International Platform of Registered Systematic Review and Meta-analysis Protocols

INPLASY

Effects of Joint Manipulation on Gait Parameters: A Scoping Review

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ADMINISTRATIVE INFORMATION

Support - None.

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

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 22 July 2024 and was last updated on 22 July 2024.

INTRODUCTION

Review question / Objective What is known from the existing literature about the influence of joint manipulation on gait parameters?

Background Joint manipulation can improve joint function, reduce pain, and increase range of motion (Coulter et al 2018; Gross et al 2010). Similarly, joint manipulation has influenced static and dynamic balance across a range of tasks (Malaya et al 2020; Malaya et al 2021), with mixed results on gait (Delafontaine et al 2024; Wójtowicz et al 2017). Understanding the impact of joint manipulation on gait can lead to more effective treatment protocols, aiding in rehabilitation and potentially reducing the need for surgical interventions or long-term reliance on medication. As gait is fundamental to daily activities, impacting it through joint manipulation could have significant implications for patient independence and overall health.

Rationale The extent to which joint manipulation influences gait has not been comprehensively explored, nor is the manner in which these interventions are applied across different populations well-documented. By mapping the current research, this review will enhance our understanding of how various joint manipulation techniques impact gait dynamics in different populations, inform clinical practice, as well as identify gaps for future research.

METHODS

Strategy of data synthesis This review will follow the methods described by Levac et al. (2010) and

Arksey and O'Malley (2005). The scoping review will follow a six-stage process (Levac et al 2010).

Stage 1: Research question identification
Stage 2: Relevant study identification
Stage 3: Study selection
Stage 4: Data charting
Stage 5: Collating, summarizing, and reporting

The following electronic databases will be searched from inception until January 2024:
• Ovid MEDLINE(R) and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations, Daily and Versions
• Index to Chiropractic Literature
• CINAHL
• Sport Discus

This is a sample strategy for Ovid/MEDLINE®:
1. manipulation, chiropractic.sh.
2. manipulation, orthopedic.sh.
3. manipulation.af.
4. chiropract*.af.
5. musculoskeletal manipulations.sh.
6. manipulation, spinal.sh. 1851
7. locomotion.af. or locomotion.sh.
8. walking.af. or walking.sh. or walk*.af.
9. gait.af. or gait.sh. or gait analysis.af.
10. exp running/
11. exp walking/
12. exp gait/
13. 10 or 11 or 12
14. 1 or 2 or 3 or 4 or 5 or 6
15. 7 or 8 or 9 or 13
16. 14 and 15
17. (kinetic* or kinematic*).sh.
18. 16 and 17

Reference checking will be performed.

Eligibility criteria Eligible studies will report on the use or effectiveness of joint manipulation on human locomotion and/or gait parameters. Studies will be included in the analysis if they satisfy the following criteria:
1. Studies reporting on the influence, effects, or investigation of joint manipulation performed by a licensed health professional on human locomotive parameters (e.g., characteristics, movement structure, kinetics, kinematics)
2. Study designs comprising experimental and observational studies, and literature reviews
Studies will be excluded based on the following criteria:
1. No English language full text available, not published in a peer-reviewed journal
2. No full text available (editorial, letters, sole abstracts, commentaries)
3. Case studies, or case series.

Source of evidence screening and selection Data will be extracted from the selected original articles and compiled into a spreadsheet using Microsoft Excel® 2023. The data will be organized based on variables relevant to the objectives of this investigation. The collected information will include:
1) Author(s) name(s) & year of publication
2) Title of article
3) Aim(s) & objective(s)
4) Country/countries of origin
5) Population
6) Methodology
7) Specific: method of gait parameter assessment
8) Intervention(s) & comparator(s)
9) Specific: type of manipulation, who performed, frequency/dosage
10) Outcome measure(s)
11) Specific: Gait parameters under study
12) Pertinent results
13) Conclusions
14) Limitations.

Data management After conducting the literature search, citations will be checked for duplicates, and a comprehensive list of unique citations will be exported to Covidence. The review team will then conduct a calibration exercise by reviewing five randomly selected titles and abstracts to determine which meet the inclusion criteria. The selection criteria will be considered successful if an 80% agreement threshold is achieved. If necessary, further refinement of the criteria will be conducted using an additional five titles and abstracts.
After successfully calibrating the selection criteria, three reviewers (C.M., D.S., A.D.R.) will independently review the selected titles and abstracts to determine eligibility. Any disagreements will be resolved through weekly discussions and consensus meetings, with K.S. serving as a referee if necessary. The full text of the selected articles will then be obtained and assessed using the selection criteria. Articles that pass the full-text review will comprise the final group for data extraction into the spreadsheet and subsequent analysis.

Reporting results / Analysis of the evidence Relevant findings will be categorized and compiled, and key themes will be identified from the included studies.

Presentation of the results The authors will provide numerical and thematic analyses of the selected articles, supplemented with additional

relevant information as appropriate. Additionally, summary charts of the included articles will be presented.

Language restriction Only English language manuscripts will be examined in the screening process.

Country(ies) involved This scoping review originated in the United States of America and Canada.

Other relevant information None.

Keywords joint manipulation, gait, locomotion, spinal manipulation, extremity manipulation.

Dissemination plans Findings from this scoping review will be presented at a scientific conference. A manuscript will be prepared and submitted for publication in a peer-reviewed journal. Social media posts and press releases will be used to increase awareness of the publication.

Contributions of each author

Author 1 - Christopher Malaya - Study conception. Article reviewer. Data extraction and analysis. Manuscript preparation. Corresponding author.
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