

Comparison of Anthropometric Variables as the Indicator of Success in Taekwondo Competition

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Abstract

The purpose to conduct this study was to determine the relationship of selected anthropometric measurements with the performance of Taekwondo athletes. In this study the anthropometric measurements of the 25 Taekwondo athletes who participated in the Senior National taekwondo championship 2018 under 54kg weight category were collected. The independent anthropometric measurements selected for this study were Iliac Height, Iliac to Knee Length and Knee Height. The performances of the players in senior national Taekwondo championships in last four years were taken as the dependent variable. The aggregate score of four years for every player was taken as their performance data. The anthropometric data of each independent variable was then correlated with their performance data using Pearson Product Moment Correlation Statistics to find the relationship between them. The results showed positive significant correlation for Iliac Height with the Winning Performance of Taekwondo players and insignificant correlation for other two variables.

Keywords :- Sparring, taekwondo, anthropometry, iliac height, knee height, iliac to knee length

Introduction

Today, Taekwondo has become a global sport that has gained an international reputation and stands among the official games in the Olympics. Taekwondo is rapidly growing martial art in the world and day by day becoming more famous sport among the youth and elders. Taekwondo is the martial art which is more focussed on kicking than punching and throwing. Different techniques of kicking are used in taekwondo to get more scores from the opponents. The word taekwondo itself is the mixture of three words namely which are as: 'Tae', 'Kwon', and 'Do'. The meaning of these words is as kicking, punching and the way respectively. So in the whole taekwondo means the way of kicking and punching.

In taekwondo competitions, non-slippery and elastic mats are used for the competition arena. There are two types of competition arenas that are being used in national and international competitions. The first one is square-shaped and the other one is octagonal shaped. In square shaped arena, the competition area is of 12m x 12m in which allowed contest area is of 8m x 8m and remaining 4m x 4m is safety area. In octagonal shaped arena, the competition area should not be lesser than 10m x 10m and should not be larger than 12m x 12m. In center, the

contest area is of octagonal shape having diameter equals to 8m and each side of the octagon should be of 3.3m approximately. In sparring competitions, three rounds are conducted in which every round is of two minutes duration and there is a one minute rest period in between every round.

Anthropometry is the study of biometrics in humans. Anthropometric measurement system is currently being used in various diverse fields. In this study, the anthropometric measurements of iliac height, knee height and iliac to knee length are studied. Knee height is the measurement from the middle of the knee cap to the surface of the floor. Iliac height is the measurement from the surface of the floor to the widest edge of the iliac crest. Iliac to knee length is the measurement widest edge of the iliac crest to the lateral condylar of the knee.

The research in this field will be very significant for the coaches and selectors in talent identification of players, in future who may bring medals for state and country. This study may also help the beginners to decide whether choose or not to choose taekwondo as their future career and to prepare different effective training programs for taekwondo players having different anthropometric measurements. Also it may guide the players to attain required physical components for better performance in the taekwondo competitions.

Objective

Following were the study objectives:

1. To investigate the relation between iliac height and winning performance of Taekwondo Players.
2. To examine the relation between knee height and winning performance of Taekwondo Players.
3. To analyze the relation between Iliac to Knee Length and winning Performance of Taekwondo Players.

Hypotheses

Following hypotheses were made by reviewing the previous studies and researcher's own knowledge of the sport:

1. There exists a significant positive relationship between iliac height and winning performance of taekwondo players.
2. There exists a significant positive relationship between iliac to knee length and winning performance of taekwondo players.
3. There exists a significant positive relationship between knee height and winning performance of taekwondo players.

Method & Procedure

The sample frame comprised of 25 national Taekwondo players as subjects. All the subjects which were selected as sample of the study were the state gold medalist in taekwondo competitions. All the subjects participated in this study were above 18 years of age. The anthropometric data was collected from these subjects during senior national Taekwondo championship. The subjects were selected with purposive sampling technique from Senior national taekwondo championship. Also, the subjects selected from a single weight category which was under 54kg only. The independent variables selected for this study were Iliac Height, Iliac to Knee Length and Knee Height. The dependent variable selected for this study was performance of the players selected for this study in last four years. The collected qualitative data of performance is then converted into quantitative data.

The tools used for the collection of anthropometric data were Stadiometer, measuring tape and sliding caliper. The iliac height of the subjects were measured using the stadiometer by making the subjects stand erect in an normal anatomical standing position. The Iliac to Knee Length and Knee Height of the subjects were measured using the sliding caliper and measuring tape. The performance data of the subjects was collected by reviewing their performances in last four years.

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

Results**Result Pertaining to Relation Between Iliac Height and Winning Performance Of Taekwondo Players**

The objective was to analyze the relationship between Iliac Height and Winning Performance of Taekwondo players.

Table 1

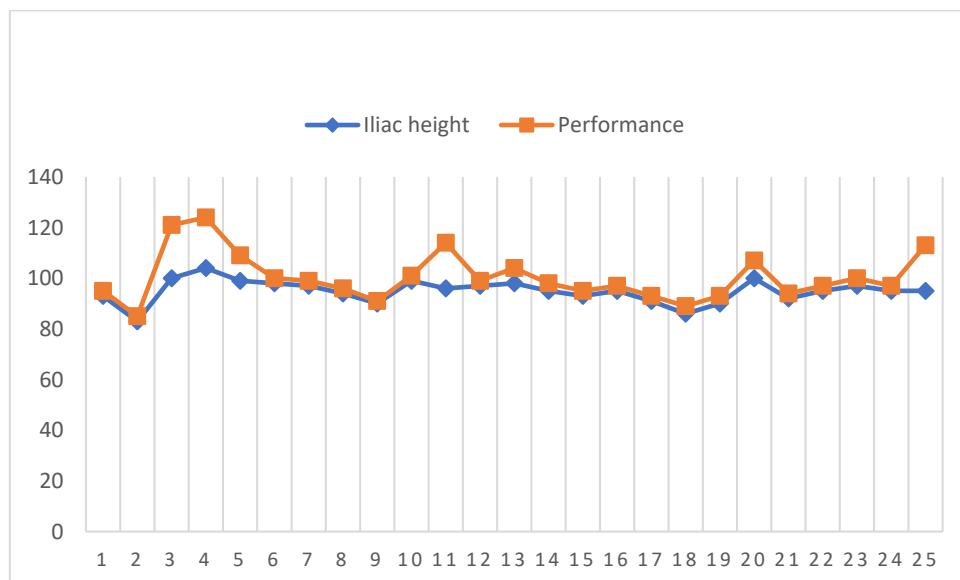
Relationship between Iliac Height and Winning Performance of Taekwondo players

| Variables | N | Mean | S.D | df | r-value |
|--------------|----|-------|-------|----|---------|
| Iliac Height | 25 | 94.88 | 4.576 | 23 | 0.489 |
| Performance | 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 Iliac Height with the Winning Performance of Taekwondo players



Data presented in table 1 indicate that the value of Pearson Product Moment Correlation Coefficient between Iliac Height and Winning Performance for male national Taekwondo

players was 0.489. This was a positive average correlation and statistically significant at 0.05 level of confidence. Thus, the stated hypothesis that there exists a significant positive relationship between Iliac Height and Winning Performance of Taekwondo players was accepted.

Result Pertaining to Relation Between Iliac to Knee Length and Winning Performance Of Taekwondo Players

The objective was to analyze the relationship between Iliac to Knee Length and Winning Performance of Taekwondo players.

Table 2

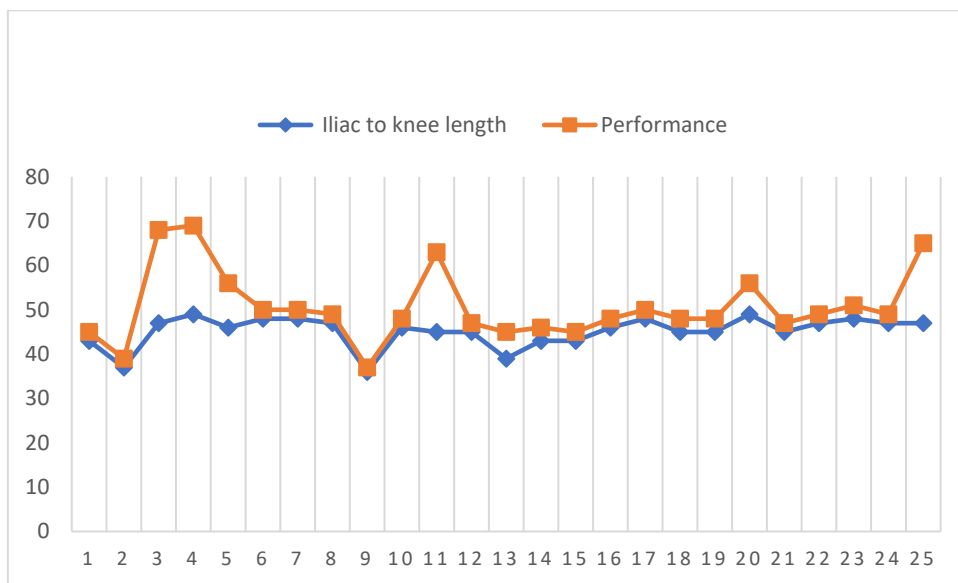
Relationship between Iliac to Knee Length and Winning Performance of Taekwondo players

| Variables | N | Mean | S.D | df | r-value |
|-----------------------------|----------|-------------|------------|-----------|----------------|
| Iliac to Knee Length | 25 | 45.16 | 3.436 | 23 | 0.267 |
| 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 Iliac to Knee Length with the Winning Performance of Taekwondo players



Data presented in table 2 indicate that the value of Pearson Product Moment Correlation Coefficient between Iliac to Knee Length and Winning Performance for male national Taekwondo players was 0.267. This was a positive low correlation and statistically insignificant at 0.05 level of confidence. Thus, the stated hypothesis that there exists a significant positive relationship between Iliac to Knee Length and Winning Performance of Taekwondo players was rejected.

Result Pertaining to Relation Between Knee Height and Winning Performance Of Taekwondo Players

The objective was to analyze the relationship between Knee Height and Winning Performance of Taekwondo players.

Table 3

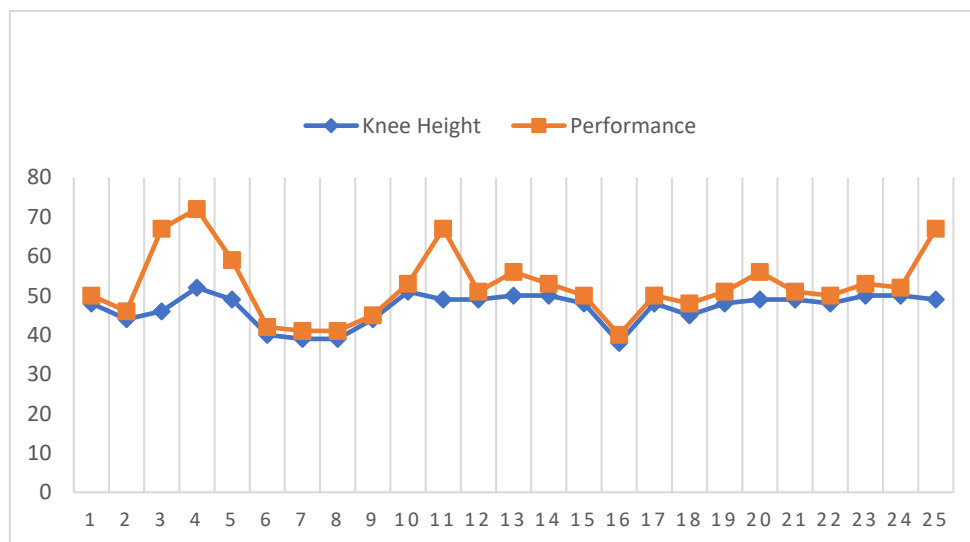
Relationship between Knee Height and Winning Performance of Taekwondo players

| Variables | N | Mean | S.D | df | r-value |
|--------------------|----|-------|-------|----|---------|
| Knee Height | 25 | 46.88 | 4.013 | 23 | 0.309 |
| Performance | 25 | 5.56 | 6.423 | | |

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

Figure 3

Line graph showing the relation of Knee Height with the Winning Performance of Taekwondo players



Data presented in table 3 indicate that the value of Pearson Product Moment Correlation Coefficient between Knee Height and Winning Performance for male national Taekwondo players was 0.309. This was a positive below average correlation and statistically insignificant at 0.05 level of confidence. Thus, the stated hypothesis that there exists a significant positive relationship between Knee Height and Winning Performance of Taekwondo players was rejected.

Discussion & conclusion

The statistical result showed significant positive relationship between Iliac Height and Winning Performance of Taekwondo players which means as the Iliac Height of players increases the Winning Performance of the players will also increase. There is one study in which Ghorbanzadeh et al. (2011) conducted their research on the topic “Determination of Taekwondo National Team Selection Criteria by Measuring Physical and Physiological Parameters”. The aim of his study was to identify the physical and physiological characteristics of Turkish taekwondo players (elite and sub elite). The players selected for the study were 24 men and 16 women elite Turkish taekwondo and 16 female ordinary athletes. The players were examined on various anthropometric and physiological measurements. The results in their study showed no significant statistical difference of leg length (iliac height) between elite and ordinary taekwondo athletes^[1]. The results of their study is in contradiction with the result of this present study which may be due to the different sampling techniques used in these studies. As the present study was conducted on the players of same weight category which is more valid to find the relation between their performances. Thus it was concluded that having higher Iliac

Height was helpful for the players to perform better in the competitions. Also it can be concluded that the winners in Taekwondo competitions had higher Iliac Height than their opponents.

Also the results showed insignificant relationship between Iliac to Knee Length and knee height with Winning Performance of Taekwondo players which means having higher or lower Iliac to Knee Length and knee height of players does not affects their Winning Performance. This may be due to the reason that only having higher Iliac to Knee Length or knee height does not assures that the players have higher lower limbs.

Works cited

1. Ghorbanzadeh, B., Münderoğlu, S., Akalan, C., Khodadadi, M. R., Kđrazci, S., & Şahđn, M. (2011). Determination of taekwondo national team selection criterions by measuring physical and physiological parameters. *Annals of Biological Research*, 2(6), 184-197.
2. Kazemi, M., Casella, C., & Perri, G. (2009). 2004 olympic tae kwon do athlete profile. *The journal of the Canadian chiropractic association*, 53(2), 144.
3. Sevinc, D., Çolak, M., & Yilmaz, V. (2015). A study on some motoric and anthropometric attributes of competitive and non-competitive taekwondo athletes between the age group 9-12 years. *International Journal of Science Culture and Sport (IntJSCS)*, 3(4), 112-122.
4. Kankanala, V., Gunen, E. A., & Igah, A. S. (2010). Anthropometric characteristics of selected combat athletic groups. *British Journal of Sports Medicine*, 44(Suppl 1), i38-i38.