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A Comparative Study of Aerobic and Anaerobic Fitness between Indigenous and Non-Indigenous Game Players in West Bengal

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Abstract

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 and non-indigenous games. So it was intended to determine the aerobic and anaerobic fitness of indigenous game like kho-kho and non-indigenous game like volleyball players. Several different games like Kho-kho is played in the country with their origin in ancient times. Playing such games may aid in the promotion of physical prowess and multilateral motor development. The sports of western origin became popular due to their distinguishing features, utility and having convinced their importance extensively. Indigenous games of India have been largely unstudied and it would appear timely pertinent to pursue research in a systematic manner. For the purpose of the study eighty male players (indigenous sport- kho-kho N=40, non-indigenous game–volleyball N=40) were selected randomly from the different level of competition in West Bengal at the age of 16 to 18 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 exist in anaerobic fitness & aerobic fitness between two groups. The results also showed that the indigenous sport (kho-kho) players were better than non-indigenous game (volleyball) players.

Keywords: *Aerobic and Anaerobic Fitness, Indigenous game (kho-kho), Non-indigenous game (volleyball).*

Introduction

In the present-day world games and sports is very much competitive. Everyone tries to become successful by surpassing the others. For that reason, every competitor must enhance his technical and tactical abilities along with conditional abilities and psychological abilities. Two individual having the same technical, tactical or psychic ability can differ in performances when there is a differences in their conditional ability. Physical fitness is important to human mind because every movement, everybody position and tension in the muscle tendon and joint helps to contribute to the formation of concepts and ideas. Physical fitness contributes to the efficient working of muscles and enables the mind to make quick and correct decision while maintaining control over the emotion.

"Clothes make the man. Naked people have little or no influence in society." (Mark Twin, More Maxims.1927). Similarly, fit player makes sportsman. Unfit player has no importance in competitive sports. Coaches try to keep their players hundred percent fit during the competition. Fitness is highly required for every sport. At present the concept of fitness as 'the ability to carry out every day task with vigor and alertness, without undue fatigue and with ample energy to enjoy leisure time pursuits and to meet unforeseen emergencies' is not being considered as an appropriate definition because of change of life style as the result of influence of technology (Hockey,1993). The most commonly was to refer to fitness currently is to use the phrases 'Health related fitness' and 'Motor performance fitness'. But in case of competitive sports aerobic and anaerobic capacity is the fundamental component of fitness. Aerobic capacity describes the functional capacity of the cardio respiratory system, (the 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 cardio respiratory performance and of the maximum ability to remove and utilize oxygen from circulating blood. Anaerobic capacity is the ability to mobilize energy during activities of intense nature i.e. executing intensive work with explosive action in short duration of time, such as, bursting speed in football, basketball, kabaddi, khokho, hockey, smash of volleyball, take off in jumps etc. But the requirement of fitness varies from game to game. As a result, players are to be trained accordingly. The playing ability of kho-kho

Table 1: The analysis of data on selected variables those were aerobic fitness and anaerobic fitness collected on forty- (40) Indigenous game (kho-kho) players and forty (40) non- indigenous games (volleyball) players.

GROUP	AEROBIC FITNESS		ANAEROBIC FITNESS	
	MEAN	S.D	MEAN	S.D
Indigenous game (kho-kho) players	149.6	11.58	7.72	1.30
NON- indigenous games (volleyball) players	166.25	24.28	9.27	1.07

Table 2: Comparison of aerobic fitness between indigenous games kho-kho and non- indigenous games volleyball players

Variable	Origin of game	Number	Mean	S.E.M	S.E.	M.D	t-value
Aerobic Fitness	Indigenous game	40	149.6	1.83	4.26	16.65	3.90**
	Non- Indigenous game	40	166.25	3.84			

$t_{-0.05}$ (78)=1.99 ** Significant at 0.05 level

Table 3: Comparison of anaerobic fitness between indigenous games kho-kho and non- indigenous games volleyball players

Variable	Origin of game	Number	Mean	S.E.M	S.E	M.D	t-value
Anaerobic Fitness	Indigenous game	40	7.72	0.20	0.27	1.55	5.83**
	Non- Indigenous game	40	9.27	0.17			

$t_{-0.05}$ (78)=1.99 ** Significant at 0.05 level

needs speed, endurance, agility, strength that is similarly the requirement of the volleyball players.

The rural population of India, comprising about 70 per cent of the country's total population possess higher level of physical fitness, physiological and morphological status than the people residing in urban areas, seems to be a pillar of strength in the Country's sports arena. Physical education and sports in India have held great importance throughout India's history for a number of reasons. Several different games are played in the country with their origin in ancient times. Often they are played during festivals for physical development and recreational entertainment. Playing such games may aid in the promotion of physical prowess and multilateral motor development.

Kho-Kho: Kho-Kho is an 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.

Volleyball is a sport played all over India, both in rural as well as urban India. It is a non-indigenous popular recreation sport. Volleyball has been a part of the official program of the Summer Olympic Games since 1964. The complete rules are extensive. However, simply, play proceeds as follows: a player on one of the teams begins a 'rally' by serving the ball (tossing or releasing it and then hitting it with a hand or arm), from behind the back boundary line of the court, over the net, and into the receiving team's court. The receiving team must not let the ball be grounded within their court. The team may touch the ball up to 3 times but individual players may not touch the ball twice consecutively. Typically, the first two touches are used to set up for an attack, an attempt to direct the ball back over the net in such a way that the serving team is unable to prevent it from being grounded in their court. The rally continues, with each team allowed as many as three consecutive touches, until either (1) a team makes a kill, grounding the ball on the opponent's court or winning the rally; or (2) a team commits a fault and loses the rally. The team that wins the rally is awarded a point, and serves the ball to start the next rally.

This study intended to analyses the Aerobic and Anaerobic fitness among indigenous game (kho-kho) players and non-indigenous game (volleyball) players.

Objective of the Study

Objective of the study was to compare the aerobic and anaerobic fitness between indigenous and non-indigenous game players in west Bengal.

Design and Methodology

Subjects

For the purpose of this study eighty- (80) male players were selected, forty- (40) from the indigenous sport kho-kho and forty- (40) from by non-indigenous sport volleyball who represent different competition at sub-division, district & state level have been selected randomly. Their age ranged between 16 to 18 years.

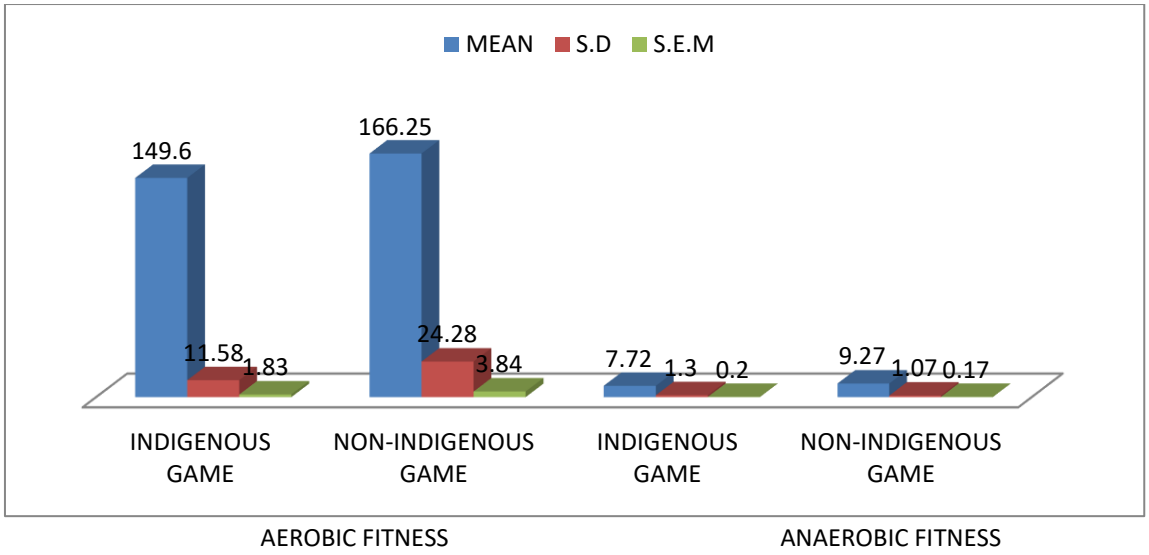

Figure 1: The graph showing the aerobic & anaerobic fitness of indigenous games kho-kho and non- indigenous games volleyball players

The study was conducted only on the male players.

Variables

a) Independent Variables:- Indigenous game (kho-kho) players and non-indigenous game (volleyball) players.
b) Dependent Variable:-

1. Anaerobic Fitness:- 50 yard dash (seconds)
2. Aerobic Fitness:- 600yard run/walk (seconds)

Statistical Technique

The data analyzed and compared with the help of statistical procedure in which Mean, Standard Deviation (SD), Standard Error of Mean (SEM) and t-test used to compare the data. The level of significance was set at $p<0.05$ level of confidence.

Results

It appears in table-1 that mean and standard deviation of Indigenous game (kho-kho) players is 149.6, 11.58 and non- indigenous games (volleyball) players is 166.25, 24.28 in relation to aerobic fitness. In case of anaerobic fitness of the groups the mean and standard deviation is 7.72, 1.30 and 9.27, 1.07 respectively. It is evident that Indigenous game (kho-kho) players are superior to non-indigenous games (volleyball) players in relation to aerobic & anaerobic fitness.

The analysis of table 2 shows that the mean difference of aerobic fitness of indigenous games (kho-kho) and non-indigenous games (volleyball) players is 16.65 and SE is 4.26. The calculated 't` value was found 3.90 which is above the table value. So it can safely be said that the mean difference of aerobic fitness between the indigenous games (kho-kho) and non- indigenous games (volleyball) players is statistically significant.

The analysis of table 3 shows that the mean difference of anaerobic fitness of indigenous games (kho-kho) and non-indigenous games (volleyball) players is 1.55 and SE is 0.27. The calculated- 't` value was found 5.83 which is greater than the table value. Therefore, it may be stated that the mean difference of aerobic fitness between the indigenous games (kho-kho) and non- indigenous games (volleyball) players is statistically significant.

Discussion

The result shows that the aerobic fitness of indigenous game (kho-kho) players was better than the non-indigenous game (volleyball) players. Nevertheless, indigenous game (kho-kho) players and non- indigenous game (volleyball) players are more or less similarly able in relation to anaerobic fitness. Indigenous sports of India like Kho-Kho have significant value for enhancing physical fitness capabilities however there is a paucity of research completed to date. This was probably one of the first scientific examinations of these sports seeking to profile athletes compared to non-indigenous sports in west Bengal. Interestingly we found that as a group, athletes from indigenous sports exhibited faster aerobic performance than athletes involved in more traditional western sports. In both the cases bursting speed, agility, basic endurance, strength, and strength endurance are highly required. As a result the players of both the team's practice to improve those qualities in good amount.

The result of the t-value showed the defiantly significant difference in anaerobic fitness & aerobic fitness components between indigenous game (kho-kho) players and non- indigenous game (volleyball) players as tabulated value at 0.05 levels is 1.99 lower than the obtained value where indigenous game (kho-kho) players found superior than their counterparts.

Conclusions

On the basis of the obtained results from the present analysis, it may be concluded that indigenous game (kho-kho) players and non- indigenous game (volleyball) players in West Bengal significantly differ on the variables of Anaerobic Fitness (50 yard dash). In anaerobic fitness indigenous game (kho-kho) players have better score in comparison to non- indigenous game (volleyball) players. This result shows that aerobic fitness significantly differ between two groups & indigenous game (kho-kho) players are better than non- indigenous game (volleyball) players.

Indigenous games of India are cost effective, feasible and easy to play and may have excellent application in school physical education programs. Indigenous games like Kho- Kho can be an excellent means to develop aerobic fitness & anaerobic fitness.

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