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Efficacy and Safety of Acupuncture in the Treatment of Ischemic Stroke in the Subacute Phase (≥21 Days from Onset): A Systematic Review

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 28 June 2026 and was last updated on 28 June 2026.

INTRODUCTION

Review question / Objective To systematically evaluate the efficacy and safety of acupuncture (all modifications) initiated ≥21 days after ischemic stroke in patients over 18 years of age.

Condition being studied A systematic search was conducted in PubMed/MEDLINE, Cochrane Library, Embase, Web of Science, eLIBRARY.RU/RSCI, and CyberLeninka without language restrictions. Study selection and quality assessment were performed according to the PRISMA 2020 protocol and the Cochrane RoB 2 tool; the quality of evidence was assessed using the GRADE system.

METHODS

Participant or population Adults (≥18 years) with a confirmed diagnosis of acute ischemic stroke (ICD-10: I63), verified by CT/MRI; acupuncture therapy initiated ≥21 days after stroke onset (subacute / early and late recovery period). Exclusion: hemorrhagic stroke (I60–I62); transient ischemic attack (G45); mixed strokes; pediatric population; pregnant women; acute phase (<21 days).

Intervention Acupuncture (classical body acupuncture), electroacupuncture (EA), scalp acupuncture (Jiao Shunfa / Zhu Mingqing / Yamamoto), auriculotherapy, craniopuncture, pharmacopuncture — as monotherapy or in combination with standard neurorehabilitation. Exclusions: laser acupuncture without a needle; acupressure only; moxibustion only; transcutaneous electrical nerve stimulation outside reflexology zones; herbal therapy only.

Comparator Standard pharmacological therapy and/or conventional rehabilitation; sham acupuncture (superficial needling or non-resonance points); no intervention; waiting list. Exclusions: comparison of acupuncture with another acupuncture without a control group; uncontrolled case series.

Study designs to be included Of 2847 initially identified records, 41 publications were included in the qualitative synthesis: 6 Cochrane systematic reviews, 23 RCTs, 7 recent meta-analyses (2020–2026), and 5 Russian clinical studies. Pooled estimates from meta-analyses indicate a clinically meaningful effect of acupuncture in the subacute phase: NIHSS — standardized mean difference (SMD) approximately −1.1 [95% CI −1.5; −0.7]; Fugl-Meyer Assessment — weighted mean difference (WMD) +9 to +11 points; Barthel Index — WMD +10 to +15 points; mRS — odds ratio (OR) for favorable outcome 1.5–2.1. More pronounced results were obtained with.

Eligibility criteria Population (P) — Patients: Adults (≥18 years) with a confirmed diagnosis of acute ischemic stroke (ICD-10: I63), verified by CT/MRI; acupuncture therapy initiated ≥21 days after stroke onset (subacute / early and late recovery period). Exclude: hemorrhagic stroke (I60–I62); transient ischemic attack (G45); mixed strokes; pediatric population; pregnant women; acute phase (<21 days).
Intervention (I) — Intervention: Acupuncture (classical body acupuncture), electroacupuncture (EA), scalp acupuncture (Jiao Shunfa / Zhu Mingqing / Yamamoto), auriculotherapy, craniopuncture, pharmacopuncture — as monotherapy or in combination with standard neurorehabilitation. Exclude: laser acupuncture without a needle; acupressure only; moxibustion only; TENS outside reflexology zones; herbal therapy only.
Comparison (C) — Comparison: Standard pharmacological therapy and/or conventional rehabilitation; sham acupuncture (superficial needling or non-resonance points); no intervention; waiting list. Exclude: comparison of acupuncture with another acupuncture without a control group; uncontrolled case series.
Outcomes (O) — Outcomes: Primary outcome: Change in motor function measured by the Fugl-Meyer Assessment (FMA) for upper and/or lower limb. Secondary outcomes: Functional independence in daily living: change in Barthel Index (BI); Muscle tone: change in Modified Ashworth Scale (MAS); Mobility and balance measures: gait speed (m/s), 10-Meter Walk Test (10MWT), Berg Balance Scale (BBS); Safety: incidence and nature of registered adverse events related to the intervention. Exclude: neuroimaging outcomes without clinical correlates; laboratory parameters only.
Study design (S) — Design: Randomized controlled trials (RCTs); quasi-RCTs; systematic reviews and meta-analyses on the topic (for contextual analysis); national clinical guidelines. Exclude: case series; clinical case descriptions; narrative reviews without systematic methodology; experimental animal studies.

Information sources Not reported.

Main outcome(s) Acupuncture (all modifications) initiated from day 21 after ischemic stroke (subacute phase) as part of multimodal neurorehabilitation is accompanied by clinically significant improvements in neurological deficit, motor function, daily activities, and functional independence.
Electroacupuncture and scalp acupuncture (Jiao Shunfa, Zhu Mingqing) demonstrate the greatest efficacy; classical body acupuncture shows a moderate effect; sham acupuncture shows a small non-specific effect.
The quality of evidence according to the GRADE system is low to moderate. The main reasons for downgrading: high risk of bias in a large proportion of Chinese RCTs, clinical heterogeneity, possible publication bias.
The safety profile of acupuncture in the subacute period is favorable: serious adverse events are extremely rare (<0.05 per 1000 sessions), local adverse events occur in 1–3% of sessions.
Indications and optimal timing of initiation: The use of acupuncture in patients with ischemic stroke, starting from day 21 after disease onset (early recovery period) and continuing into the late recovery period (up to 24 months), yields clinically significant positive results. Within this window, the optimal time to start therapy is 21–60 days after stroke.
Recommended regimens (based on consensus from included RCTs and patents RU2669025, CN104491071):
Body acupuncture: GV20 (Bai-Hui), GV24, LI4 (He-Gu), LI11 (Qu-Chi), TE5 (Wai-Guan), ST36 (Zu-San-Li), SP6 (San-Yin-Jiao), GB30, GB34, KI3.
Scalp acupuncture (Jiao Shunfa): motor area contralateral to the affected side, sensory area, speech area I/II/III (for aphasia), visual area (for hemianopsia).
Auricular points: Shenmen (TF4), Subcortex (AT4), Brain (AT3.4), Heart (CO15), Liver (CO12), affected limb (on the auricle).
Dose and duration:
Session duration: 20–30 minutes (body acupuncture); scalp acupuncture — 30–60 minutes or prolonged.
Frequency: 5–6 sessions per week in the first 4 weeks of the course; 2–3 times per week thereafter.
Total course: 20–40 sessions; if deficit persists, repeat the course after 4 weeks.

Electrostimulation (when using EA): intermittent current, frequency 2 Hz (to enhance neurogenesis) or 100 Hz (to suppress spasticity), intensity up to sub-pain threshold.

Quality assessment / Risk of bias analysis The Cochrane Risk of Bias 2 tool (Sterne J.A.C. et al., BMJ, 2019;366:l4898) was used to assess the risk of systematic error in RCTs, evaluating five domains: (1) randomization process; (2) deviations from intended interventions; (3) missing outcome data; (4) measurement of the outcome; (5) selection of the reported result. Each domain was assigned one of three levels: "low risk," "some concerns," or "high risk."
Limitations of the methodology of included studies:
Heterogeneity of interventions: wide variability in points, dose, course duration, and stimulation types reduces the generalizability of results.
Low quality of a significant proportion of RCTs: 60–80% of Chinese RCTs have a high risk of systematic error.
Difficulty of blinding: due to the invasive nature of the procedure, adequate sham control is possible only with special "placebo needles" (Streitberger, Park), which are used in a minority of RCTs.
Publication bias: funnel plots in several meta-analyses (Chavez 2017, Liu 2018) show asymmetry, indicating a possible underrepresentation of negative results.
Limitations of this review:
The protocol was not registered in PROSPERO before the start of the study. This reduces transparency and allows for potential post-hoc changes in the search strategy.
Inability to access full texts of a number of publications: some Chinese RCTs are available only as abstracts. eLIBRARY.RU and CyberLeninka require authorization.
Failure to perform a proprietary meta-analysis: due to clinical heterogeneity, a qualitative synthesis with data from previously published meta-analyses was predominantly used; no own quantitative synthesis was conducted.
Possible non-compliance with the ≥21 days criterion: in some RCTs, the timing of therapy initiation is described unclearly ("subacute phase," "recovery period"), which requires cautious interpretation.
Language bias: although the review had no language restrictions, about 70% of included RCTs were published in English and Chinese, reflecting the geography of research activity.

Strategy of data synthesis Given the high clinical heterogeneity (differences in point schemes, course duration, outcome scales), a qualitative synthesis was prioritized. For outcomes with sufficient homogeneity, summary data from previously published meta-analyses are presented with 95% confidence intervals. For continuous scales, weighted mean difference (WMD) and standardized mean difference (SMD) were used; for dichotomous outcomes, odds ratio (OR) or relative risk (RR). Heterogeneity was assessed by I^2 with a threshold of >50% considered substantial. Due to clinical heterogeneity of the selected works (mismatch of point schemes, course duration, and timing of treatment initiation), the main format of synthesis chosen was a qualitative narrative synthesis with summary estimates from previously published meta-analyses.

Subgroup analysis The search in six databases yielded 2,747 records; an additional 100 records were added from other sources (hand search, screening of reference lists of included reviews). After deduplication, 1,962 unique records remained. At the title and abstract screening stage, 1,720 clearly irrelevant works were excluded. Full texts were assessed for 242 articles, of which 201 were excluded for reasons indicated in the flow chart. Finally, 41 publications were included in the qualitative synthesis, and for the quantitative assessment of individual outcomes, data from previously published meta-analyses covering a total of ≥75 RCTs were used.

Sensitivity analysis Six pivotal Cochrane and Cochrane-equivalent systematic reviews were identified and analyzed, together covering about 100 primary RCTs. Each of them covers both the acute and subacute phases; in the present work, subgroups with therapy initiation ≥21 days were separately considered.

Country(ies) involved Russian - Medical University "Reaviz".

Keywords acupuncture; electroacupuncture; scalp acupuncture; ischemic stroke; subacute phase; neurorehabilitation; systematic review.

Dissemination plans Print publication in a journal.

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