

Influence of Different Physical Exercise Items on Mental Health of Female College Students

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Objectives: Taking female college students and non-PE majors in a women's college as experimental research objects, this paper compares and analyzes the influence of different dimensions of mental health level, and discusses the interaction and relationship between different physical exercises and female college students' mental health level. **Methods:** The research was conducted in the form of experiment, and the female college students were randomly divided into three different exercise groups, namely aerobics group, basketball group and table tennis group. The three project groups were carried out under the conditions of basically the same exercise intensity, the same exercise time and the same number of exercises per week. **Results:** The research shows that the level of mental health changes in different degrees before and after the experiment. After the experiment, aerobics, basketball and table tennis have different influences on the dimension of mental health of female college students. **Conclusion:** This study suggests that female college students who have no habit of physical exercise should be encouraged to take part in physical exercise, and those who have already taken part in physical exercise should be encouraged to persevere and participate in sports group events properly, so as to improve social adaptability and promote their own healthy development.

Keywords: physical exercise; female college students; mental health

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Nowadays, among the female college students in our country, many people have mental health disorders in different degrees, such as depression, psychosis, neurosis, physical and mental disorders, aggressiveness, etc., and mental illness has become the main reason for college students' dropping out of school and physical education¹. College students are facing more and more pressure in their daily life and study, and the psychological problems behind the increasing pressure are gradually emerging. As we all know, physical activity is beneficial to health, but up to now, there have been reports on the relationship between physical activity and health, which are mostly limited to physical or biological changes²⁻³.

Physical exercise is not only a process of physical activity, but also a process of psychological activity. According to previous studies, physical exercise can promote the mental health of college students to a certain extent, and the effect on mental health is influenced by many factors. Physical exercise can regulate mood, enhance mental health and relieve anxiety and depression. Female college students are the mother of society, and they should bear the important responsibility of having children in the future. The health of mothers will directly affect the health of future children⁴. Therefore, it is particularly important to pay attention to women's mental health.

Some studies have pointed out that one-time physical exercise can also have immediate psychological improvement benefits. For example,

running for 30 minutes can significantly improve the bad emotional states such as tension, confusion, fatigue, anxiety, depression and anger, while keeping the sense of vitality at a high level⁵. Wang Yang et al.⁶ measured the subjects after exercise, and found that their level of state anxiety, depression, tension and psychological disorder decreased significantly, while their energy and happiness increased significantly. However, a few studies show that physical exercise has no short-term emotional effect. According to the national sample survey in 2014, 25.8% of college students have different degrees of psychological barriers or abnormal performances, and 10% of students have serious psychological barriers⁷; In China, the participation rate of women over 16 years old in physical exercise is 30.8%, and the participation rate of young women is the highest, followed by old women and the lowest among middle-aged women. Women's physical and mental health at different stages of growth deserves attention⁸. Li Yonghua and others⁹ pointed out that people who often participate in sports are more likely to form good interpersonal relationships with others. Mai Yini, a famous scholar, believes that games and sports have psychological health care values such as inspiring creativity, eliminating tension, maintaining friendship and making people optimistic.

Female college students' physical exercise refers to the physical activities of female college students who take the initiative to use various sports means and methods to improve their physical fitness, promote the healthy development of body and mind, and enrich amateur culture. In the process of exercise, they can improve the beauty of their body, feel the beauty brought by this healthy exercise, and constantly improve their recognition of beauty, so that aerobics can truly become an important part of their daily physical exercise, and at the same time, this healthy form of physical exercise can also affect their mental health¹⁰⁻¹¹. Based on the consensus that physical exercise can improve mental health, this study explores the influence of different physical exercises on the mental health of female college students. At the same time, find out whether there are differences in mental health level between different sports events,

and provide an effective method to solve the mental health problems of female college students in China, so as to achieve the purpose of improving students' mental health.

Health is the foundation of human life, which is not only related to human development and social progress, but also related to everyone's own happiness and success. Mental health quality is some inherent, basic and relatively stable psychological qualities and characteristics formed by individuals under the joint action of heredity and environment¹². These psychological qualities and physical characteristics affect or determine the individual's psychological, physiological and social functions, and then affect the individual's mental health. Current research shows that when people evaluate events as challenges, their health will not be adversely affected, while when they evaluate events as threats, their health will be greatly affected. Health is a continuous unity and multi-dimensional adaptation, which is not a passive process. Health represents the overall level and external performance of functional adaptation. It is health if the individual's potential and ability limit are in good condition. Health is a kind of quality of life achieved after people adapt to the environment, including social, emotional, spiritual, spiritual and biological adaptation¹³.

Good adaptability is the cornerstone of normal life and continuous development of human beings in society. Development is an eternal theme and the highest embodiment of self-worth and social value. Admittedly, adaptation and development are also the core of mental health quality. Studies have shown that intense stress behavior can consume all norepinephrine. Pituitary/adrenal response: The hypothalamus secretes corticotropin, which activates pituitary activity, while the pituitary gland secretes adrenocortical hormone and endorphin. American psychologists put forward a three-dimensional health model about health, emphasizing the comprehensive evaluation of people's life state from three aspects: biology, psychology and society, and vividly describing the relationship among physical health, mental health and social health of different groups of people¹⁴. The definition of health given by the United Nations World Health Organization is that "health is not only to be free from disease and weakness, but to keep the body, spirit and society in perfect condition". However, people who

regard stress events as injuries and threats may take negative response actions, which may result in different degrees of physical and mental injuries.

METHODS

Research Object

We randomly selected college girls and non-PE majors from a women's college, aged 18-22 years, with an average age of 19 years. Thirty people from three classes were selected as the subjects of this experiment. Divide 30 people into three groups: aerobics group, basketball group and table tennis group, with 10 people in each group. Questionnaire survey was conducted by random sampling method, and 25 questionnaires were collected. There were 22 valid questionnaires, and the effective rate was 88%.

Literature Research Method

Through literature review and internet access, we have consulted the works of general psychology, health psychology, sports psychology and experimental psychology, which provide enlightenment and theoretical support for this study.

Training Scheme and Test Method

Experimental methods: 8 optional courses are taught by regular teachers for one semester, that is, 16 weeks of teaching time, twice a week, once in class, once in extracurricular activities, and 90 minutes for each exercise. Exercise content:

Three times a week, they are compulsory physical education public class, second activity class and club physical exercise. Aerobics is the main teaching content of freshmen and ball games is the main teaching content of sophomores. Aerobics group takes mass aerobics as its main content, and professional aerobics teachers make their own fitness content. Basketball group exercises are mainly free exercises and group competitions, supplemented by preparation activities and relaxation exercises. Table tennis group also adopts concentrated practice, which is mainly based on singles competition and supplemented by preparation activities. Exercise for 12 weeks with the same exercise time and frequency, and self-evaluation with SCL-90 scale in the first week and twelfth week. This paper makes a comparative analysis of the influence of three different exercises on the mental health level.

Interviewing Method

It is planned to visit some college physique test related workers, mental health consulting teachers, physical education teachers, college students and experts, which will inject new blood into the compilation of the scale and the research achievements of this paper.

Questionnaire Survey Method

By using the self-made questionnaire of physical exercise items, the students' favorite items, general favorite items and least favorite items are determined as experimental items. The survey results are shown in Table 1 below:

Table 1
List of Students' Likes in Different Projects

Projects	The number of	Proportion
Basketball	13	43%
Aerobics	21	70%
Badminton	18	60%
Gymnastics	23	77%
Table tennis	17	57%

It can be seen from Table 1 that gymnastics is the favorite item of students, accounting for 77%, aerobics is the middle item, accounting for

70%, and basketball is the least favorite item of students, accounting for 43%.

Data Processing

22 valid questionnaires were statistically analyzed by SPSS11.5. Comprises the following steps: processing the current situation data of students participating in physical exercise; Processing of students' pressure level measurement data. Chi-square test was used to test the generic difference, and the significant level was 0.05. At the same time, the correlation coefficient of contingency table is calculated to analyze the degree of dependence among different generic variables.

RESULTS

General Situation of Mental Health of Female College Students

The results of this study show that the average total score of mental health status of female college students is 10.45, which is between the average level of L 0.34-10.72 in some universities in China [15]. Table 2 shows the mental health status of the respondents.

Table 2
Descriptive Statistics of Mental Health of Female College Students

	Quantity	Minimum value	Maximum value	Average score	Standard deviation
Mental health	22	0	10	10.45	4.278

Influence of Gender on Mental Health Quality of College Student

The scores of mental health quality survey show that the scores of mental health quality of

female college students are higher than that of male students, which supports the research hypothesis.

Table 3
Investigation Results of Mental Health Quality Of Male and Female College Students of Different Genders

Variable	Boy M±SD	Girls M±SD	t	P
Cognitive	23.14±1.54	26.30±1.17	-5.03	0.00
Emotion	18.05±0.63	24.76±0.88	-4.57	0.00
Personality	20.07±1.33	19.67±0.74	0.57	0.00
Adapt	21.73±1.28	22.82±1.53	-1.37	0.00

It can be seen from Table 3 above that the scores of girls in cognition, emotion, personality, adaptation and mental health quality are higher than boys, and the difference is very significant. The reason may be that boys are more motivated, active and utilitarian, and the pressure brought

by society and family is greater. Girls like to make friends, are easygoing, and are good at talking and venting. Girls have stronger willpower and self-control, and consider problems more comprehensively and deeply.

4.3 Comparative analysis of mental health level

Table 4
Different Dimensions of Mental Health Of Female College Students In Basketball Before and After The Experiment

Actual effect factor	Pre-test($\bar{x} \pm s$)	Post test($\bar{x} \pm s$)	t value
Somatization	1.13±0.21	1.03±0.14	1.21
Force	1.66±0.35	1.37±0.17	0.66
Interpersonal relationships	1.47±0.20	1.30±0.11	2.01
Depression	1.63±0.41	1.38±0.23	0.11
Anxiety	1.88±0.58	1.50±0.22	0.33
Terror	1.36±0.20	1.22±0.41	0.41
Other	1.56±0.71	1.36±0.24	2.83

From Table 4, it can be seen that the mental health level of female college students is significantly different in three dimensions: anxiety, paranoia and interpersonal sensitivity before and after taking part in basketball exercises. The reason for this is that basketball is a collective antagonistic sport with great intensity, which can improve students' physical quality. In practice, both cooperation and confrontation can stimulate students' enterprising spirit and enhance their cooperative ability. Therefore, female college students' interpersonal relationship has been improved, and their anxiety and paranoia have been alleviated.

Comparison of the Influence of Table Tennis and Aerobics on Psychological Factors

Table 5 shows the influence and comparison of aerobics and table tennis on psychological factors. From the table, we can see that aerobics has more obvious influence on somatization factors and obsessive-compulsive symptoms than table tennis, and $P < 0.05$ has significant difference; The influence of table tennis on interpersonal factors is obviously better than aerobics, and $P < 0.05$ has significant difference; However, the scores of the hostile factors of table tennis are obviously higher than those of aerobics, and there is a significant difference ($P < 0.05$). That is to say, table tennis can obviously enhance the hostile emotions of college students, which may be related to the antagonistic collective sports of table tennis.

Table 5

Comparison of the Influence of Aerobics and Table Tennis on Psychological Factors

Psychological factors	Aerobics M±SD	Table tennis M±SD	P value
Somatization	1.25±0.36	1.82±0.68	P<0.05
Force	1.41±0.77	1.87±0.37	P<0.05
Interpersonal relationships	1.24±0.37	1.66±0.50	P<0.05
Depression	1.72±0.25	1.74±0.54	P>0.05
Anxiety	1.07±0.11	1.60±0.84	P>0.05
Terror	1.91±0.64	1.94±0.67	P<0.05
Other	1.32±0.45	1.55±0.51	P>0.05

Comparison of Mental Health Level of Three Groups of Female College Students After the Experiment

After the experiment, the comparison results of

mental health level of female college students in three different exercise groups are shown in Table 6.

Table 6

Comparison of Each Dimension of Mental Health Level Among Three Groups of Female College Students After the Experiment

Dimensions	Before the experiment(n=30) ($\bar{x} \pm s$)	After the experiment(n=30) ($\bar{x} \pm s$)	Aerobics/basketball		Aerobics/table tennis		Basketball/table tennis	
			t1	P1	t2	P2	T3	P3
Sense of unity of mind and body	14.20±2.14	17.07±1.25	-2.35	0.36	-0.36	0.02	0.33	0.56
Sense of self-respect	20.47±3.34	21.44±1.68	-1.02	0.14	-0.82	0.230	-2.46	0.23

Sense of balance of personality structure	26.10±2.28	25.63±3.06	1.25	0.24	-7.31	0.08	-3.05	0.61
Self-structure coordination	19.03±1.88	25.73±2.08	-6.37	0.07	1.53	0.56	-0.25	0.33
Interpersonal affinity	24.04±2.71	18.05±1.26	3.70	0.44	0.72	0.56	-0.98	0.49
Role adaptation	24.52±1.63	23.73±4.08	1.29	0.71	-3.56	0.33	4.23	0.12
Natural intimacy	22.03±1.85	19.36±1.28	2.07	0.88	-8.23	0.82	-3.76	0.86
Sense of belief value	25.37±4.58	25.53±2.85	-0.32	0.63	0.76	0.71	-0.47	0.77
Ideal transcendence	26.71±3.62	20.41±2.66	7.24	0.79	4.03	0.46	-0.56	0.60

It can be seen from Table 6 that after the experiment, the mental health level of female college students in basketball group and table tennis group is significantly different in the sense of unity of body and mind ($p < 0.05$), the sense of role adaptation ($p < 0.05$) and two dimensions. After the experiment, there are significant differences between the students in aerobics group and the female college students in basketball group in the dimensions of interpersonal affinity, belief value and ideal transcendence. Aerobics is an aesthetic sport, which is the patent of female friends. Most women like this sport, while relatively few female college students like basketball. During the experiment, aerobics showed absolute enthusiasm, but basketball had some negative factors, but they all participated in it. Compared with before and after taking part in basketball exercise, there are significant differences in the mental health level of girls in four dimensions: anxiety, terror, paranoia and psychosexually transmitted diseases. The difference of paranoid factors is very significant.

DISCUSSION

The differences of mental health level between female college students in basketball group and table tennis group after the experiment are mainly in the latitude of physical and mental unity and the latitude of role adaptation. After the experiment, the results of the comparison between basketball group and table tennis group show that basketball is a collective sport with strong antagonism, and it is a sport that cultivates collective consciousness, unity and cooperation ability and tenacious fighting spirit. However, in the aspect of table tennis, the female college students who choose table tennis to exercise will have obvious changes in five dimensions, namely, the sense of experiment and ideal transcendence. The differences between them are very obvious, but they are basically consistent in four dimensions: the sense of unity of body and mind, the sense of self-structure coordination, the sense of interpersonal affinity and the sense of role adaptation.

By comparing the effects of swimming, basketball, running and table tennis on mental health factors, it can be seen that swimming has a

greater promotion effect on somatization, anxiety and terror factors than the other three events, and $p < 0.05$, with significant difference; The promotion effect of basketball on interpersonal factors is beyond the other three, and $p < 0.05$, which has statistical significance; Table tennis, aerobics and other projects have increased significantly. Their exercise places are generally around dormitories, classes or classrooms, etc., and the requirements for the venues are relatively simple, especially aerobics and sports dance. As long as there is music, students can dance and their enthusiasm for exercise is gradually improved. Aerobics is carried out under the leadership of professional aerobics teachers, accompanied by fast-paced and powerful music. It is full of cheerful, progressive and passionate environment, and also has certain requirements for individual coordination and rhythm. If you change to high school students and junior high school students, the results may be different. Under normal circumstances, the willpower of girls is stronger than that of boys, so the endurance of girls' exercise is much better than that of boys. Thirdly, the requirements for boys may be higher in terms of physical test standards, which leads to a generally lower level of physical health.

From the perspective of exercise intensity, the number of students who choose moderate sweating is the highest, while among the students with moderate sweating intensity, the number of girls is more than that of boys, and among the students who choose sweat intensity, there are more boys than girls. The main content of belief value dimension is the individual's grasp of life goal, meaning of life and future. I think aerobics is an aesthetic sport, which is the patent of female friends. Most women like this sport, but relatively few female college students like basketball. Although there are more public courses and professional courses arranged for the first-year students in the teaching plan, they have less entertainment in their spare time and may participate in sports activities in their limited spare time [17]. According to the analysis of experimental results, basketball is a collective sport with strong antagonism, and it is a sport that cultivates collective consciousness, unity and cooperation ability and tenacious fighting spirit. Table tennis is an individual sport (with the

exception of doubles), which mainly emphasizes personal awareness. The reason why physical exercise improves health is well known, but the physical health of non-physical education majors is worrying because of their heavy learning tasks, lack of willpower and good habits of lasting exercise, etc.

Conclusions

(1) Students' strength, endurance, speed, flexibility, etc. can be helped by aerobics, table tennis, badminton and basketball exercises. Among them, aerobics and badminton can obviously improve students' physical quality.

(2) By comparing the mental health status of college students with different sports habits, we can find that there are significant differences between the general mental health status of college students who often take part in physical exercise, those who do not often take part in physical exercise and those who do not take part in physical exercise, which shows that taking part in physical exercise can effectively improve the mental health status of college students.

(3) The impact of aerobics exercise on female college students' mental health is mainly in three dimensions: self-respect, balance of personality structure and natural affinity. The impact of basketball exercise on female college students' mental health is mainly reflected in five dimensions: physical and mental unity, self-structure coordination, interpersonal affinity, natural affinity and belief value. However, different projects have different influences on the mental health of female universities. We conclude that the mental health difference of female universities before and after choosing aerobics exercise is very obvious. After analysis, we think that after long-term aerobics exercise, their inner feelings can be vented to a certain extent, and their bodies can stretch freely. There is no significant difference in basketball, but there is a significant difference in aerobics, which may be related to girls' preference for aerobics.

(4) Different sports events have certain influence on the mental health level of female college students. The three sports have different influences on each dimension of mental health level, and aerobics exercise has a particularly promi

nent influence on female college students' mental health. Long-term aerobics exercise can fully vent feelings, freely stretch the body, cheer and be happy, thus relaxing the tired state of mind and better achieving the effect of entertaining body and mind.

Suggestions

This study shows that taking part in physical exercise can promote the physical and mental health of female college students. Educational management departments and universities should attach importance to and strengthen the construction of physical education and health courses, include mental health education in the course construction, enrich the teaching objectives of physical education, adjust the syllabus and teaching materials of physical education, and establish a scientific, systematic and comprehensive structure of physical education courses, which is conducive to correctly guiding the practical activities of physical education and health teaching and enhancing the awareness of physical health of college students. When college students face pressure, what factors can prompt them to actively participate in physical exercise to relieve pressure? Different forms of physical exercise have a significant impact on which stressors, which is an important topic to be studied in the future. Construct the content system of mental health education, and infiltrate it into all school work. According to the stage and continuity of individual psychological quality development, construct the content system of mental health education, and infiltrate it into all school work. It is suggested that the teaching hours of these two kinds of exercises should be increased in college physical education, so that students can better master the skills needed for self-exercise, so that they can make better use of the sports knowledge and skills they have mastered to exercise themselves in their spare time.

Teaching in physical education class should be targeted, and courses that are unnecessary need not be offered, which wastes resources and space. To set up the students' needs, we should set up relevant courses according to the needs of students' physical needs in their jobs. Therefore, schools and teachers should recognize the value of

physical exercise, combine the functions of physical exercise, encourage and suggest more students to join in extracurricular physical exercise, and let college students develop the habit of self-conscious exercise, especially the female college students' awareness of exercise needs to be improved. Everyone has different experiences, so their psychological problems may be different. Therefore, according to different individuals' ages, experiences and their own psychological conditions, we should choose suitable sports to exercise, so as to improve their psychological conditions and mental health more quickly. Let them participate in physical exercise in various ways, purposefully, organized and planned, so that physical exercise can become a sharp weapon to improve mental health. At the same time, students' interest in participating sports should be fully considered in such activities.

From the characteristics of the project, aerobics and basketball are more suitable for the age characteristics of female college students, and have better effects on the mental health of female college students. Therefore, according to the psychological characteristics of college students at the present stage, schools should offer some lectures on mental health of college students, so that students can treat mental health problems with a correct attitude and give full play to the role of psychological counseling room in schools. According to the characteristics, we should choose relevant sports as our own exercise items, and teachers' guidance should be targeted to benefit students and develop good exercise habits. It is suggested to strengthen the mental health education in women's colleges and take practical measures. Schools should take corresponding measures to strengthen their mental health. In addition, they are encouraged to take part in more sports, add a certain amount of fitness equipment in schools to ensure their exercise quantity and exercise quality, so as to provide them with psychological health assistance and improve their psychological health level.

Human Subjects Approval Statement

This paper did not include human subjects.

Conflict of Interest Disclosure Statement

None declared.

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