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# A comparative study on kinesthetic perception and selected anthropometric variables between state level junior Kho-Kho and Kabaddi players

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**Abstract**
In this study the analysis, explanation and interpretation of psychosomatic variables of an individual during sport performance was observed. Considering the importance of kinesthetic perception and somatic variables on sport performance the present study has planned to compare kinesthetic perception and selected anthropometric variables between state level female junior Kho-Kho and Kabaddi players. The significance of the study is to provide best opportunity to select the player for the higher level of competition. Total of 20 Kho-Kho and 20 Kabaddi players were selected as the subject of this study. To conduct the study the following variables were measured through standard procedures as criterion measured, such as - age, height and weight for personal data, BMI, Waist and Hip Circumference were measured as anthropometric variables and kinesthetic perception was measured through distance perception jump. After collecting the data to find out the differences between the groups 't' test was computed and the following conclusions were drawn-

i. The Kho-Kho players were better in kinesthetic perception than Kabaddi players.
ii. The BMI of Kabaddi players were better than Kho-Kho players.
iii. Both waist, and hip circumference of Kabaddi players were greater than Kho-Kho players.

**Keywords:** kinesthetic perception, anthropometric, Kabaddi, Kho-Kho, BMI, circumference.

## 1. Introduction
Kabaddi and Kho-kho are the very popular game in India. Both the game are originated in India. Kabaddi is a basically body contact game and it is the National game of Bangladesh, and state of Punjab, Tamil Nadu and Andhra Pradesh in India. Kabaddi received international exposure during the year 1936 in Berlin Olympic, demonstrated by Hanuman Prasarak Mondal, Amarabati, Maharashtra.

Similarly Kho-Kho is a non-body contact game and a demonstrated in 1982 Asian games which was held in Delhi, but still it has not been included in Asian games so far. It is slowly spreading in the neighboring countries like Nepal, Bangladesh, Srilanka and Pakistan. Both the game required physical, structural and physiological development for higher level performance. Basically both games required specific structure of the body and perception quality i.e. kinesthetic perception.

Perception and movement are two sides of the same coin and are difficult to separate. Perception itself may be defined, as "the total pattern arising from many sensation and result in a meaning which is more than the sum of its parts". Perception – motors refers to the ability of individual to receive, identify, interpret, and react property to a multitude of stimuli impinging on them from the outside and from within themselves. Of course those stimuli from the outside come from the sense of sight, hearing, touch, taste, and smell, while those form with in come from the Kinesthetic or proprioceptive sense. Motor-learning is the integration of movement into a pattern for a purpose as a result of training procedure or environmental conditions.

Kinesthetic perception is the ability to perceive the position, effort and movement of the body parts or entire body during muscular action, is sometime referred to as the sixth sense. The kinesthetic perception is presumably located in the joints, muscle & tendons. The term proprioceptive sense is also used to refer this sense. The proprioceptor was a sensory modality that provides feedback solely on the status on the body internally.

The receptor for movement sense and those which give information about the position of the body in space are called proprioceptors.

Structure and function are dependent on one another. Structure determined function and function also influences structure. This is equally applicable for games and sports. This sports persons with a particular sport. Basket batters are taller and Gymnast are shorter, long distance Runner are thinner and sprinters are muscular. Defenders are heavier forwards are lighter again a high level performer for long distance running possesses lesser amount of part in comparison with the some level sports person for swimming.

This interdependent of structure and function has been the focus of study and research for sports scientists. It has been reported that persons of different body structure should go for different type of activities to achieve high level performance. The selection of athlete of different games and sports also considers the specific requirement of the event it respect of body build.

According to Carter (1982) the athletes who want to achieve success in sports at high level can compare their physique with those of top class athlete.

Conducted a study on Indian weight lifter and wrestlers and reported that India athletes had relatively greater amount BMI and waist and hip ratio comparison with the Olympians.

Studied the physical status and performance of women junior state level Kho-Kho players. They found significant mean difference in anthropometric and somatic variables.

**Purpose of the Study**

The purpose of the study was to find out:

i. The differences in kinesthetic perception between the state level female Kabaddi and Kho-Kho players.
ii. The differences in BMI between the state level female Kabaddi and Kho-Kho players.
iii. The differences in Waist and hip circumferences between the state level female Kabaddi and Kho-Kho players.

**Significances of the study**

i. This study may help to select the players for the higher level of competition.
ii. The result of the study may provide the best opportunity to make the coaching process in a most effective way.

**Methodology**

This study comes under the category of descriptive survey in the field of Physical Education. In this study the investigator made on attempt to evaluate and compare the selected anthropometric and kinesthetic perception among female Kabaddi and Kho-Kho players. Here in this chapter – the subjects, criterion measure, administration of tests, Instrument and tools and statistical computation are described.

**The subject**

20 female kabaddi and 20 female Kho-Kho players of state level were selected as the subject for the present study. The age of the both groups of subjects were ragging from 15-17 years.

**Criterion Measure**

The criterion measures of this study were – Age, height and weight for personal data, BMI Waist & Hip circumference and distance perception jump for kinesthetic perception were taken as a criterion measures

**Instruments and Tools used**

To collect the relevant information for this study following tools were used

- Stadio meter
- Weighing machine
- Measuring tape
- Whistle

**Procedure for collection data**

For personal data the investigator had considered age height and weight which has been collected in the following ways.

Ages of the subjects were recorded from date of birth certificate. It was recorded as complete years.

For measuring standing height the subjects were asked to erect on a horizontal surface, then a smooth pointer was placed on subject head and actual height was measured from the wall and was recorded in nearest 0.1 centimeter.

For measuring weight the subjects were asked to stand bare footed on the platform of weighing machine in erect posture. The weight was recorded in nearest 0.1 kg to measuring the BMI the procedure of collected data were – height in kg and height in centimeter were taken BMI was to calculated from the following formula –

$$BMI = \frac{\text{Weight (in kg)}}{\text{Height}^2 \text{ (in cm)}}$$

The score is ratio of weight and height

To measure the circumference of waist and hip – A measuring tape was used in centimeter scale. The total circumference of waist and hip in cm scale were recorded as a score of a subject.

To measured the kinesthetic perception ability the distance perception jump used. To collect the data 20 trails were given and the scores were recorded in cm scale. Then highest five scores and lowest five scores were eliminated and the arrange of the sum of middle ten scores were recorded a score of a subject.

After collecting the data a standard statistical procedure were applied for getting better result and discussions.

**Result and Discussion**

In this chapter result and discussion of all the selected anthropometric variables and kinesthetic perception were presented.

**i. Personal data**

Personal data consists of - Age, height, weight of the subjects and it was presented in table no. 1 and fig no. 1 for clear mental picture.

**Table 1:** represents the mean of personal data of the Kho-Kho and Kabaddi groups

| Variable | Age (Years) | Height (cm) | Weight (kg) |
|---|---|---|---|
| Kabaddi | 15.5 | 152 | 49.8 |
| Kho-Kho | 15.6 | 155.5 | 43.1 |

It appears in table no-1 that the mean value of age, height weight of kabaddi players were 15.5, 152 and 48.8 respectively and the mean value of age, height and weight of Kho-Kho players were 15.6, 155.5 and 43.1 respective.

From table no.-1it was also evident that the heights of the Kho-Kho players were more than Kabaddi players and

conversely weight of the kabaddi players were better than Kho-Kho player.

The difference among the groups were also presented graphically in Fig No-1for clear mental picture

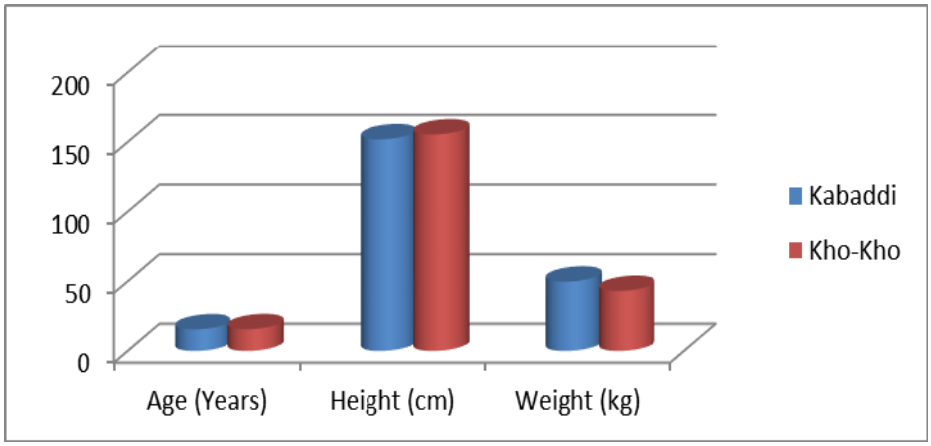


**Fig 1:** represents the mean & SD value in Age, Height and Weight of the two groups.

**Body Mass Index**

The differences between Kho-Kho and Kabaddi groups in BMI were presented in table No. 2 and Fig. No. 2 (Fig 2 for clear mental picture)

**Table 2:** Comparison of BMI between State level junior female Kabaddi and Kho-Kho players

| Group | Mean | SD | 't' |
|---|---|---|---|
| Kabaddi | 21.99 | 1.50 | 5.36* |
| Kho-Kho | 18.88 | 2.01 | |

Significant at 0.05 level of confidence df = 38, table value 2.02

It appears in table no-2 that the mean and SD value of kabaddi players in BMI were 21.99 and 1.50 respectively and the mean and SD value of Kho-Kho players in BMI were 18.88 and 2.01 respectively.

It shows that the two mean of BMI of Kabaddi and Kho-Kho players were different. However to ascertain the degree of differences 't' test was computed and the 't' value was found 5.36, which was significant at 0.05 level of confidence. The normal BMI ranges were exists between 18 to 25, and the mean BMI was about 21.5. The mean BMI of kabaddi players were 21.99 which was balance for a population. Where the BMI of Kho-Kho players were 18.88 which was low in comparison to the mean of normal.

The difference among the groups were also presented graphically in Fig No-2 for clear mental picture-

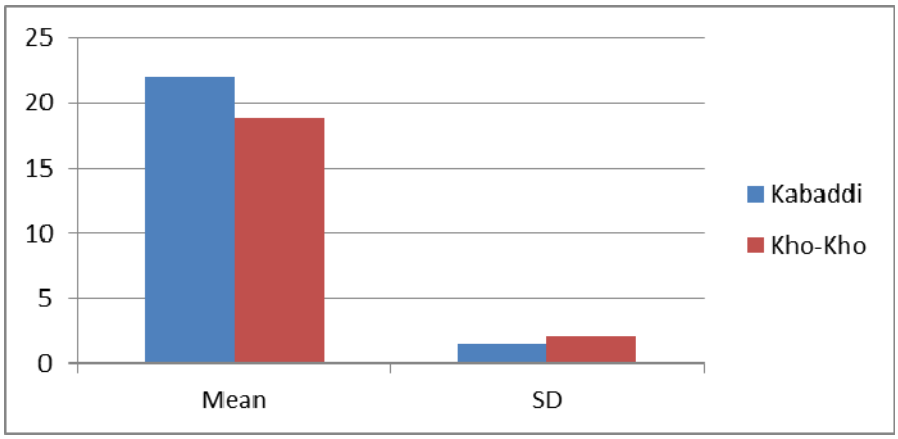


**Fig 2:** represents the mean & SD value in BMI among the two groups.

**Waist Circumference**

The differences between Kho-Kho and Kabaddi groups in Waist circumference were presented in table No. 2 and Fig. No. 2 (Fig 2 for clear mental picture)

**Table 3:** Comparison of Waist circumference between State level junior female kabaddi and Kho-Kho players

| Group | Mean(cm) | SD | 't' Value |
|---|---|---|---|
| Kabaddi | 70.4 | 3.48 | 3.45* |
| Kho-Kho | 65.6 | 4.96 | |

Significant at 0.05 level of confidence df = 38, table value 2.02

It appears in table no-3 that the mean and SD value of kabaddi players in Waist circumference were 70.4 and 3.48 respectively and the mean and SD value of Kho-Kho players in waist circumference were 65.6 and 4.96 respectively.

It shows that the two mean of Waist circumference of Kabaddi and Kho-Kho players were different. However to ascertain the difference, 't' test was computed and the value was found 3.45, which was significant at 0.05 level of confidence. As the weight of kabaddi players were more than kho-kho players and the nature of game demands more body weight. So Kabaddi players were in better position in waist circumference.

The difference among the groups were also presented graphically in Fig No-3for clear mental picture-

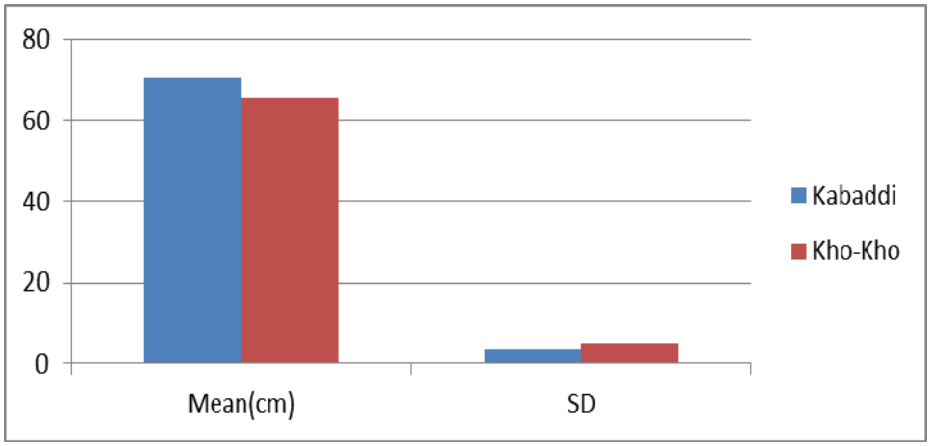


**Fig 3:** represents the mean & SD value in Waist circumference of the two groups.

**Hip Circumference**

The differences between Kho-Kho and Kabaddi groups in hip circumference were presented in table No. 4 and Fig. No. 4 (Fig 4 for clear mental picture)

**Table 4:** Comparison of hip circumference between State level junior female kabaddi and Kho-Kho players.

| Group | Mean(cm) | SD | 't' Value |
|---|---|---|---|
| Kabaddi | 89.35 | 3.21 | 4.49* |
| Kho-Kho | 84.41 | 3.90 | |

Significant at 0.05 level of confidence df = 38, table value 2.02

It appears in table no-3 that the mean and SD value of kabaddi players in hip circumference were 89.35 and 3.21 respectively and the mean and SD value of Kho-Kho players in hip circumference were 84.41 and 3.90 respectively.

It shows that the two mean of hip circumference of Kabaddi and Kho-Kho players were different. However to ascertain the difference, 't' test was computed and the value was found 4.49*, which was significant at 0.05 level of confidence. As the weight of kabaddi players were more than kho-kho players and the nature of game demands more body weight. So kabaddi players were in better position in hip circumference.

The difference among the groups were also presented graphically in fig no-4 for a clear mental picture-

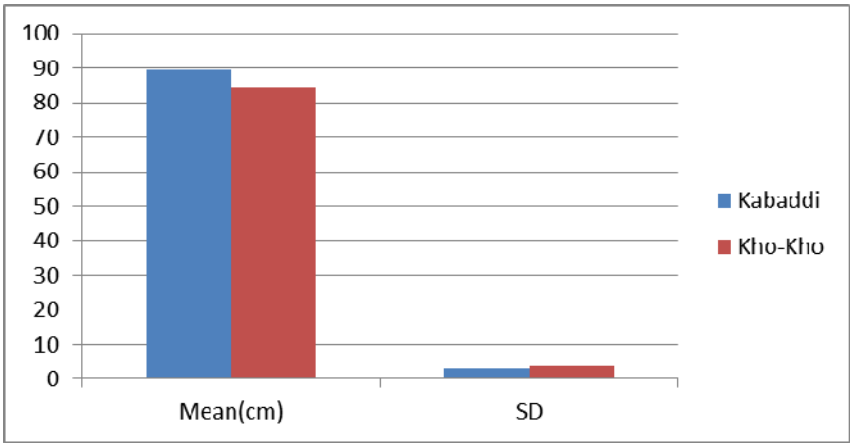


**Fig 4:** represents the mean &SD value in Hip circumference among the two groups.

**Kinesthetic perception**

The difference between Kho-Kho and Kabaddi groups in Kinesthetic perception were presented in table No. 5 and Fig. No. 5 (Fig 5 for clear mental picture)

**Table 5:** Comparison of kinesthetic perception between State level junior female kabaddi and Kho-Kho players.

| Group | Mean(cm) | SD | 't' Value |
|---|---|---|---|
| Kabaddi | 78.4 | 16.08 | 4.41* |
| Kho-Kho | 55.0 | 10.65 | |

Significant at 0.05 level of confidence df = 38, table value 2.02

It appears in table no-5 that the mean and SD value of kabaddi players in Kinesthetic perception were 78.4 and 16.08 respectively and the mean and SD value of Kho-Kho players in Kinesthetic perception were 55.0 and 10.65 respectively.

It was also shows that the mean value of kinesthetic perception of both Kabaddi and Kho-Kho players were different. However to ascertain the degree of differences't' test was computed and the 't' value was found 4.49*, which was significant at 0.05 level of confidence. So though some differences were observed among the mean values and significant differences were exists between the two groups.

The difference among the groups were also presented graphically in fig no-5 for a clear mental picture-

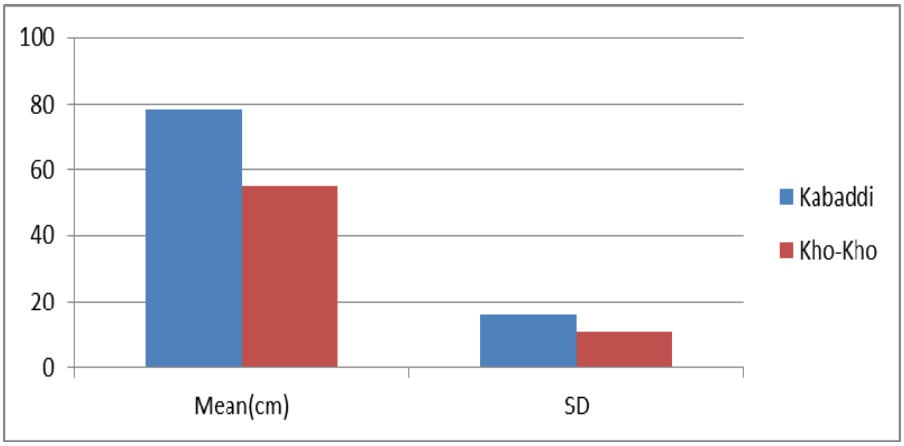


**Fig 5:** represents the mean & SD difference in kinesthetic perception among the two groups.

## Conclusions

On the basis of results obtained and limitation of the study, the following conclusions were drown –

i. The Kho-Kho Players were taller than Kabaddi players.
ii. The Kabaddi players were more heavier than Kho-Kho players
iii. The Kabaddi Players were better than the Kho-Kho Players in BMI.
iv. The Waist and Hip circumferences of Kabaddi players were greater than Kho-Kho players.
v. In kinesthetic perception ability Kho-Kho players were better than Kabaddi players.

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