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The Role Of Physical Activity And Sports In The Prevention And Treatment Of Chronic Diseases: Modern Scientific Data And Practical Recommendations

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ABSTRACT

This article examines the role of physical activity and sports in the prevention and treatment of chronic diseases based on modern scientific data and practical recommendations. The paper describes the mechanisms of the impact of physical activity on the body, including the improvement of metabolism and functions of the cardiovascular system, as well as the prevention and treatment of diseases such as obesity, diabetes, hypertension, heart and vascular diseases, depression and others.The study provides an overview of the results of many studies demonstrating that physical activity and sport have significant therapeutic potential for patients with chronic diseases. The article also provides practical recommendations on the choice of optimal types of physical activity and sports, the frequency and duration of classes, depending on the state of health, age and other factors.It is also noted that physical exercises should be individualized and aimed at achieving specific goals for each patient. At the same time, it is important to take into account the peculiarities of health and age, as well as to observe safety measures and monitor loads.One of the main conclusions of the article is the fact that physical activity and sport not only prevent the development of many chronic diseases, but also can improve the quality of life of patients, as well as reduce the risk of mortality from cardiovascular diseases.Thus, the study highlights the importance of regular physical exercise for the prevention and treatment of chronic diseases, and also recommends that doctors integrate this approach into their practice.

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INTRODUCTION

Physical activity and sports are key factors affecting human health and well-being. The modern lifestyle, characterized by low physical activity and a sedentary lifestyle, leads to an increase in the incidence of chronic diseases such as obesity, diabetes, hypertension, heart and vascular diseases, depression and others[1]. However, scientific studies show that regular physical activity and sports can be effective in the prevention and treatment of chronic diseases. Physical activity helps to improve metabolism, cardiovascular and nervous system functions, as well as reduce stress levels and improve mood.

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In this regard, the task of determining the optimal forms and levels of physical activity for the prevention and treatment of chronic diseases is becoming increasingly urgent. It is also important to understand that when performing physical exercises, it is necessary to take into account the individual characteristics of the patient, as well as to observe safety measures [2].

The purpose of this article is to consider the role of physical activity and sports in the prevention and treatment of chronic diseases based on modern scientific data and practical recommendations.

MATERIALS AND METHODS

When writing the study, an analysis of the literature on the topic of various authors was carried out, and comparative and analytical research methods were also used.

RESULTS

Physical activity is any form of movement that increases the energy expenditure of the body and contributes to its functioning. It is an integral part of a healthy lifestyle and plays an important role in promoting human health. Regular physical activity improves metabolism, which reduces the risk of developing many diseases, such as diabetes, obesity, hypertension, cardiovascular diseases and some types of cancer. It also helps to improve the functional state of the cardiovascular, respiratory and nervous systems, increases endurance and muscle strength, reduces stress levels and improves a person's psychological state.

In addition, physical activity helps strengthen bones and muscles, which reduces the risk of osteoporosis and other diseases of the musculoskeletal system. It also improves the immune system, increasing the body's resistance to infections and other diseases. In general, physical activity is of key importance for maintaining human health. Regular sports and other types of physical activity are an important component of a healthy lifestyle and can help improve the quality of life, prolong it and prevent the development of many diseases [3].

Physical activity affects the human body through a variety of mechanisms that have a positive effect on health and well-being:

- improved metabolism. Physical activity stimulates the body's metabolism, which helps to reduce cholesterol levels in the blood, reduce blood sugar levels and reduce body weight;

- strengthening of the cardiovascular system. Physical activity strengthens the cardiovascular system, improving its functional state and contributing to an increase in heart volume, improving blood flow and lowering blood pressure;

- improvement of respiratory function: physical activity improves respiratory function by increasing lung capacity and improving gas exchange in the lungs;

stress reduction. Physical activity helps to reduce stress and anxiety levels, improving a person's psychological state and contributing to an increase in mood;

-strengthening of muscles and bones. Physical activity helps strengthen muscles and bones, reduce the risk of osteoporosis and improve the quality of life;

- improving the function of the immune system. Physical activity improves the function of the immune system, reducing the risk of developing infectious diseases [4].

Thus, physical activity has a positive effect on the body through many mechanisms, improving human health and well-being.

Regular physical activity stimulates the body's metabolism, which helps to reduce cholesterol levels in the blood, reduce blood sugar levels and reduce body weight. Physical activity increases energy consumption, which in turn contributes to weight loss and lower body fat levels. In addition, it improves insulin sensitivity, which reduces blood sugar levels and prevents the development of diabetes.

Also, physical activity contributes to an increase in the level of "good" cholesterol (high-density lipoproteins), which plays an important role in protecting against cardiovascular diseases. It also helps to reduce the level of "bad" cholesterol (low-density lipoproteins), which is one of the main risk factors for the development of cardiovascular diseases [5].

In general, physical activity is an important factor for maintaining health and preventing the development of various diseases. It helps to improve the metabolism in the body, which can lead to a decrease in cholesterol levels in the blood, a decrease in blood sugar and a decrease in body weight.

Physical activity strengthens the cardiovascular system and improves its functional state. Regular physical exercises help to increase the volume of the heart and improve its performance.

Physical activity also improves blood flow in the body by increasing the amount of oxygen and nutrients that flow to tissues and organs. This helps to improve their functioning and reduce the risk of developing various diseases.

In addition, physical activity helps to reduce blood pressure. It improves the elasticity of blood vessels and increases their ability to regulate blood flow. This can prevent the development of hypertension and other cardiovascular diseases.

In general, physical activity is an important factor for strengthening the cardiovascular system and preventing the development of various diseases. It helps to increase the volume of the heart, improve blood flow and lower blood pressure, which can reduce the risk of developing cardiovascular diseases.

Physical activity helps to improve the respiratory function of the body. Regular exercise increases lung capacity and improves gas exchange in the lungs, i.e. the body's ability to

use oxygen and remove carbon dioxide. During physical activity, a person accelerates breathing and increases the volume of inhaled air. This allows the lungs to use oxygen more fully and remove more carbon dioxide from the body. In addition, physical activity improves the functioning of the cardiovascular system, which also contributes to the improvement of gas exchange in the lungs [6].

Constant physical exercise can improve respiratory function and reduce the risk of developing diseases of the respiratory system, such as bronchial asthma, chronic obstructive pulmonary disease and others.

Physical activity helps reduce stress and anxiety levels, improving the psychological state and contributing to an increase in mood. During exercise, the hormones endorphins are released in the body, which are a natural analgesic and give a feeling of pleasant fatigue. In addition, physical activity helps to reduce the level of the stress hormone cortisol, which can affect a person's psychological state and cause feelings of anxiety and anxiety.

Also, physical activity can improve self-esteem, increase self-confidence and improve sleep quality. Regular exercise can help in the fight against depression and other psychological disorders, improve the overall quality of life and improve mood.

Physical activity helps strengthen muscles and bones, reduce the risk of osteoporosis and improve the quality of life. Regular exercise helps to strengthen muscle mass, which is especially important for older people. In addition, they help strengthen bones, preventing the development of osteoporosis and related fractures.

Also, physical activity can help improve coordination, balance, and flexibility, which can help prevent injury and improve quality of life. In addition, sports can help reduce back and joint pain, which is especially important for people suffering from diseases of the musculoskeletal system [7].

Accordingly, physical activity plays an important role in promoting health and improving the quality of life. It can help prevent many chronic diseases and improve a person's physical and psychological condition. Regular exercise can be an important component of a healthy lifestyle that promotes longevity and well-being.

Physical activity improves the function of the immune system by increasing blood flow and improving oxygen supply to tissues, as well as increasing the level of leukocytes and antibodies in the blood. This helps protect the body from infections and accelerates the recovery process after diseases. Physical activity also helps to reduce the level of inflammation in the body, which also has a beneficial effect on the immune system [8].

Physical activity and sports can be an effective supplement to the treatment of chronic diseases such as diabetes, hypertension, heart disease, obesity, etc. According to research, regular exercise can improve the condition of patients with chronic diseases, reduce blood sugar and cholesterol levels, lower blood pressure, increase lung capacity, reduce body weight and improve quality of life. In addition, sports and physical activity can improve the psychological state of patients, reducing the level of stress, anxiety and depression. It is important to note that the use of physical activity and sports in the treatment of chronic diseases should be carried out under the supervision of specialists and taking into account the individual characteristics of the patient.

Physical activity and sports can be used as an additional method of treatment and prevention of chronic diseases such as heart and vascular diseases, diabetes, obesity, depression, arthritis, etc. At the same time, the choice and recommendations of certain types and intensity of physical exercises should be based on the specific characteristics of the patient and his disease, and should also take into account age, level of physical fitness and individual preferences.

It is important to note that the increase in physical activity and the beginning of sports should occur gradually and under the supervision of a specialist. Improper use of physical activity can lead to injuries and other undesirable consequences. Thus, physical activity and sports have a huge potential for health promotion and treatment of chronic diseases. Recommendations on the choice of types of physical exercises, their intensity and duration should be based on the individual characteristics of the patient and carried out under the supervision of a specialist [9].

DISCUSSION

When choosing the optimal types of physical activity and sports, it is necessary to take into account the individual characteristics of each person, such as age, level of training, the presence of chronic diseases and other factors. Some general recommendations on the choice of types of physical activity and sports, the frequency and duration of classes are as follows:

- it is necessary to start with small loads. If you haven't been exercising for a long time, start with a small load, gradually increasing it over several weeks. Start with 15-20 minutes of light exercise, such as walking or cycling, and gradually increase the duration and intensity of training;

- it is necessary to choose exercises that are enjoyable. To enjoy training and continue to exercise regularly, choose the types of physical activity that you like. It can be dancing, swimming, yoga or any other exercises;

- it is important to add variety to the training process. To avoid boredom and monotony, try different types of physical activity, such as aerobics, strength training, pilates, etc. This will help to improve results and increase motivation for classes [10].

When choosing types of physical activity, take into account your diseases and health status. For example, if you have

problems with joints or spine, it is better to choose milder types of activity, such as swimming or yoga. Depending on the goals and health status, it is recommended to engage in physical activity from 2-3 times a week to daily. The duration of training can also vary from 30 minutes to 1-2 hours, depending on the intensity and type of activity.

For obese or overweight patients, it is recommended to increase the duration of physical activity to 60-90 minutes a day and include high-intensity aerobic exercises in the program, such as running, brisk walking, intensive cycling or a simulator.

For patients with chronic diseases, it is better to start classes under the guidance of an instructor or a specialist in physical rehabilitation. They will help to develop an individual program that takes into account the health and physical capabilities of the patient, and will provide control over the performance of exercises.

The regularity of physical activity is a key factor for achieving and maintaining health. It is recommended to engage in physical activity at least 3-4 times a week, while the intensity and duration of classes should correspond to the capabilities and state of health of the patient.

It is important to remember that physical activity should be combined with proper nutrition and daily routine, as well as take into account the individual characteristics of the patient [11].

For people who lead a sedentary lifestyle, it is recommended to increase physical activity gradually, starting with small exercises such as walking, then gradually increasing the intensity and duration of classes. You should not start physical activity without prior consultation with a doctor, especially if you have chronic diseases or serious health problems.

Although physical activity and sports have many positive health effects and can be used in the prevention and treatment of chronic diseases, there are some possible problems and limitations that may arise when using them.

One of the main problems is the possibility of injury during exercise and sports, especially for people with pre-existing diseases, such as arthritis or heart disease. Therefore, it is very important that patients conduct physical activity classes under the guidance of an experienced instructor and follow the recommendations of doctors [12].

There may also be problems with excessive load on the body, which can lead to muscle overstrain, increased stress levels and other negative consequences. Therefore, it is important to choose the optimal level of intensity and duration of classes, especially for people with diseases that limit their abilities.

It is important to keep in mind that physical activity and sports cannot replace the full-fledged treatment of chronic diseases. For example, patients with diabetes or arthritis may need to take medications to control their symptoms and prevent the progression of the disease. Finally, it is worth noting that physical activity and sports may be unacceptable for some patients with chronic diseases, especially in the case of acute conditions or in a severe form of the disease. Therefore, before starting classes, you should discuss with your doctor the possibility and safety of physical exercises and sports activities.

There are several innovative approaches to the use of physical activity and sports in the prevention and treatment of chronic diseases:

- High Intensity Interval Training (HIIT) is a training method that involves short periods of very high intensity with periods of lower intensity as recovery. Studies have shown that HIIT can improve the function of the cardiovascular system, reduce the risk of diabetes and improve the lipid profile in the blood;

- Virtual reality (VR) is a technology that creates an imitation of reality using computer graphics and other sensory influences, such as sound and touch. Using VR in physical training can increase motivation and satisfaction from classes, as well as improve results.;

- wearable device technologies are devices that can measure physical activity data such as heart rate, number of steps, distance and calories. Using these devices can help people track their results and set specific goals to improve their health;

- interactive games are games that can be used as physical training, for example, games on video game consoles or on phones. The use of interactive games can increase motivation and interest in physical activity, especially in children and adolescents [12].

The use of these innovative approaches can improve the effectiveness and accessibility of physical activity and sports for the prevention and treatment of chronic diseases. However, it is necessary to take into account individual characteristics and limitations when using these methods. In addition, innovative approaches to the use of physical activity and sports in the prevention and treatment of chronic diseases have been developed and implemented in recent years. For example, methods such as functional training, endurance training, stretching training, strength training and coordination training have been developed to improve the functional state of people with chronic diseases. New forms of physical activity have also been developed, such as yoga, Pilates, dancing, which not only contribute to improving physical condition, but also psychological [13].

Innovative technologies, such as virtual reality, can be used to create individual physical activity programs for people with various chronic diseases, which increases the effectiveness of their treatment. Thus, innovative approaches to the use of physical activity and sports in the prevention and treatment of chronic diseases can significantly improve the quality of life of patients and increase the effectiveness of their treatment.

Functional training is an innovative approach to the use of physical activity and sports in the prevention and treatment of chronic diseases. It is a set of exercises aimed at developing strength, endurance, flexibility and coordination of

movements. The peculiarity of functional training is that it is focused on everyday life and body functions, and not on individual muscle groups [14]. Functional training can be especially useful for patients with chronic diseases, as it improves the functional state of the body, improves the quality of life and reduces the risk of complications. For example, with arthritis, functional training can reduce joint pain, increase flexibility and mobility, and improve the psychological state of the patient. In diabetes, functional training improves blood glucose levels, reduces the risk of complications and increases the sense of self-control.

In addition, functional training can be used for the prevention of chronic diseases, as it promotes the development of the whole body as a whole, strengthens the immune system and increases resistance to stress. It can also help in the recovery period after injury or surgery, speeding up the rehabilitation process and returning the patient to normal life.

However, like any type of physical activity, functional training may have contraindications and health risks. Therefore, before starting classes, it is necessary to consult with a doctor and choose the optimal set of exercises for specific needs and characteristics of the body [15].

Endurance training is an important component of physical activity and sports in the prevention and treatment of chronic diseases. It is aimed at increasing the endurance of the body and improving the cardiorespiratory system. Endurance training can be conducted in various formats, including running, walking, cycling, swimming and other types of cardio loads. At the same time, it is important to choose the optimal type of training depending on the patient's goals and health status.

Endurance training can be especially useful for patients with diseases of the cardiovascular system, such as coronary heart disease, hypertension and heart failure. It can also help people with obesity, diabetes and other chronic diseases. Endurance training can improve heart and lung function, increase physical activity levels, and improve patients' quality of life. In addition, they can contribute to weight loss and cholesterol levels in the blood, as well as reduce the risk of developing cardiovascular diseases and diabetes. However, it is important to remember that endurance training can be a strain on the body, especially for patients with chronic diseases. Therefore, before starting training, it is necessary to consult with a doctor and choose the optimal exercise regime depending on the patient's state of health.

Stretching or flexibility training has an important role in the prevention and treatment of chronic diseases such as back pain, arthritis, fibromyalgia and muscle and joint injuries.

Stretching helps to improve flexibility, coordination and balance, as well as reduces muscle tension and increases blood circulation in the body. These factors can help reduce the risk of injury and improve the quality of life [16].

In some cases, stretching can be even more effective than exercise with a load. For example, with back pain, stretching the muscles of the back and abdominal muscles can reduce discomfort and pain. Stretching can also be an effective way to reduce stress and improve psychological state. It can help to relax and reduce tension, as well as improve sleep. However, it is important to remember that stretching should be correct and safe. Before starting stretching training, it is necessary to consult with a trainer or a doctor, especially if you have any chronic diseases or problems with joints and muscles [17].

Strength training helps to develop strength qualities, improve muscle mass and tone, as well as increase bone density. This is especially important for patients with osteoporosis or other bone diseases. Strength training can also help patients with chronic diseases improve posture and balance, reduce pain and increase functional independence. However, before starting strength training, it is necessary to consult with a doctor and a trainer in order to assess the state of health and choose the optimal training program. This is especially important for patients with cardiovascular diseases, high blood pressure or other contraindications for strength training.

Coordination training is aimed at improving a person's ability to perform complex movements and control his body in space. Such training is especially important for people who play sports or perform any actions that require precision and coordination of movements. Coordination training can help improve balance, stability and accuracy of movements. It can also help improve the ability to respond quickly to sudden changes in body position or environment [18].

Coordination training can be carried out with the help of various exercises, such as balancing exercises, jumping, agility, eye-hand coordination exercises, exercises to change the direction of movement, and many others [19]. It is important to note that coordination training can be especially useful for people suffering from neurological diseases such as Parkinson's disease or cerebral palsy, as it can help them improve coordination of movements and reduce the risk of falls. Also, coordination training can be useful for older people to maintain mobility and reduce the risk of injury.

CONCLUSION

Physical activity and sports are important means of prevention and treatment of many chronic diseases. Current research confirms that regular physical activity promotes health and reduces the risk of developing cardiovascular diseases, obesity, diabetes, arthritis, depression and other diseases.

Practical recommendations for choosing the optimal types of physical activity, frequency and duration of classes should take into account the age, health status and physical fitness of a person. They can range from light activities, such as walking or yoga, to intense cardio or strength exercises.

However, it is necessary to take into account the potential problems associated with physical activity, including injuries, overexertion and other negative consequences. It is important

to conduct training under the guidance of an experienced instructor and observe safety rules.

Innovative approaches to the application of physical activity and sports include functional training, endurance training, stretching training, strength training and coordination training. Each of these types of training can be applied depending on individual goals and needs. In general, physical activity and sports play an important role in maintaining health and preventing chronic diseases. They can be an effective complement to other treatments and help improve people's quality of life.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

All authors contributed in reviewing the final version of this paper

REFERENCES

1. Borghi-Silva A., Garcia-Araújo A. S., Winkermann E., Caruso F. R., Bassi-Dibai D., Goulart C. L., et al. (2021). Exercise-based rehabilitation delivery models in comorbid chronic pulmonary disease and chronic heart failure. Front. Cardiovasc. Med. 8, 729073
2. Eyre H., Kahn R., Robertson R. M., Clark N. G., Doyle C., Hong Y., Gansler T., Glynn T., Smith R. A., Taubert K., Thun M. J., et al. American Cancer Society (2004). Preventing cancer, cardiovascular disease, and diabetes: A common agenda for the American cancer society, the American diabetes association, and the American heart association. Stroke 109 (25), 1999–2010.
3. Hortobágyi T., Vetrovsky T., Balbim G. M., Sorte Silva N. C. B., Manca A., Deriu F., et al. (2022). The impact of aerobic and resistance training intensity on markers of neuroplasticity in health and disease. Ageing Res. Rev. 80, 101698.
4. Pedersen B. K., Saltin B. (2015). Exercise as medicine – evidence for prescribing exercise as therapy in 26 different chronic diseases. Scand. J. Med. Sci. Sports 25, 1–72.
5. Saeidi A., Haghighi M. M., Kolahdouzi S., Daraei A., Abderrahmane A. B., Essop M. F., et al. (2021). The effects of physical activity on adipokines in individuals with overweight/obesity across the lifespan: A narrative review. Obes. Rev. 22, e13090.
6. Warburton D. E., Nicol C. W., Bredin S. S. (2006). Health benefits of physical activity: The evidence. CMAJ 174 (6), 801–809.
7. Zouhal H., Zare-kookandeh N., Haghighi M. M., Daraei A, Sousa M. D, Soltani M, et al. (2021). Physical activity and adipokine levels in individuals with type 2 diabetes: A literature review and practical applications. Rev. Endocr. Metab. Disord. 22, 987–1011.
8. Kohl HW: Physical activity and cardiovascular disease: evidence for a dose response. Med Sci Sports Exerc. 2001, 33 (6 Suppl): S472-483. discussion S493–474
9. Oguma Y, Sesso HD, Paffenbarger RS, Lee IM: Physical activity and all cause mortality in women: a review of the evidence. Br J Sports Med. 2002, 36 (3): 162-172.
10. Tuomilehto J, Lindstrom J, Eriksson JG, Valle TT, Hamalainen H, Ilanne-Parikka P, Keinanen-Kiukaanniemi S, Laakso M, Louheranta A, Rastas M: Prevention of type 2 diabetes mellitus by changes in lifestyle among subjects with impaired glucose tolerance. N Engl J Med. 2001, 344 (18): 1343-1350.
11. Cheema B, Abas H, Smith B, O'Sullivan A, Chan M, Patwardhan A, Kelly J, Gillin A, Pang G, Lloyd B: Progressive exercise for anabolism in kidney disease (PEAK): a randomized, controlled trial of resistance training during hemodialysis. J Am Soc Nephrol. 2007, 18 (5): 1594-1601.
12. Zwisler AD, Soja AM, Rasmussen S, Frederiksen M, Abedini S, Appel J, Rasmussen H, Gluud C, Iversen L, Sigurd B: Hospital-based comprehensive cardiac rehabilitation versus usual care among patients with congestive heart failure, ischemic heart disease, or high risk of ischemic heart disease: 12-month results of a randomized clinical trial. Am Heart J. 2008, 155 (6): 1106-1113.
13. Belardinelli R, Georgiou D, Cianci G, Purcaro A: 10-year exercise training in chronic heart failure: a randomized controlled trial. J Am Coll Cardiol. 2012, 60 (16): 1521-1528.
14. Orozco LJ, Buchleitner AM, Gimenez-Perez G, Roque IFM, Richter B, Mauricio D: Exercise or exercise and diet for preventing type 2 diabetes mellitus. Cochrane Database Syst Rev. 2008, 3
15. Hurkmans E, van der-Giesen FJ, Vliet Vlieland TP, Schoones J, EC V d-E: Dynamic exercise programs (aerobic capacity and/or muscle strength training) in patients with rheumatoid arthritis. Cochrane Database Syst Rev. 2009, 4
16. Davies EJ, Moxham T, Rees K, Singh S, Coats AJ, Ebrahim S, Lough F, Taylor RS: Exercise based rehabilitation for heart failure. Cochrane Database Syst Rev. 2010, 4
17. Heiwe S, Jacobson SH: Exercise training for adults with chronic kidney disease. Cochrane Database Syst Rev. 2011, 10
18. Heran BS, Chen JM, Ebrahim S, Moxham T, Oldridge N, Rees K, Thompson DR, Taylor RS: Exercise-based cardiac rehabilitation for coronary heart disease. Cochrane Database Syst Rev. 2011, 7
19. Smith V, Devane D, Begley CM, Clarke M: Methodology in conducting a systematic review of systematic reviews of healthcare interventions. BMC Med Res Methodol. 2011, 11