Analysis of Cardiovascular Endurance and Anaerobic Power between Intervarsity Players of Indigenous Games

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Abstract

The purpose of the present investigation was to compare cardiovascular endurance and anaerobic power of male intervarsity players of indigenous games. To achieve the set objectives, twenty four (N=24) male players (N_1=12 Kho-kho players and N_2=12 Kabaddi players) of Indian indigenous games were selected from Vidyasagar University, West Bengal, India. Data was collected during their residential training camps for the participation of Inter University tournament. The age of the students ranged from 19 to 25 years. Total two variables cardiovascular endurance and anaerobic power were selected for this study. Cardiovascular endurance was measured by the performance of 600 yard run/walk on standard track with the help of stop watch in minute. Anaerobic power was measured by standing broad jump in meter unit. Data was analyzed using SPSS, (Version 20.0) software. The level of significance chosen was 0.05. To compare between the mean scores of cardiovascular endurance and anaerobic power between indigenous games of Kho-kho and Kabaddi players the Independent Sample t-test was applied. The results of the study showed that Kho-kho players were significantly better than the Kabaddi players in comparison with cardiovascular endurance. This study provides base information for devising training module for enhancement of performance of the players of the two Indian indigenous games.

Keywords: Cardiovascular endurance, anaerobic power, indigenous games.

Introduction

The word 'indigenous' refers to the notion of a place-based human ethnic culture that has not migrated from its homeland, and is not a settler or colonial population. Indigenous games are recreational activities that originated from a particular cultural group, community or people. These games are different from your mainstream sports, which are regulated by international federations, and have fixed rules. Indigenous games are recreational activities that originated from a particular cultural group, community or people. These games are different from your mainstream sports, which are regulated by international federations, and have fixed rules. Playing indigenous games not only improves physical development and brain stimulation. They get to experience and let their imagination wonder. Children also learn social skills because most of these games are played in a group. They also learn and understand rules. These games can also be of great benefit to them, they require physical activity, social skills, creativity,

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imagination, competition, camaraderie… and many more benefits that could fill an entire article. Quite simply, traditional children's games stimulate their growth, physically as well as intellectually.

There are so many indigenous games in our country. Among them Kho-kho and Kabaddi are very famous and popular throughout India. Kho-kho and Kabaddi are also two very popular games in the south Asian countries today. Both the games have a rapid increasing trend of popularity in the western countries and few American and African countries as well. Both the games are considered as small area games. The games are simple in nature, easy to organize and less expensive, hence, rich to common men. Both games required less equipment. Kabaddi is most aggressive and highly body contact game, but Kho-kho is a semi contact game. Both the games differ from each other in their nature, skills, techniques and strategies etc. So, there are some similarity and dissimilarity as well between Kho-kho and Kabaddi games.

The performance of a sportsman in any game or event depends on physical fitness. The physical fitness or condition is the sum total of five motor abilities namely muscular strength, agility, power, speed and cardiovascular endurance. Cardiovascular Endurance consists of maintaining an increased heart rate and breathing rate for a longer period of time. Cardiovascular exercise improves your body's ability to bring oxygen from the environment, into the lungs, and diffuse into the bloodstream. An increasing flow of oxygen to cells in the body will help them work to their capacity. In addition, cardiovascular exercise helps the heart to become bigger and stronger (it is a muscle), allowing more blood to be pumped out with each beat. If more blood is pumped out with each beat, the heart does not have to beat as fast or work as hard. Particularly Cardiovascular endurance plays a vital role in the games of Kho-kho and Kabaddi. The word 'anaerobic' literally means "without oxygen". Anaerobic exercise means you're working at such a high level of intensity, that the cardiovascular system can't deliver oxygen to the muscles fast enough. Because muscles need oxygen to continue exercising, anaerobic exercises only last for short periods of time. The assessment of physiological work capacity is a major consideration in preparing athletes for high-level competition (Bulbulian et al., 2001)[2]. It has been suggested that success in many sport games appears to include high anaerobic capacity, not aerobic power alone (Smith, et al., 1992)[5]. The aim of the present study was to determine the cardiovascular endurance and anaerobic power of male intervarsity players of indigenous games.

Purpose of the study: The purpose of the study was to compare the cardiovascular endurance and anaerobic power of intervarsity level Indian indigenous games of Kho-kho and Kabaddi players.

Delimitations of the study:

a. The study was delimited to male Indian indigenous games of Kho-kho and Kabaddi players,

b. The study was delimited to intervarsity level Kho-kho and Kabaddi games,

c. Subject age was delimited to 19-25 years and

d. The study was also delimited only 12 players in each group.

Limitations of the study:

a. Diet, health, habits and living style of the subjects cannot be controlled, and

b. They would have been in activities of their own choice their timetables should not be controlled.

Objectives of the study:

a. To collect data about cardiovascular endurance and anaerobic power of male Kho-kho players.

b. To collect data about cardiovascular endurance and anaerobic power of male Kabaddi players.

c. To analysis the cardiovascular endurance and anaerobic power between Kho-kho and Kabaddi players.

Significances of the problem:

a. An analysis about cardiovascular endurance and anaerobic power of male intervarsity level male indigenous games of Kho-kho and Kabaddi players can be scanned out from this study.

b. The study may help in planning the training programme of male intervarsity level Kho-kho and Kabaddi players.

c. The results of the study may be helpful for self-assessment of male indigenous games male intervarsity level Kho-kho and Kabaddi players.

Methodology:

Design of the study: For the present study the sample has been selected from Vidyasagar University residential training camps. Twelve male (12) Kho-kho and twelve male (12) Kabaddi players has been selected for this study. Test has been conducted on the both groups (Kho-kho and Kabaddi) to collect the data of selected variables. To analyses of data't'- ratio has been used. Statistical significance was tested at 0.05 level of confidence.

Selection of the subject: These subjects for this study were selected from Vidyasagar University, West Bengal, Kho-kho and Kabaddi teams. A total number of 24 male players, 12 each from Kho-kho and Kabaddi were selected. The age of the subject range from 19-25 years.

Selection of the variables: The selected variables were concerned with the cardiovascular endurance by 600 yard run/walk test (in seconds) and anaerobic power was measured by standing broad jump (in meter).

Criterion measures: The following tests were selected and their course was considered as criterion measured for this investigation of indigenous games.

a. Cardiovascular endurance was measured by 600 yard run/walk test. The score was done when the time was elapsed in the nearest $1/10^{th}$ of a minute.
b. Anaerobic power was measured by standing broad jump. The score was done in meter of distance from the starting line to the nearest contact point on the ground.

Administration of the test: The data were collected for each variable by administering their respective tests. The tests were administered in the Vidyasagar University play ground. Sufficient trails were given to each subject. The tests were explained to the subjects prior to their administration.

Statistical procedure: The collected data were analyzed by using Independent Sample't'-test to compare the cardiovascular endurance and anaerobic power of intervarsity level male indigenous games of Kho-kho and Kabaddi players.

Discussions of results:

Table-1

Computation of 't' ratio of cardiovascular endurance between indigenous games of male intervarsity Kabaddi and Kho-kho players.

Results of 600 Yards Run/Walk	N	Mean±S.D (Minute)	Standard Error Mean	Mean Difference	t	df	Sig. (2-Tailed)
Kho-kho Players	12	1.59±0.038	0.011	0.14	-8.09	22	0.000*
Kabaddi Players	12	1.73±0.049	0.014				

*significance level on 0.05 level

Table-1 indicated that the mean and standard deviation scores of Kho-kho players and Kabaddi players have been found 1.59 ±0.038 and 1.73 ±0.049 respectively in relation to their cardiovascular endurance ability. The calculated 't' value (-8.09) of cardiovascular endurance of the subjects were found to greater than the table value; so the result reflected significant difference exist at 0.05 level of confidence. Cardiovascular endurance of Kho-kho players were found superior that statistically significant compared to Kabaddi players may be due to the other reasons that the total field area of Kho-kho game is bigger than that of Kabaddi field area. Thus while playing; the Kho-kho players cover more distance by running as compared to Kabaddi players, where the field is comparatively smaller than Kabaddi. Also in Kho-kho game the running skills are much dominating throughout the game. In Kho-kho game a team of nine players chases the defenders with maximum speed to put 'runners' out and the same time the defenders run with maximum speed not to be put out from the game. This process continues still a team of nine minutes of single term. There are four terms of nine minutes in Kho-kho game, whereas; in Kabaddi the continuous running of nine minutes does not take place. The finding of this study is consonance with Pradhan & Jana (2015)[3] and Singh & Singh (2013)[4]. The results have been presented graphically in figure-1.

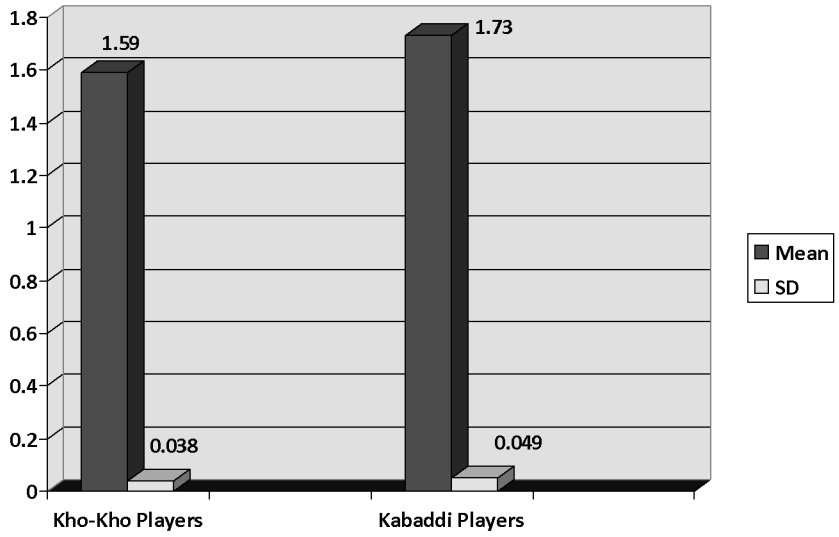
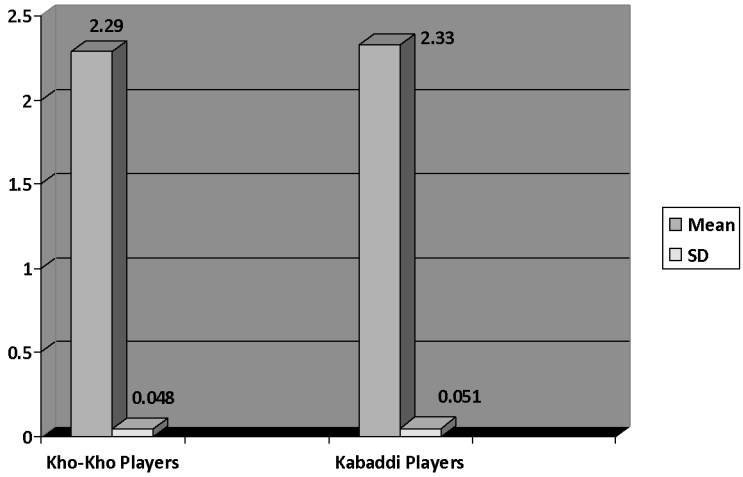


Table-2

Computation of 't' ratio of explosive leg strength between indigenous games of male intervarsity Kabaddi and Kho-kho players.

Standing Broad Jump	N	Mean±S.D (Miter)	Standard Error Mean	Mean Difference	t	df	Sig. (2-Tailed)
Kho-kho Players	12	2.29±0.048	0.014	0.03	0.04	22	0.78
Kabaddi Players	12	2.33±0.051	0.015				

Table-2 indicated that the mean and standard deviation scores of Kho-kho players and Kabaddi players have been found 2.29±0.048 and 2.33±0.051 respectively in relation to their anaerobic power of legs. The calculated 't' value (0.04) of anaerobic power of the subjects were found to less than the table value; so the result reflected insignificant difference exist at 0.05 level of confidence. Anaerobic power of Kabaddi players were found better than Kho-kho players but not statistically significant may be due to the fact that, application of the major skills of both games are associated with explosive power of legs that means anaerobic power of both legs. The finding of this study is consonance with the study of Ashwini KN (2018)[1]. The results have been presented graphically in figure-2.



Conclusion

Within the limitation of the study following conclusions may be drawn:

a. In cardiovascular endurance Kho-kho players are better in relation to Kabaddi players.

b. This type of study is useful to the coaches and physical education teachers to enhance the cardiovascular endurance and anaerobic power between indigenous games of Kho-kho and Kabaddi players.

c. Similar study can be conducted on the national teams as well as other sports and games also.

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