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Research on the influence of different training contents of Competitive Aerobics on the physical quality of primary school students

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ABSTRACT. Aerobics originated in foreign countries, is a kind of aerobic exercise to improve the health level of participants, and with the development of the project, it gradually divided into competitive aerobics and Public Aerobics. In many primary and secondary schools in China, competitive aerobics after-school training teams have been developed. Participating in the extracurricular training team of aerobics can not only cultivate children's special skills, but also improve their quality through training. Through the methods of literature, interview, teaching experiment and mathematical statistics, this paper takes 24 primary school students Jiangxi Normal University who have participated in the after-school training of aerobics as the experimental objects. Through the 9-week teaching experiment, this paper analyzes the influence of different training contents of Competitive Aerobics the physical quality of primary school students, so as to carry out the after-school training of Competitive Aerobics scientifically Provide a reference.

KEYWORDS: Competitive aerobics; different training contents; primary school students; physical quality

1. Introduction

Aerobics originated in foreign countries, is an aerobic exercise to improve the health level of participants. With the popularization of aerobics and the development of various aerobics competitions, the content of aerobics is becoming more and more abundant, and gradually divided into competitive aerobics and mass aerobics. The results show that the intensity of competitive aerobics is greater, the competitiveness is obvious, the professional level is high, and the movements are more complex and diverse; the Public Aerobics is more simple, and the threshold of participation is lower. Competitive aerobics has a sound level of athletes, referees and coaches; through participating in the general level competition recognized by the State General Administration of sport, the participants can obtain the

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corresponding level of athletes according to the competition results; in Fig competitive aerobics competition rules, according to the age of the participants, they are divided into 9-11 year-old preparatory group, 12-14-year-old group, 15-17-year-old group and two groups The evaluation rules of each group were adjusted according to the physiological development of the participants.

At present, many universities in our country have opened high-level enrollment quota for aerobics, and many primary and secondary schools will organize their teachers and students to establish after-school sports training teams of competitive aerobics. According to the interview with parents and teachers, the reasons for the support of parents and teachers include not only training children's strong points through competitive aerobics training, but also improving children's physical quality and improving their willpower and character through training. Through the methods of literature review, interview, teaching experiment and mathematical statistics, this paper takes 24 primary school students who have participated in Aerobics extracurricular training in primary school affiliated to Jiangxi Normal University as the experimental objects. Through 9-week teaching experiment, this paper analyzes the impact of different training contents on primary school students' physical quality, so as to carry out competitive aerobics training after school scientifically Provide a reference.

2. Experimental design

2.1 Experiment time

The experiment lasted for 9 weeks, from September 2019 to November 2019.

2.2 Laboratory equipment

Setting: aerobics room, 8th floor, sports complex building, Qingshanhu campus, Jiangxi Normal University.

Experimental equipment: rope skipping, stopwatch, sponge pad, gymnastics mat, handle, sound, tape measure, scale, competitive aerobics competition board, etc.

2.3 Experimental indexes

Before the experiment, the basic information and physical fitness indexes of primary school students were measured. The basic information indexes were age, height and weight, and the physical fitness indexes were flexibility, upper limb strength (standard push ups), lower limb strength (standing long jump), speed (60 meter round-trip running time), and sensitive coordination (30 second cross grid movement count times). After the experiment, the physical fitness indexes were measured again, and the differences of physical fitness indexes between the two groups before and after the experiment were compared.

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The flexibility test includes left fork, right fork and transverse fork as the specific test content, with 1 point for sticking to the ground; 2 points for one leg with 10 cm height attached to the ground, and 3 points for each leg with 10 cm height attached to the ground; one test. Standard push ups, each push-up elbow joint is not lower than the shoulder, head, shoulder, waist and back in a straight line; measure once. Standing long jump, measure the distance from take-off to landing heel; measure twice to get the best result. The 60 meter round-trip run was tested in the gymnastic room of Jiangxi Normal University. After hearing the password, it took 60 meters to run around the sideline of the gymnasium. Move the cross grid, set the center point on the flat ground, and take small steps along the center of both legs; complete the front, back, left and right for one time, take the integer times, count the completion times in 30 seconds; measure once.

2.4 Experimental grouping

Twenty four students were selected from the primary school affiliated to Jiangxi Normal University who participated in the summer training of competitive aerobics. They were randomly divided into two groups with 12 students in each group. The members of the two groups were 6 boys and 6 girls. The list of groups and the basic information of its members are as follows.

Table 1: Experimental group member information

Basic information	age	height	weight
Wan××	9	132	24
WU××	10	137	29
Fu××	10	129	23
Gui××	11	147	32
Zhou××	10	140	29
Chen××	11	150	32
Ding××	9	127	23
Liu××	10	137	28
Zhan××	10	141	29
Cheng××	11	144	31
Xu××	9	130	27
Yi××	9	129	27

Table 2: Control group member information

Basic information	age	height	weight
Peng××	10	141	28

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Liao××	10	136	26
Li××	11	147	33
Kang××	9	138	26
Xin××	11	141	30
Huang××	9	128	25
Ye××	9	125	23
Wang××	10	130	27
Du××	11	140	31
Lin××	9	122	22
Xiao××	10	135	28
Xiong××	9	129	26

Table 3: Comparison of basic information between the two groups of students

Basic information	age	height	weight
The experimental group was $\bar{X}$	9.92±0.79	136.92±7.66	27.83±3.19
The control group was $\bar{X}$	9.83±0.83	134.33±7.54	27.08±3.18
P	0.804	0.414	0.569

Through the independent sample test of the basic information of the two groups of students before the experiment, there is no significant difference in the indicators of age, height and weight between the two groups, that is, the physiological development of the two groups of students is similar.

Table 4: Comparison of physical fitness indexes between the two groups

Basic information	flexible	standard push up	standing long jump	10m round trip	cross grid movement
The experimental group was $\bar{X}$	5.50±1.17	6.25±1.29	148.92±7.27	11.53±0.50	10.58±1.38
The control group was $\bar{X}$	5.25±1.36	6.66±1.15	144.17±8.08	11.64±0.58	9.92±1.56
P	0.633	0.869	0.144	0.629	0.280

Two groups of primary school students before the test did not receive competitive aerobics extracurricular training, and through the independent sample test of physical fitness indicators of the two groups of students, it was found that the two groups of students in flexibility, speed, upper limb strength, lower limb strength and agility, the indicators are not significantly different, that is, the two groups of students' physical fitness level is similar. Combined with the information in Table 3, it can be grouped effectively.

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2.5 Experimental scheme

The training contents of Competitive Aerobics include jogging, stretching, jumping and other exercises based on the development of general quality; the exercises of kicking, aerobics and terminal control based on the development of special quality; and the difficult auxiliary exercises such as forward bending and leg raising and small split leg jumping which are mainly developed by special techniques. According to the participants' age, physical ability, training direction and other factors, the specific training content was arranged.

In this experiment, the training intensity of the experimental group will be controlled in medium and low intensity according to the heart rate changes of primary school students, and more difficult auxiliary exercises and low load strength exercises are arranged. The exercise content of illumination is mainly exercise, ballet and the control of small muscle groups of small joints of the body, and strength exercise is less. Through the 9-week teaching experiment, this paper compares the effect of different exercise contents on the physical quality of primary school students.

In the specific teaching experiment, according to the physical and mental characteristics of primary school students, more intuitive demonstration of body movements, detailed decomposition and explanation of new movements, flexible use of game teaching method, more encouragement and guidance, more interaction and communication with primary school students.

This experiment is divided into three stages: the first stage is from the first week to the third week; the second stage is from the fourth week to the sixth week; the third stage is from the seventh week to the ninth week. The class time is three times a week, and the duration of each class is 90 minutes.

3. Research results and analysis

3.1 Comparative analysis of flexibility quality of two groups of students after the experiment

The flexibility quality scores of the two groups before and after the experiment were tested by SPSS, and the results were as follows.

Table 5: Comparative analysis of flexibility quality of the two groups of students after the experiment

	Before the experiment	After the experiment	Improvement range
The experimental group was $\overline{X}$	5.50±1.17	6.42±0.79	16.65%
The control group was $\overline{X}$	5.25±1.36	7.50±0.67	42.86%
P	0.633	<0.01	

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It can be seen from table 5 that there is no significant difference in the flexibility quality of the two groups at the same level before the experiment. After 9 weeks of teaching experiment, the average flexibility of the experimental group increased by 16.65%, and that of the control group increased by 42.86%. After the experiment, the flexibility quality of the two groups of students has been improved, in which the control group has a greater improvement, compared with the experimental group, there is a very significant difference.

3.2 Comparative analysis of upper limb strength of two groups of students after the experiment

The upper limb strength scores of the two groups before and after the experiment were tested by SPSS, and the results were as follows.

Table 6: Comparative analysis of upper limb strength between the two groups after the experiment

	Before the experiment	After the experiment	Improvement range
The experimental group was $\bar{X}$	6.25±1.29	14.08±1.73	125.33%
The control group was $\bar{X}$	6.66±1.15	9.83±1.64	55.23%
P	0.869	<0.01	

It can be seen from table 6 that there is no significant difference in the upper limb strength of the two groups at the same level before the experiment. After 9 weeks of teaching experiment, the average number of standard push ups that students in the experimental group can complete increased by 125.33%, while the average number of standard push ups completed by students in the control group increased by 55.23%. Before the training, the two groups of students rarely carry out upper limb strength exercise, and the initial level is low. Therefore, after the training experiment, the upper limb strength of the two groups of students has been greatly improved, in which the experimental group has a greater improvement, compared with the control group, there is a very significant difference.

3.3 Comparative analysis of lower limb strength of the two groups of students after the experiment

The lower limb strength scores of the two groups before and after the experiment were tested by SPSS, and the results were as follows.

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Table 7: Comparative analysis of lower limb strength between the two groups after the experiment

	Before the experiment	After the experiment	Improvement range
The experimental group was $\bar{X}$	148.92±7.27	154.75±7.12	3.91%
The control group was $\bar{X}$	144.17±8.08	148.17±8.16	2.77%
P	0.144	0.047	

It can be seen from table 7 that there is no significant difference in the lower limb strength of the two groups at the same level before the experiment. After 9 weeks of teaching experiment, the average value of standing long jump in the experimental group increased by 3.91%, while that of the control group increased by 2.77%. Primary school students are young, usually like to play with each other, chase and jump, so the effect of the experiment on lower limb burst is not so obvious. After the experiment, the lower limb strength of the two groups of students has been slightly improved, in which the experimental group has a larger improvement than the control group Significant difference.

3.4 Comparative analysis of speed quality of the two groups of students after the experiment

The speed quality scores of the two groups before and after the experiment were tested by SPSS, and the results were as follows.

Table 8: the speed of the two groups was compared

	Before the experiment	After the experiment	Improvement range
The experimental group was $\bar{X}$	11.53±0.50	11.56±0.46	3.25%
The control group was $\bar{X}$	11.64±0.58	11.21±0.59	3.72%
P	0.629	0.820	

It can be seen from table 8 that there is no significant difference in the speed quality of the two groups at the same level before the experiment. After 9 weeks of teaching experiment, the average value of 60m time running in the experimental group increased by 3.25%, while that of the control group increased by 3.72%. Primary school students like to chase and play with each other in their spare time. At the same time, the experiment did not arrange too much targeted training content of speed quality. Therefore, the speed quality of the two groups of students was only slightly improved by training, and there was no significant difference between the two groups after the experiment.

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3.5 Comparative analysis of the sensitivity of the two groups of students after the experiment

The results of SPSS were as follows.

Table 9: comparative analysis of the sensitivity of the two groups of students after the experiment

	Before the experiment	After the experiment	Improvement range
The experimental group was $\overline{X}$	10.58±1.38	11.75±1.48	11.59%
The control group was $\overline{X}$	9.92±1.56	13.17±1.47	32.77%
P	0.280	0.028	

It can be seen from table 9 that before the experiment, there is no significant difference in the sensitivity of the two groups at the same level. After 9 weeks of teaching experiment, the average number of cross lattice movement in the experimental group increased by 11.59%, while that of the control group increased by 32.77%. In the training experiment, the training of the two groups of students were arranged with fast reaction and control exercises of lower limbs, and the proportion of this part of exercises in the control group was relatively large. Therefore, the sensitive quality of the two groups of students was improved after the experiment, in which the control group was greatly improved, and compared with the experimental group, there was a very significant difference.

4. Conclusions and suggestions

4.1 Conclusion

1) After 9 weeks of teaching and training experiment, the two groups of primary school students have a certain improvement in lower limb flexibility, upper limb strength, lower limb strength, speed quality and agility quality. The improvement range of each index of the two groups of students is different due to the different training contents.

2) After 9 weeks of teaching and training experiment, the experimental group of primary school students in the standard push-up and lower limb strength standing long jump, which represents the strength of the upper limbs, is higher than that of the control group, with a very significant difference compared with the results of the control group after the experiment.

3) After 9 weeks of teaching and training experiment, the improvement of the flexibility of the lower limbs and the number of cross grid movements representing the sensitive quality of the control group were higher than those of the experimental group, with a significant difference compared with the results of the experimental

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group after the experiment.

4.2 Suggestions

1) The physical fitness of primary school students has strong plasticity and large space for improvement. At this stage, primary school students should be encouraged and guided

2) The improvement of primary school students' physical quality is greatly affected by the training content. Therefore, the training content should be reasonably arranged according to the current physical quality and training objectives of primary school students.

3) Primary school students are lively and active, like running, chasing and playing. Therefore, there is no need to arrange the training content of speed quality. We should scientifically improve the short board of primary school students' quality according to their physiological development characteristics and daily behavior characteristics.

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