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Opinion

The Influence of Qigong Baduanjin on the Peripheral Microcirculation of Patients with Diabetic Foot

GuangZong Li[1]*, JunRu Mao[2], AnNi Zhao[2], YiQing Cai[3], YingQi Wu[2], WeiLi Zhang[2], Chen Niu[2], Jing Yang[2] and Xin Liu[2,4]

[1]Dongfang Hospital, Beijing University of Chinese Medicine, No.6, 1st Section, Fangxingyuan, Fangzhuang, Beijing, China

[2]School of Life Sciences, Beijing University of Chinese Medicine, China

[3]School of Traditional Chinese Medicine, Beijing University of Chinese Medicine, China

[4]School of Human Movement and Nutrition Sciences, The University of Queensland, Australia

***Corresponding Author:** Guangzong Li, Department of Vascular Surgery (4th Surgical Department), Dongfang Hospital, Beijing University of Chinese Medicine, No.6, 1st Section, Fangxingyuan, Fangzhuang, Beijing, China.

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Diabetes mellitus (DM) is a chronic and serious disease with a rapidly increasing incidence and prevalence and is related to many complications. In the context of rapid economic development in my country, rapid changes in residents' lifestyles, a significant increase in obesity and overweight people, and aging and other factors, there are currently 425 million adult diabetic patients in the world, and the number of adult diabetic patients in China is as high as 114 million [1]. The foot is the "target organ" for diabetic complications, and the relative risk of lower limb amputation in diabetic patients is 40 times that of non-diabetic patients. About 85% of amputations are caused by foot ulcers, and about 15% of diabetic patients will eventually develop foot ulcers [2,3], which can easily lead to disability or even death [4,5]. Patients often experience physical and psychological pain and social pressure, which brings certain difficulties to treatment and care [4]. This is a major public health and socioeconomic burden for our national health service agencies. Nevertheless, the impact of diabetes on the skin biology of human feet is largely unknown. Therefore, it is particularly important to effectively control the peripheral and deep development of diabetic ulcers, accelerate the healing of ulcers, reduce the occurrence of serious complications, and improve the life and quality of life of patients.

Health Qigong is a traditional national sport that combines physical activity, breathing, breathing, and psychological adjustment as the main form of exercise. It is an integral part of the long-standing Chinese culture. In the previous observation, we found that by practicing Health Qigong·12 Duan Jin, patients with diabetic foot can relieve their anxiety and tension, improve the microcirculation of the lower extremities, and accelerate the healing of lower extremities ulcers. During the Twelve Duan Jin exercises, the diabetic foot patients will evenly contract and relax the muscles of the whole body alternately, stretching and relaxing with each inhalation, which promotes blood circulation and makes blood circulation unobstructed. In addition, the short-term hold of the breath makes the blood impact stronger, avoids the long-term storage of the vascular retentate, and can prevent embolism. At the same time, Songjing's mental state helps to eliminate the anxiety and tension of the practitioners and reduces the active substances that cause vasoconstriction such as norepinephrine and epinephrine in the blood, thereby protecting the blood vessels of the lower limbs.

Diabetic Peripheral Neuropathy (DPN) is regarded as progressive and irreversible. Ten years after diabetes, 50% of diabetic patients will develop peripheral neuropathy. Nowadays, the technical

support of the internet is a promising strategy, which can contact health professionals quickly and efficiently. The feasibility, acceptability, safety, and effectiveness of online Qigong exercise in treating type 2 DPN are not clear, and its potential mechanism is also unclear.

Baduanjin is a traditional Chinese medicine fitness method, which organically combines the three functions of "regulating the body, regulating the breath, and regulating the heart" through gentle and slow stretching movements. Unblock the meridians, to achieve the function of regulating the body's viscera and collaterals. During the exercise of Baduanjin, the muscles of the whole body contract and relax alternately, and stretch and relax with each breath, which promotes blood circulation and makes blood circulation unobstructed. A brief hold of breath makes the blood more powerful and accelerates peripheral blood circulation. At the same time, Songjing's mental state helps to eliminate the anxiety and tension of the practitioners and reduces the active substances that cause vasoconstriction such as norepinephrine and epinephrine in the blood, thereby protecting the peripheral microcirculation of the lower limbs. Baduanjin has been popularized in our hospital for diabetic foot patients for many years and has achieved good clinical effects. This research group intends to adopt a randomized and controlled method to objectively evaluate the safety of Ba Duan Jin in clinical application and to comprehensively evaluate its effectiveness in the peripheral microcirculation of patients with diabetic foot Qi deficiency and blood stasis syndrome. Research and explore the mechanism of collaterals caused by qi deficiency and blood stasis from the perspective of TCM theory.

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