study on the relative body fat and anthropometrics prediction of body density of south Australian females aged 17-35 years. One hundred thirty five females were tested in order to produce some normative percentage body fat (percent BF) data on Australian sample, which represented a cross validate exiting multiple regression equation which predicted body density B.D from Anthropometric measurement and if necessary to develop population specific equations.

Finkenberk M-E. and Dinad 1992 conducted a study on cognitive somatic state anxiety and self confidence I cheer leading competition 77 cheerleaders participating in national collegiate championship competition were administered the competitive state anxiety inventory 2 immediately prior to performance significant correlations were found between cognitive and somatic state anxiety finding consistent with previous research negative correlations were found between both cognitive and somatic state anxiety and self confidence, also as previously reported, canonical discriminate between the terms could be accomplished by a combination of the state anxiety variables both groups, 36 men and 41 women differed significantly from normative scores on the somatic subscale. Pown Radha coducted in 19990 a study on prediction of soccer playing ability from selected skills motor abilities, Anthropometric variables, Physiological and Psychological factors for university and state men football players. In order to study the individual relationship of the selected skills, motor abilities and Anthropometric variables. Physiological and Psychological factors to soccer playing ability, Pearson's product moment correlation was computed. To study the combined effect to these variables to soccer playing performance, multiple correlations was calculated with the help of Wherry Doo little test selection method.

Methodology

The subject selected for this study were one hundred university women soccer players from ten universities who participated in the All-India Inter university women soccer competition held at Alagappa University Karaikudi during the year 1996-97 and one hundred state women soccer players from four states (TamilNadu, Karnataka,

Kerala and Andhra) who participated in the Inter State women soccer tournament held at Calcutta during the year 1996-97 were selected as subjects. The selection of one hundred university and one hundred state women soccer players were made on random basis. The goal keepers were excluded from this study as they were considered to be a special category of players who did not engage themselves in various skills included in this study. Soccer playing ability was determined by 3 experts based on their judgment on 9-10 point scale. Physical variables included speed and power were measured by 50 meters dash and vertical jump respectively. Physiological variables included resting pulse rate, Vital capacity were measured by pulse watch and sphygmomanometers, Anthropometric measurements, which included height, leg length and thigh girth were measured by shift board and measuring tape. Psychological variables were measured by using questions prepared by Bandera.

Soccer skills Kicking and dribbling were conducted by kicking for distance and dribbling for timing, the data were collected and statistically analyzed by using Pearson's product moment correlation and Wherry-Doolittle method of multiple correlations. The level of confidence was fixed at 0.05 levels for significant differences if any.

Table - I
Inter-correlation Matrix of Skills Physical Variables, Physiological Variables, Anthropometric Variables Psychological Factors and Soccer Playing Ability of University Women Soccer Players

	Standing height	Leg length	Thigh Girth	Speed	Power	Vital Capacity	Pulse rate	Self Confidence	Aggression	Dribbling	Kicking for Distance	Standing height
Soccer Playing	0.2668410	0.1364004	-0.05593673	0.23583905	0.38403934	0.12816126	-0.1265751	0.19868269	0.224544652	-0.1672029	0.34162577	0.26684109
Standing height		0.8248318	0.37541798	0.14895214	0.62706827	0.10573451	0.22631663	0.07329953	0.24580691	-0.0706978	0.0647237	
Leg length			0.26810492	0.2283657	0.53842136	0.11420424	0.42187299	-0.00724205	0.14865364	-0.0573149	0.08653801	
Thigh Girth				0.12966188	0.3065332	0.017591	-0.1633673	0.15078371	0.11411782	-0.1446971	0.17315348	

	Standing height	Leg length	Thigh girth	Speed	Power	Vital capacity	Pulse rate	Self confidence	Aggression	Dribbling	Kicking for distance	Standing height
Speed					0.0050831	-0.0718802	0.29705952	0.13103545	0.24158708	0.02368918	0.0117521	
Power						0.23195679	-0.0187728	0.02765684	0.12436586	-0.1782989	0.11681687	
Vital Capacity							0.14676583	-0.15059174	-0.0219066	-0.0289189	0.06675418	
Pulse rate									-0.07141982	-0.0625639	0.09954477	
Self Confidence									0.07141982	0.002141	-0.0251176	
Aggression										-0.3285040	0.23230847	
Dribbling											-0.5760184	
Mean	1.6282	99.72	47.27	7.6311	44.28	3096	62.38	66.28	14.86	24.1183	27.77	1.6282
SD	0.0623	6.6469	4.1949	0.5764	8.0524	570.2491	13.6035	6.4731	2.1261	1.3909	3.4172	

C.V Mean 7.3030 S.D.= 0.9838 C.V (Soccer playing ability)
 df = N-2 Table value =1890
 100-2 = 98

Results and Discussion

To determine the relationship between soccer skills (Kicking and dribbling) physical variables (speed and power), physiological variables (pulse rate and vital capacity), anthropometrical variables (height, leg length and thigh girth), psychological variables (aggression and self confidence) and soccer playing ability, pearson's product method of computing coefficient of correlation was employed pertaining to this are presented in tables I – II for university and state women soccer players respectively.

The statistical analysis of data in the above Table I pertaining to university women soccer players clearly shows that soccer playing ability has significant relationship with kicking was 0.34162577, speed was 0.23583905, power was 0.38403934 and aggression was 0.22454652, where as the relationship between soccer playing ability and dribbling was (-0.16072029), vital capacity was 0.128116126, height was (-0.16684109), leg length was 0.13640047, thigh girth was (-0.05593673) and sel confidence was 0.19868269 are not significant.

Table I shows that the coefficient of correlation between the independent variables and dependent variables ranges from -0.00056270 to -0.5760184. The high correlation between kicking and dribbling was -0.57601841. The lowest correlation between height and pulse rate was -0.00056270.

Pertaining to state soccer players statistical analysis of data in the Table II clearly indicates that there was a significant relationship between soccer playing ability and kicking of was 0.6412178,. Thigh girth was 0.30971457, aggression was 0.4567484 and self confidence was 0.023933269 at 0.05 level of confidence.

Table – II
Inter-correlation Matrix of Skills Physical Variables, Physiological Variables, Anthropometric Variables Psychological Factors and Soccer Playing Ability of University Women Soccer Players

	Standing height	Leg length	Thigh Girth	Speed	Power	Vital Capacity	Pulse rate	Self Confidence	Aggression	Dribbling	Kicking for Distance	Standing height
Playing ability	0.2228725	0.1935730	0.30971457	0.22436557	0.23303934	0.02230226	-0.0471586	0.23933269	0.4576484	-0.6298395	0.64121782	0.2668419
Standing height		0.8248318	0.37541798	0.14895214	0.62706827	0.10573451	0.22631663	0.07329953	0.24580691	-0.0706978	0.0647237	
Leg length			0.26810492	0.2283657	0.53842136	0.11420424	0.42187299	-0.00724205	0.14865364	-0.0573149	0.08653801	
Thigh Girth				0.112966188	0.3065332	0.017591	-0.1633673	0.15078371	0.11411782	-0.1446971	0.17315348	
Speed					0.0050831	-0.0718802	0.29705952	0.13103545	0.24158708	0.02368918	-0.0117521	

SD	Mean	Dribbling	Aggression	Self Confidence	Pulse rate	Vital Capacity	Power
0.0632	1.6282						
6.6469	99.72						
4.1949	47.27						
0.5764	7.6311						0.23195679
8.0524	44.28						-0.0187728
570.2491	3096						0.02765684
13.6035	62.38						0.14676583
6.4731	66.28						-0.15059174
2.1261	14.86			0.07141982	-0.07141982	-0.0219066	0.12436586
1.3909	24.1183		-0.3285040	0.002141	-0.0625639	-0.0289189	-0.1782989
3.4172	27.77	-0.5760184	0.23230847	-0.0251176	0.09954477	0.06675418	0.11681687
	1.6282						

CV Mean 7.3030 S.D.=0.9838 C.V (Soccer playing ability) df = N-2 Table value =1890
100-2=98

From Table II it was also evident that the physical variables namely speed, power and physiological variables pulse rate, vital capacity and Anthropometric variables height, leg length were not significantly related to the soccer playing ability because of their low coefficient of correlation.

Table II also shows the correlation between the independent variables and dependent variables ranges from 0.00214100 to -0.0823349. The highest correlation between dribbling and kicking was -0.0823349. The lowest correlation between self confidence and dribbling was 0.0021410.

Conclusions

Within the limitations of this study the following conclusions are justified as per the results obtained.

1. Among all the skill variable analyzed, kicking was found to be significantly related to soccer playing ability for university women soccer players where as kicking was found to be significantly related to soccer playing for state women soccer players.

2. Physical variables speed and power were found to be significantly related to soccer playing ability for university women soccer players, whereas speed, power had not shown significant relations with soccer playing ability for state women players.
3. Physiological variables, pulse rate and vital capacity had not shown significant relations with soccer playing ability at both levels (university and state).
4. As far as Psychological components were concerned aggression and self confidence were having significant relationships with soccer playing ability for university and state women soccer players.
5. Among Anthropometric variables height, leg length, thigh girth were not significantly correlated with the soccer playing ability for university women soccer players whereas thigh girth was having significant relationship with state women soccer players.

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