

Effects of Physical Exercise on Blood Pressure in Elderly Patients with Nonalcoholic Fatty Liver Disease and Hypertension

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Abstract: With the continuous improvement of living standards, people's health conditions have gradually improved, but the number of patients with non-alcoholic fatty liver disease and hypertension has been on the rise. Hypertension is a disease with a high prevalence among the elderly, which poses a great threat to people's lives and safety. Although the drug has a certain therapeutic effect, it will also bring great side effects. The purpose of this article is to study the effect of exercise on the blood pressure of elderly patients with nonalcoholic fatty liver disease and hypertension. By selecting 20 patients with nonalcoholic fatty liver disease and hypertension as an experiment, after they exercise, they collect blood pressure data, and explore the effects of exercise on liver function and blood pressure in elderly patients with non-alcoholic fatty liver disease and hypertension. The results of the study showed that the systolic and diastolic blood pressure of patients in the exercise group decreased from (168.2 ± 5.3) mmHg and (95.8 ± 7.2) mmHg to (139.6 ± 6.5) mmHg and (86.0 ± 5.5) mmHg ($P < 0.05$) before. It proves that exercise has a good effect on reducing blood pressure in patients with hypertension. Exercise is known as "the best medicine", and it has a significant effect on regulating blood pressure in elderly patients with non-alcoholic fatty liver disease and hypertension.

1. Introduction

With the change of lifestyle and the acceleration of the aging process, hypertension has become the main health threat to elderly residents in China and the world, and has become a hot topic of global concern [1]. The number of elderly residents in our country who die of cardiovascular and

vascular diseases accounts for 41% of all deaths, ranking first among all causes of death. Hypertension is a clinically common chronic lifelong metabolic disease [2]. The data shows that the prevalence of hypertension in the elderly population in China has reached 25.2%, and the number of patients has been on the rise. The medical expenses caused by high blood pressure in China's residents show a continuous increasing trend. The medical expenses incurred by high blood pressure during the one-time medical treatment of residents are also rising continuously. It is especially important for blood pressure patients to find a safe, efficient and free way of reducing blood pressure [3]. Sports training was called "the best medicine of humanity" by the father of medicine Hippocrates thousands of years ago. Exercises can effectively improve people's physical and mental health, and have a preventive effect on a variety of diseases, and brisk walking exercise is especially suitable for elderly patients with fatty liver and hypertension. [4].

The number of elderly non-alcoholic fatty liver disease with hypertension is increasing, the treatment period of hypertension is long, the complications are many and the risk characteristics are not only that make people suffer from irreversible health and reduced quality of life once they get sick It also brings a huge medical burden to individuals, families and society, which seriously threatens the health and property safety of urban and rural residents in China [5]. Hypertension is a disease in which multiple factors work together. Accurate identification and adjustment of hypertension risk factors is the key to improving the effectiveness of hypertension prevention and control [6]. The current guidelines for the prevention and control of hypertension propose that while exercising medical treatment for patients with hypertension, physical exercise can not only further consolidate the effect of blood pressure control, but also have an important meaning in reducing the incidence of cardiovascular and other dangerous events [7]. Current prevention and control measures in China: on the one hand, the patient's blood pressure is controlled within the target blood pressure range by means of drug treatment, and at the same time, the exercise training of high-necked hypertension patients is strengthened; on the other hand, the improvement of lifestyle is such as salt intake Adjustment, quitting smoking and limiting alcohol, weight loss, and maintaining psychological balance are also very meaningful for preventing and controlling hypertension [8].

This article aims to explore the effect of exercise on the blood pressure of elderly patients with non-alcoholic fatty liver disease and hypertension. Among them, Costarring gave a detailed introduction to the concurrent principles of non-alcoholic fatty liver disease combined with hypertension, analyzed the current problems in the medical system for the treatment of hypertension, and elaborated the research methods and techniques of the medical community for hypertension [9]. In his article, William put forward the research significance and current status of exercise training on the regulation of blood pressure in hypertensive patients under the current limitations of medical technology, and explained the related treatment of non-alcoholic fatty liver disease combined with high The traditional method of blood pressure also shows that adherence to medical treatment is also important for patients with hypertension [10]. In this article, Eun-hwa elaborated on the physical status of patients with nonalcoholic fatty liver disease and hypertension, and proposed the risks faced by this physical condition [11]. Camila proposed that exercise training has a good therapeutic effect on elderly patients with non-alcoholic fatty liver disease and hypertension. It is a treatment method without side effects and can reduce the financial burden of patients. The state should encourage and advocate [12].

Specifically, the main research content of this article is roughly divided into five parts: The first part is the introduction part, which aims to make a systematic review of the main research content of this article from the research background, research purpose and research ideas and methods; the second part is The theoretical basis, detailed and systematically summarizes the current research status of the effect of exercise on the blood pressure of elderly patients with non-alcoholic fatty

liver disease and hypertension, and introduces the principle of exercise to regulate blood pressure. The third part is the experimental part. The relevant experiments are carried out through scientific and rigorous experimental methods, and the advantages and disadvantages of current medical methods for lowering blood pressure are described. The fourth part is related concepts and theoretical basics. It explains the concept, medical principles and important significance of sports exercise in detail. At the same time, it also briefly explains the methods and methods of correct exercise for elderly hypertensive patients. The fifth part is the summary and suggestion of this article, which is a summary of the results of the article and the prospect of further attention to the way of exercise to lower blood pressure.

2. Theoretical Basis

2.1. The Principle of Hypertension

Non-alcoholic fatty liver disease with hypertension is one of many types of hypertension. Blood pressure (blood, BP is also called systemic arterial blood pressure) is the lateral pressure of blood in the blood vessel against the blood vessel wall per unit area. Hypertension refers to the blood pressure in the circulatory system is higher than the normal value, usually refers to the increase in systemic arterial blood pressure, is a common clinical syndrome. Hypertension refers to a disease in which arterial blood pressure continues to increase due to arterial vascular sclerosis and abnormal regulation of the center of vascular movement. In the revised version of the Guidelines for the Prevention of Hypertension in China, hypertension is defined as the sum of systolic blood pressure and diastolic blood pressure without taking anti-hypertensive drugs. According to the blood pressure level, hypertension can be divided into systolic blood pressure ≥ 140 mmHg and diastolic blood pressure the pressure is ≥ 90 mmHg. The blood pressure value is mainly measured by the hazy artery of the upper arm. The diagnosis of hypertension requires dynamic observation of blood pressure changes and overall blood pressure levels over a period of time. Those with unknown etiology in hypertension are called primary hypertension, which is characterized by increased and persistent arterial blood pressure, and hypertension is caused by multiple factors, that is to say, the pathogenesis of hypertension is very complex, and there is no clear in conclusion. The current research only concluded that the pathogenesis of hypertension is related to biological genetics, lifestyle, mental stress and other factors. The main factors of increased blood pressure are mechanistically factors and vascular mechanism factors.

For hypertensive patients, the neural mechanism is one of the causes of increased blood pressure. All neural mechanisms ultimately reflect the dysfunction of the nerve center that regulates blood pressure under the cerebral cortex, which in turn leads to hyper function of the sympathetic nervous system, leading to dysfunction of vasomotor motivational (constriction is greater than relaxation), which in turn leads to increased blood pressure. The mechanism that causes the central dysfunction of blood pressure regulation in the subcortex is mainly the abnormality of neurotransmitter activity and concentration. For example, the most common nor epinephrine and epinephrine concentrations increase, which in turn leads to hyper function of local neuronal networks related to blood pressure elevation in blood pressure regulation. Some other common neurotransmitters such as dopamine, topdressing, neurocutaneous, etc., abnormally increased concentration and activity will also lead to abnormal vascular central function. The renal mechanism leading to essential hypertension mainly refers to the retention of renal sodium and water caused by various factors. The retained sodium and water will increase the blood flow of the dirty, too high blood flow will start peripheral blood vessels to blood pressure the self-regulation makes the blood pressure increase, and the increased blood pressure makes the release of atrial naturalistic peptide increase. The atrial naturalistic

peptide can increase the glomerular filtration rate of the kidney and can also inhibit the function of renal tubule re absorption of steel. The glimmer enhances the excretion of water and sodium, and at the same time inhibit the release of renin from the proximal cells of the kidney, thereby inhibiting the release of progesterone hormone by the cells located in the adrenal globular zone. Other endogenous substances that promote the excretion of sodium and water, such as endogenous digitalis-like factors, increase the excretion of sodium and water and increase the resistance of peripheral small blood vessels, which in turn leads to increased blood pressure.

Vascular mechanism mainly refers to the dysfunction of vascular epithelial cells caused by various factors, which makes the structural function and abnormality of large arteries and small arteries and elasticity decline, which in turn makes the pulse wave propagation speed increase, and the reflected echo will advance to the middle and large arteries before the systole. An additional pressure peak will be formed during systole. This wave is delayed, which will increase the systolic pressure of the aorta, but reduce the diastolic pressure, thereby increasing the pulse pressure difference. In addition, the decrease in the number of small resistance arteries, or thickening of the tube wall, weakening of the elasticity and increase in resistance will change the position of the pressure reflection point of the peripheral blood vessel and the intensity of the reflected wave, resulting in increased blood pressure and increased pulse pressure. The mechanism leading to the structural changes of large and small arteries involves the breaking of the balance between the local active substances on the surface of vascular epithelial cells, mainly referring to the imbalance of the ratio of dilatory and vasoconstrictor substances, such as the increase of vascular oxygen free radicals and the nitric oxide activity that promotes vasodilation Decrease, insufficient tetracycline release, etc. The main factors that cause these abnormalities are epidemically, elevated blood homogeneity, and increased blood sugar, which ultimately lead to increased blood pressure in patients. The hormonal mechanism is commonly known as the abnormal function of the labor-intensive system. Among them, renin is a protein hydro lase. When the blood circulation of the system is insufficient and the blood pressure is reduced, the blood flow of the kidney will be reduced accordingly. The low blood flow of the kidney will excite the parietal cells located in the renal artery of the kidney Release renin, which can split the intensification present in the blood to produce angiotensin. This substance only has a weak effect of constricting blood vessels, but it can enter the blood circulation of the lungs and secreted in the lungs. Under the hydrolysis of the conversion enzyme, it is converted into intransigent, and vascular is a highly active constriction, which can cause an increase in blood pressure. In addition to the ability of intransigent to contract the small arteries of the whole body and increase the resistance of the surrounding circulation, it can also promote the synthesis and secretion of progesterone in the adrenal cortical globular zone. The increased progesterone can strengthen the absorption of sodium ions by the renal tubules The effect of preserving water and steel ions leads to increased blood circulation and blood flow to the body, and increased blood pressure; in addition, intransigent can also strengthen the contraction of the small veins, and can also increase the blood flow back to the heart. Blood pressure, but this is only a secondary factor of increased blood pressure.

2.2. Pathogenesis of Non-Alcoholic Fatty Liver Disease

With the improvement of people's living standards and changes in dietary structure, preventive health care measures are relatively lagging. The incidence of non-alcoholic fatty liver disease (NAFLD), which is closely related to high fat and high calorie intake, has been increasing year by year, and has become a concern of the medical community. And research hotspots. Hypertension patients have a higher incidence of fatty liver than healthy people. Nonalcoholic fatty liver disease (NAFLD) is a common chronic liver disease, including nonalcoholic simple fatty liver,

nonalcoholic dermatitis, and dermatitis-related cirrhosis. During the pathogenesis of NAFLD, metabolic syndrome is often complicated. NAFLD is closely related to hypertension and epidemically. This article has done a lot of research on the etiology of NAFLD, and put forward the "second strike" theory, that liver insulin is closely related to the occurrence of NAFLD. The first attack was mainly insulin resistance, which caused liver cell fat degeneration and accumulation, and increased the sensitivity of damaged liver cells to internal and exogenous damaging factors; the second attack was mainly based on the previous stage, After oxidant stress and lipid peroxidation, antioxidants are produced, which increases the number of undesirable oxidant metabolites and aggravates liver cell damage, which leads to further inflammation, necrosis, and fibrosis of liver cells with lipid changes.

For non-alcoholic fatty liver disease, insulin resistance is the core link throughout the entire process of non-alcoholic fatty liver disease. Insulin islet has the following effects; glucose metabolism: insulin secreted by pancreatic islets, binds to receptors in target organ cells, and when the insulin receptor substrate tyrosine is activated, a signal transduction reaction occurs that causes cellular enzymes to be activated to play a role in ingesting glucose, excess glucose is stored in the liver in the form of glycogen; promote the synthesis of fat: by promoting the conversion of liver synthetic fat to form triglycerides stored in phagocytes, and inhibit fatty acid oxidation; By reducing the activity of hormone-sensitive lipase, inhibiting the decomposition of lipids; by increasing the activity of lipoprotein lipase, promoting the uptake of fatty acids in blood by liver cells, thereby reducing the level of blood lipids. ADLFD When the body is in insulin resistance, the inhibitory effect of hormone-sensitive lipase is weakened, lipid decomposition activity is greatly increased, and the content of free fatty acids in the blood is increased, resulting in increased intake of it by the liver. The ester form is stored in the liver or partially metabolized and transported out of the liver. In the later period, hypochondria oxidant overload makes the excess triglyceride accumulate in the liver, which on the one hand exacerbates the fatty change of the liver. On the other hand, when the content of fatty acids in the blood is too high, the insulin signal is damaged, the glucose clearance function is weakened, and a large amount of excess glucose stimulates the secretion of the islet, resulting in hyperglycemia, which leads to the onset of liver disease

Under normal circumstances, an appropriate amount of FFA can be oxidized to generate energy and be stored, and ROS can be removed by antioxidants. When NAFLD occurs, excessive FFA in the body causes hypochondria oxidant compensation to increase and produce a large amount of ROS. When the amount exceeds the clearance capacity, a large amount of ROS accumulates. A large amount of ROS causes the hypochondria membrane to swell, MPTP opens, apoptosis-inducing factors and Cytochrome C Released into the cytoplasm, it directly damages the hypochondria mtDNA, making it ultra-structural abnormal, the hypochondria DNA base pair is deleted, the nucleate is activated, and the skeletal protein is hydrolyzed together to promote liver cells, and these changes have also changed The activity of amigo-terminal Kinase disrupts insulin signaling, affects lipid metabolism, and hypochondria swelling and rupture. During this process, more ROS are leaked, oxygen free radicals in the body increase, and a vicious cycle is formed, which further damages the liver and increases inflammation and fibrosis. A variety of reasons lead to the accumulation of ROS, which interacts with polyunsaturated fatty acids (PUFA) in the cell membrane to generate lipid peroxide (LOP), which is called lipid per-oxidation. The product of this process is lipid peroxides, such as formaldehyde (m mad) and HNE, which are two very toxic products, they can diffuse into the cell and outside, and expand the damage range of oxidant stress , and can make apoptotic B100 hydrolyze, thereby aggravating the aggravation of hepatitis disease.

3. Experiments

3.1. Experimental Preparation for the Effect of Exercise on Blood Pressure

In this paper, 20 elderly patients with non-alcoholic fatty liver disease complicated with hypertension were selected, and they were divided into two groups to conduct a research experiment on the effect of exercise on blood pressure. This experiment was conducted under the premise of scientific objectiveness and truth, and the requirements for the inclusion of test subjects are as follows: (1) For elderly patients with non-alcoholic fatty liver disease and hypertension who are retired in our province, and are over 60 years old, side by side with fatty liver Severe patients with tertiary hypertension; (2) Clinically diagnosed with fatty liver combined with hypertension, and who are tolerable to the content of brisk walking after clinical evaluation; (3) After informed consent to be included in the experimental study and Cooperate to complete follow-up; (4) Report to the medical ethics committee and get approval. (5) Exclude cirrhosis or alcoholic liver disease; secondary, malignant hypertension; patients with specific diseases that can cause fatty liver, such as malignant tumors or particularization degeneration. Related experimental equipment: use ACUSONX300 color Doppler ultrasound (Siemens Germany); use DDG-3000 biochemical analyzer (Japan Photoelectric Industry Co., Ltd.); use Senlac / SL-528 blood lipid and blood glucose analyzer (Tianjin Senlac Science and Trade Co., Ltd.); use German Siemens SOMATOMSensation64 spiral CT; using CONTEC electronic magnetometer (Dalian Tanganyika Medical System Co., Ltd.). The experimenters were randomly divided into two groups.

Both groups of patients were treated with a small amount of conventional basic medications: taking lipid-lowering drugs such as fibrates, statins or probucol (such as Genital, Indiscipline, Jibbing, Angeleno, Zhengzhou Inyang tablets) Choose 1 to 2 kinds of anti-hypertensive and lipid-lowering drugs). In this paper, the experimenters conducted unified training. Record exercise methods, exercise intensity, exercise taboos and daily diet precautions in detail, and print and send them to patients in the form of personal medical orders and exercise prescriptions. There are consultation telephones and regular telephone return visits to ensure effective monitoring of the experimental content. The control group used daily drug rehabilitation without exercise intervention, and the exercise group used daily drug rehabilitation to increase exercise intervention. Uniform and strict intervention measures should be implemented on diet and medicines, alcohol is prohibited, and light and low-fat foods are eaten. All the selected patients collected blood pressure, liver function, blood sugar, and blood lipids before and after treatment for clinical control studies to observe the lipid-lowering effect and clinical efficacy of the two groups; the research subjects were required to measure and record blood pressure by themselves every morning; If the systolic or diastolic blood pressure changes too much, you must even receive treatment and guidance from a specialist; require the research subjects to measure liver function indicators once a month, and establish a record file in time to observe the sample for 8 months of clinical tracking effect. .

3.2. Experimental Content

The items of exercise in this experiment are tai chi and brisk walking. Divide the experimenters into two groups, and carry out different experiments. There was no significant difference in age, medical history and condition between the two groups, and they were comparable ($P > 0.05$). Both groups of patients took a small amount of conventional basic medications, banned alcohol, and ate light and low-fat foods. The sports group insisted on brisk walking combined with Tai Chi exercise. The first group of fitness training instructions: It is required to walk 4.5 to 6 kilometers per hour, which is called brisk walking (elderly frail people are slightly slower and gradually accelerate after the body slowly adapts), that is, 120 to 140 steps per minute. The average brisk walk is 1 to 2 times

per day, the time for each exercise is 30 to 70 minutes, and the effective walking is 6 to 8 thousand steps per day. When walking briskly, you should lift your head and lift your shoulders, so that your shoulders and hips are kept on the same straight line perpendicular to the ground. With slow and deep breathing, swinging arms, striding forward quickly, or patting the abdomen, back, and waist while walking, walking with variable steps. When discomfort symptoms such as palpitation and dizziness occur during exercise, reduce the speed of exercise and stop exercise gradually; pay attention to step by step, according to the patient's own situation. Feeling abnormally tired the next day, reduce the amount of exercise. Tai Chi has the effect of lowering blood pressure and fitness. Elderly patients need to luck Danita qi during exercise, move qi with heart, clear meridians, balance yin and yang qi and blood. After the fitness run (walking), take a proper rest for 5 to 10 minutes, and then start to play Tai Chi, 2 to 3 times each time. Keep track of every subject during the experiment to ensure that the experimental data is accurate.

The second group of patients exercise test requirements: on average, walk 1-3 times a day, choose early, middle, and evening can be carried out, each fitness time is suitable for 30 to 70 minutes, each walking distance should not be less than 4 kilometers, preferably between 3 and 6 kilometers, and effective walking of 6 to 8 thousand steps per day. The above requires the research subjects to adjust their stride, pace and walking speed during exercise according to their own conditions. When walking, lift your chest and raise your head, spread your shoulders, keeping your shoulders and hips on the same straight line perpendicular to the ground. With slow and deep breathing, swinging arms, and striding forward quickly. Or pat on the belly, back and waist while walking, and take a few steps while walking; prompting the patient to experience discomfort symptoms such as panic and dizziness during the exercise, you can reduce the exercise speed and stop the exercise gradually; brisk walking is a good method of exercise. Moderate fast walking (115-125 steps / min) is a low-intensity aerobic exercise. We say that brisk walking is different from ordinary walking, not just walking casually, but brisk walking. Generally, the walking speed is within 3 kilometers per hour, while brisk walking requires only 4.5 to 6 kilometers per hour to be called brisk walking. In other words, a 10-minute walk should be about a kilometer (the elderly may be slightly slower, and gradually accelerate after the body slowly adapts), that is, about 120 to 160 steps per minute. The heart rate should be maintained at least 100 times per minute during exercise, and the maximum heart rate should not exceed 200 minus the age. After walking, then stick to Tai Chi, and stop automatically according to the amount of exercise, in order to achieve faster breathing and slight sweating. Fatigue after exercise usually disappears within 10-20 minutes. If you feel sore and heavy limbs, dizziness, and poor sleep after exercise, and you have not recovered the next morning, it means that the amount of exercise is too large and needs to be adjusted in time. Also track detailed data.

3.3. Experimental Results and Related Data

The evaluation indexes in this experiment are mainly blood pressure and liver function indexes, and blood pressure is mainly systolic and diastolic blood pressure; liver function indexes: alanine transferal (ALT), aspartate transferal (AST), glutony semitransparent (a-GGT), Alkaline Photostat (ALP); blood glucose, blood lipid index: fasting blood glucose (FPG), total cholesterol (TC), triglyceride (TG) and high density lipoprotein cholesterol (HDL-C). Judgment of efficacy refers to the evaluation criteria for the efficacy of fatty liver and hypertension formulated by the Pharmaceutical Affairs Bureau of the Ministry of Health in 2010. 1. Cure: symptoms and signs disappear, liver function and blood lipids are normal, B-ultrasound shows uniform light spots in the liver, normal echo in the deep liver, liver the internal small blood vessels are clear and the CT value is normal. 2. Significant effect: symptoms and signs basically disappeared, liver function was

basically normal, TC decreased $\geq 20\%$, TG decreased $\geq 40\%$, HDL decreased $\geq 0.94\text{nmol / L}$, liver B-ultrasound showed uniform liver light spot and small blood vessels The result was fair, the deep liver echo weakened slightly, and the CT value was close to normal. 3. Effective: Symptoms and signs improved significantly, and liver function test results decreased. TC and TG decreased by 10% to 20% and 20% to 40% of the original value; HDL decreased by ≥ 0.8 to 0.9nmol / L . B-ultrasound showed uniform light spots in the liver and small blood vessels showed an improvement from the previous. 4. Ineffective: The liver function is not improved significantly, the blood lipid level has not reached the effective standard, and the results of B-ultrasound and CT have not improved. The blood pressure data information table after the experiment is shown in Table 1:

Table 1. Information table of blood pressure data after experiment

Group	FBG	BMI	SBP	DBP
Group A	11 \pm 0.68	253 \pm 0.58	89 \pm 2.14	8 \pm 2.15
Group B	15 \pm 0.59	198 \pm 0.98	85 \pm 3.56	12 \pm 8.74
Average	22 \pm 0.42	366 \pm 0.65	103 \pm 4.38	10 \pm 5.35

This experiment found that the exercise method was used to effectively control the blood pressure of patients with fatty liver and hypertension. The improvement of liver function indexes can indeed relieve the disease and play an irreplaceable role in conventional drugs. On the one hand, this experiment believes that the occurrence and development of hypertension is related to insulin resistance and excessive stress. Reasonable exercise can improve insulin sensitivity on the one hand and increase the plasma levels of dilatory hormones such as propagandist. On the other hand, aerobic Exercise helps to slow down the body's stress and improve the body's adaptability, and it helps to avoid the stress response of blood pressure. In addition, aerobic training can reduce fibrinogen and other hypertension-related risk factors in addition to scientific blood pressure reduction, and it has been proven in many practices to improve patients' liver function indicators. Aerobic exercise can improve the heart and lung function of hypertensive patients through viscosity reduction and depolarization, and reasonably control the condition. In this experiment, liver function indexes and blood pressure of elderly patients receiving brisk walking combined with Antiquarian exercise were improved, and their condition was effectively controlled, proving the important practical significance and application effect of brisk walking combined with Antiquarian exercise for elderly patients. In addition, the operation of fast-step fitness exercise is simple and convenient. There are no special requirements for the exercise venue and exercise environment, no sudden risks, and it is very easy to promote in many groups, and it is convenient for the supervision of the patient's family and medical staff. The comparability and high acceptance of the lay a solid foundation for clinical promotion.

4. Discussion

4.1. Analysis of the Effect of Exercise on the Physical Function of Elderly Patients with Nonalcoholic Fatty Liver Disease and Hypertension

Life is movement, and this is true, especially for the elderly, exercise is more important. The relevant research in this article shows that the systolic and diastolic blood pressure of patients with nonalcoholic fatty liver disease and hypertension after exercise training decreased from (168.2 \pm 5.3) mmHg and (95.8 \pm 7.2) mm hg to (139.6 \pm 6.5) before treatment mmHg and (86.05.5) mm hg ($P < 0.05$); clinical symptoms improved, blood ALT, AST, a-get, TG, TC all decreased, but the improvement of each index in the exercise group was more obvious. After the exercise group, 11 cases were markedly effective, 16 cases were effective, 2 cases were ineffective, and the total

effective rate was 93.1%. The control group was 7 cases, 16 cases, and 6 cases, respectively, with a total effective rate of 79.3%. Changes in liver function, blood glucose, and blood lipid before and after the experiment. After the experiment, the liver function indicators in the exercise group were significantly lower than before the experiment ($P < 0.05$, $P < 0.01$). The control group only had ALT and ALP levels compared with before the experiment. The difference was significant ($P < 0.01$). After the experiment, there was a significant difference between the exercise group and the control group ($P < 0.05$, $P < 0.01$). The data of blood glucose and blood lipid changes in elderly patients with non-alcoholic fatty liver disease after exercise are shown in Table 2.

Table 2. Data of blood and blood lipid changes in elderly patients with non-alcoholic fatty liver disease after exercise

Number	Indicator type	Before the experiment	After the experiment
1	ALT	138±0.235	120±1.325
2	AST	146±0.185	119±0.892
3	ALP	140±0.221	123±0.776

Modern medicine believes that blood pressure lowering is the basis for avoiding cardiovascular diseases. The long-term goal of hypertension treatment is to prevent cardiovascular complications and reduce the possibility of cardiovascular diseases. Sports exercise for the elderly involves the participation of most muscle groups. It can increase cardiopulmonary health and control body weight. It can promote the use of more oxygen by muscles participating in sports. It has a very good effect on reducing or preventing high blood pressure. Brisk walking, swimming, cycling and aerobic fitness (dance or skipping rope) are all aerobic exercises, which are the core content of sports in the management of hypertension. Many studies have verified the effects of brisk walking, jogging, cycling, swimming, family aerobics, and various lifestyle activities on hypertension. Generally, after 4-12 weeks of aerobic exercise, the SBP of EH patients can be reduced by 5-15 mm Hg and DBP by 4-9 mm Hg. The research in this paper believes that for blood pressure to reach a stable state, exercise intervention should be carried out for at least 4-12 weeks, and after exercise intervention is completed, only by continuing to adhere to aerobic exercise training can the effect of exercise be reduced. However, not all sports are suitable for middle-aged and elderly patients with hypertension, such as fast running or rowing and other vigorous events, and it is not suitable for patients with hypertension. High-intensity strength training may cause more potential harm. All in all, exercise training can effectively reduce the incidence of elderly hypertensive patients, as shown in Figure 1 below.

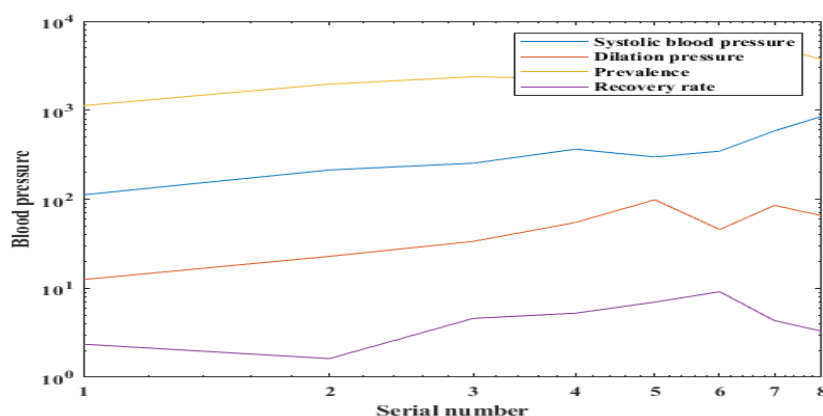


Figure 1. Exercise can effectively reduce the incidence of elderly patients with hypertension

As can be seen from the data in Figure 1, exercise training has a good blood pressure regulation effect on elderly patients with non-alcoholic fatty liver disease and hypertension, which can reduce the incidence of hypertension by 34%.

Old people's physical exercise can effectively control the blood pressure of patients with fatty liver and hypertension. The improvement of liver function indicators can indeed alleviate the disease and play an irreplaceable role in conventional drugs. On the one hand, this article believes that the occurrence and development of hypertension is related to insulin resistance and excessive stress. Reasonable exercise can improve insulin sensitivity on the one hand and increase the plasma levels of dilatory hormones such as propagandist and atrial naturalistic pep tides; another In terms of aerobic exercise, it helps to slow down the body's stress and improve the body's adaptability, and it helps to avoid the stress response of blood pressure. In addition, aerobic training can reduce fibrinogen and other hypertension-related risk factors in addition to scientific blood pressure reduction. It has been proven in many practices to improve liver function indicators of patients, and the aerobic exercise mode of disease-repairing fitness can be depolymerized by reducing viscosity the effect can improve the heart and lung function of patients with hypertension, and reasonably control the condition. In this study, liver function indexes and blood pressure of elderly patients receiving brisk walking exercise were improved, and the condition of fatty liver combined with hypertension was effectively controlled, proving the important practical significance and application of brisk walking exercise for elderly patients' effect. It can be seen from the analysis that exercise in elderly hypertensive patients has also greatly improved the liver function and health of patients with liver disease and hypertension, as shown in Figure 2 below.

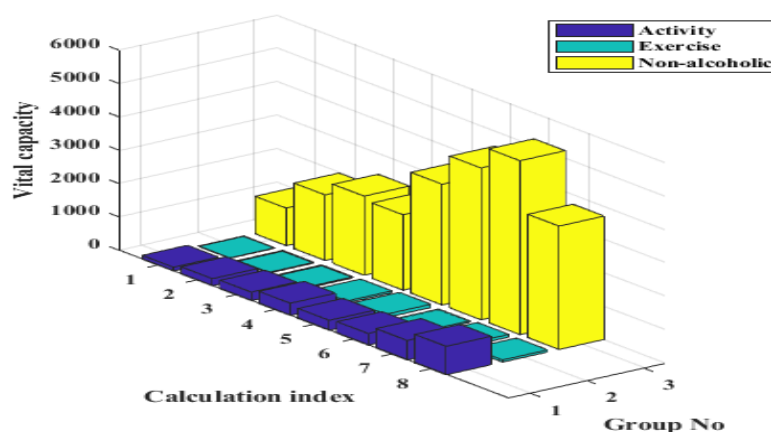


Figure 2. Exercise has also greatly improved liver function in patients with liver disease and hypertension

From the data in Figure 2, it can be seen that exercise training in elderly hypertensive patients is also helpful for liver function in patients with liver disease and hypertension, which can reduce liver function abnormalities in patients with liver disease by 16% g.

4.2. Analysis of the Effect of Exercise on Blood Pressure in Elderly Patients with Nonalcoholic Fatty Liver Disease and Hypertension

For middle-aged and elderly people, with the increase of age, the possibility of developing hypertension is 90%, and the improvement of exercise ability can reduce this possibility. Cardiopulmonary endurance has a significant correlation with the occurrence of cardiovascular disease. This study found that compared with subjects with a cardiopulmonary endurance of less

than 6 Mett, people with a cardiopulmonary endurance of 12 Met have a 20% lower risk of hypertension ; Cardiopulmonary endurance increased by 1 meteor value, the mortality due to cardiovascular disease decreased by 15%. And the study found that improving respirator endurance can significantly help maintain the optimal blood lipid and lipoprotein status. Therefore, improving cardiopulmonary fitness may delay or reverse the appearance of epidemically, atherosclerosis, and cardiovascular disease. Maximum oxygen uptake and heart rate are often used to evaluate exercise ability, and heart rate also reflects sympathetic nerve activation ability to a certain extent. In this study, after 12 weeks of walking exercise, the maximum oxygen uptake of the walking exercise intervention group was significantly increased, and the heart rate decreased under different exercise states, indicating that 12 weeks of walking exercise improved the exercise ability of patients with essential hypertension and passed Reduce heart rate and weaken sympathetic nerve activation. At the same time, when the quantitative load test with different strength steps was performed, the heart rate also decreased, indicating that the subject's heart contraction ability increased and the heart function appeared "saving". Through walking exercise, reduce the daily sitting time of patients with essential hypertension, increase the time of moderate exercise intensity, improve the exercise ability of patients with essential hypertension, improve blood lipid metabolism, reduce abdominal fat accumulation, and provide a basis for lowering blood pressure , At the same time can also increase the immunity of the elderly. Exercise can improve the body's immune ability in elderly patients with non-alcoholic fatty liver disease and hypertension, as shown in Figure 3 below.

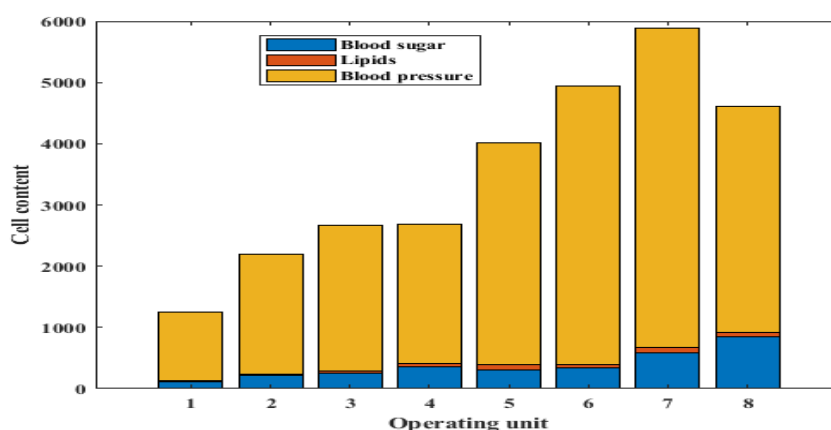


Figure 3. Exercise can improve the body's immune ability in elderly patients with non-alcoholic fatty liver disease and hypertension

From the data in Figure 3, it can be seen that exercise training has a good effect on improving immunity in elderly patients with non-alcoholic fatty liver disease and hypertension, and the body's immunity can be increased by 18%.

Exercise has many benefits for the elderly. This study found that high-intensity physical exercise and aerobic exercise for patients with nonalcoholic fatty liver disease and hypertension can reduce the incidence of cardiovascular disease and cancer, and extend lifespan. , And anti-hypertensive effect. Exercise can improve the elasticity of muscle fibers and the toughness of joints, and expand the capillaries in the muscle group, improve the compliance of blood vessels, reduce the tension of blood vessels, thereby reducing peripheral resistance and lowering blood pressure. Walking exercise can promote the secretion of neurotransmitters such as β -endorphin and dopamine in the nerve center, thereby regulating cerebral cortex and autonomic nerve function, reducing the activity of sympathetic nerves and labor-intensive system, and improving the excitability of vague nerve . Therefore, it can increase the level of prostate E in the plasma and improve the metabolism of sugar, fat and sodium, making it beneficial to lower blood pressure. Walking exercise can also relieve

symptoms such as mental stress, anxiety and restlessness. Enhance metabolism, improve sleep, eliminate fatigue, and feel comfortable. So as to ease the tension of nerves, muscles and blood vessels, to achieve the effect of lowering blood pressure. Exercise training can regulate blood pressure in elderly patients with nonalcoholic fatty liver disease and hypertension, as shown in Figure 4 below.

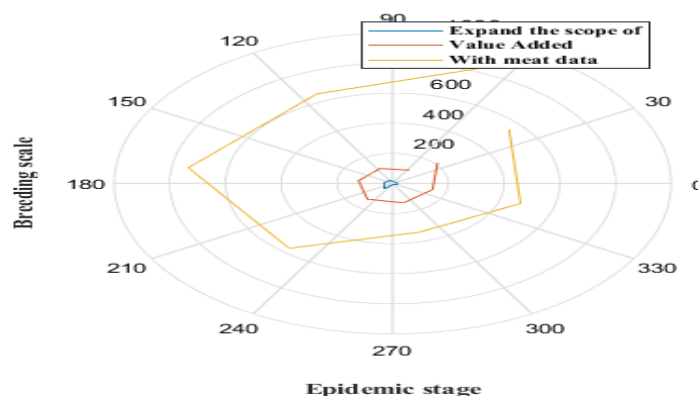


Figure 4. It can regulate blood pressure in elderly patients with nonalcoholic fatty liver disease and hypertension

It can be seen from Figure 4 that exercise training has an effect of regulating blood pressure in elderly patients with non-alcoholic fatty liver disease and hypertension. It has an average effect of reducing 11/6 mmHg in patients with hypertension. The intervention subjects in this article have decreased on average 10.05 / 12.03 mmHg.

5. Conclusions

(1) Exercise has a good effect on the treatment of elderly non-alcoholic fatty liver disease with hypertension. For the elderly, the elderly is relatively safe and harmless, and have an important impact on the prevention and improvement of hypertension. The exercise plan should be formulated according to the physical conditions, exercise habits and exercise conditions of the elderly, and at the same time strengthen the exercise guidance for the elderly with hypertension, so as to ensure the safety and effectiveness of exercise therapy. Large exercise can effectively improve the physiological function of the elderly, and it is worth promoting.

(2) This study shows that the blood pressure of patients with nonalcoholic fatty liver disease and hypertension before exercise and after exercise: the systolic blood pressure and diastolic blood pressure decreased from (168.2 ± 5.3) mmHg and (95.8 ± 7.2) mmHg before treatment At $(139.66.5)$ mmHg and $(86.05.5)$ mmHg ($P < 0.05$), it can be proved that exercise has a good effect on reducing blood pressure in patients with hypertension.

(3) Exercise for elderly patients with non-alcoholic fatty liver disease and hypertension: has a good blood pressure regulation effect, can reduce the incidence of hypertension by 34%, can reduce liver disease by 16% g liver function abnormalities, body immunity Increase by 18%, It has an average effect of 11/6 mmHg reduction in hypertensive patients, and the intervention subjects in this article decreased by an average of 10.05 / 12.03 mmHg.

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Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Conflict of Interest

The author states that this article has no conflict of interest.

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