

# Exercise Physiology Analysis of the Exercise Activity of the Elderly

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**Abstract:** The American sports physiologist, Mollers believes that "sports should be performed in a way that follows the natural and circular planes (referring to a gentle but not abrupt process)." The amount of exercise is from small to large, and the operation is from simple to complex considering comfort and nature, step by step. However, through questionnaire interviews and heart rate tests, from the perspective of exercise physiology, the paper analyzed the quality and quantity of fitness activities of middle-aged and elderly residents in the community. It is found that bodybuilders lack understanding of their own health before exercise, and lack understanding of absolute and relative contraindications of exercise.

## 1. The Exercise Forms and Characteristics of Elder

### 1.1 Form

The elderly usually carries out community fitness exercises such as fitness tours, walking, brisk walking, jogging, skipping ropes, climbing stairs, playing bowling, practicing Taijiquan, Taiji Swords, Mulan Fans, Qigong, and twisting Yangge songs, turning hula hoops, dancing intercourse, like mass aerobics, class exercises, gym exercises, and exercises.

### 1.2 Features

(1) Free movement, self-feeling, self-discipline, involuntary light sports, can be carried out collectively or independently; it can be exercised in the sound of music, and it can also be exercised in a quiet manner without any conventional method of movement. When you listen to music, you can gently sway with the rhythm; when standing and speaking, you can do chest expansion by the way. That is, any form of exercise can be an effective form of fitness.

(2) Anytime, anywhere, no restrictions on light sports, regardless of the size of the space, the location of the place, such as houses, balconies or steps, roadsides, trees or house vacancies, as well as mountains, rivers or fields, gardens, parks or playgrounds, etc., can all be exercised to make fitness activities more convenient. Light sports are also extremely relaxed and casual in time. As long as you have the desire, you can engage in a relaxing and enjoyable exercise at any time. For example, you can use the interval between learning and work, and use intermittent time after meals. Even if it is bad, you can use spare time. The exercise schedule can be long or short, depending on the individual's physical strength, interest, and the specific circumstances of the busy and busy.

(3) Low physical energy consumption and low technical requirements Light sports are light-weight sports and have little physical energy consumption. They can regulate the functions of various body systems and make exercisers feel comfortable and able to do everything they can. In addition, light sports do not have excessively high technical and regulatory requirements. There is no burden and no stress in sports. It is enough to exercise according to their own wishes.

## 2. The research process of the elderly physical exercise

Aging is a complex process that is influenced by many factors such as heredity, lifestyle, and chronic diseases, and the interactions between these factors. How to improve the health of middle and old people and improve their quality of life through exercise and physical activity so that they

can better independent living has become an important issue in the current society. Research shows that participation in regular physical activities (aerobic and muscular exercise) can improve the adaptability of physiological function in the middle-aged and the elderly, and have a delay effect on the body's aging. With the deep implementation of China's "National Fitness Program", how to scientifically and effectively conduct physical exercise in accordance with its own physical and health conditions has become a common concern. Currently, studies on middle-aged and old people's physical fitness are mostly focused on sociological investigations on the status of physical fitness. Participate in sport participation rate, venues, expenditures, etc. [2], or study the effects of certain fitness methods on the quality of middle-aged and old people, such as Taijiquan, aerobic dance, aerobics, etc. The influence of the segment of the population [3], but little research has been done on how to practice scientific exercise in the middle-aged and elderly population in a certain region. This, we begin to urban residents in fitness activities to investigate the behavior of the elderly, testing, exercise physiology from the point of view of quality and quantity of community fitness of the elderly, provide the basis for health promotion and health education.

## **2.1 Research objects and methods**

The research subjects adopted a cluster and random sampling method to select a group of 50-69-year-old fitness people (in the residential community) from the urban areas.

## **2.2 Research results**

### **2.2.1 Self-assessment of pre-exercise physical fitness status of respondents.**

In interviews, it was learned that although most middle-aged and senior citizens agree that exercise should be performed, surveys have shown that they had physical fitness or physical examination before exercise and fitness. Residents only had 9.1%, while only 26.8% of them consulted doctors. 64.1% of people evaluated their own health and physical performance only through their own subjective feelings. They never considered that regular exercise should be performed before exercise [1].

### **2.2.2 Analysis of the pre-exercise conditions of the middle-aged and older members of the community before exercise.**

The exercise should be fully prepared before the exercise, including the assessment of their own health and physical condition, the collection and storage of relevant fitness knowledge and the formulation of fitness plans. The survey found that only 35.9% of the pre-exercise health assessments or consultations with doctors of the residents of the middle-aged and old residents of the community in Hangzhou indicate that the fitness group lacks the necessary health protection before exercise. Exercise is a double-edged sword and there are both sides of beneficial and endangering health. The data shows that among the risk factors for exercise, the most important ones are age, cardiac performance, and exercise intensity [5]. Many bodybuilders believe that as long as there is no physical discomfort, they can participate in sports. In fact, whether or not before exercise Symptoms of vascular disease, sports accidents often occur in the elderly. Such as sudden death in sports often occur in people over 40 years of age before, rather than known heart disease [5]. In addition, the occurrence of sports accidents often in sports excessive intensity is the incentive. Therefore, for older and middle-aged bodybuilders over 40 years old, it is absolutely necessary to check their own health before exercise. In particular, the heart The exercise stress test of the face will find lesions that have not been shown at the time of static, greatly reducing the risk factors of exercise. At the same time, the evaluation of their physical conditions such as cardiopulmonary function, muscle strength and endurance, body composition, flexibility, and balance, sensitivity and response. The assessment of such ability will guide the athlete to choose the proper way of exercise.

### **2.2.3 Quality analysis of community residents' fitness activities.**

The combination of exercise frequency, exercise intensity, and duration in long-term exercise is considered to produce effective exercise effects. The interaction of these factors has produced

excessive stimulation [6]. The lower the stimulation, the lower the exercise effect, and the higher the stimulation, the higher the effect. Research shows that: less than twice a week, less than 40% to 50% of maximum oxygen uptake and each time low Aerobic exercise for 10 minutes is usually not enough to provide stimulation for adults to promote and maintain healthy fitness. Even so, if exercise frequency and duration are appropriate, lower intensity physical activity can still obtain many health benefits. For example, the amount of physical activity can be accumulated through 10 minutes in a day. Based on the above points of view, the study develops evaluation criteria for appropriate exercise based on the recommendations of the American College of Sports Medicine for middle-aged and elderly people. That is, the development of cardiopulmonary function and body composition. The exercise mode is mainly exercise frequency 3 to 5 days/week; light to moderate exercise intensity, mild: heart rate reaches 35% to 54% of maximum heart rate during exercise, moderate: heart rate is about 55% to 69% maximum heart rate range; movement Time: 20 ~ 60 minutes (including the accumulation of exercise time), physical feeling tired or slightly tired. In the elements of the exercise planning, the most important is the exercise intensity. The most suitable exercise program for the elderly is walking, jogging, swimming, etc. Muscle groups participate in rhythmic aerobic exercise. The most significant role of these sports programs is to improve the function of the cardiovascular system and to slow down the degradation of certain physiological functions brought about by age. The survey found that: The fitness program is more reasonable and has national and regional characteristics such as Tai Chi and mountaineering. In addition to full understanding and knowledge of physical conditions before exercise, warm-up and relaxation activities before and after each exercise include jogging and stretching exercises. All of them are essential. For the middle-aged and the elderly, before exercise, the routine should be walking, jogging and other systemic exercises. The purpose is to eliminate the physiological inertia of the respiratory system and improve the body temperature in order to facilitate the subsequent joint stretching. The mobilization and promotion of the body's various systems to prevent sports injuries. The most obvious effect of relaxation after exercise is to prevent high blood pressure after exercise. Survey shows that the elderly in the community The participation rate of physical activity was 61% higher, but 39% did not do any warm-up activities. The warm-up activities were mostly walking and jogging. Afterwards, the exercises for stretching joints were usually about 10 minutes, and the winter could be appropriately extended. What is worth noting is the order of respondents' warm-up activities [3]. Only 57.2% of them performed relaxation activities to reduce their intensity. Immediate rest after exercise, such as watching TV, newspapers, and sit-in, will greatly reduce the effect of exercise and increase.

### **3. Exercise Fitness of the Elderly**

(1) The main functions of physical exercise are the adjustment of human physiological function, physical strength, ability and psychology; the display of human personality; the supplementation of human culture; making the human body enjoy itself in a happy and healthy way in the practical experience of sports. The rest of my spare time is to relieve the physical and mental fatigue caused by work and life, eliminate the tension caused by improper loads and hardships, and enable the exerciser to achieve self-esteem, happily, and form a good physiological and psychological need. Continuous light sports can accelerate the decomposition of body fat, sugar and protein, improve lipid metabolism, improve cardiopulmonary function, reduce peripheral blood circulation resistance, reduce the burden on the heart work, effectively prevent brain and cardiovascular diseases, and prolong organs. For example, playing a fitness ball not only has good curative effect on hemiplegia sequelae, cervical spondylosis, frozen shoulder, coronary heart disease, finger dysfunction, etc., but also dredges meridians through repeated stimulation of many points and meridians of fingers and hands. Reconcile the effects of blood, strong internal organs, and brain-enhancement. For another example, regular participation in fitness tourism not only enhances the leg muscles, improves the flexibility and flexibility of the joints, but also makes the blood circulation of the body smooth during the travel process, and the blood accelerates, so that the dross on the blood vessel wall is continuously cleared and the blood vessel elasticity is enhanced. In order to achieve the purpose of

promoting metabolism and strengthening the heart and lungs. Mild exercise can also help gastric acid secretion and improve gastric motility; it can stimulate more immune assistance in vivo, thus playing a role in resisting viruses, bacterial infections and inhibiting and killing mutant cancer cells in the body; if engaged in hiking, climbing. Lightweight fitness tours such as walking and brisk walking can make muscle fibers thicker and increase muscle strength. Medical researchers have found that continuing to engage in light sports can also prevent the excessive secretion of estrogen, thereby changing the ratio of estrogen in women, reducing fat, and effectively reducing the incidence of female cancers with specific reproductive organs.

#### (2) Antagonism of physical fitness to sub-health

As a whole, people are closely related to their physiology and psychology. Physical health is the basis and prerequisite for mental health. Mental health is the guarantee and motivation for physical health. From a medical perspective, light sports is also a kind of psychological training. Easy exercise can secrete a healthy and beneficial hormone, enzyme and acetylcholine and other active substances, regulate blood flow, stimulate nerve cells, speed up metabolism, and make gastric activity more regular, so that saliva and insulin increased secretion. For example, twisting Yangge, dancing with music, and exercising in entertainment can not only cultivate feelings and pleasure, but also regulate the endocrine system of the human body to prevent diseases caused by autonomic dysfunction; for example, it is beneficial to tourism in sports and fitness tourism. The psychological adjustment of the person, relieve mental fatigue, but also can transfer the excitement of the cerebral cortex, so that the excitement and inhibition tend to balance, and effectively regulate the function of the central nervous system, coordination of the body's endocrine function, improve the body immunity. Obviously, light sports is a means to make the central nervous system get moderate activation and achieve a pleasant level, so that people can feel comfortable and happy feelings directly after exercising, and this effect can occur instantaneously, and it can also occur on many occasions. Get a feel after exercise. In addition, light sports can also promote the release of a substance in the human body - endorphin skin. The substance can make people feel happy, invigorate, and have high emotions. This is helpful to eliminate people's bad mood (such as irritability, anger, sadness, anxiety, depression, pain, etc.), relieve psychological pressure, and add fun to life. Dr. Herbert, University of Southern California School of Medicine, had done this scientific experiment: Divided 30 old people aged 52 to 70 into two groups, all suffering from nervousness, insomnia, and irritable diseases. During the trial, the first group of clever people took sedatives and the other group did not take any medication. It only took 15 minutes of physical activity every day. The test results showed that "light sports" performed better than "sedatives." Therefore, he came to the conclusion that light sports are a good neurosedative, and it has a good effect on human neurological tranquility.

#### (3) Anti-aging effects of sports and fitness.

As a person grows, the organ systems and physiological functions of a person gradually decline, and various degenerative diseases occur due to lack of exercise, which causes the phenomenon of aging. Appropriate light aerobic exercise, such as Tai Chi Chuan, Tai Chi Sword, Fan Dance, and walks, can effectively delay the decline of physiological function caused by increasing age, and it is particularly beneficial to prevent premature aging of the body. Chen Caizhen et al. reported that aerobic exercise increased the antioxidant capacity of the kidney by suppressing the increase of oxidative stress during the aging process, so as to prevent or delay the premature decline of aging kidney function. The Danish scholar schnoh moderate reported that compared with non-joggers, joggers had a significant difference in the risk of death during the 8-year follow-up period. The relative risk of the former was only 0.39, that is, the risk of death was 60% lower than that of the control group.

#### (4) The role of physical fitness in rehabilitation and improving immunity.

While the living standard of modern society is continuously improving, the phenomenon of environmental pollution, ecological imbalance, and civilization is becoming more and more serious. In order to prevent diseases, people are trying to increase their resistance to diseases and their ability to adapt to changes in the natural world. Light sports is the return to nature of living beings.

It brings people close to nature and enhances the body's resistance and adaptability through the forces of nature (sunshine, air, water, etc.) to achieve the purpose of healing. If this is not the case, the organism itself will undergo adverse changes in accordance with the laws of nature, and the immediate manifestation of this change is the occurrence of disease. Low energy and light exercise can also stimulate the body's immune system, so that the number of immune cells in the body such as NK cells, K cells, T and B and lymphocytes, and macrophages increase, function activity increases, secretion of antibodies and cytokines increases, and immunity is enhanced. Enhance the body's resistance to disease and disease prevention. The report of the Harvard School of Public Health in the United States pointed out that the middle-aged and elderly people can walk 30 times a day and the probability of stroke can be reduced by 30%.

#### **4. Conclusions**

The bodybuilder lacks understanding of his own health status before exercise, lacks awareness of absolute and relative contraindications to exercise, lacks monitoring and guidance of potential risks in sports, and many athletes suffer from excessive or low exercise intensity and lack of exercise time. The exercise of the bodybuilder did not play a role in the maintenance and promotion of health and did not achieve the effect of exercise. It required intervention instruction for health education.

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