

Influence of Transmission Electron Microscope on the Physical Fitness of Female College Students in Aerobics Exercise

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Abstract: Under the transmission electron microscope, it can be found that different exercise habits will lead to great differences in the distribution ratio of fat muscles in the human body, and lead to changes in the number and morphology of muscle cells and fat cells. However, it is not clear how these changes will affect the body constitution. The purpose of this article is to study the effect of aerobics exercise on the physique of female college students. Through literature research and investigation, this paper briefly introduces the physical problems of college students, including physical quality and psychological quality. The characteristics and significance of aerobics are analyzed. Aerobics can not only exercise the body, but also improve the aesthetic consciousness and artistic accomplishment, helping to form a strong will. The effects of aerobics exercise on the physical fitness of female college students were compared through comparative experiments. The results show that, after aerobics exercise, female college students have improved their performance in all physical fitness items. Among them, sit-ups showed the greatest improvement, exceeding 10 points. The body has also been improved. The chest circumference has increased by 2.8cm, and the waist circumference, hip circumference and leg circumference have all decreased to varying degrees. Psychologically, calisthenics exercise has the greatest influence on irritability index and depression index, making irritability index drop by 1.4 from 3.2 to 1.8 and depression index drop by 0.9 from 3.4 to 2.5. In this experiment, the living conditions of female college students have not remained completely the same, and the seasons and other factors may also affect them, which needs further improvement.

1. Introduction

Muscle and fat of the human body each have their own uses, but once their distribution ratio is

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out of balance, it may cause serious harm [1]. Under the transmission electron microscope, we can observe that different exercise habits will lead to a large difference in the distribution ratio of fat muscles in the human body, and lead to changes in the number and morphology of muscle cells and fat cells. Nowadays, people's work and rest style and life style are often not regular enough, resulting in many health problems [2]. For example, obesity is a serious health problem. The greatest harm of obesity to women is not only unsightly body shape and bloated appearance, but also pathological aspects, such as hypertension, hyperlipidemia abnormalities, insulin resistance and diabetes, coronary heart disease, liver dysfunction, gallstones, gout, etc. These are all related to obesity. There is also endometrial cancer, which is also common in middle-aged women [3]. Young women who are infertile and infertile due to obesity have polycystic ovary syndrome, which is also related to obesity.

During college, human skeleton development is basically fixed and no major quality changes will occur. However, it can be found by transmission electron microscope that adipocytes are extremely active in this period [4]. If you allow fat to grow, not only will your figure be affected, but your health will also be endangered. Moreover, with the development of the society, the pressure of college students is increasing day by day, and their physical and psychological conditions are being seriously challenged. The physical health of college students is not optimistic and they need a movement that can regulate their body and mind [5]. Aerobics is an aerobic fitness activity integrating music, gymnastics and dance. The form and characteristics of calisthenics determine that most of the participants are girls, because calisthenics has no physical confrontation, is not very strong and difficult, and is very suitable for girls as normal fitness activities. Fitness exercise can not only have a positive impact on the body, but also can adjust people's mood. It is a very good exercise [6].

There has been a lot of research on sports and health. Fabian, in order to study the injury of joints and tendons caused by physical exercise, observed the acute effects of extreme exercise on the knee joint, ankle joint and surrounding structures of athletes through ultrasound. It is found that acute physical stress is closely related to patellar tendon vascular proliferation, and synovial effusion of knee joint and talus joint has no obvious change [7]. Jun study found that exercise is the most effective intervention measure to prevent obesity. Although the cellular and molecular mechanism of exercise protecting mitochondrial dysfunction in skeletal muscle is still unclear, exercise training can reduce mitochondrial dysfunction, enable mitochondria to maintain the balance between mitochondrial dynamics and mitosis, and reduce apoptosis signals in obese skeletal muscle [8]. Lu believes that exercise, aerobic fitness and physical activity play an important role in the treatment of childhood obesity and asthma. Moreover, obesity and lack of exercise are both associated with asthma symptoms and treatment responses [9]. Sulistyoningrum's research found that regular aerobic aerobics can reduce body weight and waist circumference well [10]. Wen studied the effect of short-term aerobic exercise on bone metabolism and functional health of postmenopausal women [11]. Chang's research found that aerobics combined with selective fall prevention exercises over a period of time can improve mobility without damaging the basic benefits of aerobics [12].

In brief, this paper discusses the effect of aerobics exercise on the physical fitness of female college students. Specifically, the main research content of this paper is roughly divided into six parts: The first part is the introduction part, aiming to make a systematic overview of the main research content of this paper from the research background, research purposes, research ideas and methods. The second part introduces the physical problems of college students, including physical quality and psychological quality. The third part introduces the characteristics and significance of aerobics. The fourth part is the related research, through the inquiry data and the related experiment

has analyzed the aerobics teaching and the study attention point. The fifth part is the analysis of the data, through specific survey data and research results, comparing the impact of aerobics exercise on female college students' physique. The results show that, after aerobics exercise, female college students have improved their performance in all physical fitness items. Among them, sit-ups showed the greatest improvement, exceeding 10 points. The body has also been improved. The chest circumference has increased by 2.8cm, and the waist circumference, hip circumference and leg circumference have all decreased to varying degrees. At the same time, it also improves the psychological and spiritual aspects, and has the greatest impact on irritability index and depression index. The sixth part is the summary and suggestion of this article, which is the summary and prospect of the article's achievements. In the experiment of this article, the living conditions of female college students have not completely remained the same, and the seasons and other factors may also have impacts, which need to be further improved.

2. Physical Problems of College Students

2.1. Physical Quality Problem

Physical quality is the basis of all human qualities. It refers to the ability of the human body to show skills in sports, i.e. the ability of physical strength, speed, endurance, sensitivity, flexibility and coordination in sports. Strengthening students' physique and improving their health level are the most important tasks of school physical education. Physical fitness is the main component of physical fitness. The decline of physical fitness will definitely affect the enhancement of physical fitness. The average age of Chinese college students is generally between 19 and 23 years old. In a relatively stable college life stage, students' physical quality should be continuously improved or maintained at a higher level. However, it backfired.

Why is this happening? On the one hand, it may be because the content of physical fitness exercises is boring and monotonous. Students lack the enthusiasm to practice and are prone to weariness. Some students are forced to cope with the exercises due to discipline in class and the examination of quality tests. Therefore, we should take the importance of improving students' physical fitness exercises as an important task in teaching, and theoretically let students recognize the importance of physical fitness exercises to improve physical fitness. Step by step, make the best use of the situation to motivate students to learn. For example, girls are very interested in rhythmic gymnastics, calisthenics, social dance and other items with strong rhythm, so we can add these courses (physical education and elective courses). In addition, we should also adopt scientific fitness methods to achieve the purpose of strengthening students' physique and healthy students' body and mind.

On the other hand, it may be caused by living habits and current social culture. Although one has to go through military training as soon as he enters the school gate, one month after suntan, college students have plenty of time to do nothing, which is best used for Ge You to lie down. Fancy house life seems too convenient: in the past, the class was over and the dining hall was crowded. now, I lie down and wait for takeout. In the past, I used to brush the racetrack in groups, but now I play games all the time. Only one network cable is needed to fight till dawn. Time and quality of life can be saved, in order to play more games and lose more time. According to relevant data, the proportion of students who surf the Internet for a long time is increasing with age. Staying up late is very common among college students. The young man got very dark late and was sealed by sheets in the morning. He hesitated hard about postponing his early class.

In the process of setting up college physical education classes, there are only two classes per

week. It is impossible to meet the requirements of the development of individual physical quality of college students by relying solely on the time of physical education classes. The focus of physical education teaching in ordinary colleges and universities should be to make students fully realize the importance and superiority of having good physical quality, so that students can master the theoretical knowledge and practice methods of physical exercise. Only by making students truly aware of the importance of physical exercise and mastering several scientific methods of physical exercise, can students formulate their own suitable exercise methods according to their own characteristics and exercise consciously, can they better ensure the completion of the university's learning tasks and achieve the goal of scientific exercise. Provide as many sports and fitness equipment and activities as possible that are popular with students. Appropriate increase in the ratio of sports scores and credits will give students a sense of crisis in terms of content and form, and make them realize ideologically that without a healthy body, there will be no better life and study, and they will not be qualified college students.

2.2. Psychological Quality Problem

Many people think that physique only refers to physical quality, such as explosive force, endurance, vital capacity and other physiological indicators. In fact, constitution also includes many aspects. The definition of constitution points out that constitution includes physical form development level, physiological and biochemical function level, physical quality and athletic ability, psychological state and adaptability. From this we can see that psychological quality is also an important indicator of physical fitness, and is often overlooked as an indicator. In fact, the psychological quality of college students is getting worse and worse, and the psychological problems are getting more and more serious, which must be paid enough attention to. In recent years, injuries caused by the immaturity of college students' psychological quality are frequent, which has attracted extensive attention from all walks of life. The occurrence of these events, to a large extent, shows that the psychological quality of the students' needs to be strengthened under the background of social and cultural diversity. Scientific and effective means are needed to help college students improve their psychological quality, perfect their personality, enhance their social responsibility, and establish correct world outlook, outlook on life and values. After four years of college study and life, college students have to enter the society and the workplace. In this process, they often face more life choices. These choices will affect college students' psychology and cause them psychological pressure.

At present, science and technology are advancing with each passing day. Media forms are gradually updated. Radio, television, newspapers, Internet and other forms and contents are further enriched. Media distribution methods are more innovative. The number of information bases carried by media platforms is also greater. These changes will inevitably have some impact on people's mental health development. However, for college students whose psychology is still in the development stage, they lack certain ability to identify new things, have certain difficulty in distinguishing good from bad things, and lack logical thinking on information processing and sorting. However, driven by strong thirst for knowledge, college students are often prone to blindly use various media need to integrate and refine the relevant public opinions, actively guide the people's ideological trend, and avoid the negative impact of bad content on college students to the greatest extent. Moreover, just as most people think that physique has nothing to do with psychology. In a period of time, people's understanding of health is still mainly focused on the improvement of

physical quality, and not enough attention is paid to the health of psychological quality. In such an invisible and healthy thinking process, people have a certain paranoia about their psychological quality and do not properly position their psychological quality. Such educational concepts are also deeply reflected in students. For example, the lack of mental health education in college students' ideological and political work brings serious disadvantages to the overall education of college students, makes the education of college students' group psychological quality ineffective, and pays insufficient attention to the health problems of college students' group psychological quality.

Carrying out mental health education is a very complicated and arduous systematic project. The success of mental health education for college students is directly related to the growth of students, the stability of families and the development of the country. Faced with the increasing complexity of modern society, there are still some deficiencies in the development of college students' self-awareness, such as self-identification and self-evaluation. The limited thinking mode and narrow thinking scope, especially the lack of self-evaluation, make students highlight themselves in the judgment of things without paying attention to the situation of other individuals, which directly affects the cultivation of their psychological endurance and sense of responsibility. Due to the lack of careful consideration and subjective evaluation of the life events they have experienced, many students are unruly and reckless in their study process, and their personal behavior is seriously out of control, thus unable to correctly recognize their life and goals. In the process of studying, college students often have many things that are contrary to their own thinking. For some unexpected events, more college students do not have more correct solutions in the process of facing directly. However, for some students who are especially excellent in their studies, they are at a loss when confronted with similar problems. The immaturity of psychology leads college students to deal with problems arbitrarily and often do not like to accept criticism from others. They only like to listen to what is pleasing to the ear. In such a state of mind, the malady of insufficient psychological endurance of students will appear, and the light ones will make students listless, lack self-confidence, and seriously lead to the split of students' personality.

Cultivating college students' healthy psychological quality helps them enter the society with a relaxed and mature attitude, smoothly embark on the work post, face a brand-new life and life, and reduce the occurrence of various injuries. In order to do a good job in college students' psychological quality, we need to fully consider the characteristics of college students themselves and analyze various influencing factors of college students' psychological quality, so as to find feasible countermeasures. In many studies, it has been found that exercise helps to improve people's psychological quality, and it may be possible to find auxiliary treatment methods from exercise.

3. Characteristics and Significance of Aerobics

3.1. Characteristics of Aerobics

High artistic quality. The artistry of calisthenics is mainly reflected in its "health, strength and beauty" features. Aerobics movements are coordinated, smooth and flexible, which enables exercisers not only to exercise their bodies and strengthen their physique, but also to enjoy "beauty" and improve our aesthetic awareness and artistic accomplishment. Aerobics has a strong rhythm, aerobics is very popular, in addition to the effectiveness of the exercise itself, the movement of the sense of the times, one of the very important factors is that modern music brings vitality to aerobics, aerobics movements and music strong rhythm makes aerobics exercises more infectious. The extensive adaptability of calisthenics lies in the variety of forms of calisthenics exercises, the amount of exercise can be large or small, it is easy to control, and the requirements for field

equipment are not high. Therefore, it is suitable for people of all ages, different genders, different physical qualities, and different technical levels. All kinds of people can find suitable ways from calisthenics exercises and can have fun from calisthenics exercises. The exercise load and rhythm designed by aerobics fully consider the feasibility of producing a series of stimulation results, making it suitable for the physique of ordinary people and even the aerobic range that people with physique can bear. It is safe and effective for people to follow the fast and orderly rhythm of movement on the flat ground and with cheerful music.

Aerobics can promote health and beauty. "Health Beauty" is a kind of positive health concept and modern consciousness. Previous studies have shown that "Health Beauty" is the state in which the body exerts its functions most effectively. A person with "health beauty" not only feels good about him and can easily cope with daily work and life, but also has plenty of energy to participate in various social, recreational and leisure activities, and can spontaneously deal with sudden stress. Good rhythm is very important for aerobics exercises. In order to perform well, the exerciser must have certain muscle control ability, music rhythm and movement completion ability. Therefore, in practice, attention should be paid to the development and training of the rhythmic sense of movements, so as to master the rhythmic sense of movements slowly on the basis of understanding the rhythm of music. In general, aerobics is a relatively comprehensive sport, and suitable for a wide range of people of all ages.

3.2. The Significance of Aerobics

Aerobics helps to cultivate aesthetic consciousness. Aerobics is an artistic sport. It is often practiced in aerobics and requires the beauty of action to be shown in the movements. In the appreciation of music, enhance the sense of rhythm and rhythm, taste the beauty of music, improve the quality of music and the ability to appreciate music; In physical exercises, cultivate students' elegant temperament and pursue physical beauty. In this way, students can get a sense of beauty in which their emotions are stimulated and their emotions are vented, a sense of satisfaction in understanding beauty, appreciating beauty, pursuing beauty, expressing beauty, creating beauty, showing beauty and enjoying beauty, and the physical quality and cultural and artistic quality of students can be improved in an all-round way. Aerobics is embodied by the beauty of human body. The beauty of the human body is reflected by the beauty of body, posture and spirit. Human body beauty includes natural beauty and social beauty. The natural beauty of the human body is the beauty of the body formed by the physiological and anatomical structure of the human body, which includes the beauty of body, posture and action. Social beauty is the spiritual beauty and inner beauty of human beings, which includes moral character, speech, manners, manners, etc. The organic unity of these two aspects constitutes the beauty of human body. Participating in aerobics activities can improve both natural beauty and social beauty and make the human body more perfect. Specifically, the aesthetic of aerobics includes the shaping of physical beauty and artistic aesthetics. Shaping physical beauty mainly refers to improving body shape, correcting posture, setting up good manners and images, and making appearance more harmonious and perfect through aerobics exercises.

Aerobics helps to form a strong will. There are many asymmetrical movements and complicated upper and lower limb coordination movements in aerobics, as well as certain requirements on the strength and range of movements, and the duration is longer, especially aerobic aerobics, which lasts for more than one hour, needs to overcome physiological limits, cultivate students' willpower and endurance to overcome fatigue and form tough willpower quality. At the same time, exercising with strong music accompaniment often makes students forget fatigue and unconsciously improves their physical endurance. The formation of good psychological qualities of college students, such as hard-working, perseverance, decisiveness, courage, self-control, self-confidence, etc., should add a bargaining chip to a competitive world. Aerobics helps to improve expression and self-confidence. As the saying goes, "everyone has a love of beauty". Although some people have already noticed the importance of their own value, their performance has been inhibited by shyness. Aerobics is a skill-based physical activity, which is different from other sports. Aerobics is used as a means to provide students with a place to express themselves, to continuously stimulate enthusiasm for expression, to transform it into performance behavior and to improve expression. The improvement of expressive force will make the psychological state more stable. During the learning process, the students will be guided step by step. The students will realize their own abilities, complete their actions continuously, and at the same time enhance their self-confidence. The benefits of aerobics are various, and the current research is relatively broad. This paper will take female college students as the research object to conduct specific research on the role of aerobics.

4. Experiments

4.1. Experimental Content

Aerobics is a relatively all-round sport, suitable for all ages, and common in college courses, but aerobics is not so easy to imagine, and there are many places to pay attention to in both teaching and practice. If we do not pay attention to these points of attention, it may be difficult to achieve good results.

Teachers' teaching methods have a certain influence on the improvement of aerobics teaching quality. Generally speaking, the current aerobics teaching is still using traditional teaching methods, which not only will not improve the learning quality of students' aerobics, but also lead to students' aversion to aerobics learning and unwillingness to learn aerobics. The main reason for this problem lies in the uniqueness of aerobics itself. And aerobics is not a simple action can be learned, but also understand the meaning and ideas to be expressed, through one of the little tricks can effectively express the creation of the performer's heart want to express things, so in the actual teaching just let students learn the movements, although students can achieve certain results in body movements, but can't understand the meaning represented in the movement, making the movement performance is not flexible. Moreover, in actual teaching, teachers simply explain the movements for students, and then break down the aerobics movements they have learned. Students learn in an integrated way according to the teacher's broken-down movements. Most teachers do not analyze the emotions of the movements they have learned while teaching, which affects the aerobics teaching quality to a great extent.

In the process of physical education, most students think that physical education is used to relax their pressure. Therefore, in most cases, students reduce their pressure on learning through free activities. This makes students have certain resistance to the collective training required by teachers, which is not conducive to the smooth development of aerobics teaching. Therefore, the teacher-student relationship has become the biggest problem in teaching. If teachers want students to actively participate in aerobics learning, they must solve the problems existing between teachers and students, build a harmonious teacher-student relationship, and guide students to actively participate in aerobics teaching. Students should not hold conflicting emotions in the learning process. Aerobics learning is not an easy task. It needs to be taken seriously, with emphasis on the unity of rhythm and movement and the correct body posture. However, it is also necessary to proceed in a gradual and orderly manner and not to act too hastily. It is not that the more exercise the better. Before exercising, you should make sufficient warm-up preparations and pay attention to supplementing water.

4.2. Experimental Results

In order to study the effect of calisthenics on the physique of female college students, we selected 50 female college students, all aged 19 to 20 years old, as the research object. Four special calisthenics exercises each week, each lasting about 50 to 80 minutes, including instruction time such as explanation, teaching and error correction. First of all, it explores the changes of their physical fitness before and after learning aerobics, including sitting body forward flexion, standing long jump, 800m, sit-up. Scores were made using the scoring criteria of college students' physical tests, and the data are shown in Table 1.

Time (days)	Sit and Reach	Standing Long Jump	800m	Situp
0	64.5	66.3	70.2	65.8
30	68.2	67.4	75.5	69.4
60	71.3	69.8	77.4	73.9
90	72.8	70.6	78.5	76.1

Table 1. Score of sports events

5. Discussion

5.1. Analysis on the Influence of Aerobics on Physical Fitness

In order to study the effect of calisthenics exercise on female college students' physique, we must first understand the effect of calisthenics on physical fitness. There are many ways to make the exterior better, but if only the exterior is better, but the physical fitness is decreased, it is putting the cart before the horse. For example, many female college students choose to go on a diet or take diet pills in order to be thin. Although their body looks better, they are prone to problems in their health. In order to understand the current physical condition of female college students, we conducted a survey on the total physical test results of female college students, and the results are shown in Figure 1.

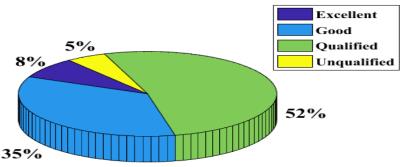


Figure 1. Distribution of physical examination results of female college students

From the data in the above figure, it can be seen that only 8% of female college students have reached excellent physical fitness level, and 35% of female college students are at good level. 52% of the female college students are qualified, which is more than half of the total, proving that the

physical fitness level of most female college students is at the passing level. There are also 5% of female college students whose physical fitness level is not up to standard, which is really worrying. At present, college students often lack exercise in their lifestyle. Many people sit or lie all day long. This situation will certainly promote the decline of physical fitness. Whether aerobics exercise can improve the physical fitness of female college students, we will draw the relevant data into a line chart, as shown in Figure 2.

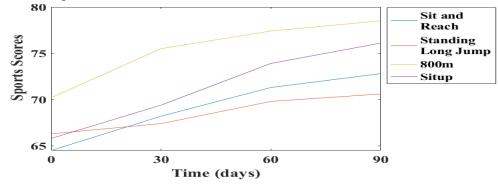


Figure 2. Changes in physical fitness

From the data in the above figure, it can be seen that after aerobics exercise, female college students have improved their performance in all physical fitness items. Among them, sit-ups showed the greatest improvement, exceeding 10 points. The promotion of standing long jump is relatively the least. The reason may be that sit-ups need waist strength. Aerobics training for waist is more in this experiment. The standing long jump requires the joint action of the waist and legs. Although the strength of the waist and legs has been improved, most of the students did not have special training and did not know how to coordinate during the standing long jump, which resulted in the inability to exert the waist strength. In addition, aerobics is more endurance-oriented for leg exercises, while standing long jump is more explosive, which is also the reason why 800m long distance running is more, improved than long jump.

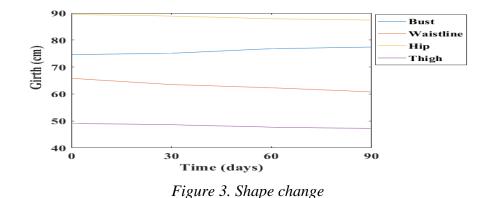
5.2. Analysis on the Influence of Aerobics on Body

Everyone has a love of beauty. Many people expect aerobics to be about their body shape. They choose aerobics to make their body shape better. As for body shape, we often measure it through three measurements, namely chest circumference, waist circumference and hip circumference. However, more and more people begin to pursue thin legs, so this experiment will also measure the leg circumference. Relevant measurement data are shown in Table 2.

Time	Chest Circumference	Waist Circumference	Hip Circumference	Leg Circumference
(days)	(cm)	(cm)	(cm)	(cm)
0	74.6	65.8	89.5	49.1
30	75.1	63.5	88.9	48.6
60	76.8	62.3	87.9	47.7
90	77.4	60.8	87.4	47.2

Table 2. Shape change

In order to intuitively compare the physical changes of female college students during aerobics exercise, the relevant data are plotted into line charts, as shown in Figure 3.



From the data in the above figure, it can be seen that through calisthenics exercise, the chest circumference of female college students has increased by 2.8cm, and the waist circumference, hip circumference and leg circumference have decreased to varying degrees. The change of waist circumference is the most obvious, with a reduction of 5cm, which can also confirm the most obvious result of sit-ups in the previous article. In the process of exercise, the waist exercises a large proportion of the total amount, and throughout. The increase in chest circumference and the decrease in waist circumference, hip circumference and leg circumference make the female college students' body more inclined to a healthy body standard, which is also a more beautiful body standard and meets the heart of beauty.

5.3. Analysis on the Influence of Aerobics on Psychological Quality

As we mentioned earlier, the meaning of constitution includes not only physical but also psychological. Mental health is often neglected. In this experiment, we evaluated the psychological quality of female college students. The evaluation contents mainly include depression index, anxiety index, irritability index and paranoid index. From 1 to 5, the degree is deepening, and the data are shown in Table 3.

Sentiment Index	Depression Index	Anxiety Index	Irritability Index	Paranoid Index
Before Exercise	3.4	2.5	3.2	2.8
After Exercise	2.5	2.1	1.8	2.3

Table 3.	Changes	in psych	hological	quality

In order to intuitively compare the changes of female college students' psychological quality through calisthenics exercises, the relevant data are plotted as bar charts, as shown in Figure 4.

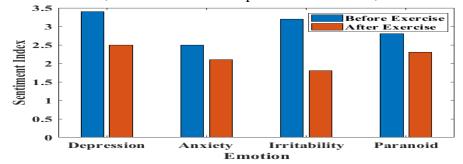


Figure 4. The Influence of aerobics on psychological quality

From the data in the above figure, it can be seen that calisthenics exercise has the greatest influence on irritability index and depression index, making irritability index drop by 1.4 from 3.2 to 1.8 and depression index drop by 0.9 from 3.4 to 2.5. This shows that aerobics exercise is helpful to improve the psychological quality of female college students, enabling them to better control their anger and become more cheerful and less depressed. This may benefit from the social function of calisthenics, communicating with each other during the exercise process and making each other good friends.

6. Conclusion

(1) The introduction of aerobics and college students' physical problems, the purpose and significance of the research and the current research situation. Constitution includes physical development level, physiological and biochemical function level, physical quality and exercise ability, psychological state and adaptability. People often only pay attention to physical health, often ignoring psychological aspects. The physical problems of college students lie not only in their physical quality, but also in their psychological quality.

(2) Through literature research and investigation, the characteristics and significance of aerobics are introduced. Aerobics movements are coordinated, smooth and flexible, which enables the exercisers not only to exercise their bodies and strengthen their physique, but also to enjoy "beauty" and improve their aesthetic awareness and artistic accomplishment. Aerobics can not only promote health and beauty, but also help to form a strong will.

(3) Experiments and data analysis show that, after aerobics exercise, female college students have improved their performance in all physical fitness items. Among them, sit-ups showed the greatest improvement, exceeding 10 points. The body has also been improved. The chest circumference has increased by 2.8cm, and the waist circumference, hip circumference and leg circumference have all decreased to varying degrees. The change of waist circumference was the most obvious, with a decrease of 5cm. Psychologically, calisthenics exercise has the greatest influence on irritability index and depression index, making irritability index drop by 1.4 from 3.2 to 1.8 and depression index drop by 0.9 from 3.4 to 2.5. It can be seen from this that calisthenics exercise is helpful to improve the physical and psychological quality of female college students. In this experiment, the living conditions of female college students have not remained completely the same, and the seasons and other factors may also affect them, which needs further improvement.

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Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Conflict of Interest

The author states that this article has no conflict of interest.

References

- [1] John P Higgins, & Christopher L Higgins. (2016). "Prescribing Exercise to Help Your Patients Lose Weight", Cleve Clin J Med, 83(2), pp.141-150. https://doi.org/10.3949/ccjm.83a.14139
- [2] Burgess B, Raynor HA, & Tepper BJ. (2017). "Prop Nontaster Women Lose More Weight Following a Low-carbohydrate Versus a Low-fat Diet in a Randomized Controlled Trial", Obesity, 25(10), pp.1682. https://doi.org/10.1002/oby.21951
- [3] Ortega, F. B., Sui, X., Lavie, C. J., & Blair, S. N. (2016). "Body Mass Index, the Most Widely Used but also Widely Criticized Index:would a Criterion Standard Measure of Total Body Fat Be a Better Predictor of Cardiovascular Disease Mortality?", Mayo Clinic Proceedings, 91(4), pp.443. https://doi.org/10.1016/j.mayocp.2016.01.008
- [4] Marjanne Senekal, Gabrielle L. Lasker, Lindsay van Velden, Ria Laubscher, & Norman J. Temple. (2016). "Weight-loss Strategies of South African Female University Students and Comparison of Weight Management-related Characteristics between Dieters and Non-dieters", Bmc Public Health, 16(1), pp.918. https://doi.org/10.1186/s12889-016-3576-x
- [5] Tengku Alina Tengku Ismail, Rohana Abdul Jalil, Wan Rosli Wan Ishak, Noor Fadzlina Hamid, & Wan Manan Wan Muda. (2018). "Understanding Dieting and Previous Weight Loss Attempts among Overweight and Obese Participants: Insights into my Body is Fit and Fabulous at Work Program", Korean Journal of Family Medicine, 39(1), 15-22. https://doi.org/10.4082/kjfm.2018.39.1.15
- [6] Haslam, D. (2016). "Weight Management in Obesity–past and Present", International Journal of Clinical Practice, 70(3), pp.206-217. https://doi.org/10.1111/ijcp.12771
- [7] Fabian Proft, Mathias Grunke, Christiane Reindl, Felix Mueller, & Matthias Witt. (2016). "The Influence of Long Distance Running on Sonographic Joint and Tendon Pathology: Results from a Prospective Study with Marathon Runners", Bmc Musculoskeletal Disorders, 17(1), pp.1-8.
- [8] Jun-Won Heo, Mi-Hyun No, Dong-Ho Park, Ju-Hee Kang, & Hyo-Bum Kwak. (2017). "Effects of Exercise on Obesity-Induced Mitochondrial Dysfunction in Skeletal Muscle", Journal of the Korean Physiological Society & the Korean Society of Pharmacology, 21(6), pp.567-577.
- [9] Kim D Lu, Krikor Manoukian, Shlomit Radom-Aizik, Dan M Cooper, & Stanley P Galant. (2015). "Obesity, Asthma, and Exercise in Child and Adolescent Health", Pediatric Exercise Science, 28(2), pp.13-18. https://doi.org/10.1123/pes.2015-0122
- [10] Sulistyoningrum, E., & Candrawati, S. (2016). "12-weeks Programmed Aerobics Dance Reduced Body Mass Index and Waist Circumference of Young Women", Bangladesh Journal of Medical Science, 15(3), pp.376. https://doi.org/10.3329/bjms.v15i3.30193
- [11] Wen, H. J., Huang, T. H., Li, T. L., Chong, P. N., & Ang, B. S. (2016). "Effects of Short-term Step Aerobics Exercise on Bone Metabolism and Functional Fitness in Postmenopausal Women with Low Bone Mass", Osteoporosis International, 28(2), pp.1-9. https://doi.org/10.1007/s00198-016-3759-4
- [12] Chang, Y. C., Wang, J. D., Chen, H. C., & Hu, S. C. (2017). "Aerobic-synergized Exercises May Improve Fall-related Physical Fitness in Older Adults", Journal of Sports Medicine & Physical Fitness, 57(5), pp.660. https://doi.org/10.23736/S0022-4707.16.05728-5