

# INPLASY PROTOCOL

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None declared.

## Efficacy and Safety of Acupuncture for Tourette syndrome: A Systematic Review and Meta-Analysis of randomized controlled trials

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**Review question / Objective:** Efficacy and Safety of Acupuncture for Tourette syndrome: A Systematic Review and Meta-Analysis of randomized controlled trials.

**Condition being studied:** Tourette syndrome (TS, also known as Tourette disorder and Gilles de la Tourette syndrome) is a genetic neurodevelopmental disorder in which multiple sudden, recurrent, rhythmless motor and phonological tics occur several times a day and have an age of onset <18 years. TS prevalence is 1% male to female ratio is about 4:1. Since behavioral interventions are not readily available, there are adverse effects of pharmacological treatment, such as metabolic abnormalities and drowsiness. Also, Tic cannot be fully controlled with drugs. Acupuncture has been proposed as an option to reduce the dose or avoid the use of medications. This study used a systematic review to investigate the effectiveness and safety of acupuncture for TS.

**INPLASY registration number:** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 08 October 2022 and was last updated on 08 October 2022 (registration number INPLASY2022100032).

### INTRODUCTION

**Review question / Objective:** Efficacy and Safety of Acupuncture for Tourette syndrome: A Systematic Review and Meta-Analysis of randomized controlled trials.

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disorder and Gilles de la Tourette syndrome) is a genetic neurodevelopmental disorder in which multiple sudden, recurrent, rhythmless motor and phonological tics occur several times a day and have an age of onset <18 years. TS prevalence is 1% male to female ratio is about 4:1. Since behavioral interventions are not readily available, there are adverse

effects of pharmacological treatment, such as metabolic abnormalities and drowsiness. Also, Tic cannot be fully controlled with drugs. Acupuncture has been proposed as an option to reduce the dose or avoid the use of medications. This study used a systematic review to investigate the effectiveness and safety of acupuncture for TS.

## METHODS

**Participant or population:** Clearly diagnosed TS patients.

**Intervention:** Acupuncture Therapy.

**Comparator:** Drug Treatment.

**Study designs to be included:** Randomized controlled trials.

**Eligibility criteria:** (1)Participants: Patients with confirmed diagnosed TS, regardless of type, gender, age, and country. The diagnostic criteria from (DSM- IV), (DSM-V), (ICD-11), and (CCMD-4). Chronic movement disorders, chronic vocal disorders, transient disorders, and tic disorders were not included. (2)Intervention: Acupuncture treatment, excluding moxibustion, acupoint injections, and transcutaneous electrical stimulation (3) Control group: Medications (haloperidol, thiopride, and other drugs). (4)Research: Randomized controlled trials will be included.

**Information sources:** We will search electronic databases from their inception to July 2022 for RCTs about acupuncture for Tourette syndrome. A total of 9 databases and 3 gray literature databases, including PubMed, Cochrane Library, EMBASE, Web of Science, Medline, China National Knowledge Infrastructure (CNKI), Wanfang Database, China Science and Technology Journal Database (VIP), China Biomedicine (CBM), Chinese Clinical Trials Registry, Open Grey, and GreyNet International. The search strategy included 3 components: clinical condition (Tourette's syndrome, Tourette disorder, Gilles de la

Tourette syndrome), intervention (manual acupuncture, electroacupuncture, plum acupuncture, snap acupuncture, auricular acupuncture), and study type (randomized clinical trial).

**Main outcome(s):** The Yale Global Tic Severity Scale (YGTSS), total score is used to assess the severity of clinical tic symptoms in TS.

**Additional outcome(s):** XIncluding Adverse reaction rate and Plasma dopamine (DA) values.

**Quality assessment / Risk of bias analysis:** Two investigators will independently assess the risk of bias in the included studies using the Cochrane Collaboration's Risk of Bias tool. Each RCT was assigned 7 specific domains of low, high or unclear risk of bias (random sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, incomplete outcome data, selective outcome reporting, and other potential threats), in addition, any disagreements were resolved by discussion within the group.

**Strategy of data synthesis:** We used RevMan 5.3 software and Stata 16.0 software to analyze the extracted data with a confidence interval (CI) of 95%. Risk ratios (RR) were chosen to represent the effect sizes for dichotomous data, and continuous-type data were analyzed by mean difference (MD). Heterogeneity between trials was determined by the  $\chi^2$  test and reported as  $I^2$ . when  $I^2 < 50\%$ , it indicated low heterogeneity between studies, and the fixed effects model was used. When  $I^2 > 50\%$ , indicating significant study heterogeneity, a random-effects model was selected, and heterogeneity was explored using subgroup or sensitivity analyses to investigate the sources of heterogeneity. Funnel plots were used to assess the presence of potential publication bias.

**Subgroup analysis:** According to the acupuncture treatment, the subgroup analysis was divided into the general

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acupuncture group and electroacupuncture group. Based on the type of drug, the Subgroup analysis was divided into the haloperidol group, thiorpride group, and other drugs group.

**Sensitivity analysis:** To ensure the robustness of the article results, we will conduct sensitivity analysis once the outcome analyses involve a significant degree of heterogeneity based on sample size, methodological quality, and the effect of missing data.

**Language restriction:** Chinese and English.

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

**Keywords:** Tourette syndrome, Tic, Acupuncture, Systematic Review, Meta-Analysis, RCT.

**Contributions of each author:**

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