INPLASY PROTOCOL

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**Review Stage at time of this submission:** **The review has not yet started.**

**Conflicts of interest:**
**None declared.**

# Electro-acupuncture for post-stroke cognitive impairment: a protocol for systematic review and meta-analysis of randomized controlled trial

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**Review question / Objective:** **The aim of this systematic review is to compare electro-acupuncture and other interventions in terms of efficacy and acceptability in the post-stroke cognitive impairment to better inform clinical practice. To this end, the proposed systematic review will address the following question: Whether electro-acupuncture is the better intervention to improve cognitive function in stroke ?".**
**Condition being studied:** **A considerable number of stroke survivors suffered from cognitive impairment, and more than one third of stroke survivors are affected at 3 and 12 months after the stroke. The prevalence of the cognitive impairment 3 months after stroke ranges from 21.8% to 69.8%, and 44% to 70% after 6 months. Even years after the stroke, cognitive dysfunction still plagues stroke patients. It was reported that 34% to 57% stroke patients suffered from the cognitive impairment during the first year after stroke. What's more, study showed that post-stroke cognitive impairment (PSCI) is common even after successful clinical recovery.**

**INPLASY registration number:** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 09 January 2022 and was last updated on 09 January 2022 (registration number INPLASY202210038).

## INTRODUCTION

**Review question / Objective:** **The aim of this systematic review is to compare electro-acupuncture and other interventions in terms of efficacy and acceptability in the post-stroke cognitive impairment to better inform clinical practice. To this end, the proposed systematic review will address the following question: Whether electro-acupuncture is the better intervention to improve cognitive function in stroke ?".**

**Rationale:** Although the published systematic reviews suggest that acupuncture can help improve post-stroke cognitive dysfunction, the power of the results is low due to study limitations. The review reported by Liu et al. included 21 trails, but only 9 studies reported the primary outcome (cognitive function), and the cognitive function was measured using different studies. And the largest sample size in the study reported by Liu is only 40 cases, which also makes the power of the study results low. The review reported by Zhou included 37 studies with 2,869 patients. However, studies in which acupuncture was used in combination with other interventions as an intervention package in the experimental group were also included, which makes the power is low. Therefore, this review is necessary to analyze the effect of electro-acupuncture for PSCI and to provide evidence for the using of electro-acupuncture therapy for PSCI.

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## METHODS

**Search strategy:** The English terms were used individually or combined "cerebrovascular disorders," "cognition disorders,'' ''memory disorders," "acupuncture," "electroacupuncture,"and the Chinese searching terms were "nao cu zhong (stroke)," "nao geng si (cerebral infarction)," "ren zhi gong neng(cognitive function)," ''zhen ci (acupuncture),'' ''dian zhen (electroacupuncture ),".

**Participant or population:** All stroke patients will be included regardless of the type of stroke (hemorrhagic or ischemic stroke), age, gender, severity, course of the disease(acute stage, subacute stage or chronic stage) and region.

**Intervention:** All studies using electro-acupuncture as an intervention of the experimental group for stroke will be included in the study. Acupuncture points, intensity, time, intervention cycle are not limited.

**Comparator:** The intervention methods used in the control group were not restricted.

**Study designs to be included:** All randomized controlled trials (RCTs) focused on this topic will be included regardless of publication status or publication type.

**Eligibility criteria:** Eligibility criteria was defined according to the PICOS(participant, intervention, comparator, study design). The details reported in item 12 to 15.

**Information sources:** All the literature will be obtained from online databases via systematic research from inception until Dec31, 2021 with no language limitations. Online databases include Cochrane Central Register of Controlled Trials (CENTRAL) in the Cochrane Library, Medline (via PubMed), EMBASE (via embase.com), CINAHL (via EBSCOhost), China National Knowledge Infrastructure (CNKI) database, WanFang Database, Chinese Science and Technology Periodical (VIP) Database, and Sino-Med Database.

**Main outcome(s):** Cognitive function will be defined as primary outcome regardless of the measured instruments.

**Additional outcome(s):** The secondary outcome measures of this review will include activities of daily living reported in the studies. Possible measure instruments

for consideration include global assessment tools of ADL. Other secondary outcomes include drop out from the study during the treatment phase, and adverse events (including death from all causes).

**Data management:** The data needed for the study will be extracted independently by two authors according to a table of data extraction. The extracted data includes the following parts: 1) Basic information including the author, title, journal, publish year, etc.; 2) Information about the subject including species, age, weight, feeding conditions, animal models, criteria used for including and excluding animals, etc.; 3) Intervention information including intervention for experimental group and the intervention for control group, intervention points, intensity of intervention, frequency of intervention, treatment cycle, etc.; 4) outcomes information such as the instruments used in studies. 5) study design: e.g. experimental group settings, number of experimental groups, number of animals per groups.

**Quality assessment / Risk of bias analysis:** The "Risk of bias" table, recommended by the Cochrane Handbook for Systematic Reviews of Interventions,35 will be used to assess the methodological quality of the included studies by two independent reviewers. Reviewer authors' judgements involve answering a specific question for each item. The items for the risk of bias tool are: random sequence generation (selection bias), allocation concealment (selection bias), blinding of participants and personnel (performance bias), blinding of outcome assessment (detection bias), incomplete outcome data (attrition bias), selective reporting (reporting bias) and other bias. Each included study will be categorized as having a high risk of bias (an answer "Yes"), unclear risk of bias (what happened in the study is unknown or insufficient detail is reported) and low risk of bias (an answer "No") for each entry. Because it is impossible to blind study participants and personnel during the water-based exercise, the blinding of participants and personnel will be considered to be high risk of bias. Any discrepancies will be resolved via discussing and consulting with a third experienced reviewer.

**Strategy of data synthesis:** Meta-analysis will be performed to describe the effect of electro-acupuncture for PSCI. The parameters will be set based on the outcome type, heterogeneity results. Mean difference (SD) or the standardized mean difference (SMD) will be used for meta-analysis of continuous data. Odds ratios, risk ratios or risk differences will be used for meta-analysis of dichotomous data. Random-effect model or fixed-effect model will be used base on heterogeneity results. Meta-analyses will be illustrated using a forest plot.

**Subgroup analysis:** Subgroup analyses will be done as a mean of investigating heterogeneous results or to answer specific questions about types of acupuncture or different acu-points used in studies. Subgroup analyses will be done for subsets of subjects, subsets of acupuncture points (head acupuncture points, limbs acupuncture points, body acupuncture point).

**Sensitivity analysis:** In order to ask the question, 'Are the findings robust to the decisions made in the process of obtain them', a sensitivity analysis will be performed. It may involve undertaking meta-analysis twice: 1) including all the studies; 2) including only these that are definitely known to be eligible. The influence of articles not included in the second analysis on the results will be discussed in the results report of this study.

**Language:** The language will be limited to English and Chinese without any restrictions on publication type.

**Country(ies) involved:** China.

**Other relevant information:** Nothing.

**Keywords:** stroke, cognitive impairment, PSCI, electro-acupuncture, protocol, review.

**Dissemination plans:** We will publish the results after the study is completed.

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