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Selected Aerobic Anaerobic Efficiency of Kho-Kho Players from Different Game Positions: A Comparative Analysis

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Abstract

Performance in different games is supposed to be related to better physical fitness. Optimal performance requires a combination of technical and tactical abilities as well as a high degree of physical fitness. Aerobic and anaerobic fitness is the basic to indigenous games. So, it was intended to compare the Kho-Kho players in relation to their positions on the selected Aerobic and anaerobic abilities. For the purpose of the study sixty female players (Runner n=30 and Chaser n=30) were selected randomly from the different level of competition in West Bengal at the age of 14 to 16 years. The data was analyzed and compared with the help of standard statistical procedure in which mean. Standard deviation (S.D), standard error of mean (S.E.M) and independent- t test was used. The level of significance was set at 0.05. Result of this study revealed that the significance difference exists in anaerobic fitness between two groups. The results also showed that the runners' players were better than chaser players in Kho-Kho game.

Keywords: Runner, Chaser, Aerobic and Anaerobic Fitness

INTRODUCTION

Kho-Kho is a unique indigenous game. It is a game of chase as well as attack and defense, a game of skill and rhythm and fits with rich cultural heritage of India. Like all Indian games, it is simple, inexpensive and enjoyable. It does, however, demands physical fitness including endurance, speed and agility. Dodging, feinting and bursts of controlled speed make this game exciting and fun. To catch by pursuit - to chase, rather than just run - is the capstone of kho-kho. Kho-Kho ranks as one of the most popular traditional sports in India.It is well known that physical conditioning and aerobic capacity in particular, depend on 3 important elements: maximal oxygen consumption (VO_2max), anaerobic threshold, and work economy **(Howley et al., 1995; Pateand Kriska, 1984).**

Cardiorespiratory endurance can be classified into aerobic resistance and anaerobic resistance. Aerobic resistance is the capacity to maintain a stimulus for a prolonged period of time **(Ibanez et al., 2019).**This causes the athlete to make adaptations to the effort (competition or training). After a while, energy production will be lower before the same stimulus, reaching a process of saving energy **(Bompa et al., 2006).**

The improvement of aerobic and anaerobic capacity, muscle strength, speed, and neuromuscular coordination are the main requirement of Kho-Kho game. Aerobic capacity describes the functional capacity of the cardio respiratory system (heart, lungs and blood vessels). Aerobic capacity is defined as the maximum amount of oxygen the body can use during a specified period, usually during intense exercise. It is a function both of cardiorespiratory performance and the maximum ability to remove and utilise oxygen from circulating blood. Anaerobic capacity is the ability to mobilize energy during activities of intense nature.The responses to intermittent activity are characterized by higher levels of physiological strain compared to that of continuous exercise performed at the same mean work rate **(Bangsbo, 1996; Drust et al., 2000).**

However, importance of various components of fitness varies with different sports for better performance. Physical fitness is possible through the study of motor fitness. The motor fitness can be understood by analysis its components like speed, strength, endurance,flexibility, agility, coordination ability and balance, although physical fitness is conditioned, by heredity, physical organic and behavioral components. The physiological responses to intermittent exercise have also been compared with those of continuous exercise at the same average workload in an attempt to evaluate differences between exercise patterns **(Astrand and Rodahl, 1977; Edwards et al., 1973; Essen, 1978).**So, the researcher thought to measure and compares only two components (speed and endurance) of district level female Kho-Kho players.

MATERIALS AND METHODS

Participants

For the present study Sixty (N=60) district level female Kho Kho players of 14 to 16 years were randomly selected from Bankura District in West Bengal and based on their positions were classified into two groups: Runners (n=30) and Chasers (n=30). In the present Study Purposive random group design was adopted.

Table 1: List of Variables and their respective Test

VARIABLES	TEST	UNIT
Anaerobic fitness	50 yards dash	Seconds
Aerobic fitness	600 yards run and walk	Seconds

Statistical Analysis

In the present study for the sake of Analysis of data mean and standard deviation of the variables were calculated. To test the significant difference between means Independent ‘t’-test was calculated. The level of significance was set at $P<0.05$ level of confidence.

RESULTS

Table 2: Descriptive statistics of Kho-Kho players in respect to specific playing positions

	50YRD		600YRD	
GROUPS	MEAN	S. D	MEAN	S. D

Kho – Kho Runner Players	8.49	0.37	169.8	35.77
Kho – Kho Chaser Players	8.93	0.31	168.23	32.61

Table 3: Comparison of Anaerobic fitness between runner and chaser of kho-kho players

Group	Mean	Mean Diff	SE	t	Sig
Runner	8.49	0.44	0.088	4.99*	0.0001
chaser	8.93				

To observe the statistically significant between the groups t-test was employed. The above table shows that the mean difference of aerobic fitness of Kho Kho runner and chaser players is 0.044 and SE is 0.088. The calculated 'P' value was found 0.000 which is less than the 0.05 level, so it can safely be said that the mean difference of anaerobic fitness between the Kho Kho runner and chaser players is statistically significant.

Table 4: Comparison of Aerobic fitness between runner and chaser of kho-kho players

Group	Mean	Mean Diff	SE	t	Sig
Runner	169.8	1.57	8.837	0.1777	0.8596
chaser	168.23				

Table-4 shows that the mean difference of anaerobic fitness of the groups is 1.57 and SE is 8.837 The calculated 'p' value was greater than the 0.05 level (P> 0.05). Therefore, it may be stated that the mean difference of aerobic fitness of aerobic fitness and Kho Kho runner and chaser players is statistically not significant.

DISCUSSION

The result findings show that khokho runner players and Kho Kho chaser players are more or less similarly able in relation to aerobic fitness and anaerobic fitness. Though there are some similarities in both the cases busting speed, agility, basic endurance, balance, strength, strength endurance are highly required.The greatest values, which were noted during the interval attempts, are the results of high energy anaerobic adaptations of high-intensity efforts **(Bangsbo et al., 1991; Fohrenbach et al., 1986; Reilly, 1997; Williford, 1999).**

The anaerobic fitness of runner was significantly higher than the Chaser. On the other hand, the aerobic fitness of both runners and chasers were not significantly differ in each other. This might be the cause of nature of playing and also different in skill execution in the game. Players achieved better speed time included repeated sprints of high intensity during the game**(Aziz, Newton, Tan, &Teh, 2006).**

CONCLUSIONS

It may conclude that in respect of anaerobic fitness, runners were higher than that of chaser players in Kho Kho. On the other hand, there were no significant difference was found in aerobic fitness, when it compared in between runner and chaser.

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