A COMPARATIVE STUDY ON AGILITY FLEXIBILITY AND LEG EXPLOSIVE STRENGTH BETWEEN UNIVERSITIES LEVEL FEMALE KABADDI AND KHO-KHO PLAYERS

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Abstract

Fitness is the most important factor for any type of performance. The purpose of the study was to find out the significant difference between University level female Kabaddi and Kho-Kho players in Agility, flexibility and leg explosive strength. The subjects of present study were university level female Kabaddi and Kho-Kho players selected from Kalyani University and Bardwan University. Total thirty (30) female subjects were selected for this study, among them, fifteen (15) Kabaddi and fifteen (15) Kho-Kho players. The age level of the subject was between 18-25 years. All the subjects were assessed for age, height, weight, Agility, Flexibility and Leg Explosive strength. Analyzing the data it was found that – 1.The agility of Kho-Kho players was significantly better than agility of Kabaddi players.2. There was no significant difference of flexibility among Kabaddi and Kho-Kho players. 3. The leg explosive strength of Kho-Kho players was significantly better than Kabaddi players.

Key words: Kabaddi , Kho-Kho, Agility, Flexibility ,Leg Explosive strength

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Introduction

1. History of Kabaddi

Kabaddi is basically an outdoor team game, played in the tropical countries of Asia. This indigenous game of India was adopted by other countries in Asia viz. Pakistan, Nepal, Bhutan, Bangladesh, Sri Lanka, Maldives, Malaysia and more recently by Japan and China.

The excitement and thrill provided by the game has made it very popular and Kabaddi is rightly called the 'Game of the masses', since spectators totally involve themselves and give the players a great deal of encouragement.

The game requires no equipment whatsoever, and the rules of the game are very easy to comprehend. This is the reason for the popularity of the game in rural areas, since rural youth in India can ill-afford the sophisticated equipment demanded by other sports.

The game demands agility, muscular co-ordination, breath holding capacity, quick response and a great deal of presence of mind. Kabaddi was probably invented to develop defensive responses by an individual against group attacks and a group's responses to an individual attack.This is the only combative sport in which offence is an individual effort whereas defence is a group effort.

Kabaddi at the **2014 Asian Games** was held in Songdo Global University Gymnasium, Incheon, South Korea from 28 September to 3 October 2014.India's both men's and women's team won two kabaddi gold medals by defeating the same opponent Iran in the finals where Iran bagged silver in both the categories. Bronze was given to South Korea and Pakistan in men's draw and while women's team of Bangladesh and Thailand clinched it after their respective defeats in semifinals. (en.wikipedia.org/wiki/kabaddi at the 2014 Asian Games.)

The **Pro Kabaddi League** (PKL) is a professional kabaddi league in India, based on the format of the Indian Premier League. The first edition of the tournament started on 26 July 2014 with eight franchises consisting of players from around the world.It is currently supervised by Mashal Sports Managing Director Charu Sharma. (Wikipedia.ogr/wiki/pro_kabaddileague)

Kabaddi believes in the maxim of a strong mind in a strong body. This inexpensive game should be given the maximum encouragement since it is well suited for developing countries to realize the underlying spirit of sports, which is health for all.

Origin

The origin of the game dates back to pre-historic times. The game was played all over the country in various forms. It was known as HU-TU-TU in Western India, HA-DO-DO in Eastern India and Bangladesh, Chedugudu in Southern India, Kaunbada and various other names in Northern India. Kabaddi may have been derived from the term 'Kaunbada' which means a challenge to the opponent. (www.dsysodisha.gov.in/pdf/rules/kabaddi. pdf)

Some of the major forms of the game are Amar, Gemini, Sanjeevini and the game was played as per the situation with flexible rules. All these forms were synthesized to the present form of Kabaddi. Maharashtra is the pioneer state to popularize this game and bring it to the national platform. It was only in 1918 that certain rules and regulations were laid down and efforts were made to give the game a National status. The rules and regulations were brought out in print for the first time in 1923 and an All India competition was conducted the same year at Baroda on the basis of these rules. The game received international exposure during the 1936 Olympic Games at Berlin when it was demonstrated by the Hanuman Vyayam Prasarak Mandal, Amravathi, and it received good appreciation.

Kabaddi was introduced in the Indian Olympic Games at Calcutta in 1938. An All India Kabaddi Federation came into existence during 1950. Regular National Championships commenced from the year 1952. The first men's Nationals were held in Madras and the first women's Nationals were held in Calcutta in 1955.

New rules were framed in 1954 at the National Championship held in New Delhi. Efforts were made to demonstrate the game in the World Youth Festival held at Moscow in 1957 but unfortunately due to various reasons this could not be accomplished.

The Indian University Sports Control Board included Kabaddi as one of the main sports disciplines in their curriculum during 1961. The School Games

Federation of India included the discipline in the school games during 1962. The Amateur Kabaddi Federation of India, a new body, came into existence in

the year 1972 with the prime motive of organizing competitions at the National

level and popularizing the game in the neighbouring countries. Junior and Sub- Junior sections were also included in the national competitions.

The National Institute of Sports, Patiala, the premier institute to develop sports in the country included the game in the coaching curriculum with effect from 1971. Since then,

qualified coaches are being produced every year, to train players at different levels in a systematic and scientific manner. The Indian men's team toured Bangladesh in 1974 as a part of the Cultural Exchange Programme and played test matches in different parts of the country.

The Bangladesh team visited India in 1979 and played 5 test matches in our country. The Asian Amateur Kabaddi Federation was formed in the year 1978, at Bhilai, on the occasion of the silver jubilee of National Championships in Kabaddi. The first Asian Championship was conducted in the year 1980 at Calcutta. In 1981, Indian men & women teams went on a goodwill tour of the Asian countries and played exhibition matches in Thailand, Japan, Malaysia etc. in order to popularize the game abroad. Federation cup competitions for men and women commenced in the same year. In the IXth Asian Games held at New Delhi, Kabaddi was included as a demonstration game. An open International tournament was conducted in Bombay in 1984. The game was included in the South Asian Federation Games held at Dacca for the first time in 1985. On the occasion of the tri-centenary celebrations of the city of Calcutta, an International Invitation Kabaddi Tournament was organised at Calcutta.Kabaddi was included as one of the main disciplines in the XIth Asian Games, held at Beijing. This major landmark in the history of Kabaddi. It was a proud moment for India when it won the GOLD MEDAL and an unforgettable event for Kabaddi lovers all over the country who had strived to get the game into the international arena.

2. History of Kho-Kho

kho-kho, traditional Indian sport, a form of tag, that is one of the oldest forms of outdoor sport, dating back to prehistoric India.

The kho-kho playing field—which can be placed on any suitable indoor or outdoor surface—is a rectangle 29 metres (32 yards) long and 16 metres (17 yards) wide with a vertical wooden post at either end of the field. Each kho-kho team consists of 12 players, but during a contest only 9 players from each team take the field. A match consists of two innings. In an innings, each team gets seven minutes for chasing and seven for defending. Eight members of the chasing team sit in eight squares in the central lane of the field, alternating in the direction they face. The ninth member is the active chaser (sometimes referred to as the attacker), who begins his pursuit at either of the posts. The active chaser “knocks out” an opponent by touching that person with the palm of the hand. The defenders (also called runners) try to play out the

seven minutes, avoiding being touched by the chaser while not moving out of the field's boundaries. Runners enter the chase area (known as the rectangle) in batches of three. As the third runner leaves, the next batch of three must enter the rectangle. Runners are declared "out" when either they are touched by the active chaser, they drift out of the rectangle, or they enter the rectangle late. The active chaser can get any chasing-team member, sitting crouched in one of the squares in the centre of the field, to take over and continue the chase by tapping him on the back with the palm and saying "kho" loudly. The chase is built up through a series of "Khos" as the chasers continue their pursuit in a relay manner. (Sports.indiaprss.org /Kho-Kho.phq)

The first kho-kho tournaments were organized in 1914, and the first national championship was held in 1959 at Vijayawada under the auspices of the Kho-kho Federation of India (KKFI), which was formed in 1955. Ever since, the KKFI has made great efforts to popularize the game, which is now played across India at various levels, from schools to the national team. Kho-kho was included as a demonstration sport at the Berlin 1936 Olympic Games and at the South Asian Federation (SAF) Games in Calcutta (Kolkata) in 1987. It was during the SAF Games that the Asian Kho-kho Federation was formed, which later helped popularize kho-kho in Pakistan, Bangladesh, Nepal, and Sri Lanka.

3. Agility

At present, there is no consensus among the sports science community for a clear definition of agility. Agility has classically been defined as simply the ability to change direction rapidly (Bloomfield, Ackland, & Elliot, 1994; Clarke, 1959; Mathews, 1973), but also the ability to change direction rapidly and accurately (Barrow & McGee, 1971; Johnson & Nelson, 1969). In more recent publications, some authors have defined agility to include whole-body change of direction as well as rapid movement and direction change of limbs (Baechle, 1994; Draper & Lancaster, 1985). Even more confusing has been the introduction of the term ''quickness'' (Baker, 1999a; Moreno, 1995), which is seemingly used interchangeably for both agility and change of direction speed. Quickness has been identified as ''a multi-planar or multidirectional skill that combines acceleration, explosiveness, and reactiveness'' (Moreno, 1995). This definition suggests that quickness consists of cognitive and physical reactive abilities and explosive acceleration. If this is an identifiable physical quality, then one might infer that quickness is a component of agility, as the proposed definition (Moreno, 1995) for quickness

does not include deceleration or changing direction. However, the available literature includes skills and tests that involve changing direction and deems these to be quickness drills and tests (Baker, 1999a; Moreno, 1995). Currently, the term quickness is used a great deal in North American sports settings, and has been the topic of several presentations and workshops marketed towards athletes and coaches. The term quickness is also used extensively on the worldwide- web in reference to training methods for fieldsport athletes. Although the exact definition of quickness is unclear, its use will be avoided in the current article, as it is seemingly vague. (en.wikipedia.org/wiki/agility)

4. Flexibility

Flexibility or limberness refers to the absolute range of motion in a joint or series of joint, and length in muscles that cross the joint. Flexibility is variable between individuals, particularly in terms of differences in muscle length of multi-joint muscles. There are two kinds of flexibility, static and dynamic flexibility; **Static flexibility**-The range of motion about a joint is define static flexibility. **Dynamic flexibility**-This type of flexibility is define as the opposition or resistance of a joint to motion. The structure limits to flexibility are bone, muscles, ligaments, other structures associated with joint capsule, tendons and other connective tissues and skin. Flexibility is improved by type of exercise and stretching.

Along with strength and endurance, flexibility is also an important component of muscular performance. So flexibility city is very important of any type of activities. In Kho-Kho and Kabaddi more require shoulder ship, hip flexibility and other flexibility of joint. (en.wikipedia.org /wiki /flexibility (anatomy)

5. Leg Explosive Strength

An athlete's ability to cover a distance in short period of time is a factor of power and explosive strength of the muscles. Power refers to the ability of the neuromuscular system to produce the greatest possible impulse in a given period of time. The time period depends on the resistance or the load against which the athletes has to work and of the organization of the acceleration (Scbmidtbeicher 1992). Explosive strength on the other hand describes the ability of the neuromuscular system to develop high action velocities (Buhrle 1985, Boapa 1983).

Methodology

1 THE SUBJECT

The subject of present study were university level female Kabaddi and Kho-Kho players selected from Kalyani University and Bardwan University. Total thirty (30) female subject were selected for this study. Among them, fifteen (15) Kabaddi and fifteen (15) Kho-Kho players. The age level of the subject was between 18-25 years.

2 CRITERION MEASURES

To conduct the present study the following measurement were taken –

Age, Height, Weight, Agility, Flexibility and Leg Explosive strength.

3 TOOLS AND EQUIPMENTS USED

To collect relevant information for the project work following tools were used–

a. Measuring tape, b. Steadiometer, c. Weighing Machine ,d. Stopwatch

d. Flexomeasure case with yardstick and tape.

4 PROCEDURES FOR COLLECTION DATA

a. Age: Age was recorded in completed years. Age of the subjects was vectored from the Madhyamic Admit Cards.

b. Height: The height was measured on a stadiometer. The reading of the scale taken in nearest centimeters.

c. Weight: For measuring the weight a weighing machine was used. The subject was asked to stand bare footed on the platform of weighing machine increate posture. The weight was recorded in nearest 0.1 kilogram.

d. Shuttle run:

Purpose: To measure the agility of the subjects.

Procedure: Wooden black placed 10m. away from the starting line. The subjects stood behind at one of the starting line. With the two wooden block at the other line. On the signal to start, the subject ran to the wooden block looked one and returned to staring line, placed it behind that line. She then retrieved the second wooden block and sprinted back across the starting line. There were two stop watches and two subjects were completed against each other. Three trials were given and the best performance was taken.

Score: The score was the elapsed time recorded in seconds.

e. Standing Broad Jump

Purpose: To measure the leg explosive strength of the subjects.

Procedure: The subject stood behind the take off line with her feet several inches apart. Before jumping the subjects dipped at the knees and swing the arms, backward, simultaneously extending knee and swinging the arms forward and then jumped forward.

Score: Measurement was from the nearest of take off line of the landing mark in meters.

f. Flexibility :

Purpose: To measure the hip and back flexion and extension of the hamstring muscles of leg.

Procedure:

i. Line up the 15 inch mark of the yardstick with a line on the floor and tape the ends of the stick to the floor so that the flexomeasure case (windows side) is face down.

ii. Sit down and line up the heels with the near edge of the 15-inch mark and slide the seat back beyond the zero end of the yardstick.

iii. A partner stands and braces the toes against the heels. Also an assistant on each side to hold the knees in a locked position as the prepared to stretch.

iv. With heels not more than 5 inches apart, slowly stretched forward, pushed the flexomeasure case as far down the stick as possible with the finger tips of both hands. Take the reading at the near edge of the flexomeasure case.

Score: The best of three trials measured to the nearest quarter of an inch was the test score.

Results & Discussion

Table-1 Means of Age, Height and Weight of the groups.

VARIABLES	KABADDI		KHO-HKO	
	Mean	Sd	Mean	Sd
AGE (Yrs)	21.13	2.26	20.53	2.26
HEIGHT (Cm)	154.8	5.85	153.26	4.92
WEIGHT (Kg)	51.4	5.57	46.66	3.43

Table-I represents the personal data related of age, height and weight of the subjects. It shows that the mean height (154.8cm) of Kabaddi players was more than the mean height (153.26cm) of Kho-Kho players and the mean weight (51.4kg) of Kabaddi players was more than the weight (46.66kg) of Kho-Kho players.

Table-2 Comparison of agility between University level female Kabaddi and Kho-Kho players.

GROUP	AGILITY		't'
	Mean	Sd	
KABADDI	11.25	0.56	4.195*
KHO-KHO	10.58	0.27	

*Significant of 0.05 level of confidence.

Table-no1 shows that the two means of agility of Kabaddi and Kho-Kho players were different. However to ascertain the degree of difference 't' test was conducted and obtained 't' values was 4.19 to be significant at 0.05 level the 't' value should be greater than 2.05 to 2.70.

Table-3 Comparison of flexibility between University level female Kabaddi and Kho-Kho players.

GROUP	FLEXIBILITY		't'
	Mean	Sd	
KABADDI	43.4	4.95	1.84*
KHO-KHO	36.2	6.47	

*Not significant at 0.05 level of confidence.

The above table shows the mean value of flexibility of female Kabaddi and Kho-Kho players. It shows that the two means of flexibility of kabaddi and Kho-Kho players are different. However the degrees of different't' test was conducted and obtained't' value was 1.84 to be not significant at 0.05 levels. The't' value should be less than 2.05 and 2.76.

Table-4 Comparison of leg explosive strength between University level female Kabaddi and Kho-Kho players.

GROUP	LEG EXPLOSIVE STRENGTH		't'
	Mean	Sd	
KABADDI	1.79	0.16	2.65*
KHO-KHO	1.94	0.14	

*Significant of 0.05 level of confidence.

The above table shows the mean value of leg explosive strength of female Kabaddi and Kho-Kho players. The mean of kabaddi and kho-kho players was 1 .79 (±0.16) and 1.94 (±0.14) respectively. And the corresponding't' value was 2.65 which was significant 0.05 level of confident. To be significant at 0.05 level the't' value should be greater than 2.05 at 28 df.

Conclusion

On the basis of the results obtained in the present study following conclusion were drawn.

(i) The agility of Kho-Kho players was significantly better than agility of Kabaddi players.

(ii) There was no significant difference of flexibility among Kabaddi and Kho-Kho players.

(iii) The leg explosive strength of Kho-Kho players was significantly better than Kabaddi players.

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