

INPLASY202380001

doi: 10.37766/inplasy2023.8.0001

Received: 31 July 2023

Published: 01 August 2023

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**ADMINISTRATIVE INFORMATION****Support** - This research was supported by Taipei Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation.**Review Stage at time of this submission** - Piloting of the study selection process.**Conflicts of interest** - None declared.**INPLASY registration number:** INPLASY202380001**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 01 August 2023 and was last updated on 01 August 2023.**INTRODUCTION**

**Review question / Objective** The objective of this paper is to conduct a comprehensive systematic review of the existing evidence associated with the application of both central and peripheral magnetic stimulation in the management of neurogenic bladder.

**Condition being studied** Neurogenic bladder, or neurogenic lower urinary tract (LUT) symptoms, have a significant impact on the quality of life and functional independence of individuals. Magnetic stimulation is a non-invasive technique that utilizes the principle of inducing electric fields through exposure to a magnetic field. And magnetic stimulation holds great promise as a potential modality for managing neurogenic bladder.

**METHODS**

**Participant or population** Inclusion criteria: Clinical studies that involved human participants

with neurogenic bladder. Studies that provided data for pre- and post-intervention bladder assessments or evaluated changes in objective or subjective scores related to urinary tracts. Exclusion criteria: Studies involving healthy subjects or patients with unknown neurological diseases. Studies that did not include objective or subjective measurements of bladder symptoms.

**Intervention** Central and peripheral magnetic stimulation.

**Comparator** No comparisons or other interventions.

**Study designs to be included** No comparisons or other interventions.

**Eligibility criteria** The inclusion criteria for this study were as follows: 1) Clinical studies that involved human participants with neurogenic bladder. 2) Studies that provided data for pre- and post-intervention bladder assessments or evaluated changes in objective or subjective

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scores related to urinary tracts. The systematic review applied the following exclusion criteria: 1) Case reports, conference abstracts, editorials and reviews. 2) Studies that did not focus on urinary problems. 3) Studies that did not focus on treatment. 4) Studies involving healthy subjects or patients with unknown neurological diseases. 5) Studies that did not include objective or subjective measurements of bladder symptoms. 6) Studies not published in English.

**Information sources** Two authors independently performed electronic searches in the Ovid MEDLINE, Ovid Embase, Cochrane Library, and Web of Science databases using the primary keywords "neurogenic bladder" and "magnetic stimulation." Additionally, we examined the reference lists of a relevant article and conducted additional manual searches. In cases where a consensus could not be reached between the two authors, a corresponding author was consulted for resolution.

**Main outcome(s)** This review emphasizes the benefits of magnetic stimulation in the management of neurogenic bladder. We advocate for clinical investigation including pre- and post-intervention bladder assessments or evaluated changes in objective or subjective scores related to urinary tracts.

**Quality assessment / Risk of bias analysis** The methodological quality of randomized controlled trial (RCT) was evaluated using the Risk of Bias Assessment tool (RoB v.2.0) from the Cochrane Collaboration. In assessing the bias of case series, the NIH quality assessment tool was employed.

**Strategy of data synthesis** The findings of the present literature review will be categorized into two primary sections. Firstly, an initial overview of the identified papers will be provided, focusing on the general structure of the papers, including publication year, the population involved, and the methodologies used to assess the effects of magnetic stimulation. Subsequently, a more in-depth analysis will be conducted on the papers that explore magnetic stimulation in the context of various neurogenic bladder diseases. The characteristics of these papers will be listed and discussed, with a particular emphasis on demographics (publication year, population, study type, etc.) and the methodologies employed (protocols used, investigated outcomes, types of stimulation applied, etc.).

**Subgroup analysis** The outcomes will be presented in two main sections. The first section

will encompass all the identified papers, providing a comprehensive overview of the current state of the art. The subsequent section will concentrate on the papers that specifically investigate the application of magnetic stimulation in various diseases.

**Sensitivity analysis** None.

**Country(ies) involved** Taiwan.

**Keywords** Magnetic stimulation ; Neurogenic bladder ; Treatment ; Parameters ; Frequency.

**Contributions of each author**

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Author 3 - LUO HUA YU.

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