

## **Comparisons of physique, body composition, and somatotype by weight division between male and female collegiate taekwondo athletes**

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### ABSTRACT

The aim of the study was to compare the physique, body composition and somatotype between male and female collegiate taekwondo athletes and specially focus on differences by weight division. 60 collegiate taekwondo athletes (male: 29, female: 31) voluntarily participated in the study. They were divided into four Olympic weight divisions (male for -58 kg, -68 kg, -80 kg, +80 kg, female for -49 kg, -57 kg, -67 kg, +67 kg). Anthropometric measurements included body weight, height, sitting height, body circumferences (relaxed arm, flexed arm, chest, waist, hip, thigh, and calf), bone widths (humerus and femur), and skinfold thicknesses (triceps, subscapular, supriliac, thigh, and calf) were measured. The three somatotype components were assessed by Heath-Carter anthropometric method (Carter & Heath, 1990). Independent t-test and one-way ANOVA were applied to analyze difference of dependent variables. Significant level was set at .05.

Male athletes were taller and heavier than female athletes. However, sum of skinfold thickness was significantly higher in female athletes than male athletes. The three somatotype components for male athletes were 3.4-3.5-3.1 and characterized with balanced mesomorphy. On the other hand, the somatotype of female athletes were 6.1-3.4-2.6 and characterized with mesomorphic endomorph. In male athletes -80 kg and +80 kg weight divisions were higher mesomorphy, but lower ectomorphy than -58 kg and -68 kg weight divisions. In female, -57 kg, -67 kg and +67 kg weight divisions were higher endomorphy and mesomorphy, but lower ectomorphy than -49 kg weight divisions.

In conclusion, male athletes had higher anthropometric characteristics than female athletes except for the skinfold thickness. Female athletes had higher endomorphy, whereas male athletes had higher ectomorphy. Physique and somatotype were different between weight divisions both male and female athletes. This study provides a reference data of morphological characteristics of collegiate elite taekwondo athletes.