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Poststroke Cognitive Impairment

Troubles cognitifs post-AVC

1. Systematic Reviews and Meta-Analysis

1.1. Generic Acupuncture

1.1.1. Li H 2026

Li H, Zhao Z, Qiao P, Wang J, Xu P, Ye Y. Meta-analysis of treatment methods for poststroke cognitive impairment: A network analysis of various interventions. Brain Behav. 2026 Jan;16(1):e71115. https://doi.org/10.1002/brb3.71115

Objective	Poststroke cognitive impairment (PSCI) is a common neurological consequence of stroke that significantly impacts patients' quality of life and functional recovery. This meta-analysis aimed to evaluate and compare the efficacy of various treatment modalities for PSCI.
Methods	We conducted a systematic search of multiple databases and identified eligible randomized controlled trials (RCTs) investigating treatments for PSCI. Eleven RCTs with 904 participants evaluating seven different interventions were included in the network meta-analysis. The treatments included transcranial direct current stimulation (tDCS), **acupuncture**, Baduanjin exercise, transcranial ultrasound stimulation (TUS), moderate-intensity aerobic exercise, modified Suanzaoren decoction, and cognitive training alone (control).
Results	Network meta-analysis showed that all interventions demonstrated some degree of efficacy compared to cognitive training alone, with Baduanjin exercise and tDCS ranking highest for improving cognitive function. Publication bias assessment showed no significant bias.
Conclusion	This comprehensive analysis suggests that non-pharmacological interventions, particularly neuromodulation techniques and traditional Chinese exercise, may offer promising approaches for PSCI treatment. These findings provide evidence-based guidance for clinical decision-making, though more large-scale, high-quality RCTs are needed to strengthen these conclusions.

1.1.2. Li M 2026

Li M, Liu T, Zhao W, Zhao J, Zhao D, Zhang X. Effects of acupuncture on cognitive function and lipid metabolism in post-stroke vascular dementia: a systematic review and meta-analysis of randomized controlled trials. Front Aging Neurosci. 2026;18:1797567. https://doi.org/10.3389/fnagi.2026.1797567

Introduction	Post-stroke vascular dementia (PSVD) is a prevalent cognitive disorder and an underexplored area in dementia research, yet conventional pharmacotherapies have limited efficacy. Although acupuncture has emerged as a promising non-pharmacological intervention, no systematic review has specifically evaluated its effects in PSVD. This meta-analysis therefore aimed to assess the efficacy, safety, and potential treatment parameters of acupuncture for PSVD.
Methods	Following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, seven databases were searched for randomized controlled trials (RCTs) investigating acupuncture for PSVD from inception to November 3, 2025. Included studies were assessed for risk of bias using the Cochrane Risk-of-Bias 2.0 tool, and meta-analyses were conducted in Stata to evaluate outcomes and explore sources of heterogeneity. The main pooled analyses included both add-on trials and monotherapy trials, which addressed distinct clinical questions and were therefore interpreted cautiously.
Results	**Thirteen RCTs involving 1,085 patients** were included. Acupuncture was associated with a higher study-defined overall effective rate, a non-standardized and heterogeneous outcome [relative risk = 1.27, 95% confidence interval (CI): 1.17-1.37, $p < 0.001$], as well as improvements in Mini-Mental State Examination (MMSE) scores [mean difference (MD) = 2.89, 95% CI: 2.15-3.64, $p < 0.001$] and Montreal Cognitive Assessment (MoCA) scores (MD = 2.80, 95% CI: 2.33-3.28, $p < 0.001$). An exploratory subgroup analysis suggested a larger MMSE effect in trials with 12 weeks of treatment (MD = 4.20). However, because this analysis was not prespecified and the number of studies in each subgroup was limited, this finding should be interpreted as hypothesis-generating. Acupuncture was also associated with lower total cholesterol [standardized mean difference (SMD) = -0.574, $p = 0.002$] and triglyceride levels (SMD = -0.552, $p = 0.002$), although these lipid-related findings were based on only two studies and should be regarded as exploratory. Only three minor adverse events (scalp hematomas) were reported; however, adverse-event reporting was incomplete across the included studies. No strong signal of publication bias was detected for MMSE.
Discussion	Overall, acupuncture-related interventions may be associated with cognitive improvement in PSVD, but the certainty of evidence remains limited by methodological weaknesses, incomplete safety reporting, and the exploratory nature of the study-defined overall effective rate, lipid-related outcomes, and treatment-duration findings. Larger, high-quality multicenter RCTs are needed to confirm these observations.

1.1.3. Li S 2026

Li S, Huo H, Li D, Li W, Tan X, Li J, et al. Comparative efficacy of different electromagnetic stimulations for post-stroke cognitive impairment: A systematic review and network meta-analysis. Eur J Integr Med. 2026;87:102720. https://doi.org/10.1016/j.eujim.2026.102720

Background	Post-stroke cognitive impairment (PSCI) is a frequent consequence of stroke. Several electromagnetic stimulation approaches, including **electroacupuncture (EA), transcutaneous acupoint electrical stimulation (TEAS)**, and repetitive transcranial magnetic stimulation (rTMS), have been investigated as adjuncts to rehabilitation. This systematic review and network meta-analysis compared their efficacy in improving cognitive outcomes in patients with PSCI.
Methods	Eight Chinese and English databases were searched from inception to October 26, 2025, for randomized controlled trials evaluating electromagnetic stimulation therapies for PSCI. Risk of bias was assessed using RoB 2.0, and certainty of evidence using GRADE. A frequentist network meta-analysis was conducted with Stata 18.0.

Results	A total of 120 RCTs were included. **Electroacupuncture** ranked highest for Mini-Mental State Examination (MMSE) scores (SUCRA = 82.1%; SMD = 1.74, 95% CI 1.17 to 2.31). **TEAS** ranked highest for Montreal Cognitive Assessment (MoCA) scores (SUCRA = 72.8%; SMD = 1.89, 95% CI 0.16 to 3.62), although the wide confidence interval indicated substantial imprecision, and also ranked highest for Loewenstein Occupational Therapy Cognitive Assessment (LOTCA) scores (SUCRA = 87.0%; SMD = 1.74, 95% CI 0.85 to 2.63). rTMS ranked highest for P300 amplitude (SUCRA = 76.0%; SMD = 1.35, 95% CI 0.63 to 2.06) and P300 latency (SUCRA = 72.8%; SMD = -1.02, 95% CI -1.24 to -0.80). Cluster analysis of MMSE and MoCA suggested a relatively balanced efficacy profile for **EA**, whereas **TEAS** showed the greatest apparent benefit for MoCA. Certainty of evidence was generally low to moderate because of methodological limitations and imprecision, although sensitivity analyses supported the robustness of the findings.
Conclusion	Electromagnetic stimulation used as an adjunct to conventional rehabilitation may improve cognitive outcomes after stroke. **EA** ranked highest for MMSE, **TEAS** for MoCA and LOTCA, and rTMS for P300 measures. However, certainty of evidence was low to moderate, and the estimates, particularly for TEAS on MoCA, were imprecise; the findings should therefore be interpreted cautiously.

1.1.4. Niu 2026

Niu H, Li W, Du L, Zheng X, Liang J, Yang X, Luo J. Comparative efficacy of non-pharmacological interventions for post-stroke cognitive impairment: a systematic review and network meta-analysis of randomized controlled trials. Front Neurol. 2026 Mar 3;17:1644663. https://doi.org/10.3389/fneur.2026.1644663

Background	Post-stroke cognitive impairment (PSCI) substantially diminishes quality of life and functional independence in stroke survivors. Various non-pharmacological interventions have been proposed to improve cognitive and functional outcomes; however, their relative effectiveness remains uncertain.
Methods	A network meta-analysis of 23 RCTs (1,723 participants) evaluated seven non-drug therapies, including computer-based cognitive training (CCT), transcranial direct current stimulation (tDCS), repetitive transcranial magnetic stimulation (rTMS), acupuncture, exercise, and their combinations. Primary and secondary outcomes were MoCA and MBI scores, respectively.
Results	Regarding MoCA scores, the most effective intervention was CCT combined with tDCS (mean difference vs. control: 6.67; 95% CrI: 1.20-12.13), followed by **acupuncture** combined with rTMS (6.59; 95% CrI: 4.34-8.84) and rTMS alone (4.26; 95% CrI: 2.65-5.88). SUCRA rankings indicated that CCT + tDCS and **acupuncture** + rTMS had the highest probabilities of being the most effective treatments. For MBI scores, tDCS (8.41; 95% CrI: 4.50-12.32), exercise rehabilitation (6.87; 95% CrI: 4.92-8.82), and CCT (6.62; 95% CrI: 3.84-9.39) demonstrated the greatest improvements compared to control. Funnel plots revealed no significant publication bias, and contribution plots supported the stability of the network geometry.
Conclusion	Among non-pharmacological approaches for PSCI, combined CCT and tDCS produced the most consistent cognitive improvements, while tDCS and exercise rehabilitation yielded the most pronounced gains in functional recovery. These findings support the clinical integration of multimodal brain stimulation and cognitive rehabilitation strategies in the management of PSCI.

1.1.5. Kreiger 2025

Kreiger K, Weiss E, Fluri F. Novel therapies for post-stroke cognitive impairment: a systematic review.

Front Neurol. 2025 May 27;16:1569329. https://doi.org/10.3389/fneur.2025.1569329

Backgound	Stroke impacts 15 million people annually, ranking as the second-leading cause of mortality and the third-leading cause of disability globally. Despite advances in acute care, long-term cognitive impairments persist in 30-70% of survivors, impeding rehabilitation and increasing dependency. The existing treatments for post-stroke cognitive impairment (PSCI) show limited efficacy, underscoring the need for more comprehensive approaches. The objective of this systematic review is to evaluate the effectiveness of novel therapeutic interventions for PSCI.
Methods	The present systematic review was conducted in accordance with the PRISMA guidelines and has been registered in PROSPERO (CRD42024621445). A comprehensive search in PubMed and EMBASE identified randomized controlled trials (RCTs) from the past 5 years examining PSCI interventions, with the selection criterion being an assessment of the trials using the Montreal Cognitive Assessment (MoCA). Statistical analyses included pooled mean differences (MD) with 95% confidence intervals (CI), heterogeneity assessment, and subgroup analyses.
Results	Of 755 identified articles, 22 RCTs involving 5,100 participants met the inclusion criteria. The results demonstrated that brain stimulation therapies, particularly transcranial direct current stimulation (tDCS; MD 4.56, 95% CI: 3.19-5.93) and pharmacological interventions (MD 4.00, 95% CI: 3.48-4.52) exhibited significant benefits. **Acupuncture** showed potential benefits (MD 2.65, 95% CI: 1.07-4.23), albeit with considerable variability. Training approaches yielded mixed outcomes (MD 1.53, 95% CI: -0.09-3.15). Early interventions (within 3 months post-stroke) were the most effective.
Discussion	Brain stimulation, especially tDCS, resulted in consistent cognitive benefits, with early initiation enhancing outcomes. Pharmacotherapy demonstrated robust, generalizable results, while cognitive training showed small but reliable effects. **Acupuncture** and physical training hold potential but require further standardization.
Conclusion	Effective stroke rehabilitation requires a multimodal, personalized approach integrating brain stimulation, pharmacotherapy, and cognitive training. Early intervention is critical for maximizing neuroplasticity, the effect of later interventions needs further evaluation. Standardization is needed to optimize physical training and alternative medicine.

1.1.6. Pan 2025

Pan Y, Pan W. Meta-Analysis of the Influence of Integrated Traditional Chinese and Western Medicine on Cognitive Dysfunction After Hypertensive Intracerebral Hemorrhage. Brain Behav. 2025 Dec;15(12):e71083. https://doi.org/10.1002/brb3.71083

Background	Hypertensive intracerebral hemorrhage (HICH) constitutes a highly lethal form of cerebrovascular disease. A frequent consequence of HICH is cognitive dysfunction, which significantly impacts patients' quality of life. Despite the burgeoning interest in integrated traditional Chinese and Western medicine (ITCWM) for the rehabilitation of cognitive deficits following HICH, the available evidence supporting its efficacy remains limited.
Aim	This study seeks to summarize the efficacy and safety of ITCWM in addressing cognitive dysfunction resulting from HICH using meta-analysis.
Methods	A literature search was conducted across the China National Knowledge Infrastructure, Wanfang, CQVIP, SinoMed, PubMed, Embase, Cochrane Library, and Web of Science databases. Studies were selected based on criteria. Quality assessment was evaluated through the Cochrane tool. Pooled results for continuous data were analyzed using the standardized mean difference (SMD) with a 95% confidence interval (CI). Binary categorical data were summarily analyzed using risk ratio (RR) and 95% CI.

Results	A total of **13 RCTs involving 1123 patients** were included. ITCWM significantly reduced NIHSS score (SMD = -2.36, 95% CI: -4.92, 0.19) and traditional Chinese medicine syndrome (TCMS) scores (SMD = -3.28, 95% CI: -4.02, -2.54), while improving activities of daily living (SMD = 3.67, 95% CI: 2.09, 5.26) and cognitive function scores (SMD = 1.27, 95% CI: 0.41, 2.14). The incidence of adverse events (RR = 0.26, 95% CI: 0.14, 0.46) was significantly lower in the ITCWM group. Subgroup analyses supported these findings, indicating that longer treatment durations (≥ 3 weeks) and multiple TCM therapies were associated with better outcomes.
Conclusion	ITCWM demonstrates both effectiveness and safety in the management of post-HICH cognitive dysfunction, improving neurological function, daily living abilities, and cognitive function while reducing adverse events.

1.1.7. Zhang 2025 (combined with repetitive transcranial magnetic stimulation)

Frontiers in Neurology. 2025 Dec 12;16:1663452. Acupuncture combined with repetitive transcranial magnetic stimulation for the treatment of post-stroke cognitive impairment: a systematic review and meta-analysis with trial sequential analysis. https://doi.org/10.3389/fneur.2025.1663452

Objective	This study aimed to comprehensively evaluate the clinical effectiveness and safety of acupuncture combined with repetitive transcranial magnetic stimulation (rTMS) in treating post-stroke cognitive impairment (PSCI) through meta-analysis and trial sequential analysis (TSA), moreover to provide an evidence-based basis for the treatment of PSCI in clinical practice.
Methods	The study conducted a comprehensive search of eight major domestic and international databases, including PubMed, Cochrane Library, Embase, Web of Science, China National Knowledge Infrastructure (CNKI), Wanfang Data, VIP and China Biology Medicine (CBM). Four English and four Chinese databases of randomized controlled trials of acupuncture combined with rTMS for the treatment of PSCI from inception until July 2025. Systematic reviews and meta-analyses were conducted based on the Cochrane systematic review method by using RevMan5.4 and Stata/MP 18.0, and trial sequential analyses were performed by TSA 0.9.
Results	**Sixteen RCTs involving 1,058 patients** were included, including 532 patients in the experimental group and 526 patients in the control group. Meta-analysis results showed that the experimental group had a higher clinical effectiveness rate in treating patients with PSCI compared to the control group [RR = 1.29, 95% CI (1.08, 1.55), p = 0.005]. The experimental group significantly improved scores on several scales: Montreal Cognitive Assessment (MoCA) [MD = 2.95, 95% CI (2.37, 3.53), p < 0.00001], Mini-Mental State Examination (MMSE) [MD = 2.89, 95% CI (2.13, 3.64), p < 0.00001], LOTCA [MD = 13.61, 95% CI (6.57, 20.65), p = 0.0002], Modified Barthel Index (MBI) [MD = 10.86, 95% CI (7.79, 13.94), p < 0.00001], Activity of Daily Life (ADL) [MD = 15.33, 95% CI (10.06, 20.61), p < 0.00001]. Also it was found to reduced the latency of P300 in the experimental group [MD = -18.18, 95% CI (-25.76, -10.61), p < 0.00001] and prolonged the amplitude of P300 [MD = 1.55, 95%CI (0.71, 2.39), p = 0.0003]. In addition, it could increase the Brain-derived Neurotrophic Factor (BDNF) level in the blood of the patients [MD = 0.93, 95%CI (0.52, 1.35), p < 0.0001], and decrease the Neuron-Specific Enolase (NSE) levels [SMD = -1.26, 95% CI (-1.59, -0.93), p < 0.00001]. There are two studies reported the adverse events. The TSA showed that the cumulative Z value of the meta-analysis of the clinical effectiveness rate, MoCA, and MMSE scales crossed the traditional and TSA boundaries, proving reliable conclusions.
Conclusion	Acupuncture combined with rTMS can improve cognitive function, regulate daily living ability, and regulate neurotransmitter levels in patients with PSCI, which is worthy recommended in the clinic. However, due to limitations in sample size, inclusion quality and incomplete reporting, it is worth noting that more rigorously designed and high-quality studies are needed to further validate these conclusions.

1.1.8. Luo 2024

Luo Z, Li W, Jiang J, Sun J, Zhang M, Zhang Y, Dong L, Li K, Wu C. Effect of Acupuncture on Cognitive Function in Patients With Post-Stroke Cognitive Impairment: A Systematic Review and Meta-Analysis. Brain Behav. 2024 Oct;14(10):e70075. https://doi.org/10.1002/brb3.70075

Aims and objective	To investigate the impact of acupuncture on post-stroke cognitive impairment (PSCI).
Backgound	PSCI is a major barrier to stroke patients' rehabilitation, and acupuncture is one of the treatments. However, the benefit of acupuncture on PSCI is unclear.
Design	A meta-analysis and systematic review of randomized controlled trials (RCTs).
Methods	Up to February 1, 2024, databases in PubMed, MEDLINE, Scopus, Embase, Web of Science, Cochrane Library, China National Knowledge Infrastructure, VIP, and Wanfang Data were searched. The risk of bias was investigated using the Cochrane Handbook for systematic reviews of treatments. Random-effect and fix-effect models were used to report the effects.
Results	There were **29 randomized clinical trials with 2477 participants** included. The findings demonstrated that the Mini-Mental State Examination (MMSE) and the Montreal Cognitive Assessment (MoCA) scores were higher in the acupuncture group than medicine group (mean difference [MD] = 1.74, 95% confidence interval (CI) CI [1.26, 2.23], I2 = 59%, $p < 0.01$). Compared to medicine group, the Loewenstein Occupational Therapy Cognitive Assessment (LOTCA) score exhibited a significant decrease and demonstrated improvement in the acupuncture group. Statistically significant outcomes were observed in the Barthel Index scores and P300 event-related potential (ERP). According to subgroup analysis, acupuncture was superior to conventional therapy for improving cognitive function in PSCI patients at 4 weeks after treatment.
Conclusion	Acupuncture therapy has shown promise in ameliorating cognitive deficits and enhancing daily functional abilities in individuals diagnosed with PSCI. But future research should focus on the duration and implement large sample, high-quality RCTs.
Relevance to clinical practice	Clinical workers in practical clinical work can select appropriate acupoints according to the actual conditions of patients, as well as confirm the treatment course of PSCI patients, while paying attention to observing and evaluating the therapeutic efficacy of acupuncture, to improve the health outcomes of patients in a patient-centered way.

1.1.9. Wu 2024

Wu W, Song C, Yang Y, Hu Y, Lin H. Acupuncture for cognitive impairment after stroke: A systematic review and meta-analysis. Heliyon. 2024 May 1;10(9):e30522. https://doi.org/10.1016/j.heliyon.2024.e30522

Objective	Acupuncture as an alternative therapy for post-stroke cognitive impairment (PSCI) has emerged as a research focus. The inclusion of additional external treatments in many previous studies prevents a clear, direct assessment of acupuncture's impact on PSCI. In order to prevent patients from developing hypersensitivity to other treatments and misinterpreting acupuncture's true therapeutic value, this study establish stricter intervention criteria and exclude therapies beyond acupuncture. The review aimed to offering a clearer evaluation of acupuncture's efficacy and safety in PSCI treatment.

Methods	This research involved a comprehensive search for randomized controlled trials (RCTs) across eight databases, adhering to the Cochrane Systematic Reviewer's Handbook 5.1.0 for risk-of-bias and quality assessments. A meta-analysis was conducted using RevMan 5.3 software.
Results	The inclusion of **18 publications, totaling 1361 patients**, was achieved. The meta-analysis demonstrated a significantly higher overall efficacy of acupuncture for PSCI compared to controls (OR = 4.06, 95 % CI 2.86-5.76, Z = 7.82). Notable statistical differences were observed in the Montreal Cognitive Assessment scores (MD = 2.32, 95 % CI 1.68-2.97, Z = 7.10) and the Mini-Mental State Examination scores (MD = 2.02, 95 % CI 1.06-2.98, Z = 4.13) between the groups. Improvements in the Barthel Index scores were noted for the experimental group (MD = 5.70, 95 % CI 4.68-6.72, Z = 10.92).
Conclusion	Integrating acupuncture with Western medications offers significant benefits for treating PSCI over Western medications alone. However, the long-term efficacy of acupuncture in PSCI treatment and its potential in reducing recurrence rates remain undetermined. Further high-standard RCTs are essential to explore acupuncture's effectiveness in PSCI treatment more thoroughly.

1.1.10. Yang 2024

Yang G, Guo L, Zhang Y, Li S. Network meta-analysis of non-pharmacological interventions for cognitive impairment after an ischemic stroke. Front Neurol. 2024 Jun 4;15:1327065. https://doi.org/10.3389/fneur.2024.1327065

Objective	This study aims to evaluate the effectiveness of non-pharmacological interventions in improving cognitive function in patients with ischemic stroke through network meta-analysis.
Methods	We searched databases including the Cochrane Library, PubMed, EmBase, and Web of Science for randomized controlled trials (RCTs) on non-pharmacological treatments to improve cognitive impairment following ischemic stroke. The publication date was up to 15 March 2023. Due to the insufficiency of included studies, supplementary searches for high-quality Chinese literature were performed in databases such as CNKI, WanFang Data, and VIP Chinese Science Journals Database. Two reviewers independently went through the literature, extracted data, and assessed the risk of bias in the included studies using the risk of bias assessment tool recommended by the Cochrane Handbook for Systematic Reviews of Interventions 5.1.0. By utilizing R 4.2.3 RStudio software and the GeMTC package, a Bayesian network meta-analysis was conducted to assess the improvement in Mini-Mental State Examination (MMSE) and Montreal Cognitive Assessment (MoCA) scores under a variety of non-pharmacological interventions.
Results	A total of **22 RCTs involving 2,111 patients** and 14 different non-pharmacological treatments were included. These interventions were transcranial direct current stimulation (tDCS), reminiscence therapy (RT), remote ischemic conditioning (RIC), physical fitness training (PFT), intensive patient care program (IPCP), moderate-intensity continuous training + high-intensity interval training (MICT + HIIT), medium intensity continuous training (MICT), grip training (GT), acupuncture, cognitive behavioral therapy (CBT), cognitive rehabilitation training (CRT), high pressure oxygen (HPO), moxibustion, and repetitive transcranial magnetic stimulation (rTMS). The results of the network meta-analysis indicated that rTMS had the highest likelihood of being the most effective intervention for improving MMSE and MoCA scores.
Conclusion	The evidence from this study suggests that rTMS holds promise for improving MMSE and MoCA scores in patients with cognitive impairment following ischemic stroke. However, further high-quality research is needed to confirm and validate this finding.

1.1.11. Liu 2023

Liu Y, Chen F, Qin P, Zhao L, Li X, Han J, Ke Z, Zhu H, Wu B. Acupuncture treatment vs. cognitive rehabilitation for post-stroke cognitive impairment: A systematic review and meta-analysis of randomized controlled trials. Front Neurol. 2023 Feb 9;14:1035125. https://doi.org/10.3389/fneur.2023.1035125.

Background	Cognitive impairment is one of the common sequelae after stroke, which not only hinders the recovery of patients but also increases the financial burden on families. In the absence of effective therapeutic measures, acupuncture treatment has been widely used in China to treat post-stroke cognitive impairment (PSCI), but the specific efficacy is unclear. Therefore, this review aimed to evaluate the true efficacy of acupuncture treatment in patients with PSCI.
Methods	We searched eight databases [PubMed, Embase, Web of Science, Cochrane Central Register of Controlled Trials, China Biomedical Literature Database (CBM), China Science and Technology Journal (VIP) database, the China National Knowledge Infrastructure (CNKI) database, and Wan fang database] from the inception to May 2022 for randomized controlled trials (RCTs) related to acupuncture treatment combined with cognitive rehabilitation (CR) for PSCI. Two investigators independently used a pre-designed form to extract valid data from eligible RCTs. The risk of bias was assessed through tools provided by the Cochrane Collaboration. The meta-analysis was implemented through Rev Man software (version 5.4). The strength of the evidence obtained was evaluated using GRADE profiler software. Adverse events (AEs) were collected by reading the full text and used to evaluate the safety of acupuncture treatment.
Results	**Thirty-eight studies involving a total of 2,971 participants** were included in this meta-analysis. Overall, the RCTs included in this meta-analysis were poor in methodological quality. The combined results showed that acupuncture treatment combined with CR showed significant superiority compared to CR alone in terms of improving cognitive function [Mean Difference (MD) = 3.94, 95% confidence intervals (CI): 3.16-4.72, $P < 0.00001$ (MMSE); MD = 3.30, 95%CI: 2.53-4.07, $P < 0.00001$ (MoCA); MD = 9.53, 95%CI: 5.61-13.45, $P < 0.00001$ (LOTCA)]. Furthermore, the combination of acupuncture treatment and CR significantly improved patients' self-care ability compared to CR alone [MD = 8.66, 95%CI: 5.85-11.47, $P < 0.00001$ (MBI); MD = 5.24, 95%CI: 3.90-6.57, $P < 0.00001$ (FIM)]. Meanwhile, subgroup analysis showed that MMSE scores were not sufficiently improved in the comparison of electro-acupuncture combined with CR versus CR alone (MD = 4.07, 95%CI: -0.45-8.60, $P = 0.08$). However, we also observed that electro-acupuncture combined with CR was superior to the use of CR alone in improving MoCA and MBI scores in patients with PSCI [MD = 2.17, 95%CI: 0.65-3.70, $P = 0.005$ (MoCA); MD = 1.74, 95%CI: 0.13-3.35, $P = 0.03$ (MBI)]. There was no significant difference in the occurrence of adverse events (AE) between acupuncture treatment combined with CR and CR alone ($P > 0.05$). The certainty of the evidence was rated low level because of flaws in the study design and considerable heterogeneity among the included studies.
Conclusion	This review found that acupuncture treatment combined with CR may have a positive effect on improving cognitive function and self-care ability in PSCI patients. However, our findings should be treated with caution owing to the existence of methodological quality issues. High-quality studies are urgently required to validate our results in the future.

1.1.12. Zhuo 2023

Zhuo P, Huang L, Lin M, Chen J, Dai Y, Yang M, Lin H, Zhu J, Huang J, Liu W, Tao J. Efficacy and safety

of acupuncture combined with rehabilitation training for poststroke cognitive impairment: A systematic review and meta-analysis. J Stroke Cerebrovasc Dis. 2023 Sep;32(9):107231. https://doi.org/10.1016/j.jstrokecerebrovasdis.2023.107231

Background	Accumulated evidence has proven that both acupuncture and rehabilitation therapy are beneficial for stroke sequelae. However, there is no systematic review to identify the efficacy and safety of acupuncture combined with rehabilitation training for poststroke cognitive impairment (PSCI). Therefore, the aim of this study was to assess the efficacy and safety of acupuncture combined with rehabilitation therapy for patients with PSCI.
Methods	We searched nine databases, including PubMed, Embase, Scopus, Web of Science, EBSCO, Cochrane Library, China National Knowledge Infrastructure (CNKI), China Science and Technology Journal Database (VIP), and Wan Fang, from their inception to September 2022. Randomized controlled trials (RCTs) examining the effect of acupuncture combined with rehabilitation on PSCI were included. The primary outcomes were the Mini-Mental State Examination (MMSE) score, Montreal Cognitive Assessment (MoCA) score, Modified Barthel Index (MBI) score, and Fugl-Meyer Assessment (FMA) score. The quality of the methodology was evaluated by Cochrane's risk of bias tool. Meta-analyses were performed by Revman 5.3 software.
Results	A total of **18 RCTs involving 1654 patients** were included. The overall methodological quality of the included studies was low. Pooled results demonstrated that acupuncture combined with rehabilitation could significantly improve the clinical efficacy of PSCI (OR=3.23, 95% CI: 2.13 to 4.89), MMSE score (MD= 2.85, 95% CI: 2.56 to 3.15), MoCA score (MD= 2.18, 95% CI: 1.38 to 2.97), MBI score (MD= 9.23, 95% CI: 5.62 to 12.84), and FMA score (MD=5.72, 95% CI: 3.48 to 7.96).
Conclusions	Acupuncture combined with rehabilitation may produce better outcomes than rehabilitation alone in the treatment of PSCI. However, the safety of combined interventions is still unclear. Therefore, research with more rigorous study designs and RCTs with larger sample sizes is still needed.

1.1.13. Li 2022

Li Z, Yang L, Qiu H, Wang X, Zhang C, Zhang Y. Comparative efficacy of 5 non-pharmacological therapies for adults with post-stroke cognitive impairment: A Bayesian network analysis based on 55 randomized controlled trials. Front Neurol. 2022 Sep 28;13:977518. https://doi.org/10.3389/fneur.2022.977518

Background	As a common sequela after stroke, cognitive impairment negatively impacts patients' activities of daily living and overall rehabilitation. Non-pharmacological therapies have recently drawn widespread attention for their potential in improving cognitive function. However, the optimal choice of non-pharmacological therapies for post-stroke cognitive impairment (PSCI) is still unclear. Hence, in this study, we compared and ranked 5 non-pharmacological therapies for PSCI with a Bayesian Network Meta-analysis (NMA), to offer a foundation for clinical treatment decision-making.
Methods	PubMed, EMBASE, Web of Science, Cochrane Central Register of Controlled Trials, Chinese Biomedical Medicine, China National Knowledge Infrastructure, Wangfang Database, and China Science and Technology Journal Database were searched from database inception to December 31, 2021, to collect Randomized Controlled Trials for PSCI. All of the studies were assessed (according to Cochrane Handbook for Systematic Reviews) and then data were extracted by two researchers separately. Pairwise meta-analysis for direct comparisons was performed using Revman. NMA of Bayesian hierarchical model was performed by WinBUGS and ADDIS. STATA was used to construct network evidence plots and funnel plots.

Results	A total of 55 trials (53 Two-arm trials and 2 Three-arm trials) with 3,092 individuals were included in this study. In the pair-wise meta-analysis, Transcranial Magnetic Stimulation (TMS), Virtual Reality Exposure Therapy (VR), Computer-assisted cognitive rehabilitation (CA), Transcranial Direct Current Stimulation (tDCS), and Acupuncture were superior to normal cognition training in terms of MoCA, MMSE, and BI outcomes. Bayesian NMA showed that the MoCA outcome ranked Acupuncture (84.7%) as the best therapy and TMS (79.7%) as the second. The MMSE outcome ranked TMS (76.1%) as the best therapy and Acupuncture as the second (72.1%). For BI outcome, TMS (89.1%) ranked the best.
Conclusions	TMS and Acupuncture had a better effect on improving cognitive function in post-stroke patients according to our Bayesian NMA. However, this conclusion still needs to be confirmed with large sample size and high-quality randomized controlled trials.

1.1.14. Wang 2022

Wang ZZ, Sun Z, Zhang ML, Xiong K, Zhou F. Systematic review and meta-analysis of acupuncture in the treatment of cognitive impairment after stroke. Medicine (Baltimore). 2022 Oct 14;101(41):e30461. https://doi.org/10.1097/MD.0000000000030461.

Background	We aim to make a systematic evaluation of the clinical efficacy of acupuncture in the treatment of cognitive impairment after stroke, to provide evidence-based medical evidence for clinical practice.
Methods	We searched all the randomized controlled trials of China National Knowledge Infrastructure, Wan fang data knowledge service platform, VIP Chinese periodical service platform full-text Journal Database, Chinese Biomedical Literature Database, Cochrane Library Database, and PubMed Database about acupuncture treatment of post-stroke cognitive impairment (PSCI). Two researchers independently screened the literature and extracted the data according to the inclusion and exclusion criteria. The bias risk assessment manual of Cochrane collaboration Network was used to evaluate the bias risk, and all data were analyzed by Stata16.0.
Results	**Fourteen articles** were included, with a total of **2402 patients**. Meta-analysis showed that acupuncture combined with routine therapy could significantly reduce the score of cognitive impairment symptoms compared with the control group. The mini-mental state examination scale (MMSE) score (weighted mean difference [WMD] = 3.23, 95% confidence interval [CI]: 1.89-4.56, P < .01), Montreal cognitive assessment scale (MoCA) score (WMD = 3.41, 95% CI: 0.93-5.89, P < .01), Barthel index of activities of daily living (MBI) score (WMD = 4.59, 95% CI: 1.43-7.75, P < .01), and Lowenstein assessment scale (LOTCA) score (WMD = 8.60, 95% CI: 6.32-10.89, P = .00) were significantly improved in the patients receiving group acupuncture combined with routine therapy.
Conclusion	Acupuncture combined with routine therapy seems to be more effective than conventional therapy alone in the treatment of PSCI. However, the differences between different acupuncture types need to be clarified in more high-quality randomized controlled trials.

1.1.15. Kuang 2021

Kuang X, Fan W, Hu J, Wu L, Yi W, Lu L, Xu N. Acupuncture for post-stroke cognitive impairment: a systematic review and meta-analysis. Acupunct Med. 2021 Dec;39(6):577-588. https://doi.org/10.1177/09645284211009542

Objectives:	The aim of this study was to evaluate the effectiveness and safety of acupuncture for the treatment of post-stroke cognitive impairment (PSCI).
Methods:	The Cochrane Library, Embase, Medline, China National Knowledge Infrastructure (CNKI), Chinese Science and Technology Periodical (VIP), Wanfang, and Chinese Biological Medicine (CBM) databases were electronically searched from their inception to 10 April 2019. The Montreal Cognitive Assessment (MoCA) scale and Mini-Mental State Examination (MMSE) scale were used as outcomes to assess effectiveness with respect to cognitive function. Assessment of risk of bias (ROB) and Grading of Recommendations Assessment, Development, and Evaluation (GRADE) assessment were performed by two reviewers independently. Data were analyzed using Review Manager (RevMan) 5.3.
Results:	A total of **28 trials with 2144 participants** were included in the qualitative synthesis and meta-analysis. Four of the 28 trials (14%) were assessed as being at overall low ROB, 24 of the 28 trials (86%) were assessed as having overall high ROB. The quality of evidence for both MoCA and MMSE were deemed to be very low by the GRADE criteria. Results indicated that acupuncture groups may be benefiting more than non-acupuncture groups with respect to variation of MoCA scores (merged mean difference (MMD): 2.66, 95% confidence interval (CI): 2.18 to 3.13, $p < 0.00001$; heterogeneity: $\chi2 = 35.52$, $p = 0.0007$, $I2 = 63\%$), and the heterogeneity decreased in both subgroup analysis and sensitivity analysis. In addition, acupuncture groups might be benefiting more than non-acupuncture groups in terms of changes in MMSE score (MMD = 2.97, 95% CI = 2.13 to 3.80, $p < 0.00001$; heterogeneity: $\chi2 = 269.75$; $p < 0.00001$; $I2 = 92\%$), and the heterogeneity decreased in subgroup analysis. Only one RCT addressed adverse events, and the symptoms were mild and did not affect treatment and evaluation.
Conclusion:	Acupuncture could be effective and safe for PSCI. Nevertheless, the results should be interpreted cautiously due to the high ROB of included trials and very low quality of evidence for assessed outcomes.

1.1.16. Zhou 2020 ☆

Zhou L, Wang Y, Qiao J, Wang QM, Luo X. Acupuncture for Improving Cognitive Impairment After Stroke: A Meta-Analysis of Randomized Controlled Trials. Front Psychol. 2020. [216106]. doi

Objective	This meta-analysis evaluated the efficacy of acupuncture in improving cognitive impairment of post-stroke patients.
Design	Randomized controlled trials (RCTs) investigating the effects of acupuncture compared with no treatment or sham acupuncture on post-stroke cognitive impairment (PSCI) before December 2019 were identified from databases (PubMed, EMBASE, Ovid library, Cochrane Library, Chinese National Knowledge Infrastructure, VIP Chinese Periodical Database, Wanfang Database, and SinoMed). The literature searching and data extracting were independently performed by two investigators. Study quality was assessed using the Cochrane Handbook for Systematic Reviews of Interventions. Meta-analyses were performed for the eligible RCTs with Revman 5.3 software.
Results	**Thirty-seven RCTs (2,869 patients)** were included in this meta-analysis. Merged Random-effects estimates of the gain of MMSE (Mini-Mental State Examination) or MoCA (Montreal Cognitive Assessment) were calculated for the comparison of acupuncture with no acupuncture or sham acupuncture. Following 2-8 weeks of intervention with acupuncture, pooled results demonstrated significant effects of acupuncture in improving PSCI assessed by MMSE (MD [95% CI] = 2.88 [2.09, 3.66], $p < 0.00001$) or MoCA (MD [95% CI] = 2.66 [1.95, 3.37], $p < 0.00001$).

Conclusion	The results suggest that acupuncture was effective in improving PSCI and supported the needs of more rigorous design with large-scale randomized clinical trials to determine its therapeutic benefits.

1.1.17. Zhang 2015

Zhang Yang, Tang Wei, Song Xiao-Ge, Wu Song, Zhang Gao-Ying, Xu Hua. [Systematical review and meta-analysis of the efficacy of acupuncture and moxibustion plus cognitive rehabilitation training in treating post-stroke cognitive disorder]. Shanghai Journal of Acupuncture & Moxibustion 2015. 34(10):1013-20. (chi). [187058]

Objective	To systematically assess the efficacy of acupuncture and moxibustion plus cognitive rehabilitation training in treating post-stroke cognitive disorder.
Method	A computer searched CNKI, CBM, VIP, WANFANG DATA, and Pubmed and Cochrane Library for randomized controlled trials (RCT) of acupuncture and moxibustion plus cognitive rehabilitation training for the treatment of post-stroke cognitive disorder. The reference literature in the included literature was also retrieved. Retrieval time limit for both of them was from Jan. 1st 1990 to Jan. 1st 2015. Two reviewers independently selected the trials, extracted the data and assessed the quality of methodology. Meta-analysis was then performed using RevMan 5.3 software.
Result	**Eleven trials with a total of 789 subjects** were finally included. The results of Meta-analysis showed that the following aspects were better in acupuncture plus cognitive rehabilitation training than in cognitive rehabilitation training or medication alone and there were statistically significant differences: the total efficacy rate [RR=1 .58, 95% CI(1.10,2.26), P=0.011, the MMSE sc0re [M.D=2.64, 95% CI(1.78, 3.50), P'0.00001], P300 latency [MD= - 18.46, 95% CI(- 30.51, - 6.41), P=0.003], P300 amplitude [MD=l.23, 95% CI(0.82, 1 .63), P<0.0000 1] and activities of daily living (ADL) [SMD=().52, 95% CI(0.3 1, 0.73), P=0.00001]. Based on the results of a systematical review, the quality of evidence was assessed using GRADE system recommended classification method. The results showed that the level of evidence was low and the strength of recommendations was weak.
Conclusion	**The results of Meta-analysis showed that the therapeutic effect was better in acupuncture and moxibustion plus cognitive rehabilitation training than in cognitive rehabilitation training or medication alone.** Because of low quality of all the original literature, high-quality, multicenter and large-sample randomized blind controlled trials are still needed for validation.

1.2. Special outcome

1.2.1. Neuroimaging Studies

1.2.1.1. Qin 2026

Qin C, Li B, Zhuo B, Yang X, Cui Y, Meng Z. Neuroimaging evidence of acupuncture in cognitive impairment following ischemic stroke: a systematic review. Front Neurosci. 2026 Jan 12;19:1629305. https://doi.org/10.3389/fnins.2025.1629305

Objective	This review aimed to summarize neuroimaging evidence on the effects of acupuncture in post-ischemic stroke cognitive impairment (PISCI) and to explore its potential neural mechanisms.

Methods	A systematic search was conducted across multiple databases, including China National Knowledge Infrastructure (CNKI), SinoMed (China Biology Medicine Disc), the Chinese Scientific Journal Database (VIP), Wanfang Data, PubMed, the Cochrane Library, Embase, and Web of Science. Studies were selected according to inclusion and exclusion criteria. Risk of bias was assessed for all eligible studies.
Results	**Eight studies** met the inclusion criteria. These studies utilized resting-state functional magnetic resonance imaging (rs-fMRI) and magnetic resonance spectroscopy (MRS) to investigate the effects of acupuncture on brain activity and metabolic changes. The neuroimaging findings showed that all studies focused on the sustained effects of acupuncture on brain functional activity.
Conclusions	This review provides preliminary neuroimaging evidence supporting the potential benefits of acupuncture for PISCI. The findings suggest that the possible mechanisms of acupuncture for PISCI involve changes in the activity and enhanced functional connectivity of cognition-related brain regions. Additionally, acupuncture may influence brain networks and regulate neurochemical metabolites within cognition-related regions. However, as this field remains in its early stages, further validation is needed. Future studies should focus on well-designed, multicenter randomized controlled trials (RCTs) with large sample sizes and incorporate multiple neuroimaging techniques to better clarify and verify the neural mechanisms of acupuncture in PISCI.

1.2.1.2. Yang 2025

Yang S, Bao Q, Zhong W, Wu K, Zhang X, Yao J, Chen Z, Xu P, Yin Z, Liang F. Acupuncture on Post-Stroke Cognitive Impairment: A Systematic Review of Neuroimaging Studies. J Multidiscip Healthc. 2025 Oct 3;18:6391-6410. https://doi.org/10.2147/JMDH.S544389

Backgound	Post-stroke cognitive impairment (PSCI) is a severe central nervous system disorder for which acupuncture demonstrates therapeutic efficacy. Various neuroimaging studies have indicated that acupuncture may exert its effects through modulating central mechanisms. However, owing to the current lack of a systematic summary, this study aimed to integrate the existing evidence.
Methods	Two independent reviewers conducted a search across eight databases and other sources, identifying potential neuroimaging trials on acupuncture for PSCI, spanning from the inception of the databases to August 25, 2024. Eligible studies were screened based on predefined inclusion and exclusion criteria, and their methodological quality was assessed.
Results	**Twelve studies, including 671 participants**, utilized manual acupuncture (n = 10), electroacupuncture (n = 1), or a combination of both (n = 1). Neuroimaging tools comprised functional magnetic resonance imaging (n = 7), electroencephalography (n = 2), magnetic resonance spectroscopy (n = 2), and functional near-infrared spectroscopy (n = 1). All studies consistently reported positive effects of acupuncture on patients suffering from PSCI. Changes in brain structure and function resulting from acupuncture are commonly observed in the cingulate cortex, parahippocampal gyrus, prefrontal cortex, and fusiform gyrus. Acupuncture appears to modulate cognition-related networks, including the default mode, central executive, frontoparietal, and salience networks, thereby influencing PSCI.
Conclusion	The therapeutic effects of acupuncture on PSCI may be mediated through the regulation of cognition-related brain networks. Yet, these studies remain at an exploratory stage, necessitating a combination of multiple imaging techniques and large, strictly designed multicenter RCTs to validate the neuroimaging findings.

1.3. Special Acupuncture Techniques

1.3.1. Comparison of Acupuncture techniques

1.3.1.1. Teng 2026

Teng Z, Gao Z, Zhu J, Zou L, Fu X, Chu H, Sun P. Effects of multiple acupuncture therapies on cognitive function and quality of life in stroke patients: a systematic review and network meta-analysis. Front Neurol. 2026;17:1764104. https://doi.org/10.3389/fneur.2026.1764104

Objective	To evaluate the comparative effectiveness of different acupuncture therapies in stroke rehabilitation using network meta-analysis.
Methods	We systematically searched major databases for RCTs (2016-2025) comparing six acupuncture interventions. Frequentist network meta-analysis was conducted in Stata 17.0, with interventions ranked by SUCRA values. Primary outcomes included NIHSS, BI, mRS, MoCA, and MMSE scores.
Results	Analysis of 120 RCTs (n = 15,848) demonstrated distinct efficacy profiles: EA ranked highest for neurological recovery (NIHSS SUCRA 95.7%) and BI improvement (74.8%); WNM was optimal for disability reduction (mRS SUCRA 100%) and comprehensive cognition (MoCA 94.9%); while SA excelled in MMSE improvement (86.1%).
Conclusion	Distinct acupuncture modalities exhibit unique advantages in the context of stroke rehabilitation. EA ranked first in the restoration of neurological function, whereas WNM and SA were identified as the optimal interventions for global disability and cognitive impairment, respectively. Given that the included studies originated exclusively from China, the external validity of the present findings in other populations warrants further verification.

1.3.1.2. Yin 2026

Yin T, Li P. Comparative effectiveness of acupuncture-based multimodal rehabilitation for post-stroke cognitive impairment: a network meta-analysis of 70 randomized controlled trials. Front Neurol. 2026;17:1759572. https://doi.org/10.3389/fneur.2026.1759572

Introduction	This study systematically identified randomized controlled trials evaluating therapeutic strategies for post-stroke cognitive impairment (PSCI) and performed a comprehensive systematic review and network meta-analysis to compare the effectiveness of acupuncture-based multimodal rehabilitation interventions.
Methods	PubMed, Embase, the Cochrane Library, Web of Science, CNKI, and Wanfang were searched from inception. A systematic review and network meta-analysis were performed using Montreal Cognitive Assessment (MoCA), Mini-Mental State Examination (MMSE), Barthel Index (BI) and Total Effective Rate (TER) as outcomes. Risk of bias was assessed using RoB 2, and certainty of evidence was graded with the CINeMA framework.

Results	A total of **70 randomized controlled trials involving 6,259 participants and 25 acupuncture-based rehabilitation regimens were included**. For MoCA, combined strategies such as ScA-N-SOC (SMD = 1.89, 95% CI: 1.59-2.19) and BA-N-SOC (SMD = 1.60, 95% CI: 1.26-1.93) showed notable gains. For MMSE, BA-C (SMD = 2.41, 95% CI: 1.64-3.19) and ScA-N-SOC (SMD = 1.97, 95% CI: 1.67-2.26) produced significantly greater improvements versus SOC. In BI, ScA-N-SOC (SMD = 1.50, 95% CI: 0.77-2.22) and BA-N-SOC (SMD = 1.30, 95% CI: 0.78-1.81). For TER, E-C-SOC (RR = 2.18, 95% CI: 1.24-3.83) and EA-C-SOC (RR = 1.73, 95% CI: 1.19-2.50) yielded higher response rates.
Conclusion	Significant differences were observed in the comparative effectiveness of acupuncture-based multimodal interventions for post-stroke cognitive impairment (PSCI). Overall, composite strategies incorporating noninvasive brain stimulation or cognitive training produced greater improvements in cognitive function (MoCA, MMSE) as well as activities of daily living assessed by the Barthel Index (BI). Scalp acupuncture or electroacupuncture combined with noninvasive brain stimulation demonstrated the most consistent benefits for MMSE and BI outcomes, while multimodal combined interventions also showed favorable effects on MoCA performance. These findings suggest that multi-pathway, multi-target rehabilitation strategies may outperform single-modality acupuncture or conventional rehabilitation, providing evidence-based support for individualized treatment of PSCI. Further high-quality, multicenter randomized controlled trials with long-term follow-up are warranted to confirm these findings and to elucidate the underlying neurobiological mechanisms.

1.3.1.3. Huo 2024

Huo L, Zhao M, Wang Z, Zhang L, Fu K, Zhang X. A network meta-analysis of different acupuncture therapy in the treatment of poststroke cognitive impairment and dementia. Medicine (Baltimore). 2024 Oct 25;103(43):e40233. https://doi.org/10.1097/MD.0000000000040233

Backgound	Poststroke cognitive impairment and dementia (PSCID) is a major cause of stroke-related morbidities and mortalities. Over the last few years, there has been growing evidence supporting the effectiveness of needle-related treatments in PSCID. Our goal was to rate the included therapies and assess the clinical effectiveness of various needle-related treatments in patients with PSCID.
Methods	We searched PubMed, Web of Science, Cochrane Library, Embase, China National Knowledge Infrastructure (CNKI), China Science and Technology Journal Database (VIP), Chinese Biomedical Literature Service System (SinoMed), Wanfang, FDA.gov, and ClinicalTrials.gov. A mix of subject terms and free words was used to search the databases. The retrieval period was from the inception date of the database to February, 2023. We included SRs and MAs from acupuncture RCTs of patients with PSCID. The Cochrane Risk Assessment Scale was used to evaluate the risk of bias in the included studies. State 17.0 was used for network meta-analysis in accordance with the Bayesian framework.
Results	There were **34 studies total of 2690 patients**. The cumulative ranking curve (SUCRA) revealed that CT + CFT + EA was the most efficient intervention to improve (Mini-Mental State Examination, MMSE) efficiency, followed by CT + CFT + AP to improve (Montreal Cognitive Assessment, MoCA) efficiency, CT + CFT + ACU for improving (Activities of Daily Living scale, ADL) scores, and CT + CFT + EA to improve clinical efficiency.
Conclusion	The results show that Different acupuncture methods can improve cognitive function and daily living ability in patients with PSCID. Network meta-analysis revealed that both CT + CFT + ACU and CT + CFT + EA appeared to be more beneficial for daily living activities, while CT + CFT + EA and CT + CFT + AP appeared to be more helpful for cognitive performance in patients with PSCID. Treatments including acupuncture are safer and have a reduced incidence of negative side effects.

1.3.1.4. Liu 2023

Liu Y, Zhao L, Chen F, Li X, Han J, Sun X, Bian M. Comparative efficacy and safety of multiple acupuncture therapies for post stroke cognitive impairment: a network meta-analysis of randomized controlled trials. Front Neurol. 2023 Aug 10;14:1218095. https://doi.org/10.3389/fneur.2023.1218095

Background	Acupuncture therapy has been widely used to treat post-stroke cognitive impairment (PSCI). However, acupuncture therapy includes multiple forms. Which acupuncture therapy provides the best treatment outcome for patients with PSCI remains controversial.
Objective	We aimed to compare and evaluate the efficacy and safety of different acupuncture-related therapies for PSCI in an attempt to identify the best acupuncture therapies that can improve cognitive function and self-care in daily life for patients with PSCI, and bring new insights to clinical practice.
Method	We searched eight databases including PubMed, Embase, Web of Science, Cochrane Central Register of Controlled Trials, China Biomedical Literature Database (CBM), China Science and Technology Journal (VIP) database, China National Knowledge Infrastructure (CNKI) database, and Wan fang database to find randomized controlled trials (RCTs) of acupuncture-related therapies for PSCI from the inception of the database to January 2023. Two researchers independently assessed the risk of bias in the included studies and extracted the study data. Pairwise meta-analyzes for direct comparisons were performed using Rev. Man 5.4 software. Bayesian network meta-analysis (NMA) was performed using STATA 17.0 and R4.2.4 software. The quality of evidence from the included studies was assessed using the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) system. Adverse effects (AEs) associated with acupuncture therapy were collected by reading the full text of the included studies to assess the safety of acupuncture therapy.
Results	A total of **62 RCTs** (3 three-arm trials and 59 two-arm trials) involving **5,073 participants** were included in this study. In the paired meta-analysis, most acupuncture-related therapies had a positive effect on cognitive function and self-care of daily living in patients with PSCI compared with cognitive training. Bayesian NMA results suggested that ophthalmic acupuncture plus cognitive training (79.7%) was the best acupuncture therapy for improving MMSE scores, with scalp acupuncture plus cognitive training ranking as the second (73.7%). The MoCA results suggested that warm acupuncture plus cognitive training (86.5%) was the best acupuncture therapy. In terms of improvement in daily living self-care, scalp acupuncture plus body acupuncture (87.5%) was the best acupuncture therapy for improving MBI scores. The most common minor AEs included subcutaneous hematoma, dizziness, sleepiness, and pallor.
Conclusion	According to our Bayesian NMA results, ophthalmic acupuncture plus cognitive training and warm acupuncture plus cognitive training were the most effective acupuncture treatments for improving cognitive function, while scalp acupuncture plus body acupuncture was the best acupuncture treatment for improving the performance of self-care in daily life in patients with PSCI. No serious adverse effects were found in the included studies, and acupuncture treatment appears to be safe and reliable. However, due to the low methodological quality of the included studies, our findings need to be treated with caution. High-quality studies are urgently needed to validate our findings.

1.3.2. Acupuncture combined with other therapies

1.3.2.1. Li 2023

Li S, Wang D, Zhang Y, Huo H, Liu Y, Wang Y, Zhao D, Dong X, Zhang H. The efficacy of acupuncture combined with other therapies in post stroke cognitive impairment: A network meta-analysis. Medicine (Baltimore). 2023 Jul 21;102(29):e34086. https://doi.org/10.1097/MD.0000000000034086

Background	The network meta-analysis was used to evaluate the efficacy of acupuncture combined with other therapies in the treatment of post stroke cognitive impairment (PSCI).
Methods	The China National Knowledge Infrastructure, Wanfang DATA, Vip Chinese Periodic Service Platform, PUBMED, Cochrane Library, Web of Science, and Embase were searched for randomized controlled trials (RCTs) published before March 18, 2023. Two researchers independently reviewed articles and extracted data, and then qualified papers were included in the study. STATA 14.0 was used for network meta-analysis.
Results	A total of 29 articles including 2241 patients were included in this study. The treatment of the intervention group includes acupuncture combined with traditional Chinese medicine prescriptions (TCMP), acupuncture combined with hyperbaric oxygen (HBO), acupuncture combined with repetitive transcranial magnetic stimulation (rTMS), acupuncture combined with cognitive rehabilitation (CR), acupuncture combined with donepezil. The intervention of the control group includes acupuncture, HBO, rTMS, CR, TCMP, and donepezil. In terms of improving the score of Minimum Mental State Examination (MMSE), acupuncture combined with TCMP was most likely to be the best treatment ($P < .05$). In terms of improving the score of Montreal Cognitive Assessment (MoCA), acupuncture combined with TCMP was most likely to be the best treatment ($P < .05$). In terms of improving the total effective rate of clinical treatment, acupuncture combined with rTMS was most likely to be the best treatment ($P < .05$).
Conclusion	Acupuncture combined with TCMP may be the best treatment method among all of the above treatments for PSCI.

1.3.3. Acupoints combination

1.3.3.1. Han 2024 (Governor vessel acupuncture)

Han JZ, Yang Y, Wang YF, Feng JH, Song CN, Wu WJ, Lin HB. Effectiveness and safety of Governor vessel acupuncture therapy for post-stroke cognitive impairment: A meta-analysis of randomized controlled trials. Ageing Res Rev. 2024 Aug;99:102355. https://doi.org/10.1016/j.arr.2024.102355

Objective	The purpose of this study was to evaluate the effectiveness of Governor vessel acupuncture (GV Ac) in treating post-stroke cognitive impairment (PSCI).
Methods	There was a total of seven databases examined. Four English databases (Cochrane Library, PubMed, Embase, and Medline) and three Chinese databases (Chinese National Knowledge Infrastructure (CNKI), Chinese Science and Technology Periodical Databases (VIP), and Wan Fang Database) contain all randomized controlled trials (RCTs) comparing Governor vessel acupuncture to other treatments or none acupuncture for PSCI. The exact dates for the search period are from January 1, 2000, to January 1, 2023.Two researchers independently reviewed the literature, gathered RCT data, and performed statistical analysis. All data were analyzed using Review Manager software (Rev Man) 5.3.

Results	This meta-analysis includes a total of **39 trials with 2044 patients**. There were 1022 participants in each of the test and control groups. Following 12-120 days of acupuncture treatment, a meta-analysis revealed that the treatment groups (GV Ac combined with conventional treatment groups) significantly increased their scores on the Curative ratio (OR = 3.00, 95 %CI = 2.37-3.79, P = 0.98, I^2 = 0 %), Montreal Cognitive Assessment (MoCA)(MD = 1.82, 95 %CI = 1.60-2.03, P = 0.11, I^2 = 25 %), Mini-Mental State Examination (MMSE)(MD = 2.18, 95 %CI = 1.64-2.72, P<0.005, I^2 = 92 %), and Activity of Daily Living (ADL)(MD = 5.99, 95 %CI = 5.33-6.64, P = 0.19, I^2 = 26 %).
Conclusion	The results suggested that acupuncture on points of the Governor vessel enhanced cognitive function in stroke survivors.

1.3.3.2. Li 2022

Li RY, Chen KY, Zheng HY, Tian Y, Yu Q, Xu L. Comparison of multiple acupoints combination in the treatment of post-stroke cognitive impairment: A network meta-analysis. Medicine (Baltimore). 2022 Dec 30;101(52):e32383. https://doi.org/10.1097/MD.0000000000032383

Background	To evaluate the efficacy of multiple acupoint combinations for the treatment of post-stroke cognitive impairment (PSCI) using a network meta-analysis method.
Methods	Searches for clinical randomized controlled trials (RCTs) of various types of acupuncture treatments for post-stroke cognitive dysfunction were conducted, data were extracted from studies selected according to the inclusion criteria, and the RCTs included in the analysis were assessed separately for risk of literature bias. Network meta-analysis was performed using Stata 14.0.
Results	**Sixteen RCTs involving 1257 patients** were included, which involved 9 groups of acupoint treatment plans. The best treatment plan for improving the mini-mental state examination score of PSCI was a cephalic plexus spur (99.7%). The best treatment option for improving the montreal cognitive assessment score for PSCI was Zishen Yisui acupuncture therapy (ZSYSA) (77.3%). The best option for improving the barthel index score of PSCI was ZSYSA (99.2%). In terms of improving the overall clinical outcomes of PSCI, the best treatment option for improving the overall clinical effectiveness of PSCI is ZSYSA Therapy (92.2%).
Conclusion	The analysis of all results shows that ZSYSA can significantly improve PSCI compared to other acupuncture therapies.

1.3.3.3. Hu 2020 (Baihui (GV20) and Shuigou (GV26) Acupoints)

Hu Shuting. [Systematic Review and Meta-analysis of Acupuncture at Baihui (GV20) and Shuigou (GV26) Points Treatment for Post-stroke Cognitive Impairment]. Journal of Guangzhou University of TCM. 2020. [212895].

Objective	To systematically evaluate the clinical efficacy of acupuncture at Baihui (GV20) and Shuigou (GV26)points in treating post-stroke cognitive impairment (PSCI).
Methods	The randomized clinical trials (RCTs)regarding acupuncture at Baihui (GV20)and Shuigou (GV26)points treatment for PSCI were searched from China National Knowledge Infrastructure (CNKI), Wanfang database, VIP medicine information system, Chinese Biomedical Database (CBM), PubMed and the Cochrane Library. The quality of methodology in the included literatures was evaluated by Cochrane systematic assessment method, and was given Meta-analysis by Rev Man 5. 3 software.

Results	Ultimately, a total of **11 RCTs** were included, involving **805 cases**. The results of Meta-analysis showed that the experimental group was superior to the control group in the clinical effective rate[OR = 3. 15, 95%CI (1. 81, 5. 46), Z = 4. 08, P < 0. 000 1], improving the Mini-Mental State Examination (MMSE)scores [WMD=2. 21, 95%CI (1. 01, 3. 41), Z = 3. 61, P = 0. 000 3], improving the Montreal Cognitive Assessment (MoCA)scores [WMD = 1. 84, 95% CI (0. 81, 2. 88), Z = 3. 49, P = 0. 000 5].
Conclusion	Acupuncture at Baihui (GV20)and Shuigou (GV26)points is effective for improving the cognitive functions in PSCI patients. However, due to the low quality of the included studies, more high-quality, large-scale and multiple-center RCTs are needed.

1.3.3.4. Liu 2018 (Baihui (GV 20) and Shenting (GV 24) Acupoints)

Liu Fang, Yao Li-Qun, Chen Jin-Hui. [Therapeutic Efficacy of Acupuncture at Baihui (GV 20) and Shenting (GV 24) for Post-stroke Cognitive Impairment: A Systematic Review]. Shanghai Journal of Acupuncture and Moxibustion. 2018;37(1):104-111. [100878].

Objective	To evaluate the clinical efficacy of acupuncture at Baihui (GV 20) and Shenting (GV 24) in treating post-stroke cognitive impairment (PSCI) by using the systematic review method.
Method	Via computer, Chinese Journal Full-text Database, Wanfang, China Biology Medicine disc (CBMdisc),Chinese Science and Technology Periodical Database, Pub Med, Foreign Evidence-Based Medicine(FEMB), the Cochrane Library were retrieved. Chinese Acupuncture and Moxibustion and Shanghai Journal of Acupuncture-moxibustion were manually retrieved. Randomized controlled trials published before Jan 31 st of 2013 on acupuncture at Baihui (GV 20) and Shenting (GV 24) in treating PSCI, both in Chinese and English, were collected. The required data were extracted, then were evaluated according to the criteria of Cochrane systematic review and underwent meta-analysis by using Rev Man 5.0.
Results	Twenty-two clinical trials were finally recruited, including 1 637 subjects. The meta-analysis showed that acupuncture at acupoints including Baihui (GV 20) and Shenting (GV 24) produced a more significant rehabilitation result compared to single rehabilitation training or medication. The comparison of Mini-Mental State Examination(MMSE) score showed: [WMD=3.37, 95%CI(1.70, 5.05), P<0.00001]; the comparison of P300 latency: [WMD=1.22, 95%CI(0.84, 1.59), P<0.00001]. Severe adverse reactions were not discovered.
Conclusion	Acupuncture at Baihui (GV 20) and Shenting (GV 24) can effectively improve the cognitive function of PSCI patients. However, the diagnostic criteria and evaluation indexes are expected to be unified and standardized, and the clinical trials on acupuncture intervening PSCI are required to be further improved methodologically.

1.3.4. electroacupuncture

1.3.4.1. Zhu 2026

Zhu J, Ying X, Huang T, Zhang Y, He K, Ma R. Efficacy and safety of electroacupuncture in the treatment of post-stroke cognitive impairment: a systematic review and meta-analysis. Front Neurol. 2026 Jan 2;16:1715658. https://doi.org/10.3389/fneur.2025.1715658

Objective	The objective of this research was to assess whether electroacupuncture is an effective and safe intervention for post-stroke cognitive impairment (PSCI).

Methods	Our team systematically searched eight academic databases, including the Cochrane Library, PubMed, Embase, Web of Science, China National Knowledge Infrastructure (CNKI), China Biomedical Literature Database (SinoMed), Wanfang Data, and Database of Chinese sci-tech periodicals (VIP). This study conducted a systematic review of randomized controlled trials (RCTs) investigating electroacupuncture for PSCI, covering all available literature from database inception until December 31, 2024. Following a systematic literature screening, data were extracted using Excel. The quality of the included studies was assessed using the Cochrane Risk of Bias tool (RoB 2), and the evidence quality for all outcomes was graded employing the Grading of Recommendations, Assessment, Development, and Evaluations (GRADE) framework. All statistical analyses were performed using R software (version 4.0.0) with the 'meta' package. In this study, the Mini-Mental State Examination (MMSE) was used as the primary outcome, while the Montreal Cognitive Assessment (MoCA), the Barthel Index and the Activities of Daily Living (ADL) were used as secondary outcome indicators.
Results	This meta-analysis comprised **24 studies with 1769 patients**. The results indicated that after 2 to 8 weeks of electroacupuncture treatment, electroacupuncture was more effective in improving PSCI than the control group (cognitive training, hyperbaric oxygen, western medications, repeated transcranial magnetic stimulation (rTMS), conventional acupuncture, sham electroacupuncture, etc.) and significantly improved post-treatment MMSE (MD = 2.62, 95% CI = 1.74-3.51, $p < 0.0001$, $I2 = 95.9\%$), MoCA (MD = 3.01, 95% CI = 2.12-3.91, $p < 0.0001$, $I2 = 87.0\%$), Barthel Index (MD = 5.86, 95% CI = 2.71-9.00, $p = 0.0017$, $I2 = 67.7\%$), and ADL (MD = 5.82, 95% CI = 0.70-10.94, $p = 0.0016$, $I2 = 84.4\%$) scale scores in patients with PSCI. Subgroup analyses indicated that stroke type might be a potential source of heterogeneity for the MMSE and Barthel Index, while treatment duration might contribute to heterogeneity in MoCA scores. Sensitivity analyses revealed that the pooled effect sizes for MMSE, MoCA, and Barthel outcomes remained stable without significant fluctuations, suggesting the robustness of these findings. However, the ADL outcome demonstrated lower robustness. Egger's test suggested potential publication bias for the MoCA index ($p = 0.0016$).
Conclusion	This systematic review indicates that electroacupuncture may improve cognitive function in patients with PSCI within a short-term period. However, its long-term efficacy and safety profile require further validation through higher-quality evidence. There is a need for future randomized controlled trials with larger sample sizes, longer durations, and more rigorous methodology to verify these findings.

1.3.4.2. Zhan 2017

Zhan J, Wang X, Cheng N, Tan F. [Electroacupuncture for post stroke cognitive impairment: a systematic review and Meta-analyses]. Chinese Acupuncture and Moxibustion. 2017;37(10):1119-25. 165857[165857].

Objective	To systematically evaluate the efficacy and safety of electroacupuncture (EA) for post stroke cognitive impairment (PSCI).
Methods	The randomized clinical trials (RCTs) regarding EA for PSCI published before October of 2016 were researched in China National Knowledge Infrastructure (CNKI), Chinese Biomedical Database (CBM), WanFang database, VIP medicine information system, PubMed and Cochrane Library. The literature screening and information extraction was conducted by two independent reviewers. The quality assessment was performed based on the guidance of the Cochrane Reviewers' Handbook, and Meta-analyses was performed by using RevMan 5. 3 software.

Results	Totally 14 RCTs were included, involving 896 PSCI patients. The results of Meta-analyses showed the EA group was superior to the control group in improving the MMSE [MD =1. 78, 95% CI (0. 24, 3. 32), P =0. 02], the MoCA [MD=1. 92, 95% CI (0. 96, 2. 88), P<0. 000 1], P300 latency [MD =-11. 01, 95% CI (-18. 91, -3. 11), P =0. 000 6], P300 amplitude [MD=1. 56, 95% CI (1. 14, 1. 98), P<0. 000 01], FMA score [MD =10. 74, 95% CI (2. 67, 18. 82), P =0. 009] and the clinical effective rate [RR =1. 37, 95% CI (0. 98, 1. 91), P =0. 06]. However, the comparison of BI score in both group had no significant differences [MD =6. 38, 95% CI (-2. 41, 15. 18), P =0. 15].
Conclusion	This Meta-analyses confirmed EA is effective and safe for PSCI, which could improve cognitive function and motor function. However, because of low quality of the included studies, more well-designed multicenter RCTs are needed

1.3.5. Scalp acupuncture

1.3.5.1. Li 2024

Li S, Dai A, Zhou Y, Chen X, Chen Y, Zhou L, Yang X, Yue M, Shi J, Qiu Y. Efficacy of combination scalp acupuncture for post-stroke cognitive impairment: a systematic review and meta-analysis. Front Neurosci. 2024 Nov 29;18:1468331. https://doi.org/10.3389/fnins.2024.1468331

Objective	This systematic review and meta-analysis aimed to evaluate the efficacy of combination scalp acupuncture in treating post-stroke cognitive impairment.
Methods	A comprehensive search was conducted across eight databases: PubMed, Web of Science, Cochrane Database, Embase, CBM, CNKI, WanFang, and VIP, targeting randomized controlled trials (RCTs) published from the inception of these databases until October 24, 2024. The inclusion criteria focused on RCTs that compared scalp acupuncture with conventional treatments as therapeutic interventions for patients suffering from post-stroke cognitive impairment (PSCI). The effectiveness of these treatments was evaluated using various outcome measures, including the Mini-Mental State Examination (MMSE), the Montreal Cognitive Assessment (MoCA), the Loewenstein Occupational Therapy Cognitive Assessment (LOTCA), as well as P300 latency and amplitude, which collectively assess cognitive function. Two independent reviewers conducted a risk of bias (ROB2) assessment, and data analysis was performed using Review Manager (RevMan) version 5.4.
Results	This analysis included a total of **28 studies involving 1,995 patients**. However, according to the standards of the ROB2 tool, most of these studies exhibited various methodological issues. The comprehensive analysis indicates that the efficacy of combined scalp acupuncture in treating post-stroke cognitive impairment (PSCI) is superior to that of single treatments, as evidenced by improvements across multiple scales, including the Montreal Cognitive Assessment (MoCA), Mini-Mental State Examination (MMSE), Loewenstein Occupational Therapy Cognitive Assessment (LOTCA), P300 latency, and amplitude. Specifically, the overall effective rate was reported as (RR = 1.28, 95% CI: 1.14-1.45, $p < 0.0001$; $I^2 = 51\%$, random effects model). The mean differences for the various scales were as follows: MoCA (MD = 3.55, 95% CI: 2.68-4.41, $I^2 = 93\%$, random effects model), MMSE (MD = 3.78, 95% CI: 2.83-4.73, $I^2 = 94\%$, random effects model), LOTCA (MD = 9.70, 95% CI: 7.72-11.69, $I^2 = 57\%$, random effects model), P300 latency (MD = -21.83, 95% CI: -26.31 to -17.35, $I^2 = 55\%$, random effects model), and amplitude (MD = 1.05, 95% CI: 0.76-1.34, $I^2 = 0\%$, fixed effects model), demonstrating low, medium, and high levels of heterogeneity, respectively. Notably, one study reported an adverse event related to participant withdrawal during the study.

Conclusion	Combination scalp acupuncture exhibits superior efficacy compared to single-treatment modalities in patients with post-stroke cognitive impairment (PSCI). However, the higher risk of bias (ROB) in the included trials suggests that the quality of evidence about these assessment results may be compromised. Therefore, there is an urgent need for additional high-quality clinical trials to further validate the efficacy and effectiveness of combined scalp acupuncture in treating PSCI, ultimately enhancing the overall level of evidence.

1.3.5.2. Xiao 2023

Xiao J, Wang T, Ye B, Tang C. Scalp acupuncture and computer assisted cognitive rehabilitation for stroke: A meta-analysis of randomised controlled trials. Heliyon. 2023 Jul 11;9(7):e18157. https://doi.org/10.1016/j.heliyon.2023.e18157

Objective	To assess the clinical effectiveness of scalp acupuncture and computer assisted cognitive rehabilitation in the treatment of cognitive impairment in stroke patients.
Methods	The literatures published before August 2021 in the following databases were included: PubMed, Chinese Biomedical Database, Wanfang Database, China National Knowledge Infrastructure, Database of Chinese sci-tech periodicals (VIP), EBSCO Information Services, MEDLINE and Web of Science. Only randomised controlled trials (RCTs) were included. Primary outcomes were the Loewenstein Occupational Therapy Cognitive Assessment (LOTCA) and Montreal Cognitive Assessment (MoCA). Our secondary outcome was Modified Barthel Index Score (MBI). The quality of all included trials was evaluated according to the Cochrane Collaboration. This protocol was registered in PROSPERO (CRD42016048528).
Results	**Sixteen articles were selected including 1333 patients**. The result of the meta analysis showed that the combination of scalp acupuncture and computer assisted cognitive rehabilitation had a significant improvement in the cognitive impairments. The analysis of LOTCA showed the improvement on the LOTCA ($p < 0.0001$, $n = 410$, $I2 = 86\%$, mean difference 8.31). The meta-analysis of the MOCA showed a weighted mean difference of 3.76 and 95% confidence intervals (CI) of 2.90-4.62 ($p < 0.0001$, $n = 301$). Besides, it was showed that the combination therapy played an important role in the improvement of the score of MBI with a weighted mean difference of 9.30 and 95% confidence intervals (CI) of 5.87-12.672 ($p < 0.0001$, $n = 278$).
Conclusions	Scalp acupuncture and computer assisted cognitive rehabilitation appears to be effective for stroke patients with respect to certain outcomes. However, the evidence thus far is inconclusive. Further high-quality RCTs following standardized guidelines with a low risk of bias are needed to confirm the effectiveness of acupuncture for postpartum depression.

1.3.6. Skull base-peripheral acupuncture

1.3.6.1. Xiong 2026

Xiong Y, Chen Y, Zhang X. Effectiveness and safety of skull base-peripheral acupuncture for post-stroke cognitive impairment: a systematic review and meta-analysis of randomized controlled trials. Front Neurol. 2026;17:1790835. https://doi.org/10.3389/fneur.2026.1790835

Objective	To evaluate the efficacy and safety of skull base-peripheral (SBP) acupuncture in patients with post-stroke cognitive impairment (PSCI).

Methods	We searched eight Chinese and English databases from inception to July 2025 for randomized controlled trials (RCTs) comparing SBP acupuncture with a control (no or sham acupuncture) in PSCI patients. Two reviewers independently screened studies, extracted data, and assessed outcomes including clinical effective rate, Mini-Mental State Examination (MMSE), Montreal Cognitive Assessment (MoCA), and activities of daily living (ADL). Data were analyzed using RevMan 5.3 and STATA 18.
Results	Twenty-four RCTs involving 1,962 patients were included. Meta-analysis showed that SBP acupuncture was significantly superior to control in improving clinical effective rate (OR = 3.84, 95% CI: 2.79-5.27, $p < 0.00001$), MMSE scores (MD = 2.86, 95% CI: 2.02-3.71, $p < 0.00001$), MoCA scores (MD = 2.21, 95% CI: 1.63-2.80, $p < 0.00001$), and ADL (SMD = 1.62, 95% CI: 1.02-2.22, $p < 0.00001$), despite substantial heterogeneity. Subgroup analyses suggested enhanced benefits when SBP was part of combination therapy or for treatment durations under three months. No serious adverse events were reported.
Conclusion	SBP acupuncture may have potential benefits for cognitive function in patients with PSCI, particularly when combined with other therapies or used for shorter durations. However, these cognitive findings should be considered preliminary due to methodological limitations and high heterogeneity. The benefits for ADL outcomes remain uncertain due to very low certainty of evidence and potential publication bias. The safety profile appeared acceptable based on available data. Further large-scale, multicenter, registered RCTs with rigorous methodologies and long-term follow-up are warranted.

1.3.7. Moxibustion

1.3.7.1. Liu 2023

Liu F, Lyu Z, Lin S, Li Z, Xiu H. Effects of moxibustion on cognition and activities of daily living in post-stroke cognitive impairment: A systematic review and meta-analysis of randomized controlled trials. J Nurs Scholarsh. 2023 Mar;55(2):464-476. https://doi.org/10.1111/jnu.12846

Background	Post-stroke cognitive impairment (PSCI) imposes a huge burden on patients and society as a whole; however, unequivocally effective treatments for PSCI are still lacking. Therefore, the exploration of effective and safe non-pharmacological treatment modalities for PSCI is a key imperative. Moxibustion has been widely used for cognitive rehabilitation; however, there is a paucity of systematic reviews of the available evidence. Therefore, we conducted a systematic review and meta-analysis of randomized controlled trials (RCTs) that investigated the effectiveness of moxibustion for treatment of PSCI to provide evidence base for the treatment of PSCI with moxibustion.
Objective	To evaluate the efficacy of moxibustion in improving cognitive function and activities of daily living (ADLs) in patients with PSCI.
Design	Systematic review and meta-analysis of RCTs.
Participants	Patients with a clinical diagnosis of PSCI.
Review Methods	Relevant studies published in English or Chinese were retrieved from ten databases until December 2021. RCTs that assessed the efficacy of moxibustion on cognitive functioning and ADL in patients with PSCI were included. Two reviewers independently identified the trials and extracted the data. Risk-of-bias was assessed using the Cochrane Risk of Bias Tool. Cochrane's Review Manager (RevMan 5.4) software was used for the meta-analysis.

Results	**Eighteen RCTs (1290 participants)** qualified the inclusion criteria and were included. Compared with the control group, the addition of moxibustion significantly improved the cognitive function, evaluated using the Montreal Cognitive Assessment (MoCA) [pooled mean difference (MD): 2.27, 95% CI: 1.98, 2.55, I2 = 22%]. The pooled MD of Mini-Mental State Examination (MMSE) score was 1.85 (95% CI: 1.56, 2.15, I2 = 26%), and the pooled odds ratios (OR) total effective rate was 4.74 (95% CI: 2.55, 8.80, I2 = 0%) ($p < 0.05$ for all). Moxibustion also significantly improved ADL, assessed using Modified Barthel Index (MBI) (pooled MD = 4.10, 95% CI: 2.10 to 6.10, I2 = 0%) and Barthel Index (pooled MD: 8.63, 95% CI: 7.47, 9.79, I2 = 5%) ($p < 0.05$ for all).
Conclusions	Compared with control group, the addition of moxibustion significantly improved the cognition and ADL of patients with PSCI.
Clinical relevance	Nurses can incorporate moxibustion into the rehabilitation nursing of PSCI.

2. Overviews of Systematic Reviews

2.1. Tang 2026

Tang EYH, Jackson E, Bajpai R, Di Bernardo A, Fatima M, Hamza M, et al. Interventions to reduce cognitive decline post-stroke: an umbrella review. Eur Stroke J. 2026;11(10):aakag122. https://doi.org/10.1093/esj/aakag122

Background	Post-stroke cognitive impairment (PSCI) is common and can lead to substantial disability and dependency. Previous evidence has been limited by a lack of methodologically robust trials and uncertainty regarding the benefits and limitations of pharmacological and non-pharmacological interventions. This umbrella review updated and synthesized evidence on interventions intended to reduce cognitive decline after stroke.
Methods	The review was pre-registered in PROSPERO (CRD42024611909). Searches covered 2019-2024. Eligible studies were systematic reviews of randomized controlled trials evaluating pharmacological or non-pharmacological interventions in adult stroke survivors and reporting change in global cognition, such as Mini-Mental State Examination scores. Methodological quality of the reviews was assessed using AMSTAR 2.
Results	Sixty-nine systematic reviews were included, representing global cognition data from 747 unique randomized controlled trials and 57,176 participants. Interventions were grouped into 37 categories, including single modalities such as **acupuncture**, exercise, and cognitive rehabilitation, as well as combined interventions. Most intervention categories were associated with statistically significant improvements in global cognition. However, substantial heterogeneity and wide prediction intervals indicated that effect sizes varied considerably across populations and settings. Most included systematic reviews were rated as critically low quality despite the large increase in the number of available randomized trials.
Conclusion	Several pharmacological and non-pharmacological interventions may improve global cognition after stroke, but confidence in these findings is low because of major methodological limitations in the underlying systematic reviews and substantial heterogeneity. Current evidence is insufficient to support firm recommendations for specific interventions in clinical guidelines.

2.2. Wang 2026

Wang Q, Lin Q, Ding Y, Wu Y. Traditional Chinese medicine interventions for post-stroke cognitive impairment: an evidence mapping. Front Neurol. 2026;17:1818770. doi:10.3389/fneur.2026.1818770.

Background	Post-stroke cognitive impairment (PSCI) is a major rehabilitation concern. Traditional Chinese medicine (TCM) shows promise, yet a comprehensive, evidence-based evaluation of existing systematic reviews is lacking.
Objective	This study aimed to map and evaluate the evidence on TCM interventions for PSCI, identifying strengths and gaps to inform clinical and research guidance.
Methods	We searched PubMed, the Cochrane Library, Embase (via Ovid), and Web of Science, as well as Chinese databases including CNKI, Wanfang Database, the Chinese Medicine Database, and VIP Database (from their inception to December 2024) for systematic reviews or meta-analyses of TCM for PSCI. Two reviewers assessed methodological quality using A Measurement Tool to Assess Systematic Reviews 2 (AMSTAR 2). The results were synthesized using the population-intervention-comparison-outcome (PICO) framework and visualized as bubble plots in R software.
Results	A total of **36 systematic reviews** (all from China) were included, covering acupuncture, herbal medicine, moxibustion, auricular stimulation, and TCM exercises. AMSTAR 2 rated 33 as “critically low” and 3 as “low.” TCM demonstrated multidimensional benefits: cognitive function (36/36 beneficial), activities of daily living (26/27 beneficial), neurological function (5/5 beneficial), and overall effect (33 beneficial, 1 probably beneficial).
Conclusion	TCM interventions may offer multidimensional benefits for PSCI, but the evidence is severely limited by critically low methodological quality. These findings should be considered hypothesis-generating. High-quality, prospectively registered systematic reviews and rigorous primary studies are urgently needed.

2.3. Li 2023

Li Y, Cui R, Liu S, Qin Z, Sun W, Cheng Y, Liu Q. The efficacy and safety of post-stroke cognitive impairment therapies: an umbrella review. Front Pharmacol. 2023 Aug 24;14:1207075. https://doi.org/10.3389/fphar.2023.1207075

Background	Stroke survivors are at significantly increased risk of cognitive impairment, which affects patients' independence of activities of daily living (ADLs), social engagement, and neurological function deficit. Many studies have been done to evaluate the efficacy and safety of post-stroke cognitive impairment (PSCI) treatment, and due to the largely inconsistent clinical data, there is a need to summarize and analyze the published clinical research data in this area.
Objective	An umbrella review was performed to evaluate the efficacy and safety of PSCI therapies.
Methods	Three independent authors searched for meta-analyses and systematic reviews on PubMed, the Cochrane Library, and the Web of Science to address this issue. We examined ADL and Barthel index (BI), Montreal Cognitive Assessment (MoCA), neurological function deficit as efficacy endpoints, and the incidence of adverse events as safety profiles.

Results	In all, 312 studies from 19 eligible publications were included in the umbrella review. The results showed that angiotensin-converting enzyme inhibitors (ACEI) and N-methyl-D-aspartate (NMDA) antagonists, cell therapies, **acupuncture**, and EGB76 can improve the MoCA and ADL, and the adverse effects were mild for the treatment of PSCI. Moreover, Vinpocetine, Oxiracetam, Citicoline, thrombolytic therapy, Actovegin, DL-3-n-Butylphthalide, and Nimodipine showed adverse events or low article quality in patients with PSCI. However, the research evidence is not exact and further research is needed.
Conclusion	Our study demonstrated that ACEI inhibitors (Donepezil) and NMDA antagonists (Memantine), EGB761, and **acupuncture** are the ADL and BI, MoCA, and neurological function deficit medication/therapy, respectively, for patients with PSCI.

2.4. Choi 2022

Choi TY, Jun JH, Lee HW, Yun JM, Joo MC, Lee MS. Traditional Chinese Medicine Interventions in the Rehabilitation of Cognitive and Motor Function in Patients With Stroke: An Overview and Evidence Map. Front Neurol. 2022 May 17;13:885095. https://doi.org/10.3389/fneur.2022.885095

Objective	Evidence mapping of systematic reviews (SRs) systematically and comprehensively identifies, organizes, and summarizes the distribution of scientific evidence in a field. The aim of this evidence map is to provide a synopsis of the best clinical practices and interventions in stroke rehabilitative care and to identify areas with a paucity of evidence to guide future research.
Methods	PubMed, EMBASE, CDSR, six Korean databases, and two Chinese databases were searched for SRs evaluating the effectiveness of any stroke rehabilitation intervention through October 2021. The quality of the SRs was assessed using AMSTAR 2. A bubble plot was used to graphically display clinical topics, the number of articles, the number of patients included, confidence, and effectiveness.
Results	In total, ninety-five SRs were identified; however, after methodological analysis, only 48 had sufficient quality to be included. In total, forty-eight SRs were included in the evidence mapping. The overall search identified SRs from 2015 to 2021. A total of four SRs focused on post-stroke cognitive impairment, whereas the other forty-four SRs focused on post-stroke motor function. In total, nineteen different traditional Chinese medicine (TCM) intervention modalities were included. Acupuncture was the most commonly used treatment. Overall, the quality of the included SRs was low or very low. Most SRs concluded that TCM interventions may have potential benefits in stroke rehabilitation. The results were more promising when acupuncture was used for shoulder-hand syndrome.
Conclusions	However, the identified reviews cautioned that firm conclusions cannot be drawn. The evidence map provides a visual overview of the research volume and content involving TCM interventions in stroke rehabilitation. Evidence mapping can facilitate the process of knowledge translation from scientific findings to researchers and policymakers and possibly reduce waste in research.

2.5. Li 2022

Li L, Yang L, Luo B, Deng L, Zhong Y, Gan D, Wu X, Feng P, Zhu F. Acupuncture for Post-Stroke Cognitive Impairment: An Overview of Systematic Reviews. Int J Gen Med. 2022 Sep 13;15:7249-7264. https://doi.org/10.2147/IJGM.S376759. https://pubmed.ncbi.nlm.nih.gov/36124104; PMCID: PMC9482408.

Background	Post-stroke cognitive impairment (PSCI) is one of the most common complications after stroke. In recent years, as a complementary alternative therapy, many systematic reviews (SRs) and meta-analysis (MAs) have reported the efficacy and safety of acupuncture in improving cognitive function in patients with PSCI, but the quality of evidence is unknown and therefore needs to be evaluated comprehensively.
Aim	We aimed to evaluate the SRs of acupuncture for patients with PSCI, to summarize the evidence quality of SRs to provide scientific evidence.
Methods	We searched for relevant SRs and MAs in seven databases up to March 22, 2022. Two reviewers independently completed literature retrieval, screening, and data extraction. We used A Measurement Tool to Assess Systematic Reviews 2 (AMSTAR 2) to evaluate the methodological quality; the Grading of Recommendations Assessment, Development and Evaluation (GRADE) tool to determine the strength of evidence; and the ROBIS tool to assess RoB.
Results	We identified **14 SRs**. The methodological quality of all SRs was low (2/14) or very low (12/14). GRADE results showed 13 were moderate quality (26%), 5 were low quality (10%), and 32 were very-low quality (64%). RoB showed that one SR had a low risk and 13 had a high risk. Moderate quality results showed that combined acupuncture therapy was superior to western medicine or cognitive rehabilitation training in improving cognitive function, the total response rate, and the daily living ability of patients with PSCI.
Conclusion	Based on the evidence, acupuncture appears to be effective and safe in improving cognitive function for patients with PSCI, but the overall quality of SRs is not high. High-quality randomized controlled trials are needed to confirm the effectiveness and safety of acupuncture on the cognitive function of patients with PSCI.

2.6. Hung 2019

Hung CY, Wu XY, Chung VC, Tang EC, Wu JC, Lau AY. Overview of systematic reviews with meta-analyses on acupuncture in post-stroke cognitive impairment and depression management. Integr Med Res. 2019;8(3):145-159. [199813].

Background	Acupuncture has been using as an alternative non-pharmacological therapy in the management of post stroke depression and cognitive impairment but its effectiveness and safety remain controversial. We conducted an overview of systematic reviews with meta-analyses to evaluate the evidence on the effect of acupuncture in the treatment of stroke with conventional medicine intervention.
Methods	Systematic reviews summarized the treatment effects of acupuncture for post stroke cognitive impairment and post stroke depression were considered eligible. Methodological quality of included systematic reviews was assessed using A Measurement Tool to Assess systematic Reviews 2 (AMSTAR 2).
Results	Four systematic reviews on post stroke cognitive impairment and ten systematic reviews on post stroke depression with good methodological quality were included. Meta-analyses revealed that acupuncture plus cognitive rehabilitation; and acupuncture or moxibustion plus cognitive rehabilitation, versus cognitive rehabilitation demonstrated statistically significant increase in Mini-Mental State Examination scores in compared to cognitive rehabilitation after 4 weeks treatment [Pooled weighted mean difference (WMD) = 3.14, 95% confidence interval (CI) = 2.06 to 4.21, I2 = 36%]; and (Pooled WMD = 3.22, 95% CI = 2.09 to 4.34, I2 = 0%). Furthermore, acupuncture versus antidepressant demonstrated statistically significant improve depression measured by increasing in 17-item Hamilton Depression Rating Scale in comparing to cognitive rehabilitation after 2 weeks treatment (Pooled WMD= -2.34, 95% CI= -3.46 to -1.22, I2 = 5%). Acupuncture usage was not associated with increased risk of adverse events.

Conclusions	Acupuncture is safe and improves cognitive function and depressive disorder without obvious serious adverse events for post stroke patients.

3. Clinical Practice Guidelines

⊕ positive recommendation (regardless of the level of evidence reported)
Ø negative recommendation (or lack of evidence)

3.1. American Heart Association/American Stroke Association (AHA, ASA, USA) 2026 Ø

Richards LG, Ifejika NL, Stein J, Bahouth MN, Abshire Saylor M, Barrett AM, Chen P, Deutsch AF, Dusenbury W, Ellis C Jr, Eng J, Fleet J, Ford HR, Grattan ES, Harvey RL, Jones CA, Krishnan C, Kutzle S, Matthews D, Mazwi N, Minga J, Nilsen DM, Noser E, Porter HR, Raghavan P, Rose DK, Skidmore ER, St-Onge MP, Stoykov ME, Schettini AT, Terrill AL, Tirschwell DL, Vilar P, Whitaker-Hilbig A, Zorowitz R; Peer Review Committee. 2026 Guideline for Adult Stroke Rehabilitation and Recovery: A Guideline From the American Heart Association and American Stroke Association. Stroke. 2026 Aug 27. https://doi.org/10.1161/str.0000000000000536

Poststroke Cognitive Impairment/Memory : Scalp **acupuncture** with high intensity (5–6 sessions per week over 8–12 weeks) may be associated with small improvements in poststroke global cognition and short- and long-term memory, but the clinical significance of these findings and limitations in the outcome measures used in these studies point to the need for future research.

3.2. Brazilian Academy of Neurology (BAN, Brazil) 2022 ⊕

Minelli C, Luvizutto GJ, Cacho RO, Neves LO, Magalhães SCSA, Pedatella MTA, Mendonça LIZ, Ortiz KZ, Lange MC, Ribeiro PW, Souza LAPS, Milani C, Cruz DMCD, Costa RDMD, Conforto AB, Carvalho FMM, Ciarlini BS, Frota NAF, Almeida KJ, Schochat E, Oliveira TP, Miranda C, Piemonte MEP, Lopes LCG, Lopes CG, Tosin MHS, Oliveira BC, Oliveira BGRB, Castro SS, Andrade JBC, Silva GS, Pontes-Neto OM, Carvalho JJF, Martins SCO, Bazan R. Brazilian practice guidelines for stroke rehabilitation: Part II. Arq Neuropsiquiatr. 2022 Jul;80(7):741-758.. https://doi.org/10.1055/s-0042-1757692 .

Cognition: Acupuncture associated with cognitive rehabilitation can be employed (Recommendation IIa-A)

3.3. Canadian Partnership for Stroke Recovery (CPSR, Canada) 2018 ⊕

Evidence-based review of stroke rehabilitation: 18th edition, Canadian Partnership for Stroke Recovery (CPSR). 2018. [197578]. URL/

Post-Stroke Cognitive Disorders. There is level 1b and level 2 evidence that acupuncture can be an effective intervention in the remediation of cognitive deficits, There is level 1b evidence that acupuncture combined with nimodipine can improve cognitive functioning short term. There is level 1b evidence that electroacupuncture may improve attention, praxis, perception and orientation, but not thinking, organization memory and mental health.

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