

Study of the Effects of Physical Activity on the Mental Health of College Students in the Context of the Post Epidemic Era

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Abstract

Modern college students are in an information age with strong competitiveness and challenges, and college students encounter a society with vibrant and various pressures, opportunities and dangers, many choices for future life and more confusion, which makes the modern college students' own psychological barriers more and more prominent, the use of literature and data method, questionnaire survey method to analyze the current situation of college students' mental health, participation in sports and the understanding of the importance of mental health education in the physical education classroom. Using literature method and questionnaire survey method, we mainly analyze the current situation of college students' mental health, the current situation of participating in sports and the awareness of paying attention to mental health education in sports classroom, and put forward corresponding suggestions on the basis of which, we hope to provide certain reference for other colleges and universities to pay attention to the mental health education in sports.

Keywords

Physical Activity; Mental Health; Impact Study; Logistic Regression.

1. Introduction

With the rapid development of society, students' learning pressure and social pressure are gradually increasing, and only with a healthy body and mind can they better cope with the pressure of their studies and social pressure, and a healthy body and mind is conducive to college students' pursuit of happiness in life. Sports can help college students to develop physically and mentally, and as the main position for cultivating successors of the socialist cause, colleges and universities should carry out colorful sports activities to guide college students to have positive and healthy psychological and physiological states through sports training, and to deal with learning, life and employment problems with an optimistic mindset. Positive psychology concepts should be integrated into sports teaching activities in colleges and universities to make students realize the role of physical exercise in mental health, promote the development of good character of college students through sports activities, and cultivate the positive and aggressive personality of college students.

Active participation in sports has a direct effect on college students' ability to overcome certain psychological problems and establish a positive attitude towards life. Some college students have a certain degree of social psychological disorders, such as social phobia. People belong to social animals, need to find a sense of belonging and security in group activities, long-term social activities will lead to further deterioration of social psychological disorders, so that students with social psychological disorders fall into a kind of self-doubt and self-denial of the psychological state. Students with psychosocial disorders are prone to lack of self-confidence,

have difficulty in expressing themselves in social activities, and even deliberately avoid normal social activities, which has many negative effects on their lives, studies and work. Even when participating in simple social activities, students with social psychology disorder need to carry out complex psychological construction, and will repeatedly simulate the social scene in their hearts, assess the possible problems that may arise in the social activities, and then design a response plan for the problems in their hearts. When it is difficult to gather the courage to carry out social activities, it is easy for new social changes to lead to socially awkward situations and worsen the situation of social psychological disorders. Sports activities have a more obvious effect on the alleviation of social psychological disorders, especially sports activities with outstanding group characteristics, which pay great attention to the interactive communication in the process of sports, and can provide a richer social scene for overcoming social psychological disorders. People who love sports usually have a more cheerful personality, relatively less delicate, interactive character features outstanding and strong willingness to take the initiative to socialize, their social active behavior is very valuable for people with social fear, through constant social interaction can provide a good opportunity for social psychological disorder college students to overcome social fear. Sports have unique significance for the physical and mental health growth of college students. Integrating the concept of positive psychology into college sports can guide students to develop a positive sports psychology and attitude, form a good character, promote personality improvement, and become a modern intellectual who knows how to cherish life and pursue happiness[1].

It is very important to cultivate the enthusiasm of college students to participate in sports; if college students do not participate in sports, the mental health education activities in sports cannot be carried out. Traditional sports for college students are relatively single in content, generally focusing on track and field and ball games, which are not attractive to college students[2]. As young people, college students are more interested in fashionable sports, such as outdoor cycling, rock climbing, swimming, street dance, etc., and they are more willing to participate. Colleges and universities should actively introduce rich sports curriculum content to attract more college students to actively participate in sports, and in the process of sports physical education teachers can be moderately integrated into some mental health education concepts.

2. Content of the Study

2.1. Objects of Study

Anhui University of Finance and Economics (AUFE) randomly selected 1,000 students from freshman to senior year.

2.2. Research Tools

Sampling adequacy test (KMO) and Bartlett's spherical test were required. The questionnaire was analyzed by KMO test and Bartlett's spherical test using SPSS software so as to verify the significance of the magnitude of commonality between the items. The results of their tests are shown in Table 1 below:

Table 1. KMO test table

	KMO test value	0.802
Bartlett's test of sphericity	Cardinality of last reading	571.613
	(number of) degrees of freedom (physics)	21
	significance	.002

In the above spherical test, the KMO test value is 0.802 which is greater than 0.6 and meets the statistical significance. In addition Bartlett's spherical test value is 571.613 with p-value less than 0.005. thus, the questionnaire has structural validity and there are common factors present which can be factor analyzed[3].

We guessed that there is a correlation between physical activity and to mental health, so we conducted a chi-square test and the results are shown in Table 2:

Table 2. chi-square test

	(be) worth	(number of) degrees of freedom (physics)	Progressive significance (bilateral)
Pearson's chi-square	470.177a	12	0.000
likelihood ratio	279.264	12	0.000
Number of active cases	1326		
a. 1 cell (5.0%) has a desired count of less than 5. The minimum desired count is 4.26.			

As can be seen in Table 2, the Person's chi-square independence test corresponds to a P-value = 0.000 < 0.05, which is the rejection of the original hypothesis, then it is considered that physical activity with its significant effect on mental health.

3. Experimental Procedure

3.1. Data Collection and Organization

Data on age, gender, physical education performance, and mental health scores for 1000 students.

3.2. Statistics and Analysis

Logistic Regression (Logistic Regression) is a multivariate analysis method to study the relationship between the dependent variable as a dichotomous or multichotomous observation and the influencing factors (independent variables), which is a probabilistic nonlinear regression.

Classification of Logistic Regression.

Bicategorical Logistic Regression: The information that the dependent variable is two categorical variables can be analyzed by unconditional logistic regression and conditional logistic regression. Unconditional logistic regression is mostly used in unmatched or cohort studies, and conditional logistic regression is mostly used in paired or matched data.

Multi-categorical Logistic Regression: The dependent variable is multi-categorical information, which can be analyzed by Multi-categorical Logistic Regression Model or Ordered Categorical Logistic Regression Model.

Suppose that if there is a linear relationship between the dependent variable Y and the independent variable x, then the linear function affecting the probability of an event is as follows:

$$Y = \alpha + \beta_1 x_i \tag{1}$$

where x_i is the independent variable, Y is the dependent variable, α is the intercept term, and β_1 is the regression coefficient.

When binary logistic regression is used, its actual analysis is to study the effect of X on Y, and Y is dichotomous data, such as whether or not they are willing to buy the product, whether or not they like it, and whether or not they buy the live banded item. The number 1 stands for YES and the number 0 stands for NO.

Since the dependent variable is a dichotomous variable of type 0-1, with Y=1 indicating that the event occurs (i.e., willingness to segregate household waste) and Y=0 indicating that the event does not occur (i.e., unwillingness to segregate household waste)[4], it has a zero-mean heteroskedasticity and no longer satisfies the basic assumptions of the linear regression equation. Therefore, the Logistic function is required.

$$\ln\left(\frac{P}{1-P}\right) = \theta_0 + \theta_1 X_1 + \theta_2 X_2 + \dots + \theta_n X_n \quad (2)$$

MSE (Mean Square Error): The expected value of the square of the difference between the predicted and actual values. The smaller the value, the more accurate the model is. RMSE (Root Mean Square Error) :The square root of the MSE, the smaller the value, the more accurate the model is. MAE (Mean Absolute Error) :The average of the absolute errors, which reflects the actual situation of the prediction errors. The smaller the value, the more accurate the model is. MAPE (Mean Absolute Percentage Error) :It is a distortion of MAE, it is a percentage value. The smaller the value, the more accurate the model. R² MAPE (Mean Absolute Percentage Error) : Compares the predicted values to the case where only the mean is used, and the closer the result is to 1, the more accurate the model is[5].

3.3. Experimental Results

Based on the data analysis, we found that there is no relationship between the gender of the respondents for mental health, i.e., gender can not be used as a standard for judging the degree of mental health; there is a significant relationship between age for the understanding of express packaging recycling, and the degree of physical activity for mental health is significantly higher than that for other age groups in a specific age group, specifically in the age group of 18 to 21, which is much more profound for mental health than other age groups in the research; and the data results show that the influence of physical activity on mental health is positive, i.e., the more physical activity, the more mental health[6]. In this research, compared with other age groups, the degree of mental health is more profound; and the data results show that the impact of physical activity behavior on mental health is positive, that is, the more physical activity, the better the mental health.

4. Analysis and Conclusions of the Study

4.1. Conclusion

The data show that almost half of the people sometimes take the initiative to learn about physical exercise and mental health and national policies, some often go to learn about it, a small number occasionally, and a few do not. On the whole, the situation is relatively optimistic, and people will more or less learn about physical exercise and mental health through various platforms and media, which is also conducive to the inheritance and development of physical exercise and mental health. Policies related to physical exercise and mental health issued by the state must be an appropriate judgment of physical exercise and mental health itself and the reality, in order to protect the existing physical exercise and mental health. From a practical point of view, physical exercise and mental health run through our lives, and it is important to understand their direction for our economic, social and cultural development. This shows that as a citizen under socialism, there are certain responsibilities and obligations to fulfill. Most

people believe that people have a more important attitude towards physical exercise and mental health, which is closely related to our national conditions and traditional Chinese virtues. Influenced by traditional culture and modern education, physical exercise and mental health is always a topic of study, and the significance of physical exercise and mental health to modern society is even more prominent. Therefore, in the family, people also emphasize the promotion of the spirit of physical exercise and mental health. However, it should not be ignored that there are still a small number of people who do not feel or do not value physical exercise and mental health at all, which shows that there are still loopholes in modern education that need to be improved and developed to guide people to emphasize the essence of culture and promote physical exercise and mental health. Respondents willing to actively support the development of physical exercise and mental health accounted for 43.9% of the total number of respondents in the survey; 50.41% of residents could consider responding to physical exercise and mental health if given the opportunity; in addition, 5.69% of residents believed that the development of this policy is the responsibility of the relevant departments and has nothing to do with them. The results of the survey show that a very small number of respondents have an attitude of "not caring about their own business". Overall, the subjective initiative of residents in responding to the policy on physical exercise and mental health is relatively high, but the number of people who explicitly express their active support for the policy still needs to be improved.

The contemporary value of physical exercise for the mental health of young people lies in the following: firstly, physically, it promotes healthy growth: physical exercise is both the foundation of young people's physical health and the guarantee of their mental health, which helps them to grow up in an all-rounded and healthy way. Secondly, it shapes a positive personality psychologically: through physical exercise, young people can cultivate positive personality traits such as perseverance, courage and hard work, and unity and cooperation. Then, from the perspective of contributing to society, it can cultivate a sense of social responsibility: physical exercise can enhance young people's sense of teamwork and collective honor, and cultivate their sense of social responsibility and dedication.

4.2. Analysis and Discussion

Physical education in colleges and universities should re-examine its own problems, and remember to treat college students and require them to have high or low sports skills, overly rational requirements, and utilitarian ideas. Instead, they should be allowed to jump out of the pure technical education of sports competition through effective physical education, pay more attention to their own will, cultivate students' interests and hobbies in sports, and lead them to relax their body and mind through physical exercise, and give students more opportunities for self-expression and transcendence. Give students more opportunities to show themselves and transcend[7].

University physical education should be carried out in the overall development of students as a starting point, teachers in the teaching of sports knowledge at the same time, should guide the students to pay attention to their own interests, to stimulate their potential sports cells, so that they take the initiative to accept the physical exercise, and actively shaping a healthy mind and a sound personality. Therefore, colleges and universities should reposition the concept of physical education, the function of the sports organization to the supervision, service-oriented to change; education management system to the humane, democratic to change; teaching methods need to be indoctrinated by the past, training to the indoctrination, infection and guidance to change.

University physical education can make use of local resources, with the help of the local sports culture of the people so that students can participate in physical education to produce cultural identity and resonance, more conducive to the popularization of sports culture and physical

exercise. At present, physical exercise is not only limited to running, basketball, soccer and other traditional sports, but also some new, niche sports, such as waist drum team, maze orienteering, archery, dragon boat racing, etc., are compatible with local culture, popular with the local people's favorite sports, which fully demonstrates the people-oriented university physical education. Strengthen the construction of teachers and improve the ability of physical education teachers to cultivate humanism. In order to fully demonstrate humanistic care and reasonably guide students to physical exercise, university teachers must have good professionalism and teaching ability, and only if teachers set an example and improve their professionalism in humanistic care, can they better practice the concept of human-centered education[8].

4.2.1. Measures for the Prevention of Mental Health among University Students after a Major Health Event

(i) School level

The capacity for risk constructed by social diseases may produce a wide range of threats under certain conditions. This risk triggers adolescents' awareness of risk, allowing them to develop a consensus in the face of risk and to generate risk perceptions in order to avoid it. During social disorders, adolescents experience an increase in sedentary time and a decrease in physical activity, which may lead them to develop high levels of anxiety. In addition, due to the adoption of online teaching models in schools at all levels, screen time invariably increases when students study in dormitories, and excessive screen-based recreation time also becomes a risk factor for anxiety in adolescents. However, physical exercise has been proven to be effective in alleviating adverse psychological states such as tension and anxiety triggered by public crisis events. Therefore, appropriate physical exercise is recommended as a way to regulate individual mental health during this special period.

(ii) Student level

① Adjustment of self-perception

In the early stage of public health emergencies, college students usually experience nervousness, anxiety, restlessness, insomnia and other phenomena. First of all, college students should realize that these phenomena are very normal, not only will they appear these conditions, others will also appear, de-personalization of the understanding will allow college students to be in the collective, reducing unnecessary panic. Secondly, positive self-regulation, i.e., internal and external regulation. Cognitive patterns determine our emotional state, and by changing cognition internally, we can change our emotions by changing unfavorable ideas. While adjusting our internal cognition, we can get support and help from external social resources such as family, friends and experts.

② Pieces of self-regulation of emotions

When a negative emotion occurs, being able to recognize and accept it in time is the basis for regulating emotions. Many college students will choose to escape or confront when facing negative emotions, such as pouring out sorrows with alcohol, closing themselves off or even self-harming, which will only make college students fall into the emotional quagmire and be unable to extricate themselves. Therefore, acknowledge their emotions and accept it, feel it, and make a more rational, complete and realistic judgment by shifting attention and positive self-suggestion.

4.2.2. Ideas and Suggestions for the Future Development of Physical Education in Colleges and Universities

① Fully respect students' individuality

Because of their own growth experience and personality concepts are different, individual differences in students is inevitable, students choose, the love of sports is not the same, teachers

should fully respect each student's interests and hobbies, to accept their different personalities, according to their own choices to carry out sports, even if it is the same sports, do not have to use students, the amount of suitable exercise is not the same, teachers should accept their differences to carry out reasonable physical exercise. Teachers should accept their differences and conduct reasonable physical exercise.

② Building a harmonious and democratic teacher-student relationship

College students have matured both physiologically and psychologically, formed their own way of thinking, and have their own ideas about physical exercise, students as independent individuals, they are equal to teachers in terms of personality. So teachers in full respect for the students' personality at the same time, but also should be on the students in the process of the movement of mistakes with tolerance, not too much to force them to reach a certain level, the exercise process should be gradual and orderly, to promote the guidance of education, instead of supervisory education, in a good learning and communication in the feeling of democracy and harmony, so that the students feel humane, to build a harmonious and democratic relationship between teachers and students.

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