

# INPLASY PROTOCOL

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**Corresponding author:**  
YuChi Su

zac850429@gmail.com

**Author Affiliation:**  
Department of Physical Medicine and Rehabilitation, National Cheng Kung University Hospital, College of Medicine, National Cheng Kung University.

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**Review Stage at time of this submission:** Data analysis.

**Conflicts of interest:**  
None declared.

## Effectiveness of Botulinum Neurotoxin Type A in Treatment of Scoliosis Among Children and Adolescents: A Systematic Review and Meta-Analysis

Su, YC<sup>1</sup>; Lin, YC<sup>2</sup>; Hsieh, PC<sup>3</sup>; Liao, CL<sup>4</sup>; Guo, YH<sup>5</sup>.

**Review question / Objective:** Both randomized controlled trials and nonrandomized controlled studies were enrolled due to the scarcity of available investigations. Studies examining patients aged <18 years with scoliosis who were treated with BoNT-A were eligible for inclusion. We included articles published in Chinese and English only. We excluded case reports and conference proceedings due to the extremely high possibility of publication bias. In addition, studies that did not report the etiology of scoliosis were excluded.

**Condition being studied:** We investigated the effectiveness of BoNT-A in scoliosis treatment among children and adolescents by conducting a systematic review and meta-analysis of published articles. In addition, we examined the moderators of effectiveness including the study design, etiology of scoliosis, and method used for target muscle selection.

**INPLASY registration number:** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 07 September 2022 and was last updated on 07 September 2022 (registration number INPLASY202290031).

### INTRODUCTION

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## METHODS

**Participant or population:** Scoliosis patients under 18 years old.

**Intervention:** Botulinum toxin.

**Comparator:** Treatments other than botulinum toxin.

**Study designs to be included:** Randomized controlled trials (RCT) and nonrandomized controlled studies (NRS).

**Eligibility criteria:** Studies that did not report the etiology of scoliosis were excluded. None.

**Information sources:** PubMed, Medline, Cochrane Central Register of Controlled Trials, Web of Science, Airiti Library, and Index of the Taiwan Periodical Literature System.

**Main outcome(s):** Cobb angle.

**Quality assessment / Risk of bias analysis:** For randomized controlled trials, the risk of bias was examined using the Cochrane risk of bias tool. We adopted the Joanna Briggs Institute Critical Appraisal Checklist to evaluate the nonrandomized controlled studies.

**Strategy of data synthesis:** The primary outcome was the improvement in the Cobb angle after BoNT-A injection and represented by standardized mean differences (SMDs) and 95% confidence

intervals (CIs). The Cobb angle before and after BoNT-A treatment were used to analyze the summary effect size.

**Subgroup analysis:** Subgroup analysis was conducted according to differences in study designs, etiology of scoliosis, and methods used for target muscle selection.

**Sensitivity analysis:** Not applied due to limited data.

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

**Keywords:** Botulinum neurotoxin; scoliosis.

## Contributions of each author:

Author 1 - Yu Chi Su.

Author 2 - Yu Ching Lin.

Author 3 - Pei-Chun Hsieh.

Author 4 - Chung Lun Liao.

Author 5 - Yao Hong Guo.