Scholar Publishing Group
International Journal of Neural Network
https://doi.org/10.38007/NN.2022.030203
ISSN 2790-2692 Vol. 3, Issue 2: 19-26

The Intervention of Basketball with Deep Learning on College Students' Mental Health

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Keywords: Deep Learning, Basketball Teaching, Mental Health, Mental Quality

Abstract: College students (CS) often have lofty ideals. In order to realize their pursuits, they have to face many challenges, and at the same time, they will also bear more pressure, resulting in MH problems. Basketball is an important part of sports. It attracts the majority of CS to participate in it with its characteristics of entertainment and fitness. When CS participates in basketball, they can not only enhance their PF, but also cultivate their psychological qualities of tenacious protection, unity, friendship, and courage. Therefore, studying the impact of basketball on CS' mental health (MH) can provide more ideas and theoretical basis for the research on the relationship between basketball and CS' MH. In the experiment of this paper, teachers should integrate the concept of deep learning in basketball teaching class to maximize the teaching effect. After comparing the MH indicators and physical fitness (PF) scores of the students before and after the experiment, it was found that the psychological status of the students in the experimental group(EG) was significantly improved.

1. Introduction

As a knowledgeable and high-quality social high-level talent, the healthy development of the body, mind and personality of CS has an extremely important influence on the construction of social material civilization, spiritual civilization and the future development of the country. With the continuous development of society, various challenges and pressures need to be faced by CS. Through social surveys, it is found that the MH level of other groups in the society is higher than that of CS of the same age. Therefore, both society and schools should pay enough attention to the MH of CS [1-2].

At present, many scholars have carried out related research on the promotion of CS' MH by basketball. For example, a scholar focused on the impact of basketball on the psychological quality

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of students, put forward the psychological status of contemporary students, and sought ways to promote the healthy growth of students' MH in view of the existing problems. The effective method of psychological quality can create a happy, upward, confident, positive and healthy state of mind [3]. Some studies have pointed out that the invention of basketball is to allow students to participate more in basketball through physical exercise, so that students can improve their physical, psychological and social adaptation, and improve their physical and MH and interpersonal skills. Communication is better developed. Some scholars have summed up the reasons for psychological problems, such as study pressure, interpersonal communication, employment pressure, without taking effective measures, students are prone to anxiety and depression, and basketball promotes the development of students' MH with its entertainment and competition. Effectively regulate students' psychological pressure problems [4-5]. From these research results, basketball has a positive effect on MH.

Through the analysis experiment that basketball can interfere with students' MH, this paper shows that basketball can improve students' psychological problems from the aspects of psychology, PF and team spirit. Basketball provides a wider space for students' interpersonal communication. Relationships enable students to better overcome anxiety, shyness, and establish good self-confidence.

2. Research on the Promotion of MH by Basketball Based on Deep Learning

2.1. The Current Situation of MH of CS

(1) Weak self-care ability

Before going to university, many students were cared for by their parents and lacked the experience of independent living. After entering university, students lacked support in life and psychology, and lacked self-care ability. Facing a new environment and new problems, they all It is necessary to solve it independently, especially in the face of increasingly fierce market competition, which increases the psychological pressure of many CS [6-7].

(2) Self-evaluation is too high or too low

Because CS study and live in a small range in school, they still lack a certain understanding of social life and interpersonal communication. CS sometimes have a higher sense of superiority, but when faced with difficulties, they dare not face it bravely, resulting in a sense of inferiority. This complex emotion of self-confidence and self-doubt often has a negative impact on the MH of CS. influence [8-9].

Self-evaluation is too high, arrogant and conceited, and low-minded, this is the evaluation of many people on today's CS. CS with this kind of mentality consider themselves to be the favored sons of heaven. Generally, their families and living conditions are relatively superior since childhood. Extreme, that is, low self-esteem, self-defeating [10].

There is also some CS, due to various reasons, their self-evaluation is too low, and their inferiority complex is strong. Students with this mentality generally have poor conditions in various aspects or have encountered major changes, and always show malaise and lack of self-confidence [11].

(3) Lack of communication experience and communication skills

Entering the university stage, university life is more complicated and socialized than the previous life experience. Before entering university, some students put their energy on their studies, but after university they need to communicate frequently with others. This process will make students feel tense and uncomfortable, and make them fall into the predicament of interpersonal relationships [12].

2.2. Basketball Teaching Integrating Deep Learning

The concept of deep learning not only respects the teaching rules, but also optimizes the modern learning concept [13]. Deep learning is not surface learning; it requires students' self-study and teacher's guidance to complement each other in the learning process. Applying deep learning to basketball teaching and promoting students' MH through basketball is one of the goals of basketball teaching [14].

In-depth teaching is also related to the teaching environment. Due to changes in the environment and methods, people's attention and interest can often be aroused. Changing the teaching environment and enhancing the freshness of students is an effective way to attract students to participate in sports, which will make students forget their fatigue. According to the actual situation, choose the best exercise time, find joy in sports, and complete teaching tasks in a cheerful atmosphere to relax. The purpose of mood [15]. Create a relaxed class atmosphere, so that students can release their emotions in this teaching environment, put aside the emotions that oppress the cranial nerves, and feel comfortable physically and mentally after exercise [16].

3. Intervention Experimental Research

3.1. Research Methods

The 150 CS were divided into two groups, the EG A and the control group(CG) B. The grouping situation is shown in Figure 1. Different basketball interventions were implemented for these two groups of students. The students in the EG participated in basketball club activities 2-3 times a week, and participated in basketball for more than 1 hour almost every day. The students in the CG did not participate in any basketball-related activities except for the weekly 2-knot basketball teaching class. The experimental process lasted for 3 months. Before the experiment, students were given a MH test and a PF test. After the experiment, a MH test and a PF test were conducted to compare the test results before and after the test.

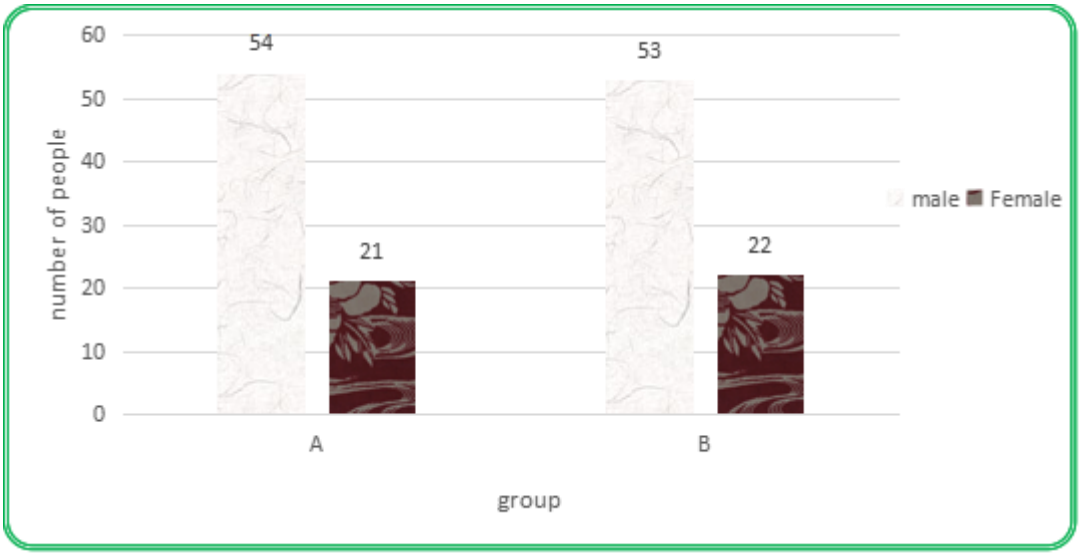

Figure 1. The structure of the two groups of male and female students

3.2. Data Verification

In this paper, the T-test method is used to test whether there is a significant difference(SD) between the data of group A and group B. Assuming that n is the number of samples, μ is the

sample mean(SM), s is the sample standard deviation, and $\bar{x}$ is the SM, then the t distribution formula is shown in (1).

$$t = \frac{\bar{x} - \mu}{s / \sqrt{n}} \tag{1}$$

The probability density formula corresponding to the t distribution is shown in (2).

$$f(t) = \frac{\Gamma((h+1)/2}{\sqrt{h\pi}\Gamma(h/2)}(1+t^2/h)^{-(h+1)/2} \tag{2}$$

Among them, h=n-1 is called the degree of freedom, and Γ is the gamma function.

4. Analysis of Experimental Results

4.1. The Average Value of MH Indicators

Table 1. Test of various indicators of MH before the experiment

	A	B	T	P
Somatization	1.67	1.62	0.127	0.674
Obsessive-compulsive disorder	1.54	1.55	-0.134	0.358
Interpersonal relationship	1.87	1.82	-0.241	0.249
Depression	1.76	1.75	0.104	0.415
Anxiety	1.81	1.83	-1.175	0.833
Hostility	1.56	1.53	-0.263	0.714
Fear	1.56	1.59	1.352	0.267
Paranoid	1.61	1.57	1.284	0.662
Psychotic	1.47	1.46	0.319	0.153

In Table 1, the following conclusions can be drawn: Before the start of the test, the number of students in the EG and the CG was basically equal, and there was no SD in the average values of the psychological health indicators of the students in each group. The balance of the groups shows that the MH status of CS is not very different, and the sample size of each group is 75 (belonging to a large sample), which basically eliminates the differences between groups that may be caused by individual differences. This basically eliminates the interference to the experimental effect caused by grouping, and provides a powerful precondition for the analysis of the experimental effect after the experiment.

Table 2. Test of various indicators of MH after the experiment

	A	B	T	P
Somatization	1.58	1.60	-0.253	0.048
Obsessive-compulsive disorder	1.43	1.51	-0.037	0.035
Interpersonal relationship	1.34	1.69	-0.182	0.027
Depression	1.42	1.76	-2.647	0.008
Anxiety	1.45	1.77	-0.158	0.016
Hostility	1.43	1.49	-1.347	0.034
Fear	1.51	1.56	-0.609	0.072
Paranoid	1.37	1.54	-0.148	0.143
Psychotic	1.40	1.45	-2.351	0.089

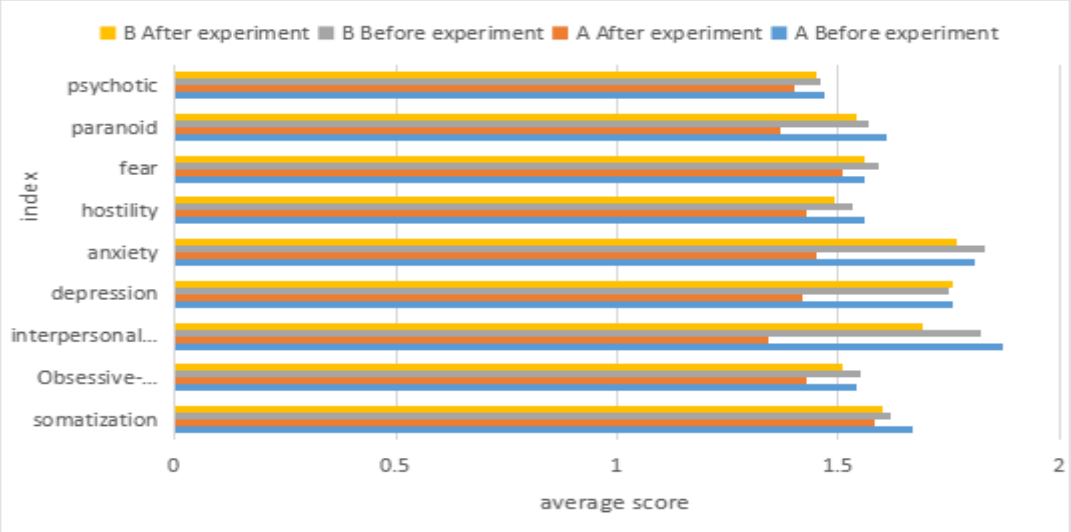

Figure 2. Comparison of test values of MH indicators before and after the experiment

According to the comparison results in Table 2 and Figure 2, after the test, the scores of each index of the EG and the CG decreased, and the value of the experimental components decreased more obviously. In addition to the fear factor, paranoid factor, psychotic factor and other deep MH factors, the improvement is not very obvious (P value is greater than 0.05), the improvement of basketball includes somatization factor, obsessive-compulsive factor, interpersonal factor, depression factor The psychological health status of CS, including most indicators such as anxiety factor, hostility factor, etc., has a significant effect (P value is less than 0.05).

4.2. Average PF Test Scores

Table 3. PF scores before the test

	A	B	t	P
50m run(s)	7.88	7.93	8.245	0.638
Standing long jump (m)	2.21	2.24	3.427	0.315
Forward Bend (cm)	6.34	6.26	6.533	0.142
Grip strength (kg)	35.35	35.81	7.482	0.203
lung capacity	54.36	53.97	5.557	0.182

According to Table 3, before the experiment, the PF test scores of the CG and the EG were similar, and the P values were all greater than 0.05, indicating that there was no SD in the PF scores of the two groups of students, that is, the PF status of CS was not significantly different.

Table 4. PF scores after the test

	Test group	CG	T	P
50m run(s)	7.21	7.76	5.647	0.002
Standing long jump (cm)	2.39	2.31	3.586	0.013
Forward Bend (cm)	7.13	6.45	7.209	0.007
Grip strength (kg)	38.44	36.67	3.413	0.005
Lung capacity	57.64	54.18	5.335	0.004

Comparing the results in Table 3 and Table 4, it can be seen that after the experiment, the

physical test scores of the EG and the CG have improved, and the scores of the EG have improved more significantly. There was a SD between the two groups (P value less than 0.05). Therefore, basketball can release the pressure of learning through sports by enhancing students' PF.

4.3. The Impact of Basketball on the MH of CS

(1) Influence on the MH of CS from the perspective of psychology

The above experimental results reflect that participation in basketball has significantly improved the data of some factors of the students in the EG, especially anxiety, interpersonal sensitivity, depression, paranoia, obsessive-compulsive and other factors, thus improving the psychological health of the students in the EG. Basketball provides CS with a good platform for interpersonal communication. Through basketball, they can make more new friends and make the interpersonal environment more extensive. Basketball requires the unity of students, mutual trust in team ball games. Each student recognizes the team spirit, everyone cooperates with each other, makes progress together, pursues victory, and narrows the distance between people, thereby strengthening the communication and interaction between people, the pressure is relieved, and the formation of good relationship. Basketball games also require team members to have a sense of cooperation and a spirit of collectivism, and to trust and encourage each other to achieve success [17]. Students connect themselves with the collective and form a strong sense of collective honor. Everyone fulfills their responsibilities, advances and retreats together, and restrains themselves, and at the same time, they can actively listen to the opinions of others, and are willing to communicate with others and seek help after the incident. and OCD symptoms. For the mistakes, everyone timely feedback, and help him solve, so that the psychological environment of CS can be improved.

(2) The impact of the test on the MH of CS

The PF test is a PF test for CS stipulated by the Ministry of Education. Once a year, only those who pass the test can get a graduation certificate. Therefore, the PF test results are closely related to CS. The PF test scores of the students in the EG participating in basketball were significantly better than those in the CG. Students participating in basketball are in a good mental state, active in learning, strong in interest, and active in thinking; basketball is loved by students, and their PF is enhanced through basketball, so that students have more energy to study and relieve the tension of learning It has a positive impact on students' confidence, releases learning pressure, and has a positive impact on improving MH [18].

(3) The influence of team spirit on the MH of CS

Basketball pays attention to cooperation. Only the close cooperation and common progress among teammates can win the team, thus establishing a good atmosphere of mutual assistance, mutual encouragement, mutual learning and mutual advancement among the team members. Friendship, effectively promote the improvement of performance. Students have strengthened their cohesion, controlled their own behavior and emotions, and considered more before encountering an accident. The improvement of personal behavior will enhance communication, improve interpersonal relationships liven up the atmosphere and release stress and depression. While participating in sports, students can see their own progress and accumulate experience, thus affecting the students' psychology. Because of the improvement of grades, students' confidence and enthusiasm are enhanced, learning in happiness, progress in happiness, emotional optimism, and reducing anxiety relieving stress. In physical education, a stable mental state can be achieved and a virtuous circle of MH can be promoted.

5. Conclusion

The psychological development of CS is immature and belongs to the developmental period. In

the process of study, life and social interaction, they will have anxiety, depression and other negative emotions due to various pressures, which will affect the mood of CS and affect their study, life and MH development has a certain impact. Basketball is entertaining and social, and is one of the sports that students love very much. In the process of basketball, students can communicate with each other and cooperate with each other. Participants can learn about each player and various environments on the court through basketball games, integrate into the group as soon as possible, and are accepted by others. In the cooperation with teammates, they have been recognized by teammates, and in mutual learning and mutual communication, they have promoted the friendship between classmates. Every team member got happiness from basketball, released pressure, relieved depression, and gained a sense of accomplishment. The research experiment in this paper also proves that basketball can make students' MH develop in a good direction.

Funding

This article is not supported by any foundation.

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.

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