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IDENTIFICATION OF DOMINANT FACTORS IN ASSESSING THE OFFENSIVE SKILL ABILITY FROM THE SELECTED KINANTHROPOMETRIC AND PHYSICAL VARIABLES AMONG KABADDI PLAYERS

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Abstract

The purpose of the study was to identify the dominant factors in assessing the offensive skill ability from the selected kinanthropometric and physical variables among Kabaddi players. One hundred and forty two male inter-collegiate offensive Kabaddi players were selected purposively as subjects from various colleges in Tamilnadu state, India and their age ranged between 18 and 25 years. Those Kabaddi players were taken as subjects who have represented their respective college teams and their weight was not more than ninety kilo gram. The subjects had past playing experience of at least three years in Kabaddi. A series of kinanthropometric measurements were carried out on each subject. These included standing height measured by stadiometer in centimeters, body weight measured by weighing machine in kilo grams. Three length measurements (cm) - Arm length, Arm span and Hand length. Six Girth measurements (cm) – Arm girth relaxed, Arm girth flexed, Waist and Hip girth measured by Lufkin anthropometric tape. The data were collected by following standard testing protocol of International Society for the Advancement of kinanthropometry. Physical variables were measured by the following tests. Speed was assessed by 50 metre run in seconds, Leg explosive strength assessed by Standing broad jump in meters, leg explosive power assessed by Sargent vertical jump in centimetres and Muscular endurance assessed by Modified sit ups in numbers. The offensive skill of hand reach ability was taken as the performance factor which was assessed by hand touch reach test. All testing was done two days before inter-collegiate competition by using scientifically approved equipment's and standardized test. Mean and standard deviations were calculated for each of the selected variables. The inter relationship among the selected kinanthropometric, physical variables and offensive skill ability were computed by using Pearson product-moment correlation coefficients. All selected kinanthropometric and physical variables that statistically correlated with offensive skill ability were used to form respective linear predictive models (step-wise argument selection). The result of the study fact that an inter relationship exists significantly between the kinanthropomtric, physical and offensive skill ability among male inter-collegiate Kabaddi players. The results also revealed that Arm length, Explosive strength, Height , Leg explosive power, Muscular endurance and Arm span become the common characteristics which can predict the offensive skill of hand reach ability among Kabaddi players.

***Key words**; Kinanthropometric, Physical and Kabaddi.*

INTRODUCTION

Kabaddi is basically an outdoor team game, played in the tropical countries of Asia. The excitement and thrill 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.

Kabaddi is a team as well as a combat game. Kabaddi is characterized by discreet movement execution on the part of both offensive and defensive players. Raiding in Kabaddi is an individual ability. Raider is an offensive player whose intention is to raid in the opponent court to secure as many points as possible and to escape from the strong hold of defense player or group of defense players. Defense is both collective and individual ability. Players of the defensive team aim at holding a raider, individually or collectively and foil the attempt of the raider to secure points either by holding him successfully or escape from the attacks. Frequently both raider and defense players have to encounter body weight of each other during the course of the game. These actions continue for forty minutes of duration in a limited area. This brings to focus the

importance of strength, power, speed, endurance, agility, balance and coordination. Performing several techniques call for strength and power, execution of many techniques requires speed, agility and endurance, quick reflexes and few techniques requires balance and kinesthetic sense in different propositions. It is apt to say that the techniques and tactical abilities, which are performed, requires a combined effect of these physical abilities, which will have greater role to play in performance enhancement. **(Madsen, 2001)**

PURPOSE OF THE STUDY

The purpose of the study was to identify the dominant factors in assessing the offensive skill ability from the selected kinanthropometric and physical variables among kabaddi players.

METHODOLOGY

One hundred and forty two male inter-collegiate offensive Kabaddi players were selected purposively as subjects from various colleges in Tamilnadu state, India and their age ranged between 18 and 25 years. Those Kabaddi players were taken as subjects who have represented their respective college teams and their weight was not more than ninety kilo gram. The subjects had past playing experience of at least three years in Kabaddi. A series of kinanthropometric measurements were carried out on each subject. These included standing height measured by stadiometer in centimeters, body weight measured by weighing machine in kilo grams. Three length measurements (cm) - Arm length, Arm span and Hand length. Six Girth measurements (cm) – Arm girth relaxed, Arm girth flexed, Waist and Hip girth measured by Lufkin anthropometric tape. The data were collected by following standard testing protocol of International Society for the Advancement of kinanthropometry. Physical variables were measured by the following tests. Speed was assessed by 50 metre run in seconds, Leg explosive strength assessed by Standing broad jump in meters, leg explosive power assessed by Sargent vertical jump in centimetres and Muscular endurance assessed by Modified sit ups in numbers. The offensive skill of hand reach ability was taken as the performance factor which was assessed by hand touch reach test. All testing was done two days before inter-collegiate competition by using scientifically approved equipment's and standardized test. Mean and standard deviations were calculated for each of the selected variables. The inter relationship among the selected kinanthropometric, physical variables and offensive skill ability were computed by using Pearson product-moment correlation coefficients. All selected kinanthropometric and physical variables that statistically correlated with offensive skill ability were used to form respective linear predictive models (step-wise argument selection).

ANALYSIS OF THE DATA

The data of each of the independent variables selected under kinanthropometric and physical variables and offensive skill of hand reach reach ability were analysed and presented below.

TABLE-I
DESCRIPTIVE STATISTICS OF COLLEGE LEVEL KABADDI PLAYERS

S. No	Variables	Mean	SD	N
1	**Hand reach ability**	1.0261	±.07132	142
2	**Height**	169.9507	±4.89511	142
3	**Weight**	69.2324	±8.65867	142
4	**Arm length**	77.2718	±2.82452	142
5	**Arm span**	175.1211	±7.47826	142
6	**Hand length**	18.8056	±1.09459	142
7	**Arm girth relaxed**	26.8000	±2.07884	142
8	**Arm girth flexed**	30.0514	±2.40648	142
9	**Waist girth**	74.1399	±4.47159	142
10	**Hip girth**	79.9387	±4.30231	142
11	**Speed**	7.3197	±.40637	142
12	**Leg explosive power**	53.4577	±5.20450	142
13	**Muscular endurance**	31.0141	±5.65307	142
14	**Leg explosive strength**	2.2377	±.27837	142

Table I showed the descriptive statistics – mean and standard deviations of kinanthropometric, physical variables and hand reach ability of Kabaddi players. The inter relationship between selected kinanthropometric, physical variables and offensive skill of hand reach ability was computed using

Pearson product moment correlation was presented in the Table II.

TABLE-II

INTER RELATIONSHIP OF SELECTED KINANTHROPOMETRIC, PHYSICAL VARIABLES AND OFFENSIVE SKILL OF HAND REACH ABILITY OF KABADDI PLAYERS

Variables	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}	X_{12}	X_{13}
C.R	.884	.476	.927	.767	.700	.029	.210	.288	.244	-.066	.869	-.120	.871
X_1		.622	.895	.781	.776	.127	.324	.367	.375	-.134	.767	-.077	.760
X_2			.496	.444	.609	.226	.558	.606	.600	-.305	.333	-.032	.386
X_3				.835	.727	.059	.194	.269	.224	-.064	.875	-.093	.868
X_4					.777	.064	.096	.265	.202	.008	.772	-.087	.760
X_5						.057	.342	.541	.545	-.194	.576	-.168	.571
X_6							.218	.067	.070	.015	.064	.133	.035
X_7								.561	.520	-.298	.147	.088	.141
X_8									.909	-.082	.103	-.350	.160
X_9										-.163	.035	-.332	.084
X_{10}											.012	-.164	.030
X_{11}												.032	.859
X_{12}													-.058

***Significant at 0.05 level of confidence**

C.R	Hand reach ability	X_8	Waist girth
X_1	Height	X_9	Hip girth
X_2	Weight	X_{10}	Speed
X_3	Arm length	X_{11}	Leg explosive power
X_4	Arm span	X_{12}	Muscular endurance
X_5	Hand length	X_{13}	Leg explosive strength
X_6	Arm girth relaxed		
X_7	Arm girth flexed		

Table II shows that the there was a correlation exists between the offensive skill ability of hand reach with Height (X_1), Arm length (X_3), Arm span(X_4), Hand length(X_5), Leg explosive power(X_{11}) and Leg explosive strength(X_{13}). In each variables separately.

The result shows that selected kinanthropometric and physical variables such as Height (r=0.88), Arm length (r=0.92), Arm span (r=0.76), Hand length (r=0.70), Leg explosive power (r=0.86) and leg explosive strength (r=0.87) were significantly correlated with the offensive skill of hand reach ability the required 'r' value of 0.16 was found at 0.05 level of confidence.

TABLE-III

STEP-WISE MULTIPLE REGRESSION BETWEEN OFFENSIVE SKILL ABILITY AND INDEPENDENT VARIABLES OF KABADDI PLAYERS

Model	**Variables**	**R**	**R change**	**Adjusted R Square**	**Std. Error of the Estimate**
1	**Arm length**	.927(a)	.859	.858	.02692
2	**Explosive strength**	.936(b)	.876	.875	.02524
3	**Height**	.945(c)	.894	.892	.02349
4	**Leg explosive power**	.949(d)	.900	.897	.02288
5	**Muscular endurance**	.951(e)	.904	.900	.02250
6	**Arm span**	.953(f)	.908	.904	.02210

From Table III, it was found that the multiple correlations co-efficient for predictors, such as Arm length, Explosive strength, Height , Leg explosive power, Muscular endurance and Arm span was 0.953 which produce highest multiple correlations with hand reach ability. 'R' square values show that the percentage of contribution of predictors to the hand reach ability.

TABLE-IV
REGRESSION ANALYSIS OF PREDICTION EQUATION OF KABADDI PLAYERS

Model		Unstandardized Coefficients		Standardized Coefficients
		B	Std. Error	Beta
1	(Constant)	-.782	.062	
	Arm length	.023	.001	.927
2	(Constant)	-.479	.089	
	Arm length	.017	.002	.692
	Explosive strength	.069	.015	.270
3	(Constant)	-.672	.092	
	Arm length	.010	.002	.409
	Explosive strength	.074	.014	.291
	Height	.004	.001	.297
4	(Constant)	-.586	.095	
	Arm length	.008	.002	.307
	Explosive strength	.056	.015	.219
	Height	.004	.001	.306
	Leg explosive power	.002	.001	.178
5	(Constant)	-.526	.096	
	Arm length	.007	.002	.273
	Explosive strength	.054	.015	.211
	Height	.005	.001	.310
	Leg explosive power	.003	.001	.213
	Muscular endurance	-.001	.000	-.066
6	(Constant)	-.504	.095	
	Arm length	.008	.002	.326
	Explosive strength	.057	.015	.222
	Height	.005	.001	.333
	Leg explosive power	.003	.001	.233
	Muscular endurance	-.001	.000	-.069
	Arm span	-.001	.000	-.120

From the Table IV, the following regression equations were derived for offensive skill of hand reach ability of Kabaddi players.

Regression Equation in obtained scores form = CR

Leg thrust reaching ability (CR) = -.782+0.008(X_3) +0.057(X_{13}) +0.005 (X_1) + 0.003(X_{11}) - 0.001 (X_{12}) - 0.001(X_4)

The regression equation for the offensive skill of hand reach ability includes Arm length, Explosive strength, Height, Leg explosive power, Muscular endurance and Arm span.

The kinanthropometric variables Arm length and arm span was found to be significantly correlated with hand reach ability. While executing the hand reach during raid. The longer length of arm is helpful for the raider to reach more distance. These findings are in accordance with the study of (**Devaraju & Needhiraja, (2012).**

Among the physical variables leg explosive strength, muscular endurance and leg explosive power was found to be the best predictor for hand reach ability. These findings are in accordance with the findings of **(Devaraju & Kalidasan (2012).**

CONCLUSION

1. The result revealed that correlation exists between the offensive skill of hand reach ability with Arm length, Explosive strength, Height, Leg explosive and Arm span.
2. The results also revealed that Arm length, Explosive strength, Height, Leg explosive power, Muscular endurance and Arm span become the common characteristics which can predict the offensive skill of hand reach ability among Kabaddi players.

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