INHIBITING EFFECT OF SPORTS THERAPY ON DEPRESSION

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Abstract

Under the rapid pace of life and intense competition, depression has become a leading mental illness in modern society, exerting a severe negative effect on life and health. Sports is an important way to alleviate depression and improve psychological adaptation. Therefore, this paper aims to verify the inhibition of sports therapy on depression. A total of 100 students were selected from a university in northern China's Hebei Province, and subjected to a one-semester intervention treatment with yoga. Taking this sports item as the only independent variable, the depression states of the students in the test group and the control group were evaluated before and after the treatment, against the Zung Self-Rating Anxiety Scale (SAS) and Self-Rating Depression Scale (SDS). The results show that the mean scores of SAS and SDS for the test group plunged deeply through the treatment, while those for the control group had no significant changes. The research results confirm that sports therapy inhibits depression, and highlight the necessity to treat depressed college students with this therapy.

Key words: Sports Participation Therapy, Psychological Depression, Inhibitory Effect, Empirical Experiment, Significant Difference.

INTRODUCTION

According to statistics, 13% of college students in China have mental illness at different levels, and serious mental illness can cause different degrees of depression symptoms, even college student’s suicides. Depression has become a major disease affecting the physical and mental development of Chinese college students (Nie, Zhang, & Liu, 2017; Beiter, Nash, Mccrady et al., 2015). In order to protect the physical and mental health of college students, especially mental health, it is imperative to study the prevention and control of mental illness and the treatment of depressive symptoms in college students (Jin, Tang, Ma et al., 2009; McNeely, Mayberg, Lozano et al., 2013).

As a kind of mental illness, depression has been neglected in China for a long time, and the related study of depression has lagged behind relatively in China, because of the view of “mental disease is not a disease” in the old-fashioned concept. In recent years, due to mental diseases such as depression, there have occurred some incidents, bringing huge losses to individuals, families, and society. With these incidents spread around by Internet, the concern about the depression has increased year by year, and the treatment and related research of depression have also gradually enriched in China; the advanced and mature psychological disease test method in foreign countries has been introduced to quantitatively evaluate the patient’s depression status (Goldman, Nielsen, & Champion, 2001); the advanced antidepressant drugs have been imported to effectively treat patients with depression in China; mental health education-related courses and mental health clinics etc. have been established on university campus (Schoenbaum, Unützer, McCaffrey et al., 2002).

The main treatment methods of depression include drug therapy, psychological counselling, electroconvulsive shock, etc., while the physical sports as adjunctive method for relieving depressive symptoms has become a new hotspot...
in the field of mental health research (Nutting, Rost, Dickinson et al., 2002). In this paper, taking 100 college students with mild mental health problems in a university of Hebei Province as objects of experimental research, the one-semester experiment of sports participation therapy was conducted. Sports yoga was selected as a sports therapy, and a comparative analysis was performed about the inhibitory effect of sports participation therapy on depressive symptoms before and after the intervention experiment.

**OVERVIEW OF DEPRESSION THEORY**

**Definition, manifestation and characteristics of depression**

Depression, also known as depressive disorder, is a major type of mood disorder. The clinical manifestations of depression patients include: 1) Low mood: loss of interest in things, low mood, and low motivation of life; 2) Slow thinking: Slow response, occlusion of mind, and slowing of speech rate, etc.; 3) Decreased cognitive function: decreased memory and attention, poor learning ability, and reduced flexibility, etc.; 4) Physical symptoms: insomnia, loss of appetite, weight loss, poor physical fitness, et al. (Drayer, Piraino, Reynolds et al., 2006; Adams, & Moon, 2009).

Figure 1 shows the characteristics of depression. Because of these characteristics, it’s predicted in the latest WHO health report that depression will become the second largest disease worldwide by 2020.

**Sports participation therapy of depression**

Depression has been identified as a brain developmental disease by scientists in authoritative magazines and journals such as Nature, so drug therapy is still the most important and effective treatment means of depression today. However, due to the factors of treatment remission rate, and drug resistance, such a treatment method has only about 30% of the cure rate in clinical applications, and the treatment of depression still requires the participation of diverse therapies to achieve better treatment of depression (Josefsson, Lindwall, & Archer, 2014).

At present, the main methods for treating depression include drug therapy, psychotherapy, and physical therapy. In the treatment of clinical depression, some doctors have also proposed new treatment methods such as drug-psychological combination therapy and drug-physical combination therapy, and achieved certain effects. For the purpose of enriching the treatment of depression, some scholars have also put forward the idea of inducing the emotional output of the brain through exercise, music and other methods to indirectly alleviate the symptoms of depression from the perspective of neuropsychology, and made preliminary validation by experimental research. Sports can amplify the adrenaline in the brain and blood, increase the excitability of the nervous system and inhibit the pathology of depression through sustained and regular stimulation (Chalder, Wiles, Campbell et al., 2013).

The sports participation therapy of depression summarized in the current study is classified as shown in Table 1.
Table 1. Sports participation therapy classification

| The first category          | The seconds category          | Description                                                                 |
|----------------------------|-------------------------------|------------------------------------------------------------------------------|
| Collective movement        | Dance class movement          | Through solidarity and cooperation with other people,                         |
|                            | Aerobics class movement       | to build confidence, excitement, thereby improving the symptoms              |
|                            | Ball sports                   |                                                                              |
| Aerobic exercise           | Jogging, climbing, etc.       | Aerobic exercise can improve mood and reduce stress,                           |
|                            |                               | which can reduce the anxiety state of depression. The patient adjusts the      |
|                            |                               | mood in a relaxed state, thereby reducing the symptoms of depression.        |

Sports yoga is the sub-category of aerobics. It originated in India, as an exercise method, and has been popular around the world because of its positive effects on body shaping and psychological adjustment. Sports yoga is considered to be a combination of physical and mental energy, stretching muscles and regulating the body through breathing adjustment, stretching, and squeezing (Posadzki, Cramer, Kuzdzal et al., 2014). This paper chooses sports yoga as the physical exercise of sports participation, mainly due to its dual adjustment of body and mind as well as the lower requirements of the exercise site, which is in line with the objective conditions of experiments.

EMPIRICAL STUDY ON DEPRESSION INHIBITION EFFECT

Experimental hypothesis

The experiment intends to intervene in college students with mild depression through one-semester sports yoga participation therapy. Besides, the comparison with the blank group was made to analyse the effect of physical yoga participation method on mild depression. With reference to the results of other scholars, the experiment hypothesis was made that yoga participation therapy has an inhibitory effect on depressive symptoms.

Experimental objects

Due to multiple pressures such as academics and employment, more and more Chinese college students are being diagnosed with mild depression. In this paper, college students from a university in Hebei Province were selected as experimental objects. The students in the experiment all volunteered to participate in the investigation of depressive symptoms. First, the self-rating anxiety scaling (SAS) (Table 2) and the self-rating depression scaling (SDS) (Table 3) were used to score depressive symptoms among those volunteered college students, and to screen out 100 college students with mild depressive symptoms; excluding the influence of gender factors, the ratio of male to female was 1:1. Then, 100 experimental objects were divided into two groups: 25 males and 25 females in the experimental group and 25 females and 25 females in the control group. The experimental group took physical yoga classes to learn and exercise under the guidance of physical yoga teachers, while the control group was informed of conducting normal life study. At the end of the semester, the SDS test was conducted again.

Table 2. Self-rating anxiety scale (SAS)

| Question                                           | No or very little time | A small part of the time | Quite a lot of time | Most of the time |
|----------------------------------------------------|------------------------|--------------------------|---------------------|------------------|
| I feel more nervous and anxious than ever.         | ○                      | ○                        | ○                   | ○                |
| I am worried for no reason                         | ○                      | ○                        | ○                   | ○                |
| I feel weak and easy to fatigue                    | ○                      | ○                        | ○                   | ○                |
| I feel my heart beat faster                        | ○                      | ○                        | ○                   | ○                |
| I am uncomfortable because of a vertigo            | ○                      | ○                        | ○                   | ○                |
| I am easy to fall asleep and sleep well at night.  | ○                      | ○                        | ○                   | ○                |
| I have a nightmare                                 | ○                      | ○                        | ○                   | ○                |
| I feel that everything is going well and there will be no bad things happening. | ○ | ○ | ○ | ○ |
| My fingers and chest toe are numb and stinging     | ○                      | ○                        | ○                   | ○                |
| I am easily upset or panicked                       | ○                      | ○                        | ○                   | ○                |

Note: No or very little time=1, A small part of the time=2, Quite a lot of time=3, Most of the time=4
Table 3. Self-Rating Depression Scale (SDS)

| Question                                                                 | No or very little time | A small part of the time | Quite a lot of time | Most of the time |
|-------------------------------------------------------------------------|------------------------|--------------------------|---------------------|------------------|
| I feel depressed                                                        | ○                      | ○                        | ○                   | ○                |
| I am not sleeping well at night                                         | ○                      | ○                        | ○                   | ○                |
| I eat as much as usual                                                  | ○                      | ○                        | ○                   | ○                |
| I found that my weight is falling                                       | ○                      | ○                        | ○                   | ○                |
| I feel tired for no reason                                              | ○                      | ○                        | ○                   | ○                |
| My mind is as clear as usual                                            | ○                      | ○                        | ○                   | ○                |
| I feel uneasy, can’t calm down                                          | ○                      | ○                        | ○                   | ○                |
| I am usually angry and excited                                          | ○                      | ○                        | ○                   | ○                |
| I feel that I am a useful person, someone needs me.                     | ○                      | ○                        | ○                   | ○                |
| I think that if I die, others will live better.                         | ○                      | ○                        | ○                   | ○                |
| I am still interested in things that are usually of interest.           | ○                      | ○                        | ○                   | ○                |

Note: No or very little time=1, A small part of the time=2, Quite a lot of time=3, Most of the time=4

Experimental methods and tools
The experiment mainly used the questionnaire survey (SAS and SDS) and interview method to evaluate the psychological depression of college students participating in the experiment, and the statistical analysis method to analyse the test data (Webster, 2015).

Experimental steps
(1) Distribute the statistical results of the questionnaire to the volunteers, and screen out the experimental group and the control group to ensure that there is no significant difference between the two;
(2) Select the basic and representative yoga method to carry out experimental teaching on the experimental group for one semester, which was taken twice per week, two hours each time; the students in the control group live and learn normally and do not participate in any treatment for relieving the depressive symptoms;
(3) After the end of the semester, psychologically re-test the experimental group and the control group students, check-up the test data, and calculate the statistical data. Then, use mathematical statistics method to derive the average, standard deviation and significant test results for the data of the experimental group and the control group.

Experimental results statistics
Control group
For the control group, the evaluation results of the depressive symptoms before and after the experiment are shown in Figure 2 and Table 4.

Table 4. Control group psychological test results statistics

| Item | Pre-test | After-test | P     |
|------|----------|------------|-------|
| SAS  | 37.34    | 37.44      | >0.05 |
| SDS  | 38.52    | 39.85      | >0.05 |

Figure 2. SDS SAS average score of Pre-test and After-test (Control group)

Experimental group
For the experimental group, the evaluation results of depressive symptoms before and after the experiment are shown in Figure 3 and Table 5.

Table 5. Test group psychological test results statistics

| bb   | Pre-test | After-test | P   |
|------|----------|------------|-----|
| SAS  | 37.65    | 33.41      | <0.01|
| SDS  | 38.57    | 33.58      | <0.01|
Figure 3. SDS SAS average score of Pre-test and After-test (Test group)

![Graph showing SDS SAS average score of Pre-test and After-test (Test group)](image)

Analysis of experimental results
To further compare the SAS and SDS scores of the experimental and control groups, the SAS experimental test data was drawn as a trend graph in Figure 4 (the SDS scores have the same trend).

Figure 4. SAS change trend before and after the test

![Graph showing SAS change trend before and after the test](image)

The statistical results showed that there was a significant difference of the experiment group in SAS and SDS evaluation results before and after the experiment; after one-semester psychological training and the body shaping of the experimental group in yoga courses, their mental depression was suppressed and alleviated in certain degree; on the contrary, there was no significant change in the SAS and SDS results of the control group students. It can be seen from Figure 4 that the SAS scores of the experimental group showed a more significant decrease compared with the control group.

Furthermore, through interviews with college students in experimental group, the positive effects of sports yoga on college students’ psychological depression are summarized as follows: 1) Their mental health level has been significantly improved, i.e., the yoga can ensure them to maintain a good mood and an active attitudes towards learning and life; 2) Emotional control ability and energy have been improved; by effectively adjusting the emotions such as anxiety and feelings of failure, they can be energized in life learning; 3) Mentality is adjusted, and the human body is in a state of relaxation; human body and mind after yoga enter into a state of high relaxation and great pleasure, which further promotes the secretion of endocrine hormones and enhances the positive emotional experience; 4) Interpersonal relationships have been enhanced; through collective sports yoga, college students exchange and share the learning experience, and improve physical and mental exercise while promoting their communicative competence. When the experimental group college students were interviewed about whether they will continue to exercise yoga, 93% of the respondents indicated that they would continue to exercise yoga.

CONCLUSIONS
The number of patients with depression is increasing globally, and the research topic of depression has been increasingly receiving the attention. In addition to the main treatments such as drug, psychology, and physics, the adjunctive treatments such as physical exercise has also gradually been applied. Under great pressure of learning and employment competition for Chinese college students, the number of students with mild depression has increased year by year. This paper takes college students from a university in Hebei as the research objects, and verifies the inhibitory effect of sports participation therapy on depression by the intervention experiment of sports yoga. The main conclusions and inspirations are made as follows:

(1) The results of comparative experiments show that sports yoga has an effective effect on
relieving anxiety and depression in college students; the average scores of SAS and SDS before and after the experiment in the experimental group are significantly different;

(2) As an individual sport for both physical and psychological transformation, yoga has a good inhibiting effect on the depression state of college students, and can be promoted in college physical education curriculum;

(3) Sports participation therapy as a safe, healthy and effective treatment method for assisting depression has an inhibitory effect on depressive symptoms, so it’s an effective way to maintain or promote mental health and eliminate mental illness.

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