AEROBIC EXERCISE EFFECTS ON THE HEALTH MANAGEMENT OF ELDERLY PATIENTS WITH CHRONIC DISEASES

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EFEITO DO EXERCÍCIO AERÓBICO NA GESTÃO DA SAÚDE DE PACIENTES IDOSOS COM DOENÇAS CRÔNICAS

EFECTO DEL EJERCICIO AERÓBICO EN LA GESTIÓN DE LA SALUD DE PACIENTES ANCIANOS CON ENFERMEDADES CRÓNICAS

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ABSTRACT

Introduction: The acceleration of the aging process causes the number of elderly patients with chronic diseases to increase every year, causing hypertension, diabetes, cerebral infarction, and chronic respiratory diseases. This situation considerably threatens the health of the elderly, affecting their quality of life. Objective: Improve the health awareness of the elderly as well as modify unhealthy lifestyles. Methods: Changes in blood glucose, blood pressure, blood lipids, uric acid, blood oxygen saturation, body mass index (BMI) and other indicators in elderly patients with chronic diseases before and after aerobic exercise were compared and analyzed. Symptoms and common self-management efficacy scores in elderly patients with chronic diseases were compared and analyzed before and after aerobic exercise. Results: The detection rate of liver steatosis, overweight and obesity significantly decreased after aerobic exercise. Symptom scores and common self-management efficacy were significantly higher than those collected before the intervention ($p<0.05$). Conclusion: The actual measured and predicted theoretical value of vital capacity, and other vital indicators were significantly improved. ***Level of evidence II; Therapeutic studies - investigating treatment outcomes.***

Keywords: Exercise; Chronic Disease Indicators; Preventive Medicine.

RESUMO

Introdução: A aceleração do processo de envelhecimento faz com que o número de pacientes idosos com doenças crônicas, aumente todos os anos, provocando hipertensão, diabetes, infarto cerebral e doenças respiratórias crônicas. Esta situação ameaça consideravelmente a saúde do idoso afetando sua qualidade de vida. Objetivo: Melhorar a conscientização sobre a saúde do idoso bem como modificar o estilo de vida pouco saudável. Métodos: foram comparadas e analisadas as alterações da glicemia, pressão arterial, lipídios sanguíneos, ácido úrico, saturação de oxigênio no sangue, índice de massa corporal (IMC) e outros indicadores em pacientes idosos com doenças crônicas antes e depois do exercício aeróbico. Foram comparados e analisados os sintomas e escores comuns de eficácia de autogestão em pacientes idosos com doenças crônicas antes e depois do exercício aeróbico. Resultados: A taxa de detecção de esteatose hepática, excesso de peso e obesidade diminuiu significativamente depois do exercício aeróbico. Os escores de sintomas e a eficácia comum de autogestão foram significativamente superiores aos coletados antes da intervenção ($p<0,05$). Conclusão: O valor real medido e teórico previsto da capacidade vital, e outros indicadores vitais foram aprimorados significativamente. ***Nível de evidência II; Estudos terapêuticos - investigação dos resultados do tratamento.***

Descritores: *Exercício Físico; Indicadores de Doenças Crônicas; Medicina Preventiva.*

RESUMEN

Introducción: La aceleración del proceso de envejecimiento hace que el número de pacientes ancianos con enfermedades crónicas aumente cada año, provocando hipertensión, diabetes, infarto cerebral y enfermedades respiratorias crónicas. Esta situación amenaza considerablemente la salud de las personas mayores, afectando a su calidad de vida. Objetivo: mejorar la concienciación sobre la salud de las personas mayores, así como modificar los estilos de vida poco saludables. Métodos: se compararon y analizaron los cambios en la glucemia, la presión arterial, los lípidos sanguíneos, el ácido úrico, la saturación de oxígeno en sangre, el índice de masa corporal (IMC) y otros indicadores en pacientes ancianos con enfermedades crónicas antes y después del ejercicio aeróbico. Se compararon y analizaron los síntomas y las puntuaciones comunes de eficacia de autogestión en pacientes ancianos con enfermedades crónicas antes y después del ejercicio aeróbico. Resultados: La tasa de detección de esteatosis hepática, sobrepeso y obesidad disminuyó significativamente tras el ejercicio aeróbico. Las puntuaciones de los síntomas y la eficacia común de autocontrol

fueron significativamente superiores a las recogidas antes de la intervención (p<0,05). Conclusión: El valor real medido y el valor teórico previsto de la capacidad vital, así como otros indicadores vitales, mejoraron significativamente. ***Nivel de evidencia II; Estudios terapéuticos - investigación de los resultados del tratamiento.***

Descriptores: *Ejercicio Físico; Indicadores de Enfermedades Crónicas; Medicina Preventiva.*

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INTRODUCTION

With the acceleration of the aging process, the number of elderly patients with chronic diseases such as hypertension, diabetes, cerebral infarction, chronic respiratory diseases is increasing year by year, which seriously threatens the health of the elderly and affects the quality of life. The number of elderly patients with chronic diseases in China is increasing, and the number of patients who die due to chronic diseases accounts for 85% of the total deaths of Chinese residents, and the economic burden caused by chronic diseases accounts for 70% of the total disease burden.[1] With the acceleration of the aging process, the number of elderly patients with chronic diseases such as hypertension, diabetes, cerebral infarction, and chronic respiratory diseases has increased year by year, seriously threatening the health of the elderly and affecting the quality of life. The elderly population is a high incidence of chronic diseases such as hypertension and chronic obstructive pulmonary disease, with a long course of disease, a prolonged illness, and a high rate of rehospitalization of some chronic diseases, which seriously affects the health of elderly patients and brings heavy psychological and economic burden to elderly patients with chronic diseases.[2] According to statistics, about ninety percent of elderly patients with chronic diseases choose emergency services every year because their condition control is not up to standard, which shows that the health management of elderly patients with chronic diseases in China is not in place, and the self-management ability of patients is low.[3] Therefore, it is necessary to strengthen the health management of elderly patients with chronic diseases.[4] In order to improve the health awareness of the elderly group and change the bad lifestyle, the Hainan provincial government began to advocate the popularization of aerobic exercises such as tai chi and aerobics among the elderly as early as 2000, and organized many international and domestic events such as tai chi and aerobics for the elderly.[5] Provide effective means and methods in sports, and then integrate them in a scientific form, in the form of a complete system, to manage and treat patients.[6] At present, in China's social system, the concept of medical and sports integration is mainly based on community medical service institutions.[7] There is a certain degree of strength in disease prevention and control, personal fitness enhancement, and later control and maintenance.[8] The idea and method of physical and medical integration can maximize the strength of existing medical and sports health. It has aroused enough attention of the medical system in terms of system establishment, management and resources, and has special significance in the process of forming the integration of prevention, treatment and rehabilitation nursing.[9] In order to evaluate the effect of aerobic exercise on the management of chronic diseases in the elderly, this article analyzes the health status of elderly patients with chronic diseases who popularize aerobic exercise in some areas. In order to explore the effect of aerobic exercise on the health management of elderly patients with chronic diseases, 102 elderly patients with chronic diseases were observed in this study.[10]

Research objects and method

Subjects of study

A total of 102 elderly patients with chronic diseases were selected as the study subjects, and 51 cases were randomly grouped according to the numerical table method. There were 27 males and 24 females in the control group; Age 61~81 years old, average (71.32±2.41) years; There were 20 cases of hypertension, 17 cases of type 2 diabetes, 4 cases of hyperlipidemia, 7 cases of chronic bronchitis, 3 cases of chronic obstructive pulmonary disease, including 13 cases of chronic diseases with 2 or more chronic diseases. There were 30 males and 21 females in the observation group; Age 60~83 years old, average (72.28±2.48) years; There were 17 cases of hypertension, 16 cases of type 2 diabetes, 6 cases of hyperlipidemia, 8 cases of chronic bronchitis, 4 cases of chronic obstructive pulmonary disease, including 13 patients with 2 or more chronic diseases. There was no significant difference in general data between the two groups (P>0.05), which was comparable.

Enrollment criteria: (1) confirmed by clinical examination; (2) no cognitive dysfunction; (3) Good compliance; (4) People aged 60 and above; (5) the permanent population of the region; (6) Voluntary participants in this study. Exclusion Criteria: (1) prior psychiatric history; (2) Those with serious infectious diseases such as tuberculosis; (3) Those with limited physical activity and unable to take care of themselves.

The study is Purely observational studies which no need to registry ID of ICMJE, and all the participants were reviewed and approved by Ethics Committee of Jiangxi Normal University, China (NO. 2022013)

Measurement method

The diagnosis of the disease mainly refers to the relevant standards published in the "Chinese Guidelines for the Prevention and Treatment of Hypertension" and the "Chinese Guidelines for the Prevention and Treatment of Diabetes". The effect of health management is mainly based on the Chronic Disease Self-Management Research Scale (CDSSM) developed by the researchers, and the chronic disease management scale is used to monitor and evaluate the health status of elderly patients with chronic diseases. The content of the chronic disease self-management effectiveness measurement table includes 8 aspects, including physiological perception efficacy, psychological and emotional efficacy, and disease rehabilitation efficiency, among which the average score of 1~5 items in the evaluation index is used as the self-efficacy of chronic disease symptom management, and the average score of 6~8 items is used as the self-efficacy of chronic disease common management. Each item is scored according to 1~10 points, 1 point means no confidence at all, 10 points means very confident. The scale is completed by the patient himself or her caring family and objectively reflects the patient's real situation.

Aerobic exercise regimen

Exercise tolerance test for patients, through electrocardiogram results, heart rate and other indicators to determine the patient's maximum tolerance intensity and suitable exercise intensity during exercise, generally recommended exercise intensity and heart rate calculation does not exceed 70% of the maximum heart rate, elderly patients to 40% ~ 50% maximum heart rate is appropriate. Determine aerobic exercise programs such as pullers, aerobics, and tai chi according to the patient's wishes. Develop a targeted exercise prescription for the patient, guide the patient to exercise in strict accordance with the exercise prescription,

exercise once a day or exercise 3~4 times a week, instruct the patient to perform simple warm-up activities before exercise, prepare first-aid drugs, stop exercising immediately if there is discomfort and give feedback. Regularly conduct medical examination and follow-up of patients in the observation group, and adjust exercise prescriptions according to exercise conditions and conditions.

The blood glucose, blood pressure, blood lipid, lung capacity, uric acid and other indexes of the two groups before health management and 3 months after health management were compared.

Used in this study The SPSS19.0 software package integrates data from two groups of patients Measurement analysis, measurement data use(X-±S) indicates that the t-test is used to count the capital Material adoption rate (%) indicates that the $\chi 2$ test is used, and $P<0.05$ is the difference Academic significance.

Experimental result and analysis

Changes in abnormal indicators of elderly patients with chronic diseases before and after aerobic exercise

Before aerobic exercise, 41 patients with mild fatty liver disease Moderate fatty liver23 cases and 14 cases of severe fatty liver; The BMI value shows ultra Heavy or obese89 cases. After aerobic exercise, there were 10 cases of mild fatty liver, 2 cases of moderate fatty liver disease, and 0 cases of severe fatty liver. BMI value display Signs of overweight or obesity47 cases. Before and after intervention, elderly patients with chronic diseases of fat The detection rate of fatty liver, overweight or obesity decreased significantly ($P<0.05$). As shown in Figure 1.

Because some elderly patients with chronic diseases have a low level of education and cannot objectively and comprehensively understand the disease, many elderly patients with chronic diseases will have unauthorized adjustment of drugs, irregular work and rest, etc., resulting in recurrence of the disease, and poor awareness of health management of elderly patients with chronic diseases is an important reason for the high prehospitalization rate of such patients. Because the cost of hospital treatment is a large expense for most elderly patients, under the influence of traditional thinking, many elderly patients with chronic diseases habitually delay treatment and do not take the initiative to manage chronic diseases.

Related indicators before and after aerobic exercise

Compared to pre-intervention, intervention Post-systolic blood pressure, diastolic blood pressure, preprandial blood glucose, triacylglycerol, LDL, total cholesterol, oxygen saturation, and actual vital capacity/reason On the estimated value,24h uric acid change was obvious ($P<0.01$); And high density Lipoprotein changes are insignificant($P>0.05$). After 2 years of aerobic transport after motor training, some indicators of elderly patients with chronic diseases returned to the normal range.

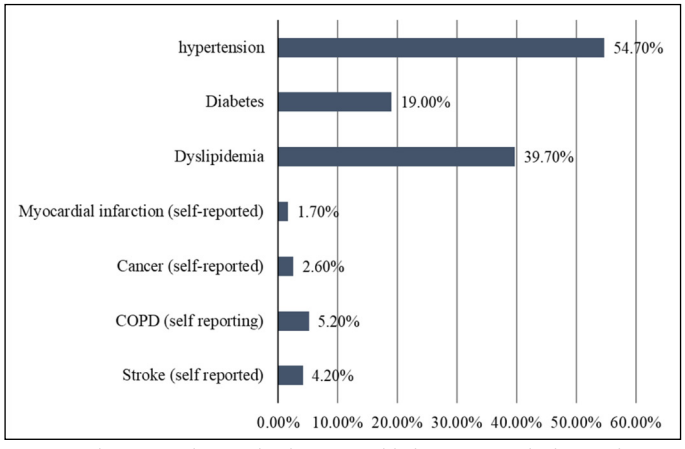

Figure 1. Changes in abnormal indicators in elderly patients with chronic diseases.

Before health management between the two groups, there were no significant differences in blood pressure, blood glucose, blood lipids and other indexes ($P>0.05$). After health management, the patients were compared with the control group, and the observation group systolic blood pressure, diastolic blood pressure, preprandial blood glucose, postprandial blood glucose2h blood sugar, total cholesterol, triacylglycerol, LDL, 24h uric acid level is significantly lower, high-density lipoprotein and lung capacity actual measured value.Theoretical prediction levels were higher and the difference was statistically significant ($P<0.05$).The blood pressure, blood sugar, blood lipids and other indicators of the first two groups of patients under health management are shown in the Table 1.

The blood pressure, blood glucose, blood lipids and other indexes of the two groups of patients after health management are shown in Table 2.

Through interviews with elderly patients with chronic diseases, it was learned that under the guidance of professional aerobic exercise coaches such as tai chi and aerobics, aerobics basically mastered the essentials of aerobic exercise, and after insisting on morning exercise every day, the muscles of the whole body were significantly relaxed, and the hypertension was reduced to the normal range; Patients who regularly take antihypertensive drugs are gradually reduced under the guidance of physicians, and some patients return to normal blood pressure after stopping the drug . The results of this study suggest that exercises such as tai chi and aerobics belong to slow-paced aerobic breathing exercises, which can effectively improve cardiopulmonary function and metabolism in elderly patients with type 2 diabetes, increase the cells that regulate blood sugar in the body, improve autoimmunity, and thus reduce blood sugar.

CONCLUSIONS

Long-term adherence to aerobic exercise can effectively improve the health status of elderly patients with chronic diseases, and the clinical treatment effect of hypertension, diabetes and other chronic diseases is better, and at the same time has a significant effect on alleviating patients' nervousness, anxiety and depression, and enhances patients' confidence and compliance with chronic diseases. In this study, the group was observed for blood glucose before and after meals2H blood

Table 1. Comparison of blood pressure, blood glucose, blood lipids and other monitoring indicators (X-±s) before health management of the two groups.

Group	Blood pressure (mmHg)		Blood sugar (mmol/L)		24h uric acid (mmol)
	Diastolic blood pressure	Systolic pressure	Fasting blood sugar	Postprandial 2h blood glucose	
Observation group (n=53)	103.05±2.07	161.22±2.13	7.23±0.38	13.31±1.21	5.83±0.38
Control group (n=53)	102.61±2.32	160.01±2.22	7.38±0.35	12.86±1.34	5.92±0.31
t-value	0.335	0.281	0.511	0.726	0.644
P-value	>0.05	>0.05	>0.05	>0.05	>0.05

Table 2. Comparison of blood pressure, blood glucose, blood lipids and other monitoring indexes (X-±s) between the two groups after health management.

Group	Blood pressure (mmHg)		Blood sugar (mmol/L)		24h uric acid (mmol)
	Diastolic blood pressure	Systolic pressure	Fasting blood sugar	Postprandial 2h blood glucose	
Observation group (n=53)	81.07±1.95	137.49±2.28	5.17±0.49	9.26±0.61	4.25±0.41
Control group (n=53)	91.65±2.07	154.26±2.32	6.36±0.42	11.09±0.58	5.51±0.37
t-value	10.311	10.294	10.084	10.812	11.091
P-value	<0.05	<0.05	<0.05	<0.05	<0.05

glucose level clear Lower, actual vital capacity measurement/ Theoretical predicted value levels were higher, compared with the control group Comparing differences was statistically significant ($P<0.05$). In summary, the implementation of aerobic exercise guidance in the health management of elderly patients with chronic diseases can effectively improve the health status of elderly patients with chronic diseases. It is recommended to focus on community elderly activity centers and geriatric rehabilitation hospitals, hire professional coaches with profound tai chi skills and familiar with the essentials of elderly gymnastics, use new media to promote among the population, enhance the self-management awareness of elderly patients with chronic diseases, and give play to the positive role of national scientific fitness in health promotion, chronic disease prevention and rehabilitation.

All authors declare no potential conflict of interest related to this article

AUTHORS' CONTRIBUTIONS: The author made significant contributions to this manuscript. Pu Juan: writing and performing surgeries; data analysis and performing surgeries; Zha Xianyi: article review and intellectual concept of the article

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