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Effects of two types of exercises on MCT1 and GLUT4 expression in visceral white adipose tissue in type I diabetic rats

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White adipose tissue plays an important role in controlling the body's metabolism. In type I diabetes mellitus (T1DM), the function of this tissue is severely impaired. The beneficial effects of exercise have been shown in this condition. In this study, we investigated how exercise can benefit on T1DM. Thus, we studied the effects of moderate-intensity endurance training (MIET) and high-intensity interval training (HIIT) on MCT1 and GLUT4 levels in visceral white adipose tissue (vWAT) of T1DM rats. Twenty-eight male rats were divided into four groups: control, T1DM, T1DM+HIIT, and T1DM+MIET. The expression of MCT1 and GLUT4 mRNAs was evaluated in vWAT after 12 weeks of training. The mRNA levels of MCT1 and GLUT4 decreased in T1DM but increased in both the exercised groups. The effects of HIIT and MIET on these genes were similar. MIET and HIIT led to increasing levels of MCT1 and GLUT4 mRNA in white adipose tissue. This can probably improve adipose tissue health and ultimately glucose homeostasis in T1DM.

Keywords: Diabetes mellitus, Endurance training, Exercise, Glucose transporter, Lactate transporter