INPLASY PROTOCOL

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None declared.

Effectiveness of Trigger Point Dry Needling for Plantar Fasciitis: A Systematic Review and Meta-Analysis

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Review question / Objective: **The treatment of plantar fasciitis is always extracorporeal shock wave therapy, injection therapy and physical therapy. At present, dry needling has also been applied to the treatment of plantar fasciitis, but its effectiveness is not clear. Previous studies have shown that trigger points dry needling is more effective in relieving pain, so we hypothesized that dry needling is superior to other therapies in the pain of plantar fasciitis.The purpose of this study was to explore the effectiveness of dry needling in the treatment of plantar fasciitis.**
Condition being studied: **Plantar fasciitis is one of the most common foot diseases that can cause foot and heel pain. Plantar fasciitis impacts daily life, and the lack of a cost-effective treatment can place great stress on the healthcare field. we compared the treatment methods through this meta-analysis, so as to obtain a more efficient and economical treatment method.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 10 May 2022 and was last updated on 10 May 2022 (registration number INPLASY20225057).

INTRODUCTION

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METHODS

Participant or population: Inclusion: Patients suffering from diagnosed Plantar Fasciitis, adult population(>18 years old). Exclusion: Co-morbid systemic inflammatory conditions.

Intervention: Trigger Point Dry Needling - a minimally invasive therapy, which stimulates the MTrPs in muscle tissue.

Comparator: Conventional treatment - incorporates non-invasive methods including home exercise therapy, stretching, Kinesio-taping, ESWT and Ultrasound.

Study designs to be included: The studies had to meet the following inclusion criteria:1) The study was conducted in an adult population(>18 years old); 2) the study was conducted in patients with plantar Fasciitis; 3) one group received any type of dry needling intervention; 4) a comparison group received sham dry needling, no intervention (control), or another intervention, such as manual therapy or corticosteroid injections; 5) the primary outcome of the studywas pain intensity (e.g., measured on a visual analogscale or a numerical pain rating scale); and 6) the study had a randomized controlled trial design.

Eligibility criteria: The inclusion criteria are designed and implemented strictly in accordance with the PICOS framework.

Information sources: Two independent investigators will search the following database: PubMed, Web of science, Embase, Cochrane Library, CBM and CNKI (China National Knowledge Infrastructure). Only RCTs relating to the effects of Plantar Fasciitis will be included in the systematic review.Trials published in the form of dissertations or grey literature will be also selected as eligible studies.

Main outcome(s): Primary outcome measure: Pain Visual Analogue Scale (VAS) assessing pain changes from baseline to follow-up. Numeric rating scale.

Additional outcome(s): Secondary outcome measure: Foot function.

Quality assessment / Risk of bias analysis: The Cochrane's Risk of Bias Tool was used to estimate the risk of bias, including the following domains: random sequence generation, allocation concealment, blinding of participants, personnel, and outcome assessor, incomplete outcome data, selective outcome reporting, and other sources of bias. How the results of the assessment will inform data synthesis: The higher the proportion of studies assessed to be at high risk of bias, the more cautious should be the analysis and interpretation of their results, and the lower will be the grading of the quality of the evidence.

Strategy of data synthesis: We use Review Manager Software (Revman, version5.4 for mac) to perform this meta-analysis by the experimental data extracted from the included articles. Random-effects model is used when heterogeneity is present among studies, and fixed-effect model is used when homogeneity is present. Heterogeneity is estimated using I^2 statistics, $I^2=0$ means no heterogeneity was observed. The higher the value of I^2, the more significant the heterogeneity, and we conventionally consider $I^2 > 50\%$ to indicated substantial heterogeneity; to the contrary, it stated non-heterogeneity. We will use sensitivity analysis or subgroup analysis to find the heterogeneity source

with the condition of significant heterogeneity. Effect size is measured through the standard mean difference (SMD) due to measure scales used in the included studies are different. P-value lower than 0.05 has statistical significance.

Subgroup analysis: If the necessary data are available, the included articles will be classified based on the score of PEDro （Physiotherapy Evidence-based Database） for subgroup analysis. PEDro scale is used to assess the methodological quality of the study, and the higher the score, the better the methodological quality.

Sensitivity analysis: By excluding some studies one by one to explore their effect on the combined effect variable, the meta-analysis was repeated, and the obtained results were compared with the original effect size. If there is no significant change between the effect size and the original effect size, the result is stable. Otherwise, the results are unstable.

Country(ies) involved: China.

Keywords: Dry Needling; Plantar Fasciitis; tigger point.

Contributions of each author:
Author 1 - zhimin xiao - drafted the manuscript.
Author 2 - zonghui wu.
Author 3 - bing zhen.