

INPLASY

INPLASY2025120011

doi: 10.37766/inplasy2025.12.0011

Received: 3 December 2025

Published: 4 December 2025

Corresponding author:

Claudio Carvajal-Parodi

claudio.carvajal@uss.cl

Author Affiliation:

Escuela de Kinesiología, Facultad de Ciencias de la Rehabilitación y Calidad de Vida, Universidad San Sebastián, Concepción 4030000, Chile.

Comparative Efficacy of Radial Extracorporeal Shockwave Therapy and Corticosteroid Injection on Pain and Function in Patients With Plantar Fasciitis: A Systematic Review and Meta-analysis

Guede-Rojas, F.; Rodríguez-Lagos L; Elgueta-Grillo J; Carvajal-Parodi, C.

ADMINISTRATIVE INFORMATION**Support** - None.**Review Stage at time of this submission** - Formal screening of search results against eligibility criteria.**Conflicts of interest** - None declared.**INPLASY registration number:** INPLASY2025120011**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 4 December 2025 and was last updated on 4 December 2025.**INTRODUCTION**

Review question / Objective The primary objective of this systematic review is to compare the effectiveness of radial extracorporeal shock wave therapy (rESWT) versus corticosteroid injections in improving pain and function in patients with plantar fasciitis.

Rationale Although radial extracorporeal shockwave therapy (rESWT) and corticosteroid injections are commonly used to treat plantar fasciitis, the evidence comparing their effects remains limited and inconsistent. Previous reviews have agrupated different shockwave modalities without distinguishing between radial and focal applications, a methodological issue that prevents understanding the specific clinical performance of rESWT. Radial shockwaves differ from focal ones in penetration depth, dispersion of energy and safety profile, which makes it essential to examine their outcomes independently. In parallel,

corticosteroid injections provide rapid short-term pain relief but have inconsistent mid- and long-term effects and may be associated with adverse events. The growing clinical use of rESWT, the variability in corticosteroid dosing protocols and the absence of modality-specific syntheses justify conducting a systematic review focused exclusively on the comparison between rESWT and injectable corticosteroids. This approach allows clarifying their relative benefits and contributes to a more precise and evidence-based decision-making process in the conservative management of plantar fasciitis.

Condition being studied Plantar Fasciitis.**METHODS**

Search strategy Search terms combined using Boolean operators (OR and AND) and organized as follows:

a) Population: Fasciitis, Plantar [Mesh], "plantar fasciitis", "plantar fasciopathy", "plantar fasciosis", plantar fasc*, "chronic plantar fasciitis", "plantar heel pain", "painful heel"

b) Intervention: Extracorporeal Shockwave Therapy [Mesh], "extracorporeal shock wave", "extracorporeal shockwave", "extracorporeal shock-wave", "radial extracorporeal shock wave", "radial shock wave", "radial shockwave", "radial shock-wave", "radial pressure wave", shock wave*, shockwave*, shock-wave*

c) Comparator: Glucocorticoids [Mesh], corticosteroid*, corticoid*, gluco-cortico*, "gluco corticosteroid", "gluco corticoid", Methylprednisolone, "Methyl prednisolone", Prednisolone, Triamcinolone, Betamethasone, Hydrocortisone, Dexamethasone

d) Outcome: Pain [Mesh], Physical Functional Performance [Mesh], Disability Evaluation [Mesh], function*, disabilit*.

Participant or population Adults with plantar fasciitis.

Intervention Radial extracorporeal shockwave therapy.

Comparator Injectable corticosteroid therapy.

Study designs to be included Randomized controlled trials.

Eligibility criteria Inclusion criteria:

Population: Adult patients (18 years or older) whose diagnosis was exclusively acute or chronic plantar fasciitis.

Intervention: Radial extracorporeal shock wave therapy, delivered as a standalone treatment or combined with other non-invasive conservative orthopedic or physical therapy interventions, which cannot include the use of corticosteroid therapy in any mode of administration.

Comparator: Injectable corticosteroid therapy administered alone or in combination with other conservative treatments.

Outcomes: Pain intensity and functional disability (measured through physical performance tests or self-report instruments).

Study design: Randomized clinical trials published in English, with no date restrictions.

Exclusion criteria

Patients presented plantar fasciitis associated with another clinical condition, including heel spurs.

Did not include any measure of pain and/or functional disability.

Grey literature.

Information sources a) Electronic databases: PubMed, CINAHL, Scopus, Web of Science, and PEDro (from inception), b) Manual screening of reference lists from included articles, c) Complementary search in Google Scholar.

Main outcome(s) Pain intensity and functional disability (measured through physical performance tests or self-report instruments).

Additional outcome(s) Adverse events.

Data management Data will be extracted independently by two reviewers using a standardized form, and any disagreements will be resolved by consensus. The form will capture information on the study authors and publication year, participant characteristics, intervention protocols, measurement instruments, primary outcomes, and reported adverse events.

Quality assessment / Risk of bias analysis Cochrane RoB-2 tool.

Strategy of data synthesis A qualitative synthesis is conducted alongside a quantitative synthesis using the MetaAnalysisOnline.com platform. Effect sizes are reported as mean differences or standardized mean differences, depending on the consistency of the measurement instruments. A random-effects or fixed-effects model is selected according to the degree of statistical heterogeneity. Heterogeneity is evaluated using the I^2 inconsistency index, interpreted as: 'might not be important' (0–40%), moderate (30–60%), substantial (50–90%), and considerable (75–100%).

Subgroup analysis a) Type of corticosteroid therapy, b) Outcome measurement scales.

Sensitivity analysis Yes, according to the methodological and clinical characteristics of the included studies.

Language restriction Only studies published in English are included.

Country(ies) involved Chile.

Other relevant information None.

Keywords Plantar Fasciitis, Extracorporeal Shockwave Therapy, Radial Extracorporeal Shockwave Therapy, Corticosteroid injection.

Dissemination plans Indexed scientific journal.

Contributions of each author

Author 1 - Francisco Guede-Rojas.

Email: francisco.guede@unab.cl

Author 2 - Leonardo Rodríguez-Lagos.

Email: rodriguez.lir@gmail.com

Author 3 - Jaime Elgueta-Grillo.

Email: dr.jreg@hotmail.com

Author 4 - Claudio Carvajal-Parodi.

Email: claudio.carvajal@uss.cl