



## High intensity interval training increases the serum levels of irisin and fibroblastic growth factor-21 (fgf-21) in obese male rats

### Poster Presentation

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### Abstract

**Introduction:** Irisin is an exercise-induced myokine, which reverses diet-induced obesity by browning white adipose tissue [1, 2]. In addition, fibroblast growth factor 21 (FGF21) as an adipokine/hepatokine contributes to browning adipose tissue, influenced by exercise training [1, 2]. It has been proposed that high-intensity interval training (HIIT) is the time-efficient and potent approach for cardiovascular and skeletal muscle adaptations that are associated with improved performance and health outcomes. However, the impact of HIIT on irisin and FGF21 is unknown. Therefore, the current study investigates the effects of high-intensity interval training (HIIT) and moderate-intensity continuous training (MICT) on irisin and FGF-21 in obese male rats.

**Methods:** After inducing obesity by high fat diet, obese rats were randomly divided into three groups: obesity control (OC), MICT, and HIIT. The HIIT protocol, including 10 bouts of 4-minute activity with the equivalent intensity of 85-90%  $vo_{2max}$  and 2-minute active rest periods, and the MICT protocol with the equivalent intensity of 65-70%  $VO_{2max}$ , with covered distance matched to that of the HIIT protocol, were performed for 12 weeks and 5 sessions per week. Serum samples were collected after completion of training protocols to measure serum levels of irisin and FGF-21 by ELISA.

**Results:** In the comparison of the HIIT group to the OC group, serum levels of irisin ( $6.43 \pm 0.93$  ng/ml vs.  $4.61 \pm 0.61$  ng/ml,  $p=0.003$ ) and FGF-21 ( $1658 \pm 206.5$  ng/l vs.  $1093 \pm 125.97$  ng/l,  $P=0.007$ ) significantly increased, while MICT had no significant effect on these two hormones ( $P=0.29$ ,  $P=1.00$  respectively).

**Conclusion:** The increase in serum irisin and FGF-21 was significant only in the HIIT group, suggesting that exercise intensity plays an important role in regulating the secretion of these hormones.

### Keywords

Exercise Training; High intensity interval training; Irisin; FGF-21

### Reference:

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