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Effects of one-time high intensity intermittent training on the expression of UCP1 mRNA in adipose tissue of obese rats

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Objective To observe the effect of one-time high-intensity intermittent training (HIIT) on the white fat browning in obese rats.

Methods 12 obese male rats at the age of 19-week were randomly divided into control group (OC group, n=6) and HIIT group (n=6). OC group doesn't do exercise, and HIIT group finish the once high-intensity intermittent training (①Warm up: 70%VO_{2max}, 7min; ②High intensity exercise: 90%VO_{2max}, 3min+ 50%VO_{2max}, 3min, 6 times; ③Convalescence: 70%VO_{2max}, 7min.). The maximal oxygen uptake (VO_{2max}) of HIIT group was tested before training, and the exercise intensity was determined according to the average VO_{2max}. The subcutaneous and testicle white adipose tissue (WAT) and brown adipose tissue (BAT) of the scapula were taken immediately after exercise. The expression of UCP1 mRNA in the WAT and BAT using the fluorescent quantitative PCR.

Results Compared with the OC group, the expression of BAT UCP1 mRNA, in the HIIT group was increased, but there was no significant difference (1.40±0.50 vs 1.03±0.27, P>0.05). In both OC and HIIT group, the expression of UCP1 mRNA of the subcutaneous and testicle WAT were too low to test. The results showed that one-time HIIT exercise had no effect on the expression of UCP1 mRNA in WAT.

Conclusions The effects of One-time HIIT on the expression of UCP1 mRNA in adipose tissue of obese rats are still not definite.