

## **Winning Performances in Taekwondo in Relation with the Widths of Lower Limb**

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### **Abstract**

The purpose of this study was to analyze the relation of selected anthropometric measurements which were Biepicondylar Width of Femur and Biiliocrystal Width with the Winning Performance of Taekwondo players. So the problem was stated as 'Relationship of Selected Anthropometric Measurements with Taekwondo Performance'. The objectives of this study were to analyze the relationship between winning success of Taekwondo players and Selected Anthropometric measurements which were Biepicondylar Width of Femur and Bi-iliocrystal Width. It was hypothesized that all the selected anthropometric measurements would have significant relationship with the Performance of Taekwondo players. The data for this study was collected from the official 37th Senior National Taekwondo Championship 2018 held at Madhya Pradesh. The subjects were randomly selected by purposive sampling method. The subjects were 25 Taekwondo players from all over India who participated in above mentioned championship under fin weight category. The results showed insignificant relationship of Biepicondylar Width of Femur and Bi-iliocrystal Width with the success of taekwondo players.

**Keywords** :- Kyourgi, taekwondo, anthropometry, Biepicondylar, Bi-iliocrystal

### **Introduction**

In today's time Taekwondo is the sport which does not require any introduction as it is very popular martial art which is practiced in the entire world. Till date only two martial arts are in the official Olympic games list as Taekwondo is the one along with Judo. Taekwondo is the national sport of Korea. The Taekwondo's origin had its roots in the Korean soil. Today's Taekwondo is majorly influenced by the Japanese Karate. On 15th August 1945 the dominance of Japan ended and the Korean arts again started to develop. After the independence, various martial art academies were formed within the Korea which were called the Kwans. During the demonstration of martial arts by the military in 1952, the South Korean President Syngman Rhee advised that all the martial art styles need to be merged. Then in 1955, all the masters of several kwans sat down to discuss a single unified name for all the martial art styles. They all came up with the name Tae Soo Do as the unified name for all the styles. Then Choi Hong Hi suggested to use the name Tae Kwon Do by replacing Soo by 'Kwon' which means 'Fist'. Korean soldiers were the very first students to practice Taekwondo.

Anthropometry is the system of studying human body measurements. Alphonse Bertillon founded the Society of Anthropology of Paris. The classification system known as the

“anthropometric system” or “judicial anthropometry” was developed by Alphonse Bertillon for which he is remembered as the father of anthropometrics. In the beginning, Alphonse Bertillon worked for the Paris police force in the department of criminal records. At that time, the criminal records were stored alphabetically which created more difficulty in identifying the repeat offenders. For this problem, Bertillon developed a new classification system which was based on anthropomorphic measurements. Bertillon obtained different anthropometric measurements to distinguish characteristics of criminals in custody. He then differentiated each individual as small, medium, or large, and added frontal and profile photography to each file. This type of photography is still used today as in the form of a mug shot.

The anthropometric variables examined for this study were Biepicondylar Width of Femur and Bi-iliocrystal Width. Biepicondylar Width of Femur is the measurement of width between medial and lateral condyles of the femur. And Bi-iliocrystal Width is the measurement of width between right and left iliocrystal landmarks of the iliac bone. In taekwondo sparring competitions, the most used portion of body is lower body, so the Biepicondylar Width of Femur and Bi-iliocrystal Width of the players may have the relation in producing more explosive power in kicks. Which in turn may help in increasing the winning ratio of the players.

### **Objectives**

The objectives focused during this study were:-

1. To find out the importance of Biepicondylar Width of Femur with the Winning Performance of Taekwondo Players.
2. To investigate the relation between Bi-iliocrystal Width and Winning Performance of Taekwondo Players.

### **Hypotheses**

The hypotheses formulated after reviewing the previous studies were:-

1. There exists a significant relationship between Biepicondylar Width of Femur and Winning Performance of Taekwondo Players.
2. There exists a significant relationship between Bi-iliocrystal Width and Winning Performance of Taekwondo Players.

### **Method & Procedure**

#### **Sampling**

The subjects selected for this study were national taekwondo players. All of the subjects were above 18 years of age. The data was collected from the 25 national players. All of the players compete under same weight category which is under 54 kg weight category. The data for this study was collected during the senior national Taekwondo championship which was held at Madhya Pradesh. The technique used for the selection of subjects for this study was purposive sampling technique.

**Independent variables**

The independent variables selected for this study were:

- a) Biepicondylar Width of Femur
- b) Bi-iliocristal Width

**Dependent variables**

The dependent variable selected for this study was the performance data of the players collected during the senior national taekwondo championship.

**Tools**

The following anthropometric tools available from the lab of Lovely Professional University used for the collection of data were:

1. Sliding caliper was used to measure the Biepicondylar width of the femur.
2. Spreading caliper was used to measure the Bi-iliocristal width.

**Statistical Technique**

In order to test the hypothesis of the study, descriptive statistics such as (mean, standard deviation) and Pearson Product Moment Correlation Coefficient technique was employed to analyze the taekwondo performance in relation to selected anthropometric measurements and level of significance was set at 0.05.

**Results**

The objective of the study was to analyze the relationship between Biepicondylar Width of femur and Winning Performance of Taekwondo players.

**Table 1**

**Relationship between Biepicondylar Width of femur and Winning Performance of Taekwondo players**

Variables	N	Mean	S.D	df	r-value
<b>Biepicondylar Width of Femur</b>	25	9.092	0.348	23	-0.303
<b>Performance</b>	25	5.56	6.423		

*Table value of r for df = 23 at 0.05 level of confidence was 0.396.*

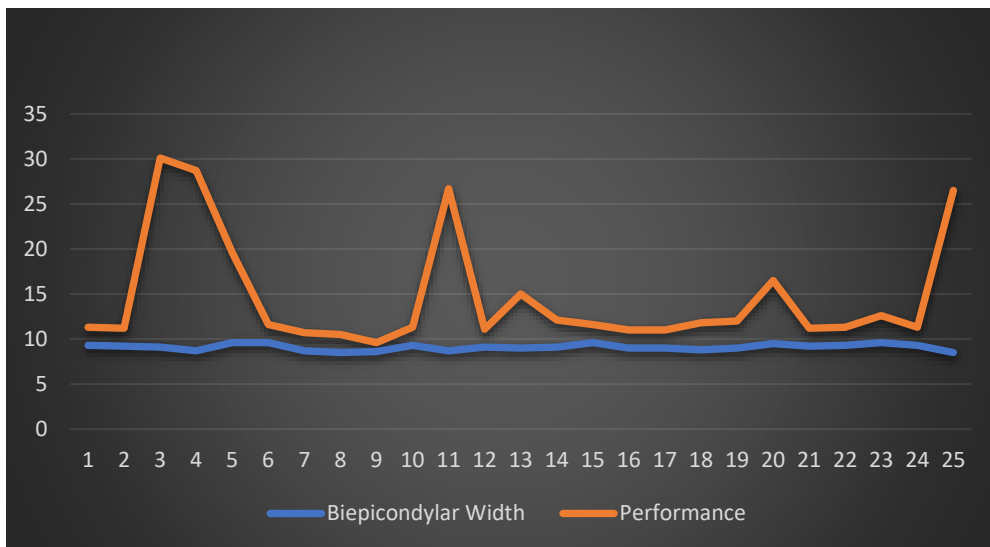


Figure 1

**Line graph showing the relation of Biepicondylar Width of femur with the Winning Performance of Taekwondo players**

Data presented in table 1 indicate that the value of Pearson Product Moment Correlation Coefficient between Biepicondylar Width of femur and Winning Performance for male national Taekwondo players was -0.303. This was a negative below average correlation and statistically insignificant at 0.05 level of confidence. Thus, the stated hypothesis that there exists a significant relationship between Biepicondylar Width of femur and Winning Performance of Taekwondo players was rejected.

The second objective was to analyze the relationship between Bi-iliocrystal Width and Winning Performance of Taekwondo players.

Table 2

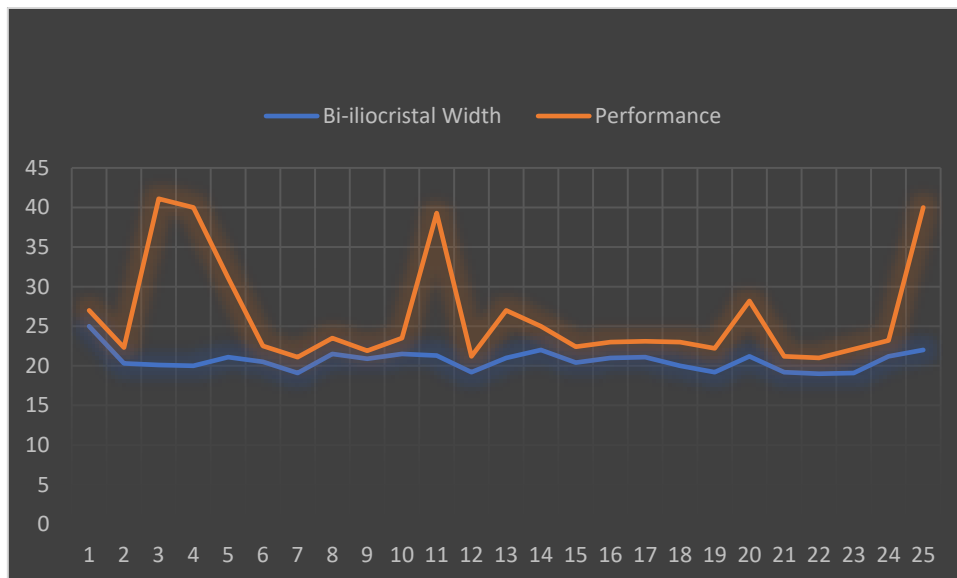
Relationship between Bi-iliocrystal Width and Winning Performance of Taekwondo players

Variables	N	Mean	S.D	df	r-value
Bi-iliocrystal Width	25	20.676	1.305	23	0.063
Performance	25	5.56	6.423		

Table value of r for df = 23 at 0.05 level of confidence was 0.396.

Figure 2

Line graph showing the relation of Bi-iliocrystal Width with the Winning Performance of Taekwondo players



Data presented in table 2 indicate that the value of Pearson Product Moment Correlation Coefficient between Bi-iliocrystal Width and Winning Performance for male national Taekwondo players was 0.063. This was a positive very low correlation and statistically insignificant at 0.05 level of confidence. Thus, the stated hypothesis that there exists a significant relationship between Bi-iliocrystal Width and Winning Performance of Taekwondo players was rejected.

**Discussion & conclusion**

The statistical results showed insignificant negative relationship between Biepicondylar width of Femur and Bi-iliocrystal Width with the Winning Performance of Taekwondo players which means having lower Biepicondylar width of femur or Bi-iliocrystal Width does not significantly affects the Winning Performance of Taekwondo players. In one of the study, Fahima Lammari conducted his research on the topic, "Study of the asymmetry to a population of high-level sportsmen and its consequences on the physical composition, the mass of the lower segment and the somatotype". The aim of the study was to know if asymmetry has an effect on the physical composition of the body as well as on the somatotype in between the dominant members and the non dominant members. The results showed that the lower leg width measurements had no significant difference between the taekwondo players and the non sportsperson<sup>[1]</sup>. The results suggested by this study was in resemblance with the results of the present study. Thus it was concluded that Biepicondylar width of Femur and Bi-iliocrystal Width did not had significant relation in assuring the winning performance of Taekwondo players. The results also showed that the Winners in Taekwondo competitions have lower Biepicondylar width of femur but that does not assures the better performance in Taekwondo Sparring competitions.

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