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Selected physical fitness components and Kabaddi performance

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Abstract
The objective of this study was to find out correlation between Independent Variables (Endurance, hip and trunk Flexibility, Agility, Speed and leg Explosive Strength) and Dependent Variable (Kabaddi Performance). Selected Variables were Endurance, hip and trunk Flexibility, Agility, Speed and leg Explosive Strength (Independent Variables).
Methodology: For this study 30 state level male Kabaddi players from Karnataka state were selected. Age of the subjects was ranging between 18 to 25 years. Kabaddi Performance was considered as Dependent Variable. The selected physical fitness Variables were measured by different tests. To find out correlation between Independent Variables (Endurance, hip and trunk Flexibility, Agility, Speed and leg Explosive Strength) and Dependent Variable (Kabaddi Performance), Product Moment Method of correlation was used.
Findings: There exists a significant relationship between Kabaddi Performance and Endurance. Agility and leg Explosive Strength. There exists an insignificant relationship between Kabaddi Performance and Flexibility and Speed.

Keywords: kabaddi performance, physical fitness

1. Introduction
Kabaddi has gained fame all over the world. Kabaddi is a attacking and defensive game. Especially of the attack is an individual effort while defense is a combined effort. Physical fitness is an inseparable part of sports performance and achievements. The quality of its utilization value is directly proportional to the level of performance. That means the greater the level of fitness. The greater the ability of a person to attain higher level of performance (J. G. P. Williams, 1962.) [15]

Kabaddi is a team game of speed, stamina, endurance, strength and skill. Although it is a team event, individual fitness plays a vital role in the success of the team. Many a times, it is a missing link of the team. During the practice, of course for winning matches, players must plan for individual fitness as well as team fitness. The individual fitness will be tailor made to meet the need of each individual separately, to suit his/her physique. Fitness consists of four parts namely 1) Physical Fitness, 2) Mental Fitness, 3) Social Fitness and 4) Spiritual Fitness. It also can be thought in terms of short time/temporary fitness and long time/permanent fitness. Physical fitness comprises two related concepts: general fitness (a state of health and well-being) and specific fitness (a task-oriented definition based on the ability to perform specific aspects of sports or occupations).
Physical fitness is generally achieved through exercise, correct nutrition and enough rest. It is an important part of life. In previous years, fitness was commonly defined as the capacity to carry out the day's activities without undue fatigue. Physical fitness, as one aspect of total fitness, is a means for development of individual personality as a whole. Physical fitness includes adequate degrees of health, posture, physique, proper functioning of vital organs, nutrition, and good health habits, along with an adequate amount of endurance, strength, stamina, and flexibility.
For performance excellence, in any activity, Anthropometric measurements, Physical fitness and psychological profiles of sports participants are three important factors besides technical & tactical efficiency and intellectual soundness. It is a well known fact that players, of one game differ from the players of other games in their body measurement, physical fitness levels and personality traits (Carrom, 1980)
The numerous studies were conducted in relationship of performance on major games like basketball, football, hockey, volleyball, cricket, kho-kho, gymnastics etc. Kabaddi is an indigenous game and its popularity is less than other games. So the prediction of performance related studies in the game of Kabaddi is less. Therefore, research scholars are interested to conduct this type of study.

Objectives of the Study
To find out correlation between Independent Variables such as Endurance, hip and trunk Flexibility, Agility, Speed and leg Explosive Strength and Dependent Variable such as Kabaddi Performance.

2. Methodology
2.1 Selection of Subjects
For this study 30 state level male Kabaddi players from Karnataka state were selected. Age of the subjects was ranging between 18 to 25 years.

2.2 Selection of Variables
Following Dependent and Independent Variables were

selected:

Dependent Variable - Kabaddi Performance.

Independent Variables
1. Leg Explosive Strength
2. Speed
3. Agility
4. Hip and Trunk Flexibility
5. Endurance

Criterion Measures Measurement of hip and trunk Flexibility was measured by sit and rich test the best of three trails was measured to the nearest centimeter and it was considered as the score, leg Explosive strength was measured by Standing Broad Jump test and recorded in meters, Speed was measured by 50 meter dash test and recorded in seconds, Agility was measured by 4x10m shuttle run test and recorded in seconds, Endurance was measured by 600 yard e run or walk test and recorded in seconds. Kabaddi performance was measured by the five experts on the basis of these five criteria like as 1) Smoothness of movements during raid and catching raider, 2) Dodging movements during raid, 3) Total number of defensive and offensive skill used, 4) Total number of out done by offender and defender, 5) Overall behave during match. For each criteria maximum 10 marks and over all 50 marks were awarded for measuring the performance.

2.3 Statistical Analysis
To determine whether relationship among the research variables exists or not Person's product- moment correlation was applied. The data was computed on the Statistical package for the Social sciences (SPSS) 20th version.

3. Result and Discussion
To find out correlation between Independent Variables (leg Explosive strength, Speed, Agility, hip and trunk Flexibility and Endurance) and Dependent Variable (Kabaddi performance), of state level kabaddi men players. Product-Moment Method of correlation was used.

Table 1: Correlation between dependent variable (kabaddi performance) and independent variables (endurance, hip and trunk flexibility, agility, speed and leg explosive strength) of state level kabaddi men players.

Si no	Independent variables	No	Pearson Correlation
1	State Level Kabaddi Men Players Kabaddi Performance And Endurance	30	0.565*
2	State Level Kabaddi Men Players Kabaddi Performance And Agility	30	0.568*
3	State Level Kabaddi Men Players Kabaddi Performance And Leg Explosive Strength	30	0.554*
4	State Level Kabaddi Men Players Kabaddi Performance And Flexibility	30	0.224
5	State Level Kabaddi Men Players Kabaddi Performance Speed	30	0.220

*Correlation is significant at the 0.05 level

Table - 1 clearly indicates that there exists a significant relationship between Kabaddi Performance and Independent Variables i.e. Endurance, Agility and leg Explosive strength On the other hand there exists an insignificant relationship between Kabaddi Performance and Independent Variable Flexibility and speed,

4. Discussion
The statistical analysis of data revealed that Kabaddi playing ability significantly related to, endurance, explosive power, and agility. The findings of the study are in agreement with conclusion reached by K. Devaraju, Apparently the agility, muscular power and circulatory respiratory endurance are essential for Kabaddi players in order to give efficient performance.

Dey (2012) [10] revealed that the game of Kabaddi requires many essential components i.e. aerobic-anaerobic capacity, strength, power, neuromuscular coordination and muscular endurance. Strength play an important components in this game. Specific fitness is achieved, when a player acquires the required motor ability at the higher level for the particular sport. In Kabaddi, specific fitness consisted of strength, speed and coordination. component (Verma, 2011) [14].

Kabaddi favours body development with a muscular strength stamina and endurance; attributable to breath holding, which correspond to cardio-respiratory endurance. Individual needs to move faster in such a small area of 20'--30'[10-12mts], need to develop the flexibility and agility which indicates the player's eyes and body movement become quicker. If your body is flexible then only, you can kick, swirl grapple with ankle legs and things. Speed acceleration is also a important parameter through which strong leg muscles give more punch to the player. Agility and stamina are also very essentials. These findings are in accordance with the Jadhav, 2011.

The other characteristics of the game of Kabaddi is the multiplicity of skills involving movement running forward, sideways and backwards with or without halt, dogging and body severs. Modern Kabaddi demands that the player are not only masters all these movements and understands exactly when to use them but also that he can perform quickly an as accurately as possible as and when demanded. Agile and sprightly players who are capable of following each situation as it arises by skillful and quick movement have a great advantage over those players, who, for instance are not agile enough to shake off the mean who is marking them out of game, or to do the same to an opposing forward for a player to be able to escape from a man marking him or for a defender to be able to mark his opposite number out of game, the player, apart from being a top class agility and cardiovascular endurance qualities that are displayed in sudden stops, unexpected change in direction, body revenue etc. which occur repeated every second of match. Because of such demands Kabaddi playing ability has been found to be significantly related to agility and endurance.

5. Conclusions
1. Significant relationship was found between state level kabaddi men players kabaddi performance and cardiovascular endurance ($r = .565$, $p < .05$).
2. Significant relationship was found between state level kabaddi men players kabaddi performance and agility ($r = 0.568$ $p < .05$).

3. Significant relationship was found between state level kabaddi men players kabaddi performance and leg explosive strength (r =.554, p <.05).
4. Insignificant relationship was found between state level kabaddi men players kabaddi performance and flexibility (r =.224, p >.05).
5. Insignificant relationship was found between state level kabaddi men players kabaddi performance and speed (r =.220, p >.05).

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