

PREDICTION OF KABADDI PLAYING ABILITY IN THE ANTHROPOMETRIC AND BIO- MOTOR CONTEXTS

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Abstract:

The aim of this present research was to predict the kabaddi playing ability of the East Zone male Kabaddi player in the anthropometric and Bio – Motor contexts s. One hundred & thirty kabaddi players were selected through random sampling approach during the East Zone kabaddi tournament in the year 2012 and their age span was 17 to 27 years. Several measurements based on the above parameters were carried out on each individual. Height was measured through stature, weight was measured by weighing machine and leg length was measured by Lufkin Anthropometric Tape. The bio – motor abilities were measured using different testing procedure protocols. Agility was measured by 40- meter agility test; leg explosive power was measured by standing broad jump, flexibility was measured by sit and reach test, muscular endurance was measured by knee bent sit – up test, and muscular power was measured by the number of push – ups. The playing ability (dependent variable) was judged by three well qualified and experienced experts. Pearson “r” was used to determine the inter correlation among them and the regression model was used to predict the playing ability with respect to the above mentioned aspects at the 0.05 level of statistical significant. Results: 1) There were high Correlations existing between playing ability against Agility ($r = 0.631$), Explosive leg Power ($r = 0.56$), Muscular strength ($r = 0.391$) and Moderate correlations exist between playing ability versus Muscular endurance ($r = 0.271$), leg length ($r = .30$), Weight ($r = 0.221$), Flexibility ($r = 0.19$) and low Correlations exist between playing ability versus Grip Strength ($r = 0.121$) and very low Correlation for height ($r = 0.087$) with playing ability in kabaddi. 2) The presented Linear Regression Model equation is--- Playing ability of kabaddi = $4.032 + 2.41$ (Leg Explosive power) - $.453$ (Agility) + $.041$ (Muscular strength) - $.360$ (Leg length).

KEYWORDS:

anthropometric, bio – motor abilities, kabaddi, muscular power .

INTRODUCTION

Kabaddi is a game of Indian origin and was played outdoors originally; but nowadays it is both an outdoor and an indoor game played in many Asian countries. Kabaddi requires tremendous bio – motor abilities (Tudor O. Bompa) such as speed, strength, coordination etc. along with intelligence and quick decision making abilities. This is a game which combines the actions of wrestling, judo, rugby and gymnastics. The important body movements in this game involve catching, holding, locking and jumping; thus the possession of desirable anthropometric and bio – motor characteristics will be a greater advantage for better performance in competitions.

“Kinanthropometry has been defined as the quantitative interface between human structure and

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function” (Rose et al.) and also distinguishes individual diversity because body type plays a tremendous role in all kinds of games. In all kinds of sports, certain physical characteristics such as body type (somatotyping) and body composition can significantly influence athletic performance (Carter, 1970, Duquet and Carter, 2012). By applying anthropometry in all kind of sports we attempt to design the working environment around the persons rather than placing constraints on them because they have to adapt to what is provided. If anthropometric parameters are taken into consideration when products are designed, the outcome is likely to be increased acceptability along with improved ease and efficiency of use, and therefore greater operational safety and cost effectiveness. When considering the design and use of equipment, the term 'average person' is often referred to and used. The body is made up anthropometrically of several functional parts, such as sitting height, stature, leg length and weight etc.

The aim of this research is to find out the possible inter-correlation between selected anthropometric parameters and motor abilities in the contexts of the playing abilities of east zone male kabaddi players and also find out the possible predictor parameter which can predict the kabaddi playing ability with the help of linear regression model.

The standing long jump test for explosive strength (the ability to expend maximum energy in one explosive act), and 40-m agility test were used to determine the power of moving quickly and easily without losing speed etc.

METHOD & MATERIALS

Selection of subjects: For the present research 130 men kabaddi players were selected from the East Zone kabaddi tournament in the year 2012 and their age span is 17 to 27 years.

Design of the Study: The study used random sampling approach and prediction design was employed to measure Kabaddi playing ability from selected anthropometric and bio - motor parameters which were considered as essential for the game of Kabaddi.

Selection of variables: For this study kabaddi playing ability was selected as criterion variable and Anthropometric and Bio - motor abilities were selected as predictor variables.

Tools: Anthropometrical variables, such as height, were measured by means of a stadiometer (Seca 220, UK), to the nearest 0.1 cm. Body weight was recorded using a portable scale (Tanita BF683W, GER) to the nearest 0.1 kg. (J. Bull, USA), and leg length was measured in cm. with the help of Lufkin Anthropometric Tape. Bio – Motor abilities such as Leg explosive power was measured to the nearest 0.1 cm with the help of standing broad jump test. Agility was measured with the help of 4x15- m agility run test. Time in seconds and hundreds of seconds was determined using an electronic timing system (Micro Gate, IT). Sit- ups were measured with the help of numbers knee-bend sit- up test s. Grip strength was measured in kg using grip strength dynamometer. Flexibility was measured to the nearest 0.1 cm with the help of sit and reach test.

STATISTICAL TECHNIQUE

Descriptive statistics such as mean and standard deviation were applied to characterize the kabaddi playing ability, Anthropometrical parameters, and Bio – Motor abilities of East Zone kabaddi players. Pearson “r” was used to determine the inter correlations among them. For the predictions of values, the researcher applied the multiple linear regression models.

RESULTS & DISCUSSION

Table 1: Descriptive Statistics of the East Zone Men kabaddi players

S.No	Variables	Mean (n =130)	S.D
	Playing ability	7.3553	.71784
1.	Height	171.33	5.84079
2.	Weight	65.1364	7.14030
3.	Leg length	99.7228	6.36210
4.	Agility	11.98	.65141
5.	Explosive power	182.82	8.32453
6.	Sit ups	45.6538	6.93683
7.	Grip strength	49.20	6.18850
8.	Flexibility	22.3054	2.65363
9.	Pushup	36.4231	5.30155

Table -1 show the Mean and Standard Deviation of Anthropometric and Bio – Motor abilities of kabaddi players. The discussion of the findings with regard to descriptive statistics such as the mean values and S.D showed that East Zone male kabaddi players possess the above mentioned characteristics which will be helpful in selecting a good kabaddi player in the future from East Zone with respect to the anthropometric and bio – motor contexts.

Table – 2: Pearson Product Moment Correlation of Selected Anthropometric and Bio- Motor parameters with the Playing Ability of the East Zone Men Kabaddi

Variables	Height	Weight	Leg length	Agility	Explosive Power	Sit ups	Grip strength	Flexibility	Pushup
Playing ability	.087	.221	.30	.631	.56	.271	.121	.19	.391
Height		.33	.74	.21	.17	.09	.13	.09	.16
Weight			.19	.15	.11	.14	.22	.25	.08
Leg length				.08	.18	.06	.05	.12	.06
Agility					.14	.07	.05	.11	.07
Explosive Power						.14	.09	.24	.08
Sit ups							.11	.07	.10
Grip strength								.10	.22
Flexibility									.09

*Significant at (P<0.05)

Table – 2 shows that the there was high Correlations between playing ability versus Agility (r = 0.631), Explosive leg Power (r = 0.56), Muscular strength (r = 0.391) and Moderate correlations exist between playing ability versus Muscular endurance (r = 0.271), leg length (r = .30), Weight (r = 0.221), Flexibility (r = 0.19) and low Correlations between playing ability versus Grip Strength (r = 0.121) and very low Correlation for height (r = 0.087) with playing ability in kabaddi.

Table – 3: Regression Model for Predictive Equation of the east Zone Men Kabaddi Players

Model	Variables	R	R Square	Unstandardized Coefficients		Standardized Coefficients
		R Square Change	F Change	B	Std. Error	R Square Change
1.	(Constant)			4.032	.617	
	Leg Explosive strength	.692(a)	.512	3.314	.431	.692
2.	(Constant)			6.724	3.421	
	Leg Explosive strength			2.962	.3.012	.521
	agility	.74.23(b)	.563	-.571	.198	-.298
3.	(Constant)			8.731	2.471	
	Leg Explosive strength			2.651	.321	.4.96
	agility			-.585	.167	-.250
	Muscular strength	.77.54(c)	.607	-.049	.012	-.242
4.	(Constant)			7.317	2.143	
	Leg Explosive Power			2.41	.221	.4.03
	agility			-.453	.196	-.230
	Muscular power			+.041	.09	-.220
	Leg length	.792(d)	.635	-.360	.091	-.211

(n=130) : (R2 = .692 for step 1: R2 = .635 final step) *Significant at (P<0.05).

Table – 3 shows that the Regression Model for Predictive Equation of East Zone men Kabaddi Players in the anthropometrical and bio – motor perspective, Leg Explosive power scores accounted for .792 (69%) in the first model of the performance ability. Agility, Muscular power, Muscular power and Leg length subsequently added? Significantly(0.01 and 0.05 levels) to predict the kabaddi playing ability of East Zone men Kabaddi Players in the run-up to the final model. The R2 value for the combination of Leg explosive power, Agility, Muscular power, and Leg Length on playing ability was 0. 792 (79 %) with the R2 change (_R2) .635 for the final model.

Linear Regression Model Equation is----

Playing ability of kabaddi = 4.032 + 2.41 (Leg Explosive power) -.453 (Agility) +.041 (Muscular strength) -.360 (Leg length).

The present study provides the most accurate predictions of the Bio – Motor abilities and Anthropometric characteristics of east zone male kabaddi players' playing ability and also shows that high correlations exist between playing ability and leg explosive power, agility and muscular power, etc.

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Agility, speed and strength are dominant factors in the game of Kabaddi. These qualities must be possessed by a good kabaddi player. Anthropometry (individual diversity) also plays a crucial role in all kind of games.

CONCLUSIONS

- 1.The present study indicates that there was a high correlation between playing ability and agility, leg explosive strength, muscular power and leg length.
- 2.The results of the present study emphasize that the agility, Leg explosive strength, Muscular power and Leg Length are common characteristics which can predict the playing ability in Kabaddi players.
- 3.The Linear Regression Model equation is---- Playing ability of kabaddi = 4.032 + 2.41 (Leg Explosive power) -.453 (Agility) +.041 (Muscular strength) -.360 (Leg length).

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