Assessing the evidence: exploring the effects of exercise in diabetic microcirculation

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Diabetes mellitus (DM) is associated with cardiovascular complications. Impairment of glycemic control induces noxious glycosylations, an increase in oxidative stress and derangement of various metabolic pathways. DM leads to dysfunction of micro and macrovessels, connected to metabolic, endothelial and autonomic nervous system. Thus, assessing vascular reactivity might be one of the clinical tools to evaluate the impact of harmful effects of DM and potential benefit of treatment; skin and skeletal muscle microcirculation have usually been tested. Physical exercise improves vascular dysfunction through various mechanisms, and is regarded as an additional effective treatment strategy of DM as it positively impacts glycemic control, improves insulin sensitivity and glucose uptake in the target tissues, thus affecting glucose and lipid metabolism, and increases the endothelium dependent vasodilation. Yet, not all patients respond in the same way so titrating the exercise type individually would be desired. Resistance training has, apart from aerobic one, been shown to positively correlate with glycemic control, improve vascular reactivity, and has been associated with less negative systemic side effects. It has been prescribed in various forms or in combination with aerobic training. The overview would present recent studies assessing the impact of different types of exercise, some mechanisms involved, and its potential positive and negative effects on treating type I and type II DM.