The Effect of Health Qigong-Baduanjin on Psychological Sub-Health Among University Students of Different Majors

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Abstract: *Psychological sub-health issues among university students are increasingly severe, characterized by emotional dysregulation, heightened stress, diminished concentration, and insufficient self-efficacy. Psychological sub-health, a transitional state between health and disease, may progress to mental or physical disorders without timely intervention. This study adopts the traditional health Qigong practice-Baduanjin-as an intervention to explore its effects on alleviating psychological sub-health in university students and differences across disciplines, aiming to provide a novel intervention model for campus mental health education and scientific evidence for promoting Baduanjin courses.Research Purpose: As a non-pharmacological therapy in traditional Chinese medicine for health preservation, Fitness Qigong-Baduanjin has garnered widespread attention due to its safety and lack of side effects. This study aims to achieve the following objectives: 1. To explore the improvement effects of Fitness Qigong-Baduanjin on psychological sub-health states (e.g., anxiety, depression, lack of concentration, sleep disorders) among college students. 2. To analyze the differences in intervention effects of practicing Baduanjin among students from different majors, thereby revealing the efficacy of Baduanjin as a psychological intervention for college students across disciplines.Research Design: This study comprises theoretical and experimental components. The theoretical part involves a systematic review of modern medical research on sub-health through literature analysis, aiming to elucidate traditional Chinese medicine's understanding of Fitness Qigong-Baduanjin in addressing psychological sub-health and its current status in prevention and treatment. The experimental part involves recruiting undergraduate students from four colleges at Huanghe Science and Technology University: the Medical School, College of Engineering, Business School, and College of Liberal Arts. Participants from these four colleges are randomly divided into 8 groups on average: four Baduanjin experimental groups (one per college) and four control groups (one per college). The intervention spans 9 and 18 weeks, with comparative analyses conducted using the SCL-90 Self-Reporting Inventory. Group comparisons are performed based on the total mean scores of the same scale across different majors after 9 and 18 weeks of intervention.*

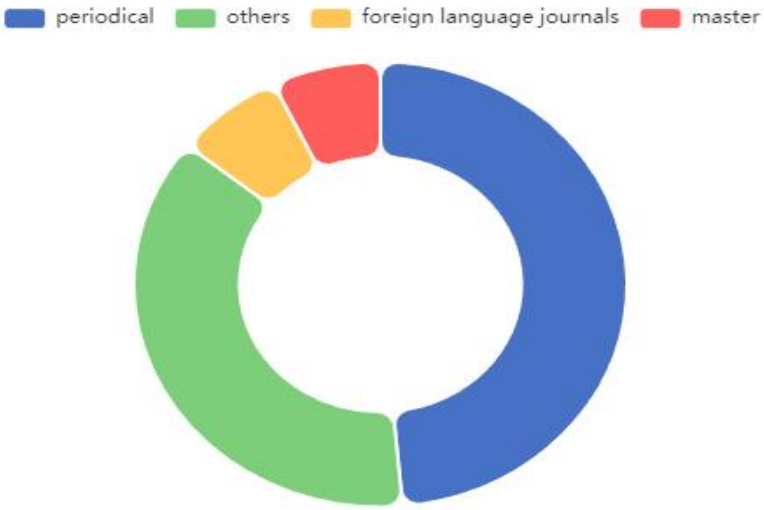
Keywords: *health qigong, baduanjin, university students, psychological sub-health, scl-90 scale*

1. Introduction

Psychological sub-health, SCL-90 scale Domestically, terms like "involution" and "lying flat" vividly reflect students' psychological stress in coping with academic pressure, career competition, and societal expectations[1,6]. Globally, challenges such as substance abuse, campus violence, and mental disorders further compound these issues. Such threats not only degrade students' quality of life but also impose potential societal burdens[2,7]. According to the 2023 China University Student Mental Health Survey, 30%-40% of students exhibit psychological sub-health, with anxiety, depression, and academic stress accounting for 70% of reported issues[3,8,9].

The mental health status of domestic university students is influenced by multifaceted factors, with psychological sub-health manifestations varying significantly across different majors due to discipline-specific characteristics, academic workloads, and distinct psychological stressors. Consequently, the intervention effects of Baduanjin may also differ: Medical students, burdened by extensive memory-intensive content and heavy academic demands, often exhibit heightened study-related anxiety, with their brains operating near cognitive limits. They may benefit from relaxing activities that alleviate academic pressure through diversion. Engineering students**, engaged in

practice-oriented curricula and rigorous logical reasoning, tend to prefer high-intensity physical activities to relieve stress. Liberal arts students, facing interpersonal communication challenges and academic expression pressures, may experience emotional instability and require gentle, calming movements for relaxation. Business students, confronted with career planning uncertainties and employment competition, often endure elevated stress and anxiety, necessitating soothing exercises to mitigate tension. Therefore, conducting psychological intervention research tailored to students from different academic disciplines will facilitate the design of more targeted intervention strategies[5,11].



Current literature on the research topic "The Impact of Fitness Qigong-Baduanjin on Psychological Sub-Health Among University Students Across Disciplines" primarily derives from academic journals, accounting for 48.57% of the total sources. This indicates that findings on this subject are predominantly disseminated through scholarly journals, reflecting its broad academic recognition and attention within the field. Furthermore, foreign journal publications constitute 37.14%, demonstrating international interest in Baduanjin research and a notable volume of related studies published in global academic platforms. Such engagement fosters cross-cultural academic exchange and collaboration. Master's theses represent 7.14% of the literature, highlighting that domestic postgraduate students in China have increasingly explored this topic, driven by national efforts to promote traditional physical practices. These theses provide both theoretical and practical guidance, enriching the academic foundation of this field.

Globally, current interventions for psychological sub-health include psychotherapy, cognitive-behavioral therapy (CBT), and pharmacological treatments. While these methods show efficacy in alleviating psychological symptoms, they often fail to address physical health improvements. Additionally, pharmacological approaches face challenges such as high costs and limited patient acceptance. In contrast, Fitness Qigong-Baduanjin, a traditional Chinese mind-body practice, serves as a non-pharmacological intervention. It not only ensures safety and absence of side effects but also exerts bidirectional benefits on both psychological and physical well-being due to its accessibility, simplicity, and scalability.

2. Methodology

2.1 Literature Review Method

Based on the research objectives, this study retrieved relevant journal articles, dissertations, and research findings from databases such as Web of Science, Scopus, and PubMed using keywords like "college students' mental health" and "influencing factors." The collected literature was classified and synthesized to gain insights into the current status and determinants of college students' mental health. By analyzing prior research achievements and limitations in this field, the study established a comprehensive theoretical foundation and data support for further exploration.

2.2 Questionnaire Survey Method

This research employed the Self-Reporting Questionnaire (SCL-90), one of the most widely used mental health assessment tools in China, to evaluate college students' psychological well-being. Participants identified as sub-healthy based on SCL-90 results were selected for subsequent interventions. Quantitative data from the survey were analyzed using statistical methods to assess the impact of Baduanjin on mental health outcomes.

2.3 Interview Method

Data from pre- and post-intervention questionnaires were standardized using Microsoft Excel and analyzed with SPSS 23.0. Key procedures included:

a:analyzing distribution characteristics to ensure dataset representativeness;

b: applying descriptive statistics, correlational analysis, and regression analysis to construct a quantitative model of mental health influencing factors..

2.4 Statistical Analysis Method

This study systematically investigated Baduanjin's mechanism of action on mental health through logical analysis. First, literature synthesis identified the "mind-body interaction" theoretical framework, hypothesizing a pathway linking "movement gentleness → autonomic nervous regulation → emotional improvement." Second, causal relationships between physiological (e.g., cortisol levels) and psychological indicators (e.g., anxiety scores) were deduced via stress response theory and validated through a randomized controlled trial (RCT). Counterfactual logic excluded confounding variables (e.g., sleep quality, social interactions), while logic trees decomposed the progressive mechanism of "parasympathetic activation → emotional stability enhancement," forming an evidence-based closed loop. This approach integrated theoretical deduction and empirical verification, enhancing methodological rigor in traditional exercise intervention research..

3. Intervention Results and Analysis

3.1 Comparison of SCL-90 Scores

TABLE I. *TABLE I.: COMPARISON OF SCL-90 SCORES BETWEEN TWO GROUPS IN MEDICAL SCHOOL*

	GROUP	CASES	MEAN	SD	T	P
BEFORE	CONTROL	70	183.53	1.25	-1.175	0.242
BEFORE	EXPERIMENTA	70	183.79	1.34		
MID	CONTROL	70	180.53	1.25	0.938	0.35
MID	EXPERIMENTA	70	180.34	1.09		
AFTER	CONTROL	70	176.53	1.25	2.541	0.012
AFTER	EXPERIMENTA	70	175.99	1.28		

Results: Before the intervention, there was no statistically significant difference between the control group (183.53 ± 1.25) and the Baduanjin experimental group (183.79 ± 1.34) ($t = -1.175$, $p = 0.242 > 0.05$). During the intervention, no significant difference was observed between the control group (180.53 ± 1.25) and the experimental group (180.34 ± 1.09) ($t = 0.938$, $p = 0.350 > 0.05$). After the intervention, a significant difference was noted between the control group (176.53 ± 1.25) and the experimental group (175.99 ± 1.28) ($t = 2.541$, $p = 0.012 < 0.05$). Therefore, compared to the control group, medical students showed a significant decrease in SCL-90 scores after Baduanjin training, indicating improved mental health.

TABLE II. *COMPARISON OF SCL-90 SCORES BETWEEN TWO GROUPS IN BUSINESS SCHOOL*

	GROUP	CASES	MEAN	SD	T	P
BEFORE	CONTROL	70	181.53	1.25	-1.175	0.242
BEFORE	EXPERIMENT	70	181.79	1.34		
MID	CONTROL	70	178.53	1.25	-1.788	0.076
MID	EXPERIMENT	70	178.94	1.48		
AFTER	CONTROL	70	176.53	1.25	2.486	0.014
AFTER	EXPERIMEN	70	176.03	1.13		

Results: Before the intervention, no significant difference was found between the control group (181.53 ± 1.25) and the Baduanjin experimental group (181.79 ± 1.34) ($t = -1.175$, $p = 0.242 > 0.05$). Similarly, during the intervention, there was no significant difference between the control group (178.53 ± 1.25) and the experimental group (178.94 ± 1.48) ($t = -1.788$, $p = 0.076 > 0.05$). However, after the intervention, a significant difference emerged between the control group (176.53 ± 1.25) and the experimental group (176.03 ± 1.13) ($t = 2.486$, $p = 0.014 < 0.05$). Therefore, Baduanjin training significantly reduced SCL-90 scores for business students, reflecting improved mental health.

TABLE III. *.COMPARISON OF SCL-90 SCORES BETWEEN TWO GROUPS IN ENGINEERING SCHOO*

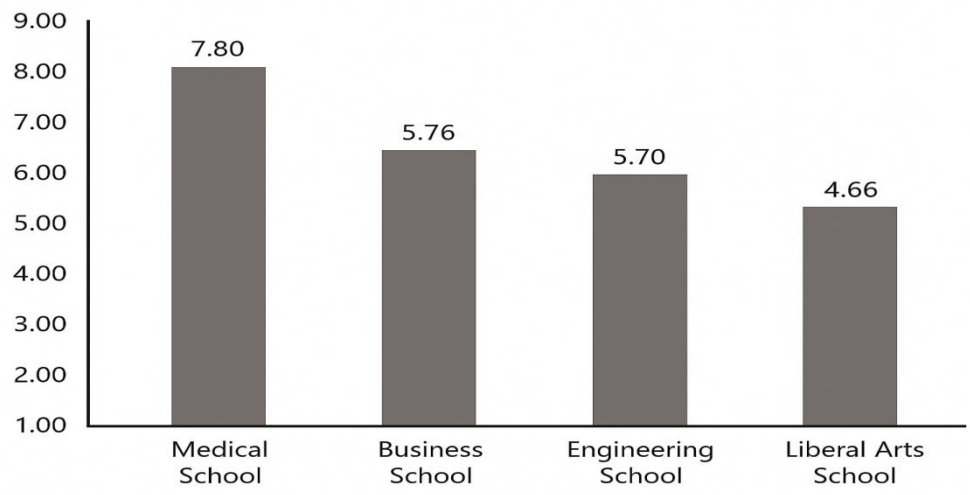
	GROUP	CASES	MEAN	SD	T	P
BEFORE	CONTROL	70	186.53	1.25	-1.175	0.242
BEFORE	EXPERIMENT	70	186.79	1.34		
MID	CONTROL	70	183.53	1.25	1.598	0.113
MID	EXPERIMENT	70	183.24	0.82		
AFTER	CONTROL	70	181.53	1.25	2.216	0.028
AFTER	EXPERIMENT	70	181.09	1.11		

Results: Before the intervention, no significant difference was observed between the control group (186.53 ± 1.25) and the experimental group (186.79 ± 1.34) ($t = -1.175$, $p = 0.242 > 0.05$). Similarly, during the intervention, no significant difference existed between the control group (183.53 ± 1.25) and the experimental group (183.24 ± 0.82) ($t = 1.598$, $p = 0.113 > 0.05$). However, after the intervention, a significant difference was found between the control group (181.53 ± 1.25) and the experimental group (181.09 ± 1.11) ($t=2.216$, $p = 0.028 < 0.05$). Thus, Baduanjin training significantly reduced SCL-90 scores for engineering students, indicating better mental health.

TABLE IV. *COMPARISON OF SCL-90 SCORES BETWEEN TWO GROUPS IN LIBERAL ARTS SCHOOL*

	GROUP	CASES	MEAN	SD	T	P
BEFORE	CONTROL	70	18053	1.25	-1.175	0.242
BEFORE	EXPERIMENT	70	180.79	1.34		
MID	CONTROL	70	177.53	1.25	0.689	0.492
MID	EXPERIMENT	70	177.40	0.94		
AFTER	CONTROL	70	176.53	1.25	2.088	0.039
AFTER	EXPERIMENT	70	176.13	1.01		

Results: Before the intervention, no significant difference was found between the control group (180.53 ± 1.25) and the experimental group (180.79 ± 1.34) ($t = -1.175$, $p = 0.242 > 0.05$). During the intervention, no significant difference was observed between the control group (177.53 ± 1.25) and the experimental group (177.40 ± 0.94) ($t = 0.689$, $p = 0.492 > 0.05$). However, after the intervention, the control group (176.53 ± 1.25) and the experimental group (176.13 ± 1.01) showed a significant difference ($t = 2.088$, $p = 0.039 < 0.05$). Therefore, liberal arts students benefited from Baduanjin training with improved mental health.



Summary: The experiment included students from four disciplines: medical school, business school, engineering school, and liberal arts school. Results indicated that SCL-90 scores in the experimental group significantly decreased after Baduanjin training compared to the control group, with all differences statistically significant. The largest reduction was observed in medical students (7.80 points), followed by business students (5.76 points), engineering students (5.70 points), and liberal arts students (4.66 points). See the figure for detail

4. Conclusion

This study demonstrated that Baduanjin exercise significantly improves suboptimal mental health among university students across different academic disciplines. Analysis of SCL-90 scores revealed no significant differences between experimental and control groups before or during the intervention. However, post-intervention results showed that students in the experimental groups had significantly lower SCL-90 scores compared to the control groups ($p < 0.05$).

Among the disciplines, medical students exhibited the greatest improvement (a decrease of 7.80 points), followed by business (5.76 points), engineering (5.70 points), and humanities students (4.66 points).

These findings suggest that Baduanjin, as a traditional, non-pharmacological intervention, effectively alleviates symptoms of anxiety, depression, inattention, and sleep disturbances. Its cross-disciplinary applicability highlights its potential as a valuable component in university mental health education. Moreover, the results underscore the unique role of traditional Chinese exercises in contemporary campus mental health interventions

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