

**The sex difference in relationship between insulin resistance and
body composition of Japanese heavy-weight Judo athletes**

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In our previous study, we reported that the prevalence of insulin resistance caused by excess fat accumulation was high in Japanese female Judo athletes of heavy-weight classes (BMI 33.8 ± 5.2). The purpose of this study was to examine sex difference in the insulin resistance of heavy-weight athletes. The subjects were 36 collegiate judo athletes (20 male and 16 female). Venous blood samples were taken in the early morning after over-night fasting. The body composition was measured by dual X-ray energy absorptiometry. The body weights were 122.4 ± 12.7 kg for male and 90.3 ± 17.0 kg for female. The percentages of body fat were 27.4 ± 4.9 % and 28.5 ± 6.0 % in male and female, respectively. The plasma glucose levels were in normal range for all subjects. However, 30% of male and 6.3% of female

exceeded the normal range of serum insulin level. According to homeostasis model assessment insulin resistance (HOMA-IR), the prevalence of insulin resistance in male athletes were 60%, and it was significantly higher than that of female athletes (25%). In female athletes, insulin level and HOMA-IR had a positive correlation with waist circumference, trunk and total fat mass. On the other hand, there were no significant correlations between these parameters in male athletes. These results may indicate that insulin resistance in male athletes is influenced by parameters other than previously mentioned body composition.

In conclusion, it found that there was sex difference in the insulin resistance affected by body composition in heavy weight Judo athletes.