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Effects of different exercise patterns on TWEAK and its signal in rat skeletal muscle

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Objective To study the effects of different exercise patterns on TWEAK and its downstream NF- κ B/MuRF1 in rat skeletal muscle, and to explore the relationship between TWEAK and skeletal muscle metabolism by different exercise interventions.

Methods Thirty-two male Sprague-Dawley rats aged 12 weeks were randomly divided into 4 groups: quiet group, high-intensity intermittent swimming group, medium-intensity continuous swimming group, and ladder-moving group, with 8 rats in each group. The exercise group adopted high-intensity intermittent swimming training, medium-intensity continuous swimming training, and ladder training, and trained for 5 days per week for 8 weeks. The right gastrocnemius muscle of the rat was taken the next day after the last training. The expression of TWEAK, NF- κ B, MuRF1 proteins was detected by Western Blot.

Results 1. The gastrocnemius muscle mass index exercise group was higher than the quiet group. 2. Compared with the quiet group, the expression of TWEAK in the exercise group was reduced, and the reduction in the ladder exercise group was more significant. 3. Compared with the quiet group, the expression of NF- κ B and MURF1 was decreased in the exercise group, and the reduction in the ladder exercise group was more significant.

Conclusions TWEAK may be involved in skeletal muscle catabolism. All three exercise patterns can alleviate skeletal muscle atrophy in rats, and the effect of ladder movement is more significant.