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Research on the Influence of Latin Dance on the Health-related Physical Fitness of High School Students

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Abstract: As an important force to promote social development, high school students are an indispensable part of today's society. Therefore, the physical quality of contemporary high school students is concerned by the society. This paper will take the high school students who participate in Latin dance training as the research object, expound the origin and function of Latin dance, and put forward that Latin dance has a promoting effect on health and fitness, aiming to provide a basis for guiding scientific fitness, and analyze the influence and function of Latin dance training on the physical health of high school students, so as to strengthen the effectiveness of Latin dance training for high school students.

1. Introduction

With the development and progress of social science and technology, health has always maintained the survival origin of each human happiness. Now and in the future, a civilized society in which everyone is healthy and happy will be the historical inevitability of our healthy and harmonious development of human society. How the national physique is excellent and healthy is also one of the most important symbol factors reflecting the economic and cultural development of a healthy country. All healthy countries must also improve the national physique level as the foundation for building national happiness. The high school stage is also an important critical period for the students ' body to gradually develop into a mature society. People who love beauty and labor have it in their hearts. In the face of such heavy and complex physical learning activities, how to select scientific, safe, interesting and more applicable aerobic exercise methods for daily exercise, in the face of increasingly heavy and intense knowledge learning task pressure, maintain good health and physical fitness, and have good psychological and physical health is one of the factors considered by high school students.

2. Research object and method

2.1 Research object

In this study, 20 students from Changsha Hongqing Secondary Vocational and Technical School were subjected to an 8-week Latin dance training intervention. Before and after the intervention,

test activities were organized respectively. The test activities were carried out around four key indicators that can reflect the level of healthy physical fitness, namely body composition, cardiopulmonary function, muscle strength and muscle endurance, and flexibility. The test results before and after the intervention were compared and analyzed to demonstrate how Latin dance can have a positive impact on the physical health of high school students and provide a theoretical basis for the development of Latin dance fitness activities.

2.2 Research method

2.2.1 Step test method

To fully explain the main purpose of the tester and describe the process of the test, it is also a better test method to advise the tester not to talk or laugh, because doing these actions may increase their blood pressure and heart rate. It should be recommended that the tester perform static stretching of the gastrocnemius, leg muscles, and iliopsoas, and be sure to tell the tester in time that if he or she feels very painful or uncomfortable, he or she can choose to stop the test at any time later.

After setting the metronome time to 96bpm per second (24 step cycles per minute), when the tester starts the step, start a timer or stopwatch that you specify.[1]

2.2.2 Skinfold thickness

The skinfold thickness measuring meter is used to measure the average derinfold thickness among several special positioning points of human body, and the numerical estimation method of human body density and human fat rate is calculated. Through the grip strength, standing long jump, one minute sit-ups and other tests, the subjects ' upper limbs, lower limbs, trunk muscle strength and endurance were evaluated.

How to objectively evaluate and improve the physiological flexibility of human body movement by sitting forward flexion exercise: The practice of sitting forward flexion can effectively and obviously improve the physiological joint flexibility of each joint movement muscle in the body, reflecting the improvement of the flexibility of the moving human body, reflecting the good overall function of the coordination between the major joint ligaments and various sports and soft tissues around the human body, and helping to improve the ductility of human muscles, ligament fibrous tissues and other nerve tendon tissue structures. When high school students lack various healthy physical exercise, many people should first consider the problem of general decline in physical flexibility. If the tester cannot reach the toes, it is generally rated as "poor flexibility". [2]

3. Results and analysis

3.1 Body composition

By testing body mass index (BMI), body fat rate (BF%), waist-to-hip ratio (WHR) to judge whether overweight and obesity, it can reduce the risk of heart disease, hypertension and other diseases due to overweight and obesity, and control the body shape.

3.1.1 Body mass index (BMI)

Body mass index is the standard used by the World Health Organization to evaluate obesity. The Chinese standard is 18.5 to 23.9 as normal. It can be seen from Table 1 that after one year of exercise, the height of the girls in the two experimental groups remained basically unchanged and

the weight was reduced. The body mass index of girls in the Latin dance group changed from 21.02 ± 2.16 to 19.37 ± 1.86, with a very significant difference. The control group changed from 21.32 ± 2.56 to 20.15 ± 1.73, with a significant difference. [3]

Table 1: Changes of body mass index, body fat and waist-to-hip ratio before and after experiment.

index	Latin dance group		control group	
	Before the experiment	After the experiment	Before the experiment	After the experiment
stature /cm	159.27±3.47	160.05±2.65	157.43±2.61	157.27±2.94
weight /kg	53.25±5.31	49.23±3.15*	51.35±4.25	50.34±4.56
baric index BMI	21.02±2.16	19.37±1.86**	21.32±2.56	20.15±1.73*
Body fat ratio /%	25.22±3.54	23.65±2.18*	26.02±2.68	22.13±3.18**
waist-to-hipratio /%	0.791±0.053	0.745±0.042	0.782±0.084	0.771±0.055*

Note: p 0.05 uses "*" to indicate a significant difference compared with the test results before the experiment;

For p 0.01, "* *" indicates a very significant difference compared to the test results before the experiment.

3.1.2 Body to fat ratio (BF%)

The human body is mainly composed of muscles and muscles, of course, which also contains organs, skin and nerves. The body fat ratio is a percentage of the total body fat in the normal body weight, which can accurately measure the body's body composition changes.

3.1.3 Waist-to-hipratio (WHR)

The lower the waist-to-hip ratio (WHR), the lower the risk of overweight and obesity. A good body shape requires a balanced proportion, symmetrical and beautiful curve shape, a straight and full body without excessive obesity and bloated fatigue, and a balanced and elastic muscle development. Modern people generally believe that the curve is more important than weight. The waist and abdomen and muscles are the most easily fat-storing muscle areas on the back. If the waist circumference is too large, it will directly make the curve lines on the legs and back hips more seriously impacted.

3.2 Heart and lung fitness

Cardiopulmonary fitness can ensure that the human body can complete the work for a long time, effectively and quickly. At the same time, it is also conducive to ensuring that the fatigued body quickly eliminates physical fatigue after completing the work load, so that the body function can be effectively restored. The function of exercise is to improve the function of human cardiovascular system and respiratory system, heart pumping function. It improves work efficiency, increases lung volume and vital capacity, enhances lung ventilation capacity, improves lung function, and promotes the increase of maximum oxygen uptake. Improving the endurance of high school students can more effectively learn Latin dance and improve basic skills.

3.2.1 Vital capacity index

Vital capacity is an important index to reflect the function of respiratory system, but it is greatly influenced by individual height, weight and other forms, and cannot truly reflect the functional

status of respiratory system. Vital capacity index reflects the functional status of respiratory muscle and is not affected by morphological characteristics. Exercise consumes a lot of oxygen when respiratory muscles work, due to the need for activity, the human respiratory rate is accelerated, the number of times is increased, the respiration is deepened, and the elasticity of the lungs and chest is enhanced. The thoracic activity increases, so the respiratory muscle is developed, the chest muscle remains full and strong, and the chest circumference increases. It can be seen from Table 2 that the vital capacity index of the Latin dance group changed from 41.57 ± 6.21 to 46.16 ± 4.75, and the vital capacity index of the control group changed from 43.07 ± 4.83 to 47.64 ± 5.26. After long-term Latin dance exercise, the respiratory muscles can be developed, the chest circumference increases, and the vital capacity changes significantly, which is also the result of the adaptive changes of the human body to long-term exercise.

3.2.2 Aerobic endurance capacity of 800 m

Aerobic endurance 800 m is an important index to directly evaluate cardiovascular functional endurance, which can ensure the rapid elimination of fatigue after physical work, effectively restore physical function and meet the needs of daily work and life. As can be seen from table 2, the Latin dance group from 800 m 230.36 ± 8.36 to 224.29 ± 6.47, the change has significant difference, the control group from 228.52 ± 5.29 to 215.57 ± 8.17 change has very significant difference. The body will be adjusted when it is fatigued until it adapts to this change. Therefore, the experimental results show that the fitness effect of mass aerobics on cardiopulmonary endurance is significant.

Table 2: Changes in body weight and spirometric index at 800 meters before and after the experiment.

index	Latin dance group		control group	
	Before the experiment	After the experiment	Before the experiment	After the experiment
Spirometry index / mL kg-1	41.57±6.20	46.16±4.75**	43.07±4.83	47.64±5.26**
800 m/s	230.36±8.36	224.29±6.47*	228.52±5.29	215.57±8.17**

Note: p 0.05 uses "*" to indicate a significant difference compared with the test results before the experiment;

For p 0.01, "* *" indicates a very significant difference compared to the test results before the experiment.

3.3 Muscle strength and muscle endurance

Through several tests of grip strength, standing long jump and sit-ups, the strength and endurance of the upper limbs, lower limbs and trunk muscles of the subjects were evaluated. Compare the difference before and after training. Grip strength index is a method to test the strength of hands and arms. Sit-up is an important index to test the strength and endurance of waist and abdomen. The muscle strength of the waist, abdomen and back is poor, and the support of the muscles to the chest and waist is not enough, which will lead to the humpback or the stomach. The long time will destroy the bone shape of the body, cause unnecessary burden on the internal organs, and even affect the mood. Standing long jump tests the two indicators of leg strength and explosive power. Latin dance training needs to overcome the resistance caused by its own gravity. From Table 3, it can be seen that there are obvious changes in body weight, weight loss, grip strength index from the original 47.72 ± 2.35 to 48.39 ± 3.17, sit-ups from the original 34.48 ± 4.36 to 36.56 ± 3.85, standing long jump from the original 164.53 ± 2.36 to 168.13 ± 3.16, there are significant

changes.[4]

Table 3: Changes in grip strength index, sit-up, and standing long jump before and after the experiment.

index	Latin dance group		control group	
	Before the experiment	After the experiment	Before the experiment	After the experiment
Grip force index /%	47.72±2.35	48.39±3.17*	49.34±3.95	50.12±2.74
Sit-ups / a	34.48±4.36	36.56±3.85	36.37±3.76	39.18±4.26*
standing long jump /cm	164.53±2.36	168.13±3.16*	167.23±4.27	174.89±3.48**

Note: p 0.05 uses "*" to indicate a significant difference compared with the test results before the experiment;

For p 0.01, "* *" indicates a very significant difference compared to the test results before the experiment.

3.4 Pliability

Flexibility is also one of the important factors to improve the quality of Latin dance. Sitting forward flexion is mainly used to evaluate the ability of human body to bend arms, including shoulder, back, spine, hip joint and other parts. Test a body muscle flexibility quality level and joint and joint muscle ligament and ligament elasticity, the better the flexibility index, the greater the activity of muscle and ligament stretching, the stronger the flexibility of the joint. After exercise, it can obviously delay the rapid decline of muscle physiological flexibility level in bone and joint parts caused by various social age factors, and prevent the damage of various complex joint structures of surrounding soft tissues. Maintain good flexibility and increase joint range to meet the needs of daily life. From table 4, it can be seen that there is a significant difference in the change of sit and reach from 16.52 ±5.67 to 17.52 ±4.17 in the Latin dance group after exercise.

Table 4: Forward sitting body flexion changes before and after the experiment.

index	Latin dance group		control group	
	Before the experiment	After the experiment	Before the experiment	After the experiment
Sitting body with anterior flexion / cm	16.52±5.67	17.52±4.17*	16.64±3.49	17.68±3.74*

Note: p 0.05 uses "*" to indicate a significant difference compared with the test results before the experiment;

For p 0.01, "* *" indicates a very significant difference compared to the test results before the experiment.

4. The conclusions and recommendations

Through long-term Latin dance training, can effectively reduce the incidence of obesity, so as to achieve good fitness shaping effect. After Latin dance training for high school students, the body mass index decreases and the waist-to-hip ratio decreases better. Long-term Latin dance training can quickly promote our own dance muscle group to have a certain degree of sports elasticity, can improve physical fitness, physical fitness is the basic ability of people to complete various sports and various movements, is the most basic quality of people.Reasonable Latin dance training can

improve cardiopulmonary fitness, improve muscle strength and endurance of various parts of the body, enhance joint flexibility, meet the needs of daily activities, and maintain a healthy physical fitness. [5]

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