



Exercise Biochemistry Review

Proceedings of IBEC 2018, Beijing, China, October 23-25
PO-220

HIIT prescription and diabetes

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Objective To clarify the effect of HIIT prescription on diabetic mellitus (DM) and provide reliable exercise advice for DM patients. Method: Through literature

Methods Through literature method to collect studies by key words: HIIT, diabetic mellitus, T1DM, T2DM. And through data analyze method to organize the related studies to make a conclusion.

Results As a non-infectious metabolic disease, the incidence of DM is increasingly continuing in recent years. The epidemiological studies show that the global incidence of DM in the population aged 20-79 was 8.8% in 2015, and the total number reached 415 million. It is predicted that by 2040, the number of DM patients in this age group will reach 642 million with the prevalence rate rose to 10.4%. Insulin secretion and insulin signal transduction disorders are the main mechanisms of the onset of type 1 diabetes (T1DM) and type 2 diabetes (T2DM) respectively. The inducers of DM are complex, such as obesity, inactivity, insomnia and heredity. The current interventions for DM are mainly drugs, diet, exercise, self-monitoring and education. Among them, exercise is accepted by the majority of diabetic patients because of its economic, fewer side effects and obvious effects. The occurrence of T1DM is closely related to heredity with the majority of adolescence patients. Due to insufficient insulin secretion, the clinical treatment of T2DM is mainly exogenous insulin injections. However, long-term insulin injections on the one hand leads to a continuous decline in the effect of insulin action, and are also a painful process for T1DM patients. Regular exercise can increase insulin sensitivity, decrease insulin resistance, promote the glucose uptake of skeletal muscle and regulate the blood glucose. However, the occurrence of exercise hypoglycemia makes it difficult for T1DM patients to insist exercise. The mechanism for the occurrence of exercise hypoglycemia is not clear, but studies show that it may related to insulin regulation change, counter-regulatory response decline and energy substrate metabolism disorder. Studies have shown that high intensity interval training (HIIT) prescription can avoid the occurrence of exercise-induced hypoglycemia caused by long-term moderate-intensity exercise to a certain extent. Therefore, the relationship between HIIT exercise and T1DM patients requires more research to prove. The occurrence of T2DM is accompanied by obesity. Obesity leads to the development of insulin resistance. A large number of studies have confirmed that exercise has a good intervention effect on obesity and T2DM. Compared with the traditional moderate intensity continuous training (MICT), HIIT has a better effect on reducing abdominal fat in the obesity. T2DM is often accompanied by many complications, such as diabetes cognitive dysfunction, diabetic Cardiomyopathy, diabetic liver disease and so on. The intervention effect of the HIIT prescription on these complications has also been confirmed by numerous studies.

Conclusions As a non-pharmaceutical treatment of diabetes, exercise has obvious effects on diabetes intervention. The HIIT has gradually become one of the exercise intervention prescription because of its short time-consuming and obvious effects. However, the HIIT exercise prescription for DM patients of different ages, types, and complications remains to be further clarified.