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## Orthotics Compared to Conventional Therapy and Other Non-Surgical Treatments for Plantar Fasciitis

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### Abstract

**Clinical Question**—In adults with acute plantar fasciitis whose symptoms have not been relieved with the conventional regimen of NSAIDs, stretching and lifestyle modification, do the addition of orthotics (prefabricated or custom fitted) reduce pain and improve function compared with other non-surgical treatments (manipulative chiropractic, physical therapy and/or heel steroid injections)?

**Answer**—Yes. Studies have shown that orthotics, both prefabricated and custom fitted, reduce pain and improve function in adults with acute plantar fasciitis with few risks or side effects. Used alone or in addition to conventional therapy (NSAIDs, stretching, lifestyle modification), orthotics are effective and well tolerated by patients for short-term pain relief and improved function. Prefabricated orthotics are less costly and provide similar relief to more expensive custom orthotics.

**Level of Evidence of the Answer**—A

**Search Terms**—Plantar fasciitis, heel pain, treatment, orthotics,

**Limits**—Adult, human, English, Review, Randomized-Control Trials, Systematic Reviews, adults age 18 or more, publication dates 2004 to present.

**Date Search was Conducted**—January 16, 2014; updated January 20, 2015

**Inclusion Criteria**—Recent published systematic reviews, randomized controlled, meta-analyses; adults with confirmed acute or recent diagnosis of plantar fasciitis.

**Exclusion Criteria**—Studies older than 10 years, children, adolescents less than 18 years of age, chronic or recalcitrant plantar fasciitis.

### Summary of the Issues

Plantar fasciitis is a common painful foot condition that is usually described as stabbing or burning anteromedial heel pain that is worse in the mornings and after periods of rest. Plantar fasciitis contributes to 1 million American outpatient office visits annually; two-thirds of these patients seek treatment for this often debilitating condition from their family physician.<sup>1</sup> Plantar fasciitis is most often found in middle aged to older adults with an estimated prevalence of 7% in adults over the age of 65. In adults under age 65, plantar fasciitis is more prevalent among individuals who are obese, lead sedentary lifestyles,

runners, in the military and those with occupations requiring prolonged standing. While unknown, the suggested pathogenesis of plantar fasciitis is repetitive micro-trauma and inflammation of the plantar fascia at the calcaneal insertion.<sup>2</sup> The initial clinical diagnosis is based on history, risk factors and physical exam, not on radiographic findings; however, imaging may be helpful in recalcitrant plantar fasciitis.<sup>1-2</sup>

The high incidence of plantar fasciitis and activity-limiting pain make understanding the diagnosis of and current evidence-based recommendations for treatment highly important for the practicing clinician. Many studies report multiple therapeutic approaches making it difficult to determine which single initial therapy might be the “best.”<sup>1</sup> While little evidence supports it, conventional wisdom is to treat plantar fasciitis with NSAIDs, stretching and lifestyle modification. This review will focus on current research for treating acute plantar fasciitis if conventional options have not provided symptom relief. Treatment of recalcitrant plantar fasciitis will not be discussed in this review.

## Summary of the Evidence

A systematic review by Uden et al. published in 2011 compared six randomized control trials (RCTs) to assess the effectiveness and safety of custom foot orthoses (CFO) and corticosteroid injections (CSI) for the treatment of adults with known plantar fasciitis.<sup>3</sup> Of the six RCTs that met the criteria for this systematic review, four compared the use of CFOs to other therapies while the remaining two articles focused on the effectiveness and safety of CSIs. (See Table.)

In a 3-arm RCT conducted by Roos et al., 43 participants were randomly assigned to receive CFOs, anterior night splints, or CFOs together with anterior night splints. Pain scores were assessed using the Foot and Ankle Outcome Score at 6, 12, 26, and 52 weeks after intervention. The study concluded that use of anterior night splints and foot orthotics were both effective in providing short term pain relief and improved foot function.<sup>3</sup>

In another 3-arm RCT, Landorf et al. randomly assigned 136 participants to receive prefabricated foot orthotics, CFOs, or a placebo “sham” orthotic. Pain and function level of the participants were assessed with the Foot Health Status Questionnaire at 3 and 12 months after treatment. At 3 months, this study showed that both prefabricated orthotics and CFOs provided a significant improvement in function but no significant improvement in pain over the placebo “sham” orthotics.<sup>3,4</sup> A 2-arm RCT by Baldassin et al. used the Visual Analog Score (VAS) and the Foot Function Index (FFI) to compare prefabricated orthotics and CFOs in 142 individuals. Pain was assessed at baseline, 4 weeks, and 8 weeks. Results demonstrated that use of low-cost prefabricated orthotics in the treatment of plantar fasciitis had similar and significant outcomes in improving function and providing pain relief compared to more expensive CFOs.<sup>3</sup>

Uden et al. evaluated two studies investigating the effectiveness of CSIs.<sup>3</sup> Porter and Shadbolt randomized 125 participants into three groups: CSI with stretching of the gastrocnemius, soleus and plantar fascia, electrohydraulic shock wave therapy (ESWT) with stretching, and stretching alone. Pain was assessed at baseline, 3 months and 12 months with significant reduction in pain reported at 12 months compared to stretching alone. In the

second study of CSI, conducted by Lee and Ahmad, 64 patients were randomized to receive either an autologous blood intralesional injection (ABII, control group) or CSI treatment. Pain was assessed at baseline, 6 weeks, 3 months and 6 months. The CSI group showed significant pain reduction compared to the ABII group at 3 months but no significant differences at 6 months. Participants in both studies reported injection site pain lasting up to one week that required use of ice and analgesic.<sup>3</sup>

Uden et al. also evaluated an RCT by Dimou et al. that compared symptom relief from CFOs compared to manipulative therapy by a chiropractor. In this study, 20 participants were assigned to wear a CFO for 8 weeks or receive a total of 9 chiropractic manipulation treatments of the foot and ankle, 2 per week for 4 weeks and again at the 8 week follow-up visit. Pain was assessed subjectively with a pain rating scale and objectively with algometry at regular intervals for all groups and at the 8 week follow-up. While both groups reported pain reduction, chiropractic manipulation was found to be significantly superior to CFOs for pain relief.<sup>3</sup>

A 2011 systematic review by Brantingham et al. reviewed manipulative therapy for lower extremity conditions. Two RCTs on use of manipulative therapy by chiropractors for plantar fasciitis were included: the study described above by Dimou et al. and a study by Cleland et al. In the Cleland study, participants were assigned to receive either electrophysical agents (EPA) and stretching exercises or 6 manipulative therapy treatments over 4 weeks. The treatment used depended on the tender points and restrictions that were found on the 60 study participants. At 4 weeks and 6 months, the Foot and Ankle Ability Measure was used to assess pain and function. Significant improvement was seen in the manipulation group at 4 weeks but no significant difference at 6 months. The review concluded that chiropractic manipulative therapy is effective for short term pain relief of plantar fasciitis.<sup>5</sup>

## Conclusion

Results from this literature review indicate that patients with known acute symptomatic plantar fasciitis can be treated with a variety of non-surgical modalities that improve symptoms in the short term. Studies demonstrated adding orthotics, night splints, manipulation chiropractic, physical therapy, and/or corticosteroid injections offer improved symptom relief when conventional treatment options (NSAIDs, stretching and lifestyle change) are inadequate for reducing pain and improving function. Many studies indicate that orthotics and corticosteroid injections are the best treatments for plantar fasciitis. Orthotics, customized or prefabricated, have been shown to improve pain and function within 1 to 3 months with little to no risk. A recent study indicated that patients were compliant with both prefabricated and custom orthotics and that prefabricated orthotics were cost-effective.<sup>6</sup> Current evidence suggests that the addition of orthotics to the treatment regimen for non-recalcitrant plantar fasciitis either alone or in conjunction stretching if conventional therapy fails to bring symptom relief. Manipulative therapy might also be considered.

## Acknowledgments

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**Table**

Comparison of Non-Surgical Treatment Modalities to Provide Pain Relief and Improved Function for Patients with Non-recalcitrant Plantar Fasciitis

Study Investigators	Study Type	Study Size (n)	Treatment Modalities	Outcomes
Roos et al. <sup>3</sup>	3-arm RCT	43	CFO, night splints or CFO with night splints	Pain relief and improved function reported for all groups with significantly reduced pain at 52 weeks for the combined group.
Landorf et al. <sup>3,4</sup>	3-arm RCT	136	Prefabricated orthotic, CFO or placebo "sham" orthotic.	Both prefabricated orthotics and CFOs significantly improved function at 3 mo. compared to placebo. No significant improvement in pain compared to placebo.
Baldassin et al. <sup>3</sup>	2-arm RCT	142	Prefabricated orthotic or CFO	Pain relief and improved function was similar for both study groups at 8 weeks.
Porter and Shadbolt <sup>3</sup>	3-arm RCT	125	CSI with stretching, ESWT with stretching, and stretching alone.*	Both CSI + stretching and ESWT + stretching provided superior pain relief at 12 mo. compared to stretching alone.
Lee and Ahmad <sup>3</sup>	2-arm RCT	64	CSI or ABII. site pain for up to 7 days caused by CSI	CSI provided superior pain relief to ABII at 3 mo. but the differences were not significant at 6 mo..
Dimou et al. <sup>3,5</sup>	2-arm RCT	40	Manipulative chiropractic treatment or CFO	Manipulative chiropractic treatment significantly superior for reducing pain at 8 wk. compared to CFO.
Cleland <sup>5</sup>	2-arm RCT	60	Manipulative chiropractic treatment or EPA and exercise	Manipulative chiropractic therapy significantly reduced pain at 4 wk.. compared with EPA and exercise. No significant differences at 6 mo.

\* Participants who did not want either CSI or ESWT were re-assigned to stretching alone.