Table des matières

1. Systematic Reviews and Meta-Analysis 1
1.1. Generic Acupuncture 1
1.1.1. Cui 2026 (non-motor symptoms) 1
1.1.2. Wang 2026 (motor symptoms) 2
1.1.3. Li 2025 (Non-Motor Symptoms) 2
1.1.4. Zhang 2024 3
1.1.5. Lei 2023 (motor function) 4
1.1.6. Li 2023 4
1.1.7. Sun 2023 ★ 5
1.1.8. Yang 2023 6
1.1.9. Peirera 2022 ☆ 6
1.1.10. Kwon 2021 (Movement Function) 7
1.1.11. Wen 2021 7
1.1.12. Li 2020 ☆ 8
1.1.13. Zhou 2020 (motor symptoms) ☆ 9
1.1.14. Liu 2018 9
1.1.15. Subramanian 2017 (nonmotor symptoms) 10
1.1.16. Liu 2017 (combined with Madopar) 10
1.1.17. Noh 2017 ☆ 11
1.1.18. Lee 2017 ☆☆ 12
1.1.19. Yin 2016 ☆ 12
1.1.20. Zhang 2015 ☆☆ 13
1.1.21. Sun 2013 (non-motor symptoms) ☆☆ 13
1.1.22. Fox 2011 (motor symptoms) ☆☆ 14
1.1.23. Yang 2010 ☆☆ 15
1.1.24. Lam 2008 ☆ 15
1.1.25. Lee 2008 ∅ 16
1.2. Specific outcomes 17
1.2.1. Constipation 17
1.2.1.1. Li 2024 17
1.2.2. Pain 17
1.2.2.1. Huissoud 2024 17
1.2.2.2. Qureshi 2021 18
1.2.3. Dysphagia 19
1.2.3.1. Cheng 2023 19
1.2.3.2. Jiayu 2023 20
1.2.3.3. Wu 2023 20
1.2.3.4. Wen 2022 21
1.2.4. Neuropsychiatric symptoms 21
1.2.4.1. Tan 2024 21
1.2.5. Parkinson's disease anxiety 22
1.2.5.1. Chen 2025 22
1.2.6. Sleep and depression 23
1.2.6.1. Gu 2025 23
1.2.6.2. Zhou 2025 23
1.2.6.3. Mi 2024 24
1.2.6.4. Yan 2024 25
1.2.6.5. Hsu 2023 25
1.2.7. Cognitive impairment 26

1.2.7.1. Hanyu 2025 26
1.2.8. Fatigue 26
1.2.8.1. Alageel 2026 26
1.2.8.2. Folkerts 2023 27
1.2.9. Neuroimaging studies 28
1.2.9.1. Pereira 2026 28
1.3. Special Acupuncture Techniques 29
1.3.1. Comparison of Acupuncture techniques 29
1.3.1.1. Mao 2025 29
1.3.1.2. Yu 2025 30
1.3.2. Moxibustion 30
1.3.2.1. Niu 2022 RETRACTED 30
1.3.2.2. Cho 2017 30
1.3.3. Scalp Acupuncture 31
1.3.3.1. Li 2024 31
1.3.3.2. Qiang 2019 Ø 32
1.3.3.3. Lee 2013 32
1.3.4. Pharmaco-acupuncture 33
1.3.4.1. Cho 2018 33
1.3.5. Bee venom acupuncture 34
1.3.5.1. Jeong 2025 34
2. Overviews of systematic reviews 34
2.1. Xue 2024 34
2.2. Yu 2023 35
2.3. Cao 2020 ☆ 35
2.4. Huang 2020 ☆ 36
2.4.1. Otayza 2018 ☆ 36
3. Clinical Practice Guidelines 37
3.1. Netherlands Comprehensive Cancer Centre (IKNL, Netherlands) 2025 37
3.2. Parkinson Canada 2019 Ø 37
3.3. Haute Autorité de Santé (HAS, France) 2016 Ø 37
3.4. Parkinson Society Canada (¤PSC, Canada) 2012 Ø 38
3.5. American Academy of Neurology (AAN, USA) 2006 Ø 38

Parkinson’s Disease

Maladie de Parkinson

Articles connexes : - acupuncture expérimentale - évaluation du taiji-gigong-

1. Systematic Reviews and Meta-Analysis

1.1. Generic Acupuncture

1.1.1. Cui 2026 (non-motor symptoms)

Cui Y, Xue R, Zhang B, Huo H, Zhang Q, Gao B, Zhao Y, Mao S, Zhong W, Zhao J. Acupuncture effects on non-motor symptoms of Parkinson's disease (sleep, mood, and fatigue): a systematic review and meta-analysis. Front Neurol. 2026;17:1745157. https://doi.org/10.3389/fneur.2026.1745157

Background	Parkinson's disease (PD) causes multiple non-motor symptoms (NMSs), such as insomnia, anxiety, and fatigue, that worsen the quality of life. Pharmacological options offer limited relief, prompting interest in acupuncture as an adjunctive therapy.
Methods	Following PRISMA 2020 guidelines (PROSPERO CRD420251172700), PubMed, Embase, Web of Science, and Cochrane Library were searched from 1 Jan 2015 to 28 Oct 2025 for randomized and controlled observational studies comparing manual or electroacupuncture with sham or usual care in idiopathic PD. Outcomes were sleep quality (PDSS and PDSS-2), mood (HAM-A, HAM-D, HADS, and BDI), and fatigue (MFIS, FSS, and FACIT-F). Two reviewers independently extracted data, assessed bias with RoB 2 and ROBINS-I, and rated certainty using GRADE. Only sleep (PDSS) outcomes from two RCTs were quantitatively pooled; mood and fatigue outcomes were narratively summarized because only single trials were available.
Objectives	Unlike prior reviews that pooled diverse non-motor outcomes and comparator conditions, this review focuses on sleep disturbance, anxiety/depression, and fatigue in idiopathic PD and includes sham-controlled evidence up to 28 October 2025. It differs from recent network meta-analytic approaches by emphasizing symptom-specific, sham/usual-care controlled effect estimates and aligning certainty judgments with RoB 2/ROBINS-I and GRADE. Where data permitted, we assessed robustness using leave-one-out and fixed- versus random-effects sensitivity checks; meta-regression was not feasible due to the small number of trials.
Results	Twenty-five full-text reports were assessed, and eight primary studies met the inclusion criteria (4 RCTs and 4 observational). Two sham-controlled sleep RCTs (total n = 138) reported PDSS changes; pooled analysis suggested improved sleep with acupuncture (MD 14.52, 95% CI 7.27-21.78) with moderate heterogeneity (I2 = 68%), potentially related to differences in treatment duration (4 vs. 16 weeks) and protocol. One RCT reported a greater reduction in anxiety at follow-up (HAM-A difference 7.03 points), while fatigue showed no difference from sham (SMD 0.10, 95% CI - 0.20 to 0.40). No serious adverse events were reported. Since fewer than 10 studies contributed to any outcome, publication bias could not be formally assessed.

Conclusion	Acupuncture shows a moderate-certainty signal for improving sleep quality in PD. Evidence for anxiety is preliminary, based on one RCT with the main signal observed at follow-up, and requires replication. Evidence for fatigue is very uncertain and does not show superiority over sham. Larger multicenter RCTs with standardized protocols and ≥6-month follow-up are needed.

1.1.2. Wang 2026 (motor symptoms)

Wang Z, Ruan J, Zhang M, Li C. Adjunctive non-pharmacological interventions for motor symptoms in Parkinson's disease: a scoping review of randomized controlled trials. Front Neurol. 2026;17:1926421. https://doi.org/10.3389/fneur.2026.1926421

Background	Motor symptoms in Parkinson's disease (PD), particularly gait, balance, freezing, and axial impairment, may remain troublesome despite optimized dopaminergic treatment. The literature on non-pharmacological adjuncts is diverse, and the label “complementary and alternative therapy” is used inconsistently across conventional rehabilitation, mind-body practices, acupuncture, cueing, and neuromodulation. This scoping review aimed to map randomized evidence on adjunctive non-pharmacological interventions for PD motor symptoms while distinguishing complementary/integrative practices from conventional rehabilitation and other adjunctive technologies.
Methods	A PRISMA-ScR-guided scoping review of PubMed and Web of Science was conducted for studies published from January 1, 2015, to September 7, 2025. English- or Chinese-language randomized controlled, randomized crossover, pilot, or feasibility trials were eligible when at least one prespecified motor or motor-function outcome was reported. Published reports and independent trials were counted separately. Non-motor outcomes were not synthesized unless ancillary to an otherwise eligible motor-focused trial.
Results	Fifty eligible reports representing 48 independent randomized trials were included. Seven reports evaluated rehabilitation or technology-assisted training, 15 mind-body or exercise-based approaches, **eight acupuncture-related or manual approaches**, and 20 neuromodulation, cueing, biofeedback, or other physical interventions. Study size, intervention dose, comparator choice, motor phenotype, outcome selection, follow-up, and safety reporting varied substantially. Two pairs of publications were identified as reports from the same trial families.
Conclusion	The randomized literature on adjunctive non-pharmacological interventions for Parkinson's disease motor symptoms is broad but methodologically heterogeneous. This scoping review maps where motor outcomes have been studied but does not establish comparative efficacy or support treatment recommendations. Future trials and evidence syntheses should distinguish intervention classes more precisely, link multiple reports from the same trial, prespecify motor phenotypes and core outcomes, and report adverse events and adherence consistently.

1.1.3. Li 2025 (Non-Motor Symptoms)

Li X, Chen P, Wang S, Wang C, Li B, Liu H. Efficacy of Acupuncture Therapy in Treating Non-Motor Symptoms of Parkinson's Disease: A Systematic Review and Network Meta-Analysis. Neuropsychiatr Dis Treat. 2025 Aug 29;21:1799-1822. https://doi.org/10.2147/NDT.S541627

Purpose	Purpose: Recently, research on the management of Parkinson's disease (PD), particularly non-motor symptoms (NMS), has been increasingly reported. This systematic review and network meta-analysis (NMA) aimed to evaluate the efficacy of acupuncture interventions for NMS in PD patients to identify the most effective strategy.

Methods	Randomized controlled trials (RCTs) on acupuncture for NMS in PD were retrieved up to July 31, 2024, across eight databases: PubMed, Embase (OVID), Cochrane Library, Web of Science, China National Knowledge Infrastructure, Chinese Biomedical Literature Database, VIP Database, and Wanfang Database. The quality of the included studies was assessed using the Cochrane handbook for systematic reviews.
Results	77 RCTs were included, involving 5538 PD patients. The NMA indicated that acupuncture_training_usual (SUCRA = 84.18%) was the best intervention for improving the anxiety state of PD patients. Abdominal_acupuncture_usual (94.15%) was a preferred intervention for improving the depressive state. Scalp_acupuncture_usual (99.98%) and Scalp_electroacupuncture (94.28%) can significantly improve the sleep quality of PD patients. Heat_sensitive_moxibustion_usual (94.65%) and Warm_acupuncture_moxibustion_usual (99.995%) can significantly improve the quality of life of PD patients. Acupuncture_usual (94.02%) may be considered a promising intervention for improving the psychological, emotional and cognitive functions. Additionally, shallow_acupuncture_usual (99.17%) was the safest option. Notably, acupuncture_moxibustion (98.24%) was the most effective intervention involving the largest number of participants.
Conclusion	This analysis identifies the most effective acupuncture interventions for improving NMS in PD patients, including anxiety, depression, sleep quality, and overall quality of life, as well as additional benefits in pain management and gastrointestinal function. Future large-scale RCTs are needed to confirm these findings.

1.1.4. Zhang 2024

Zhang Y, Liu S, Xu K, Zhou Y, Shen Y, Liu Z, Bai Y, Wang S. Non-pharmacological therapies for treating non-motor symptoms in patients with Parkinson's disease: a systematic review and meta-analysis. Front Aging Neurosci. 2024 Apr 26;16:1363115. https://doi.org/10.3389/fnagi.2024.1363115

Objective	The non-motor symptoms of Parkinson's disease (PD) are an important part of PD. In recent years, more and more non-drug interventions have been applied to alleviate the non-motor symptoms of PD, but the relevant evidence is limited. This systematic review and meta-analysis was designed to evaluate the efficacy of non-drug interventions in patients with non-motor symptoms in patients with PD.
Methods	Seven databases, including PubMed, Embase, Cochrane Library, China National Knowledge Infrastructure (CNKI), Wanfang database (WANFANG), VIP database (VIP), and China Biomedical Literature Service System (CBM) were searched from the establishment of the database to December 2023. Non-drug interventions such as **acupuncture**, cognitive behavioral therapy (CBT), exercise, repetitive transcranial magnetic stimulation (rTMS), and non-motor symptoms of Parkinson's disease were selected as search words, and two independent evaluators evaluated the included literature's bias risk and data extraction. The therapeutic efficacy was evaluated by the Parkinson's Disease Sleep Scale (PDSS), Hamilton Depression Scale (HAMD), Beck Depression Inventory (BDI), Hamilton Anxiety Scale (HAMA), Montreal Cognitive Assessment (MoCA), Minimum Mental State Examination (MMSE), and Parkinson's Disease Questionnaire-39 (PDQ-39). RevMan 5.4.1 analyzed the data and estimated the average effect and the 95% confidence interval (CI). A heterogeneity test was used to assess differences in the efficacy of different non-drug treatments.
Results	We selected 36 from 4,027 articles to participate in this meta-analysis, involving 2,158 participants. Our combined results show that: PDSS: MD = -19.35, 95% CI (-30.4 to -8.28), $p < 0.0006$; HAMD: MD = -2.98, 95% CI (-4.29 to -1.67), $p < 0.00001$; BDI: MD = -2.69, 95% CI (-4.24 to 4.80), $p = 0.006$; HAMA: MD = -2.00, 95% CI (-2.83 to -1.17), $p < 0.00001$; MMSE: MD = 1.20, 95% CI (0.71 to 1.68), $p < 0.00001$; MoCA: MD = 2.10, 95% CI (-0.97 to 3.23), $p = 0.0003$; PDQ-39: MD = -4.03, 95% CI (-5.96 to -1.57), $p < 0.00001$.

Conclusion	The four non-drug measures used in our review showed significant improvements in sleep, depression, anxiety, cognition, constipation, and quality of life compared with the control group, and no serious adverse events were reported in the included research evidence. We found differences among subgroups of different intervention methods, but due to the limited literature and indirect comparisons, these results should be interpreted carefully.

1.1.5. Lei 2023 (motor function)

Lei S, Fan J, Liu X, Xv X, Zhang J, Zhou Z, Zhuang L. Qualitative and quantitative meta-analysis of acupuncture effects on the motor function of Parkinson's disease patients. Front Neurosci. 2023 May 9;17:1125626. https://doi.org/10.3389/fnins.2023.1125626

Objective	To explore the association between acupuncture sessions and its effects on the motor function of Parkinson's Disease (PD).
Methods	Eight databases and two clinical trials registries were searched from inception to August 2022. Randomized controlled trials (RCTs) that compared acupuncture with sham acupuncture, or antiparkinsonian drugs, were included. After qualitative meta-analysis, a non-linear meta regression approach with restricted cubic spline was used to investigate the dose-response relationship between acupuncture sessions and their efficacy on the Unified Parkinson's Disease Rating Scale Part III (UPDRS-III) score. Subgroup meta-analysis was performed of the included studies according to the weekly acupuncture frequency. And finally, the included studies containing the determination of intermediate efficacy were compared.
Results	Of the 268 citations screened, **16 studies (462 patients of PD)** were included. The qualitative meta-analysis showed that the acupuncture group had better effect on UPDRS-III scores than the control group. And the quantitative meta-analysis suggested that acupuncture dose was correlated with the reduction of UPDRS-III score in PD patients with motor symptoms. In subgroup analysis, on the one hand, when the frequency of acupuncture was no more than 3 times a week, with the increase of acupuncture session, the changes of UPDRS-III score decreased and then increased (P = 0.000). On the other hand, when acupuncture for more than 3 times a week and the dose of acupuncture treatment was <60 times, the changes of UPDRS-III score increased with the increase of acupuncture dose, but the score stopped to decrease if the dose continued to increase (P = 0.020). The comparative analysis of two quantitative RCTs found that the score improvement was more significant at the higher weekly acupuncture frequency.
Interpretation	This study found that when treating PD patients with motor symptoms, acupuncture treatment may need to reach a certain dose to obtain better therapeutic effect and excessive acupuncture stimulation may cause the body to develop a certain tolerance. However, the above results still need to be verified by more high-quality clinical studies. The protocol was registered on PROSPERO International Prospective Register of Systematic Reviews (CRD42022351428).

1.1.6. Li 2023

Li RY, Chen KY, Wang XR, Yu Q, Xu L. Comparison of Different Rehabilitation Techniques of Traditional Chinese and Western Medicine in the Treatment of Motor Dysfunction After Stroke Based on Frequency Method: A Network Meta-analysis. Am J Phys Med Rehabil. 2023 Jun 1;102(6):504-512. https://doi.org/10.1097/PHM.0000000000002130

Objective	The aim of the study is to evaluate the effect of different traditional Chinese and western medicine rehabilitation techniques on motor dysfunction after stroke using a network meta-analysis.
Methods	CNKI, Wanfang, PubMed, Embase, and Cochrane databases were searched from inception to September 2022. We independently searched and screened randomized controlled trials of rehabilitation techniques for poststroke motor dysfunction treatment, evaluated the quality, and analyzed the data using Stata 14.0.
Results	Seventy-four randomized controlled trials involving nine rehabilitation techniques and 5128 patients were included. The results of network meta-analysis showed the following orders regarding improvement of the total scores of Fugl-Meyer Assessment, Action Research Arm Test, and Berg Balance Scale: biofeedback therapy > mirror therapy > repetitive transcranial magnetic stimulation > acupuncture therapy > transcranial direct current stimulation > Taichi > common therapy, virtual reality > transcranial direct current stimulation > repetitive transcranial magnetic stimulation > mirror therapy > common therapy, and acupuncture therapy > virtual reality > neuromuscular electrical stimulation > mirror therapy > common therapy > transcranial direct current stimulation, respectively.
Conclusions	Biofeedback therapy had the best comprehensive effect, while virtual reality was the best intervention for improving the index of action research arm test and Fugl-Meyer Assessment-lower extremity. Acupuncture therapy improved lower limb balance function.

1.1.7. Sun 2023 ★

Sun Y, Sheng J, Liu T, Yang G, He M, Huang Y, Luo Z, Zhu J, Jin X. Combination treatment of acupoint therapy and conventional medication for motor function of Parkinson's disease: A systematic review and meta-analysis. Complement Ther Clin Pract. 2023 Feb;50:101677. https://doi.org/10.1016/j.ctcp.2022.101677

Background	Combination treatment with acupoint therapy and conventional medication (CM) has been proposed as a strategy that could improve motor dysfunction in Parkinson's disease (PD). We performed this systematic review and meta-analysis to assess the effects of this combination treatment on motor function in patients with PD.
Methods	We searched randomized controlled trials (RCTs) from eight databases, comparing combined acupoint therapy and CM and CM (alone or with sham interventions). The quality of the trials was evaluated according to the Cochrane risk of bias. Subgroup and sensitivity analyses were performed on different types of acupoint interventions.
Results	**Forty-seven trials of 2929 participants** were included, with 45 studies used for the meta-analyses. Combination treatment yielded an improved reduction in United Parkinson's disease rating scale (UPDRS) III of -3.85 [95% CI, -4.83 to -2.86] and Webster scale score of -3.17 [95% CI, -4.07 to -2.27]. Further analyses demonstrated that real (compared with sham) intervention was linked to a decreased UPDRS III of -2.02 ([95% CI, -3.60 to -0.44], I2 = 40%), and beneficial effects were observed when combination intervention was used for patients with Hoehn-Yahr (H-Y) stages >3 with mild to moderate stimulation for 4-12-week treatment.
Conclusions	Acupoint therapy and CM treatment may improve motor function of patients with PD. Patients with H-Y stage >3 could tolerate real acupoint intervention with mild to moderate stimulation for 4-12-week treatment and showed improvement. However, this was demonstrated with low to moderate levels of evidence in statistical description.

1.1.8. Yang 2023

Yang 2023 Yang Y, Wang Y, Gao T, Reyila A, Liu J, Liu J, Han H. Effect of Physiotherapy Interventions on Motor Symptoms in People With Parkinson's Disease: A Systematic Review and Meta-Analysis. Biol Res Nurs. 2023 Oct;25(4):586-605. https://doi.org/10.1177/10998004231171587

Objective	To evaluate the effectiveness of different types of physiotherapy interventions in people with Parkinson's disease (PD).
Design	Systematic review and meta-analysis of randomized controlled trials (RCTs).
Methods	Five databases (PubMed, Embase, Cochrane Library, CINAHL and Web of Science Core Collection) were searched for relevant RCTs published from database inception to July 14, 2022. Reviewers independently screened the literature, extracted data, and assessed the literature quality according to the Cochrane Collaboration Risk of Bias Tool and PEDro Scale. This meta-analysis was conducted using RevMan 5.4.1 and reported in compliance with the PRISMA statement.
Results	Forty-two RCTs with 2,530 participants were included. Across all types of physiotherapy, strength training, mind-body exercise, aerobic exercise, and non-invasive brain stimulation (NiBS) were effective in improving motor symptoms as measured by the (Movement Disorders Society-) Unified PD Scale, whereas balance and gait training (BGT) and **acupuncture** were not. The pooled results showed that the change in mind-body exercise (MD = -5.36, 95% CI [-7.97 to -2.74], p < .01, I2 = 68%) and NiBS (MD = -4.59, 95% CI [-8.59 to -0.59], p = .02, I2 = 78%) reached clinical threshold, indicating clinically meaningful improvements. Considering the effectiveness of the interventions on motor symptoms, balance, gait and functional mobility, mind-body exercise was recommended the most.
Conclusions	Exercise appears to be a better form of physiotherapy than NiBS and **acupuncture** for improving motor function. Mind-body exercise showed beneficial effects on motor symptoms, balance, gait and functional mobility in people with PD, and is worthy of being promoted.

1.1.9. Peirera 2022 ☆

Pereira CR, Machado J, Rodrigues J, de Oliveira NM, Criado MB, Greten HJ. Effectiveness of Acupuncture in Parkinson's Disease Symptoms-A Systematic Review. Healthcare (Basel). 2022 Nov 21;10(11):2334. https://doi.org/10.3390/healthcare10112334

Background	Parkinson's disease (PD) is the second most common neurodegenerative disease. Several pharmacological and surgical therapies have been developed; however, they are accompanied by some adverse effects. As a result, many patients have been resorting to complementary medicine, namely acupuncture, in the hope of obtaining symptomatic improvements without having disruptive side effects. Therefore, advances in research in this area are very important. This work presents a systematic review of the effectiveness of acupuncture treatments in relieving PD symptoms.
Methods	EMBASE, Medline, Pubmed, Science Direct, The Cochrane Library, Cochrane Central Register of Controlled Trials (Central) and Scielo databases, were systematically searched from January 2011 through July 2021. Randomised controlled trials (RCTs) published in English with all types of acupuncture treatment were included. The selection and analysis of the articles was conducted by two blinding authors through Rayyan application.

Results	A total of 720 potentially relevant articles were identified; 52 RCTs met our inclusion criteria. After the exclusion of 35 articles, we found **17 eligible**. The included RCTs reported positive effects for acupuncture plus conventional treatment compared with conventional treatment alone in the UPDRS score.
Conclusions	Although all the studies reviewed pointed out a positive effect of acupuncture on improving motor and non-motor symptoms in Parkinson's disease, we found great discrepancies regarding the studies' design and methodology, making difficult any comparison between them.

1.1.10. Kwon 2021 (Movement Function)

Kwon M, Cheong MJ, Leem J, Kim TH. Effect of Acupuncture on Movement Function in Patients with Parkinson's Disease: Network Meta-Analysis of Randomized Controlled Trials. Healthcare (Basel). 2021 Nov 5;9(11):1502. https://doi.org/10.3390/healthcare9111502

Aim	We aimed to compare the effectiveness of some different acupuncture modalities on motor function using the unified Parkinson disease rating scale (UPDRS)-III scores of idiopathic Parkinson’s disease (PD) via pairwise and network meta-analyses (NMA) of randomized controlled trials (RCTs).
Methods	The Cochrane risk of bias assessment tool was used to assess the methodological quality of the included RCTs. A frequentist approach-based random effect model NMA was performed.
Results	**Seventeen RCTs with 1071 participants** were included. The five following modalities were identified: combination of conventional medication (levodopa) with (1) electroacupuncture (ELEC), (2) manual acupuncture (MANU), (3) bee venom acupuncture (BEEV), (4) sham acupuncture (SHAM), and (5) conventional medication alone (CONV). In NMA on UPDRS-III, BEEV was the best modality compared to CONV (mean difference [MD]) −7.37, 95% confidence interval [−11.97, −2.77]). The comparative ranking assessed through NMA was suggested to be BEEV, MANU, ELEC, SHAM, and CONV. Regarding daily activity assessment (UPDRS-II), the magnitude of effectiveness was in the order of BEEV, ELEC, MANU, SHAM, and CONV.
Conclusions	Combination treatment with BEEV (MANU or ELEC) and CONV can be recommended to improve motor function in PD patients. Due to the limited number of included RCTs, further NMA with more rigorous RCTs are warranted.

1.1.11. Wen 2021

Wen X, Li K, Wen H, Wang Q, Wu Z, Yao X, Jiao B, Sun P, Ge S, Wen C, Lu L. Acupuncture-Related Therapies for Parkinson's Disease: A Meta-Analysis and Qualitative Review. Front Aging Neurosci. 2021. [220131]. doi

Objective	This systematic review and meta-analysis aimed to assess the effects of the combination of acupuncture-related therapies with conventional medication compared with conventional medication in patients with Parkinson's disease (PD).

Methods	A literature search within eight databases [including Medline, Embase, the Cochrane Library, PubMed, China National Knowledge Infrastructure (CNKI), China Biology Medicine (CBM), VIP, and Wanfang Database] was performed covering a time frame from their inception to August 2020. Randomized controlled trials (RCTs) comparing acupuncture-related therapies combined with conventional medication vs. conventional medication in patients with PD were eligible. Two authors independently assessed the risk of bias. Assessments were performed with the total and subscales scores of the Unified Parkinson's Disease Rating Scale (UPDRS), 39-item Parkinson's Disease Questionnaire (PDQ-39), the dosage of Madopar, Mini-Mental State Examination (MMSE), and 17-item Hamilton Depression Scale (HAMD). Data were analyzed by adopting the Cochrane Collaboration's RevMan 5.4 (Review Man, Copenhagen, Denmark); and mean effect sizes and 95% confidence intervals were estimated. Tests for heterogeneity were used to assess differences in treatment effects across different types of acupuncture used.
Results	**Sixty-six trials** met the inclusion criteria, of which 61 trials provided data for the meta-analysis. We defined high-quality articles as those with a low risk of bias in four or more domains; and only 10 (15.15%) articles were of high quality. Compared with the controls, acupuncture-related therapies with conventional medication achieved a benefit in the primary outcomes of UPDRS (motor subscore: -3.90, -4.33 to -3.49, $P < 0.01$; total score: -7.37 points, -8.91 to -5.82, $P < 0.001$; activities of daily living subscore: -3.96, -4.96 to -2.95, $P < 0.01$). For the subgroup difference test among the effects of different acupuncture methods, significant differences existed in outcomes with the UPDRS-III, UPDRS-I, UPDRS-IV, and PDQ-39 scores and Madopar dosage, while non-significant differences existed with the UPDRS-total, UPDRS-II, HAMD, and MMSE scores.
Conclusions	Acupuncture-related therapies combined with conventional medication may benefit individuals with PD. Our review findings should be considered with caution because of the methodological weaknesses in the included trials. Future, large randomized trials of acupuncture-related therapies for PD with high methodological quality are warranted.

1.1.12. Li 2020 ☆

Li Xiaoyan. [Evaluate the effectiveness of acupuncture for Parkinson's disease patients]. Heilongjiang Journal of TCM. 2020. [212923].

Objective	To summarize and evaluate the effectiveness of acupuncture (or combination of acupuncture and medicine) in the treatment of Parkinson's disease patients with motor function and symptoms. Method: Two independent reviewers extracted data from all randomized clinical trials in 8 electronic databases retrieved to evaluate the uniformity of acupuncture (or acupuncture and medicine) compared with conventional therapies (drugs) for Parkinson's disease Evaluation scale (UPDRS), Webster scale (Webster) and the impact of clinical efficacy.
Results	This study included 11 RCTs that met the inclusion criteria (922 patients were included). After evaluating the Unified Parkinson’s Disease Rating Scale (UPDRS), 4 RCTs confirmed that the combination of acupuncture and the drug is better than the drug alone [weighted mean difference (WMD)=-11. 771, 95% confidence interval (CI) (-14. 197, -9. 344) , P<0. 01], Webster scale, 4 RCTs confirmed that acupuncture treatment is better than western medicine alone [WMD, -2. 474, 95% confidence interval (-2. 794, -2. 154), P<0. 01]. According to the Webster scale, 4 RCTs show that acupuncture is more effective than drugs [WMD=1. 106, 95% confidence interval (1. 022, 1. 197), P<0. 05]; UPDRS scale, 4 RCTs show that acupuncture combined with drugs is more effective than drugs. The curative effect is obvious [weighted mean difference=1. 236, 95% confidence interval (1. 099, 1. 390), P<0. 01].

Conclusion	Acupuncture has a significant positive effect in clinical treatment of Parkinson's disease, but for the future research of Parkinson's disease, more rigorous methods should be explored.

1.1.13. Zhou 2020 (motor symptoms) ☆

Zhou Jing. [Meta analysis of acupuncture in the treatment of pathogenic motor symptoms of Parkinson's disease]. Global TCM. 2020. [212952].

Objective	To systematically evaluate the clinical efficacy of acupuncture in the treatment of pathogenic motor symptoms of Parkinson's disease.
Methods	The randomized controlled trial on acupuncture with Western medicine in the treatment of primary motor symptoms of Parkinson's disease was collected. The relative data was extracted after being evaluated. Rev Man 5. 3 meta analysis was used to analyze the efficacy and safety.
Results	**14 papers were included and 632 objects** were involved. The results of meta analysis shows that acupuncture can effectively reduce the score of UPDRSIII and improve the motor dysfunction of patients. Acupuncture can also effectively reduce tremor score but there is no significant difference in decreasing the scores of rigidity and slowness.
Conclusion	Acupuncture can effectively improve the primary motor symptoms of Parkinson's disease. The effect of acupuncture combined with western medicine is better than using western medicine only. Limited by the number and quality of included studies, the above results need to be verified by more high-quality studies to provide reliable evidence for clinical practice.

1.1.14. Liu 2018

Liu Yanhui, Chen Tao, Deng Yidong, Zhang Shan, Teng Si, Cai Benchi, Su Jiali. [A meta-analysis on clinical effect of acupuncture for Parkinson disease]. Journal of Chinese Physician. 2018;1:16-23,27. [201794].

Objective	To evaluate the clinical effect of acupuncture on Parkinson disease (PD) with systematic review in view of evidence-based medicine (EBM).
Methods	Articles on clinical effect of acupuncture on Parkinson disease published from the database-established year to May of 2017 we searched from China National Knowledge Internet (CNKI), Wanfang, VIP, Chinese Biomedical Literature Database (CBM), PubMed, and Cochrane Library databases without language limitation. Quality evaluation and data extraction were carried out according to the tool for assessing risk of bias provided by the Cochrane Handbook for Systematic Reviews of Interventions (Version 5.1.0).All statistical analyses were performed with Reviewer Manager Software (Version 5.3;Cochrane Collaboration, Oxford, UK). Assessments were performed with the total effective rate, the scores of each scale (the unified Parkinson disease rating scales-UPDRS and the Webster scale),and the improvement of different clinical manifestation.

Results	In all,**12 randomized controlled trials (RCTs)** met our inclusion criterion, a total of **892 patients**, including 468 cases in the experimental group (acupuncture with or without medicine) and 424 cases in the control group (medicine only).Meta-analysis showed favorable results for the experimental group compared to control group in the total effective rate, the total scales of UPDRS and the modified Webster scale [OR =2.16,95□ CI (1.57,2.97),P□0.01;OR =7.20,95□ CI(4.02,10.37),P□0.01;OR=3.33,95□ CI(2.13,4.53),P □0.01].The experimental group was effective in relieving partial symptoms of PD such as rigidity, postural, gait, bradykinesia compared to the control group, while there was no significant difference in tremor at rest and sit-stand up movements (P □ 0.05).
Conclusions	Acupuncture had certain clinical effect on Parkinson disease, it can relieve the clinical symptoms of Parkinson disease to some extent, and postpone the progression of PD, which improves the quality of life of PD patients. Acupuncture can be recommended as a combination treatment for Parkinson disease.

1.1.15. Subramanian 2017 (nonmotor symptoms)

Subramanian I. Complementary and Alternative Medicine and Exercise in Nonmotor Symptoms of Parkinson's Disease. Int Rev Neurobiol. 2017:1163-1188. [160582].

> The use of complementary and alternative medicine (CAM) therapy in nonmotor symptoms (NMS) for Parkinson disease (PD) is growing worldwide. Well-performed, systematic evidence-based research is largely lacking in this area and many studies include various forms of CAM with small patient numbers and a lack of standardization of the approaches studied. Taichi, Qigong, dance, yoga, mindfulness, acupuncture, and other CAM therapies are reviewed and there is some evidence for the following: Taichi in sleep and PDQ39; dance in cognition, apathy, and a mild trend to improved fatigue; yoga in PDQ39; and **acupuncture in depression**, PDQ39, and sleep. Exercise including occupational therapy (OT) and physical therapy (PT) has been studied in motor symptoms of PD and balance but only with small studies with a mounting evidence base for use of exercise in NMS of PD including PDQ39, sleep, fatigue, depression, and some subsets of cognition. Studies of OT and PT largely show some benefit to depression, apathy, and anxiety. Sustainability of an improvement has not been shown given short duration of follow up. Finding optimal control groups and blind for these interventions is also an issue. This is a very important area of study since patients want to be self-empowered and they want guidance on which form of exercise is the best. Additionally, evidence for PT and OT in NMS would give added weight to get these interventions covered through medical insurance.

1.1.16. Liu 2017 (combined with Madopar)

Liu H, Chen L, Zhang Z, Geng G, Chen W, Dong H, Chen L, Zhan S, Li T. Effectiveness and safety of acupuncture combined with Madopar for Parkinson's disease: a systematic review with meta-analysis. Acupunct Med. 2017;35(6):404-412. [99815].

Objective	To evaluate the effectiveness and safety of acupuncture combined with Madopar for the treatment of Parkinson's disease (PD), compared to the use of Madopar alone.
Methods	A systematic search was carried out for randomised controlled trials (RCTs) of acupuncture and Madopar for the treatment of PD published between April 1995 and April 2015. The primary outcome was total effectiveness rate and secondary outcomes included Unified Parkinson's Disease Rating Scale (UPDRS) scores. Data were pooled and analysed with RevMan 5.3. Results were expressed as relative ratio (RR) with 95% confidence interval (Cis).

Results	Finally, 11 RCTs with 831 subjects were included. Meta-analyses showed that acupuncture combined with Madopar for the treatment of PD can significantly improve the clinical effectiveness compared with Madopar alone (RR=1.28, 95% CI 1.18 to 1.38, P<0.001). It was also found that acupuncture combined with Madopar significantly improved the UPDRS II (SMD=-1.00, 95% CI -1.71 to -0.29, P=0.006) and UPDRS I-IV total summed scores (SMD=-1.15, 95% CI -1.63 to -0.67, P<0.001) but not UPDRS I (SMD=-0.37, 95% CI -0.77 to 0.02, P=0.06), UPDRS III (SMD=-0.93, 95% CI -2.28 to 0.41, P=0.17) or UPDRS IV (SMD=-0.78, 95% CI -2.24 to 0.68, P=0.30) scores. Accordingly, acupuncture combined with Madopar appeared to have a positive effect on activities of daily life and the general condition of patients with PD, but was not better than Madopar alone for the treatment of mental activity, behaviour, mood and motor disability. In the safety evaluation, it was found that acupuncture combined with Madopar was associated with significantly fewer adverse effects including gastrointestinal reactions (RR=0.38, 95% CI 0.23 to 0.65, P<0.001), on-off phenomena (RR=0.27, 95% CI 0.11 to 0.66, P=0.004) and mental disorders (RR=0.24, 95% CI 0.06 to 0.92, P=0.04) but did not significantly reduce dyskinesia (RR=0.64, 95% CI 0.35 to 1.16, P=0.14).
Conclusion	Acupuncture combined with Madopar appears, to some extent, to improve clinical effectiveness and safety in the treatment of PD, compared with Madopar alone. This conclusion must be considered cautiously, given the quality of most of the studies included was low. Therefore, more high-quality, multicentre, prospective, RCTs with large sample sizes are needed to further clarify the effect of acupuncture combined with Madopar for PD.

1.1.17. Noh 2017 ☆

Noh H, Kwon S, Cho SY, Jung WS , Moon SK, Park JM, Ko CN, Park SU. Effectiveness and safety of acupuncture in the treatment of Parkinson's disease: A systematic review and meta-analysis of randomized controlled trials. Complement Ther Med. 2017;34:86-103. [171620].

Objective	This study aimed to examine the effectiveness and safety of acupuncture in the treatment of Parkinson's disease (PD).
Methods	English, Chinese, and Korean electronic databases were searched up to June 2016. Randomized controlled trials (RCTs) were eligible. The methodological quality was assessed using Cochrane's risk of bias tool. Meta-analysis was performed using RevMan 5.3.
Results	In total, **42 studies involving 2625 participants** were systematically reviewed. Participants treated using combined acupuncture and conventional medication (CM) showed significant improvements in total Unified PD Rating Scale (UPDRS), UPDRS I, UPDRS II, UPDRS III, and the Webster scale compared to those treated using CM alone. The combination of electroacupuncture and CM was significantly superior to CM alone in total UPDRS, UPDRS I, UPDRS II, and UPDRS IV. Similarly, the combination of scalp electroacupuncture, acupuncture, and CM was significantly more effective than CM alone in total UPDRS. However, our meta-analysis showed that the combination of electroacupuncture and CM was not significantly more effective than CM alone in UPDRS III, the Webster, and the Tension Assessment Scale. The results also failed to show that acupuncture was significantly more effective than placebo acupuncture in total UPDRS. Overall, the methodological quality of the RCTs was low. No serious adverse events were reported.
Conclusions	We found that acupuncture might be a safe and useful adjunctive treatment for patients with PD. However, because of methodological flaws in the included studies, conclusive evidence is still lacking. More rigorous and well-designed placebo-controlled trials should be conducted.

1.1.18. Lee 2017 ☆☆

Lee SH, Lim S. Clinical effectiveness of acupuncture on Parkinson disease: A PRISMA-compliant systematic review and meta-analysis. Medicine (Baltimore). 2017. [190954].

Objectives	Parkinson's disease (PD) is the second-most-common chronic and progressive neurodegenerative disease. The long-term use of levodopa leads to a loss of efficacy and to complications. Therefore, many patients with PD have turned to complementary therapies to help relieve their symptoms. Acupuncture is most commonly used as a complementary therapy in patients with PD. This paper presents a systematic review and meta-analysis of the effects of acupuncture for patients with PD. This study was performed to summarize and evaluate evidence regarding the effectiveness of acupuncture in the relief of PD symptoms.
Methods	Seven databases, namely, MEDLINE, EMBASE, the Cochrane Library, the China National Knowledge Infrastructure [CNKI], and three Korean medical databases, were searched from their inception through August 2015 without language restrictions. Randomized controlled trials (RCTs) were included if they contained reports of acupuncture compared with no treatment and conventional treatment alone or acupuncture plus conventional treatment compared with conventional treatment alone for PD symptoms. Assessments were performed with the unified PD rating scales (UPDRS) I, II, III, and IV and the total score, the Webster scale, and effectiveness rating. Methodological quality was assessed using the Physiotherapy Evidence Database (PEDro) scale and the Cochrane risk of bias (ROB).
Results	In all, 982 potentially relevant articles were identified; 25 RCTs met our inclusion criterion, **19 of 25 RCTs were high-quality studies** (i.e., a score of 6 or higher). The included RCTs showed favorable results for acupuncture plus conventional treatment compared with conventional treatment alone in the UPDRS II, III, and IV and the total score. Acupuncture was effective in relieving PD symptoms compared with no treatment and conventional treatment alone, and acupuncture plus conventional treatment had a **more significant effect than conventional treatment alone**.
Conclusions	We performed a systematic review and meta-analysis to evaluate the use of acupuncture for relief of PD symptoms and found that **acupuncture has significant positive effects**. Acupuncture can be considered as a combination treatment with conventional treatment for patients with PD. Further studies on this topic should be carried out according to rigorous methodological designs in both the East and the West.

1.1.19. Yin 2016 ☆

Yin Hong-na , Han Chao , Sun Zhong-ren , et al. [Randomized Controlled Trials of Acupuncture for Parkinson's Disease: A Systematic Review and Meta — analysis]. Journal of Clinical Acupuncture and Moxibustion. 2016;32(8):67. [189379].

Objective	To summarize and evaluate the efficacy of acupuncture for Parkinson's disease(PD).
Methods	Four databases both in and abroad were searched electronically and relevant reviews were searched. Randomized controlled trials(RCTs) which compared acupuncture as the main intervention to medication, placebo or conventional therapy for treating PD were included for this meta-analysis.
Results	**9 RCTs** were included in our review, involving **665 cases'PD**. As a result, the total effective rate 'acupuncture for PD was significantly superior to those of the control group [OR =2. 60,95% CI(1. 78,3. 79), Z =4. 66, P < 0.000 01□

Conclusion	Although acupuncture may be effective for treating PD, the methodological flaws in the included studies might affect the analysis. The rigorous higher-quality RCTs are needed.

1.1.20. Zhang 2015 ☆☆

Zhang G, Xiong N, Zhang Z, Liu L1, Huang J, Yang J, Wu J, Lin Z, Wang T. Effectiveness of traditional Chinese medicine as an adjunct therapy for Parkinson's disease: a systematic review and meta-analysis. PLoS One. 2015;10(3):.[176524].

Background	Idiopathic Parkinson disease (PD) is a common neurodegenerative disease that seriously hinders limb activities and affects patients' lives. We performed a meta-analysis aiming to systematically review and quantitatively synthesize the efficacy and safety of traditional Chinese medicine (TCM) as an adjunct therapy for clinical PD patients.
Methods	An electronic search was conducted in PubMed, Cochrane Controlled Trials Register, China National Knowledge Infrastructure, Chinese Scientific Journals Database and Wanfang data to identify randomized trials evaluating TCM adjuvant therapy versus conventional treatment. The change from baseline of the Unified Parkinson's Disease Rating Scale score (UPDRS) was used to estimate the effectiveness of the therapies.
Results	**Twenty-seven articles involving 2314 patients** from 1999 to 2013 were included. Potentially marked improvements were shown in UPDRS I (SMD 0.68, 95%CI 0.38, 0.98), II (WMD 2.41, 95%CI 1.66, 2.62), III (WMD 2.45, 95%CI 2.03, 2.86), IV (WMD 0.32, 95%CI 0.15, 049) and I-IV total scores (WMD 6.18, 95%CI 5.06, 7.31) in patients with TCM plus dopamine replacement therapy (DRT) compared to DRT alone. Acupuncture add-on therapy was markedly beneficial for improving the UPDRS I-IV total score of PD patients (WMD 10.96, 95%CI 5.85, 16.07). However, TCM monotherapy did not improve the score. The effectiveness seemed to be more obvious in PD patients with longer adjunct durations. TCM adjuvant therapy was generally safe and well tolerated.
Conclusions	Although the data were limited by methodological flaws in many studies, **the evidence indicates the potential superiority of TCM as an alternative therapeutic for PD treatment** and justifies further high-quality studies.

1.1.21. Sun 2013 (non-motor symptoms) ☆☆

Sun Miao-Xuan, Zhang Xiong. [Effect of acupuncture for non-motor symptoms of parkinson’s disease: a systematic review and meta-analysis]. Acta Universitatis Traditionis Medicalis Sinensis Pharmacologiaeque Shanghai. 2013;5:41-48; 6. [186902].

Objective	To systematically evaluate the clinical efficacy of acupuncture for the non-motor symptoms (NMS)of Parkinson’s disease (PD).
Methods	Randomized controlled trials (RCTs) of acupuncture in treatment of PD were identified from PubMed, Cochrane Library, Chinese National Knowledge Infrastructure (CNKI), Wanfang Database and VIP Database for Chinese Technical Periodicals, and some relevant journals were hand-searched. The quality of RCTs were evaluated based on Cochrane collaboration’s tool for assessing risk of bias, and the Review Manager (version 5. 0) software was used for meta-analysis.

Results	A total of **18 RCTs involving 1 325 patients** were included. The results of meta-analysis showed: ①Depression: The Hamilton Depression Scale (HAMD) and the Self-Rating Depression Scale (SDS) were used to evaluate depression. HAMD: There was statistical difference between two groups [SMD =- 5. 83, 95% CI (- 8. 61, - 3. 05), P < 0. 000 1]. SDS: There was statistical difference between two groups [SMD =- 4. 42, 95% CI (- 6. 44, - 2. 39), P < 0. 000 1]. ②Mental symptoms: There was statistical difference between two groups [OR = 0. 12, 95% CI (0. 02, 0. 65), P = 0. 01]. ③Sleep disorders: There was statistical difference between two groups [OR = 0. 04, 95% CI (0. 00, 0. 29), P = 0. 002]. ④Gastrointestinal symptoms: There was statistical difference between two groups [OR = 0. 15, 95% CI (0. 07, 0. 33), P < 0. 000 01]. ⑤ Activity of daily life: The Webster scale and the Unified Parkinson ’s Disease Rating Scale (UPDRS)-Ⅱwere used to evaluate the activity of daily life. Webster scale: There was statistical difference between two groups [OR =0. 45, 95%CI (0. 29, 0. 68), P =0. 000 1]. The total score of UPDRSⅡ: There was statistical difference between two groups [SMD =- 4. 24, 95% CI (- 5. 08, - 3. 39), P < 0. 000 01]. The different score of UPDRSⅡ: There was statistical difference between two groups [SMD = 3. 51, 95% CI (1. 64, 5. 38), P = 0. 000 2].
Conclusion	**Acupuncture therapy can improve some NMS of PD patients,** however, the high-quality, large-sample and multi-center RCTs are needed to further certify; in addition, the evaluation standard of therapeutic effect of NMS is needed.

1.1.22. Fox 2011 (motor symptoms) ☆☆

Fox SH, Katzenschlager R, Lim SY, Ravina B, Seppi K, Coelho M, Poewe W, Rascol O, Goetz CG, Sampaio C. The Movement Disorder Society Evidence-Based Medicine Review Update: Treatments for the motor symptoms of Parkinson's disease. Mov Disord. 2011;26 supp 3:s2-41.[162534] .

Objectives	The objective was to update previous evidence-based medicine reviews of treatments for motor symptoms of Parkinson's disease published between 2002 and 2005. Level I (randomized, controlled trial) reports of pharmacological, surgical, and nonpharmacological interventions for the motor symptoms of Parkinson's disease between January 2004 (2001 for nonpharmacological) and December 2010 were reviewed.
Methods	Criteria for inclusion, clinical indications, ranking, efficacy conclusions, safety, and implications for clinical practice followed the original program outline and adhered to evidence-based medicine methodology. Sixty-eight new studies qualified for review.
Results	Piribedil, pramipexole, pramipexole extended release, ropinirole, rotigotine, cabergoline, and pergolide were all efficacious as symptomatic monotherapy; ropinirole prolonged release was likely efficacious. All were efficacious as a symptomatic adjunct except pramipexole extended release, for which there is insufficient evidence. For prevention/delay of motor fluctuations, pramipexole and cabergoline were efficacious, and for prevention/delay of dyskinesia, pramipexole, ropinirole, ropinirole prolonged release, and cabergoline were all efficacious, whereas pergolide was likely efficacious. Duodenal infusion of levodopa was likely efficacious in the treatment of motor complications, but the practice implication is investigational. Entacapone was nonefficacious as a symptomatic adjunct to levodopa in nonfluctuating patients and nonefficacious in the prevention/delay of motor complications. Rasagiline conclusions were revised to efficacious as a symptomatic adjunct, and as treatment for motor fluctuations. Clozapine was efficacious in dyskinesia, but because of safety issues, the practice implication is possibly useful. Bilateral subthalamic nucleus deep brain stimulation, bilateral globus pallidus stimulation, and unilateral pallidotomy were updated to efficacious for motor complications. Physical therapy was revised to likely efficacious as symptomatic adjunct therapy.
Conclusions	This evidence-based medicine review updates the field and highlights gaps for research.

1.1.23. Yang 2010 ☆☆

Yang Li-Hong, Du Yuan-Hao, Xiong Jun, Liu Jia-Lin, Wang Yun-Na, Li Ying, Li Li-Na. [Acupuncture treatment for parkinson disease: a systematic review]. Chinese Journal of EBM. 2010;10(6):711-17.[166226].

Objective	To assess the efficacy and safety of acupuncture versus western medicine in the treatment of parkinson disease.
Methods	Randomized controlled trials (RCTs) involving acupuncture versus western medicines in the treatment of parkinson disease were identified from CBM (1978 to 2008), VIP (1989 to 2008), Wanfang Database (1998 to 2008), CNKI (1979 to 2008), PubMed (1966 to 2008), Embase (1980 to 2008), and The Cochrane Library (Issue 4, 2008). And some relevant journals were handsearched. Data were extracted and evaluated by two reviewers independently with a specially-designed extraction form. The Cochrane Collaboration’s RevMan 5.0.20 software was used for metaanalyses.
Results	A total of **13 trials involving 832 patients** were included. The result of meta-analyses showed that the total effective rates of the acupuncture group or of the group of acupuncture plus Madopar were similar when compared with Madopar alone in Webster score. (1) The total effective rate: The total effective rate in acupuncture plus Madopar was similar when compared with Madopar alone in UPDRS score at Day 30 (RR=1.33, 95%CI 0.95 to 1.88) and Day 66 (RR=1.38, 95%CI 0.84 to 2.24), but there were significant differences between acupuncture plus Madopar and Madopar alone (RR=1.61, 95%CI (1.19 to 2.17) at Day 84. The total effective rate in acupuncture plus benserazide-levodopa was higher than benserazide-levodopa alone (RR=1.70, 95%CI 1.08 to 2.68) at Day 66. (2)Webster score: There were no sig nificant differences between acupuncture and Madopar at Day 30 (WMD= – 2.51, 95%CI – 2.83 to – 2.19) and at Day 63 (WMD= – 2.48, 95%CI – 3.01 to – 1.95). There were significant differences between acupuncture plus Madopar and Madopar alone at Day 30 (WMD= – 13.48, 95%CI – 15.35 to – 11.61), but not at Day 42 (WMD= 0.50, 95%CI – 1.22 to 2.22). (3) UPDRS score: There were no significant differences between acupuncture and Madopar at Day 60 (WMD= – 7.19, 95%CI – 14.49 to 0.11). There were significant differences between acupuncture plus Madopar and Madopar alone at Day 30 (WMD= 7.07 and 95%CI 2.95 to 11.19) and at Day 84 (WMD= – 12.49,95%CI – 16.75 to – 8.23), but no significant differences were found at Day 66 and Day 33 (WMD= – 14.90, 95%CI – 31.89 to 2.09; WMD= – 8.60, 95%CI – 21.51 to 4.31).But there were statistical differences between acupuncture plus Madopar and Madopar alone at Day 30 (WMD= 7.07, 95%CI 2.95 to 11.19). There were no differences between acupuncture plus benserazide-levodopa and benserazidelevodopa alone at Day 66 (WMD=-10.80,95%CI-21.78 to 0.18) and at Day 33 (WMD=-15.60,95%CI-28.38 to -2.82). (4) Adverse reaction: Three trials reported adverse reactions including dizziness, heartbeat acceleration, slight mouth drying and nausea, but all of these were relieved or disappeared in the course of treatment.
Conclusion	**Acupuncture is safe and effective in the treatment of parkinson disease**. Acupuncture plus western drugs may be superior to western drugs alone. Because of the defects in the methodological quality of the included trials, the conclusion is to be confirmed by more highquality RCTs.

1.1.24. Lam 2008 ☆

Lam YC, Kum WF, Durairajan SSK, Lu JH, Man SC, Xu M, Zhang XF, Huang XZ, Li M. Efficacy and safety of acupuncture for idiopathic parkinson's disease: a systematic review. Journal of Alternative and Complementary Medicine. 2008;14(6):663.[149982] .

Objectives	To assess the efficacy and safety of acupuncture therapy (monotherapy or adjuvant therapy), compared with placebo, conventional interventions, or no treatment in treating patients with idiopathic Parkinson's disease (IPD).
Data sources	International electronic database: (1) The Cochrane Controlled Trials Register, (2) Academic Search Premier, (3) ACP Medicine, Alternative Medicine, (4) CINAHL, (5) EBM Reviews, (6) EMBASE, (7) MEDLINE, (8) OLD MEDLINE, (9) ProQuest Medical Library. Chinese electronic databases searched included: (1) VIP, (2) CJN, (3) CBM disk, (4) China Medical Academic Conference. Hand searching was conducted on all appropriate journals. Reference lists of relevant trials and reviews were also searched to identify additional studies. Selection criteria: All randomized controlled trials (RCTs) of any duration comparing monotherapy and adjuvant acupuncture therapy with placebo or no intervention were included. Data collection and analysis: Data were abstracted independently by Y. C. Lam and S. C. Man onto standardized forms, and disagreements were resolved by discussion.
Main results	**Ten (10) trials** were included, each using a different set of acupoints and manipulation of needles. None of them reported the concealment of allocation. Only two mentioned the number of dropouts. Two (2) used a nonblind method while others did not mention their blinding methods. Nine (9) studies claimed a statistically significant positive effect from acupuncture as compared with their control; only one indicated that there were no statistically significant differences for all variables measured. Only 2 studies described details about adverse events.
Conclusions	**There is evidence indicating the potential effectiveness of acupuncture for treating IPD**. The results were limited by the methodological flaws, unknowns in concealment of allocation, number of dropouts, and blinding methods in the studies. Large, well-designed, placebo-controlled RCTs with rigorous methods of randomization and adequately concealed allocation, as well as intention-to-treat data analysis are needed.

1.1.25. Lee 2008 Ø

Lee MS, Shin BC, Kong JC, Ernst E. Effectiveness of acupuncture for Parkinson's disease: a systematic review. Mov Disord. 2008; 23(11):1505-15. [149866].

Objective	The objective of this review is to assess the clinical evidence for or against acupuncture as a treatment for Parkinson's disease (PD).
Methods	We searched the literature using 17 databases from their inception to September 2007 (searched again 3rd January 2008), without language restrictions. We included all randomized clinical trials (RCTs) regardless of their design. Methodological quality was assessed using the Jadad score.
Results	**Eleven RCTs met all inclusion criteria**. Three RCTs assessed the effectiveness of acupuncture on Unified Parkinson's Disease Rating Scale (UPDRS) compared with placebo acupuncture. A meta-analysis of these studies showed no significant effect (n = 96, WMD, 5.7; 95% CI -2.8 to 14.2, P = 0.19, heterogeneity: tau(2) = 0, chi(2) = 0.97, P = 0.62, I(2) = 0%). Another six RCTs compared acupuncture plus conventional drugs on improvement of symptoms of PD with drugs only. A meta-analysis of two of these studies suggested a positive effect of scalp acupuncture (n = 106, RR, 1.46, 95% CI = 1.15 to 1.87, P = 0.002; heterogeneity: tau(2) = 0.00, chi(2) = 1.14, P = 0.29, I(2) = 12%). Two further RCTs tested acupuncture versus no treatment. The meta-analysis of these studies also suggested beneficial effects of acupuncture. The results of the latter two types of RCTs fail to adequately control for nonspecific effects.
Conclusions	**The evidence for the effectiveness of acupuncture for treating PD is not convincing**. The number and quality of trials as well as their total sample size are too low to draw any firm conclusion. Further rigorous trials are warranted.

1.2. Specific outcomes

1.2.1. Constipation

1.2.1.1. Li 2024

Li Z, Niu Q, Yang K, Zhao K, Yin S, Zhu F. Acupuncture for constipation in Parkinson's disease: A systematic review and meta-analysis of randomized controlled trials. Medicine (Baltimore). 2024 Jul 19;103(29):e38937. https://doi.org/10.1097/MD.0000000000038937. PMID: 39029044.

Backgound	Parkinson's disease (PD) is the second most common neurological disease worldwide, and there is a potential interaction between PD and constipation. PD constipation often causes significant trouble for patients and seriously affects their quality of life. Acupuncture is widely used for treating constipation and has been clinically proven. However, it is unclear whether the current evidence is sufficient to support acupuncture to improve PD constipation.
Methods	We searched the Cochrane Central Register of Controlled Trials, Embase, PubMed, Web of Science, China National Knowledge Infrastructure, Wan Fang Data Knowledge Service Platform, and Chinese Scientific Journal Database (VIP database) for randomized controlled trials from inception through July 1, 2023. Randomized controlled trials (RCTs) included acupuncture, sham acupuncture, and medication for PD constipation. Stata 16.0 software and Cochrane RoB2.0 were used for data processing and migration risk analysis.
Results	The **11 studies included a total of 960 patients**. The results showed that acupuncture or acupuncture combined with conventional treatment seemed to have advantages in improving complete spontaneous bowel movements (WMD: 1.49, 95% CI: 0.86, 2.11; P < .00001), Patient-Assessment of Constipation Quality of Life questionnaire (WMD: -11.83, 95% CI: -15.67, -7.99; P < .00001), the chronic constipation severity scale (CCS) (SMD: -0.99, 95% CI: -1.40, -0.58; P < .01), and c(RRP) (WMD: 2.13, 95% CI: 0.44, 3.82; P < .05).
Conclusion	The present results show that compared with conventional treatment, acupuncture combined with conventional treatment seems to increase the number of spontaneous defecations in PD patients, improve quality of life, increase rectal resting pressure, and alleviate the severity of chronic constipation. Thus, acupuncture has the potential to treat PD constipation. However, due to the study's limitations, higher-quality RCTs are needed for verification.

1.2.2. Pain

1.2.2.1. Huissoud 2024

Huissoud M, Boussac M, Joineau K, Harroch E, Brefel-Courbon C, Descamps E. The effectiveness and safety of non-pharmacological intervention for pain management in Parkinson's disease: A systematic review. Rev Neurol (Paris). 2024 Oct;180(8):715-735. https://doi.org/10.1016/j.neurol.2023.04.010

Background	Chronic pain is a non-motor symptom affecting from 60 to 80% of patients with Parkinson's disease (PD). PD patients can suffer from different types of pain, either specific or not specific of the disease, and depending on various pathophysiological mechanisms (nociceptive, nociplastic or neuropathic), which can be present at any stage of the disease. Non-pharmacological interventions (NPIs) are essential to complement routine care interventions in PD pain management. Moreover, in the literature, it has been shown that 42% of PD patients are already using complementary therapies. Hence, our aim was to investigate the effectiveness and safety of NPIs for pain management in PD.
Methods	A systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement. Eighteen published randomized control trials (RCTs) were included between 2004 and 2021 leading to a total of 976 PD patients. From them, we reported fifteen different NPIs classified in seven categories: physical exercises, balneotherapy, manual therapy, acupuncture, botanical preparation, body-psychological practice and multiprotection care.
Results	Our results have shown that NPIs for PD pain management had a low-to-moderate level of evidence showing mainly favourable results, even if some NPIs presented inconclusive results. Moreover, our review highlighted the clinical relevance of some specific NPIs in PD pain management: NPIs consisting of active physical activities, opposed to passive activities. The safety of NPIs was also confirmed since only few minor transient adverse events were reported.
Conclusion	Nevertheless, even if some interesting results were found, the methodology of future studies needs to be more robust and to include comprehensive descriptions in order to offer reliable and sound recommendations to clinicians.

1.2.2.2. Qureshi 2021

Qureshi AR, Jamal MK, Rahman E, Paul DA, Oghli YS, Mulaffer MT, Qureshi D, Danish MA, Rana AQ. Non-pharmacological therapies for pain management in Parkinson's disease: A systematic review. Acta Neurol Scand. 2021;144(2):115-131. [220235]. doi

Background	Among the various non-motor symptoms of Parkinson's disease (PD), pain is often cited as the most common and debilitating feature. Currently, the literature contains gaps in knowledge with respect to the various forms of treatment available, particularly non-pharmacological therapies. Thus, the purpose of this systematic review is to provide an examination of the literature on non-pharmacological therapies for pain in PD.
Methods	We compared the findings of research articles indexed within various literature databases related to non-pharmacological treatments of pain in PD patients.

Results	Our review identified five major non-pharmacological methods of pain therapy in PD: **acupuncture**, hydrotherapy, massage therapy, neuromodulation, and exercise. Treatments such as exercise therapy found a reduction in pain perception due to various factors, including the analgesic effects of neurotransmitter release during exercise and increased activity leading to a decrease in musculoskeletal rigidity and stiffness. By the same token, hydrotherapy has been shown to reduce pain perception within PD patients, with authors often citing a combined treatment of exercise and hydrotherapy as an effective treatment for pain management. Multiple methods of neurostimulation were also observed, including deep brain stimulation and spinal cord stimulation. Deep brain stimulation showed efficacy in alleviating certain pain types (dystonic and central), while not others (musculoskeletal). Hence, patients may consider deep brain stimulation as an additive procedure for their current treatment protocol. On the other hand, spinal cord stimulation showed significant improvement in reducing VAS scores for pain. Finally, although the literature on massage therapy and **acupuncture** effectiveness on pain management is limited, both have demonstrated a reduction in pain perception, with common reasons such as tactile stimulation and release of anti-nociceptive molecules in the body.
Conclusions	Although literature pertaining to non-pharmacological treatments of pain in PD is sparse, there is copious support for these treatments as beneficial to pain management. Further exploration in the form of clinical trials is warranted to assess the efficacy of such therapies.

1.2.3. Dysphagia

1.2.3.1. Cheng 2023

Cheng I, Sasegbon A, Hamdy S. Dysphagia treatments in Parkinson's disease: A systematic review and meta-analysis. Neurogastroenterol Motil. 2023 Aug;35(8):e14517. https://doi.org/10.1111/nmo.14517

Background	The majority of patients with Parkinson's disease (PD) develop oropharyngeal dysphagia during the course of their disease. However, the efficacy of dysphagia treatments for these patients remains controversial. Therefore, we conducted this systematic review and meta-analysis to evaluate treatment efficacy based on the evidence from randomized controlled trials (RCTs).
Methods	Five electronic databases were systematically searched from inception date to April 2022. Two reviewers independently extracted and analyzed the data. The outcome measures were changes in swallowing-related characteristics based on instrumental swallowing assessments.
Key results	An initial search identified 187 RCT studies of relevance. After screening, nine studies with a total sample size of 286 were included in the meta-analysis. The pooled effect size for all dysphagia treatments compared with control comparators was significant and medium (SMD [95% CI] = 0.58 [0.22, 0.94], p = 0.001; I2 = 50%). Subgroup analysis revealed a significant and medium pooled effect size for stimulation treatments (brain stimulation, peripheral neurostimulation and acupuncture) (SMD [95% CI] = 0.54 [0.15, 0.92]; p = 0.006; I2 = 22%). Specifically, the effect sizes for the single RCTs on neuromuscular stimulation (SMD [95% CI] = 1.58 [0.49, 2.86]; p = 0.005) and acupuncture (SMD [95% CI] = 0.82 [0.27, 1.37]; p = 0.003) were significant and large.

Conclusions and inferences	Our results showed that overall, dysphagia treatments, particularly stimulation treatments, can potentially benefit PD patients. However, given the limited number of small RCTs for each type of treatment, the evidence remains weak and uncertain. Further large-scale, multicenter RCTs are warranted to fully explore their clinical efficacy in the PD population.

1.2.3.2. Jiayu 2023

Jiayu L, Minmin W, Zhu L. Meta-analysis of the therapeutic effect of acupuncture on dysphagia in patients with Parkinson disease. Medicine (Baltimore). 2023 Dec 22;102(51):e36698. https://doi.org/10.1097/MD.0000000000036698

Objective	To systematically evaluate the therapeutic effect of acupuncture on dysphagia in patients with Parkinson disease (PD).
Method	We searched CNKI, WF, VIP, CBM, Cochrane Library, and Web of Chinese Biomedical Literature Randomized controlled trials on the efficacy of acupuncture in the treatment of dysphagia in patients with PD was retrieved from Science, Embase, and PubMed databases from establishment to October 2022. Outcome indicators included clinical efficacy, swallowing function, hemoglobin, and serum albumin. Literature screening and data extraction of included literature were conducted independently by 2 reviewers, and literature quality was evaluated according to the standards of the Cochrane Collaboration network. Data analysis was performed using Review Manager 5.3 and Stata14.0 software.
Results	**466 patients were included in 7 literature**, 234 in the observation, and 232 in the control groups. The results of the meta-analysis showed the clinical efficacy in the observation group [odd ratio = 0.25, 95% confidence interval (95%CI) (0.15, 0.40), P < .01]. Swallowing function [standardized mean difference (SMD) = -0.96, 95%CI (-1.24, -0.68), P < .01]; hemoglobin index level [SMD = -0.72, 95%CI (-1.25, -0.20), P < .01]; serum albumin index level [SMD = -1.25, 95%CI (-2.19, -0.31), P < .01].
Conclusion	Acupuncture has a specific curative effect on dysphagia in patients with PD, and the therapeutic effect is more significant than that in the control group, which can improve the dysphagia function and nutrition level in patients with PD more effectively.

1.2.3.3. Wu 2023

Wu J, Wang Y, Wang X, Xie Y, Li W. A systematic review and meta-analysis of acupuncture in Parkinson's disease with dysphagia. Front Neurol. 2023 May 26;14:1099012. https://doi.org/10.3389/fneur.2023.1099012

Objective	The systematic review and meta-analysis aimed to comprehensively evaluate acupuncture's efficacy and safety in treating dysphagia in Parkinson's disease (PD).
Methods	We searched PubMed, Cochrane Library, Embase, Web of Science, China Knowledge Infrastructure (CNKI), China Science Journal Database (VIP), Wan-fang Database, and the China Biomedical Literature Service System (CBM) for randomized controlled trials (RCTs) comparing the efficacy of acupuncture alone or in combination with control treatment in improving dysphagia by October 2022. The degree of dysphagia was the primary outcome indicator, with secondary outcomes including serum albumin (ALB) and hemoglobin (Hb) levels, the incidence of pneumonia, and adverse events. Two investigators independently extracted information according to the inclusion and exclusion criteria. Data synthesis was calculated by RevMan (V.5.4.1) software.

Results	This study included **ten randomized controlled trials with 724 patients**. Most RCTs have a high or uncertain risk of bias due to the lack of a blinded design. Meta-analysis showed that acupuncture combined with control treatment was superior to control treatment alone in improving Videofluoroscopic Swallowing Study (VFSS) scores (MD: 1.48; 95% CI: 1.16, 1.81; P < 0.00001) and reducing Standardized Swallowing Assessment (SSA) scores (MD: -3.08; 95% CI: -4.01, -2.15; P < 0.00001). Acupuncture combined with control therapy has a more significant benefit in improving the clinical efficiency of dysphagia in PD (RR: 1.40; 95%CI: 1.25, 1.58; P < 0.00001). Compared to the control group without acupuncture, acupuncture improved the nutritional status of patients and increased their serum ALB (MD: 3.38, 95%CI: 1.83, 4.92, P < 0.00001) and Hb levels (MD: 7.66; 95%CI: 5.57, 9.75; P < 0.00001). Three RCTs reported that the rate of pulmonary infections in the acupuncture group was lower than without acupuncture intervention (RR: 0.29, 95% CI: 0.14, 0.63; P = 0.001).
Conclusion	Acupuncture could be recommended as an adjunctive treatment for dysphagia in PD. However, due to the high risk of bias in the included studies, more high-quality evidence is needed to confirm the efficacy and safety of acupuncture for dysphagia in PD.

1.2.3.4. Wen 2022

Wen X, Liu Z, Liu X, Peng Y, Liu H. The effects of physiotherapy treatments on dysphagia in Parkinson's disease: A systematic review of randomized controlled trials. Brain Res Bull. 2022 Oct 1;188:59-66. https://doi.org/10.1016/j.brainresbull.2022.07.016

Background	The prevalence of swallowing disorders in Parkinson's disease (PD) is relatively high. Different physiotherapy interventions for swallowing disorders are available but there is a lack of evidence-based medicine for their effectiveness in PD.
Objective	The purpose of this systematic review was to investigate the effects of different physiotherapy interventions on dysphagia in PD.
Methods	This systematic review was conducted according to PRISMA guidelines. We methodically searched databases including PubMed, PEDro, Cochrane Library, Embase, and Web of Science. Studies of any language published up to March 2022 were searched. Randomized controlled trials (RCTs) of non-pharmacological treatment for dysphagia in PD were selected in strict accordance with our exclusion and inclusion criteria.
Results	In total, we identified and included 10 RCTs in patients with PD undergoing dysphagia. This review involved seven rehabilitation treatments, including **acupuncture**, expiratory muscle strength training (EMST), repetitive transcranial magnetic stimulation (rTMS), video-assisted swallowing therapy (VAST), electrical stimulation, and speech and language therapy (SLT).
Conclusion	For physiotherapy treatments, including **acupuncture**, EMST, high-frequency rTMS and VAST may be effective treatments for dysphagia in patients with PD. However, there was not enough evidence that electrical stimulation has therapeutic effects on dysphagia in patients with PD.

1.2.4. Neuropsychiatric symptoms

1.2.4.1. Tan 2024

Tan W, Xie F, Zhou J, Pan Z, Liao M, Zhuang L. Efficacy and safety of acupuncture therapy for neuropsychiatric symptoms among patients with Parkinson's disease: A systematic review and meta-analysis. Clin Rehabil. 2024 Aug;38(8):1044-1062. https://doi.org/10.1177/02692155241258278

Objective	To systematically evaluate the efficacy and safety of acupuncture therapy for neuropsychiatric symptoms in patients with Parkinson's disease.
Methods	We searched eight databases from their inception until 14 April 2024, including PubMed, Cochrane Library, Embase, Web of Science, SinoMed, China National Knowledge Infrastructure, China Science and Technology Periodical Database, and Wanfang Database. The search aimed to find randomized controlled trials assessing the effectiveness of acupuncture for neuropsychiatric symptoms in patients with Parkinson's disease. Literature screening and data extraction were performed independently by the authors. Meta-analysis was conducted using RevMan V.5.3 software, and Stata 17.0 software was used for detecting publication bias and performing sensitivity analysis.
Results	Twenty-eight studies, involving 2148 participants, met the inclusion criteria. The meta-analysis revealed that acupuncture therapy improved depression-related scale scores (standardized mean difference (SMD) = -0.70, 95% CI [-0.98, -0.42], $p < 0.00001$), anxiety-related scale scores (SMD = -0.78, 95% CI [-1.43, -0.14], $p = 0.02$), Montreal Cognitive Assessment scores (weighted mean difference (WMD) = 2.74, 95% CI [2.43, 3.05], $p < 0.00001$), Mini Mental State Examination scores (WMD = 2.36, 95% CI [0.78, 3.94], $p = 0.003$), Yale-Brown Obsessive Compulsive Scale scores, and Parkinson's Disease Questionnaire-39 scores (WMD = -2.66, 95% CI [-4.83, -0.49], $p = 0.02$) compared to controls.
Conclusion	This review supports the application of acupuncture to reduce the severity of neuropsychiatric symptoms including depression, anxiety, and impulse control disorders, and to improve cognition and quality of life in patients with Parkinson's disease. The adverse effects associated with acupuncture, either alone or as adjunctive therapy, were relatively minor.

1.2.5. Parkinson's disease anxiety

1.2.5.1. Chen 2025

Chen L, Xu HX, Wang ZQ, Li GN, Wu LY, Huang Y, Wu HG, Zhou JH. Effectiveness and safety of acupuncture for Parkinson's disease anxiety: a systematic review and meta-analysis. Front Aging Neurosci. 2025 Oct 15;17:1663059. https://doi.org/10.3389/fnagi.2025.1663059

Background	Background: Individuals with Parkinson's disease (PD) commonly experience anxiety, with a prevalence of 31%. This study systematically evaluates the efficacy and safety of acupuncture for anxiety related to PD.
Methods	Method: Nine databases were searched for randomized controlled trials (RCTs) published from inception to August 24, 2025. RCTs comparing acupuncture and moxibustion treatments (with or without other therapies, e.g., western medicine, routine care, sham acupuncture) to other therapies alone for managing PD anxiety were included. Data were analyzed using the R software (version 4.5.1). In accordance with PRISMA-2020 guidelines, two reviewers independently extracted data and assessed the risk of bias using the Cochrane risk of bias tool (ROB 2.0). The certainty of the evidence was graded using the GRADE (Grading of Recommendations Assessment, Development, and Evaluation) according to GRADE handbook.
Results	Results: A total of 10 studies were included, comprising 1,000 patients with anxiety after PD. The meta-analysis indicated that, compared to the control group, the acupuncture group showed significant improvements in HAMA and SAS scores (SMD = -3.64, 95% CI [-5.06 to -2.23]; SMD = -7.76, 95% CI [-10.10 to -5.41]), as well as significant improvements in HAMD and SDS scores (SMD = -2.93, 95% CI [-4.25 to -1.60]; SMD = -8.35, 95% CI [-8.88 to -7.82]). The reported adverse events related to acupuncture were minimal and less severe.

Conclusion	Conclusion: Acupuncture can successfully reduce anxiety symptoms in PD patients. Additional higher quality randomized controlled trials are required to ascertain the safety and effectiveness of acupuncture as a therapy for anxiety in PD patients.

1.2.6. Sleep and depression

1.2.6.1. Gu 2025

Gu Yujie, Liang Yue, Han Hui, Yin Huichao, Zheng Zuncheng. The efficacy and safety of acupuncture for Parkinson's disease insomnia: a systematic review and meta-analysis. Front Neurol. 2025 Nov 3;16:1697481. https://doi.org/10.3389/fneur.2025.1697481

Background	Background: Insomnia is a common comorbid symptom in Parkinson's disease (PD) patients, significantly impairing their quality of life. Acupuncture is widely applied in treating PD insomnia, yet relevant evidence remains fragmented.
Objective	Objective: To investigate the efficacy of acupuncture in improving PD insomnia through systematic review and meta-analysis, evaluating its clinical effectiveness and safety.
Methods	Methods: Eight electronic databases were searched: PubMed, Cochrane Library, Embase, Web of Science, China National Knowledge Infrastructure (CNKI), VIP Data Platform, Wanfang Data Knowledge Service Platform, and China Biomedical Literature Service System. References from relevant literature and clinical trial registries were manually searched for randomized controlled trials (RCTs) on acupuncture for PD insomnia. Studies were screened against inclusion and exclusion criteria, relevant data extracted, and meta-analysis conducted using RevMan 5.4 software.
Results	Results: **Eleven studies involving 800 patients** were included. Meta-analysis revealed that acupuncture effectively improved PSQI (MD = -2.87, 95% CI: -4.28 to -1.46, $p < 0.0001$) and PDSS (MD = 7.96, 95% CI: 5.55-10.37, $p < 0.00001$), demonstrating superior efficacy compared to the control group (MD = 6.64, 95% CI: 3.47-12.69, $p < 0.00001$).
Conclusion	Conclusion: Acupuncture effectively improves PSQI and PDSS scores in patients with PD insomnia and exhibits superior efficacy over the control group. However, due to limitations, further details could not be explored.

1.2.6.2. Zhou 2025

Zhou H, Zhong H, Ying W, Li Z, Nie Y, Zhang B. Acupuncture for the anxiety and depression in Parkinson disease: A systematic review and network meta-analysis. Medicine (Baltimore). 2025 Aug 8;104(32):e42136. https://doi.org/10.1097/MD.0000000000042136

Backgound	Parkinson disease (PD) is characterized by motor symptoms as the main clinical manifestation. Emotional symptoms such as anxiety and depression are often closely related to the severity of the disease in Parkinson disease patients. Acupuncture therapies have shown effective effects on PD's motor and emotional symptoms. This study aims to evaluate the efficacy of acupuncture in improving anxiety and depression in PD patients and compare the effectiveness of different acupuncture therapies.

Methods	A comprehensive search was conducted across 7 databases to identify randomized controlled trials on acupuncture to improve anxiety and depression in PD patients, from inception to July 1, 2023. Two reviewers independently screened the literature, extracted data, and cross-checked the information. The outcome measures included Hamilton Depression Rating Scale scores, Hamilton Anxiety Rating Scale scores, Self-Rating Depression Scale scores, and Self-Rating Anxiety Scale scores. Data analysis was performed using STATA 17.0 software for network meta-analysis, RevMan 5.4 for pairwise meta-analysis, and Cochrane Handbook 5.1 for assessing the risk of bias.
Results	This study included **26 randomized controlled trials, involving 2153 PD patients** with anxiety or depression. The network meta-analysis results showed that the combination of acupuncture and Western medicine had better efficacy in improving Hamilton Depression Rating Scale scores, Hamilton Anxiety Rating Scale scores, and Self-Rating Depression Scale scores compared to other treatments. And acupuncture combined with traditional Chinese medicine and western medicine had better efficacy in improving SAS scores than western medicine alone.
Conclusion	The findings of this study suggest that acupuncture combined with western medicine may be considered a feasible treatment option for PD patients with anxiety or depression. However, because of limitations in the quality of the literature, further validation of this conclusion is warranted through future studies.

1.2.6.3. Mi 2024

Mi W, Meng M, Xu F, Sun L. Efficacy of acupuncture as adjunct therapy for sleep disorders in Parkinson's disease: A systematic review and meta-analysis. Complement Ther Med. 2024 Jun;82:103044. https://doi.org/10.1016/j.ctim.2024.103044

Objective	The purpose of this study was to summarize existing clinical studies through a systematic review to explore the efficacy of acupuncture in treating sleep disorders in PD patients.
Methods	According to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, we retrieved the papers through 30 April 2023 from eight databases. The experimental group was treated with acupuncture plus conventional therapy, while the control group was treated with conventional therapy alone or combined with sham acupuncture. The sleep quality was the primary outcome. A team of researchers meticulously performed literature screening, data extraction and risk of bias assessment following the Cochrane Handbook. A meta-analysis was synthesized using Review Manager Version 5.4 software if feasible. The quality of the evidence was assessed by the Grading of Recommendations, Assessment, Development and Evaluations (GRADE) tool.
Results	A total of 973 papers were identified, with 15 papers involving 957 patients included in this systematic review. The results showed that acupuncture interventions included manual acupuncture, electroacupuncture, moxibustion and bleeding, with 1–7 times every week implemented during 2–12 weeks. Acupuncture as an adjunct therapy compared to conventional therapy alone showed better effect in sleep quality and overall symptoms of PD. Risk of bias assessment showed deficiencies in blinding and allocation concealment. All included studies were synthesized in a meta-analysis, as the result of which acupuncture improved PDSS scores (MD = 16.57; 95% CI, 7.24–25.90; I^2 = 97%) and effective rate for sleep disorders (OR = 5.91; 95% CI, 1.71–20.39; I^2 = 54%); meanwhile, acupuncture reduced UPDRS scores (MD = -4.29; 95% CI, -6.54 to -2.03; I^2 = 77%) and improved effective rate for PD (OR = 3.22; 95% CI, 1.81–5.72; I^2 = 0%). The quality of evidence ranged from low to moderate by GRADE.

Conclusion	This study provides initial evidence that acupuncture as an adjunct therapy might be associated with improvement of sleep disorders in PD. Due to the lack of high-quality studies, larger sample size studies with sham acupuncture groups should be conducted in future.

1.2.6.4. Yan 2024

Yan F, Chen C, Feng Q, Huang Z, Chen Y, Chen H. Acupuncture and sleep disorders in Parkinson's disease: A systematic evaluation with meta-analysis. Medicine (Baltimore). 2024 Jan 5;103(1):e36286. https://doi.org/10.1097/MD.0000000000036286

Backgound	Parkinson's disease (PD) patients commonly suffer from sleep disorders, significantly impacting their quality of life. Western treatments often entail adverse effects, while acupuncture (ACU) presents a safe, nonaddictive alternative.
Methods	A thorough literature search was performed across PubMed, Cochrane Library, and Embase databases. Eligible studies underwent statistical analysis via RevMan 5.4 software.
Results	This study synthesized data from **19 randomized controlled trials involving 1300 patients**. The ACU cohort showed notable improvement in Parkinson's disease sleep scale (PDSS) scores (mean difference [MD] = 10.81, 95% confidence interval [CI]: 5.64, 15.98) relative to controls. Subgroup analysis revealed significance for ACU treatments beyond 6 weeks (MD = 15.39, 95% CI: 11.70, 19.09) but not for those 6 weeks or shorter (MD = 3.51, 95% CI: -1.20, 8.23). Notably, electroacupuncture resulted in significant PDSS score enhancements (MD = 12.39, 95% CI: 6.06, 18.71), with sensitivity analysis verifying result stability. However, without electroacupuncture, PDSS score differences were insignificant (MD = 7.83, 95% CI: -2.33, 17.99) and had lower result stability. Additionally, increased ACU session frequency may yield better improvements in PDSS scores. The ACU group also observed Improved Pittsburgh Sleep Quality Index scores (MD = -4.52, 95% CI: -6.36, -2.67). However, no significant variation was identified in Epworth Sleepiness Scale score improvement between groups (MD = -0.90, 95% CI: -3.67, 1.88).
Conclusion	ACU therapy effectively improves nighttime sleep quality in PD patients. A treatment duration extending beyond 6 weeks is highly recommended. Additionally, increasing the frequency of ACU sessions and incorporating electroacupuncture in the treatment regimen may be essential for optimal results.

1.2.6.5. Hsu 2023

Hsu WT, Hsu CM, Hung SC, Hung SY. Acupuncture Improves Sleep Disorders and Depression among Patients with Parkinson's Disease: A Meta-Analysis. Healthcare (Basel). 2023 Jul 17;11(14):2042. https://doi.org/10.3390/healthcare11142042

Backgound	Parkinson's disease (PD) is associated with a range of non-motor symptoms that lack effective treatments. Acupuncture is a popular alternative therapy for PD patients that has been shown to improve motor symptoms. However, the efficacy of acupuncture in treating non-motor symptoms has remained controversial. The goal of our study was to systematically assess the existing evidence for acupuncture's efficacy in treating PD non-motor symptoms of sleep disorders, depression, anxiety, and fatigue.

Method	We conducted a meta-analysis of clinical trials by searching Pubmed, Embase, CINAHL, and Web of Science as electronic databases to evaluate acupuncture treatment for PD non-motor symptoms. Thirteen clinical trials met our inclusion criteria, and their methodological quality was assessed using the modified Jadad scale, indicating a moderate overall quality.
Results	Our results showed that acupuncture improved PD-related sleep disorders and depression but had no effect on anxiety and fatigue. Our meta-analysis suggests that acupuncture can be used as a complementary treatment for sleep disturbances and depression in PD patients and may exhibit a dual therapeutic effect on motor and non-motor symptoms. However, further well-designed clinical trials with larger sample sizes are needed to confirm these findings.
Conclusion	Overall, our study highlights the potential of acupuncture as a viable complementary therapy for the treatment of PD non-motor symptoms of sleep disorders and depression, which can improve the quality of life of PD patients.

1.2.7. Cognitive impairment

1.2.7.1. Hanyu 2025

Hanyu P, Wang A. The effectiveness and safety of acupuncture for the treatment of cognitive impairment from Parkinson disease: A meta-analysis and systematic review. Medicine (Baltimore). 2025 Apr 18;104(16):e42148. https://doi.org/10.1097/MD.0000000000042148

Background	This systematic review and meta-analysis examined the efficacy and safety of acupuncture for treating patients with cognitive impairment from Parkinson disease (PDCI).
Methods	We searched the China National Knowledge Infrastructure, Wanfang (WF), Weipu (VIP), China Biology Medicine, PubMed, Embase, Cochrane Library, Web of Science and Clinical Trials electronic databases from database inception to January 2024 to identify randomized controlled trials that examined the use of acupuncture to treat PDCI. Studies published in Chinese or English were considered eligible. Two independent reviewers performed the literature search. Data extracted from the included studies were analyzed via RevMan 5.4 software for Meta. The mean effect sizes and 95% confidence intervals were calculated.
Results	This meta-analysis ultimately included 9 articles involving a total of 629 patients. The outcome measures included the mini-mental state examination, the Montreal cognitive assessment (MoCA), and the overall effective rate. The meta-analysis revealed that there were significant differences in all 3 outcomes between the experimental and control groups.
Conclusions	Acupuncture can be used as an effective treatment for PDCI and is significantly superior to conventional treatments. However, considering the low methodological quality of the included studies, results of this meta-analysis should be interpreted with caution. In addition, due to the inconsistency observed in this study, more clinical trials are needed for further investigation.

1.2.8. Fatigue

1.2.8.1. Alageel 2026

Alageel S, Hibberd J, Deane KHO. Non-Pharmacological interventions for managing fatigue in

parkinson's disease: A systematic review and meta-analysis. Clin Park Relat Disord. 2026;14:100434. https://doi.org/10.1016/j.prdoa.2026.100434

Background	Fatigue is a prevalent and disabling non-motor symptom in Parkinson's disease (PD), yet evidence for effective management strategies, particularly non-pharmacological approaches, remains limited.
Objective	To systematically review and meta-analyse the efficacy of non-pharmacological interventions aimed at reducing fatigue in people with PD (PwP).
Methods	MEDLINE, CINAHL and AMED were searched from inception to January 2026 for randomised controlled trials (RCTs) in which fatigue was a primary outcome. Risk of bias was assessed using the Cochrane RoB2 tool. Standardised mean differences (SMDs) were pooled using random-effects models, and certainty of evidence was assessed using GRADE. The protocol was registered with PROSPERO (CRD42023394180).
Results	Five RCTs (n = 270 participants) met the inclusion criteria, evaluating exercise-based interventions (3 trials, n = 142) and **acupuncture (2 trials, n = 128)**. Exercise interventions were associated with a statistically significant reduction in fatigue compared with controls (SMD = - 1.34, 95% CI - 2.24 to - 0.44, p = 0.003), although heterogeneity was substantial (I2 = 89%). Acupuncture showed no significant effect compared with sham (SMD = 0.17, 95% CI - 0.13 to 0.51, p = 0.26), with low heterogeneity (I2 = 0%). Risk of bias was low in the acupuncture trials but rated as 'some concerns' for all exercise trials. GRADE assessment indicated low certainty evidence for exercise and moderate certainty evidence for acupuncture. Secondary outcomes such as quality of life and sleep were inconsistently reported and showed minimal change.
Conclusion	Exercise-based interventions show preliminary promise for reducing fatigue severity in PwP, but the evidence is limited by heterogeneity and methodological concerns. Acupuncture appears ineffective compared to sham. High-quality, adequately powered RCTs evaluating diverse non-pharmacological approaches, including psychological and self-management strategies, are urgently needed, using standardised PD-specific fatigue measures.

1.2.8.2. Folkerts 2023

Folkerts AK, Nielsen J, Gollan R, Lansu A, Solfronk D, Monsef I, Ernst M, Skoetz N, Zeuner KE, Kalbe E. Physical Exercise as a Potential Treatment for Fatigue in Parkinson's Disease? A Systematic Review and Meta-Analysis of Pharmacological and Non-Pharmacological Interventions. J Parkinsons Dis. 2023;13(5):659-679. https://doi.org/10.3233/JPD-225116

Backgound	Fatigue is one of the most common and debilitating non-motor symptoms among patients with Parkinson's disease (PD) and significantly impacts quality of life. Therefore, effective treatment options are needed.
Objective	To provide an update on randomized controlled trials (RCTs) including pharmacological and non-pharmacological (but non-surgical) treatments that examine the effects of fatigue on PD patients.
Methods	We searched the MEDLINE, EMBASE, PsycINFO, CENTRAL, and CINAHL databases for (cross-over) RCTs on pharmacological and non-pharmacological interventions for treating fatigue in PD patients until May 2021. Meta-analyses for random-effects models were calculated when two or more studies on the same treatment option were available using standardized mean differences (SMDs) with 95% confidence intervals (CIs).

Results	Fourteen pharmacological and 16 non-pharmacological intervention RCTs were identified. For pharmacological approaches, a meta-analysis could only be performed for modafinil compared to placebo (n = 2) revealing a non-significant effect on fatigue (SMD = - 0.21, 95% CI - 0.74-0.31, p = 0.43). Regarding non-pharmacological approaches, physical exercise (n = 8) following different training approaches versus passive or placebo control groups showed a small significant effect (SMD = - 0.37, 95% CI - 0.69- - 0.05, p = 0.02) which could not be demonstrated for **acupuncture** vs. sham-acupuncture (SMD = 0.16, 95% CI - 0.19-0.50, p = 0.37).
Conclusion	Physical exercise may be a promising strategy to treat fatigue in PD patients. Further research is required to examine the efficacy of this treatment strategy and further interventions. Future studies should differentiate treatment effects on physical and mental fatigue as the different underlying mechanisms of these symptoms may lead to different treatment responses. More effort is required to develop, evaluate, and implement holistic fatigue management strategies for PD patients.

1.2.9. Neuroimaging studies

1.2.9.1. Pereira 2026

Pereira CR, Greten HJ, Santos R, Reis AM, Ramos B, Santos MJ, et al. Neuroimaging Evidence of Acupuncture Effects in Parkinson's Disease: A Systematic Review of fMRI-Based Clinical Studies. Healthcare (Basel). 2026;14(20):3457. https://doi.org/10.3390/healthcare14203457

Background	Parkinson's disease is a common neurodegenerative disorder, and acupuncture is used by some patients as an adjunctive non-pharmacological treatment. Functional magnetic resonance imaging (fMRI) provides a means of investigating potential neural effects in vivo. This systematic review synthesized fMRI evidence on acupuncture-related brain changes in Parkinson's disease and assessed the methodological quality of the available studies.
Methods	EMBASE, MEDLINE, PubMed, ScienceDirect, the Cochrane Library, CENTRAL, and SciELO were searched without restriction on publication year. Eligible studies were clinical fMRI studies of acupuncture in patients with Parkinson's disease, including interventional and controlled cross-sectional designs, published in English or Portuguese. Two reviewers independently performed screening and data extraction. Risk of bias was assessed using RoB 2 for studies with a randomized element and ROBINS-I for non-randomized studies.
Results	**Seven studies** reported in eight publications and published between 2009 and 2024 were included, comprising 151 patients with Parkinson's disease (147 with analyzable data) and 36 healthy controls. Designs included one three-arm randomized controlled trial, one randomized-order crossover placebo study, one non-randomized two-group study, two single-arm interventional studies, and two controlled cross-sectional studies. GB34 was used in five of seven studies, and all studies used 3-Tesla echo-planar BOLD imaging. Acupuncture was associated with modulation of the precentral gyrus, prefrontal cortex, thalamus, cerebellum, insula, and putamen. Individual studies also reported improvements in pain, gait, or motor scores. Risk of bias was high in both studies with randomized elements and serious or critical in all five non-randomized studies; no study was at low risk of bias.
Conclusion	Current fMRI findings are preliminary and hypothesis-generating. They are insufficient to establish clinical efficacy, distinguish specific neuromodulatory effects from non-specific effects, or support changes in clinical practice. Adequately powered, sham-controlled randomized trials using harmonized imaging protocols are needed.

1.3. Special Acupuncture Techniques

1.3.1. Comparison of Acupuncture techniques

1.3.1.1. Mao 2025

Mao X, Huang W, Zhang S, Chen T, Chen L, Liu X, Zhao Y. Comparative Efficacy of Acupuncture-Related Therapies for Parkinson's Disease: A Systematic Review and Network Meta-Analysis. Behav Brain Res. 2025 Sep 25:115848. https://doi.org/10.1016/j.bbr.2025.115848

Background	Background: Parkinson's disease (PD) is a prevalent neurodegenerative disorder marked by progressive motor and non-motor symptoms. Although levodopa remains the standard therapy, long-term use leads to reduced efficacy and motor complications. Acupuncture-related therapies have gained attention as safe, affordable adjuncts, but the comparative effectiveness of different modalities remains uncertain.
Methods	Method: We conducted a comprehensive search of Chinese and international databases to identify randomized controlled trials (RCTs) evaluating the effectiveness of acupuncture-related therapies for PD. Eligible studies were selected based on predefined PICOS criteria. Two reviewers independently screened studies, extracted data, and assessed risk of bias using the RoB 2.0 tool. A frequentist network meta-analysis was performed using Stata SE 15.1. For continuous outcomes, mean differences were calculated; for binary outcomes, risk ratios were used. A random-effects model was applied, with heterogeneity assessed by τ^2 and consistency tested across the network. SUCRA values were calculated to rank the comparative efficacy of interventions.
Results	Result: Fifty-seven RCTs (n = 4,262; 2002-2024) were included. Interventions comprised manual acupuncture (MA), electroacupuncture (EA), warm acupuncture (WA), fire acupuncture (FA), and moxibustion (MOX), used alone or in combination with conventional medication (CM) or Chinese herbal medicine (CHM). For total effective rate (41 RCTs; n = 3,086), the most pronounced benefit was observed with EA + WA + CM (RR = 3.00; 95% CI: 1.20-7.48; SUCRA = 97%; moderate confidence). Significant improvements were also found for MOX + CM (RR = 1.33; 1.07-1.64; SUCRA = 68.8%), MA + CM (RR = 1.20; 1.10-1.32; SUCRA = 51.7%), and EA + CM (RR = 1.15; 1.05-1.26; SUCRA = 38.3%). For UPDRS (36 RCTs; n = 2,655), MA + CM significantly improved motor symptoms compared with CM (MD = -0.89; 95% CI: -1.58 to -0.20; SUCRA = 61.6%; moderate certainty). For Webster score (5 RCTs; n = 444), both EA + CM (MD = -3.65; -5.01 to -2.28; SUCRA = 91.1%) and MA + CM (MD = -2.62; -4.31 to -0.92; SUCRA = 61.8%) were superior to CM. For HAMD (11 RCTs; n = 802), significant reductions in depressive symptoms were observed with MA + CM (MD = -2.41; 95% CI: -3.48 to -1.34; SUCRA = 91.9%) and EA + CM (MD = -2.16; 95% CI: -3.74 to -0.58; SUCRA = 62.8%). CINeMA ratings were low to moderate for most pairwise comparisons.
Conclusion	Conclusion: Acupuncture-based therapies provided added benefits over conventional medication for Parkinson's disease. EA + WA + CM showed the most consistent improvement in overall effectiveness, MA + CM was most effective for motor symptoms, EA + CM and MA + CM demonstrated superiority for Webster scores, and MA + CM also performed best for depressive symptoms. Although the certainty of evidence ranged from low to moderate, these findings suggest that tailored combinations of acupuncture and conventional treatment may optimize outcomes in PD.

1.3.1.2. Yu 2025

Yu P, Wang G, Tan S, Zhan M, Zheng Y, Zhou W, Li H, Ma J. Efficacy of various acupuncture modalities on alleviating symptoms in Parkinson's disease: a systematic review and meta-analysis of randomized controlled trials. Neurol Sci. 2025 Oct;46(10):4819-4835. https://doi.org/10.1007/s10072-025-08333-1

Background	Background: Parkinson's disease (PD) is a progressive neurological condition, that often respond poorly to conventional treatments. Acupuncture has gained attention as a supportive therapy, but the clinical effects of its various modalities remain insufficiently defined. This study examined the therapeutic efficacy of different acupuncture approaches in managing symptoms of PD.
Methods	Methods: The meta-analysis and systematic review was carried out in accordance with PRISMA 2020 guidelines and registered in PROSPERO (CRD42024627483). Randomized controlled trials (RCTs) assessing acupuncture modalities combined with standard PD therapy was encompassed. The Cochrane RoB 2 tool was utilized to figure out the risk of bias, and subgroup/meta-regression analyses explored heterogeneity. Evidence certainty was rated using the GRADE framework.
Results	Results: In 50 RCTs (n = 3,248), acupuncture significantly outperformed Western medicine across all UPDRS domains, with the strongest effect on treatment-related motor complications (SMD: -2.16; 95% CI: -3.10 to -1.22). It also improved quality of life, pain, sleep, depression, and anxiety. Optimal results were linked to ≥ 10 acupoints, moderate session duration, and thrice-weekly treatment. Among all modalities, electroacupuncture showed the highest overall efficacy. Thinner needles worked better for non-motor symptoms; thicker ones favored motor outcomes. No serious adverse events occurred; mild effects were rare and transient.
Conclusion	Conclusions: This comprehensive analysis highlights acupuncture—especially electroacupuncture—as a clinically valuable adjunct to standard PD therapy. Its benefits across motor, non-motor, and psychological domains, when delivered with optimized parameters, suggest a strong case for its integration into personalized PD management strategies.

1.3.2. Moxibustion

1.3.2.1. Niu 2022 RETRACTED

- Retracted: Efficacy of Moxibustion in the Treatment of Parkinson's Disease Based on Meta-Analysis under Intelligent Medical Treatment. Appl Bionics Biomech. 2023 Nov 1;2023:9872864. https://doi.org/10.1155/2023/9872864
- Niu Q, Xu W. Efficacy of Moxibustion in the Treatment of Parkinson's Disease Based on Meta-Analysis under Intelligent Medical Treatment. Appl Bionics Biomech. 2022 Apr 30;2022:8168152.https://pubmed.ncbi.nlm.nih.gov/35535324/

1.3.2.2. Cho 2017

Cho Ki-Ho, Kim Tae-Hun, Kwon Seungwon, Jung Woo-Sang et al. Moxibustion for idiopathic Parkinson’s disease: A systematic review and meta-analysis of randomized controlled trials. European Journal of Integrative Medicine. 2017;13:26-33. [206067].

Background	Moxibustion is the burning of mugwort used to stimulate acupuncture points on the skin. In traditional East-Asian medicine, moxibustion is often used as a non-drug treatment for idiopathic Parkinson's disease (IPD).
Aim	The aim of this systematic review was to evaluate the effectiveness and safety of moxibustion therapy to treat IPD.
Methods	The following electronic databases were searched for studies published in or before December 2016: Medline, the Cochrane Central Register of Controlled Trials (CENTRAL), EMBASE, OASIS (Korean database), and CNKI (Chinese database). Two researchers conducted the data extraction and risk of bias assessments.
Results	From the results, a total of 10 studies (644 IPD patients) were included in this review. Overall methodological quality was not high and all studies included small numbers of participants which could not ensure the rigor of the synthesized evidence. There was a considerable clinical heterogeneity in terms of patient’s population, moxibustion types and control group interventions. Compared with control group, moxibustion did not show significant difference in the overall effectiveness ratio (RR 1.20, 95% CI [1.00, 1.44]). About the total unified Parkinson’s disease rating scale (UPDRS) score, however, there was significant difference between moxibustion and control interventions (MD −8.75, 95% CI [−12.54, −4.95]). Adverse events related to moxibustion treatment were not reported in most of the studies.
Conclusions	Evidence on the benefit and harm of moxibustion therapy for IPD was not conclusive due to methodological problems and small sample sizes among the included studies. More rigorous clinical studies will be necessary in future.

1.3.3. Scalp Acupuncture

1.3.3.1. Li 2024

Li H, Ju G, Chen J, Wang Y. Integrated approach of scalp electroacupuncture and pharmacotherapy in managing Parkinson's disease: A systematic review, meta-analysis, and trial sequential analysis of randomized clinical trials. Medicine (Baltimore). 2024 Dec 13;103(50):e40786. https://doi.org/10.1097/MD.0000000000040786

Background	Parkinson disease (PD) is a progressive neurological disorder that may be managed with therapies like scalp electroacupuncture (SEA). The combination of SEA and medication could potentially offer a new approach for managing PD symptoms. The systematic review and meta-analysis aimed to assess the combined impact of SEA and medication on PD through a comprehensive analysis of randomized clinical trials, focusing on outcomes like effective rate and various scores (total Unified Parkinson Disease Rating Scale (UPDRS), UPDRS III, and Webster).
Methods	It was conducted an unrestricted search from the beginning of each database until April 19, 2024, across 7 databases. These included 4 international databases: PubMed, Web of Science, Scopus, and Cochrane Library, and 3 Chinese databases: CNKI, VIP, and Wanfang. Review Manager, version 5.3 was used to calculate the mean difference (MD) or risk ratio along with a 95% confidence interval (CI). The Comprehensive Meta-Analysis version 3.0 was employed for conducting bias analyses, meta-regression, and sensitivity analyses.

Results	From 1422 records identified in the databases, 17 articles were included in both the systematic review and meta-analysis. The pooled risk ratio and its 95% CI in the intervention (SEA + medication) group compared to the control (medication) group for the effective rate is 1.24 [1.17, 1.32] with P < .00001. The pooled MD and its 95% CI for the Webster score is -0.51 [-6.36, 5.35] with P = .86. The pooled MD and its 95% CI for total UPDRS is 8.73 [2.88, 14.58] with P = .003. The pooled MD and its 95% CI for UPDRS III is 4.42 [3.23, 5.61] with P < .00001. The results for total UPDRS and UPDRS III showed that intervention reduced the severity and progression of PD in patients more than medication.
Conclusions	The intervention (SEA + medication) has shown significant effectiveness compared to the control (medication) in terms of the effective rate, total UPDRS, and UPDRS III in PD patients. However, it did not show a significant effect on the Webster score.

1.3.3.2. Qiang 2019 Ø

Qiang Tianyao, Cong Gai , Yuan Chai , Wandi Feng , Haojie Ma , Yi Zhang , Jing Feng , Zhenyu Guo , Ling Ma , Hongmei Sun. Combination therapy of scalp electro-acupuncture and medication for the treatment of Parkinson's disease: A systematic review and meta-analysis. Journal of Traditional Chinese Medical Sciences. 2019;6(1):26-34. [197195].

Objective	To summarize the current clinical evidence related to the therapeutic effects and safety of adjuvant scalp electro-acupuncture (SEA) treatment for Parkinson's disease in China.
Methods	Following the PRISMA statement, seven electronic databases were searched to retrieve randomized controlled clinical trials that used SEA combined with medication as the treatment intervention, and medication as the control. RevMan 5.3 was used to analyze outcomes, including the Unified Parkinson's Disease Rating Scale (UPDRS), Webster scale, effectiveness rate, and UPDRS III.
Results	**Nine randomized controlled trials**, with certain methodological flaws and risks of bias, were included that involved **474 participants**. SEA combined with medication was more effective than medication alone in overall therapeutic effects, as evidenced by total UPDRS scores (mean difference (MD): 7.15, 95% confidence interval [CI] 0.24 to 14.07, P = .04), Webster scores (MD: 1.60, 95% CI 0.20 to 2.99, P = .03), and effectiveness rate (risk ratio: 1.35, 95% CI 1.19 to 1.54, P < .001). In addition, there was significant improvement in pooled motor function results after adjuvant SEA treatment compared with medication alone (MD: 5.75, 95% CI 4.18 to 7.32, P < .001).
Conclusion	The combination of SEA and medication may be a promising intervention for patients with Parkinson's disease, especially to improve motor function. However, results were inconclusive, and additional studies with rigorous experimental design and larger sample sizes are needed to verify these results.

1.3.3.3. Lee 2013

Lee HS, Park HL, Lee SJ, Shin BC, Choi JY, and Soo Lee MS. Scalp Acupuncture for Parkinson's Disease: A Systematic Review of Randomized Controlled Trials. Chin J Integr Med. 2013;19(4):297-306. [165812].

Objective	To evaluate the effectiveness of scalp acupuncture (SA), a modern acupuncture technique specialized to neurological disorders, in managing motor function and symptoms for Parkinson's disease (PD) patients.

Methods	Two independent reviewers extracted data from all of the randomized clinical trials (RCTs) that assessed the efficacy of SA for PD compared with conventional therapies (CTs). Sixteen electronic databases were searched. The risk of bias was appraised with the Cochrane Collaboration tool, and the reporting of the included studies was evaluated by the Consolidated Standards of Reporting Trials (CONSORT) 2010 checklist and the revised Standards for Reporting Interventions in Clinical Trials of Acupuncture (STRICTA) guidelines.
Results	In total, **4 RCTs** met the inclusion criteria. As assessed by the Unified PD Rating Scale (UPDRS), 2 RCTs showed that SA combined with CTs proved superior to CTs alone [60 cases; weighted mean difference, —3.94; 95% confidence interval (CI), —6.05 to —1.84, P=0.01; 12=O%]. Based on the Webster scale, however, 3 RCTs showed no superior effect of SA when combined with CTs with high heterogeneity (154 cases; risk ratio, 1.29; 95% CI, 0.79 to 2.12, P=0.30; 12=84%). The Cochrane risk of bias, adherence to the CONSORT and the STRICTA checklist showed that the quality of all the included RCTs was generally low.
Conclusions	The result of our systematic review and meta-analysis suggested that **the effectiveness of SA for PD is promising**, however, the evidence is not convincing. A sham-controlled RCT design that adheres to the CONSORT and STRICTA guidelines to overcome methodological weakness and that includes a large sample size is strongly recommended to confirm the precise effect of SA on PD.

1.3.4. Pharmaco-acupuncture

1.3.4.1. Cho 2018

Cho KH, Kim TH, Jung WS, Moon SK, Ko CN, Cho SY, Jeon CY, Choi TY, Lee MS, Lee SH, Chung EK, Kwon S. Pharmacoacupuncture for Idiopathic Parkinson's Disease: A Systematic Review of Randomized Controlled Trials. Evid Based Complement Alternat Med. 2018. [170448].

Introduction	Pharmacoacupuncture is a new acupuncture treatment that stimulates acupuncture points by injecting herbal medicine into them. Recently, pharmacoacupuncture has been widely used in the treatment of idiopathic Parkinson's disease in traditional East Asian medicine. The purpose of this systematic review is to evaluate the efficacy and safety of pharmacoacupuncture in the treatment of idiopathic Parkinson's disease.
Methods	The following electronic databases were searched for studies published in or before December 2016: Medline, Cochrane Central Register of Controlled Trials (CENTRAL), EMBASE, OASIS, and CNKI, without language restriction. The main outcome assessed was the total Unified Parkinson's Disease Rating Scale (UPDRS) score. The details of the pharmacoacupuncture intervention, such as the herbal medicine and acupuncture points used, were also investigated.
Results	From 138 studies, **3 randomized controlled trials were included**; the number of patients analyzed was 134. Most of the studies showed considerable methodological flaws. There was heterogeneity of the intervention type and treatment duration in the included studies. Therefore, we could not conduct a meta-analysis. In one study, adjunctive bee venom pharmacoacupuncture therapy significantly improved total UPDRS scores compared with conventional therapy alone. Another study, which used adjunctive Kakkonein pharmacoacupuncture, did not reveal significant improvement compared with conventional therapy alone. A third study reported that Mailuoning pharmacoacupuncture was able to significantly improve the modified Webster Symptom Score when compared with no treatment. Adverse events related to the pharmacoacupuncture were reported in only one case, itching caused by the bee venom.

Conclusions	Our findings regarding the efficacy of pharmacoacupuncture as a therapy for idiopathic Parkinson's disease are currently inconclusive. Further large and rigorous clinical trials are needed.

1.3.5. Bee venom acupuncture

1.3.5.1. Jeong 2025

Jeong H, Kim KH, Ko SG. Effectiveness of Bee Venom Injection for Parkinson's Disease: A Systematic Review. Toxins (Basel). 2025 Apr 20;17(4):204. https://doi.org/10.3390/toxins17040204

Background	Parkinson's disease (PD) is the second most common neurodegenerative disorder worldwide, affecting over 8.5 million people as of 2019. While standard pharmacological treatments help alleviate symptoms, their long-term use can lead to side effects such as dyskinesia. Bee venom acupuncture (BVA) involves the use of a natural toxin derived from bees that can be used for pain relief and treating neurological disorders. This study aimed to review the efficacy and safety of BVA for the treatment of PD.
Methods	This review protocol was prospectively registered with PROSPERO (CRD420251000577). We searched eight databases in February 2025 and selected 12 studies involving 215 PD patients treated with BVA. Idiopathic Parkinson's disease (IPD) is the most common diagnosis. The concentration and dosage per session ranged from 0.03 to 0.1 mg/mL and from 0.1 to 1.0 mL, respectively. Twenty-four different outcome measures were used, with the Unified PD Rating Scale employed in 91.7% of the studies.
Results	All studies reported improvements in outcomes. Mild adverse effects such as swelling and itching were noted in four studies (33.3%); however, no severe reactions such as anaphylactic shock occurred.
Conclusion	These findings suggest that BVA has the potential for broader clinical applications in the treatment of PD.

2. Overviews of systematic reviews

2.1. Xue 2024

Xue H, He HX, Wu D, Fan WH, Li YX. An overview of systematic reviews of acupuncture for Parkinson's disease. Front Neurosci. 2024 Aug 30;18:1415008. https://doi.org/10.3389/fnins.2024.1415008

Background	Many systematic reviews (SRs) have reported the efficacy of acupuncture in improving Parkinson's disease (PD), but the quality of evidence is unknown. Therefore, it is necessary to comprehensively summarize and objectively evaluate the evidence of acupuncture for PD.
Methods	Seven databases were searched to retrieve SRs on the acupuncture for PD. Two reviewers independently completed literature retrieval, screening, and data extraction. The methodological quality, risk of bias (RoB), evidence quality of the included SRs were assessed by the Assessing the Methodological Quality of Systematic Reviews 2 (AMSTAR 2), the Risk of Bias in Systematic Reviews (ROBIS), the Grading of Recommendations Assessment, Development and Evaluation (GRADE) tool.

Results	A total of 24 SRs were included. According to AMSTAR 2, 6 (25%) were rated as high quality, 6 (25%) were rated as moderate quality, and 12 (50%) were rated as very low quality. The application of the ROBIS tool showed that 12 (25%) SRs were at low risk of bias. The results of GRADE showed that 8 (7.62%) outcomes provided high quality evidence, 23 (21.9%) outcomes provided moderate quality evidence, 42 (40%) outcomes provided low quality evidence, and 32 (30.48%) outcomes provided very low quality evidence.
Conclusion	The overview indicates that acupuncture shows promise as a treatment for PD, although the evidence is limited and inconclusive due to methodological flaws and the heterogeneity of existing studies. Future research should focus on fully reporting methodological details and following review guidelines to produce more reliable and consistent evidence on the effectiveness of acupuncture for PD.

2.2. Yu 2023

Yu B, Ma SQ, Huang HP, Zhong Z, Yu S, Huang K, Zhang LY, Li MY, Yao L. Research methods and efficacy of acupuncture in the treatment of Parkinson's disease: a scoping review of systematic reviews and meta-analyses. Front Neurol. 2023 Jun 2;14:1196446. https://doi.org/10.3389/fneur.2023.1196446

Introduction	Research on acupuncture for Parkinson's Disease is growing rapidly. A scoping review examines emerging evidence and is important to guide policy and practice. The purpose of this scoping review was to examine the breadth and methodological quality of systematic reviews and meta-analyses, and to map the quality of evidence of these studies to evaluate the efficacy of acupuncture for treatment of PD.
Methods	Seven literature databases were searched. Two researchers independently screened the literature and extracted relevant information (such as general characteristics, inclusion criteria, study results, and report quality).The inclusion criteria include publicly published systematic reviews/meta-analyses/systematic reviews of acupuncture treatment for Parkinson's disease. The research subjects are any patients who meet the diagnostic criteria for Parkinson's disease, and intervention measures include acupuncture treatment including electro acupuncture, scalp acupuncture, or combination with other treatment methods. The outcome indicators are all types of results related to PD and the effective measurement tools used.
Results	A total of **23 systematic reviews and/or meta-analyses** of studies were included. Most of the articles were published between 2019 and 2023 (47.8%). A total of 14 articles (60.9%) were evaluated and classified, and 89 (36.8.1%) of the 242 included articles were of medium and high quality.
Discussion	This study comprehensively evaluates the quality and research methods of incorporating SRs/MAs, and concludes that acupuncture treatment for Parkinson's disease may be significant. Considering the shortcomings in research design and methodology, it is not possible to draw conclusions on the evidence of acupuncture treatment for PD at this stage, but it does not mean that acupuncture treatment is ineffective. We hope to focus on improving research design and methods in the study of acupuncture treatment for Parkinson's disease, an increase the credibility of research results.

2.3. Cao 2020 ☆

Cao L, Li X, Li M, Yao, Hou L, Zhang W, Wang Y, Niu J, Yang K. The effectiveness of acupuncture for Parkinson's disease: An overview of systematic reviews. Complement Ther Med. 2020. [209268]. doi

Objectives	Acupuncture is an alternative therapy for Parkinson's disease (PD), but its efficacy and safety are controversial. This overview aimed to summarize the existing evidence from systematic reviews (SRs) and meta-analyses (MAs) in order to assess the effectiveness of acupuncture as a treatment for PD.
Methods	Seven electronic databases were searched from their inception until July 2019. The Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) and Assessment of Multiple Systematic Reviews 2 (AMSTAR2) checklists were used to assess evidence quality and methodological quality, respectively. The outcomes of study were calculated using mean differences (MDs) and risk ratios (RRs) with 95 % confidence intervals (CIs). A meta-analysis was performed using RevMan 5.3 software.
Results	A total of **12 SRs/MAs** were included. All 12 SRs/MAs had more than one critical weakness in AMSTAR 2 and were considered of critically low methodological quality. The quality of evidence was unsatisfactory according to the GRADE checklist. Meta-analyses showed that acupuncture combined with drug for the treatment of PD can significantly improve the total effectiveness rate compared with drug alone (RR = 1.25, 95 % CI 1.16-1.34, P < 0.001). It was also found that acupuncture combined with drug significantly improved the UPDRS I-IV total summed scores (WMD=-6.18, 95 % CI -10.32 to -2.04, P < 0.001) and Webster scores (WMD=-4.20, 95 % CI -7.59 to -0.81, P < 0.001).
Conclusion	Acupuncture might improve the UPDRS score, Webster score, and total effective rate in treatment of PD. It might be a safe and useful adjunctive treatment for patients with PD. However, we should interpret the findings of these reviews with caution, considering the overall limited methodological and reporting quality.

2.4. Huang 2020 ☆

Huang J, Qin X, Cai X, Huang Y. Effectiveness of Acupuncture in the Treatment of Parkinson's Disease: An Overview of Systematic Reviews. Front Neurol. 2020:917. [212545]. doi

Background	The effects of acupuncture on Parkinson's disease (PD) outcomes remain unclear. The aim of this overview was to comprehensively evaluate the methodological quality and applicability of the results of systematic reviews (SRs)/meta-analyses (MAs) that examined the use of acupuncture to treat PD.
Methods	Eight databases were searched to retrieve SRs/MAs on the use of acupuncture for the treatment of PD. Two reviewers independently screened and extracted the data using the Assessing the Methodological Quality of Systematic Reviews 2 (AMSTAR-2) checklist to evaluate the methodological quality and using the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) criteria to assess the evidence quality of the included reviews.
Results	A total of **11 SRs/MAs were included**. According to the AMSTAR-2 checklist results, all included SRs/MAs were rated as very-low-quality studies. The GRADE criteria revealed 20 studies with very-low-quality evidence, 9 with low-quality evidence, 3 with moderate-quality evidence, and 0 with high-quality evidence. Descriptive analysis showed that acupuncture appears to be a clinically effective and safe treatment for PD.
Conclusions	The use of acupuncture for the treatment of PD may be clinically effective and safe. This conclusion must be interpreted cautiously due to the generally low methodological quality and low quality of evidence of the included studies.

2.4.1. Otayza 2018 ☆

Otayza J, Juri C. Is acupuncture an alternative for the treatment of Parkinson’s Disease?. Medwave. 2018;18(3). [158650].

Introduction	It has been proposed that acupuncture has several benefits for patients with Parkinson’s disease. However, its real clinical effect is still under discussion.
Methods	To answer this question we used Epistemonikos, the largest database of systematic reviews in health, which is maintained by screening multiple information sources, including MEDLINE, EMBASE, Cochrane, among others. We extracted data from the systematic reviews, reanalyzed data of primary studies, conducted a meta-analysis and generated a summary of findings table using the GRADE approach.
Results and conclusions	We identified nine systematic reviews including 53 studies overall, of which 45 were randomized trials. We concluded acupuncture might have a small effect in improving motor symptoms and disability in Parkinson’s disease, but the certainty of the evidence is low.

3. Clinical Practice Guidelines

⊕ positive recommendation (regardless of the level of evidence reported)
Ø negative recommendation, or lack of evidence ou non conclusif

3.1. Netherlands Comprehensive Cancer Centre (IKNL, Netherlands) 2025

Multidisciplinary guideline Oral problems and swallowing disorders in the palliative phase. Palliatine. 2025. https://palliaweb.nl/richtlijnen-palliatieve-zorg/richtlijn/mondproblemen-in-de-palliatieve-fase

Consider acupuncture for swallowing difficulties in patients with Parkinson's disease.

3.2. Parkinson Canada 2019 Ø

¤2e édition du guide canadien pour la maladie de parkinson, Parkinson Canada. 2019:60P. [115066].

Même si beaucoup de malades souhaitent recourir aux thérapies non conventionnelles comme l’acupuncture, les données appuyant ces méthodes sont insuffisantes. De plus en plus de patients s’ouvrent et s’intéressent à ce type de traitement, et la profession médicale devra fournir des données scientiques valides pour les guider. L’effet placebo est un phénomène bien connu, en particulier chez les patients atteints de la maladie de Parkinson, et il pourrait être médié par la dopamine. Par conséquent, toute méthode appelée à traiter la maladie de Parkinson doit faire l’objet d’une évaluation scientiquement rigoureuse de son efficacité, pour faire en sorte que les patients en aient le plus possible pour leur argent, leur temps et leurs efforts.

3.3. Haute Autorité de Santé (HAS, France) 2016 Ø

HAS. Maladie de Parkinson et syndromes apparentés : techniques et modalités de la prise en charge non médicamenteuse des troubles moteurs. Paris: Haute Autorité de Santé (HAS). 2016;:54P. [167786].

Nous n’avons pas trouvé de preuve suffisante et consistante pour affirmer, au-delà des effets qu’elles peuvent engendrer transversalement (dus à l’intensité, la diversité, etc.), que les thérapeutiques suivantes sont bénéfiques ou pas (preuve insuffisante pour supporter ou réfuter leur utilisation) : thérapie manuelle ; balnéothérapie ; **acupuncture** ; biofeedback ; réalité virtuelle ; serious games ; technique Alexander.

3.4. Parkinson Society Canada (¤PSC, Canada) 2012 Ø

Grimes D, Gordon J, Snelgrove B, Lim-Carter I, Fon E , Martin W et al. Canadian Guidelines on Parkinson’s Disease. Canadian Journal of Neurological Sciences. 2012;39(4) sup 1:s1-30. [197040].

C57 There is insufficient evidence to support or refute the use of **acupuncture**, manual therapy, biofeedback or the Alexander technique in the treatment of PD. AAN Level U

3.5. American Academy of Neurology (AAN, USA) 2006 Ø

Suchowersky O, Gronseth G, Perlmutter J, Reich S, Zesiewicz T, Weiner WJ; Quality Standards Subcommittee of the American Academy of Neurology. Practice Parameter: neuroprotective strategies and alternative therapies for Parkinson disease(an evidence-based review): report of the Quality Standards Subcommittee of the American Academy of Neurology. Neurology. 2006;66(7):976-82. [198765].

There is insufficient evidence to support or refute the use of acupuncture in PD (Level U).

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