Construction and Analysis of Data Security System for Changes in Physical Fitness of College Students

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Abstract:

Introduction: With the accelerated pace of modern life, sub-health has gradually become a threat to the health of contemporary people. In the busy life, people not only have their physical conditions, but also their moral cultivation and ideal pursuit in their spiritual life are gradually indifferent.

Objectives: This study aims to investigate the training methods of national traditional sports under the model of combination of sports and medicine.

Methods: 217 college students, including 60 boys and 157 girls. The subjects were divided into two groups. The experimental group used traditional ethnic sports. The control group did not take traditional ethnic sports. Functional indicators (pulse, systolic blood pressure, diastolic blood pressure and swelling volume at rest), quality indicators (pull up, sit up, standing long jump, 50m, 800m and 1000m) and derived indicators (body mass index, vital capacity body mass index, Vilvik index and Bellak index) and other indicators of body shape, physiological function and sports skills are measured after one week.

Results: The experimental data shows that after a year of traditional national sports practice, the students' pull up (male) and sit up (female) performances have improved to a certain extent, while the standing long jump, 50 meters, 800 meters (female), 1000 meters (male) and other performances have improved significantly, especially in long-distance running. This not only proves that national traditional sports can significantly promote the overall function of the human body, but also indicates that national traditional sports can improve the sports skills and physical flexibility of the human body.

Conclusions: After a year of national traditional sports training, the physical morphology, physiology and sports indicators of 217 non sports major college students before and after the training were sorted out and analyzed. The experimental results show that the national traditional sports make the body shape of college students tend to be normal, the cardiorespiratory function is significantly strengthened, and the physical flexibility and sports function are significantly improved, which has a significant impact on the physical function quality of college students.

Keywords: Data Driven Analysis national traditional sports, college student, physical function, motion.

INTRODUCTION

With the accelerated pace of modern life, sub-health has gradually become a threat to the health of contemporary people1. In the busy life, people not only have their physical conditions, but also their moral cultivation and ideal pursuit in their spiritual life are gradually indifferent2-3. On the basis of many previous research achievements on the influence of traditional national sports on the physique and spirit of middle-aged and elderly people, this paper aims at young people, i.e. college students, through the exercise of traditional national sports before and after the shape indicators (height, weight, chest circumference, shoulder width, pelvis width). Functional indicators (pulse, systolic blood pressure, diastolic blood pressure and swelling volume at rest), quality indicators (pull up, sit up, standing long jump, 50m, 800m and 1000m) and derived indicators (body mass index, vital capacity body mass index, Vilvik index and Bellak index) and other indicators of body shape, physiological function and sports skills are measured after one week. This paper probes into the influence of traditional national sports on the physical functions of young and middle-aged people, so as to analyze the influence mechanism of traditional national sports on young people's bodies, and lay a foundation for the comprehensive promotion of traditional national sports in the future.

OBJECTIVES

This study aims to investigate the training methods of national traditional sports under the model of combination of sports and medicine.

METHODS

(1) Literature method. Through the Internet, the Chinese academic journal network and the university library, access to books and documents related to college students' physique. At the same time, the collected data were analyzed and studied to provide a theoretical basis for studying the impact of traditional national sports on college students' physical quality.

(2) Experimental test method. Screening criteria: among newly enrolled college students, voluntary enrollment is the primary election. The standard is 18-22 years old, who has never practiced traditional national sports, and has no heart, lung or major diseases. Exclusion criteria: those who have less than 30 minutes of daily training and have accumulated more than 15 days; Those who fail to participate in the training as required for more than 25 days accumulatively; Those who voluntarily give up training during the experiment; Those who cannot participate in the training due to various accidents during the experiment. All students taking part in the training will spend one hour in the morning (6:00-7:00) or one hour in the evening (17:00-19:00) for training. As students are at the starting point in the study of traditional national sports, the training plan is based on basic skills and gradually increases the difficulty. According to the Test Rules specified in the Research on the Constitution and Health of Chinese Students, the national designated equipment is used to test the physical health indicators. In this paper, 217 college students were tested for physical health indicators. After one year of traditional national sports study, they were tested again for physical health indicators, and two groups of test data were obtained.

(3) Mathematical statistics. Input the experimental data into the computer and check it carefully. Use SPSS17.0 statistical software to analyze the data. The statistical methods used include T test, etc.

RESULTS

Experimental result

There were 253 college students participating in the study of traditional national sports, including 86 boys and 167 girls, including 36 (25 boys and 11 girls). Due to various reasons, the training task was not completed as required, and its physiological indicators could not be included in the experimental data. The number of eligible subjects is 217, including 61 boys and 156 girls. The minimum age is 18, the maximum age is 22, and the average age is 19.362. The morphological indicators are shown in Table 1.

Table 1. Data Sheet of Student Form Index

Morphological index	Male			Female		
	max	min	Mean value	max	min	Mean value
Height (cm)	192	161	173.7	174.6	150.2	161.84
Weight 1 (kg)	104.3	40	62.485	80.3	40.1	53.01
Weight 2 (kg)	104	40.5	65.811	80.1	40.5	53.353
Bust circumference 1 (cm)	109.2	69	87.128	106	69	83.475
Bust circumference 2 (cm)	110.4	68.5	87.398	107.5	70	83.799
Shoulder width (cm)	60	35	47.762	49.5	31	39.847
Pelvic width (cm)	59	34	46.91	54	26.3	37.9

Note: 1 represents pre study indicators, 2 represents post study indicators.

The physical function quality indicators of students before and after learning traditional national sports are shown in Table 2.

Table 2. Statistical table of paired samples of male students' physiological indicators and derived indicators

	Mean value	N	Standard deviation	Standard error of mean
Vital capacity 1	3985.2349	60	543.38441	69.56356
Vital capacity 2	4229.4972	60	632.01805	80.91064
Pull up 1	8.479	60	4.486	0.535

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Pull up 2	9.219	60	4.335	0.536
Standing Long Jump 1	222.891	60	18.1565	2.3247
Standing Long Jump 2	228.628	60	17.1562	2.1966
50m 1	7.2913	60	0.66009	0.06533
50m 2	7.0208	60	0.71827	0.07278
1000m 1	4.1524	60	0.37276	0.02854
1000m 2	3.917	60	0.43978	0.03713
Body mass index 1	21.6324	60	3.47513	0.42294
Body mass index 2	21.7408	60	3.45576	0.42046
Vilvik Index 1	87.8165	60	9.48306	1.21418
Vilvik Index 2	88.1597	60	9.45603	1.21072
Bellac index 1	19.2636	60	3.08834	0.36321
Bellac index 2	18.665	60	3.01524	0.32753
Vital capacity body mass index 1	61.6829	60	7.63661	0.95577
Vital capacity body mass index 2	65.0151	60	7.96882	1.0203

Note: 1 represents pre study indicators, 2 represents post study indicators.

Table III. Paired sample correlation coefficient table of male physiological indicators and derived indicators

	N	Correlation coefficient	Sig.
Vital capacity 1&2	60	0.988	0.000
Pull up 1&Pull up 2	60	0.978	0.000
Standing Long Jump 1&Standing Long Jump 2	60	0.964	0.000
50m 1&50m 2	60	0.823	0.000
1000m1&1000m2	60	0.900	0.000
BMI 1&BMI 2	60	1.01	0.000
Vilvik Index 1&Vilvik Index 2	60	1.01	0.000
Bellac index 1&Bellac index 2	60	0.945	0.000
Vital capacity body mass index 1&Vital capacity body mass index 2	60	0.963	0.000

Note: 1 represents pre study indicators, 2 represents post study indicators.

Table 4. Statistical table of paired samples of female students' physiological indicators and derived indicators

	Mean value	N	Standard deviation	Standard error of mean
Vital capacity 1	30.079	157	8.823	0.696
Vital capacity 2	32.139	157	8.215	0.648
Pull up 1	169.406	157	15.0283	1.1931
Pull up 2	172.685	157	14.5884	1.1579
Standing Long Jump 1	8.9502	157	0.92357	0.06383
Standing Long Jump 2	8.6899	157	0.93205	0.0645
50m 1	3.8745	157	0.39341	0.02138
50m 2	3.7002	157	0.52805	0.03216
1000m 1	28i3.46	157	401.13	32.106
1000m 2	3035.249	157	484.964	38.818
Body mass index 1	53.2022	157	6.76059	0.53116
Body mass index 2	56.9714	157	8.01509	0.6316
Vilvik Index 1	20.26i5	157	2.3176	0.17544

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Vilvik Index 2	20.3818	157	2.30574	0.17449
Bellac index 1	84.4377	157	6.93332	0.54499
Bellac index 2	84.8509	157	6.87974	0.5407
Vital capacity body mass index 1	149.3162	157	17.27365	1.37288
Vital capacity body mass index 2	145.4351	157	15.88124	1.2614

Note: 1 represents pre study indicators, 2 represents post study indicators.

Table V. Table of Paired Sample Correlation Coefficients of Physiological Indexes and Derived Indexes of Female Students

	N	Correlation coefficient	Sig.
Vital capacity 1&2	157	0.985	0.000
Pull up 1&Pull up 2	157	0.961	0.000
Standing Long Jump 1&Standing Long Jump 2	157	0.961	0.000
50m 1&50m 2	157	0.742	0.000
1000m1&1000m2	157	0.953	0.000
BMI 1&BMI 2	157	0.933	0.000
Vilvik Index 1&Vilvik Index 2	157	0.961	0.000
Bellac index 1&Bellac index 2	157	0.998	0.000
Vital capacity body mass index 1&Vital capacity body mass index 2	157	0.976	0.000

Note: 1 represents pre study indicators, 2 represents post study indicators.

DISCUSSION

According to the results of the statistical table of students' body shape in Table 1, after a year's study of traditional national sports, the weight of boys and girls has increased slightly, while the highest weight loss and lowest weight gain of boys and girls after study. It shows that after a period of traditional national sports practice, the students' weight has changed evenly. The decline of the highest weight and the rise of the lowest weight are enough to show that traditional national sports continue to consume fat in the process of low-intensity aerobic exercise, making it tend to be normal. According to learning, there are significant differences in body mass index and Vilvik index before and after learning. Body mass index (BMI) mainly reflects the body shape of a person and is an indicator to determine the degree of obesity and thinness of a person; The Vilvik index reflects the length, width, circumference, thickness and density of the human body, and is closely related to other indexes of the cardiopulmonary ventilator. It is not only a nutritional index, but also an important index in reflecting the human physique and physical level. The significant difference between before and after learning indicates that students' weight tends to be rationalized after exercise.

Vital capacity refers to the total amount of gas exhaled after one inhalation. As for the organs, tissues and even every cell of an organism, as long as they want to maintain normal life activities, oxygen supply is essential[4-6]. The supply of oxygen in human body is completely dependent on respiratory movement. In this process, the lungs not only absorb fresh oxygen, but also discharge carbon dioxide generated by metabolism in the body[7]. Therefore, the capacity of the lungs is the decisive factor for a person's respiratory ability. Therefore, vital capacity has become an objective indicator of lung function and an important indicator of human function and physical fitness. The vital capacity body mass index mainly reflects the correlation between vital capacity and body weight through the ratio of the body's own vital capacity and body weight, that is, the relative value of the vital capacity per 1kg body weight, so as to carry out objective quantitative comparative analysis on individuals and groups of different ages and genders. Bellac index is an important index to measure cardiac function. The reference value of normal cardiovascular function is 14.7-21.3. The data results show that the vital capacity, vital capacity body mass index, and Beirak index of male and female students have increased before and after learning traditional national sports, and there are significant differences. It shows that national traditional sports have a benign two-way regulation effect on human heart and lung function, blood circulation, nerve regulation, etc., which is similar to the conclusion that multiple national traditional sports have a positive impact on the physiological function of the

elderly. Practice and application have proved that after exercising the Tendon Changing Classic, there will be body reactions such as warm limbs, slight sweating, and obvious relief of soreness8-10. All these indicate that traditional national sports have the effect of promoting blood circulation, enhancing myocardial contractility and aerobic metabolism.

The experimental data shows that after a year of traditional national sports practice, the students' pull up (male) and sit up (female) performances have improved to a certain extent, while the standing long jump, 50 meters, 800 meters (female), 1000 meters (male) and other performances have improved significantly, especially in long-distance running. This not only proves that national traditional sports can significantly promote the overall function of the human body, but also indicates that national traditional sports can improve the sports skills and physical flexibility of the human body. The exercise of traditional national sports is first planned by the cerebral cortex, subcortical basal ganglia and cerebellum, then issued by the motor area of the cerebral cortex, and then implemented by the brain stem and spinal cord motor neurons. In the process of exercise, it is also necessary to activate the motor centers and peripheral receptors at all levels to form complex feedback activities, ensure accurate action and correct action deviation in time. Secondly, traditional national sports can enhance the consumption of fat, reduce the deposition of fat in the body and strengthen the heart and lung function through the characteristics of low intensity and long time sports.

After a year of national traditional sports training, the physical morphology, physiology and sports indicators of 217 non sports major college students before and after the training were sorted out and analyzed. The experimental results show that the national traditional sports make the body shape of college students tend to be normal, the cardiorespiratory function is significantly strengthened, and the physical flexibility and sports function are significantly improved, which has a significant impact on the physical function quality of college students.

The research object of this paper is 18-22 years old college students. Through the analysis of experimental data, we can draw a conclusion that traditional national sports can actively promote the physiological function of young and middle-aged people. It is not only an important means of fitness and disease prevention, but also a way of exercise to enhance the immune capacity of the body. Based on the above theoretical and experimental research, traditional national sports have a strong popularization foundation and are suitable for health care sports for people of all ages. As long as you keep practicing, you can strengthen the coordination and stability of your body, and gradually improve your immune ability, heart and lung functions, etc. Therefore, vigorously carrying forward national traditional sports is not only the need to carry forward the traditional culture of the motherland, but also an important way to improve the physical quality of the whole people.

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