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Acupuncture treatment modified the mRNA expression of SERCA related genes induced by spiral wire immobilization in mice

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The purpose of this study was to examine whether acupuncture treatment is available to affect the muscle contractile function. Sarcoplasmic reticulum Ca²⁺ATPase (SERCA) resides in the sarcoplasmic reticulum (SR) within muscle cells. SERCA transfers Ca²⁺ from the cytosol of the cell to the lumen of the SR at the expense of ATP hydrolysis during muscle relaxation. . Calsequestrin is a Ca²⁺-binding protein of the sarcoplasmic reticulum. Electroacupuncture (EA) and manual acupuncture (MA) were conducted on the atrophic gastrocnemius muscles induced by spiral wire immobilization (SWI) for 2 weeks. A total of 32 male mice (8 weeks), were randomly placed into 4 groups: A) control, B) SWI, C) SWI + MA and D) SWI+

EA 1 Hz (n = 8/each groups). We measured the mRNA expression levels of SERCA1 in soleus is significantly increased by the SWI ($P < 0.001$) and significantly decreased by the MA and EA treatment ($P < 0.05$, $P < 0.05$, respectively). Surprisingly, we found the mRNA expression level of Calsequestrin1 in SWI group was significantly increased than control group ($P < 0.01$) and the EA group expression level was significantly increased than in the SWI group ($P < 0.05$), however, we could not find the significant difference between the MA group and the control group. We concluded that acupuncture treatment is available to affect the muscle contractile function.