In adult humans with plantar fasciitis does a sustained stretch of the calf muscles or triceps surae have an beneficial effect on pain, range of movement and return to normal daily activity.

# Clinical bottom line

There is minimal evidence that stretching the calf muscles or triceps surae can be beneficial in patients with plantar fasciitis.

There is minimal evidence that using night splints can be beneficial in patients with plantar fasciitis.

However it is important to note that the research available at present is based on trials with small numbers, have suffered from high drop out rates and have short term follow up only..

**Criteria for Critically appraised Topic**

**Population** Adult humans with plantar fasciitis

**Intervention** Sustained stretching of calf muscle group or triceps surae

**Comparison** No intervention, orthotics, weight reduction, surgery, night splints, injection therapy

**Outcome** reduction in pain, return to normal function improvement in range of movement

**Search Terms used**

**The following databases were searched:**

(Sports discis, MANTIS (Chiropractor/Osteopath),Cochrane, Pedro, NHS Library for Health, Medline, Cinahl, Embase, Psycinfo,Clinical Evidence, Bandolier, NELH, Professional websites, guidelines, NICE. HTA). Pub Med, Australasian Journals, Journal of American Podiatric Society, UK Guidelines, Australian Guidelines

**The following types of study were used:**

Systematic reviews.
Randomised controlled trials.

**Key words searched:**

Population, musculoskeletal, muscle stretch, stretching, stretches, NICE, orthotics, weight reduction, surgery, night splints, injection therapy, plantar fasciitis

**Exclude**
Children

**Search for the past 20 years i.e. 1987 – 2007**

**Available Evidence**

| Database ( Specific to your CAT) | Number of relevant abstracts |
|---|---|
| **Clinical evidence** | |
| **PsychInfo** | |
| **AMED/ CINAHL/ Embase** | |
| **PEDRO** | |
| **Medline** | |
| **Cochrane** | |
| **Total** | **9** |

**Results**

- 9 Abstracts were evaluated
- 5 answered our clinical question.

**Results- continued**

**Porter et al 1998**. 94 participants with 122 symptomatic feet initially included. Sustained stretching versus intermittent stretching groups (hanging heel over edge of step). Dorsiflexion improved in both groups but was the same as the control group at 4 months. Pain levels improved in both groups but not statistically significant. High drop out rate, 26% from sustained stretches and 35% from sustained stretches. Only short term follow up.

**Barry et al 2002** Retrospective design. Examined a tiered approach to treatment involving night splinting or stretching as the first tier. Progressed through 4 tiers if no improvement. Surgery was the 4$^{th}$ tier. 160 patients included but high loss to follow up (13% in stretching group). Suggested night splints added benefit and stretching group took longer to recover

**Crawford F and Thomson C 2003** Systematic review of RCTs in adults with heel pain. 2 reviewers, 19 trials identified (1626) patients. Identified trials were of poor quality with small numbers. No evidence for laser, ultrasound or insoles. Some evidence for injection therapy, limited evidence for night splints in those with chronic pain. Stretching marginally beneficial over no treatment.

**DiGiovanni et al 2003** undertook a randomised trial of 101 patients with chronic heel pain with symptoms for at least 10 months. Compared Plantar fascia stretches with Achilles tendon stretches. All patients also had 3 weeks of celecoxib, insoles and watched an educational video. 20% lost to follow up. Only short term follow up at 8 weeks. Pain subscale suggested improvements in pain in plantar fascia stretching group (not statistically significant).

**Cole et al 2005**, this review covered diagnosis and intervention. The main paper of use for our question was DiGiovanni et al 2003- see above

**Implications for practice**

The research to date is of poor methodological quality and has suffered from inadequate numbers, high drop out rates and poor compliance with interventions.

Minimal evidence for stretching and night splints should be viewed with these issues in mind.

**Research questions**

**Does stretching the plantar facia or triceps surae in patients with heel pain reduce pain, improve function when compared to a control group**

**References**

Barry LD Barry AN Chen Y 2002 A Retrospective study of standing gastrocnemius – soleus stretching versus night splinting in the treatment of plantar fasciitis Journal of Ankle and Foot Surgery 4 221-227

Crawford F and Thomson C Interventions for treating heel pain. Cochrane Database of Systematic reviews 2003 Issue 3

Cole C Seto C Gazewood J 2005 Evidence Based review of Diagnosis and Therapy American Family Physician 72 11 2237-2242

DiGiovanni BF Nawoczenski DA Lintal ME Moore EA Murray JC Wilding GE 2003 Tissue specific plantar fascia stretching exercises enhances outcomes in patients with chronic heel pain. A prospective randomised study Journal Bone and Joint Surgery 85A 1270-7

Porter D Barrill E Oneacre K May BD 1998 The effects of duration and frequency of Achilles tendon stretching on dorsiflexion and outcome I painful heel syndrome: a randomised blinded control study Foot Ankle Int 23 (7) 619-624