

# INPLASY PROTOCOL

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No conflict of interest.

## Efficacy evaluation of different stimulation types with transcranial direct current stimulation on upper limb motor function and activities of daily living in patients after stroke: A network Meta-analysis

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**Review question / Objective:** The purpose of the modified mesh meta-analysis is to compare the effects of different transcranial direct current stimulation on the upper limb motor function and ability of daily living after stroke in order to provide a basis for clinical treatment.

**Condition being studied:** Stroke is an acute or focal brain dysfunction caused by various vascular causes (including hemorrhage and ischemia), lasting more than 24 hours. It has the characteristics of high morbidity, high mortality, and high disability. Its clinical signs are mainly abnormal posture control, abnormal muscle tension, abnormal muscle strength, and decreased balance function. More than one-half of the patients have upper limb dysfunction, which severely reduces the patient's quality of life and ability of daily living. Therefore, how to safely and efficiently improve the upper limb motor function and daily living ability of stroke patients has become a clinical hotspot and difficulty.

**INPLASY registration number:** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 04 December 2020 and was last updated on 04 December 2020 (registration number INPLASY2020120021).

### INTRODUCTION

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the upper limb motor function and ability of daily living after stroke in order to provide a basis for clinical treatment.

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various vascular causes (including hemorrhage and ischemia), lasting more than 24 hours. It has the characteristics of high morbidity, high mortality, and high disability. Its clinical signs are mainly abnormal posture control, abnormal muscle tension, abnormal muscle strength, and decreased balance function. More than one-half of the patients have upper limb dysfunction, which severely reduces the patient's quality of life and ability of daily living. Therefore, how to safely and efficiently improve the upper limb motor function and daily living ability of stroke patients has become a clinical hotspot and difficulty.

## METHODS

**Participant or population:** The included subjects all met the diagnostic criteria of stroke in the "Key Points for Diagnosis of Various Cerebrovascular Diseases" , and were further diagnosed by CT and MRI; patients were older than 18 years old, gender and course of disease were not limited; clear consciousness, none cognitive dysfunction.

**Intervention:** Each stimulation group includes one of anode, cathode, and bipolar tDCS, and the other intervention groups include physical therapy group and sham stimulation group. The physical therapy group received conventional rehabilitation treatment; the sham stimulation group received no stimulation current during treatment, but the dashboard displayed normally.

**Comparator:** The control group is the conventional physical therapy group, and the patients only receive conventional rehabilitation treatment.

**Study designs to be included:** Randomized controlled trial or randomized crossover trial.

**Eligibility criteria:** The included subjects all met the diagnostic criteria of stroke in the "Key Points for Diagnosis of Various Cerebrovascular Diseases" , and were further diagnosed by CT and MRI; patients

were older than 18 years old, gender and course of disease were not limited; clear consciousness, none cognitive dysfunction.

**Information sources:** Systematic search for literature on transcranial direct current stimulation treatment of stroke patients in ProQuest, PubMed, Embase, Cochrane Library, Scopus, Web of Science, CNKI, Wanfang, and Weipu databases.

**Main outcome(s):** Upper limb motor function assessment: Upper limb Fugl-Meyer scale (UE-FMA), Wolf upper limb motor function test (WMFT), Jebsen-Taylor hand function test (JTHF), daily living ability assessment: Modified Barthel index (MBI).

**Quality assessment / Risk of bias analysis:** Two reviewers will independently assesses the quality of the selected studies according to the Cochrane Collaboration ' s tool for randomized controlled trials . Items will be evaluated in three categories : Low risk of bias , unclear bias and high risk of bias . The following characteristics will be evaluated : Random sequence generation ( selection Bias ) Allocation concealment ( selection bias ) Blinding Blinding of participants and personnel ( performance bias ) Incomplete outcome data ( attrition bias ) Selective reporting ( reporting bias ) Other biases Results from these questions will be graphed and assessed using o reviewers will independently assesses.

**Strategy of data synthesis:** Use Stata14.0 software to conduct frequency network meta-analysis and graph drawing of the data. The outcome indicators are continuous variables and are evaluated by the same scale. Therefore, weighted mean difference (WMD) and 95% credibility are used Interval (Confidence interval, CI) is used as the effect size. First draw a network evidence map for direct comparison between interventions; then evaluate the consistency of the closed loop of each outcome index through the loop inconsistency test. When the 95% CI of the loop inconsistency factor (IF) contains 0, it indicates direct evidence and indirect

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evidence There is good agreement among the evidences. The results of the network meta-analysis are displayed by comparing the forest maps in pairs. According to the cumulative area under the curve (SUCRA) to draw a cumulative ranking probability map, used to determine the best stimulation method. The comparison-correction funnel chart is used to test publication bias and small sample effects.

**Subgroup analysis:** Subgroup analysis of the length of the disease and the duration of intervention after stroke.

**Sensibility analysis:** Perform sensitivity analysis by excluding documents one by one, and analyze the documents that have a greater impact on the results to find the source of heterogeneity.

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

**Keywords:** transcranial direct current stimulation; stroke; upper limb; motor function.

**Contributions of each author:**

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