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Relationship of selected physical and psychological variables in performance of karnataka state inter university male kabaddi players

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Abstract
Kabaddi is a combative team game played with absolutely no equipment on a rectangular court either outdoor or indoor with seven players on the ground in each side. The game is played into two halves of 20 minutes each with an interval of 5 minutes. The present study was carried out with the aim to find out the relationship between kabaddi performance and selected physical fitness variables physiological variables of university male kabaddi players. One hundred and eighty kabaddi players were selected for the present study. The physical fitness variables included speed, agility, power, flexibility, pull ups and endurance. The psychological variables were anxiety, aggression and self-confidence. All the physical fitness variables and psychological variables were measured by using standardized test. The performance was measured by using subjects rating of 10-point rating scale. The study revealed that speed, leg explosive power and endurance were significantly correlated with performance. Agility, arm power, flexibility, resting pulse rate and breath holding time were not significantly correlated with performance.

Keywords: Speed, agility, power, flexibility, endurance, height, weight, arm length and leg length, anxiety, aggression and self-confidence, breath holding time, resting pulse rate

Introduction
Kabaddi is basically an Indian game, which requires both skill and power, and combines the characteristics of wrestling and rugby. Kabaddi is aptly known as the "GAME OF THE MASSES" due to its popularity, simple, easy to comprehend rules, and public appeal. The game calls for no sophisticated equipment what so ever, which makes it a very popular sport in the developing countries. Though it is basically an outdoor sport played on clay court, of late the game is being played on synthetic surface indoors with great success. The duration of the game is 45 minutes for men & junior boys with a 5-minute break in between for the teams to change sides. In the case of women & sub junior boys, the duration is 35 minutes with a 5-minute break in between. Kabaddi is a combative team game, played with absolutely no equipment, in a rectangular court, either out doors of indoors with seven players on the ground in each side. Each side takes alternate chances at offense and defence. The basic idea of the game is to score points by raiding into the opponents' court and touching as many defence players as possible without getting caught on a single breath. During play, the players on the defensive side are called 'Antis' while the player of the offense is called the 'Raider'. Kabaddi is perhaps the only combative sport in which attack is an individual attempt while defence is a group effort.

The attack in Kabaddi is known as a 'Raid'. The antis touched by the raider during the attack are declared out if they do not succeed in when their side scores points against the opposite side during their raiding turn or if the remaining players succeed in catching the opponent's raider. Yoga, the Indian science to control body and mind through meditation and self-control plays an integral part of Kabaddi. The raider has to enter the opponent's court chanting the word 'Kabaddi' while holding his breath and has to continue to do so until he returns to his home court. This is known as 'cant', which is closely related to 'pranayama' of yoga. While pranayama is about withholding breath in order to exercise internal organs, cant is the means to withhold breath with vigorous physical activity. This is perhaps one of the few sports to combine yoga with hectic physical activity. The game calls for agility, good lung capacity, muscular coordinates, and presence of mind and quick responses. For a single player to take on seven opponents is no mean task, requires dare as well as an ability to concentrate and anticipate the opponent's moves.

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The maximal ability of a person to perform in any athletic event is obviously limited by his physical characteristics. But beyond these broad restrictions psychological factors often play a decisive role. In future, top performance and record breaking efforts will be greatly enhanced by giving more attention to the psychological aspects of the athlete such as motivation, anxiety, emotion, self-confidence, personality of the athlete, stress, staleness and soon.

The physical structure especially the height and leg length, arm length and the ideal weight have definite advantage in sports. Similarly, segmental length of individual body parts and the length specifically are of considerable advantage in selected athletic events and certain games like Kabaddi, Volleyball, Basketball, etc.

Aggression and anxiety had become an integral part of contemporary sports milieu in Kabaddi. Coaches have become sensitive to a player's ability to withstand and react to physical coercion.

It is noted that some players progress upwards, primarily because of their ability to fight. Toughness and willingness to fight have become important in establishing a positive identity. Self-confidence is the state or quality of being confident or certain of oneself or one's abilities.

In Kabaddi self-confidence plays a vital role in good performance. Self-confidence appears in almost every theoretical account of behavior in the field of Kabaddi.

Once the variables are identified it is easy to manipulate these variables so that the performance can be improved to desired level.

Statement of the Problem
The purpose of the present investigation is to find the relationship of selected Physical variables psychological variables with Performance in Kabaddi.

Objective of the Study
1) To study the relationship between Performance of Kabaddi players and study Physical variables psychological variables.
2) To study the impact of study Physical variables on Performance of Kabaddi players
3) To estimate the performance ability of Kabaddi players from the study variables.
4) To find the dominant predictors of performance ability of kabaddi players among the study variables.
5) To estimate the performance ability of kabaddi players from the selected psychological variables anxiety, aggression, self-confidence.

Methodology
In the South-zone inter university Kabaddi championship held at to establish the nature of relationship between the performance in Kabaddi and the study variables, the following methodology was used.

Selection of the Subjects: The Subjects for the present study were male Kabaddi players of universities who had received regular training and participated in competitive Kabaddi game. The subjects were regular participants in the collegiate and university level Kabaddi championships.

They were drawn from different universities of Karnataka State who were rated as the best players by a panel of three expert coaches. The subjects were participants Kuvempu University, Shimoga (Karnataka) during the year 2015-16.

Sample size of the Study: The sample of the present study consisted of hundred (180) male Kabaddi players in the age group of 18 to 28 years.

Selection of the variables for the Study: After a thorough review of literature relevant to the game of Kabaddi found in books, journals, periodicals, and research articles besides detailed discussion with the experts and keeping in view feasibility of the study in terms of availability of equipment and the relevance of the variables to the present study, the following variables were selected.

Total performance of the selected subjects was rated by three experts subjectively on a ten-point rating scale. This was the dependent variable for this study.

Independent Variables: The various independent variables selected for the present study are listed below:

1) Physical fitness Variables
1) Speed
2) Agility
3) Power
4) Flexibility
5) Pull Ups
6) Endurance.

2) Psychological variables
1) Anxiety
2) Aggression
3) Self-confidence.

Analysis

Table 1: Physical fitness variables

Physical Variables	Test used to Measure	Unit of Measurement
Speed	30mts run with standing start	In Secs
Agility	4 x 10 mts shuttle run	In Sec
Power-Leg explosive power	Standing broad jump	In Sec and Centimeters
Flexibility	Sit and Reach test	In Centimeters
Pull ups	Arm strength and endurance	By numbers
Endurance	1000metrs	By Mins

Objectives
- To study the relationship between Performance of Kabaddi players and study Physical variables and psychological variables

- To study the impact of study Physical variables on Performance of Kabaddi players

Table 2: Correlations

Correlations		Performance
Speed	Pearson Correlation	.094
	Sig. (2-tailed)	.212
	N	180
Agility	Pearson Correlation	.060
	Sig. (2-tailed)	.424
	N	180
Standing Broad jump	Pearson Correlation	.093
	Sig. (2-tailed)	.214
	N	180
Flexibility	Pearson Correlation	.066
	Sig. (2-tailed)	.381
	N	180
Pull Up	Pearson Correlation	.031
	Sig. (2-tailed)	.683
	N	180
Endurance	Pearson Correlation	.352**
	Sig. (2-tailed)	.000
	N	180

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

From the above table following inferences were made:
- The correlation between Performance and Speed was positive r = 0.009 and P = 0.924 > 0.05, the test was not significant at 5% levels. That is, there was no significant correlation between the Performance and the Speed of the Kabaddi players at 5% levels.
- The correlation between Performance and Agility was positive r = 0.032 and P = 0.726 > 0.05, the test was not significant at 5% levels. That is, there was no significant correlation between the Performance and the Agility of the Kabaddi players at 5% levels.
- The correlation between Performance and Standing Broad Jump was positive r = 0.054 and P = 0.558 > 0.05, the test was not significant at 5% levels. That is, there was no significant correlation between the Performance and the Standing Broad Jump of the Kabaddi players at 5% levels.
- The correlation between Performance and Flexibility was positive r = 0.137 and P = 0.137 > 0.05, the test was not significant at 5% levels. That is, there was no significant correlation between the Performance and the Flexibility of the Kabaddi players at 5% levels.
- The correlation between Performance and Pull ups was positive r = 0.137 and P = 0.137 > 0.05, the test was not significant at 5% levels. That is, there was no significant correlation between the Performance and the Pull ups of the Kabaddi players at 5% levels.
- The correlation between Performance and Endurance was positive r = 0.460 and P = 0.00 < 0.05, the test was significant at 5% levels. That is, there exists significant correlation between the Performance and the Endurance of the Kabaddi players at 5% levels.

a. Dependent Variable: Performance
The estimated regression equation of Performance on the Physical variables was given by

Performance = 24.55 + 0.059 (Endurance)
And the above regression equation was significant as indicated in ANOVA table with P = 0.00 < 0.05 at 5% level of significance.
Hence, one unit change in Endurance indicates 0.059 unit change in Performance.
- There exists significant correlation between the Performance and the Endurance of the Kabaddi players
- The regression equation of Performance and the physical variables were statistically significant with one unit change in Endurance indicates 0.059 unit change in Performance.

Table 3: Psychological variables

Psychological variables	Test and Unit of Measurement
Anxiety	Rainer Martins Questionnaire-1977
Aggression	Anand Kumar and Prem Shankar shulka Questionnaire-1989
Self Confidence	Rekha Agnihotri Questionnaire-1987

Table 4: Descriptive statistics of psychological variables

Descriptive Statistics of Psychological variables					
Psychological variables	N	Minimum	Maximum	Mean	Std. Deviation
Anxiety	180	18.00	40.00	28.5111	4.03683
Aggression	180	6.00	24.00	14.9000	3.19409
Self Confidence	180	18.00	56.00	34.2278	7.18691
Valid N (list wise)	180				

From the above table following details were given:
- The average Anxiety score of the players was 28.51 with standard deviation 4.04.
- The average Aggression score of the players was 14.90 with standard deviation 3.19.
- The average Self Confidence score of the players was 34.23 with standard deviation 7.19

Table 5: Correlation analysis was used and the computations made were tabulated in the table

Correlations					
Psychological variables		Performance	Anxiety	Aggression	Self Confidence
Performance	Pearson Correlation	1	.012	-.083	-.008
	Sig. (2-tailed)		.869	.268	.916
	N	180	180	180	180
Anxiety	Pearson Correlation	.012	1	-.217**	-.157*
	Sig. (2-tailed)	.869		.003	.035
	N	180	180	180	180
Aggression	Pearson Correlation	-.083	-.217**	1	.515**
	Sig. (2-tailed)	.268	.003		.000
	N	180	180	180	180
Self Confidence	Pearson Correlation	-.008	-.157*	.515**	1
	Sig. (2-tailed)	.916	.035	.000	
	N	180	180	180	180

*. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed

From the above table following inferences were drawn:
- The correlation between Performance and Anxiety was positive, r = 0.012 with P = 0.869 the test was not significant at 5% levels that is, there was no significant positive correlation between Performance and Anxiety.
- The correlation between Performance and Aggression was negative, r = -0.083 with P = 0.268 the test was not significant at 5% levels that is, there was no significant negative correlation between Performance and Aggression.
- The correlation between Performance and Self Confidence was negative, r = -0.008 with P = 0.916 the test was not significant at 5% levels that is, there was no significant negative correlation between Performance and Self Confidence.

Since the calculated Chi-square value was greater than table value, the test was significant at 5% levels, that is, the level of Self Confidence of Kabaddi players were not equally distributed. Among 180 Kabaddi players 30 (16.7%) were at below average level of Self Confidence, 118 (65.6%) were at average level of Self Confidence, and 32 (17.8%) were at above average level of Self Confidence and it was found to be statistically significant at 5% level of significant.

Findings
From the analysis made above, following results were listed:
- The average 30 metres run (Speed) of the players was 6.60 seconds with standard deviation 0.33.
- The average 6×10 metres Shuttle run (Agility) of the players was 15.66 seconds with standard deviation 0.54.
- The average leg explosive power (Standing Broad Jump) of the players was 2.23 meters with standard deviation 0.13.
- The average sit and reach test (Flexibility) of the players was 4.66 inches with standard deviation 1.89.
- The average arm strength and endurance (Pull Ups) of the players was 5.95 numbers with standard deviation 1.67.
- The average thousand meter run (Endurance) of the players was 276.29 seconds with standard deviation 60.26.
- The average Performance score of the players was 41.38 with standard deviation 7.05.

- There was no significant correlation between Speed and Performance
- There was no significant correlation between Agility and Performance
- There was no significant correlation between Standing Broad jump and Performance
- There was no significant correlation between Flexibility and Performance
- There was no significant correlation between Pull ups and Performance
- There exists significant correlation between Endurance and Performance
- The estimated regression equation of Performance on Endurance was given by

$$Performance = 30.018 + 0.041 \, (Endurance)$$

That is, for one unit change in Endurance score indicates 0.014 unit change in Performance of the Kabaddi players.
- The average Anxiety score of the players was 28.51 with standard deviation 4.04.
- The average Aggression score of the players was 14.90 with standard deviation 3.19.
- The average Self Confidence score of the players was 34.23 with standard deviation 7.19.
- There was no significant positive correlation between Performance and Anxiety.
- There was no significant negative correlation between Performance and Aggression.
- There was no significant negative correlation between Performance and Self Confidence.
- The estimated regression equation of Performance on Anxiety, Aggression and Self-confidence was given by

$$Performance = 43.527 - 0.006 \, (Anxiety) - 0.239 \, (Aggression) + 0.046 \, (Self\text{-}confidence)$$

That is, for one unit change in Anxiety score indicates 0.006 unit change in Performance; for one unit change in Aggression score indicates 0.239 unit change in Performance; and for one unit change in Self-confidence score indicates 0.046 unit change in Performance.

Results and Discussion

With the emphasis made by the investigator in the of Introduction about eight variables under study were essential qualities of good performance in Kabaddi. The multiple regression analysis was conducted and the following regression equation of performance in Kabaddi on the nine variables under the study were obtained.

With the findings narrated earlier the investigator found that not all nine variables were significantly correlated with the performance in Kabaddi, step wise regression analysis was conducted for performance in Kabaddi on two classified categories-physical variables, and psychological variables the study variables separately, the analysis have been presented earlier.

Considering the physical variables only as independent variables in the step wise regression analysis, leg explosive power, speed and cardio vascular endurance would act as predictors for performance in kabaddi. The other three variables agility, flexibility and arm strength endurance were found to be not significantly associated with the performance in Kabaddi

Considering the psychological variables only as independent variables in the step wise regression analysis anxiety, aggression, and self-confidence, would act as predictors for performance in kabaddi. Were at above average level of Self Confidence and it was found to be statistically significant with the performance in kabaddi

The estimated multivariate stepwise regression of Performance on the study variables was given by

Performance = - 28.967 + 5.242 (Speed) + 6.491 (Standing broad jump) + 0.056 (Endurance) + 0.152 (Weight) – 0.316 (Aggression)

That is, for one unit change in Speed score indicates 5.242 unit change in Performance; for one unit change in Standing Broad Jump score indicates 6.491 unit change in Performance; for one unit change in Endurance score indicates 0.056 unit change in Performance and for one unit change in Aggression score indicates 0.316 unit change in Performance.

Conclusions

Among the selected six physical variables only speed, leg explosive power and cardiovascular endurance were found to be significant correlation in relation to performance in the Kabaddi and flexibility, were found to be not significantly correlated to performance in Kabaddi. Among the selected three psychological variables only aggression was found to be significant correlated to performance in the Kabaddi and anxiety, self-confidence was found to be not significantly correlated in relation to performance in Kabaddi.

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