

INPLASY

The effectiveness of Neural Mobilization in patients with Tarsal Tunnel Syndrome: A Systematic Review and Meta-analysis

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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.

INPLASY registration number: INPLASY202490077

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 18 September 2024 and was last updated on 18 September 2024.

INTRODUCTION

Review question / Objective Do Neural Mobilization techniques demonstrate effectiveness in treating patients with Tarsal Tunnel Syndrome?

Rationale Patients with Tarsal Tunnel Syndrome (TTS) exhibit pain around the tarsal tunnel, with irradiation to the plantar aspect of the foot. This systematic review aims to analyze evidence from randomized controlled trials (RCTs) investigating the effectiveness of Neural Mobilization techniques in patients with TTS.

Condition being studied Tarsal tunnel syndrome is a compressive neuropathy affecting the posterior tibial nerve, located beneath the flexor retinaculum on the medial ankle. Various intrinsic or extrinsic factors can contribute to pain along the medial side of the foot, particularly when aggravated by certain activities. The clinical symptoms typically are diffuse and poorly localized and often

associated with paresthesia along the medial ankle and/ or plantar foot.

METHODS

Search strategy Systematic search and selection of RCTs will be performed in three scientific databases (Pubmed, Scopus, Physiotherapy Evidence Database-PEDro) and one search engine (Google Scholar), from inception to September 2024. Relevant studies published in the English language will be extracted, evaluated, and independently rated for methodological quality (PEDro scale). The quality of the evidence will be assessed with the GRADE approach.

Participant or population Patients with Tarsal tunnel syndrome symptomatology, aged between 18-65 years, of either sex.

Intervention Neural Mobilization techniques directed mainly to the posterior tibial nerve (sliding or tension techniques for pain control or range of

motion improvement) or/and general neural tissue for example Straight Leg Raise- SLR (sliding or tension techniques provided by physical therapists).

Comparator Another active physical therapy intervention (eg. Conservative treatment, general exercise, electrotherapy), true control (eg. waiting list), sham control (sham application of techniques).

Study designs to be included RCTs only - all other types of studies will be excluded (cohort, non-randomized controlled trials, case series and case studies).

Eligibility criteria Patients with Tarsal tunnel syndrome symptomatology, aged between 18-65 years, of either sex with Tinel's sign positive or/and Tenderness grading more than 2.

Non-randomized controlled clinical trials, studies without control or other intervention groups, and case report- studies, will be excluded from the present systematic review. Also, studies will be excluded if they include individuals with any of the following conditions: tumors, cancer, systematic inflammatory disease (rheumatoid arthritis, spondyloarthropathy, and connective tissue diseases etc.), plantar fasciitis, heel pain, Morton syndrome, ankle instability and any other comorbidities of ankle and foot. Whilst no language restrictions will be imposed during database searching, studies written in languages other English will be excluded during screening.

Information sources An electronic database search of PubMed, PEDro (Physiotherapy Evidence Database), Scopus and one search engine (Google Scholar) will be undertaken from inception to September 2024. Supplementary searches will be carried out by hand searching the reference lists of included studies. The keywords will be used in the Scopus and PEDro database (advanced search) in different combinations and according to the PICO Model for Clinical Questions will be undertaken from inception to September 2024.

Main outcome(s) Pain evaluation (e.g., VAS), Functional Foot Index (FFI).

Additional outcome(s) Neuropathic Pain Questionnaire (NPQ), tibial nerve's diameter measurement, Range of motion (universal goniometer), specific provocative tests for tarsal tunnel syndrome (Tinel's sign or tibial nerve stretch test), and/or specific nerve tissue assessments (e.g., paresthesia, light touch).

Data management Studies will be selected for inclusion according to the above-described PICO statement: P (tarsal tunnel syndrome), I (neural tissue mobilization), C (control condition/ other physical therapy interventions, as detailed above) and O (main/additional outcomes). Data extraction methods:

Study selection: Two reviewers (GK & PT) will apply eligibility criteria and select studies for inclusion in the systematic review. One of the two reviewers will screen records and the other will check decisions.

Data extraction: Participant demographics and baseline characteristics and all the above PICO-related data will be extracted in custom-made data extraction tables.

One reviewer will be extracting and the other reviewer will be checking the data (one will extract data and another person check the extracted data).

Disagreements between individual judgements will be resolved by inclusion of a third reviewer (EG).

Missing data will not be handled by imputation but will be treated as missing. Study investigators will be contacted for unreported data or additional details.

Data will be recorded in an excel spreadsheet. Meta-analyses will be conducted with the Cochrane RevMan software (on line version).

Quality assessment / Risk of bias analysis The Physiotherapy Evidence Database (PEDro) Scale.

Strategy of data synthesis The minimum number of studies required for synthesis will be two. Studies synthesized must be fairly homogeneous considering the population characteristics (ie. severity or chronicity pain levels), the interventions, the outcome timepoint (shorter immediate post-intervention time points will be preferred), and the effect size heterogeneity (I^2 index >70%). Major inconsistencies in any of the above domains will direct the analysis towards qualitative synthesis.

Meta-analysis (mean differences for individual studies will be combined using a random effect model) will be performed if the above criteria of homogeneity of studies are present. In any other case, methods of qualitative data synthesis will be applied.

Subgroup analysis No subgroup analyses will be performed.

Sensitivity analysis None.

Language restriction English- There is not an English language summary.

Country(ies) involved Greece.

Other relevant information None.

Keywords Tarsal Tunnel Syndrome, Nerve compression syndromes, neural mobilization, Nerve Mobilization Exercises, tibial nerve mobilization, nerve entrapment, Tibial nerve stretch.

Dissemination plans Publication in scientific conferences, and journals.

Contributions of each author

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