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Research Progress on the Treatment of Motor and Non - motor Functions of Parkinson's Disease by Health Qigong

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Abstract

Parkinson's disease (PD) is a common neurodegenerative disease, and drug treatment has limitations. This study reviews the effects of various health qigong on the motor and non - motor functions of PD. It is found that Baduanjin can improve balance, walking ability, relieve negative emotions, enhance the quality of life, and also has effects on cognition and sleep. Wuqinxi is beneficial for the recovery of balance and walking functions, can improve cognition and the quality of life, but research on immunity and sleep is insufficient. Health qigong exercises can effectively improve motor functions, relieve anxiety, improve mood and cognition, and reduce non - motor symptoms. Liuzijue and Yijinjing can enhance balance and walking abilities and improve symptoms such as sleep and fatigue. However, many existing studies have problems such as small sample sizes and unclear mechanisms. In the future, large - sample, multi - center studies should be carried out, mechanisms should be explored in depth, the best intervention plan should be determined, research indicators should be expanded, and clinical application should be promoted.

Keywords

Parkinson's disease; Health qigong; Motor function; Non - motor function.

1. Introduction

Parkinson's Disease (PD) is the second most common neurodegenerative disease caused by the severe loss of dopaminergic neurons in the ventral substantia nigra and midbrain[1]. The prevalence of PD gradually increases with age, mostly occurring in people over 50 years old, peaking at 85 - 89 years old, affecting more than 1% of the elderly population. Moreover, the prevalence in men is twice that in women. It is estimated that by 2024, the number of PD patients globally will increase to 12.9 million[2,3,4]. PD patients usually exhibit motor symptoms such as muscle stiffness, bradykinesia, and postural balance disorders, as well as non - motor symptoms such as depression, anxiety, and insomnia[5]. Although drug treatment can reduce these main symptoms[6], it cannot completely prevent the progression of PD. In addition, drug treatment has limited effects in some areas and can cause side effects[7]. Therefore, exercise intervention, as one of the non - drug therapies, is not only beneficial for the recovery of PD patients but also compensates for the deficiencies of drug treatment, and has received extensive attention in clinical research.

Health qigong is a traditional Chinese sports project that combines physical activities, breathing techniques, and psychological regulation as its main forms of exercise[8], representing a two - way integration of traditional Chinese medicine and modern medicine. Currently, the General Administration of Sport of China has publicly promoted various health qigong such as Baduanjin, Wuqinxi, Yijinjing, and Liuzijue, and has specifically developed health qigong exercise prescriptions for the recovery of PD patients. Due to its excellent fitness effects and suitable exercise intensity for the middle - aged and elderly, it is being used more and more

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widely in the treatment of PD. Its positive effects on improving the motor function[9], relieving negative emotions[10], and enhancing the quality of life of PD patients have been confirmed[11]. The application prospect of health qigong in PD treatment is broad. However, currently, research on its mechanism of action and other aspects is still relatively limited[12], and there is no article comprehensively reviewing and summarizing the effects of various health qigong on the motor and non - motor functions of Parkinson's disease. By reviewing the actual effects of health qigong in treating the motor and non - motor functions of PD, it is helpful to explore the medical value of health qigong and provide a new perspective for optimizing clinical treatment plans.

2. Treatment of PD with Baduanjin Health Qigong

2.1. Treatment of Balance Ability

Baduanjin Health Qigong consists of eight sets of movements, each named according to its specific effects. For example, the "Shaking Head and Wagging Tail to Eliminate Heart Fire" movement requires the coordinated movement of the hip joint, waist, and neck. Movements like "Lifting Heels and Jumping to Cure All Diseases" emphasize the training of the body's center - of - gravity control ability during the upward and downward movements, which can effectively improve the balance ability of PD patients[13]. Dong Shuangshuang et al. conducted two 3 - week Baduanjin exercises and measured the balance scores of PD patients using a balance tester. The results showed that the balance scores of PD patients increased significantly, and the balance level decreased significantly, indicating the positive impact of Baduanjin exercise on balance ability. This also provided a method different from traditional research for measuring the improvement of balance ability by health qigong. Zhang Xiya et al. tested the balance ability of PD patients by measuring the single - leg standing time with eyes closed and open[14]. Statistical analysis showed that after 12 - week Baduanjin treatment, the single - leg standing time with eyes open and closed increased significantly. In the past, most studies used the Berg Balance Scale (BBS) and the third part of the Unified Parkinson's Disease Rating Scale (UPDRS - Ⅲ) to observe balance ability. Some studies have shown that Baduanjin exercise can effectively reduce the UPDRS - Ⅲ score and increase the BBS scoreof PD patients, indicating an effective improvement in balance ability[16]. Liu Fengchun et al. measured PD patients during hospitalization and after discharge using the BBS by including non - concurrent samples[17]. The research results showed that the BBS scores at 3 months and 1 year after discharge remained at a relatively high level, indicating that Baduanjin can not only effectively improve the balance function of PD patients but also maintain this improvement for a long time. However, in another study of theirs, due to different research designs, different results were obtained, and the BBS score did not increase significantly[18]. Therefore, Jinghui Lai et al.comprehensively analyzed different research evidence and conducted a Meta - analysis to reveal whether Baduanjin can improve the balance function of PD patients. After combining the results of multiple studies, it was shown that Baduanjin can effectively increase the BBS score[19].

2.2. Treatment of Walking Ability

Baduanjin can improve the gait disorders and enhance the walking ability of PD patients by stretching the bladder meridian, gallbladder meridian, and other meridians in the legs, relieving lower - limb muscle fatigue, and strengthening lower - limb muscle strength. The research results of Lu Chunxia et al showed that after the combined treatment of Baduanjin and the G - EO rehabilitation robot, the step length and walking speed of PD patients increased significantly[20]. This treatment effect has also been proven in other studies. For example, after Baduanjin training based on basic rehabilitation treatment, the scores of the Freezing of Gait Questionnaire (FOGQ), starting time, and walking cycle decreased significantly, and the step

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width increased significantly[21]. After the combined training of Baduanjin and balance pad, the walking distance in the 6 - Minute Walk Distance (6MWD) test increased significantly[16]. It can be seen that the combination of Baduanjin and other rehabilitation methods has great potential in treating the walking disorders of PD patients. However, in studies where Baduanjin exercise is carried out alone without combining other treatment measures, not all gait parameters have been improved. For example, in the study of Xiao et al.[22], the walking speed increased, but the step width and step - width duration did not. In the study of Dong Shuangshuang et al.[13], the walking cycle time was shortened, but gait indicators such as walking speed and step width did not improve. In conclusion, different intervention measures may lead to different research results, and the treatment effect of Baduanjin combined with other measures may be better. Although there are differences in the results of different studies, Baduanjin exercise can more or less significantly improve some gait parameters. Overall, it still has a certain effect on the recovery of the walking ability of PD patients. In the future, more scientifically rigorous randomized controlled experiments should be designed to prove this.

2.3. Treatment of Negative Emotions

As a form of physical and mental exercise, Baduanjin emphasizes muscle - bone relaxation, inner peace, and breathing regulation during practice[23]. It not only has the functions of dredging the meridians and qi - blood, strengthening the body, and enhancing the functions of the internal organs but also plays an important role in alleviating psychological disorders such as negative emotions. Currently, a large number of studies mainly focus on depression and anxiety. Specifically, after Baduanjin exercises with different treatment cycles, the scores of the Hamilton Depression Scale (HAMD)[26] and the Geriatric Depression Scale (GDS)[27] measured in patients of different ages and disease durations decreased significantly, indicating that the depressive state of PD patients was effectively relieved. Moreover, some studies have reported that PD depressive symptoms are closely related to intestinal flora imbalance, and Baduanjin may have the effect of regulating the ecological balance of intestinal microorganisms, which may be an important mechanism for Baduanjin to improve PD depressive symptoms[28]. The improvement effect of Baduanjin on other negative emotions of PD patients is also obvious. Lu Chunxia et al. proved through a 4 - week randomized controlled experiment that Baduanjin not only significantly reduced the HAMD score and the Hamilton Anxiety Scale (HAMA) score but also significantly reduced the Modified Apathy Evaluation Scale (MAES) score, indicating that Baduanjin can have a positive effect on regulating depression, anxiety, and apathy[29]. It is worth noting that in all studies on the treatment of PD with Baduanjin, this study was the first to prove the impact of Baduanjin on apathy symptoms, expanding the research scope in this area and re - affirming the potential of Baduanjin in regulating the brain nerves of the human body.

2.4. Treatment of Quality of Life

Baduanjin also has a positive effect on improving the quality of life of PD patients. It can be evaluated by observing the patients' ability to perform daily activities. Some studies have shown that after a four - week Baduanjin intervention for mild to moderate PD patients, the Barthel index increased significantly, effectively improving the patients' daily living ability[26]. The daily living ability is a comprehensive reflection of the physiological state, psychological state, and social adaptation ability. The improvement of this ability is helpful for the improvement of the patients' physical functions and the enhancement of their self - confidence, thus improving the quality of life as a whole. In addition, Li, Ke - Fan et al. proved through a randomized controlled experiment that Baduanjin can significantly reduce the score of the Parkinson's Disease Questionnaire - 39 (PDQ - 39), indicating that patients have improved in many aspects such as physical activity, mental health, and physical discomfort, comprehensively improving the quality of life[30]. It can be concluded that Baduanjin can have

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different degrees of promoting effects on the physical and mental health of PD patients and has a positive significance for improving the patients' quality of life.

2.5. Treatment of Other Indicators

Currently, research on the treatment of other symptoms of PD with Baduanjin is limited, and the number of related indicators is small. In terms of cognitive function, Carvalho, Livia et al. conducted a case report[31]. After 8 - week Baduanjin practice monitored through a remote platform, the Montreal Cognitive Assessment (MoCA) scores of 2 patients decreased, indicating an improvement in cognitive function. However, due to the small sample size, the research results need to be viewed conservatively. In terms of sleep disorders, Xiao et al. conducted a 6 - month Baduanjin intervention on mild to moderate Parkinson's disease patients[22]. The results showed that the sleep quality and fatigue degree of the patients were significantly improved, mainly reflected in the significant increase in the total score of the Parkinson's Disease Sleep Scale - 2 (PDSS - 2) and the scores of night - time movement symptoms, night - time Parkinson's disease symptoms, and sleep interference. In addition, Wang Xiangyumeasured the motor symptoms of patients using the Movement Disorder Society - Unified Parkinson's Disease Rating Scale (MDS - UPDRS) and specifically listed the scores of each item in the first and second parts of the scale[32]. The results showed that the patients' sleep disorders, fatigue feelings, and living abilities were significantly improved, which is helpful for a more detailed and comprehensive understanding of the treatment effect of Baduanjin on PD. For these indicators, more research is needed to explore the relationship between Baduanjin and them.

3. Treatment of PD with Wuqinxi Health Qigong

3.1. Treatment of Balance Ability

Wuqinxi Health Qigong is a traditional health - preserving exercise adapted from the movements and breathing methods of five animals: tiger, deer, bear, ape, and bird[33]. It is a profound practice that integrates the body, qi, and mind, aiming to enable practitioners to achieve a state of perfect harmony between the body and mind in the balance of movement and stillness. It involves many exercises for improving balance, such as the tiger pounce, ape lift, and bird flight, which can greatly promote the body's balance ability. Yang Hui et al.conducted a 16 - week Wuqinxi exercise intervention on PD patients with Hoehn - Yahr (H - Y) stage 1 - 3[34]. The research results showed that the left - right balance index, front - back balance index, and overall balance index decreased significantly, improving the patients' balance ability. Li Zhenlan et al. compared the effects of Wuqinxi Qigong and stretching exercises on PD patients through the Mini - Balance Evaluation Systems Test (MiniBESTest)[11]. The results showed that the MiniBESTest score of the Wuqinxi Qigong group increased significantly, indicating a great improvement in balance ability. In addition, some scholars used the PRO - KIN balance instrument to measure the impact of Wuqinxi on the balance ability of PD patients. The measurement results showed that the length of the movement trajectory of the body's center of pressure and the area of the ellipse formed by the movement trajectory of the center of pressure within 30 s decreased[35], providing evidence for the balance - enhancing effect of Wuqinxi. Similar to Baduanjin, most studies on the evaluation of the balance ability of Wuqinxi still mainly use the BBS. For example, Kong Xiangzhen et al. implemented a 4 - week low - load exercise combined with Wuqinxi training for mild to moderate PD convalescents[36]. The results showed that the BBS score increased significantly, indicating an improvement in balance ability. In summary, Wuqinxi can provide a variety of balance - training movements and has achieved good results in restoring the balance ability of PD patients, which has been verified by multiple measurement methods.

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3.2. Treatment of Walking Ability

Experimental studies have shown that Wuqinxi is not only a simple imitation of the main movements of five animals but also demonstrates five related functions based on the holistic health concept of traditional Chinese medicine. The bear - shaped movement has the effects of regulating the spleen and stomach and strengthening the limbs[37], which can effectively strengthen the lower - limb walking ability of PD patients. Shen Mengyue et al. randomly divided 30 PD patients into a Wuqinxi exercise group and a stretching exercise group[38]. The results showed that Wuqinxi exercise had a better effect on improving walking speed, specifically reflected in the significant shortening of the Timed Up and Go Test (TUGT) time compared with the stretching exercise. In the study of Li Zhenlan et al.[11], the same result was obtained in the TUGT test. In addition, the gait parameters such as walking speed and step length of 20 PD patients in the single - task state also increased. Kong Xiangzhen et al. observed the gait using scales, and the results showed that the scores of the FOGQ and the gait part of the UPDRS decreased significantly, once again proving that Wuqinxi is beneficial for the walking ability of PD patients[36]. Although many studies have shown relatively consistent results, overall, there are many small - sample - size studies. Therefore, more large - sample - size experiments are needed to explore the relationship between Wuqinxi and the walking ability of PD patients.

3.3. Treatment of Negative Emotions

Wuqinxi emphasizes the unity of the body and mind. When practicing, it requires practitioners to focus their attention on the movements and breathing, which can help them eliminate distractions and enter a state of calm and relaxation. Therefore, it has the effect of relieving negative emotions. However, currently, the number of related studies is small, and only two indicators, depression and anxiety, have been involved. Chen Hua et al. treated PD patients with the combination of the traditional Chinese medicine formula Jieyu Qingxin Decoction and Wuqinxi exercise[39]. Although the results showed that the depressive state of the patients was relieved, due to the combined treatment method, it was impossible to determine the contribution of Wuqinxi. In another experiment, it was proved that Wuqinxi could effectively reduce the HAMD and HAMA scores of patients, indicating that the depressive and anxious states were effectively improved[36]. Although Wuqinxi has potential advantages in regulating emotions and may help Parkinson's disease patients relieve negative emotions such as depression and anxiety, up to now, related studies still have certain limitations, and its exact effect has not been fully verified. There is an urgent need to carry out more scientifically rigorous studies with large sample sizes to deeply explore and clarify the actual effect of Wuqinxi on the negative emotions of Parkinson's disease patients.

3.4. Treatment of Cognitive Function

Movements such as the tiger - shaped and deer - shaped movements in Wuqinxi often involve the pitching and turning of the head, which can stretch the neck meridians and promote the qi - blood circulation of the bladder meridian of foot - taiyang and other meridians, helping to improve the activity and function of brain cells and providing a good material basis for cognitive activities. Although the theory of traditional Chinese medicine meridians explains this mechanism, there is little relevant evidence. Currently, most studies still focus on the impact of Wuqinxi on cognitive function. A 48 - week long - term experiment proved that the combination of somatosensory games and Wuqinxi training could effectively increase the MoCA score, restoring patients to a normal cognitive level[40]. However, an 8 - week short - term experiment showed that although the MoCA score increased, it did not reach the normal cognitive level[41]. It can be seen that to restore the cognitive function of PD patients to a normal state, long - term Wuqinxi exercise may be required. Executive function is an important part of cognitive function. Shen Mengyue et al. measured the executive function of patients using the Stroop colour and

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word test[38]. After 12 - week Wuqinxi exercise, the accuracy rate and reaction time of the word - meaning part and the color part improved, reflecting an enhancement of the patients' cognitive function.

3.5. Treatment of Quality of Life

Based on the above - mentioned multi - dimensional positive effects, the role of Wuqinxi in enhancing the quality of life of PD patients is definite and cannot be ignored. It is expected to become an important supplementary means in the comprehensive rehabilitation treatment of PD. This has been strongly confirmed in a large number of related studies. For example, an 8 - week single - item Wuqinxi training study showed that after the training, the physical motor function of PD patients participating in the Wuqinxi training was significantly improved, and their daily activity ability was enhanced[35]. Another 12 - week single - item Wuqinxi training obtained similar results[42]. There are also studies focusing on the effects of combining Wuqinxi with other therapies. A 6 - week study on the combination of Wuqinxi and physical training showed that the physical function of patients was significantly improved[43]. The research results of the comprehensive rehabilitation therapy combining Wuqinxi and positive assimilation education are also remarkable[44]. This comprehensive therapy not only improved the motor ability of patients but also greatly reduced their self - perceived burden. In addition, all these studies showed a significant decrease in the PDQ - 39 score, fully demonstrating the great benefits of Wuqinxi for the quality of life of patients.

3.6. Treatment of Other Indicators

From the perspective of traditional Chinese medicine, Wuqinxi can regulate qi - blood, balance yin and yang, and dredge meridians, providing nutrients for the immune system and maintaining the body's balance. From the perspective of modern medicine, it can regulate the immune system in an all - around way through nerve regulation, endocrine regulation, and metabolic regulation, maintaining hormone levels and promoting waste excretion. However, among all the studies on the treatment of PD with Wuqinxi, only one study involved the immune function of patients. According to the research results, after the intervention, the levels of NK, CD3 +, CD4 +, and CD8 + in patients increased, indicating that Wuqinxi exercise can improve the cellular immune level of elderly PD patients[34]. Sleep disorder is a common non - motor symptom in PD patients. However, current related research is relatively scarce. In existing studies, Tzu - Wei Chou monitored the impact of a 12 - week Wuqinxi exercise on the sleep quality of the elderly, but no significant change in sleep quality was observed[45]. Ma Chunxia only studied the sleep of the elderly using the ape - shaped movement in Wuqinxi[46]. The results showed that the Pittsburgh Sleep Quality Index (PSQI) score decreased significantly, indicating an improvement in sleep quality. It should be noted that these two studies focused on the general elderly population or the elderly with other diseases, not the specific group of Parkinson's disease patients. Therefore, their results cannot be directly extended to PD patients and can only be used as a reference when there is no research on the PD group. More studies on the sleep disorders of PD patients are needed to fill the gap in this field and provide more powerful evidence for clinical treatment.

4. Treatment of PD with Health Qigong Exercises

4.1. Treatment of Motor Function

Health qigong exercises are a set of complete exercise plans. They are compiled by carefully selecting 10 movements from traditional health qigong such as Wuqinxi, Liuzijue, Yijinjing, Baduanjin, the Twelve - Method Daoyin Health - Preserving Gong, and Mawangdui Daoyin Technique, taking into account the clinical symptoms of PD patients, as well as the difficulty level and exercise intensity. Compared with traditional health qigong, they have a more

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targeted impact on the motor and non - motor functions of PD. In recent years, they have become the focus of extensive attention in the field of treating PD with health qigong. The benefits of health qigong exercises for the motor function of PD patients were first confirmed in the study of Liu Xiaolei et al.[47]. In this study, 23 mild or moderate PD patients underwent 10 - week health qigong exercise training. As a result, multiple abilities were improved, including the elasticity of the pronator teres muscle of the left and right arms, body coordination ability, body stability, and balance ability. Subsequently, many scholars have engaged in research in this area. The experimental results of Zhirong Wan showed that health qigong exercises could significantly extend the single - leg eye - closed standing time of PD patients and significantly shorten the time used in the TUGT, verifying the effectiveness of health qigong exercises on balance and coordination abilities[48]. Some scholars also evaluated the motor ability by measuring other indicators. Zong Weijie et al. conducted a 12 - week intervention experiment with health qigong exercises and found that the score of the third part of the Unified Parkinson's Disease Rating Scale (UPDRS - Ⅲ) decreased significantly, and the step length, step frequency, and walking speed increased significantly[49]. Li, Xiying also proved through 12 - week health qigong training that the range of motion of the hip and knee joints of PD patients increased[50]. These two studies together provided evidence that health qigong exercises can improve the walking ability of PD patients. In conclusion, the improvement of the motor function of PD patients by health qigong exercises is reliable. Currently, there is no controversy, and it can be promoted as an effective treatment measure in clinical practice. However, compared with other types of health qigong, health qigong exercises are a new type of exercise, and the stability of their effects still needs to be verified by more research.

4.2. Treatment of Non - motor Function

The impact of health qigong exercises on the non - motor functions of PD patients was first demonstrated in the study of Liu Xiaolei et al.[51]. The study showed that 10 - week health qigong exercise training could reduce the Beck Anxiety Inventory (BAI) score, indicating that health qigong had a certain effect on relieving the anxiety of patients. Although the anxiety index involved is valuable, relying only on one aspect of negative emotions has certain limitations for comprehensively evaluating the non - motor functions of PD patients. In subsequent studies, other non - motor function indicators of PD were supplemented. The study of Fan Jing et al. showed that 8 - week health qigong exercise intervention could significantly increase the score of the energy item in the Profile of Mood States (POMS), and decrease the scores of fatigue, depression, and the overall score, but had no significant impact on other item scores[52]. In addition, it could significantly increase the scores of attention, delayed recall, and the overall score in the MoCA, but had no significant improvement on item scores such as naming and language. It can be seen that health qigong exercises may not be able to improve all mood state and cognitive function indicators. However, the significant change in the total scores of the two scales indicates that health qigong exercises still have a certain positive impact. In addition to the above - mentioned measurement indicators, Zhang Zhenzhen et al. also studied the overall non - motor symptoms of PD patients[53]. After 8 - week health qigong exercise training, the score of the Non - Motor Symptoms Questionnaire (NMSQuest) decreased significantly, indicating an improvement in the non - motor symptoms of PD patients. IL - 6 and IL - 1β are two commonly used clinical indicators for evaluating the body's inflammatory response. Bong et al. reported that there was a significant correlation between the levels of IL - 6 and IL - 1β and the disease progression of PD patients[54]. Therefore, Zhang Zhenzhen measured the levels of interleukin IL - 6 and IL - 1β in patients[53]. After treatment, the levels of IL - 6 and IL - 1β decreased significantly, proving the curative effect of health qigong exercises on PD. Research from the perspective of biochemical indicators can provide more reliable objective data for research in this field and is worthy of adoption in future research.

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5. Treatment of PD with Liuzijue and Yijinjing Health Qigong

5.1. Treatment of Motor Function

Liuzijue combines breathing meditation and physical movement. During the practice, by rhythmically exhaling the six syllables of "xu", "he", "hu", "si", "chui", and "xi" through the mouth and nose[55], and coordinating with specific movements, it can activate the core muscles and enhance the proprioception, thereby strengthening the body's balance ability and optimizing the gait stability and coordination during walking, which is helpful for improving the body's motor function. However, perhaps due to its lower popularity compared with Baduanjin and Wuqinxi, there are few studies on the treatment of PD motor function with Liuzijue. Wang Wanhong et al. conducted a 6 - week Liuzijue training for PD patients[56]. Compared with the conventional rehabilitation training group, the scores of UPDRS - Ⅲ, AP - SD, ML - SD, and TUGT in the Liuzijue group were significantly lower, indicating better recovery of overall motor function, balance ability, and walking ability. Wassom et al. carried out a pilot study[57]. They conducted a six - week "Liuzijue" qigong intervention on 7 mild to moderate PD patients. The results showed that the patients' gait function improved, the walking speed increased, the double - support time shortened, and the gait variability improved. Although this study had limitations such as a small sample size and no control group, it indicated that qigong had potential in improving the sleep and gait of PD patients and provided a direction for subsequent research. Yijinjing is also one of the health qigong. It integrates daoyin health - preservation, traditional martial arts, and the theory of yin and yang, and has the function of stretching the tendons and bones. Jiang Jiahui and Bi Hongyan conducted a study on mild to moderate PD patients[58]. The results showed that after Yijinjing training, the UPDRS - Ⅲ score decreased, indicating an improvement in motor function, and the cardiopulmonary endurance index increased. In summary, currently, only a small number of articles have involved Liuzijue and Yijinjing. More large - sample and multi - center studies are needed in the future to clarify the impact of different exercise parameters on the motor function of PD patients and improve the rehabilitation plan.

5.2. Treatment of Non - motor Function

In recent years, many studies on the non - motor symptoms of PD treated by Liuzijue qigong have mainly focused on sleep quality. Sanghee Moon et al. conducted a 6 - week Liuzijue intervention on 5 PD patients and found that the serum TNF - α level decreased significantly and the sleep quality improved significantly, indicating that qigong could reduce the TNF - α level and improve sleep[59]. Subsequently, the scholar conducted two other similar studies. The studies showed that after a 12 - week Liuzijue intervention on 8 patients, the sleep quality and overall non - motor symptoms improved significantly, and there was a moderate to strong correlation between the change in the IL - 1β concentration and sleep quality, indicating that qigong may have an impact on the inflammatory state and sleep quality of PD patients[60]. Yijinjing also has a certain effect on the treatment of non - motor symptoms of PD. Jiang Jiahui et al. conducted an 8 - week Yijinjing training for 20 PD patients[58]. The results showed that the scores of the Fatigue Severity Scale (FSS) and the Non - Motor Symptoms Scale (NMSS) decreased significantly, indicating a significant improvement in the fatigue state and non - motor symptoms of the patients. The above - mentioned studies indicate that Liuzijue and Yijinjing qigong may improve the non - motor symptoms of PD. However, due to problems such as small sample sizes, more research is needed for verification.

6. Summary and Prospects

Health qigong has shown initial effectiveness in the field of PD treatment. Baduanjin can improve the balance ability of patients, increase balance scores, extend single - leg standing

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time, enhance walking ability when combined with rehabilitation means, relieve negative emotions such as depression and anxiety, improve the quality of life, and also has certain effects on cognition and sleep. Wuqinxi can restore balance function through various movements, increase walking speed, has the potential to relieve negative emotions, helps improve cognitive function, and significantly enhances the quality of life, but research on immunity and sleep needs to be strengthened. Health qigong exercises can reliably improve motor functions, relieve anxiety, improve mood and cognition, and reduce non - motor symptoms. Liuzijue and Yijinjing can enhance balance and walking abilities and improve symptoms such as sleep and fatigue. However, many current studies have problems such as small sample sizes and unclear mechanisms. In the future, in - depth research on the mechanism of action should be carried out, large - sample and multi - center studies should be conducted, the optimal intervention plan should be determined, research indicators such as language and swallowing should be expanded, clinical application should be promoted, and modern technologies such as wearable devices should be combined for precise monitoring and analysis to tap greater therapeutic potential.

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