ISSN 2706-6819 Vol.4, Issue 4: 23-27, DOI: 10.25236/IJFM.2022.040405

Research Progress on the Preventive and Curative Effects of Traditional Sports and Wellness Exercises on Sub-health

Taoxing Yang[1], Zunshuai Wang[1], Xiaoling Li[1], Ruixue Ma[1], Xinrong Fan[2,*]

[1]Shaanxi University of Traditional Chinese Medicine, Xianyang, China
[2]China Academy of Chinese Medical Sciences, Beijing, China
**Corresponding author: fxr1973@126.com*

Abstract: *At present, sub-health has become one of the most common physical conditions in the world, and its incidence is higher in the young population. Improving sub-health has become one of the most important issues to be addressed worldwide. It has been found that TCM exercise therapy is more acceptable than drug therapy in improving sub-health because of its long-lasting effect and less side effects. This article provides a review of TCM exercise therapy for sub-health.*

Keywords: *Sub-health; Chinese Medicine Exercise Therapy; Prevention and Treatment*

1. Introduction

Sub-health is an intermediate state between health and disease, i.e., "health-subhealth-disease" [1]. The following sub-health can be categorised according to various medical practitioners and literature: (1) physical sub-health: mainly physical symptoms such as physical fatigue, unexplained pain and poor sleep quality. (2) Psychological sub-health: the main symptoms are psychological, such as depressed mood, lack of interest in doing things, agitation and boredom. (3) Social sub-health: mainly manifestations of poor social adjustment, such as indifference, helplessness, reluctance to communicate with others, and poor interpersonal relationships.

Worldwide, the majority of the population is in a state of sub-health, and according to statistics, over 70% of the population in China is in a state of sub-health, and the incidence is increasing year by year. Therefore, how to effectively improve the state of sub-health and enhance the quality of human existence has received increasing attention from scholars at home and abroad.

Studies have shown [2] that people with exercise habits are less likely to experience sub-health than those without, suggesting that exercise therapy can prevent sub-health states from occurring to some extent. The traditional Chinese medicine (TCM) sports therapy is favored by many Chinese people for its advantages of simplicity and efficiency. These exercises combine low to moderate intensity aerobic exercise with meditation, which integrates the practitioner's body with the nature of heaven and earth and promotes the balance of yin and yang in the practitioner's organism, allowing the body and mind to be fully stretched and relaxed, which is effective in relieving fatigue and improving functional, psychological and social adaptation. This article provides an overview of TCM exercise therapy for sub-health.

2. TCM exercise therapy for the management of somatic sub-health

2.1. Improvement of function

Taijiquan is effective in improving physical fatigue, lowering blood pressure and resting heart rate, and increasing lung capacity. Zhu Ganfang [3] conducted a three-month experiment on 80 sub-healthy college students, and conducted a questionnaire survey on their sub-healthy status before and after the experiment respectively. The results showed that the health symptoms of the experimental group who practiced Tai Chi on a regular basis were significantly improved, mainly reflected in fatigue, gastrointestinal tract, immune and mental symptoms ($P<0.05$). Liu Jing et al. [4] found that after a period of regular Taijiquan exercise, the body indicators (blood pressure, heart rate, lung capacity, 1st second expiratory volume/time lung capacity, etc.) showed varying degrees of improvement, and even showed

ISSN 2706-6819 Vol.4, Issue 4: 23-27, DOI: 10.25236/IJFM.2022.040405

an “energy-saving” pattern, which prolonged life. Wang Yang [5] from Hubei University of Traditional Chinese Medicine measured the surface electromyographic signals of the core muscles of healthy university students before and after the practice of Baduanjin and found that both short-term and long-term practice of Baduanjin produced a certain degree of stimulation of the lumbar and abdominal muscles, and that prolonged exercise increased muscle strength and also improved muscle tolerance. Zhang Cong et al. [6] used a cohort study method and found that after practicing Baduanjin, the subjects' symptoms such as mental fatigue and dizziness improved significantly *(P*<0.05). A number of studies have demonstrated the advantages of Yi Jin Jing in the management of physical sub-health. Bi Zijuan et al. [7] conducted Yi Jin Jing training on university students in sub-health at Shanghai University of Traditional Chinese Medicine and collected information from their pulse charts before and after practice. The main effects were to slow down heart rhythm, improve heart ejection and improve vascular compliance, and reduce peripheral resistance. Xu Ruixu et al. [8] conducted an experimental study of Yi Jin Jing “Supporting Tian Pile” on Yang deficiency college students and confirmed that it was effective in improving the fear of cold and weakness of the waist and knees in Yang deficiency (*P*<0.01). A study by Su Yufeng et al. [9] found that after three months of Yi Jin Jing exercise, elderly women showed significant improvements in blood lipids, as well as a decrease in blood pressure and a range of positive effects on physical functions, including seated forward bending, back strength, reaction time, and time spent standing on one leg with eyes closed. In an experimental study conducted by Hou Yanshao [10] on 60 people aged 60-69 years old in the urban area of Quzhou County, Handan City, Hebei Province, the participants were tested for lower limb stability indicators before and after the experiment. After 12 weeks of Wu Qin Xi Exercise training for 60-70 minutes each time for five times a week, the elderly showed significant differences in lower limb stability compared to before the experiment. Wu Qin Xi Exercise can assist the body in regulating blood lipid balance. In a controlled experiment conducted by Yu Dinghai [11] on 100 healthy middle-aged and elderly people in Yangpu District, Shanghai, who had no long-term exercise history, the triglyceride levels of the experimental group after three months of daily morning Wu Qin Xi exercises were significantly lower than those before the experiment. Another study found [12] that long-term, moderate exercise of the Wu Qin Xi Exercises could increase their total T-lymphocyte count to some extent, indicating that the Wu Qin Xi Exercises exercise played a positive regulatory role on the body's immune function. The Liuzijue exercise also has the effect of improving somatic sub-health. Wei Shengmin [13] found that after 30 middle-aged and elderly people aged 50-70 years old practised The Liuzijue exercise for three months at a community morning exercise site in Shijiazhuang, Hebei Province, the subjects' body shape (e.g. hip circumference and other indicators) changed significantly compared with that before the training, and their physical quality was significantly enhanced. It also had a positive effect on blood lipid regulation.

2.2. Regulation of sleep

In terms of sleep, all types of TCM health exercises have shown strong positive effects. In an experimental study of college students with sleep disorders at a university in Chengdu, Luo Shasha [14] found that the Pittsburgh Sleep Quality Index (PSQI) scores of the experimental group practicing Taijiquan were significantly lower than those of the control group not practicing Taijiquan (*P*<0.001), and all seven dimensions of the PSQI were significantly different (*P*<0.001). Tang Ying et al. [15] combined hot spring retreat with Baduanjin retreat as the observation group and the routine intervention was used as the control group, intervening the people in the sanatorium who were in a sub-healthy state. After two weeks, both the observation group and the control group were better than before the intervention in terms of improving sub-health, and the observation group was significantly better than the control group in terms of improving sleep quality and anti-anxiety (*P*<0.001). Yang Yang [16] et al. measured the sleep quality of sub-health nurses who practiced Baduanjin at 1, 3 and 6 months, and found that mild, moderate and severe sub-health nurses were all healthier after practicing Baduanjin than before, and the results were better at 6 months of practice than at 1 and 3 months. Wang Wei et al. [17] conducted an experimental study on students with insomnia at a university and found that students who participated in Yi Jin Jing training had significantly better sleep quality after two months of exercise than before (*P*<0.01). Cheng Haifang et al. [18] conducted a modified Yi Jin Jing intervention with a group of elderly people with sleep disorders in the Shanghai community and recorded their sleep quality using the PSQI. They found that the scale scores of the elderly people decreased and their quality of life improved significantly after participating in the intervention compared to before. The experiment by Yang Yu et al. [19] showed that Wu Qin Xi Exercises combined with Eszopiclone had good therapeutic effects on patients with insomnia of the heart and spleen deficiency type, and the therapeutic effects were superior to the Tui Na combined with Eszopiclone protocol. Liuzijue exercise can effectively improve sleep disorders. Cui Xiang et al. [20] divided 60 university students with sleep disorders in Hubei University

ISSN 2706-6819 Vol.4, Issue 4: 23-27, DOI: 10.25236/IJFM.2022.040405

of Traditional Chinese Medicine into two groups of 30 each according to the principle of random grouping. The experimental group performed regular (five times a week, one hour each time) Liuzijue exercises, while the control group did not perform specific physical training, and tested their sleep with PSQI before and after the experiment, respectively. After 8 weeks, the PSQI score of the experimental group was generally lower than before the experiment, showing significant differences in different factors.

3. Chinese medicine exercise therapy for the management of psychological sub-health

Traditional health sports are mostly a combination of somatic movements and meditative activities that relax the practitioner's brain and have a positive effect on the elimination of tension and other undesirable factors, helping the body to regulate itself.

Taijiquan can effectively alleviate anxiety, depression and other adverse emotions. In a questionnaire survey and physical examination of permanent residents of Chenjiagou village, Wen County, Henan Province, who were over 40 years old, and their sleep and anxiety and depression, Shen Minghui et al. [21] found that middle-aged and elderly men who practised Taijiquan had better sleep and anxiety and depression than the non-practising group ($P<0.05$). Rao Ting et al. [22] also confirmed in a clinical trial that Taijiquan had some improvement in sleep and depression and anxiety. Zhang Yuzheng [23] found through a questionnaire survey that university students generally had some degree of anxiety symptoms, and found through an experimental design study that practicing Baduanjin could alleviate the bad mood of university students in terms of anxiety and depression. Fan Weiying et al. [24] found that the experimental group practising Baduanjin had better control of anxiety, depression and blood pressure than the control group in 38 cases of primary elderly hypertensive patients in a group intervention. In an experimental study of 42 young and middle-aged people of different ages working in Beijing, Cheng Miao [25] found that after 12 weeks of regular Yi Jin Jing fitness exercises, the subjects were significantly better in terms of depression and anxiety. Li Wei [26] grouped 360 first-year general college students from Dezhou Institute of Vocational Technology according to the principle of balance, and measured the subjects' physical form, physiological function, physical quality and mental health before and after the experiment respectively, and trained the experimental group with Wu Qin Xi Exercises and the control group without training. After 18 weeks, in addition to a series of positive changes in the body, the experimental group has also greatly improved in terms of mood. The scores of various negative emotional factors were significantly lower than those before the experiment ($P<0.01$), while the scores of some positive emotional factors were higher than those before the experiment ($P<0.01$). Gao Jin [27] conducted an experiment with depressed patients in Xiamen Xiangyue Hospital and found that after four weeks, the scores on the Depression Self-Rating Scale and Anxiety Self-Rating Scale in the experimental group that took Liuzijue Exercise intervention were significantly lower than those before the experiment and in the control group, and that the bad mood improved.

4. Chinese medicine exercise therapy for the management of social interaction sub-health

Social interaction sub-health is mostly seen in the form of reluctance to engage with people, reduced frequency of interpersonal interaction, or interpersonal tension. Chinese medicine exercise therapy can alleviate this phenomenon to some extent.

Xiang Yunping [28] conducted a questionnaire survey on 100 practitioners and 100 non-practitioners of Taijiquan at Zhoukou Normal College and found that Taijiquan could have a positive effect on all dimensions of college students' mental health, with significant effects in interpersonal relationships, psychological tolerance and adaptability. Qi Yan [29] analysed 220 students from Baotou Medical College and found that students who regularly participated in Taijiquan training scored significantly lower than ordinary university students on the factor of interpersonal sensitivity and were more confident in the process of interpersonal interaction, indicating that Taijiquan could improve social interaction sub-health. Hu Bingjiao et al. [30] selected 100 students from the class of 2006 at Mudanjiang Medical College to undergo Baduanjin training and conducted psychological and psychological tests on them before and after the training. The results showed that after 20 weeks of Baduanjin exercise, all indicators of the students were better than before and interpersonal tension was reduced. A study on Yi Jin Jing in an elderly population [31] showed that after six months of practice, adverse factors such as interpersonal relationship and paranoia scored lower than those who did not practise ($P<0.01$), and adverse factors such as compulsion and hostility also reflected significant differences compared to the control group ($P<0.05$), and after one year of practice, various differences were further significant ($P<0.01$). Li Shaohua [32] experimentally studied the effects of Wu Qin Xi on the cognition of an elderly population

ISSN 2706-6819 Vol.4, Issue 4: 23-27, DOI: 10.25236/IJFM.2022.040405

who volunteered to participate in a study in the community. Cognitive function and baseline health data were collected before and after the experiment, and the experimental group showed varying degrees of improvement in cognition and somatic health, especially in speech function and attention, after 40 weeks of Wu Qin Xi training once a week for one hour. The benefits were more pronounced over time. In an experimental study conducted by You Xingxue [33] on retired elderly people from Wangjing Nanhu District in Beijing and Xingtai University for the Aged, after three months, the total physical health and mental health scores of the elderly in the experimental group practicing the Liuzijue Exercise improved significantly compared to the pre-experimental period, and the improvement in mental health was even more significant than before.

5. Conclusion

In summary, common traditional sports and health exercises: Taijiquan, Baduanjin, Yi Jin Jing, Wu Qin Xi, and Liuzijue are good for improving somatic sub-health, psychological sub-health and social adaptation sub-health. We should carry them forward and spread them to communities and schools so that people of all ages can actively participate.

References

[1] Zhu Rong. Interpretation of the Clinical Guidelines for Traditional Chinese Medicine in Sub-health [J]. Chinese Traditional Medicine Modern Distance Education, 2009, 7(02): 79-80.
[2] Ercan S, Başkurt F, Başkurt Z, et al. Effect of Self-perceived Fatigue on Balance and Functional Mobility in Middle-Aged Obese Women [J]. Acta Med Okayama, 2019, 73(2): 95-100.
[3] Zhu Jianfang. An experimental study on traditional health care intervention for college students' sub-health [J]. Contemporary Sports Technology, 2016, 6(31): 85-87.
[4] Liu J, Chen PJ, Qiu Pisang, et al. A follow-up study on the effects of long-term Taijiquan exercise on the cardiorespiratory fitness of middle-aged and elderly women [J]. Chinese Journal of Sports Medicine, 2003(03): 290-293.
[5] Wang Yang. Study on the influence of Baduanjin training on the surface electromyographic signals of core muscles in the lumbar and abdominal regions of healthy university students [D]. Hubei University of Traditional Chinese Medicine, 2021.
[6] Zhang Cong, Liao Yan, Zhang Yu, et al. A cohort study on the effect of practicing Baduanjin on the improvement of TCM symptoms in people with fatigue sub-health[J]. Journal of Beijing University of Traditional Chinese Medicine (TCM Clinical Edition), 2013, 20(06): 6-9.
[7] Bi Zijuan, Wang Yu, Wang Jue, et al. A study on the evaluation of Yi Jin Jing based on digital pulse map to regulate the health status of college students [J]. Chinese Journal of Traditional Chinese Medicine Information, 2020, 27(06): 23-27.
[8] Xu Ruixu, Dou Sidong, Huang Ningying, et al. Effects of Yi Jin Jing " Supporting Tian Pile" Exercise on Yang Deficiency Physique of College Students [J]. Journal of Changchun University of Traditional Chinese Medicine, 2019, 35(02): 295-297.
[9] Su Yufeng, Liu Xiaodan. Effects of fitness qigong and Yi Jin Jing exercise on physical function and blood lipids in the elderly [J]. Journal of Nanjing Institute of Physical Education and Sports (Natural Science Edition), 2012, 11(02): 27-29.
[10] Hou Yanshao. A comparative study on the effects of fitness qigong Baduanjin and Wu Qin Xi play on the stability of the lower limbs of the elderly [D]. Hebei Normal University, 2016.
[11] Yu Dinghai. Changes in lipid metabolism in middle-aged and elderly people before and after six months of fitness qigong-Wu Qin Xi play exercise[J]. Chinese Journal of Sports Medicine, 2008(05): 610-611.
[12] Yu Dinghai, Wang Jinghao. Changes in peripheral blood T lymphocytes in middle-aged and elderly people before and after 6 months of fitness qigong Wu Qin Xi exercise [J]. Chinese Journal of Sports Medicine, 2007(02): 206-207.
[13] Wei Shengmin. An experimental study on the fitness efficacy of four types of fitness qigong exercises on middle-aged and elderly people [D]. Hebei Normal University, 2007.
[14] Luo Shasha. Research on the intervention effect of Taijiquan on sleep disorders in college students [J]. Chinese healing medicine, 2021, 30(12): 1249-1252.
[15] Tang Ying, Jiang Yanfang, Wu Tao. The implementation of hot spring hydrotherapy with Baduanjin in improving the sub-health status of special duty convalescents [J]. Chinese healing medicine, 2021, 30(11): 1214-1216.
[16] Yang Yang, Liu Jing. Analysis of the effect of Baduanjin on alleviating nurses' sub-health and sleep

ISSN 2706-6819 Vol.4, Issue 4: 23-27, DOI: 10.25236/IJFM.2022.040405

quality [J]. World Journal of Sleep Medicine, 2021, 8(04): 741-742.
[17] Wang Wei, Li Qi, Ma Shuxiang, et al. Effects of the Tui Na gong method "Yi Jin Jing" on insomnia in college students [J]. Chinese Medicine Information, 2011, 28(05): 91-93.
[18] Cheng HFA, Zhang L, Li Y, et al. Effect of modified Yi Jin Jing on sleep quality in older adults with sleep disorders in the community [J]. Journal of Rehabilitation, 2018, 28(03): 6-11.
[19] YANG Y, WU SAI F, LIANG YY, et al. Observation on the effect of eszopiclone combined with the Wu Qin Xi Exercise for the treatment of insomnia of the heart and spleen deficiency type [J]. Guangxi Medicine, 2020, 42(10): 1310-1313.
[20] Cui Xiang, Bo Zugang. An experimental study on the improvement of sleep quality of college students with fitness qigong-Liuzijue exercise [J]. Guangming TCM, 2014, 29(05): 953-954.
[21] Shen Minghui, Yin Ningwei, Zhao Songyao, et al. Analysis of the effects of tai chi exercise on depression and sleep quality in middle-aged and elderly men [J]. Chinese geriatric health medicine, 2022, 20(01): 78-80.
[22] Rao T, Ni HJ. Effects of tai chi on sleep and mood in patients with depressive disorder-related insomnia [J]. Chinese primary health care, 2018, 32(01): 66-78.
[23] Zhang Yuzheng. An empirical study on the improvement of depression and anxiety in college students by fitness qigong-Baduanjin [J]. Wushu Research, 2021, 6(12): 131-133.
[24] Fan Weiying, Zheng Liwei, Chen Feng, et al. Effects of Baduanjin exercise on anxiety and depression in 38 cases of elderly patients with essential hypertension [J]. Fujian Traditional Chinese Medicine, 2021, 52(02): 11-13.
[25] Cheng Miao. Research on the improvement of sleep disorders in young and middle-aged people with sleep disorders by twelve weeks of fitness qigong-Yi Jin Jing [D]. Beijing University of Sports, 2017.
[26] Li Wei. A study on measuring the effects of the new fitness qigong-Wu Qin Xi play on the physical and mental health of general college students [D]. Shandong Institute of Physical Education, 2015.
[27] Gao Jin. The effect of the Liuzijue on depression and anxiety in patients with depression [D]. Fujian University of Traditional Chinese Medicine, 2020.
[28] Xiang Yunping. The impact of practicing Taijiquan on college students' mental health: an example from Zhoukou Teachers' College [J]. Journal of Zhoukou Normal College, 2014, 31(05): 143-146.
[29] Qi Yan. An empirical study on the effects of tai chi exercise on college students' mental health [J]. Contemporary Sports Technology, 2013, 3(08): 100-101.
[30] Hu Bingjiao, Liu Hongfu. Effects of Baduanjin on physical fitness, psychological quality and mental health of college students [J]. Journal of Mudanjiang Medical College, 2008(01): 89-91.
[31] Zhong ZB, Zhang WC, Wan ZL. The effect of fitness qigong Yi Jin Jing on the mental health status of the elderly [J]. Chinese Behavioral Medicine Science, 2006(09): 850-851.
[32] Li Shaohua. Study on the intervention effect of fitness qigong-Wu Qin Xi play on the cognitive function of the elderly [D]. Shanghai Institute of Physical Education, 2019.
[33] You Xingxue. A study on the factors affecting the quality of survival of the elderly by fitness qigong–Liuzijue Skill [D]. Capital Institute of Physical Education, 2009.