

原著

バイペダルラットにおける殿筋の筋線維伝導速度に関して

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1999-11-10 00:00:00+09受理

Muscle Fiber Conduction Velocities of the Gluteus Muscles of Bipedal Standing Rats

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(Accepted 1999-11-10 00:00:00+09)

Key words:bipedal standing, rat, mfcv, gluteus maximus

Abstract

Muscle fiber conduction velocities (MFCV) of the gluteus maximus muscles of bipedal standing rats were measured to determine whether exercise induces changes in intra muscular function. Sixteen four-week old male Sprague-Dawley rats were divided into two groups ; a control group (N=8) and a bipedal exercise group (N=8). Bipedal standing exercise was performed in a special bipedal training box called a Skinner's operant box. The animals were trained twice every day, in

the morning and evening, five days a week. After 15 weeks of training the MFCV of the medial side (MFCV-M) and the lateral side (MFCV-L) of the gluteus maximus were measured using a comb style electrode under general anesthesia with thiopental sodium. Muscle fiber action potentials were evoked by electrical stimulation directly to the muscles, and recorded using a comb style electrode array on the surface of the muscles. The mean MFCV-M participation in hip extension in the bipedal exercise group (3.83 ± 0.39 m/sec) was significantly higher than that in the control group (3.45 ± 0.43 m/sec). However, there were no significant differences in the mean MFCV-L participation in hip rotation between the bipedal exercise group (3.81 ± 0.34 m/sec) and the control group (3.67 ± 0.35 m/sec). These results suggest that the increase in MFCV in the bipedal exercise group was caused not only by structural changes in the muscles, but also by changes in muscle function including muscle strength.
