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Prediction of Playing Ability among Kho-Kho Players from Selected Anthropometrical, Psychological and Physical Fitness Variables

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Abstract

The purpose of the study was to predict the playing ability in kho-kho from selected anthropometrical, psychological and physical fitness variables. To achieve the purpose four hundred and thirty five kho-kho players were randomly selected from various clubs in Karnataka state, India and their age ranged from 15 to 18 years. The criterion measure of overall playing ability was measured by a panel of experts consisting three persons. The average rating of the three experts on the overall laying ability was considered as the score of subjects. The computation of multiple regression was also used. In multiple regressions, a criterion variables from a set of predictors was predicted. Step wise argument methods of multiple regression was used in this study to find out the predictor variable that has the highest correlation with the criterion variables were entered in the equation depending on the contribution of each predictor. The SPSS 15 version package was used to determine the predictive equation. The prediction formula resulting from multiple regression was basically an extension of the two variables model, Y = a + bx. In this research study there were nineteen predictor variables and hence the following statistical regression equation was used. The step wise multiple regression method was used for the selection of variables. The results revealed that the speed, leg length, cardio vascular endurance, body weight, agility and flexibility become the common characteristics which can predict the playing ability in Kho-kho players.

Keywords: Playing Ability, Anthropometrical, Psychological, Physical Fitness, Kho-Kho.

Introduction

Research trends help the research scholar to identify the practice going on in particular subject ie., what are the priority areas, what has been done, the trends analysis reveals the exact picture of research in a subject or discipline. It also tries to answer the questions, such as, what are the strength and weakness. Trends analysis further shows the direction or the course taken by such subjects whether the goals/objectives are achieved or not, and development in a given course of time span. Research is required for knowledge, for life and best survival of physical education, is no exception and must keep itself updated as per to cater the needs of the modern times. If we look it in the Indian context then we can trace out that the education has well established with broad objectives. Research is the essence in education which is required to keep the subjects updated. Physical education is an academic subject and also we must keep it updated, so as to answer the trends should be traced in the research.

Kho-Kho is an indigenous game becoming very popular with more scientific technique. Kho-Kho players need fitness, quickness in decision, tact, agility, speed, movements and confidence, strength, stamina to concentrate on the exact technique which demands his mental and physical fitness. Kho-kho is no expectations on each turn of nine minutes, the player of chasing team has to fit, stand and run is quick succession several times and require tremendous fitness. The greater the skill and speed of attackers and defenders, the more tense situation is created among the spectators. Quickness is the soul of this game and consequently the short duration of nine minutes of the game is full enthusiasm shouts and encouragement and keen competition. Thus it appears that there is a constraint necessity to determine the physical fitness requirements of kho-kho players in order to develop faster and greater improvement in various fundamentals of the game. Performance can be improved through training methods based on skills of the game. The physiological requirements and the selective diagnosis are not fully understood. This is specially so in indigenous sports like kabaddi and kho-kho. As kho-kho is a contact sport, it may be used as a medium to release certain emotions like aggression and anxiety in an acceptable way preventing the accumulations of these emotions least that may cause, abnormal behaviour and ill health (Bharath & Chetan, 2016).

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Methodology

The purpose of the study was to predict the playing ability in kho-kho from selected anthropometrical, psychological and physical fitness variables. To achieve the purpose four hundred and thirty five kho-kho players were randomly selected from various clubs in Karnataka state, India and their age ranged from 15 to 18 years. The criterion measure of overall playing ability was measured by a panel of experts consisting three persons. The average rating of the three experts on the overall laying ability was considered as the score of subjects. The computation of multiple regression was also used. In multiple regressions, a criterion variables from a set of predictors was predicted. Step wise argument methods of multiple regression was used in this study to find out the predictor variable that has the highest correlation with the criterion variables were entered in the equation depending on the contribution of each predictor. The SPSS 15 version package was used to determine the predictive equation. The prediction formula resulting from multiple regression was basically an extension of the two variables model, Y = a + bx. In this research study there were nineteen predictor variables and hence the following statistical regression equation was used. The step wise multiple regression method was used for the selection of variables.

Results

Table 1
Step wise multiple regression between playing ability and independent variables of kho-kho players

Model	Variables	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	Speed	.574[a]	.329	.328	5.81006
2	Leg Length	.622[b]	.387	.384	5.56163
3	Cardio Vascular Endurance	.643[c]	.414	.410	5.44262
4	Body weight	.654[d]	.427	.422	5.38607
5	Agility	.667[e]	.445	.439	5.30759
6	Flexibility	.676[f]	.456	.449	5.26063

From Table – 1, it is found out that the multiple correlations co – efficient for predictors, such as speed, leg length, cardiovascular endurance, body weight, agility and flexibility was 0.676 which produce highest multiple correlations with kho-kho playing ability. 'R' square values show that the percentage of contribution of predictors to the Kho-kho playing ability (Dependent variables) is in the following order.

1. bout 57% of the variation in the kho-kho playing ability was explained by the regression model with one predictor speed.
2. About 62% of the variation in the kho-kho playing ability was explained by the regression model with two predictors, speed and leg length. An additional 5% of the variance in the kho-kho playing ability is contributed by leg length.
3. About 64% of the variation in the kho-kho playing ability was explained by the regression model with three predictors, speed, leg length and cardiovascular endurance. An additional 2% of the variance in the kho-kho playing ability is contributed by cardiovascular endurance.
4. About 65% of the variation in the kho-kho playing ability was explained by the regression model with four predictors, speed, leg length, cardiovascular endurance and body weight. An additional 1% of the variance in the Kho-kho playing ability is contributed by body weight.
5. About 66% of the variation in the kho-kho playing ability was explained by the regression model with five predictors, speed, leg length, cardio vascular endurance, body weight and agility. An additional 1% of the variance in the kho-kho playing ability is contributed by agility.
6. About 67% of the variation in the kho-kho playing ability was explained by the regression model with six predictors, speed, leg length, cardio vascular endurance, body weight, agility and flexibility. An additional 1% of the variance in the kho-kho playing ability is contributed by flexibility.

Multiple regression equation was computed and the results were presented in Table 2.

Table 2
Regression analysis of prediction equation of college level kho-kho players

Model		Unstandardized Coefficients		Standardized Coefficients	Sig.	Partial Correlations	Collinearity Statistics
		B	Std. Error	Beta			
Step1	(Constant)	17.283	3.876		.000		
	Speed	8.405	.577	.574	.000	.574	1.000
Step 2	(Constant)	-7.314	5.356		.173		
	Speed	7.824	.560	.534	.000	.558	.973
	Leg Length	.363	.057	.243	.000	.293	.973
Step 3	(Constant)	-108.500	23.170		.000		
	Speed	5.413	.767	.369	.000	.322	.496
	Leg Length	.329	.056	.220	.000	.271	.955
	Cardiovascular Endurance	.051	.011	.237	.000	.211	.487
Step 4	(Constant)	-134.893	24.388		.000		
	Speed	6.233	.802	.425	.000	.351	.444
	Leg Length	.305	.056	.204	.000	.252	.938
	Cardiovascular Endurance	.066	.012	.306	.000	.252	.415
	Body weight	-.236	.074	-.162	.002	-.151	.512
Step 5	(Constant)	-137.754	24.045		.000		
	Speed	5.852	.797	.399	.000	.334	.437
	Leg Length	.308	.055	.206	.000	.259	.937
	Cardiovascular Endurance	.053	.012	.248	.000	.202	.385
	Body weight	-.304	.075	-.208	.000	-.191	.482
	Agility	3.584	.964	.176	.000	.177	.574
Step 6	(Constant)	-145.893	23.991		.000		
	Speed	5.972	.791	.408	.000	.343	.436
	Leg Length	.313	.055	.209	.000	.265	.937
	Cardiovascular Endurance	.050	.012	.232	.000	.191	.382
	Body weight	-.282	.075	-.193	.000	-.178	.477
	Agility	3.918	.963	.193	.000	.193	.566
	Flexibility	.230	.078	.108	.003	.141	.948

In the Table – 2, the following regression equations were derived for playing ability of Kho-kho players with dependent variables. Regression Equation in obtained scores from = CR

Playing Ability (CR) = 17.283 +5.972(X_9) +0.313(X_4) +0.050(X_{11}) -0.282(X_2) +3.918(X_{12}) +0.230(X_{13})

C.R	Playing ability
X_9	Speed
X_4	Leg Length
X_{11}	Cardio Vascular Endurance
X_2	Body weight
X_{12}	Agility
X_{13}	Flexibility

The regression equation for the prediction of Kho-kho playing ability includes speed, leg length, cardio vascular endurance, body weight, agility and flexibility. As the multiple correlations on Kho-kho playing ability with the combined effect of these independent variables are highly significant, it is apparent that the obtained regression equation has a high predictive validity.

Conclusion

The following conclusions were,

1. The size of multiple correlation is sufficiently large and hence regression equation developed by six variables can be put in to prediction equation of kho-kho players.
2. The results revealed that the speed, leg length, cardio vascular endurance, body weight, agility and flexibility become the common characteristics which can predict the playing ability in Kho-kho players.

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