

Research on the Influence of Fancy Rope Skipping on College Students' Endurance Quality under Cooperative Learning Mode

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Abstract: although fancy rope skipping is a new form of sport initiated by european and american countries in recent years, it can transform a variety of routines and is a sport with a very comprehensive fitness function. Long-term persistence in exercise can effectively train individual's reaction ability, endurance, coordination and other physical qualities. It is not only conducive to maintaining personal fitness and coordination, but also can achieve the goal of strengthening body. Therefore, it is of great theoretical and practical value to increase the research on endurance training methods of college students' fancy rope skipping. Based on this, this paper adopts the experimental method and mathematical statistics method based on cooperative learning mode to carry out a 15-week teaching of fancy rope skipping for the students of fancy rope skipping option courses. In the teaching process, the paper also makes a comparative study of some indexes of students' body shape, body function and physical fitness before and after the teaching. Through horizontal and vertical comparison, it is concluded that after 15 weeks of fancy rope skipping exercise, the students' endurance quality shows an increasing trend in all aspects, and the passing rate of each test index shows an increasing trend, which shows that fancy rope skipping can help students improve their endurance quality and physical test results.

1. Introduction

In recent years, the problem of students' physical health has been a big problem perplexing parents, schools and society. How to improve students' physical health and keep students in a healthy state has also been a problem we are solving [1]. Sports cooperative learning is the basic form of learning groups, using the interaction of dynamic factors to promote learning, and taking group performance as the standard to jointly complete the goal of sports teaching. In recent years, the problem of students' physical health has been a big problem perplexing parents, schools and society. How to improve students' physical health and keep students in a healthy state has also been a problem we are solving [2]. In order to achieve ideal results in the college entrance examination, schools and parents have adopted the method of sacrificing students' physical exercise time. In the school physical education class is not taken seriously, even there is no chance, exist in name only [3]. Therefore, we should actively explore the effective role of fancy rope skipping in endurance training and study the endurance training methods of fancy rope skipping in order to better improve the endurance quality of college students.

2. The Value of Fancy Rope Skipping in Developing College Students' Endurance Quality

2.1 Fancy Skipping Rope Has the Function of Strengthening Body Constitution

The human body needs the coordination and cooperation of limbs to complete the movement of fancy rope skipping. When taking off from the lower limb, the upper limb should swing the rope, which is conducive to the development of students' coordination [4]. Moreover, when the human body jumps up and down, it also promotes the development of heart and lung and the functions of various organs. Let students be able to fully stimulate their exercise enthusiasm, be able to generate a strong interest in physical exercise for a long time, and develop into a long-term interest in exercise, and consciously engage in exercise for a long time. By combining and arranging some

movements, adding some gymnastics, martial arts and other elements, with dynamic music, beautiful clothes, and great appreciation, the originally boring fancy rope skipping immediately became attractive to people's eyes and easily stimulated people's interest in exercise [5]. The blood supply from the heart was increased. Make the brain and other important organs can get more blood, get more nutrients, and promote body development. Endurance quality is an important index to evaluate the endurance quality of human body, and is also an important foundation to ensure the functions of human organs and oxygen supply. Effective endurance training can keep the immune function of human body in good condition and promote the physiological health of human body.

2.2 Fancy Skipping Rope Has the Function of Improving Intelligence

Fancy skipping rope is a kind of movement that requires multiple organs to work together to complete, which can realize the overall development of the body [6]. Moreover, the sole of the human body has a large number of acupuncture points, and the acupuncture points on the sole of the foot can be continuously impacted through continuous jumping, thus activating the vein, enabling the human body to produce substances beneficial to brain development and improving intelligence. Modern people's living pressure is increasing, the pace of life is speeding up, the living habits have undergone tremendous changes, and the bad living habits have increased significantly, which has had a serious impact on human physiological health and the body's operating state [7]. With the cooperation of music, fancy rope skipping can not only relieve pressure, but also cultivate people's innovative ability, develop their brains, promote unity, improve people's adaptability to society and be more hopeful about life.

2.3 Fancy Skipping Rope Has the Function of Improving Mental, Heart and Lung Functions

Rope skipping is an aerobic exercise, and people will increase blood oxygen exchange by increasing the frequency of breathing. This can effectively increase vital capacity, make the body get more oxygen, and also increase the contraction of the heart, so as to deliver more blood to the whole body [8]. Through fancy rope skipping, the vital capacity of the human body can be improved, so that the human body can obtain more oxygen, and the contraction of the heart can also be promoted. The heart is a "pump" in the human body, and blood can be pumped to the whole body through contraction. Under such conditions, blood vessels can be compressed and relaxed, so that blood pressure can be lowered, and red blood cell level can be improved. Fancy skipping rope can effectively prevent diseases, improve sleep disorders and lose weight. Rope skipping is a whole-body exercise that enhances blood circulation and allows blood to obtain more oxygen, which is conducive to enhancing muscle endurance and cardiopulmonary function. It has a very obvious promoting effect on the improvement of college students' jumping ability and sports ability, and has been deeply loved by students and has low technical requirements.

3. Research Method

The data processing software in this study is mainly officeexcel2010 and SPSS17.0 software package. SPSS17.0 was used to make statistics on the relevant measurement data of students before and after the experiment. The subjects in the experiment are 40 students from the fancy rope skipping club. The results measured before training were compared with the results measured after training. The experimental group used recreational and competitive fancy rope skipping training methods. The training time was set at 6: 30-7: 20 in the morning and 3: 00-6: 40 in the afternoon, and 80 minutes were devoted to various exercises of fancy rope skipping.

4. Results and Analysis

4.1 The Influence of Fancy Rope Skipping on College Students' Body Shape

Body shape is height, weight, waist circumference, hip circumference, chest circumference and other aspects of body shape, this paper selects height, weight, waist circumference, hip circumference for data collection and comparative analysis. As shown in Table 1.

Table 1 Statistical Table of Body Shape Data before and after the Experiment

Indicators	Pre-test data	Posttest data	P
Height (cm)	164.74±5.33	164.61±5.14	0.472
Weight (kg)	56.7±10.25	56.4±10.11	0.493
Waist circumference (cm)	74.13±9.83	73.91±8.99	0.314
Hip circumference (cm)	95.34±6.68	95.27±6.34	0.652

After practicing the fancy rope skipping for 16 weeks, 40 students had a height of (164.61 ± 5.14) cm after the experiment, a height of (164.74 ± 5.33) cm before the experiment, and $P > 0.05$. The obvious change may be due to the fact that the students tested are all adults, the body development is basically completed, and the body bones have been shaped. After the students have mastered the technical movements, they can change the mode, speed and pattern, which is conducive to changing the excitement area of the students' cerebral cortex, maintaining and improving the quality of students' excitement. Such as the cross arm jump in place, the cross arm jump in progress, you can also make the rope back to the front of the body through the body, you can also make the rope back to the body through the body. It is also possible to jump rope in fancy at the same time during running, either by crossing the rope alternately with one foot or by jumping the rope forward with both feet. After the experiment, the one-minute value of fancy rope skipping between the experimental group and the control group was 0.000, indicating a significant difference ($P < 0.01$). This shows that the sport of fancy rope skipping plays a very important role in the endurance quality and explosive force of students and effectively promotes the improvement of students' endurance.

In terms of waist circumference and hip circumference, the waist circumference after the experiment was (73.91 ± 8.99) cm, the waist circumference before the experiment was (74.13 ± 9.83) cm; the hip circumference after the experiment was (95.27 ± 6.34) cm, and the hip circumference before the experiment was (95.34 ± 6.68) cm, $P > 0.05$. Through comparison, we can see that the waist circumference and hip circumference have changed before and after the experiment. The reason why the change is not obvious may still be related to the number of activities. Due to the students' physical condition and age difference, the effect of fancy rope skipping training is not the same, some effect is obvious, some effect is slightly worse; At the same time, the students' will quality has not yet been finalized, their will fluctuates greatly during practice, and their achievements are also different due to different learning situations. In terms of physical exercise, students' endurance level and assistance ability can be well improved. The collective long rope also has a variety of playing methods. When the rope is shaken up, it can run in from the front or side of the rope and then quickly run out without touching the rope. It can also increase the difficulty when running. If schools give other forms of guidance and organize and carry out rich after-class activities, they can fully mobilize students' exercise enthusiasm and develop long-term independent exercise awareness with little extra cost, which is a win-win situation.

4.2 Influence of Fancy Rope Skipping on College Students' Physical Function

Human body function is expressed by vital capacity and step index. Vital capacity refers to the maximum amount of air exhaled by the lungs after maximum inhalation. Step test index is an important index to reflect the functional status of human cardiovascular system. Due to continuous jumping up and down during fancy rope skipping, the activity of the lower leg is increased, and the coordination of the upper limbs is also strengthened, which can accelerate the blood circulation of the whole body, and the heart rate is about 25-45 times faster than usual, which plays an important role in promoting the blood circulation and improving the cardiopulmonary function. As shown in Table 2, after practicing the fancy rope skipping for 15 weeks, the vital capacity data were compared before and after. The vital capacity data after the experiment was (2854 ± 745.81) ml, and the vital capacity data before the experiment was (2735 ± 621.33) ml, $P < 0.05$. It can be seen that the vital capacity of students has been greatly improved by practicing. Therefore, in the physical education class, the physical education teacher does not need to practice from the most basic content, but directly carries on the difficult movement explanation, not only can satisfy the student to challenge oneself's desire, but also can improve the student's endurance level. With the

continuous accumulation of students' sports skills, students can learn various fancy routines by themselves. If schools can provide more display platforms, a virtuous circle can be formed.

Table 2 Statistical Table of Vital Capacity Measurement Results before and after the Experiment

Index	Pre-test data	Posttest data	P
Vital Capacity (ml)	2735±621.33	2854±745.81	0
Step experiment index	24.55±2.04	24.16±5.77	0.735

However, based on the average of Table 2, the step test index of 40 students before the test was (24.55 ± 2.04), which reached a good level. After the test, it was (24.16 ± 5.77), and $P > 0.05$, which also reached a good level. Compared with the data measured before and after, the cardiopulmonary function was improved. This shows that fancy rope skipping can help exercise the cardiopulmonary function of college students. Fancy skipping is like swimming on the water, which can fully exercise the body and strengthen the calf and ankle strength. Improve leg bounce, wrist and elbow flexibility and rapidly change the internal environment. Rhythmic fancy rope skipping can stimulate nerve veins on the soles of the feet and conduct brain secretion and elimination of chemicals that are beneficial to improving people's intelligence. These competitive rope skipping exercises can easily arouse the excitement of students' cerebral cortex, promote brain development and improve their intelligence level. Moreover, students can complete physical education in an environment full of joy, thus improving endurance quality and the quality of physical education. To increase the endurance quality of athletes and improve their basic physical fitness and strength requirements. In the training process, some tactical actions of athletes should also be standardized and corrected to prevent injuries caused by nonstandard actions.

4.3 Effect of Fancy Rope Skipping on Physical Fitness of College Students

Speed quality, endurance quality, flexibility quality and explosive force are all manifestations of human endurance quality. In this study, speed quality and explosive force are selected for research. The explosive force is embodied by standing long jump and the speed quality is embodied by 50m running. People can improve the strength and endurance of respiratory muscles and increase vital capacity during fancy rope skipping activities. Deepening respiration increases effective ventilation, improves the effect of lung ventilation, increases the suction and contraction force of the heart, reduces heart rate, relaxes blood vessels and lowers blood pressure. As shown in Table 3, after performing 16-week fancy rope skipping exercises for 40 students, the test data after the 50m running test is (9.19 ± 1.39) s, and the test data before the test is (9.33 ± 1.41) s, $P > 0.05$, the comparison shows that the performance of the 50m race is slightly improved. Reflects the speed quality of the human body's rapid movement. Speed quality is one of the basic qualities of fancy rope skipping, which mainly includes reaction speed and action speed. According to one of the speed expression forms of fancy skipping action, it is generally divided into the speed of continuous jumping, the speed of footstep change, the speed of rocking rope, and the speed of hand change.

Table 3 Statistical Table of Physical Fitness Measurement Results before and after the Experiment

Index	Pre-test data	Posttest data	P
50m run (s)	9.33±1.41	9.19±1.39	0.285
Long jump (m)	1.72±0.34	1.69±0.24	0.003

After performing 16-week fancy rope skipping exercises for 40 students, the scores after the test were (1.69 ± 0.24) m, and the scores before the standing long jump test were (1.72 ± 0.34) m, $P < 0.05$. The standing long jump performance has been greatly improved. When they surpass the difficult movements that they did not reach before, they can reach a peak experience, and the desire and skill of fancy rope skipping can be obtained to advance to higher goals. Cooperative learning can give students more space for free activities and more opportunities for mutual communication, and can enable students to learn to discover, learn to explore, and learn to innovate in autonomous learning. You can also increase the fun by using parabola, turning, etc. You can also shake the two ropes at the same time, make certain movements according to the rules of fancy rope skipping when you run between the two ropes, then jump over the ropes and run out. Compared with the traditional

fancy rope skipping, it can more easily improve the students' leg length and explosive force. Through the analysis of the 50m run and standing long jump of the students in the elective course of fancy rope skipping, the analysis results show that fancy rope skipping has certain influence on the physical fitness of college students.

5. Conclusions and Suggestions

5.1 Conclusion

The fancy skipping rope has certain influence on the body shape of college students. The physical development of college students has been completed. fancy rope skipping has little effect on height, $p > 0.05$. However, fancy rope skipping plays a certain role in reducing college students' weight, waist circumference and hip circumference. Through 15 weeks of fancy rope skipping exercises, the conclusion of the transverse comparison between the experimental group and the control group before and after the experiment is that the speed quality, strength quality, endurance quality and sensitivity quality of the students in the experimental group are significantly higher than those in the control group, and there is no significant difference in flexibility quality. This shows that fancy rope skipping can improve students' endurance qualities such as speed, strength, endurance, explosive force and agility. Fancy skipping has a positive impact on the physical development of college students. The 50m running result has been improved slightly, $P > 0.05$; the standing long jump result has also been improved slightly, $P < 0.05$. After 15 weeks of tricks, the students showed an increasing trend in all aspects of their endurance quality, and the passing rate of various test indicators showed an upward trend. This shows that the tricks can help the students improve their endurance quality. And fitness test results.

5.2 Suggestions

The fancy skipping rope can effectively improve the endurance quality and physical fitness test results of college students. It is suggested that the content of fancy skipping rope should be appropriately added in primary school physical education classes. When developing fancy skipping rope, scientific grade and difficulty should be selected, attention should be paid to the "sensitive period of endurance quality" of students, and targeted training content should be set up from the perspective of comprehensively developing the endurance quality of students. Colleges and universities can appropriately add the practice of fancy rope skipping to the quasi-physical education activities. Cooperative learning can better meet the needs, abilities and interests of individual students, and enable students to develop in autonomous learning activities. At present, the preparation activities mainly focus on jogging. The addition of fancy rope skipping can make students enter the state quickly, and it can also help students get a fuller warm-up. The purpose of introducing fancy rope skipping into classroom teaching is to improve students' physical and mental quality, cultivate students' behavior habits of conscious exercise, better participate actively, and gradually develop endurance quality. Let college students participate in the new sports of fancy rope skipping, enrich students' after-school life, let them feel the fun of sports, stimulate their enthusiasm to participate in physical exercise, truly improve the students' endurance quality status quo, and cultivate students' lifelong sports concept.

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