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**Gurupreet Singh**  
Assistant Professor, Department of Physical Education and Sports Technology, SGGSW University, Fatehgarh, Sahib, Punjab, India

**Dr. Kanwaljeet Singh**  
Former Professor and Dean Academic Affairs and Head of Department of Physical Education and Sport Technology, SGGSW University Fatehgarh, Sahib, Punjab, India

## A comparative study on selected anthropometrical variables among kabaddi and gatka players

**Gurupreet Singh and Dr. Kanwaljeet Singh**

### Abstract

The purpose of the study was to know about the comparison of anthropometric variables among Kabaddi and Gatka Players. The study was conducted among 220 male players (110 kabaddi and 110 gatka) those who had represented interuniversity from North India. The subjects were thoroughly aware with the testing procedure as well as the purpose and significance of the study. Subjects were made aware about the conduct of the study and related information was given by the researcher. The variables selected for the study are anthropometric respectively. They are Height, Weight, Humerus bicondylar diameter, Femur bicondylar diameter. Further the data were analyzed to find out the significant differences among the groups. 't'-test statistical technique was used to analyze the significant differences and the level of significance was set at 0.05 level for testing the hypothesis. Further the data were analyzed to find out the significant differences among the groups.

The results revealed that there was insignificant difference among the kabaddi and gatka player in Height, Weight, Humerus bicondylar and Femur bicondylar.

**Keywords:** Anthropometrical variables, Kabaddi, gatka players

### Introduction

The games Kabaddi and Gatka are the most popular sports in Punjab as well as in India. They are considered as strenuous games because the games demands a high degree of fitness as well as speed, agility, endurance and jumping ability which are the basic qualities of the players. To achieve the best possible performance, the training has to be formulated according to the requirement and of game.

The Sport Kabaddi has Indian origin, played by teams of seven on a court. The players attempt to tag or capture opponents and must hold their breath while running, repeating the word 'kabaddi' to show that they are doing so. It is a contact team sport that originated in Indian subcontinent in Tamil Nadu. It is popular in South Asia and is the state game of the Indian states of Tamil Nadu, Maharashtra, Bihar, Andhra Pradesh, Telangana and Punjab. It is also the national sport of Bangladesh. Two teams compete with each other while occupying its own half of the court. They take turns of sending a "raider" into the half of opposing team and earn points if the raider manages to touch the member of opposing team members and return the home half, all while taking only a single breath. If, however, the raider is tackled and prevented from returning, the opposing team earns the point. Similar, by nature of Sports (Gatka) is also popular in one of the state of India, i.e. Punjab. The study of this project is linked to national style kabaddi and the second game, under study is also popular in Punjab region as gatka.

Gatka is a traditional South Asian form of combat-training, (martial art) developed by Sikhs, in which wooden sticks are used to simulate swords in sparring matches. In modern usage, it commonly refers to the northwestern Indian martial arts, which should more properly be called shastara vidiya from Sanskrit (shastra-vidya or "science of weapons"). Attacks and counterattacks vary from one community to another but the basic techniques are the same. This study will primarily use the extended definition of Gatka, making it synonymous with shastara-vidiya. Gatka can be practiced either as a sport or ritual. The sport form is played by two opponents wielding wooden staves called gatka. These sticks may be paired with a shield. Points are scored for making contact with the stick. The other weapons are not used for

**Correspondence**  
**Gurupreet Singh**  
Assistant Professor, Department of Physical Education and Sports Technology, SGGSW University, Fatehgarh, Sahib, Punjab, India

full-contact sparring, but their techniques are taught through forms training. The ritual form is purely for demonstration and is performed to music during occasions such as weddings, or as part of a theatrical performance. A practitioner of Gatka is called a gatkabaj while a teacher is addressed as Guru or Gurudev.

Gatka is a traditional sports or marshal art of Punjab. Gatka is direct related to the culture of Sikhism and it is performed mostly at occasion of Sikhs religion, like any Gurpurb and other special days. So that this activity to work of bind up different cultures in a single role. The requirement of the Gatka and Kabaddi Players are different in relation to the parameters such as Physical, Physiological, Anthropometrical, Bio-chemical and Psychological etc.

Therefore, Anthropometric measurements are the best applicable means for studying body size, shape and composition. It helps greatly in sports talent selection, sports counseling and measurement of obesity for health related physical fitness. One of the most important tasks for physical education is to measure different part and components of human body.

The scientific terminology given to the measurements of man is "Anthropometric" which is a word synthesized from two Greek words- 'Anthropos' means man and 'metreein' means to measure. Hence, anthropometry means- the measurement of human body.

Physical Educators have long realized that the performance of athlete is greatly influenced by factors such as age, body structure, height, and weight. It also acknowledges that the person of the same age will vary considerably in body size and shape and that individual of the same height will differ greatly in body weight that person may weigh the same but the relative proportion of the muscle fat and bone will be anything but equal.

Anthropometric technique is becoming popular place in the sports medicine clinic, the human performance laboratory and the field of physical education and sports technology. The size shape and composition of athletes and recreational sports participant correlated with performance and indicate condition and potential. To yield precise reliable and most importantly useful information standardized measurement procedure are essential. The validity of the information is strongly dependent on the applicability of these techniques to the sports population and particularly a light athlete. This has been considered but is area that will change rapidly as more information become available. Future trends are likely to be towards multidimensional scaling system and multi component description of the body composition based on population specific approaches. The co-assistant of anthropometric and body composition with exercises and sport science has been mutually benefited synergistic and this is also likely to be the case in future. Anthropometric measurements consist of objective measurement of structure of the body. This is the most specialized technique of measuring the body of athlete and players along with the body structure.

Albert *et al.* (2013)<sup>[1]</sup> evaluate the study "Anthropometric characteristics of elite junior tennis players." The aims of this study were to describe the anthropometric characteristics of elite male and female junior tennis players, to compare the anthropometric variables of the first 12 elite junior tennis players on the ranking with the lower ranked players, and to establish an anthropometric profile chart for elite junior tennis players. There were no significant differences in height and weight between the first 12 and the lower ranked boys, while

the first 12 girls were significantly taller than the lower ranked girls ( $p = 0.009$ ). Significant differences were found for humeral and femoral breadths between the first 12 and the lower ranked girls ( $p = 0.000$ ;  $p = 0.004$ , respectively)

### **Objective of the Study**

- To compare the anthropometrical variables between male players of kabaddi and gatka from interuniversity North Zone of India.

### **Hypothesis of the Study**

#### **For the present study it was hypothesized that**

1. There will be no significant difference of height between male players of kabaddi and gatka from inter university North Zone of India.
2. There will be no significant difference of body weight between male players of kabaddi and gatka from inter university North Zone of India.
3. There will be no significant difference of humerus bicondylar diameter between male players of kabaddi and gatka from inter university North Zone of India.
4. There will be no significant difference of femur bicondylar diameter between male players of kabaddi and gatka from inter university North Zone of India.

### **Procedure and Methodology**

The study was conducted among 220 male players (110 kabaddi and 110 gatka) those who was represented interuniversity from north India. The subjects were thoroughly acquainted with the testing procedure as well as the purpose and significance of the study. Subjects were made aware about the conduct of the study and relevant information was given by the researcher. Further the data were analyzed to find out the significant differences among the groups. 't'-test statistical technique was used to analyze the significant differences and the level of significance was set at 0.05 level for testing the hypothesis. Further the data were analyzed to find out the significant differences among the groups.

### **Tools**

#### **Anthropometric Instrument**

A number of instruments have been devised by anthropologists for taking accurate measurements on the living as well as on the skeleton. The use of proper equipment is most essential for anthropometric measurements. In the present study researcher was use the following instruments.

1. Anthropometric Rod for Height
2. Weighing Machine for Weight
3. Sliding Caliper For Diameter

#### **1. Height (Stature)**

**Purpose:** To measure the Height of the subject.

**Instrument:** Anthropometric rod is the most used instrument for many of the anthropometric measurements on the living beings. It is used to take height measurements as well as transverse breadths of the body. It consists of four segments which when join together from a rigid bar of 200 cm. There is a fixed sleeve on the top of the rod and adjustable graduated cross bar passes through it. There is also movable sleeve with an adjustable graduated cross bar, which registers the height measurements.

**Procedure:** The vertex point is the highest point on the head when it is in a horizontal plane. For measuring height the

subject was asked to stand bare footed and erect with both heels touching each other, with hips and upper scapular part touching the wall. The subject was asked to look straight so that his visual axis parallel to the surface of the floor. The anthropometric rod was held vertical in front of the body in mid-sagittal plane and the horizontal movable arm of the rod was brought down on to the vertex point. The height was recorded with the help of anthropometric rod.

**Scoring:** Height of the subject measured in centimeters.

## 2. Body weight

**Purpose:** To measure the weight of the subject.

**Instrument:** The body weight is ideally taken on the standard weighing machine. The instrument of choice for this study was ‘digital weighing machine’ manufactured by Omron, India (see figure 3.3). It is a portable spring balance with a square foot platform. This machine is calibrated with accuracy of 50 grams

**Procedure:** The body weight is ideally taken on a standard weighing machine. The weight of all subjects was taken by removing all the clothes from the body except the shorts and shirts. The pointer of weighing machine was set at zero. The subject was said to stand bare footed on the weighing machine.

**Scoring:** Weight of the subject is measured in kilograms.

**3. Humerus Diameter:** It measures the straight distance between the two outermost points on the condyles of the lower end of Humerus.

**Instrument:** Sliding caliper is used for taking shorter breadths. It consists of 25 cm. long straight bar. The arms are projected to an equal distance on both the sides of the scale. They end in sharp points on one side and have blunted ends on the opposite. The sharp ends are used for taking measurements on the skeletons whereas the blunt ends are used for measuring the living. Usually, the caliper is graduated up to mm. calipers with venire have been devised for taking more accurate measurements. They also have adjustable arms which enable us to take projective measurements.

**Procedure:** The subject was asked to raise his arm to the horizontal plane and bent at right angle. The measurement across the width of the lower end of the humerus was recorded by pressing the arms of the calipers.

**Scoring:** Humerus diameter is measured in centimeters.

## 4. Femur Diameter

It is the straight distance between the outermost points of the condyles on the lower end of the femur.

**Instrument:** Sliding caliper

**Procedure:** The subject was asked to sit on the bench or chair with his knee flexed at right angle (90°). The arms of the caliper were applied to compress the soft tissues of the epicondyles of the fumer.

**Scoring:** Femur diameter is measured in centimeters.

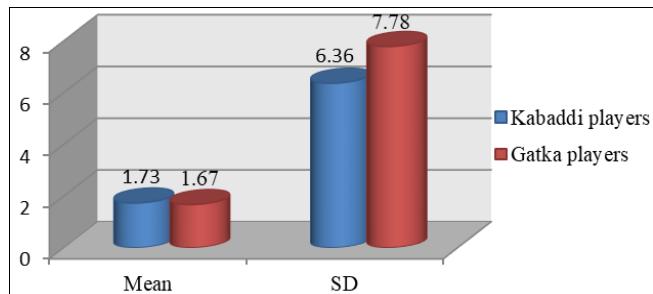
## Statistical Analysis

**Table 1:** T-ratio of the scores of Kabaddi and Gatka players on the measure of Height

	N	Mean (in meters)	SD	t-value
Kabaddi players	110	1.73	6.36	6.47
Gatka players	110	1.67	7.78	

df(218) at 0.05 level = 1.97

Table no.1 shows the Mean, S.D. and ‘t’-value for height of kabaddi and gatka players. The table statistically reveals that the calculated ‘t’-value of height 6.47 is greater than tabulated value 1.97. Hence it proves that there was significant difference between kabaddi and gatka players in height. Furthermore the mean value shows that kabaddi player were taller than the gatka players the values of stable no.1 are also illustrated in figure no.1.



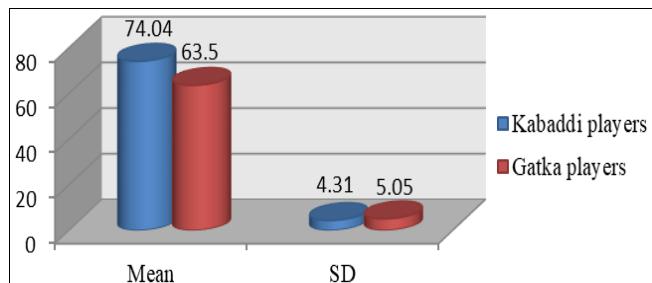
**Fig 1:** Mean and Standard deviation of the scores of Kabaddi and Gatka players on the measure of height

**Table 2:** T-ratio of the scores of Kabaddi and Gatka players on the measure of body weight

	N	Mean (in kilograms)	SD	t-value
Kabaddi players	110	74.04	4.31	16.65
Gatka players	110	63.50	5.05	

df (218) at 0.05 level = 1.97

Table no.2 shows the Mean, S.D. and ‘t’-value for weight of kabaddi and gatka players. The table statistically reveals that the calculated ‘t’-value of weight 16.65 is greater than tabulated value 1.97. Hence it proves that there was significant difference between kabaddi and gatka players in weight. Furthermore the mean value shows that kabaddi player were lower than the gatka players the values of stable no.2 are also illustrated in figure no.2.



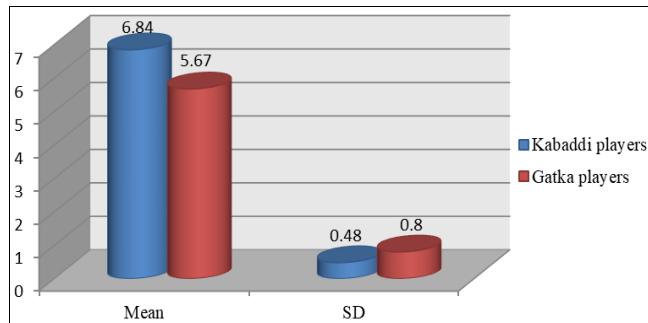
**Fig 2:** Mean and Standard deviation of the scores of Kabaddi and Gatka players on the measure of body weight

**Table 3:** T-ratio of the scores of Kabaddi and Gatka players on the measure of humerus bicondylar

	N	Mean (in centimeters)	SD	t-value
Kabaddi players	110	6.84	.48	10.90
Gatka players	110	5.67	.80	

df (218) at 0.05 level = 1.97

Table no.3 shows the Mean, S.D. and 't'-value for humerus bicondylar of kabaddi and gatka players. The table statistically reveals that the calculated 't'-value of humerus bicondylar 10.90 is greater than tabulated value 1.97. Hence it proves that there was significant difference between kabaddi and gatka players in humerus bicondylar. Furthermore the mean value shows that kabaddi player were lower than the gatka players the values of stable no.3 are also illustrated in figure no.3.



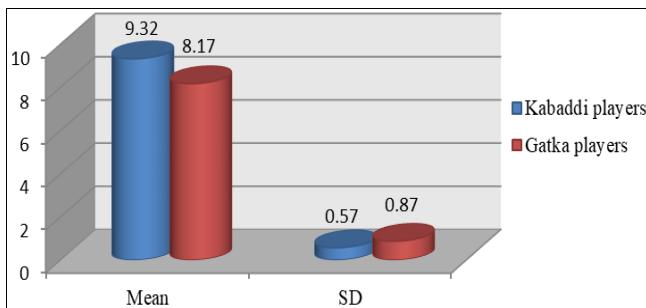
**Fig 3:** Mean and Standard deviation of the scores of Kabaddi and Gatka players on the measure of humerus bicondylar

**Table 4:** T-ratio of the scores of Kabaddi and Gatka players on the measure of femur bicondylar

	N	Mean (in centimeters)	SD	t-value
Kabaddi players	110	9.32	.57	
Gatka players	110	8.17	.87	11.54

df (218) at 0.05 level = 1.97

Table no.4 shows the Mean, S.D. and 't'-value for femur bicondylar of kabaddi and gatka players. The table statistically reveals that the calculated 't'-value of humerus bicondylar 11.54 is greater than tabulated value 1.97. Hence it proves that there was significant difference between kabaddi and gatka players in femur bicondylar. Furthermore the mean value shows that kabaddi player were lower than the gatka players the values of stable no.4 are also illustrated in figure no.4.



**Fig 4:** Mean and Standard deviation of the scores of Kabaddi and Gatka players on the measure of femur bicondylar

## Discussion & Finding

The main purpose of the study was comparison of anthropometric kabaddi and gatka players. The study was conducted among 220 male players (110 kabaddi and 110 gatka) those who were represented interuniversity from north India. The data calculated separately for all the ten anthropometric variables. The variables selected for the study are anthropometric respectively. They are Height, Weight, Humerus bicondylar diameter, Femur bicondylar diameter. Further the data was analyzed to find out the significant differences among the players. 't' test statistical technique

was used to analyze the significant differences and the level of significance was set at 0.05 level for testing the hypothesis. The results revealed that there was insignificant difference among the kabaddi and gatka in Height, Weight, Humerus bicondylar diameter, Femur bicondylar diameter.

## References

- Albert, Sanz D, Zabala M. Anthropometric characteristics of elite junior tennis players; British journal of sports medicine, 2013, 31(12).
- Carter JEL. Prediction of outstanding athletic ability the structural perspective. In: F. Landry and Orban, W.A.R. (Eds.): Exercise Physiology. Symposia specialists, Miami. 1940; 4:29-42.
- Eveleth PB, Tanner JM. Worldwide Variation in Human Growth. Cambridge University Press, Cambridge, 1976.
- Singh SP, Sidhu LS. Physique and morphology of Jat-Sikh cyclists of Punjab. Journal of Sports Medicine and Physical Fitness. 1982; 22:185-190.
- Viviani F, Casagrande G, Toniutto F. The morphotype in a group of peri-pubertal soccer players; the journal of sports medicine and physical fitness. 1993; 33(2):178-83.