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Effects of different motor functional therapies on cognitive impairment in type 2 diabetes mellitus

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Objective The clinical manifestations of diabetic cognitive dysfunction are decreased visual spatial ability, executive dysfunction, mental activity speed and attention, and decreased abstract logical reasoning. Cognitive dysfunction is irreversible. Timely and accurate assessment and diagnosis, early detection and intervention to delay disease progression are particularly critical. The Cognitive Assessment Scale plays an important role in screening for cognitive dysfunction in diabetes. To observe the effects of motor functional therapy on cognitive impairment and blood glucose, blood lipids, body weight, body composition, and maximal oxygen uptake in patients with type 2 diabetes.
Methods A total of 63 elderly patients with type 2 diabetes mellitus in Chengdu community aged ≥65 years and educated for ≥12 years were enrolled in the motor function therapy group according to the simple mental state examination (MMSE) score (diabetes cognitive impairment, MMSE total score) ≥ 20 points, aerobic exercise group, n = 21) and functional function therapy group (diabetes cognitive impairment, MMSE total score ≥ 20 points, resistance exercise group, n = 21). The adult community of diabetes in Chengdu (normal cognitive function) with age ≥ 65 years, education time ≥ 12 years, and MMSE total score ≥ 24 points was used as the control group (n=21). Montreal Cognitive Assessment Scale (MOCA): MOCA is an assessment tool developed by Nasreddine and clinically proven to be used for rapid screening of MCI. There were no statistical differences in baseline data (age, gender, and hypertension incidence) among the 3 groups of patients. The LOTCA scale was used to evaluate the cognitive function of the subjects and to compare between groups. Sixty-three patients with type 2 diabetes were randomly divided into aerobic exercise intensity group (50% VO2max) (n=21), resistance exercise intensity group and control group (n=21). Both the aerobic exercise group and the resistance exercise group underwent a 12-week moderate-intensity exercise three times a week. The resistance middle strength group was trained 2 groups each time, each group was 25 minutes, the group rested for 5 minutes, 55 minutes in total, and the aerobic medium intensity group continued to exercise for 55 minutes. All patients underwent fasting blood glucose (FPG), glycosylated hemoglobin (HbA1c), total cholesterol (TC), triglyceride (TG), low density lipoprotein (LDL), body weight, and fat weight (FW) before and after training. , lean body mass (LBM), maximal oxygen uptake (VO2max) determination; measure the energy expenditure of word movement and the total energy expenditure of the entire exercise process.
Results There were no significant differences among the three groups before the test (P>0.05). All the indexes of the medium-intensity resistance exercise group and the medium-intensity aerobic exercise group were significantly different from the control group (P<0.05). After the MOCA score test There was an improvement in the score before the trial, and the total score of LOTCA was significantly different among the three groups. In addition to perceptual sub-items (item identification), the aerobic exercise group and the resistance exercise group LOTCA scale in perceptual sub-projects (incomplete object recognition), visual motion organization and its sub-projects (copying two-dimensional graphics, building blocks) The design and puzzle) project scores were higher than before the test, close to the control group score. The scores of the two groups of exercise therapy in the thinking operation and its sub-projects (Riska organized shape classification, picture arrangement B and geometric reasoning) and attention-focused items were lower than the control group. Compared with the resistance exercise, there was a significant difference in the

maximum oxygen uptake between aerobic exercise and resistance exercise ($P<0.05$). Compared with the total exercise energy consumption in the first 6 weeks, the aerobic exercise group was superior to the resistance exercise group. The total exercise energy expenditure was compared in the last 6 weeks, and the resistance exercise group was superior to the aerobic exercise group.
Conclusions Elderly patients with type 2 diabetes may have cognitive impairment earlier. In the absence of differences in exercise, the aerobic exercise group and the resistance exercise group improve cognitive impairment, blood sugar, blood fat, body weight, and body composition in patients with type 2 diabetes. There is no significant difference. Compared with MMSE, LOTCA has the advantage of identifying early cognitive impairment in elderly patients with type 2 diabetes and distinguishing the severity of the damage.