

ANALYSIS OF SELECTED ANTHROPOMETRIC PHYSICAL FITNESS AND PSYCHOLOGICAL VARIABLES HIGHLY CORRELATED WITH PLAYING ABILITY OF STATE LEVEL WOMEN KABADDI PLAYERS

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ABSTRACT

The purpose of the study is to analyze the selected anthropometric, physical fitness, and psychological variables highly correlated with the playing ability of state level women kabaddi players. To achieve the purpose of the study, the investigator selected 120 state level Women Kabaddi Players as subjects. The players who participated in the inter district kabaddi championship were only chosen as subjects. The players who were in the age group of eighteen to twenty three years were only considered as subjects. The present study consists of one criterion variable, namely playing ability of kabaddi players, and twelve determinant variables. To determine the relationship between criterion and independent variable Pearson product moment correlation was used. In all the cases 0.05 level of significance was fixed to test the framed hypothesis. The kabaddi playing ability was significantly correlated with agility, self confidence, aggression and achievement motivation of women kabaddi players.

Key Words: Anthropometrical, physical fitness, psychological variables, kabaddi players

INTRODUCTION

In Sport, performance is determined by several factors namely skill, technique, tactics, fitness, training, etcetera. In common parlance the term 'performance' is equated to 'playing ability'. To assess the playing ability, there are very many means and methods. Generally it can be assessed by the competition results. Apart from that an individual's performance can be assessed either by subjective or objective method. One of the goals of scientific research is to identify the key factors, which plays critical role in performance. Sports science also plays an influential role in kabaddi performance. In the recent times extensive research works were undertaken in Sports Science namely Sports Training, Sports Physiology, Sports Psychology, Sports Biomechanics, Sports Anthropometry, Sports Medicine, etcetera.

The superior performance of today's athletes is the result of a complex blend of many factors (MacDougall *et al.*, 1991). These factors include genetic endowment, physiology, biomechanics, training, health status, and experience. Champion athletes, depending on their specific sports, vary considerably in their physiological attributes (Daniels, 1974). It is

therefore necessary to gain an understanding of the essential performance characteristics of a specific sport, in order to develop optimal training strategies for the athlete.

To optimize match performance, it is necessary to assess performance variables in order to provide practical feedback to players and coaches, which will guide coach's decision making and subsequently the coaching process (Bishop, 2008). The sport of kabaddi requires specific anthropometric, physical and physiology attributes. The psychological parameter of mental toughness and dedication is also needed in high doses.

The enhancement of motor skills, regulations and psychomotor processes are the special requirements for all the success in various group and individual sports. There is a need to quench the thirst of athletes that they require an intensive training load, in order to face dynamic sports like kabaddi. The level of confidence which the player had in the field and the concentration of the nuances of the games may support the player to achieve a successful play in a cool and relaxed state. The intellectual focus to the core play will help to reach the victory finally. Especially in kabaddi, presence of mind and the speed trail of decision may lead the team to get the success. The speed of the game and the skilful handling will ultimately help to predict the result of the game. Psycho-physiological research has helped to withstand the relationship between physiological activity and psychomotor efficiency.

In order to learn skills and to accomplish success is a notable achievement in the development of the game. The state of mental readiness obtained through training enables the subject to overcome stress and helps him to understand, recognize and enhance his attention level. The thoughts which are emerged in the subconscious level like tension and pressure of an athlete to perform well may disturb from his concentration. Thus the practice always helps to overcome the strain and the technical flaws and helps to concentrate and focus on a desired task, which accomplishes maximal performance. The performer can be highly tuned both mentally and physically by the practice of psychological skill and the psychological process and he will get ready with quite and ray mind to face the game as it comes.

METHODOLOGY

Subjects and Variable

The investigator selected 120 Tamilnadu state level Women Kabaddi Players as subjects. The players who participated in the inter district kabaddi championship were only chosen as subjects. The players who were in the age group of eighteen to twenty three years were only considered as subjects. The selected anthropometry parameters are height, arm length, leg length and thigh girth. The chosen Physical fitness components are agility,

explosive power, muscular strength and cardio respiratory endurance. The chosen Psychological profiles are Self confidence, aggression, achievement motivation and mental toughness. Kabaddi playing ability was assessed by subjective rating.

Criteria for Subjective Rating

To determine the playing ability of the Kabaddi players, the performance of the subjects were subjectively rated by three experts. The individual and team performance related to Kabaddi skills were selected as criteria for subjective ranking of Kabaddi playing ability by the experts. The criterion variable (playing ability) was assessed by ten individual skills for a total of 100 marks. Ten marks were awarded for each skill. The average of the marks of the three experts was taken as the criterion score.

Experimental Design and Statistical Technique

This study consists of one criterion variable, namely playing ability of the kabaddi players and twelve determinant variables. Collected data was subjected to statistical analysis as explained below. The data collected on selected variables were statistically examined. Mean and standard deviations were calculated for each of the selected variables. The inter-relationship among the selected anthropometry, physical fitness and psychological parameters with kabaddi playing ability were computed by using Pearson product-moment correlation coefficients. In all the cases 0.05 level of significance is fixed to test the hypothesis.

RESULT

The descriptive statistics– range, minimum, maximum, mean and standard deviation of anthropometric, physical, psychological characteristics and playing ability of kabaddi Players have been presented in table-I.

Table – I: Descriptive Statistics of Selected Anthropometric, Physical, Psychological and Playing Ability among Kabaddi Players

Variables	N	Range	Minimum	Maximum	Mean	Std. Error	Std. Deviation
PA	120	25.00	64.00	89.00	75.5417	.61139	6.69742
Ht	120	15.00	154.00	169.00	160.9833	.37442	4.10162
AL	120	15.00	54.00	69.00	60.9833	.37442	4.10162
LL	120	9.00	70.00	79.00	75.2250	.23859	2.61368
TG	120	8.00	39.00	47.00	43.7667	.23809	2.60811
AG	120	3.16	11.10	14.26	12.4601	.07601	.83268
EX	120	12.00	40.00	52.00	46.0917	.32237	3.53136
SE	120	5.00	26.00	31.00	28.6500	.13885	1.52100
CRE	120	780.00	1300.00	2080.00	1737.5833	16.93909	185.55842
SC	120	31.00	16.00	47.00	30.4000	.84045	9.20668
AGG	120	17.00	20.00	37.00	28.0833	.46254	5.06692
AM	120	18.00	20.00	38.00	28.4000	.41764	4.57505
MT	120	11.00	19.00	30.00	24.4500	.30215	3.30990

PA	Playing Ability	AG	Agility	AGG	Aggression
HE	Height	EX	Explosive Power	AM	Achievement Motivation
AL	Arm Length	MS	Muscular Strength	MT	Mental toughness
LL	Leg Length	CRE	Cardiorespiratory Endurance		
TG	Thigh Girth	SC	Self-confidence		

Correlation Analysis

The Inter-relationships between selected anthropometric, physical, physiological, psychological, sociological skills and playing ability of kabaddi players were computed using Pearson Product Moment Correlation and results are presented in Table – II.

Table –II: Inter-Correlation of Selected Anthropometric, Physical, Psychological variables and Playing Ability of Kabaddi Players

	PA	HE	AL	LL	TG	AG	EX	SE	CRE	SC	AGG	AM	MT
PA	1	-.065	-.065	-.065	.039	-.810**	.139	.135	-.142	-.934**	.725**	.813**	.160
HE		1	1.000**	.896**	.049	-.017	.021	-.002	-.044	-.014	.048	-.029	.113
AL			1	.896**	.049	-.017	.021	-.002	-.044	-.014	.048	-.029	.113
LL				1	-.001	-.022	-.051	-.003	.038	-.005	.047	.018	.098
TG					1	-.004	.033	.100	.018	-.060	.015	.004	-.083
AG						1	.037	-.132	.129	.808**	-.611**	-.816**	.048
EX							1	.094	-.039	.092	-.055	-.102	-.050
MS								1	-.023	-.103	.032	.133	-.030
CRE									1	.194*	-.048	-.130	.086
SC										1	.583**	.274**	
AGG											1	-.015	
AM												1	
MT													1

**The required table ‘r’ value is 0.180 at 0.05 level of confidence.*

It was evident from the Table– II that kabaddi playing ability (PA) is significantly correlated with are agility, self confidence, aggression and achievement motivation of women kabaddi players.

The correlation value for the chosen anthropometrical variables; height (-0.065), arm length (0.065), leg length (0.065, thigh girth (0.039) were insignificantly correlated with the kabaddi playing ability since the required table ‘r’ value 0.180 found at 0.05 level of confidence was lesser than obtained ‘r’ value.

High correlation also existed between kabaddi playing ability versus selected physical fitness components namely agility (0.810) as the required table 'r' value was 0.180 found at 0.05 level of confidence was higher than obtained 'r' values. However explosive power (0.139), muscular strength (0.135), cardiorespiratory endurance (0.142) were insignificantly correlated with the kabaddi playing ability.

The selected psychological skills namely self confidence (0.934), aggression (0.725) and achievement motivation (0.813) were highly correlated with the playing ability of the kabaddi players. However achievement motivation (0.160) was insignificantly correlated with the kabaddi playing ability.

The obtained and required 'r' values of selected anthropometric measurements with kabaddi playing ability is displayed in table-III.

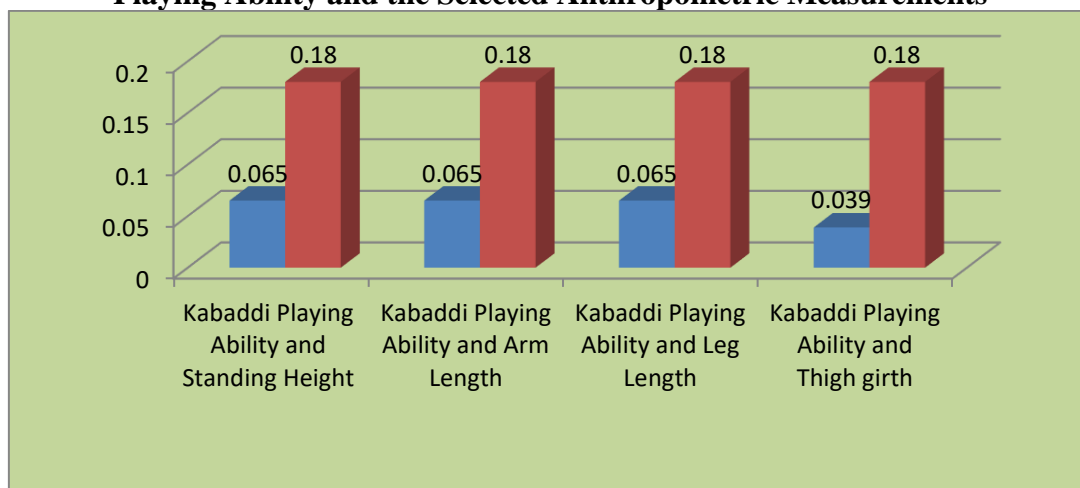
Table – III: Correlation Co-Efficient between Criterion and Selected Anthropometric Measurements

S.No	Variables Correlated	Obtained 'r'
1.	Kabaddi Playing Ability and Standing Height	0.065
2.	Kabaddi Playing Ability and Arm Length	0.065
3.	Kabaddi Playing Ability and Leg Length	0.065
4.	Kabaddi Playing Ability and Thigh girth	0.039

**The required table 'r' value is 0.180(0.05 level)*

The correlation value for the chosen anthropometrical variables; height (-0.065), arm length (0.065), leg length (0.065, thigh girth (0.039) were insignificantly correlated with the kabaddi playing ability since the required table 'r' value 0.180 found at 0.05 level of confidence was lesser than obtained 'r' value. The obtained correlation coefficient values between kabaddi playing ability and the selected anthropometric measurements are graphically shown in figure-I.

Figure-I: Diagram Showing the Correlation Coefficient Values between Kabaddi Playing Ability and the Selected Anthropometric Measurements



The obtained and required 'r' values of selected physical fitness components with kabaddi playing ability is displayed in table-IV

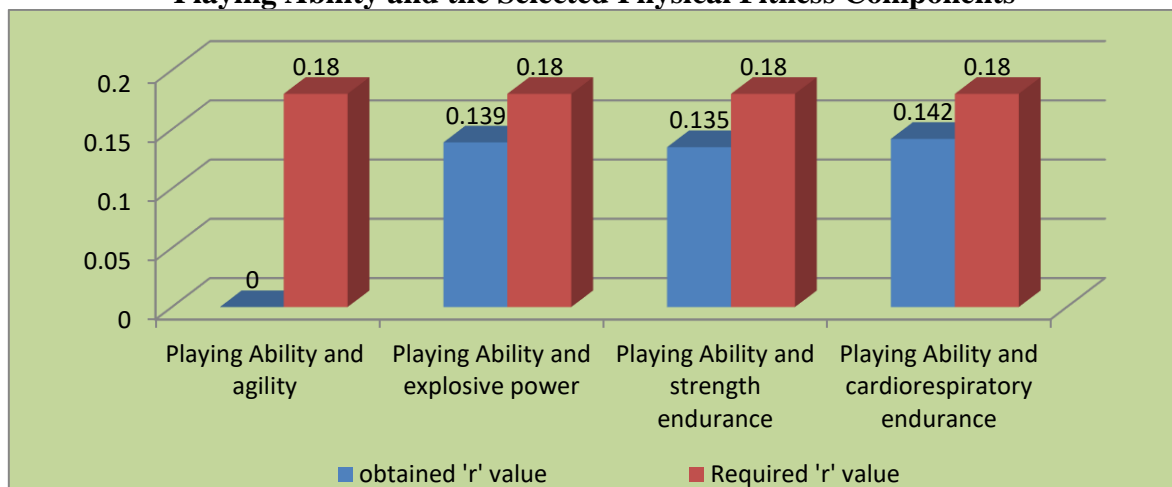
Table – IV: Correlation Co-Efficient between Criterion and Selected Physical Fitness Components

S.No	Variables Correlated	Obtained 'r'
1.	Kabaddi Playing Ability and agility	0.810*
2.	Kabaddi Playing Ability and explosive power	0.139
3.	Kabaddi Playing Ability and strength endurance	0.135
4.	Kabaddi Playing Ability and cardiorespiratory endurance	0.142

**The required table 'r' value is 0.180 (0.05 level)*

High correlation also existed between kabaddi playing ability versus selected physical fitness components namely agility (0.810) as the required table 'r' value was 0.180 found at 0.05 level of confidence was higher than obtained 'r' values. However explosive power (0.139), muscular strength (0.135), cardiorespiratory endurance (0.142) were insignificantly correlated with the kabaddi playing ability. The obtained correlation coefficient values between kabaddi playing ability and the selected physical fitness components are graphically represented in figure-II

Figure-II: Diagram Showing the Correlation Coefficient Values between Kabaddi Playing Ability and the Selected Physical Fitness Components



The obtained and required 'r' values of chosen psychological parameters with kabaddi playing ability is displayed in table-VI.

Table – VI: Correlation Co-Efficient between Criterion and Selected Psychological Parameters

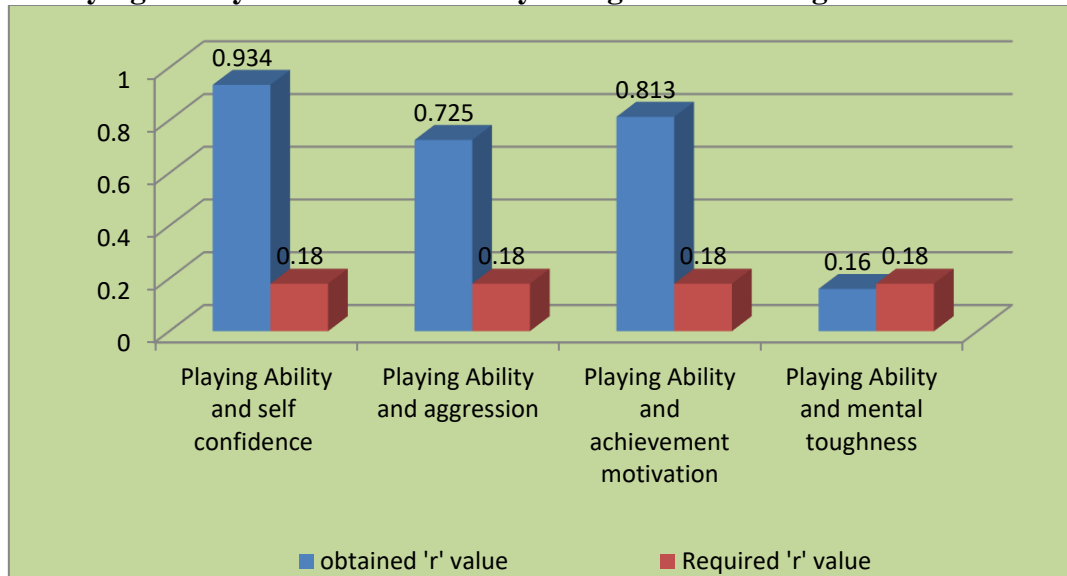
S.No	Variables Correlated	Obtained 'r'
1.	Kabaddi Playing Ability and self confidence	0.934*
2.	Kabaddi Playing Ability and aggression	0.725*
3.	Kabaddi Playing Ability and achievement motivation	0.813*
4.	Kabaddi Playing Ability and mental toughness	0.160

**The required table 'r' value is 0.180 (0.05 level)*

The selected psychological skills namely self confidence (0.934), aggression (0.725) and achievement motivation (0.813) were highly correlated with the playing ability of the kabaddi players. However mental toughness (0.160) was insignificantly correlated with the kabaddi playing ability.

The obtained correlation coefficient values between kabaddi playing ability and the selected psychological and sociological profiles are graphically shown in figure-IV

Figure-IV: Diagram Showing the Correlation Coefficient Values between Kabaddi Playing Ability and the Selected Psychological & Sociological Parameters



DISCUSSION

Although many studies have shown that specific anthropometric characteristics are significantly associated with success in sports (Malina et al., 2004), this process is very demanding, as various athletic events require differing body types to achieve maximum performance. Therefore, understanding the body composition of top-level athletes, and then assigning corresponding competitive weights for the athletes, has been done for decades and is considered an essential part of the total management process (Wilmore, 1982).

Studies have demonstrated a robust correlation between body mass, muscle mass, and work-rate profile (Rienzi et al., 2000). Studies involving young football players have shown that physical characteristics and age are important indicators for identifying talented players and selecting participants for the game (Gil et al., 2007). Players do not need to have excellent qualities in every clearly defined area of physical skills, but they must exhibit pretty high qualities in all of them, according to Reilly et al. (2000). Propensities for more methodical training and selection have an impact on the anthropometric traits of elite athletes (Norton & Olds, 2004). There has been an increase in research that focus on sport

psychological skills and the contribution thereof in sport performance over the last couple of decades. However, a limited amount of research has been conducted on this topic within the sport of kabaddi.

CONCLUSION

The kabaddi playing ability was significantly correlated with agility, Vo₂max, self confidence, aggression and achievement motivation of women kabaddi players. The results can help to frame different methods of training by laying emphasis on the development of factors which are significantly related to kabaddi game performance at state level.

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