

The Impact of Wuqinxi Exercise on the Mental Health of Chinese College Students: A Quantitative Empirical Study

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Abstract: This study aimed to investigate the improvement of psychological well-being among university students through a four-month Wuqinxi (Five Animal Frolics) intervention. Using the SCL-90 self-assessment scale, the psychological health levels of the intervention group were compared to the control group. Results revealed a significant improvement in the intervention group, emphasizing the holistic nature of Wuqinxi, combining physical movements, breath control, and meditation. This practice is believed to rebalance mind-body equilibrium, alleviate anxiety and depression, and enhance emotional well-being. The practical implications are significant, as adopting Wuqinxi as an intervention may elevate students' psychological health and overall quality of life. Wuqinxi is an actively effective method, addressing anxiety, depression, and fostering key factors like self-awareness and decision-making. The conclusion highlights Wuqinxi's positive impact on university students' psychological health, offering valuable guidance for promoting holistic well-being.

Keywords: College students, Wuqinxi intervention, Psychological well-being, SCL-90 self-assessment

1. Introduction

With the rapid development of modern Chinese society and the ever-increasing competition pressure, the mental health issues of Chinese college students have become increasingly severe^[1]. Problems such as anxiety, depression, and stress have become common phenomena on university campuses^[2]. The emergence of this phenomenon has sparked an urgent need for effective psychological health intervention methods, especially traditional Chinese approaches that may offer beneficial support for the well-being of college students.

Therefore, it is crucial to seek out and study positively effective traditional Chinese psychological health intervention methods for Chinese college students. These methods may include traditional physical exercises such as Tai Chi, Qigong, and Five Animal Frolics, as well as traditional meditation and relaxation techniques. Not only can these approaches help alleviate psychological stress among college students, but they can also enhance emotional management skills and self-awareness, thereby improving overall mental health.

Wuqinxi is a traditional Chinese fitness method originating from ancient China. It is considered a part of Chinese martial arts but is also widely used for health preservation and physical fitness. The name "Wuqinxi" is derived from its imitation of the movements of five different animals, namely, the tiger, the deer, the bear, the ape, and the bird^[3, 4].

Chinese people believe that each animal's movements in Wuqinxi entail specific body movements and breathing patterns, all of which promote physical health and balance^[5]. Wuqinxi typically comprises the following five fundamental movements^[5]:

The tiger form: Imitating the movements of a tiger, including stretching the back, spine, and limbs to enhance flexibility and muscle strength.

The deer form: Emulating the movements of a deer, with a focus on waist and neck rotations,

contributing to improved body coordination and flexibility.

The bear form: Mimicking the actions of a bear, emphasizing balance and stability, involving standing and rotational movements.

The ape form: Replicating the actions of apes and monkeys, featuring high leg lifts, bending, and stretching motions, aiding in enhancing limb flexibility and strength.

The bird form: Imitating the movements of a bird, emphasizing breath control and graceful motions, contributing to meditation and relaxation.

Wuqinxi is typically performed through slow, graceful movements, accompanied by deep breathing and focused attention. This practice is believed to help promote the circulation of qi and blood in the body, regulate the internal energy flow, enhance physical strength and immunity, as well as alleviate stress, anxiety, and improve mental well-being.

Wuqinxi is a low-intensity exercise method suitable for individuals of all ages and fitness levels. It has become a part of China's traditional cultural heritage and is popular worldwide^[6, 7], especially among those seeking a holistic approach to physical and mental well-being.

The movements of Wuqinxi involve various parts of the body, including muscles and joints. This comprehensive exercise contributes to strengthening muscle power and improving overall body flexibility^[8].

The practice of Wuqinxi is typically accompanied by deep breathing and meditation, which helps alleviate stress and anxiety. A study found that practicing Wuqinxi can significantly reduce anxiety levels and enhance the perception of mental well-being^[9].

The movements in Wuqinxi require balance and coordination, which are particularly important for improving physical balance and preventing falls, especially among the elderly^[10].

Some studies indicate that practicing Wuqinxi may contribute to enhancing the function of the immune system, increasing resilience, and reducing the risk of infections^[11].

In summary, Wuqinxi, as a traditional Chinese fitness practice spanning thousands of years, offers a multitude of physical health benefits. These benefits encompass improvements in cardiovascular health, increased muscle strength and flexibility, alleviation of stress and anxiety, enhanced physical balance, and a boost to the immune system. These research findings provide strong support for the use of Wuqinxi as an effective method for promoting physical well-being.

1.1. Research Question

In the context of the potential benefits of practicing Wuqinxi on individual physical and mental health, this research poses the following research question:

Does Wuqinxi exercise have a positive impact on the mental health levels of college students?

1.2. Research purposes

The primary objective of this study is to investigate the impact of Wuqinxi exercise on the mental health levels of college students through quantitative empirical research methods. Specific objectives include:

- Analyzing the correlation between the frequency and duration of college students' participation in Wuqinxi exercise and their mental health levels.
- Exploring whether gender plays a moderating role in the impact of Wuqinxi on mental health.
- Providing preliminary insights into the practical feasibility of Wuqinxi as a psychological health intervention method.
- Offering new perspectives and approaches for psychological health intervention on college campuses to improve the mental health levels of students.

By addressing these research questions, this study aims to provide robust evidence for the enhancement of college students' mental health while offering scientific support for the promotion and implementation of Wuqinxi exercise as a psychological health intervention method.

2. Research Methodology

2.1. Participants

From September 2022 to March 2023, this study recruited voluntary participants from a physical education class at our university who either chose to take the Wuqinxi course (intervention group, n=21) or did not choose to take the course but were from the same class (control group, n=48). Participants were randomly assigned to either the intervention or control group. Each participant self-arranged two sessions of Wuqinxi practice per week, with each session lasting 40 minutes. To eliminate interference from other physical activities, the study process documented and controlled for participants' engagement in other sports activities. Participants were students from the same class, and during the study, the intervention group exclusively selected the Wuqinxi elective course, while the control group did not choose the Wuqinxi elective course or any other physical education electives. Both groups simultaneously took other courses within their major. This selection process aimed to minimize interference from other sports and activities.

This study recruited students from our university who voluntarily chose to take the Wuqinxi course as the intervention group (n=21) and students from the same class who did not opt for the course as the control group (n=48) from September 2022 to February 2023. Participants were randomly assigned to either the intervention or control group. Each participant independently arranged two Wuqinxi practice sessions per week, each lasting 40 minutes. To eliminate potential interference from other sports activities, the research process recorded and controlled for participants' engagement in other sports. All participants were from the same class. During the study, the intervention group exclusively selected the Wuqinxi elective course, while the control group did not choose the Wuqinxi elective course or any other physical education electives. Both groups simultaneously took other courses within their major. This selection process aimed to minimize interference from other sports and activities to the greatest extent possible.

2.2. Measuring method

To measure changes in participants' levels of mental health, we conducted pre-test and post-test data collection using the Symptom Checklist-90 (SCL-90) self-report inventory.

The Symptom Checklist-90 (SCL-90) is a standardized tool widely used for assessing individual psychological health symptoms. It was originally developed by American psychologist Derogatis in 1970 and has undergone several revisions and improvements, making it one of the effective instruments for evaluating various psychological symptoms and mental health issues.

The SCL-90 Symptom Checklist typically consists of 90 questions or statements and is designed as a self-report questionnaire. Participants are required to rate each item based on their experiences and feelings over a specified period (usually the past week or a recent timeframe). These questions cover multiple domains of mental health, including depression, anxiety, hostile behavior, sleep problems, nausea, hallucinations, and more.

The purpose of the SCL-90 Symptom Checklist is to assist healthcare professionals and researchers in understanding an individual's psychological symptoms and distress across various domains. By analyzing the scores, information about the individual's mental health status can be obtained, including which areas may have issues and the severity of those issues.

Scores from this inventory are typically analyzed in the following aspects:

Overall Symptom Severity: The total score reflects the severity of symptoms across all items, with higher scores indicating a greater number of Symptom Subscales: In addition to the total score, scores for specific subscales can be analyzed to identify problems in particular domains.

The SCL-90 Symptom Checklist is widely used in clinical psychology, psychiatry, mental health research, and psychiatric practice. It can aid in diagnosing and assessing various mental disorders, understanding patient symptoms, tracking symptom changes, and evaluating treatment outcomes. However, it is important to note that the SCL-90 serves as a screening tool and is not used as a standalone diagnostic tool. In this study, we utilized it as a criterion for assessing intervention outcomes.

2.3. Data analysis

This study employed statistical analysis using SPSS 25 to conduct normal distribution tests and

independent samples t-tests on intervention and control groups' data. These analyses aimed to summarize participants' basic information and changes in psychological well-being levels.

The normality results for the two groups of data are presented in Table 1 as follows:

Table 1: Normality Test Results for Intervention and Control Groups

Tests of Normality							
Groups		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Overall average	Intervention group	0.157	21	0.192	0.932	21	0.149
	Control group	0.108	48	.200*	0.968	48	0.220
*. This is a lower bound of the true significance.							
a. Lilliefors Significance Correction							

Due to the sample size in this study, with the intervention group (n=21) and control group (n=48) summing up to 69, which is less than 2000, we conducted the Shapiro-Wilk test to assess normality. The findings indicate a significance level of $P > 0.05$, suggesting that the data follows a normal distribution.

Table 2: Independent Samples t-test for the Intervention and Control Groups

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Overall average	Equal variances assumed	13.113	0.001	-5.635	67	0.000	-0.41875	0.07431	-0.56707	-0.27043
	Equal variances not assumed			-7.484	66.968	0.000	-0.41875	0.05595	-0.53043	-0.30707

The Levene's test for homogeneity of variances was conducted based on Table 2, revealing a significance level of $\text{Sig.} = 0.001 < 0.05$. This indicates a violation of the assumption of equal variance, suggesting that the variances of the two groups are not equal. Therefore, a Welch's t-test, accounting for unequal variances, was employed to compare the differences between the two groups. The results of the Welch's t-test indicated a t-value of -7.484, with a two-tailed P-value of $0.000 < 0.05$. This implies a significant difference between the two groups in terms of the SCL-90 overall mean score, demonstrating statistical significance.

Table 3: Group Statistics for the Intervention and Control Groups

Group Statistics					
Groups		N	Mean	Std. Deviation	Std. Error Mean
Overall average	Intervention group	21	1.1933	0.13771	0.03005
	Control group	48	1.6121	0.32698	0.04720

Based on the data presented in Table 3, we observe that the intervention group has an average SCL-90 overall mean score of 1.1933, while the control group has an average SCL-90 overall mean score of 1.6121, resulting in a difference of 0.4188. This suggests that university students participating in Wuqinxi exercises exhibit better psychological health, as their SCL-90 overall mean score is significantly lower than that of the control group who did not engage in the exercise.

3. Discussion

The causes of declining psychological well-being among university students are diverse. Academic

stress stands out as a primary factor contributing to mental health issues among this demographic^[12, 13]. Research indicates a significant association between high academic stress and symptoms of anxiety and depression. Social challenges also play a role in influencing the psychological health of university student^[14]. Studies suggest that social isolation and feelings of loneliness are correlated with mental health problems. Romantic and relationship issues can exacerbate psychological distress, with research highlighting the link between relationship instability and an increased incidence of psychological discomfort^[15, 16]. Past experiences, particularly traumatic ones, may have long-term effects on the psychological well-being of university students. Literature suggests a connection between childhood traumatic experiences and mental health issues in adulthood^[17].

These studies provide support for the association between factors such as academic stress, interpersonal relationships, romantic emotions, and past experiences with psychological health issues among university students. However, mental health problems are complex and diverse, typically influenced by multiple factors. Therefore, a comprehensive understanding and resolution of psychological health issues in university students require consideration of various aspects and a holistic approach.

The combination of movement and breathing in Wuqinxi contributes to alleviating tension, reducing anxiety, and alleviating symptoms of depression. A study published in the "Journal of Psychology and Health" found that individuals engaged in Wuqinxi exercises demonstrated significant improvements in mental health^[18].

Wuqinxi demands focused attention and coordinated movements, contributing to enhanced self-awareness and body perception. Research indicates that this heightened self-awareness can assist individuals in better managing emotions and coping with stress^[19].

Improved attention and decision-making: Wuqinxi practice involves concentrated attention and decision-making, aiding in brain exercise and cognitive enhancement. This cultivates an individual's ability to confront challenges and solve problems more effectively^[20].

Facilitation of social interaction: Wuqinxi is typically performed in a group setting, encouraging social interaction and support, which is beneficial for mental health. Social connections and support can alleviate feelings of loneliness and enhance emotional well-being^[21].

The relatively small sample size used in this study may limit the generalizability of the results. If the sample is not representative, the conclusions drawn from the study may not be applicable to a broader population.

This study faced several limitations:

The intervention and control groups had uneven numbers due to student enrollment considerations, preventing an equal distribution of participants between the two groups.

The chosen data collection method might be insufficient. Comparing pre- and post-intervention data for both groups could enhance the study's credibility. The study was conducted over a limited four-month period, possibly insufficient to capture long-term changes in certain effects. A more extended research duration would provide more comprehensive data. The study design utilized a cross-sectional approach instead of a longitudinal study, potentially introducing limitations in understanding the dynamics of change over time. External factors such as season, geographic location, or cultural differences might influence the study results but were not accounted for. The applicability of the study's results in real-world scenarios may be restricted. Discrepancies between research conditions and practical application conditions could limit the study's practical impact.

The study did not comprehensively record potential interfering factors, such as lifestyle, dietary habits, and sleep patterns, nor did it consider these factors in data analysis to control for potential influencing variables

4. Conclusions

This study represents a significant exploration into the psychological well-being of university students, utilizing the SCL-90 symptom self-assessment scale to assess the changes in psychological health levels between the intervention and control groups. The following elucidates the conclusions drawn from this study:

Wuqinxi, as a comprehensive practice integrating physical movements, breath control, and meditation,

is believed to contribute to the adjustment of mind-body balance, alleviating anxiety and depression, and enhancing emotional well-being. Hence, it serves as a suitable intervention for psychological health, particularly for university students who often face academic and emotional challenges.

The study spanned an entire semester, allowing for the observation of sustained intervention effects. Recognizing that improvements in psychological well-being may not manifest in the short term, the study's duration is crucial. Further research may necessitate extended tracking and larger sample sizes to confirm these effects and delve deeper into the mechanisms through which Wuqinxi improves psychological health.

The results indicate that a four-month Wuqinxi intervention led to a more compelling comparison between the intervention and control groups. The intervention group demonstrated improved psychological health, instilling confidence in attributing this enhancement to Wuqinxi. The control group contributed to mitigating the impact of potential confounding factors on research outcomes.

This conclusion holds substantial value for the practical application of addressing mental health issues in university students. With common challenges such as academic pressure and emotional issues, adopting physical activities like Wuqinxi as an intervention method may contribute to elevating their psychological well-being and enhancing overall quality of life.

In conclusion, Wuqinxi exercises prove to be an effective method for improving the psychological health of university students. This practice not only aids in alleviating anxiety and depression but also enhances key psychological factors such as self-awareness, attention, decision-making, and social interaction. With its deep roots in traditional Chinese culture, modern research validates its benefits for psychological well-being, signifying its importance in promoting the mental health and happiness of university students.

In summary, Wuqinxi exercises stand out as an effective means for enhancing psychological well-being. Encouraging active participation among university students is recommended to elevate their mental health levels. The results of this study provide robust support for further exploration of the impact of traditional physical activities on psychological health, offering valuable suggestions for promoting a healthy lifestyle.

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