International Journal of Multidisciplinary Research and Development

IJMRD 2015; 2(2): 138-140
www.allsubjectjournal.com
Received: 19-01-2015
Accepted: 07-02-2015
E-ISSN: 2349-4182
P-ISSN: 2349-5979
Impact factor: 3.762

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A comparative study of cardio respiratory endurance between men and women Kabaddi and Kho-Kho players

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Abstract
The purpose of this study was to compare the physical fitness variable namely Cardio respiratory endurance between men and women kabaddi and kho-kho players. To achieve the purpose of this study one hundred and twenty players of kabaddi and kho-kho games studying in the Department of Physical Education and Sports Sciences, Annamalai University, Annamalai Nagar, Chidambaram, Cuddalore District, Tamil Nadu and India were randomly selected as subjects. Among them sixty men players (thirty men kabaddi and thirty men kho-kho players) and sixty women players (thirty women kabaddi and thirty women kho-kho players) with an age of the subjects were ranged between 18 to 24 years were selected as subjects. Cardio respiratory endurance was assessed by using standardized test item namely Cooper's 12 min run / walk test (men), Cooper's 9 min run / walk test (women) and it was statistically analysed by using 2 x 2 factorial ANOVA. Whenever, the obtained 'F' ratio value for interaction effect was found to be significant, the simple effect test was applied as follow up test. In all cases, the .05 level of confidence was fixed to test the level of significance which was considered as an appropriate. There was significant difference between men and women players on selected physical fitness variable namely Cardio respiratory endurance irrespective of their games (kabaddi and kho-kho). Among them, men kho-kho players were better cardio respiratory endurance than other categories of players.

Keywords: Physical fitness, Cardio respiratory endurance, men and women kabaddi and kho-kho players

1. Introduction
Physical education is generally associated with competitive sports or development of muscles or maintaining health or body building or military drill. Physical education is rightly recognized as integral part of Education. It is obvious that Physical education and Education should both work harmoniously in the total process of Education. Physical education should help to develop skills and attitudes, which will be conclusive to the wise use of leisure time, and provide opportunities for emotional control, living according to acceptable social standards and self expression.
Cardio respiratory endurance refers to the ability of the body to perform prolonged, large-muscle, dynamic exercise at moderate-to-high levels of intensity. Cardio respiratory endurance is an important part of overall physical fitness.

2. Materials and methods
2.1 statistical technique
The collected data's were statistically analysed by using 2 x 2 factorial ANOVA. Whenever, the obtained 'F' ratio value for interaction effect was found to be significant, the simple effect test was applied as follow up test. In all cases, the .05 level of confidence was fixed to test the level of significance which was considered as an appropriate.

2.2 selection of subjects
To achieve the purpose of the study one hundred and twenty players of kabaddi and kho-kho games studying in the Department of Physical Education and Sports Sciences, Annamalai University, Annamalai Nagar, Chidambaram, Cuddalore District, Tamil Nadu and India were randomly selected as subjects

Among them sixty men players (thirty men kabaddi and thirty men kho-kho players) and sixty women players (thirty women kabaddi and thirty women kho-kho players) with an age of the subjects were ranged between 18 to 24 years were selected as subjects.

2.3 selection of variable

In the present study, the investigator selected the Physical fitness Variable namely Cardio respiratory endurance.

3. Results & Discussion

3.1 Analysis of the Data

The mean and standard deviation values on cardio respiratory endurance of men and women kabaddi and kho-kho players have been analysed and presented in Table I.

Table 1: The mean and standard deviation on cardio respiratory endurance of men and women kabaddi and kho-kho players

Gender / Games		Kabaddi Players	Kh-Kho Players
Men	**Mean**	1436.20	1656.00
	SD	13.04	14.51
Women	**Mean**	1252.00	1557.33
	SD	38.68	12.70

Table I shows that the mean values on cardio respiratory endurance of men kabaddi, men kho-kho, women kabaddi and women kho-kho players were 1436.20, 1656.00, 1252.00 and 1557.33 respectively.

The two way factorial ANOVA on cardio respiratory endurance of men and women kabaddi and kho-kho players have been presented in Table II.

Table 2: Two way factorial anova on cardio respiratory endurance of men and women kabaddi and kho-kho players

Source of Variance	Sum of Squares	df	Mean Squares	Obtained "F" Ratio
A factor (Gender)	600102	1	600101.63	1138.65*
B factor (Games)	2068238	1	2068237.63	3924.33*
AB factor (interaction) (Gender x Games)	54869.6	1	54869.63	104.11*
Error	61135.5	116	527.03	

Significant at .05 level of confidence.

(The table value required for significance at .05 level of confidence with df 1 and 116 was 3.924).

Table II shows that the obtained 'F' ratio value on cardio respiratory endurance 1138.65 for factor-A (Gender - men and women players) irrespective of their games which was greater than the table value of 3.924 with df 1 and 116 required for significance at .05 level of confidence. The results of the study indicated that there was a significant difference between men and women players irrespective of their games on cardio respiratory endurance.

The obtained 'F' ratio value on cardio respiratory endurance 3924.33 for factor-B (Games – kabaddi and kho-kho) irrespective of their gender which was greater than the table value of 3.924 with df 1 and 116 required for significance at .05 level of confidence. The results of the study indicated that there was a significant difference between the kabaddi and kho-kho players irrespective of their gender on cardio respiratory endurance.

The obtained 'F' ratio value on cardio respiratory endurance 104.11 for interaction [AB factor - (Gender × Games)] which was also greater than the table value of 3.924 with df 1 and 116 required for significance at .05 level of confidence. The results of the study showed that there was a significant difference between men and women kabaddi and kho-kho players on cardio respiratory endurance.

Since, the obtained 'F' ratio for the interaction effect was found significant, the simple effect test was applied as follow up test and it was presented in Table III.

Table 3: The simple effect test for gender and games on cardio respiratory endurance

Source of Variance	Sum of Squares	df	Mean Squares	Obtained "F" Ratio
Gender and Kabaddi Players	508944.6	1	508944.60	965.68*
Gender and Kho-Kho Players	146026.67	1	146026.67	277.07*
Games and Men	724680.6	1	724680.60	1375.03*
Games and Women	1398426.67	1	1398426.67	2653.41*
Error	61135.47	116	527.03	

Significant at .05 level of confidence.

(The table value required for significance at .05 level of confidence with df 1 and 116 was 3.924).

Table III shows that the obtained 'F' ratio values on cardio respiratory endurance 965.68 and 277.07 for gender and kabaddi players and gender and kho-kho players which are greater than the table value of 3.924 with df 1 and 116 required for significant at .05 level of confidence. The results of the study indicated that there was a significant difference between gender and kabaddi players and gender and kho-kho players on cardio respiratory endurance.

Table III also revealed that the obtained 'F' ratio value on cardio respiratory endurance 1375.03 and 2653.41 for games and men players and games and women players which are greater than the table value 3.924 with df 1 and 116 required for significance at .05 level of confidence. The results of the study indicated that there was a significant difference between games and men players and games and women players on cardio respiratory endurance.

The mean values of men and women kabaddi and kho-kho players on cardio respiratory endurance are graphically represented in Figure I.

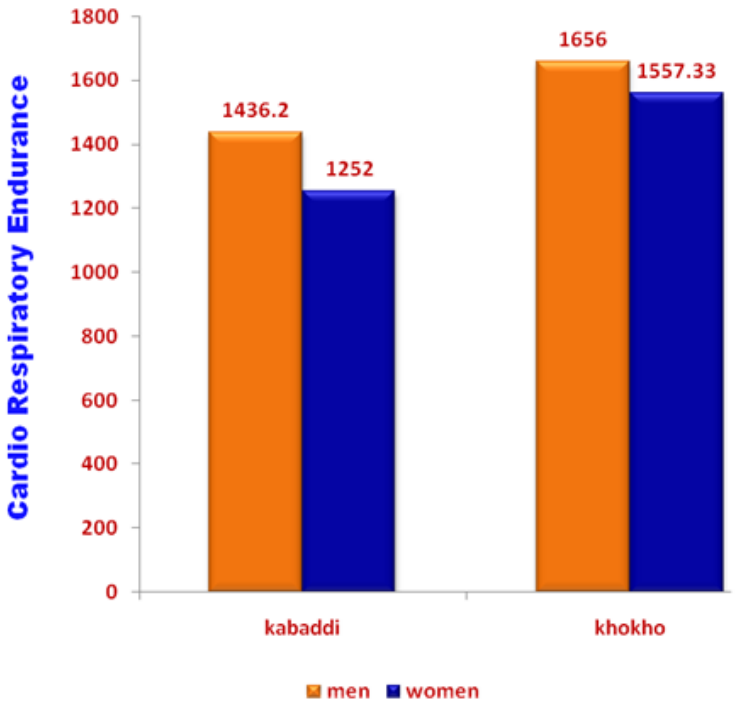

Fig 1: The mean values of men and women kabaddi and kho-kho players on cardio respiratory endurance

4. Conclusions

Based on the results of the study, the following conclusions were drawn,

1. There was significant difference between men and women players on cardio respiratory endurance irrespective of their games (kabaddi and kho-kho).
2. There was significant difference between kabaddi and kho-kho players on cardio respiratory endurance irrespective of their gender (men and women).
3. There was significant difference between men and women kabaddi and kho-kho players on cardio respiratory endurance.
4. Among the groups, men kho-kho players were better on cardio respiratory endurance than other categories of players.

5. References

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