

## **A Comparative Study on the Effect of Integrated Inside and Outside Classroom Teaching of Gas Volleyball on the Health and Fitness of Male and Female College Students**

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**Keywords:** gas volleyball, integrated inside and outside classroom teaching, male and female college students, health and physical fitness, influence

**Abstract:** With the development of the times, people gradually realize the important impact of exercise on physical health. Especially for college students, effective exercise can not only promote their physical health, but also promote the cultivation of collective consciousness and sense of honor of them. Therefore, it is very important to carry out corresponding physical education course teaching in colleges and universities. Gas volleyball is a new type of native sport derived from volleyball, which has been recognized by the masses. So far, extensive teaching activities have been carried out in various colleges and universities. However, because there are significant differences in physiology and psychology between men and women, the teaching of gas volleyball course also have different effects on the health and fitness of male and female college students. This paper will make a comparative study on the effect of gas volleyball teaching on the health and fitness of male and female college students. Since integrated inside and outside classroom teaching is one of the main teaching methods used in colleges and universities at present, this study will be based on this kind of teaching of gas volleyball class.

### **1. Introduction**

According to the results of the Fifth National Constitution Monitoring in China, the indexes of cardiopulmonary endurance, strength endurance, absolute strength and vital capacity of 7 to 18-year-old adolescents in China have decreased significantly, while the obesity rate of young people is significantly increased. Thus, in our country, the physical quality of our national average has dropped significantly, and in the ordinary case, young people under the age of 25 are in the stage of physical growth, in which, individual physical fitness increases with age. But in recent years, because of the significant decrease in the national average physical quality of our country, we should pay more attention to the health of both male and female students in colleges and universities. The fitness of health body mainly includes five parts of heart-lung endurance type energy, muscle strength, endurance, flexibility and body fat component, which emphasizes not only the constitution of people, but also the promotion of health concept<sup>[1]</sup>.

### **2. Effect of Integrated Inside and Outside Classroom Teaching on the Physical and Pulmonary Endurance of Male and Female College Students**

Cardio-pulmonary endurance can also be called aerobic endurance, which means the ability of human heart and lungs to deliver oxygen to the tissue cells. As long as the body has better cardiopulmonary endurance, the risk of heart disease will decrease. Therefore, heart-and-lung endurance is one of the most important factors in the fitness of a healthy body<sup>[2]</sup>.

According to relevant research, long-term physical activity is propitious to keep the heart rate of body in a quiet state reduced, enhance the cardiac output, and increase cardiac output. For the body, aerobic exercise can promote the endurance of respiratory muscle and further promote the function of respiratory system. At the same time, because respiratory muscle is enhanced, the exercised range of chest will be increased, as well as the number of alveoli filled with gas will obviously increase. So it can be seen that long-term physical exercise is conducive to improving the vital

capacity of body, increasing vital capacity, and obviously enhance the lung reserve capacity and the adaptability of body. In this case, during the breathing process, more oxygen can be absorbed and more carbon dioxide can be discharged, so that the need for various organs can be better met, especially for the brain. Because enough oxygen can be obtained, so the fatigue is more difficult to occur during the operation.

For new college students, they are generally in the final stage of puberty. The weight, volume and cardiac output of the heart are significantly increased compared with the early stage of puberty, and the development of respiratory system is basically completed, so the depth of breathing can be significantly increased. But at the same time, new college students have not yet developed well in muscle and bone, so they need to absorb a lot of oxygen to meet their metabolic needs. Thus, it can be seen that active exercise of cardiopulmonary fitness at this stage is conducive to promoting the physical development of college students and reducing the risk of cardiovascular disease in the future<sup>[3]</sup>.

Gas volleyball is composed of many groups of confrontational rounds, and the time of each round is about 1 minute. In the process, lots of actions such as take-off, running and so on are needed. The exercise intensity is relatively high. Therefore, college students need to have good anaerobic metabolic function to be able to carry out effective aerobic metabolism. Moreover, in integrated inside and outside classroom teaching of gas volleyball, there is no significant difference in the average of index between male and female college students before and after the step test. It can be seen that there is no significant difference in the influence of integrated inside and outside classroom teaching of gas volleyball on the lung endurance of male and female undergraduates' health fitness center<sup>[4]</sup>.

### **3. Effect of Integrated Inside and Outside Classroom Teaching on Muscle Strength and Muscle Endurance of Male and Female College Students**

Muscle strength can be divided into absolute muscle strength, relative muscle strength and muscle endurance, etc. Usually what we call muscle strength mainly refers to absolute muscle strength, which is the tension that muscle can produce when contracting to the maximum. Only with good absolute muscle strength, can we guarantee that in the process of exercise, there will be no muscle strain, joint sprain and so on. Muscle endurance refers to the ability of muscles to contract for a long time, and there is a close relationship between them. Muscle endurance is the basis of absolute muscle strength. Only when muscle endurance is effectively increased can muscle strength be effectively increased.

The period of 16 to 20 years old is an important stage for teenagers' strength quality to increase naturally. Gas volleyball belongs to a whole-body sport, based on absolute muscle strength. At the same time, students are required to have good muscle endurance and muscle explosive power. From the non-stop pace in front, middle and back of each round and repeated return shots, the tireless pace helps students to find out the best batting point and be able to effectively defeat the opponent to win. It can be seen that gas volleyball is conducive to the continuous contraction and elongation of the upper and lower limbs of the body, and can also promote the increase of cross-sectional area of muscle and output persistence. According to the research, after integrated inside and outside classroom teaching of gas volleyball, the results of female students in standing long jump, 800 meters running and sit-ups have been significantly improved, while the results of male students in standing long jump and 1000 meters running have not been significantly improved. So the effect of this kind of integrated teaching of gas volleyball on the fitness of male and female college students is different. After teaching, the fitness of female college students' muscle and muscle endurance has been significantly improved, while the fitness of male college students' muscle and muscle endurance has not been significantly improved<sup>[5]</sup>.

#### **4. Effect of Integrated Inside and Outside Classroom Teaching on Physical Flexibility of Male and Female College Students**

The ability to expand the range of motion when exerting force is the flexibility of body. Usually, the flexibility of body is determined by many factors, such as joint structure and stretching of surrounding tissues. With the increase of age, the flexibility of body will decrease. In order to ensure the flexibility of body, college students need to pay attention to the exercise of flexibility.

Gas volleyball, as a whole-body sport, requires that students' shoulders and ankles should be flexible enough to ensure the high coordination of upper and lower limbs in the process of sports. In short, in the process of gas volleyball, the front, back, left, right, upper and lower positions of body may contact with gas volleyball, so students' bodies are required to have a high degree of coordination and good flexibility. According to the relevant research results, gas volleyball can promote hip flexibility of male and female college students. While according to the experimental results, we have not found that there is no significant change in hip flexibility of male and female college students before and after the integrated inside and outside classroom teaching of gas volleyball. The reason may be that most college students contact with gas volleyball for the first time, and can not grasp the standard of all kinds of movements, so it is difficult to improve their flexibility significantly with fewer exercises. On this basis, we suggest that college physical education teachers should increase hip flexibility exercises on the basis of basic teaching of gas volleyball skills and movements, so as to promote the hip flexibility of male and female college students<sup>[6]</sup>.

#### **5. Effect of Effect of Integrated Inside and Outside Classroom Teaching on Body Fat Composition of Male and Female College Students**

The proportion of fat to body weight is body fat composition. It can be calculated by formula, which is fat weight/body weight \* 100.00%. If we can control the body fat composition within the normal percentage range, we can treat diabetes, hypertension, atherosclerosis and other chronic diseases. Normally, the body fat composition of men is between 13% and 20%, and that of women is between 18% and 25%, which belongs to the normal range. The body fat composition can be measured by underwater weighing, bioelectrical impedance and skin fold thickness methods.

According to the results of the Fifth National Physical Fitness Monitoring in China, the obesity of college students in China will become higher and higher, which will increase by about 12 when they leave school. It can be seen that the obesity rate and overweight rate of college students in China have surpassed that of developed countries, such as the United States and Japan.

Gas volleyball is a sport with a long interval, and is based on aerobic metabolism, so it is beneficial to increase the speed of body fat metabolism, thereby effectively reducing the body fat content. Meanwhile, it also needs to move quickly and use upper limbs to hit the ball, so students need to be able to have a strong explosive force in the exercise, which means that in the process of gas volleyball, students need to have sufficient anaerobic phosphate metabolism to support. Thus it can be seen that gas volleyball is conducive to students' muscle fiber coarsening. In addition, according to relevant research, after one year of the implementation of integrated inside and outside classroom teaching of gas volleyball, the body fat composition of male and female college students has decreased significantly, and the decline of body fat of male college students is greater than that of female college students<sup>[7]</sup>.

#### **6. Conclusion**

In this paper, we compare the influence of the integrated inside and outside classroom teaching of gas volleyball on the physical fitness of male and female college students on the basis of healthy fitness. Through the above, we understand that the influence of gas volleyball course on the cardiac function and flexibility of male and female college students is not significant, and there is no significant difference between male and female college students. The main reason may be that

college students do not have the habit of doing sports at ordinary times, and the sports foundation is relatively poor, so teachers are suggested to give students flexible training guidance after basic teaching. Moreover, in this study, it is not found that the change of students' body fat composition is closely related to the exercise of gas volleyball. The reason may be that gas volleyball training is only limited to the part of body, which is conducive to the improvement of local strength of students, but can not promote the reduction of the overall body fat composition of students. From this point of view, the integrated inside and outside classroom teaching of gas volleyball can improve students' physical quality to a certain extent, but for their cardiopulmonary function and physical flexibility, corresponding training should also be carried out.

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