

# Analyze the Influence of Badminton on The Physiological Function of The Human Body

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**Abstract** - Badminton is currently one of the most popular sports in China, and playing badminton can gradually affect the human cardiovascular function and lower limb strength. At the same time, the sport can also effectively enhance human cardiopulmonary function. The paper first summarises the impact on badminton at home and abroad, especially on human physiology, to provide a certain basis for the selection of sports for the general public and to develop a certain theoretical basis for the design of sports methods.

**Keywords** — badminton, physiological function, cardiopulmonary function, sports influence

## I. INTRODUCTION

Badminton is a sport with advantages in China. Through comprehensive experimental verification and analytical research on the physiological function, physical quality, and psychological characteristics of Chinese badminton players, badminton can play a good physical exercise effect, but wrong movements can also lead to injuries, shoulder joints, ankles, and soles of the feet are easily injured. Proper badminton practice can improve the body's metabolism with a reasonable output. According to the law of biology on "use is in, waste is out," long-term adherence to sports can enhance the function of the organs of the internal organs due to the vitality of the organism, which can slow down the aging process and can lead to a long and healthy life.

## II. OVERVIEW OF PHYSIOLOGICAL FUNCTION

### A. Function Overview

Physiological function relates to the body's response to various physiological activities and the external environment. It refers to the inevitable trend of the body's adjustment ability during physical exercises; that is, the body's various functions gradually rise in birth and will remain at the highest level after a certain period of time. And then, with the extension of time, the function gradually declines. For physical function, the rate of increase in the length of the ascent phases and the time change range of maintaining the highest height depends on the trainer's

maintenance state and training of their functions. Level Also besides, certain methodological influences are related to external factors and climatic conditions.

For example, the characteristics of children and adolescents' functional changes: general functional rise time is short, fast, the highest stage duration is short, and the range of changes is small (that is, the ability to withstand sudden changes in overload is low). Young adults are the most vigorous period of functional activity. And gradually decline after the prime of life. With the improvement in training level, the time of the ascending phase of physical function is shortened, the duration of the highest phase is prolonged, and the ability to withstand high-intensity exercises loud and sudden changes is also improved.

Therefore, the good physical function should be obtained by sufficient physical strength and sufficient energy. Putting aside mental exercise is the opposite of not having a complete effect.

### B. Ways to Improve Performance

#### a) Moderate Exercise

A moderate amount of exercise can improve the white blood cells of the blood system. The increase in white blood cells can last a few minutes after exercise, and the highest peak 2 to 3 hours after exercise, mainly neutrophils and lymphocytes, plays an important role in preventing the spread of pathogens. And the right amount of exercise can give people pleasure, eliminate tension, and improve confidence in the disease. But to achieve the purpose of the proper exercise to enhance physical fitness, certain conditions must be fulfilled. First of all, some upper limb exercises or lower limbs exercise are required. Follow by exercises to promote cardiopulmonary activity. Furthermore, this kind of exercise must adapt to one's age and physical condition. The most important thing is to persevere for a long time and get happiness from it. Exercise that meets this condition can enhance your physique and your immunity. It is enough to sweat a little after exercise. Intensified exercise should be reasonably rested, and adequate sleep should be used to make exercise. After that, the body will return to its proper state of health as soon as possible.



#### **b) Reasonable Meals**

Drinking plenty of water, with balanced nutrition, and no partial eclipse. Vegetables, such as rapeseed, leeks, coriander, green onions, carrots, radishes, yam, pumpkin, and soybeans. For example, eat jujubes, pears, bananas, apples, and other fruit. Properly supplement the insufficient trace elements.

#### **c) Good lifestyle and Mental Attitude**

### **III. OVERVIEW OF BADMINTON**

#### **A. The Origin of Badminton**

In 1873, there was an earl in the town of Birmingham in Glasgow County, England. A garden party was held in his territory, and several veterans returning to India were introduced to play shuttlecock games over the net. People have a lot of interest in this. This activity is very interesting and soon became popular with the social places of the upper class. " Birmingham " became the name of English badminton.

2000 years ago, games like badminton appeared in China, India, and other places. Chinese shuttlecock, Indian ball, Western Europe, etc., be called shuttlecock cricket.

#### **B. The Characteristics of Badminton**

Badminton is a way of relaxation for most people, and it is a game suitable for all ages. Badminton can be regarded as a very skillful game. Badminton also has corresponded rules and restrictions. Not only are there some very skillful ways of playing, such as receiving the service, sending the ball, and rubbing the ball, there are also rules for the score. Badminton is also simple and is not restricted by the venue. It only needs two rackets, a ball, and a net. It can be played on flat ground. It is also not restricted by gender, age, and height. It is for some people that cannot do other sports. People provide a great opportunity to exercise. Therefore, badminton is a sport suitable for all ages to relax the body and mind, exercise oneself, and cooperate with others.

### **IV. THE INFLUENCE OF PROPER BADMINTON EXERCISE ON HUMAN PHYSIOLOGICAL FUNCTION**

Badminton is a sport for the whole body, and badminton is a very effective sport to exercise the will of the human body. The effect of badminton on the body: vision: eyes must be staring in the ball of badminton, the eyes continue to rotate, and the optic nerve continues to tense, relax the tension, alternate, and perform a good static perspective on the fixed direction of modern people often watching TV, computers, books, etc. Adjustment is very beneficial to protect eyesight. Spine: playing badminton, you should raise your head and bend over and turn your body left and right to adjust the joints of the neck and lumbar spine. He is good at sports, strengthens the neck and lumbar muscles, and plays a better role in protecting the spine. Coordination: Badminton is a comprehensive exercise for the whole body.

The use of various techniques such as jumping, movement, braking, heavy buttons, light gears, assaults, and stillness during the exercise is very effective and relatively safe for body coordination. Movement Physical strength (stamina): Badminton singles are all recognized for the requirements for stamina. The number of rounds in badminton matches is relatively large. Compared with other ball sports, the demand for stamina is leading. Specifically as following:

#### **A. The Impact of Badminton on The Skeletal System**

Badminton can make bones develop and grow well, promote the bone enhancement, and enable bones to bear a greater load. Muscles are attached to the bones. Persistent exercise can increase the bony process of attachment, improve the blood circulation and metabolism of the bone, thicken the density of the outer bone layer, make the bone stronger, is enhanced the resistance of the bone to breaking and bending. Compression, elongation, and torsion capabilities. Strengthen joint toughness, improve joint elasticity and flexibility, prevention hyperplasia, Ligaments, and muscle degeneration. Continuous exercise can make people relaxed, tidy, and powerful.

According to the study of exercise physiology, badminton activities help the development and growth of human bones, improve the flexibility of joints, increase the range of exercise, and increase muscles can help increase volume and strength.

#### **B. The Impact of Badminton on The Cardiovascular System**

The human cardiovascular system consists of three parts: the heart, blood vessels, and blood. It is responsible for the transportation tasks of the metabolic process of the human body. The heart is the total power center of blood circulation. During exercise, as the number of open-heart capillaries increases, the blood supply of the myocardium is The metabolism speeds up, increasing the reserve of protein and glycogen in the myocardium. With the thickening of myocardial fibers and the thickening of the heart wall, the shape of the heart has undergone good changes. As the force of myocardial contraction increases, the heart volume also increases. The export volume of the heartbeat and the export volume per minute is also increasing. The average person's sales export volume is 70-90ml, and those who exercise regularly have 100-120ml data. The average person's heart rate is 70-80 beats/minute. When it is calming down, and those who exercise regularly can reduce it to 50-60 beats/minute. When doing strenuous exercise, the average person's heart rate is only 180 beats/minute. It may reach 200 times per minute. This change indicates that the function of the cardiovascular system has been strengthened.

#### **C. The Impact of Badminton on The Respiratory System**

Regular physical activity can improve the function of the respiratory system because exercise can maintain the elasticity of the lung tissue, improve the range of motion of the thorax, increase the depth of breathing, and increase the

lung capacity. Generally, the vital capacity of an adult male is 3500 MLS, and the female is about 2500 MLS. Regular exercises, the vital capacity of adult men reach 4000~7000 MLS, and that of women is about 3,500 MLS. Exercise can also strengthen the function of the respiratory system. When it is quiet, the average person's breathing rate is 12 breaths/minute, and the person that exercises regularly has a breathing rate of 8-10 breaths/minute. When playing badminton, the respiratory tract will have economized. That just says, to maintain a long time of efficient work, a larger exercise load can adapt to and meet the requirements of the respiratory system.

#### ***D. The Impact of Badminton on The Nervous System***

The nervous system includes the central nervous system and the peripheral nervous system. The central nervous system is responsible for the activities of the entire organism. The peripheral nervous system is distributed among the gas, distributed in the central nervous system, the central nervous system, and various organs and systems. Nerve and central nervous system instructions are transmitted to all parts of the human body. All organs and system activities of the human body are carried out under the regulation and control of the nervous system. The nervous system of college students is in the ascending period of brain cell connections and the differentiation of brain nerve cells. With the rapid development of functions, the structure and function of the cerebral cortex will also undergo great changes.

Frequent badminton activities can make your mind sober and quick to think. Because the brain only accounts for 2% of a person's body weight, the oxygen required is supplied by 20% of the heart's overall blood flow, which is more than the blood flow required for muscle work. Physical activity, especially in a natural and wide area, can improve the blood supply and oxygen supply to the brain, and improving the brain can increase the excitement of the cortex.

Also Besides, badminton racking can regulate the excitement of the cerebral cortex and is a positive measure to inhibit the process. Because the activity of the human nervous system is the mutual conversion to excitement and inhibition, the muscles continue to contract and relax during the human movement. This process itself can exercise the excitement and inhibitory functions of the nerve well, and make people's movements agile, quick response, flexible thinking, precise and decisive. At the same time, the regulation function of ganglion on cardiovascular, respiratory machinery, exercise system, etc., has also was improved.

#### ***E. The Effect of Badminton on Body Composition***

Proper exercise can promote lipolysis, promote muscle protein synthesis, reduce body fat content, increase weight, and help improve and maintain normal body composition.

#### ***F. The Influence of Badminton on Beauty Shaping and Preventing Aging***

Recently, women know that exercise has many advantages such as fitness, plasticity, and beauty for women. People who want to improve their cardiorespiratory function can ride a bicycle, do yoga while managing their body, and want to get rid of the calories of depression, can swim and run, but many people may not know that some exercises integrate various physical abilities, including all-around For sports and fitness, badminton can achieve these advantages at one time.

When hitting the ball first, the muscles of the whole body stretch and relax tightly in a short period of time. Only in this way can we complete all the dance steps, racket, and swing movements and catch up with the rain gear in fast flight. This mode of exercise can not only consume physical strength but also improve the flexibility and strength of the muscles, so friends who play ball can sweat within 10 minutes.

In badminton, we naturally perform a large number of ball-returning exercises, and use various swing postures at the same time, such as upper limb muscles and lower limb muscles at the same time, especially when the ball is caught or played in large strides, the leg muscles relax and contract. It is most frequently and most frequently fully applied to deep muscle tissues to obtain the effect of a natural correction. Also, when swinging badminton, it is necessary to often use power other than the waist, such as the hand. The way leveraging this power requires a meticulous sense of balance, coordination, and flexibility. This kind of sport characteristic is easier for women to master.

### **V. CONCLUSION**

Badminton exercises can exercise physical flexibility, physical coordination, exercise eyesight, and physical fitness, cultivate agile thinking ability, and rapid attainability. At the same time, as an activity suitable for all ages, it can not only enhance the physical quality but also increase to increase Heart and lung function. At the same time, badminton is also an unrestricted sport. Through the work of flapping, the heart rate of exercise can be enhanced, blood pressure can be reduced, and long-term badminton exercise can also increase vital capacity, thereby increasing the overall metabolic function. Teenagers and adults can also improve their overall skills and quality through badminton exercises. At the same time, they can cultivate the quality of being unwilling to lag and provide a strong physical foundation for the future modernization of your highness.

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