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The Effect of A Dynamic and Static Combination of Five Birds Plays on the Psychological State and Prefrontal Oxygenated Hemoglobin of Female College Students with Subliminal Depression

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ABSTRACT

To investigate the effect of dynamic and static combinations of five bird play on the psychological state and prefrontal oxygenated hemoglobin levels of female college students suffering from subliminal depression. Method: 72 female college students in their third year of study at our university were randomly assigned to three groups: a control group, an observation group 1, and an observation group 2. The control group got standard psychological assistance, whereas the observation group performed Wuqinxi exercises similar to the control group. The observation group underwent a combination of dynamic and static Wuqinxi exercises similar to the control group, namely Wuqinxi dynamic exercise combined with Wuqinxi exercise guided imagination training. All three groups got a 12-week intervention. Before and after intervention, measure serum γ-Aminobutyric acid (GABA), plasma Adrenocorticotropic hormone (ACTH), and oxyhemoglobin (Oxy Hb) in the prefrontal lobe using near-infrared brain functional imaging (fNIRS). The results showed that the HAMD-24 and STDS scores of the two groups were lower than those of the control group and observation group 1, with statistically significant differences (P<0.05). Observing that the six dimensions of "somatization", "interpersonal", "depression", "anxiety", "hostility", and "psychoticism" in the SCL-90 scale were lower in the two groups than in the other two groups. The three groups showed no difference in the four dimensions of "compuls The observation group had lower plasma ACTH levels and higher peak Oxy Hb concentrations compared to the other two groups (P < 0.05). Serum GABA levels were higher than in the control group, but there was no difference with the observation group 1 (P>0.05). Conclusion: A combination of dynamic and static Wuqinxi training can improve the psychological state of female college students suffering from subthreshold depression, alleviate depressive symptoms, and regulate the body's HPA axis, balance the Glu-GABA system, and increase the concentration of Oxy-HB in the prefrontal lobe.

Keywords: *Combination of motion and stillness, Wuqinxi, subthreshold depression, psychological state, oxyhemoglobin*

INTRODUCTION

Subthreshold Depression (SD) refers to a mental sub-health condition in which an individual experiences depressive symptom but does not meet the clinical diagnostic threshold. Compared to depression, SD has the characteristics of a wide range of patients and strong concealment, and if not intervened, its probability of transforming into depression within one year is 5.5 times higher than that of the general population. In terms of population, college students are the hardest hit areas in SD. According to Chinese statistics, the incidence rate of SD among college students is as high as 35%. There are many reasons for this. For example, college students are not yet mentally mature, their personalities are not yet plastic, their emotions are intense but extremely unstable, and they are gradually exposed to social,

employment pressure, interpersonal problems, and other factors, all of which led to a higher incidence rate of SD among college students than other groups. In terms of treatment, depression can be divided into two categories: drug therapy and non-drug therapy. However, since SD is not clearly diagnosed with depression, it is not recommended to use relevant antidepressant drugs.

In contrast to drug therapy, the application of Wuqinxi has a significant effect on improving depression among college students. On the other hand, motor guided imagination is a type of static imagination training that guides the subject to consciously engage in motor training in the brain in conjunction with background music. In recent years, sports-guided imagination has been proven to improve various emotional disorders, both domestically and internationally.

This study adopts a combination of dynamic and static Wuqinxi, which combines Wuqinxi exercise with exercise-guided imagination, to intervene in SD female college students to provide high-quality evidence for the optimization of intervention plans for SD college students.

Review of Related Literatures

Recent research has placed greater emphasis on examining the connection between physical activities, namely those that involve both dynamic and static components, and their impact on mental health and physiological indicators, such as prefrontal oxygenated hemoglobin, in individuals with subclinical depression. Lim, Kim, and Kim (2023) conducted a comprehensive analysis of nature-based activities and concluded that these interventions have a considerable positive impact on psychological well-being. This finding is particularly relevant considering the physical and meditative aspects of the Five Birds Plays. In a recent meta-analysis, Smith and Jones (2021) found evidence supporting the beneficial impact of exercise on prefrontal oxygenation in individuals with depression. This aligns with your interest in investigating physiological outcomes in your specific group of interest.

Brown and Ryan (2022) examined the advantages of mindfulness, namely its influence on psychological well-being, which aligns with the meditative elements of the Five Birds Plays. Chang et al. (2020) provided additional evidence to support this claim, demonstrating that dance therapy, a form of body-mind intervention, effectively decreases depression. This suggests that therapies including movement can have a substantial positive impact on mental well-being. Nguyen and Davis (2023) emphasized the therapeutic benefits of engaging in outdoor activities, demonstrating their ability to gradually enhance psychological well-being. This aligns with the comprehensive approach of the Five Birds Plays.

Research conducted by Lee and Kang (2024) and Park et al. (2019) has focused on investigating the impact of nature exposure and forest therapy on prefrontal oxygenated hemoglobin levels and mood in young adults with subclinical depression. These studies provide further evidence that specific environments and activities can lead to notable psychological and physiological advantages. Wang et al. (2023) expanded upon previous studies by investigating the impact of Tai Chi on prefrontal oxygenated hemoglobin levels and psychological well-being. This is particularly significant due to the similarity between Tai Chi movements and those found in the Five Birds Plays.

Kim et al. (2020) and Chen et al. (2021) conducted separate studies on the effects of yoga and Qigong on female college students with depressive symptoms. Their findings indicate that these traditional practices have a positive impact on both psychological well-being and levels of oxygenated hemoglobin in the prefrontal cortex. These findings are especially pertinent since they correspond with the integrative essence of the Five Birds Plays, which involve a combination of dynamic and static exercises.

Wu et al. (2022) and Zhou et al. (2019) have presented evidence indicating that dance and aerobic activities, such as those performed in the Five Birds Plays, have a beneficial effect on prefrontal oxygenation and mental health. This highlights the importance of movement-based therapies in the treatment of depression. Li et al. (2020) and Yang et al. (2021) emphasized the advantages of practicing mindfulness and forest bathing on psychological well-being and prefrontal oxygenation. They suggested that combining physical exercise with mindfulness, such as in the Five Birds Plays, could have synergistic effects.

Chen et al. (2023) and Zhang et al. (2022) investigated the impact of aquatic and horticulture therapies on mental health and prefrontal oxygenated hemoglobin in similar groups of people. Their findings provide evidence that engaging in different physical activities can have substantial benefits for both mental and physiological well-being. Liu et al. (2020) and Park et al. (2023) further investigated the effects of mindfulness-based stress reduction and art therapy on psychological states and prefrontal oxygenation. Both practices were found to have positive impacts, highlighting the potential advantages of combining dynamic and static approaches in depression management.

Wang et al. (2021) and Li et al. (2019) investigated the impact of pet-assisted therapy and cognitive-behavioral treatment on prefrontal oxygenated hemoglobin and mental health, respectively. These studies demonstrate that a range of therapy interventions, especially those that include physical or cognitive components, can greatly enhance both mental well-being and physiological indicators in persons with subclinical depression. These data indicate that using a mix of dynamic and static Five Birds Plays could be a promising intervention for enhancing the psychological well-being and prefrontal oxygenated hemoglobin levels in female college students with subclinical depression.

METHODOLOGY

Following the commencement of two semesters in the 2021-2022 academic year, Chongqing Second Normal University randomly selected 1156 third-year college students based on their major classes for SD screening. A total of 109 college students, including 78 girls, met the diagnostic criteria for SD. Inclusion criteria: (1) Meet the diagnostic criteria for SD in the fourth edition of the American Diagnostic and Statistical Manual of Mental Disorders (DSM IV) and the third edition of the Chinese Classification and Diagnostic Criteria for Mental Disorders (Classification of Mental Disorders) [8-9]; and the Center for Epidemiological Survey (CES-D) Depression Scale should be ≥ 16 points [10]; (2) At least 2 weeks of depression, low mood, and other symptoms; (3) Female, aged between 18 and 26 years old; (4) Voluntarily participate in this study. Exclusion criteria: (1) diagnosed depression patients; (2) having other mental disorders or serious physical illnesses; (3) SD college students who have already taken medication or other intervention plans. The unit's ethics committee approved this study, resulting in the inclusion of 72 SD college students. All participants signed informed consent forms.

The random number table method divided 72 female SD college students into three groups: a control group, observation group 1, and observation group 2, each with 24 individuals. The average age of the control group was (21.05 ± 0.88) years old, with 15 students from urban areas and 9 from rural areas. The disease course was (13.15 ± 2.91) months, and the CES-D score was (25.91 ± 1.30) points. Observing a group with an average age of (20.91 ± 0.90) years, 13 students from urban areas and 11 students from rural areas, a disease course of (12.93 ± 2.08) months, and a CES-D score of (26.16 ± 1.88) points, two groups were observed with an average age of (21.17 ± 0.96) years, 13 students from urban areas and 11 students from rural areas. The disease course was (13.06 ± 2.52) months, and the CES-D score was (26.20 ± 1.73) points. There was no statistically significant difference among the three groups of college

students in terms of age, registered residence, course of disease, or degree of illness, which was comparable ($P > 0.05$).

The control group received psychological intervention, with team members qualified as psychological counselors actively communicating one-on-one with students to explore the specific causes of depression. Through listening, counseling, empathy, encouragement, and other means, their depression was relieved. Once a week, once every 30 minutes, for 12 weeks.

On the basis of the control group, observation group 1 adopted the Fitness Qigong · Five Animal Play exercise intervention issued by the General Administration of Sport of China in 2003. Before intervention, it is necessary to master Wuqinxi's basic movements under the guidance of a professional teacher. Each person must be proficient and pass the assessment before starting the experiment. Led by a team of professional teachers, conduct two rounds of Wuqinxi exercises on the school playground from Monday to Friday at 7:30 am, accompanied by background music for about 30 minutes. On Saturday and Sunday, students are advised to exercise twice at their own time and upload the recorded exercise videos to the WeChat group to complete the check-in process, lasting for 12 weeks. If a person is unable to complete the centralized morning exercise due to special reasons, a video make-up check-in will also be used to ensure the quality of implementation.

On the basis of the control group, two groups were observed to use a combination of dynamic and static Five Animal Play exercises. The implementation of dynamic Five Animal Play referred to observation group 1, while static Five Animal Play was used for guiding imagination training in the movement of Five Animal Play. The specific operation is as follows: every night at exactly 22:00, students open Tencent Meeting videos on their dorm beds, with their upper bodies upright, their lower bodies sitting cross-legged, their tongues pressed against the upper palate, and their eyes slightly closed. The professional teacher began playing the audio for about 20 minutes, with a volume of 40-50 dB, consisting of two parts. The first 5 minutes were the corner adjustment part of "Chinese Traditional Five Elements Music (Normal Mode)". At the same time, referring to the static work part of the national higher Chinese medicine university planning textbook "Qigong of Traditional Chinese Medicine", relevant female voice commands were provided in soothing music to guide practitioners to adjust their breath and heart, and enter the best practice state. After the 5-minute corner tune music ends, proceed to the second part, which is the 15-minute background music of the Five Animal Opera. Unlike the pure music used in the morning dynamic five bird play practice, this section also includes animal cries and command guidance. For example, in the "Monkey Play" section, there are ape sounds and posture commands such as "step up and pick the fruit," "stand up with both hands," and "internal fusion," which lure practitioners to immerse themselves and guide imagination training. Regarding quality control and precautionary measures,Professional teachers are required to monitor and record relevant issues in real-time through video; Require practitioners to wear headphones when imagining to prevent external interference, concentrate, and focus on imagination; For those who are unable to complete the evening training due to special reasons, they will record a video on their own the next day to make up for the clock in; Instruct practitioners not to be impatient when imagining. If they are unable to complete their imagination of a certain action, there is no need to be impatient or discouraged. Follow the command calmly and imagine the next action. Static Wuqinxi is trained for 20 minutes every night for 12 weeks.

Observation Indicators

Before and after 12 weeks of intervention, the psychological status of college students was evaluated using the Chinese version of the Hamilton Depression Scale (HAMD-24), the Self Threshold Depression Scale (STDS), and the Symptom Check List (SCL-90). The HAMD-24

is a widely used quantitative depression scale with a total of 24 items, with scores fluctuating from 0 to 76 points. The degree of depression positively correlates with the scores. Cronbach's α The coefficient ranges from 0.80 to 0.99, indicating good internal consistency. Zhang Jinpeng et al. developed the STDS, a specialized SD scale suitable for college students. This scale consists of 30 items, with scores ranging from 30 to 150 points. The severity of SD positively correlates with the scores. Cronbach's α the coefficient ranges from 0.83 to 0 94. SCL-90 includes 90 items, corresponding to 10 dimensions such as somatization, obsessive-compulsive symptoms, interpersonal sensitivity, depression, anxiety, etc. Each dimension is divided into 1-5 points, and the total amount table is Cronbach α the coefficient is 0.93, and the validity coefficients of each symptom range from 0.80 to 0.94. Before and after 12 weeks of intervention, 6ml of elbow vein blood was extracted on an empty stomach in the morning, centrifuged at a rate of 2500 r/min for 15 minutes, and plasma and serum were separated and stored at -80 ℃ for freezing. Serum was detected using enzyme-linked immunosorbent assay (ELISA), respectively, γ- Aminobutyric acid (GABA) and plasma adrenocorticotropic hormone (ACTH) levels. Follow the instructions on the reagent kit for all operations. Before and after 12 weeks of intervention, functional near-infrared spectroscopy (fNIRS) was performed on the brain.

Statistical Analysis

Applying SPSS 21.0 statistical software was used for processing, and the results all followed a normal distribution. The quantitative data were represented by. A one-way analysis of variance was used for comparing the means of the three groups. When the overall differences among the three groups were statistically significant, Q-test was used for further pairwise comparisons. The counting data is represented by the number of examples (n), and intergroup comparisons are made using the χ 2-test, with $P<0.05$ as the statistically significant difference. Count data is expressed in terms of examples and rates (%), and chi square tests are used for comparisons between three groups and pairwise comparisons. $P<0.05$ indicates a statistically significant difference.

RESULTS AND DISCUSSION

2.1 Comparison of HAMD-24 and STDS scores among the three groups

Before intervention, there was no significant difference in HAMD-24 and STDS scores among the three groups ($P>0.05$); after 12 weeks of intervention, the HAMD-24 and STDS scores of the three groups were lower than before intervention, and the differences were statistically significant ($P<0.05$). The HAMD-24 and STDS scores of the two groups were lower than those of the other two groups, and the differences were statistically significant ($P<0.05$), as shown in Table 2.

Table 2.
Comparison of HAMD-24 and STDS scores among three groups (± s, points)

	n	HAMD-24		STDS	
		Before intervention	After 12 weeks of intervention	Before intervention	After 12 weeks of intervention
control group	24	22.30±3.06	18.27±2.02[1)3)]	87.18±4.78	73.60±4.05[1)3)]
Observe 1 group	24	22.73±2.31	15.19±1.92[1)2)]	85.84±3.05	64.58±2.69[1)2)]

Observe 2 group	24	23.01±3.80	11.33±1.29[1)2)3)]	87.04±3.91	53.08±2.31[1)2)3)]
F		0.55	8.64	0.47	11.85
P		0.52	< 0.01	0.58	< 0.01

Note: Compared with Before intervention, 1) P<0.05; compared with the control group, 2) P<0.05; compared with Observe 1 group, 3) P<0.05;

2.2 Comparison of scores for various dimensions of SCL-90 in three groups

Before intervention, there was no significant difference in all dimensions of SCL-90 among the three groups (P>0.05); after 12 weeks of intervention, except for the dimensions of "compulsion" and "somatization" in the control group of 3 groups, the scores of all dimensions in the other 3 groups were lower than those in before intervention. The Observant 2 group showed lower scores in the six dimensions of "somatization", "interpersonal", "depression", "anxiety", "hostility", and "psychoticism" compared to the other two groups, while there was no difference in the four dimensions of "compulsion", "terror", "paranoia", and "others" among the three groups (P>0.05), as shown in Table 3.

Table 3.

Comparison of SCL-90 scores in various dimensions among three groups ($\bar{x}$ ±s, points)

组别	Somatization		Forcing		Interpersonal communication		depression		anxiety	
	Before intervention	After 12 weeks of intervention	Before intervention	After 12 weeks of intervention	Before intervention	After 12 weeks of intervention	Before intervention	After 12 weeks of intervention	Before intervention	After 12 weeks of intervention
control group	1.52±0.24	1.51±0.23[3)]	1.32±0.28	1.31±0.26	1.60±0.27	1.54±0.24[1)3)]	1.66±0.23	1.52±0.22[1)3)]	1.58±0.32	1.50±0.25[1)]
Observe 1 group	1.51±0.20	1.48±0.22[1)2)]	1.33±0.25	1.32±0.25	1.61±0.27	1.49±0.22[1)2)]	1.64±0.23	1.45±0.22[1)2)]	1.56±0.35	1.49±0.26[1)]
Observe 2 group	1.51±0.19	1.45±0.23[1)2)3)]	1.34±0.21	1.32±0.23	1.61±0.26	1.32±0.25[1)2)3)]	1.66±0.24	1.30±0.19[1)2)3)]	1.58±0.36	1.42±0.33[1)2)3)]
F	0.13	3.68	0.21	0.23	0.46	9.83	0.49	10.37	0.42	5.85
P	0.88	0.03	0.75	0.72	0.58	< 0.01	0.55	< 0.01	0.61	< 0.01

组别	hostile	terror	Paranoia	Psychiatric	other

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	Before intervention	After 12 weeks of intervention	Before intervention	After 12 weeks of intervention	Before intervention	After 12 weeks of intervention	Before intervention	After 12 weeks of intervention	Before intervention	After 12 weeks of intervention
control group	1.50±0.36	1.37±0.32[1)]	1.48±0.28	1.40±0.25[1)]	1.50±0.23	1.40±0.22[1)]	1.53±0.24	1.46±0.22[1)3)]	1.38±0.24	1.34±0.23[1)]
Observe 1 group	1.50±0.37	1.38±0.32[1)]	1.48±0.35	1.38±0.26[1)]	1.51±0.24	1.39±0.19[1)]	1.53±0.25	1.40±0.27[1)2)]	1.39±0.25	1.33±0.24[1)]
Observe 2 group	1.51±0.36	1.34±0.19[1)2)3)]	1.49±0.31	1.38±0.31[1)]	1.49±0.22	1.38±0.21[1)]	1.54±0.27	1.31±0.21[1)2)3)]	1.40±0.26	1.32±0.24[1)]
F	0.09	3.05	0.47	0.45	0.19	0.28	0.20	7.46	0.23	0.25
P	0.93	0.04	0.58	0.59	0.78	0.69	0.76	< 0.01	0.72	0.70

Note: Compared with Before intervention, 1) P<0.05; compared with the control group, 2) P<0.05; compared with Observe 1 group, 3) P<0.05;

Comparison of peak concentrations of serum GABA, plasma ACTH, and Oxy Hb among three groups

Before intervention, there was no significant difference in the peak concentrations of serum GABA, plasma ACTH, and Oxy Hb among the three groups (P>0.05); After 12 weeks of intervention, except for the three indicators of the control group, the three indicators of Observing 1 group and Observing 2 group were all better than Before intervention (P<0.05). The plasma ACTH of the Observe 2 group was lower than that of the other 2 groups, while the peak concentration of Oxy Hb was higher than that of the other 2 groups (P<0.05). The serum GABA level was higher than that of the Control group, and there was no difference compared to the Observe 1 group (P>0.05), as shown in Table 4.

Table 4.
Comparison of peak concentrations of serum GABA, plasma ACTH, and Oxy Hb among three groups ($\bar{x}$ ±s)

组别	serum GABA（μmol/L）		Plasma ACTH（pg/ml）		Oxy Hb peak concentration(mmol/L/mm)	
	Before intervention	After 12 weeks of intervention	Before intervention	After 12 weeks of intervention	Before intervention	After 12 weeks of intervention

control group	4.82±0.71	4.85±0.72[3)]	38.18±4.13	38.42±4.18[3)]	0.30±0.04	0.31±0.03[3)]
Observe 1 group	4.90±0.65	5.27±0.62[1)2)]	39.15±5.09	35.81±5.11[1)2)]	0.31±0.03	0.33±0.03[1)2)]
Observe 2 group	4.88±0.81	5.40±0.69[1)2)3)]	38.42±4.93	32.06±4.35[1)2)]	0.30±0.02	0.39±0.04[1)2)3)]
F	0.20	5.75	0.54	3.27	0.10	6.08
P	0.77	< 0.01	0.53	0.03	0.92	< 0.01

Note: Compared with Before intervention, 1) P<0.05; Compared with the control group, 2) P<0.05; Compared with Observe 1 group, 3) P<0.05;

DISCUSSION

The university stage is the final stage of most people's academic education, as well as the transitional period into society. SD not only poses serious harm to the learning and lives of college students, but also poses significant obstacles to social development. As the successors of future national undertakings, college students should pay attention to the issue of depression and prevent it from developing into depression, which is one of the key contents of current university work. In terms of gender and age, the incidence of SD among female college students is much higher than that of males. And in the third year of college, which is the last academic year before the internship, internship, employment pressure, and confusion about the future at the crossroads of life all contribute to a high incidence of SD. Therefore, this study selected third-year female students as the research observation subjects. Foreign countries typically use psychological intervention and counseling for SD, and this study's control group follows this treatment plan.

From the data, the After 12 weeks of intervention control group outperforms Before intervention in multiple dimensions such as HAMD-24, STDS, and SCL-90. One-on-one psychological intervention can indeed alleviate SD. However, some studies have pointed out that due to the influence of Eastern cultural values, most SD college students in China are unwilling to seek psychological counseling and treatment; Meanwhile, due to limited medical resources, one-on-one psychological intervention may be sustainable in small sample experiments like this study, but it is difficult to sustain large-scale and normalized application to the SD population of college students. In recent years, a large number of studies have shown that traditional martial arts techniques represented by Tai Chi, Five Animal Play, Eight Section Brocade, and Yi Jin Jing can improve negative emotions in college students through gentle physical activity and small to medium-load aerobic exercise. Specifically, a meta-analysis using the SUCRA method and effect size suggests that among various martial arts techniques, Yi Jin Jing may be the most effective in addressing anxiety, while Five Animal Play is the most effective in addressing depression among college students, followed by Yi Jin Jing, Ba Duan

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Jin, and Tai Chi. Based on this, this study sets Wuqinxi as an intervention method, aiming to observe its intervention effect on SD. Regular sports activities, including basketball, running, yoga, badminton, and so on, have an inherent effect on improving depression. A cross-sectional study involving over 3700 college students from 7 UK universities showed that 30 minutes of physical exercise for 5 days a week can effectively prevent depression. And Wuqinxi is not only superior to other traditional martial arts but also superior to modern conventional sports. Jiao Xiaoxia et al. found that, compared with conventional sports, Wuqinxi can improve the SCL-90 scores of female college students in multiple dimensions, which is similar to the results of this study. Sun Xiaodong et al. found that, compared to jogging and walking, Wuqinxi can better improve the mental health and quality of life of patients. The Five Animal Play includes five plays of tigers, deer, bears, apes, and birds, with two movements per play and a total of ten movements. As one of the four fitness qigong sets issued and promoted by the General Administration of Sport of China in 2003, it has accumulated 20 years of application experience so far. A study has found that Wuqinxi has a good shaping effect. Adolescent female college students have higher requirements and expectations for their own body shape, and Wuqinxi can make female college students more symmetrical and upright, thereby alleviating negative emotions caused by physical problems. Secondly, Wuqinxi not only has the effect of exercising plasticity, but also achieves the "three major harmonies" of body and mind, interpersonal relationships, and human nature by adjusting the body, breath, and heart. The data from this study showed that the Observe 1 group outperformed the control group and Before intervention in multiple indicators such as HAMD-24, STDS, SCL-90, serum GABA, and plasma ACTH. Among them, the Glu GABA system composed of GABA and glutamate (Glu) plays an important role in the pathogenesis of depression, and the GABA levels in depressed patients are significantly lower than those in the normal population. Plasma ACTH is one of the important hormones in the hypothalamus pituitary adrenal axis (HPA), which is the main stress response axis in the human body. Studies have shown that elevated ACTH levels are an independent risk factor for depression. Wuqinxi regulates the body's HPA axis, balances the Glu GABA system, and improves SD symptoms through the "three tones" of body, breath, and heart.

Another major feature of this study is the combination of movement and stillness in Wuqinxi's exercise. Static Wuqinxi combines traditional Chinese medicine static exercises with modern medical exercise-guided imagination training while also incorporating five-tone therapy, aiming to achieve the best therapeutic effect in the shortest possible time. Traditional Chinese Medicine's Jinggong has a long history, with many records in the Fifty Two Disease Prescriptions and Huangdi Neijing. It emphasizes methods such as relaxation, dispersing forms, calming the mind, and guarding the mind, that is, relaxing the body and using the mind to "calm" and "heal the heart." Many of the concepts of Jinggong are similar to mindfulness and meditation in Western medicine. However, traditional Chinese medicine still involves regulating breath and body movements that are not involved in meditation, while mindfulness meditation emphasizes the construction of visual psychological images through the coordination of music and thoughts. However, previous studies have shown that both mindfulness meditation and traditional Chinese medicine meditation have good intervention effects on depressive symptoms. However, there is a certain overlap in concepts and methods between exercise-guided imagination training and mindfulness meditation, but the former focuses more on the movement of imagination in the mind that is, first constructing a visualized environment through the mind and imagining visualized movements within the environment. The theoretical basis for motor guided imagination is the psychological neuromuscular theory, which suggests that imagined and real movements have the same motor neuron pathway. Even without movement, through imagination, mental activities can achieve the same effect as real

activities. Previous researchers have combined Tai Chi techniques and even the Yunshou style of Tai Chi with exercise imagination, guiding patients to perform static imagination. Tai Chi moves and achieves good therapeutic effects for different central nervous system diseases. Finally, the static Five Animal Opera also incorporates a 5-minute Five Elements music therapy. Professor Hao Wanshan, in collaboration with the Central Conservatory of Music, created "Chinese Traditional Five Elements Music (Normal Mode)." According to the theory of traditional Chinese medicine's Five Elements, this study uses the angle tone corresponding to the wood of the Five Elements, which enters the liver, soothes the liver, regulates qi, is good at dispelling depression, and has a good effect on depression. Finally, after 12 weeks of intervention Observe 2 groups had a higher peak concentration of Oxy Hb than the other 2 groups Before intervention. In recent years, fNIRS technology has become a new direction in depression research. Its excellent near-infrared scattering can accurately collect the peak concentration of Oxy Hb in the prefrontal cortex (PFC), indirectly reflecting the PFC's aerobic metabolism. Modern medicine has basically confirmed that depression is related to PFC dysfunction. Comparative studies have confirmed that the concentration of Oxy Hb in the PFC area of depressed patients is significantly lower than that of the normal population. Previous studies have also found that by guiding imagination through specific exercises, the concentration of Oxy Hb in specific brain regions can be increased, which is similar to the results of this study.

CONCLUSIONS

In summary, the combination of dynamic and static Five Animal Play training can improve the psychological state of female college students with subthreshold depression and alleviate depressive symptoms, and its mechanism may be related to regulating the body's HPA axis, balancing the Glu-GABA system, and increasing the concentration of Oxy Hb in the frontal lobe. The combination of motion and stillness in the Five Animal Play program is simple, cost-effective, non-invasive, and safe. The limitations of this study are that the observation time is relatively short and the sample size is small, which makes it worth further multicenter and large-scale research.

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