

Prediction of Kabaddi Playing Ability from Selected Anthropometrical and Physical Variables among College Level Players

Bhagyajyoti, METI

Guest lecturer in college of education dharawad, Dharwad, Karnataka

Abstract- The purpose of the study was to predict the Kabaddi playing ability from selected Anthropometrical and Physical variables among College level Players. One hundred and Forty four male inter collegiate Kabaddi players were randomly selected from various colleges in Karnataka state, India and their age ranged between 18 and 28 years. The subjects had past playing experience of at least three years in Kabaddi and only those who represented their respective college teams were taken as subjects. A series of anthropometrical measurements was carried out on each participant. These included Standing height measured by Stadiometer; Body weight measured by weighing machine, Two Length measurements - Arm length, Leg length, measured by Luffkin Anthropometric Tape. The data were collected by following standard testing protocol of International Society for the Advancement of Kinanthropometry. Physical fitness components were measured by the following tests. Speed were assessed by 50 meter dash, Flexibility assessed by Sit and reach test, Leg explosive strength assessed by Standing broad jump, Muscular power assessed by Modified sit - ups and Muscular endurance assessed by 2.4 km run. The playing ability which was taken as the performance factor was subjectively assessed by three qualified Kabaddi coaches. All testing was done two day before inter - collegiate competition by using scientifically approved equipments. Mean and Standard deviations were calculated for each of the selected variables. The inter-relationship among the selected anthropometrical, physical variables and Kabaddi playing ability, were computed by using Pearson' product-moment correlation coefficients. All selected anthropometrical and physical variables that statistically correlated with performance were used to form respective linear predictive models (step-wise argument selection). The results revealed that an Inter-relationship exists significantly between the anthropometrical, physical and performance variables among male inter-collegiate Kabaddi players. The results also revealed that speed, agility, weight and flexibility become the common

characteristics which can predict the playing ability in Kabaddi players.

Index Terms- Prediction, Anthropometrical, Physical and Regression

I.INTRODUCTION

In India Kabadi is a major sport, which is played all over the India. This game is also getting a good status in Asian sports. This game is classified as a team game. Sport is a medium through which a player develops both physical and mental abilities and finally it results into a conscious method of doing whatever one does most effectively, whereas in other arts we utilize mental and physical abilities partially. Kabbadi is basically an Indian game, which requires both skill and power. Kabaddi combines the characteristics of wrestling and rugby. Kabaddi is played in more than sixty five countries especially Asian countries. Anthropometric measurements relevant to human movement gained formal recognition as a discipline with the inauguration of the International Society for Advancement of Kinanthropometry in 1986. Anthropometrists of all continents have participated in several major multidisciplinary studies that are being or have been conducted to assess the physical characteristics of people. Kinanthropometry has been defined as the quantitative interface between human structure and function (Ross, Drinkwater, Bailey, Marshall, Leahy, 1980) [1]. This interface is examined through the measurement and analysis of age, body size, shape, proportion, composition and maturation as they relate to gross body function. Previous reports have shown that body structure and morphological characteristics are important determinants of performance in many sports and certain physical impressions such as body composition (body fat, body mass, muscle mass) and

physique (somatotype) can significantly influence athletic performance (Carter, 1970 & Duquet and Carter, 2001). In performance and high performance sport, a great importance is given to the physical condition. It is in fact the preoccupation for the adaptation of the sportsman's body to growing physical and mental efforts, to which all the parts of the human body participate. The contemporary Kabaddi game, characterized by high intensity motor activities, places upon players a wide spectrum of requirements on all their capabilities. One can hardly single out any ability or a characteristic which is not engaged in the performance of Kabaddi players. Kabaddi is an strength game. Without endurance the player cannot perform well, in the same time the player's need all the characteristics i.e. speed, agility, flexibility, endurance etcetera. Nowadays most of the players having good height can perform well in the game situation. Without physical characteristics players cannot achieve the aim of the game, so physical characteristics is very essential for the better performance of Kabaddi. The purpose of the study was to predict the Kabaddi playing ability from selected Anthropometrical and Physical variables among College level Players.

METHODOLOGY

SELECTION OF SUBJECTS

One hundred and Fourty four male inter collegiate Kabaddi players were randomly selected from various colleges in Karnataka state, India and their age ranged between 18 and 28 years. The subjects had past playing experience of at least three years in Kabaddi and only those who represented their respective college teams were taken as subjects.

SELECTION OF VARIABLES AND TESTS

A series of anthropometrical measurements was carried out on each participant. These included Standing height measured by Stadiometer; Body weight measured by weighing machine, Two Length measurements - Arm length, Leg length, measured by Lufkin Anthropometric Tape. The data were collected by following standard testing protocol of International Society for the Advancement of Kinanthropometry. Physical fitness components were measured by the following tests. Speed were assessed by 50 meter dash, Flexibility assessed by Sit and

reach test, Leg explosive strength assessed by Standing broad jump, Muscular power assessed by Modified sit - ups and Muscular endurance assessed by 2.4 km run. The playing ability which was taken as the performance factor was subjectively assessed by three qualified Kabaddi coaches.

STATISTICAL TECHNIQUES

All testing was done two day before inter - collegiate competition by using scientifically approved equipments. Mean and Standard deviations were calculated for each of the selected variables. The inter-relationship among the selected anthropometrical, physical variables and Kabaddi playing ability, were computed by using Pearson' product-moment correlation coefficients. All selected anthropometrical and physical variables that statistically correlated with performance were used to form respective linear predictive models (step-wise argument selection).

RESULTS AND DISCUSSIONS

Table 1 Descriptive Statistics of College level Players

S. No	Variables	Mean (N=144)	SD
1	Playing ability	7.7569	± 1.03
2	Height	170.5764	± 6.36
3	Weight	62.5278	± 7.62
4	Leg Length	98.9167	± 5.58
5	Arm Length	73.0347	± 4.08
6	Speed	6.3062	± 0.54
7	Flexibility	18.2986	± 2.98
8	Leg Explosive strength	1.8080	± 0.28
9	Muscular	49.9028	± 7.39
10	Power	10.7201	± 0.61
	Muscular Endurance		

- Table 1: showed the descriptive statistics – Mean and Standard deviation of anthropometric characteristics, physical variables & playing ability of College level Kabaddi Players. The present study attempted to link the coaches rating as measure of playing ability with the anthropometric characteristics, physical variables of college level Kabaddi Players, correlation analysis was made.

- Table 2: Inter-Correlation of Selected Anthropometrical, Physical Variables with the Playing Ability of college level Kabaddi Players.

C.R Playing ability		X5 Speed							
Variables	X1	X2	X3	X4	X5	X6	X7	X8	X9
C.R			0.098	0.175	0.103	0.030	0.612	0.214	0.797
X1	0.204	0.142							
X2	0.001	0.126		0.403	0.861	0.795	0.053	0.297	0.041
X3	0.022	0.012			0.232	0.151	0.051	0.310	0.194
X4	0.027	0.108				0.782	0.044	0.291	0.041
X5	0.036	0.115					0.035	0.244	0.108
X6	0.060	0.080						0.091	0.561
X7	0.038	0.034							0.327
X8	0.063	0.038							
X9	0.082								

- X1 Height
- X2 weight
- X3 Leg Length
- X4 Arm Length
- X5 Speed
- X6 Flexibility
- X7 Leg Explosive strength
- X8 Muscular Power
- X9 Muscular Endurance

Table 3: shows that there was a correlation exists between the playing ability versus speed ($r = 0.61$) and Leg Explosive strength ($r = 0.79$) rest of other physical variables showed moderate correlation with the playing ability. Rest of other anthropometrical characteristics shows low correlation with the playing ability of college level Kabaddi players. Next, by means of stepwise selection, the best models of linear regression for predicting the playing ability of college level Kabaddi players was analysed. In each model, only the variable that achieved significance with the cut-off criteria set at probability of $F < \text{equal to or less than } 0.001, 0.01 \text{ and } 0.05$ level was listed. The predictor variables and their importance in predicting the playing ability of Kabaddi players are presented in the Table 3. Table 3 shows the Regression Analysis of Predictive Equation in college level Kabaddi Players in the samples. Among the anthropometrical, physical variables, Leg Explosive strength scores accounted for 79 % in the first model of the performance ability. Muscular Power, Speed, Leg Length and Arm Length subsequently added

Mode l	Variables	R	R Square	Unstandardized Coefficients		Standardized Coefficients
		R Square Chang	F Change	B	Std. Error	Beta
1	(Constant)			2.411	.344	
	Leg Explosive strength	.797(a)	.636	2.957	.188	.797
2	(Constant)			.526	.463	

significantly (0.01 and 0.05 levels) to the prediction of the playing ability in college level Kabaddi Players up to the final model. The R2 value for the combination of Leg explosive strength, Muscular Power, Speed, Leg Length and Arm Length on playing ability was .874 (87 %) with the R2 change (ΔR^2) .763 for the final model. Many team sports include complex human movement, which can be observed at different levels of detail. This is especially true for team sports (e.g. Soccer, Handball, and Basketball). Kabaddi is one of the most popular team based sports and has been played by both men and women throughout the world. Kabaddi is basically an outdoor team game, played in the tropical countries of Asia.

Prediction of Kabaddi Playing Ability from Selected Anthropometrical and Physical Variables among College Level Players Provided by the game has made it very popular and Kabaddi is rightly called the ‘Game of the masses’, since spectators totally involve themselves and give the players a great deal of encouragement.

Table 4: Regression Analysis of Predictive Equation in college level Kabaddi Players

Model

Variables R R Square Unstandardized Coefficients Standardize d Coefficients R Square Change F Change B Std. Error Beta 1 (Constant) 2.411 .344 Leg Explosive strength .797(a) .636 2.957 .188 .797 2 (Constant) .526 .463 Leg Explosive strength 3.016 .171 .813 Muscular Power .837(b) .700 .036 .006 .255 3 (Constant) 3.964 .988 Leg Explosive strength 2.580 .198 .696 Muscular Power .033 .006 .235 Speed .854(c) .730 -.398 .102 -.208 4 (Constant) 6.485 1.249 Leg Explosive strength 2.589 .192 .698 Muscular Power .032 .006 .232 Speed -.407 .099 -.212 Leg Length .865(d) .748 -.025 .008 -.134 5 (Constant) 6.269 1.215 Leg Explosive strength 2.460 .192 .663 Muscular Power .032 .006 .230 Speed -.473 .099 -.247 Leg Length -.055 .013 -.297 Arm Length .874(e) .763 .053 .017 .208

	Leg Explosive strength			3.016	.171	.813
	Muscular Power	.837(b)	.700	.036	.006	.255
3	(Constant)			3.964	.988	
	Leg Explosive strength			2.580	.198	.696
	Muscular Power			.033	.006	.235
	Speed	.854(c)	.730	-.398	.102	-.208
4	(Constant)			6.485	1.249	
	Leg Explosive strength			2.589	.192	.698
	Muscular Power			.032	.006	.232
	Speed			-.407	.099	-.212
	Leg Length	.865(d)	-.748	-.025	.008	-.134
5	(Constant)			6.269	1.215	
	Leg Explosive strength			2.460	.192	.663
	Muscular Power			.032	.006	.230
	Speed			-.473	.099	-.247
	Leg Length –			-.055	.013	-.297
	Arm Length	.874(e)	.763	.053	.017	.208

(n=144) : (R2 = .797 for step 1: ΔR 2 = .763 for final step) Significant at * p < 0.5.

Playing ability = 2.411 + 2.460 (X7) + .032 (X8) - .473 (X5) - .055(X3) + .053(X4)

Performance in any sports activity depends to a large extent on physical fitness. Sports trainers concentrate on improving the physical fitness and motor abilities of a player, i.e., speed, strength, endurance, flexibility. Improving the physical fitness of a player is also called conditioning. A sound conditioning programme forms the most important part of training any sports person. Conditioning or physical fitness is categorized into general and specific fitness. General fitness refers to the common qualities required for any sports person irrespective of the sport i.e., motor qualities such as strength, endurance, flexibility and coordination ability. Every sport demands motor abilities at various levels above the average. Specific fitness is achieved when a player acquires the required motor ability at the intensified level for the particular sport. For example, specific fitness in kabaddi is with reference to strength, speed and co-ordination. These findings are in accordance with the Verma (2011). Kabaddi favors body development with a muscular strength stamina and endurance; because of its special feature “Can’t holding” enriches cardiovascular endurance and resistance. Fine flexibility and agility is developed as one needs to move faster in such a small area of 20’-30’ (10-12 mts). Player’s eyes and body movement become quicker. On the other hand in physical skills speed, power (strength), endurance, flexibility, swift action, and proper coordination between hand eyes and limbs. If your body is flexible then only you can kick, swirl grapple with ankle legs and things. Here more than speed acceleration is paramount; strong leg

muscles give more punch to the player. Agility and stamina are also very essentially. These findings are in accordance with the Jadhav (2011).

CONCLUSIONS

The results obtained in the present study illustrated the formation of anthropometrical and physical variables optimum predictive equation models in male Kabaddi players. From the analysis of data. The results revealed that there was a correlation exists between the playing ability versus speed, leg explosive strength, flexibility and muscular power. The results also revealed that leg explosive strength, muscular power, speed, leg length and arm length becomes the common characteristics which can predict the playing ability in Kabaddi players.

REFERENCES

- [1] Ross, W. D., Drinkwater, D. T., Bailey, D.A., Marshall, G. R. and Leahy, R. M. Kinanthropometry; Traditions and new perspective. In: Ostin, M., Beunen, G. and Simons, J. (eds.) Kinanthropometry II. International Series on Sports Science. Vol. 9. Baltimore: University Park Press, 1980, pp. 3-27.
- [2] Carter, J. E. L. The somato types of athletes –a review. Hum. Biol. 42, 1970, pp. 535-569.
- [3] Duquet, W. and Carter, J. E. L. Somatotyping. In: Eston, R. and Reilly, T. (eds.) Kinanthropometry and Exercise Physiology Laboratory Manual, 1:

Anthropometry. London: Routledge, 2001, pp. 47–64.

- [4] Verma, A., Rana, D. and Singh, A. To Develop Physical Profile of Kabaddi Players: The Descriptive Study. Indian Journal of Movement Education and Exercises Sciences (IJMEES), 1(1), 2011.
- [5] Jadhav, K. M. (2011). Role of Yoga in Kabaddi Sport. Golden Research Thoughts, Vol. 1, Issue II.