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## Cooperative study of selected physical and physiological variables Kabaddi and football Punjabi university inter college players

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### Abstract

**Purpose:** To compare the selected physical and physiological variables of Kabaddi and Football inter College Players Sample/Setting/Participants 24 players of Football and 24 Kabaddi represented their college in the inter college tournament during 2013-14 session from Punjabi University Patiala were selected as subjects, their age ranged from 18 to 26 years.

**Methodology:** The study was an experimental research, the selected physical fitness and physiological variables such as flexibility, endurance, agility, explosive strength, heart rate, vital capacity and cardiovascular endurance were tested, Analysis of Data: 't' test were applied to check the significant difference between the group. The Level of Significance was set at 0.05 level. Results: There was significant difference between physical i.e. flexibility and explosive strength & physiology variables and there was no significant difference between physical variables i.e. Endurance and agility.

**Conclusion:** it was concluded that there was a significant difference in some selected physical & physiological variables i.e. flexibility, explosive strength & endurance, agility.

**Keywords:** Flexibility, endurance, agility, explosive strength, heart rate, vital capacity and cardiovascular endurance

### Introduction

Sports is one of the avenues of man's never ceasing strive for excellence. Its uniqueness lies in the intimacy between the physical happenings of human bodies and their repercussions on their minds as well as in the general reconcilability of the social and aesthetic values which sport engenders. Sport evokes experiences that are exclusively human and independent of the changing forms, patterns and customs of a civilization which involves profoundly modifying concepts of our environment.

According to Clarke, H. Harrison (1976) in a society where material values predominates, participation solely for pleasure, recreation and allied benefits in any activity such as sports, that demands much time, energy and self-discipline is not likely to be very popular or widely practiced doctrine especially when the nations of the world are openly using sports as an approach to national fitness and international prestige.

Fitness and training are the most misused and over used words in English language. Sir Roger Bannister defined "Physical Fitness" as a state of mental and physical harmony. Which enables someone to carry on his occupation to the best of his ability with the greatest happiness.

There will be no significant difference between physical and physiological components between Kabaddi and Football players.

### Material and Methods

#### Subjects

Data were collected on two groups of 24 Football (Govt. Phy. Edu. College Patiala, Modi College Patiala) and 24 Kabaddi (S.D. College, Barnala, DAV College Bathinda) players from Punjabi University Patiala. And those who had represented their university in the inter college tournament during 2013-14 session were selected as subjects, their age ranged from 18 to 26 Years.

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**Procedure for administrating test**

The physical and physiological tests were performed in the

ground of respected colleges. The following test was administered.

Physical / Physiological Variables	Objective	Apparatus Used	Test Description	Scoring
Flexibility	To measure the flexibility of the performer in forward bending position	Wooden Box (30" X 30" X 15") measuring tape	The performer stand on the box and then start forward bending without knee bending and touch the front side of the box.	The distance taken in Centimeter Flexibility
Endurance	To measure the endurance	Athletics' track, measuring tape, stop watch, clapper.	12 minute run/walk was to test the endurance of subjects. Subjects were allowed to warm up before actual performance. On the signal "On your mark and go" the subjects run as possible for 12 minutes.	Distance to the nearest meter was taken and recorded (12 minutes Run)
Agility	To measure the agility of the performer in running and changing direction	Measuring tape, stop watch, two wooden blocks (3' X 3' X 5')	The performer starts behind the starting line on the single go and runs to the blocks, pickup one return to the starting line and places the block behind the line. He then repeats the process with the second block. (10 Meters)	The time taken to shuttle run race and recorded to the nearest 1/10 of a meter.
Explosive Strength	To measure the explosive strength.	Marked wall measuring tape, chalk powder	Subject was stand laterally and swings his arm backward and goes downward and then jumps vertically and touching the wall by the tip of the middle finger.	Scoring was done in centimeter of distance from the normal height to the nearest contact point on the wall.
Heart rate	To measure the pulse count.	Stop watch, Chair	The subject sitting on the chair in easy condition and radial pulse is counted by the evaluator in 1 minute.	Total pulse is counted in 1 minute.
Vital Capacity	Determination of vital capacity	Dry spirometer, Chair, nose clips	The vital capacity of the subject was determined by the dry spirometer in sitting position. The subject was allowed to respire the maximum amount of air voluntarily and then he was asked to blow into the dry spirometer to the maximum extent. While taking the test nose of the subject was clipped using a nose clip.	The vital capacity of the subject was obtained from the movement of the circular volume indicator which was set at '0' before the vital capacity measure was taken. The result was calculated in liter.
Cardiovascular endurance	To measure the cardiovascular endurance	18' High platform, stop watch chairs.	The subjects were in their Proper Sports Dresses.They stepped on a 18' high platform, stepping 24 times per minute. The rate was set by metro norm, under the careful guidance of evaluator. Endurance was restricted to 3 minutes (180 Seconds). At the most recovery heart rate was recorded from 0.1 to 1.5 minutes.	Scoring in seconds

**Statistical Analysis**

't' test was applied to check the significant difference between the group. The level of significance were set at 0.05 level of physical and Physiological variables of Kabaddi and Football Players is presented in table 1, 2, 3 and 4.

**Results**

**Table 1:** Mean and Sd of physical variables of Kabaddi and football players

S. NO.	Variables	Kabaddi		Football	
		Mean	SD	Mean	SD
1	Flexibility	16.6	5.21	20.5	5.04
2	Endurance	2.331	263	2.276	408
3	Agility	19.8	18.0	15.1	6.00
4	Explosive Strength	48.7	9.96	40.5	8.47

it is evident from the table I that the mean of Kabaddi players in the physical variable i.e. flexibility, endurance agility and explosive strength are 16.6 (C.M.) for flexibility, 2.331 (m) for endurance, 19.8 (Sec) for agility and 48.7 (C.M.) for explosive strength and in the case of Football players for the physical variables i.e. flexibility, endurance, agility and explosive strength are 20.5 (C.M) for flexibility, 2.276 (M) for endurance, 15.1 (Sec) for agility and 40.5 (C.M.) for explosive strength.

**Table 2:** Mean and Sd of physiological variables of football and Kabaddi players

S. NO.	Variables	Kabaddi		Football	
		Mean	SD	Mean	SD
1	Heart Rate	72.9	9.19	58.9	5.31
2	Vital Capacity	2.985	442.0	3.406	498
3	Cardiovascular Endurance	72.2	9.81	64.5	5.00

It is evident from the table 2 that mean of Kabaddi players in the physiological variable i.e. Heart Rate, vital capacity and cardiovascular endurance are 72.2 (beat) for cardiovascular endurance, 72.9 (mm) for Heart Rate and 2.985 for vital capacity and in the case of Football Players for the variable physiological i.e., Heart Rate, vital capacity and cardiovascular endurance are 58.9 (beat) for Heart Rate, 3.406 (mm) for vital capacity and 64.5 (sec) for cardiovascular endurance.

**Table 3:** Significance of Differences of mean in selected physiological variables of Kabaddi and football players

S. NO.	Variables	Mean Differences	't'-ratio
1	Flexibility	3.9	2.90*
2	Endurance	0.155	0.628
3	Agility	4.7	1.37
4	Explosive Strength	8.2	3.44*

\* Significant at 0.05 level of confidence.

**Table 4:** Significance of differences of mean in selected physiological variables between Kabaddi and football players

S. NO.	Variables	Mean Differences	't'-ratio
1	Heart Rate	14.0	2.06*
2	Vital Capacity	0.475	3.90*
3	Cardiovascular Endurance	7.7	3.86*

\* Significant at 0.05 level of confidence.

### Discussion

It is revealed from table 1 that mean value of flexibility and endurance of Football players is better than the Kabaddi players, but in the case of explosive strength players were found better in comparison to football players. Similarly, in the case of agility it was found the same. Thus the result indicates that football players had more flexibility and the endurance in the comparison of Kabaddi players. Similarly, in case of agility the mean of Kabaddi and football players are almost the same shows that Kabaddi and football players both have same ability as agility is concerned. As far as the explosive strength is concerned the Kabaddi players found better in comparison to football players.

It is evident from table 2 that the mean of heart rate, vital capacity and cardiovascular endurance of football players is better than the Kabaddi players. it is found that the mean of Kabaddi players is better than heart rate, vital capacity and cardiovascular endurance in comparison of Kabaddi players.

It is evident from table 3 that the mean differences of Kabaddi and football players in the physical variables 3.9, 8.2, 0.155 and 4.7 respectively. The 't' value 2.90 for flexibility was significant freedom. The result indicated that Kabaddi players has better explosive strength in comparison the football players.

Similarly in the case of Endurance 't' value .628 was not significant at 0.05 level of confidence. In the case of agility the 't' value 1.37 was not significant at 0.05 level of confidence. It is evident from table 4 that the mean differences of Kabaddi and football players in the variables physiological is 4.75, 7.7, 14, and 4.90 respectively. The result indicated that football players had better vital capacity in comparison to Kabaddi players. Similarly in the case of cardiovascular endurance the 't' value 3.86 was significant at 0.05 level of confidence. The result indicated that football players had better cardiovascular endurance in comparison to Kabaddi players.

Similarly in the case of heart rate 't' value 2.06 was not significant at 0.05 level of confidence at the degree of freedom. The statistical analysis of data revealed that there was a significant differences in selected physical variable i.e. flexibility and explosive strength between inter college Kabaddi and football players. The finding of the study also revealed that there was a significant difference in selected physiological variable i.e. heart rate, vital capacity, cardiovascular endurance at 0.05 level of significance with 29 degree of freedom. The result of the study also stated that there was no significant differences found in selected physical i.e. endurance and agility. The game of Kabaddi included multiplicity of skills involving possible time. The Kabaddi game demands that the players not only master all this movement and understand exactly when to use them but also that he can perform quickly and accurately in shortest possible time as and when demanded because of such demand. The Kabaddi players are more flexible than the Football Players.

Explosive strength is required in all types of sports Kabaddi and football is now exception to it. Explosive strength is one

of the contributing factors to success in every minute of game. Kabaddi player is called upon to carry out explosive movement besides executing other fundamental? which demands sudden explosive power of legs, arms and back which are very much needed for Push and Pull in Kabaddi. Thus Kabaddi player are better than Football Players.

The vital capacity and cardiovascular endurance is directly propositional to the body size and muscular ability. The Football has better body size than Kabaddi players. According to the game situation and the length of the game is no use of having super skill and better Football players without proper vital capacity and cardiovascular endurance. Otherwise a Football player will have to run the length and width of the Football field repeatedly. The time aspiring for modern standard of competition need players who are not only highly skilled but also fast and fit. Therefore a Football player should possess the good cardiovascular and high vital capacity. Because of this reason Football have better vital capacity than Kabaddi player.

### Conclusions

Within the limitation of the study and procedure following conclusion were arrived at: There was significant difference between Kabaddi and Football players in physical variables i.e. flexibility and explosive strength.

There was no significant difference between Kabaddi and Football players in physical variables i.e. Endurance and agility.

There was significant difference between Kabaddi and Football players in physiological variables i.e heart rate, vital capacity and cardiovascular endurance.

### Recommendations

1. The similar study could be done on the female Kabaddi and Football players.
2. A similar study could be investigated at higher level like national level, taking a large number of subjects
3. A Similar study could be done with subject belonging to difference age group.
4. Coaches of different team can select players according to the study.

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