

Collected Scientific Research Relating to the Use of Osteopathy with Foot and ankle conditions

Important:

1) Osteopathy involves helping people's own self-healing abilities to work better, rather than focussing primarily on particular conditions.

2) Each person is different, and osteopathy treats them differently.

Therefore people respond to osteopathic treatment in different ways. Treatments that work for one person cannot be guaranteed to work for another person in the same way. The fact that there is scientific research supporting a treatment in a group of people does not mean that it will always work in the same way (which is probably true of all research).

A number of things make research into osteopathy challenging. These include the two aspects of osteopathy mentioned above, and also the lack of major commercial interests to provide funding in expectation of financial returns. At the same time, there is an emerging body of research demonstrating the usefulness of osteopathic treatment.

More research is being done all of the time. I am not aware of any research which shows that osteopathic treatment, delivered by a qualified osteopath, is ineffective in relation to this area. If you are aware of any studies that show that, please bring them to my attention.

Please note: there is room for debate about the classifications used for these studies. Please let John Smartt know if you believe that any of these classifications are incorrect.

These studies are from peer-reviewed journals

Number
of studies:
10

Clinically and statistically significant results

Number
of studies:
9

Systematic reviews

Number of studies: 1

Vairo GL, Miller SJ, McBrier NM, Buckley WE. 2009 **Systematic review of efficacy for manual lymphatic drainage techniques in sports medicine and rehabilitation: an evidence-based practice approach.** *J Man Manip Ther* 17(3):e80-9. <http://www.ncbi.nlm.nih.gov/pubmed/20046617>

"When combined with concomitant musculoskeletal therapy, pilot and case studies demonstrate MLDT [manual lymphatic drainage technique]'s effectiveness. The best evidence suggests that efficacy of MLDT in sports medicine and rehabilitation is specific to resolution of enzyme serum levels associated with acute skeletal muscle cell damage as well as reduction of edema following acute ankle joint sprain and radial wrist fracture. "

Ajimsha MS, Binsu D, Chithra S 2014 **Effectiveness of myofascial release in the management of plantar heel pain: a randomized controlled trial.** *Foot (Edinb)* Jun;24(2):66-71 <http://www.ncbi.nlm.nih.gov/pubmed/24703512>

"Previous studies have reported that stretching of the calf musculature and the plantar fascia are effective management strategies for plantar heel pain (PHP). However, it is unclear whether myofascial release (MFR) can improve the outcomes in this population.

OBJECTIVE:

To investigate whether myofascial release (MFR) reduces the pain and functional disability associated with plantar heel pain (PHP) in comparison with a control group receiving sham ultrasound therapy (SUST).

DESIGN:

Randomized, controlled, double blinded trial.

SETTING:

Nonprofit research foundation clinic in India.

METHOD:

Sixty-six patients, 17 men and 49 women with a clinical diagnosis of PHP were randomly assigned into MFR or a control group and given 12 sessions of treatment per client over 4 weeks. The Foot Function Index (FFI) scale was used to assess pain severity and functional disability. The primary outcome measure was the difference in FFI scale scores between week 1 (pretest score), week 4 (posttest score), and follow-up at week 12 after randomization. Additionally, pressure pain thresholds (PPT) were assessed over the affected gastrocnemii and soleus muscles, and over the calcaneus, by an assessor blinded to the treatment allocation.

RESULTS:

The simple main effects analysis showed that the MFR group performed better than the control group in weeks 4 and 12 ($P < 0.001$). Patients in the MFR and control groups reported a 72.4% and 7.4% reduction, respectively, in their pain and functional disability in week 4 compared with that in week 1, which persisted as 60.6% in the follow-up at week 12 in the MFR group compared to the baseline. The mixed ANOVA also revealed significant group-by-time interactions for changes in PPT over the gastrocnemii and soleus muscles, and the calcaneus ($P < 0.05$).

CONCLUSIONS:

This study provides evidence that MFR is more effective than a control intervention for PHP"

Saban B, Deutscher D, Ziv T 2014 **Deep massage to posterior calf muscles in combination with neural mobilization exercises as a treatment for heel pain: a pilot randomized clinical trial.** *Manual Therapy* Apr;19(2):102-8 <http://www.ncbi.nlm.nih.gov/pubmed/24090993>

"Plantar heel pain syndrome (PHPS) is a common foot disorder; however, there is limited clinical evidence on which to base treatment. Repeated clinical observations indicating heel pain during heel rise and mini squat on the affected leg, involving activation of posterior calf muscles, formed the basis of this study.

OBJECTIVE:

To compare deep massage therapy to posterior calf muscles and neural mobilization with a self-stretch exercise program (DMS) to a common treatment protocol of ultrasound therapy to the painful heel area with the same self-stretch exercises (USS).

METHODS:

Patients with PHPS were assigned to a program of 8 treatments over a period of 4-6 weeks in a single-blind randomized clinical trial. Functional status (FS) at admission and discharge from therapy as measured by the Foot & Ankle Computerized Adaptive Test was the main outcome measure.

RESULTS:

Sixty-nine patients were included in the trial (mean age 53, standard deviation (SD) 13, range 25-86, 57% women), 36 received DMS treatment and 33 with USS. The overall group-by-time interaction for the mixed-model analysis of variance (ANOVA) was found statistically significant

($p=0.034$), with a change of (mean (confidence interval, CI)) 15 (9-21) and 6 (1-11) FS points for the DMS and USS groups, respectively.

CONCLUSIONS:

Data indicated that both treatment protocols resulted in an overall short-term improvement, however, DMS treatment was significantly more effective in treating PHPS than USS treatment."

Wynne MM, Burns JM, Eland DC, Conatser RR, Howell JN 2006 **Effect of counterstrain on stretch reflexes, hoffmann reflexes, and clinical outcomes in subjects with plantar fasciitis.** J Am Osteopath Assoc Sep;106(9):547-56 <http://www.ncbi.nlm.nih.gov/pubmed/17079524>

"In a single-blind, randomized controlled trial of crossover design, the effects of counterstrain were compared with those of placebo in adult subjects (N=20) with plantar fasciitis. The subjects were led to believe that both the counterstrain and placebo were therapeutic modalities whose effects were being compared. Ten subjects (50%) were assigned to receive 3 weeks of counterstrain treatment during phase 1 of the trial, while the other 10 subjects were given placebo capsules. After a 2- to 4-week washout period, phase 2 of the trial began with the interventions reversed. "

"No significant changes in the electrically recorded reflexes of the calf muscles were observed in response to treatment. However, changes in the mechanical characteristics of the twitches resulting from the electrical responses were observed. Peak force and time to reach peak force both increased ($P < \text{or} = .05$) in the posttreatment measurements, with the increase being significantly more pronounced in the counterstrain phase ($P < .05$). A comparison of pretreatment and posttreatment symptom severity demonstrated significant relief of symptoms that was most pronounced immediately following treatment and lasted for 48 hours."

"Clinical improvement occurs in subjects with plantar fasciitis in response to counterstrain treatment. The clinical response is accompanied by mechanical, but not electrical, changes in the reflex responses of the calf muscles."

Eisenhart AW, Gaeta TJ, Yens DP. 2003 **Osteopathic manipulative treatment in the emergency department for patients with acute ankle injuries.** J Am Osteopath Assoc Sep;103(9):417-21 <http://www.ncbi.nlm.nih.gov/pubmed/14527076>

"The purpose of this study was to evaluate the efficacy of osteopathic manipulative treatment (OMT) as administered in the emergency department (ED) for the treatment of patients with acute ankle injuries."

"Patients aged 18 years and older with unilateral ankle sprains were randomly assigned either to an OMT study group or a control group. Independent outcome variables included edema, range of motion (ROM), and pain. Both groups received the current standard of care for ankle sprains and were instructed to return for a follow-up examination. Patients in the OMT study group also received one session of OMT from an osteopathic physician."

"Patients in the OMT study group had a statistically significant ($F = 5.92$, $P = .02$) improvement in edema and pain and a trend toward increased ROM immediately following intervention with OMT. Although at follow-up both study groups demonstrated significant improvement, patients in the OMT study group had a statistically significant improvement in ROM when compared with patients in the control group."

"Data clearly demonstrate that a single session of OMT in the ED can have a significant effect in the management of acute ankle injuries."

Yeo HK, Wright A 2011 **Hypoalgesic effect of a passive accessory mobilisation technique in patients with lateral ankle pain.** Manual Therapy Aug;16(4):373-7 <https://www.ncbi.nlm.nih.gov/pubmed/21285003>

"A randomised, double blind, repeated measures study was conducted to investigate the initial effects of an accessory mobilisation technique applied to the ankle joint in 13 patients with a unilateral sub-acute ankle supination injury. Ankle dorsiflexion range of motion, pressure pain threshold, visual analogue scale rating of pain during functional activity and ankle functional scores were assessed before and after application of treatment, manual contact control and no contact control conditions. There were significant improvements in ankle dorsiflexion range of

motion ($p = 0.000$) and pressure pain threshold ($p = 0.000$) during the treatment condition. However no significant effects were observed for the other measures. These findings demonstrate that mobilisation of the ankle joint can produce an initial hypoalgesic effect and an improvement in ankle dorsiflexion range of motion."

Case controlled studies

Number of studies: 1

Howell JN, Cabell KS, Chila AG, Eland DC 2006 **Stretch reflex and Hoffmann reflex responses to osteopathic manipulative treatment in subjects with Achilles tendinitis.** *J Am Osteopath Assoc* Sep;106(9):537-45 <http://www.ncbi.nlm.nih.gov/pubmed/17079523>

"The use of OMT [osteopathic manipulative therapy] produced a 23.1% decrease in the amplitude of the stretch reflex of the soleus ($P < .05$) in subjects with Achilles tendinitis. Similarly significant responses were measured in the lateral and medial heads of the gastrocnemius in OMT subjects. The H-reflex was not significantly affected by OMT. In control subjects, neither reflex was significantly affected by sham manipulative treatment. By using a rating scale on questionnaires before treatment and daily for 7 days posttreatment, OMT subjects indicated significant clinical improvement in soreness, stiffness, and swelling."

Other controlled clinical trials

Number of studies: 1

Kessler T, de Bruin E, Brunner F, Vienne P, Kissling R. 2003 **Effect of manual lymph drainage after hindfoot operations.** *Physiother Res Int* 8(2):101-10 <http://klosetraining.com/wp-content/uploads/2013/10/Effect-of-MLD-after-Hindfoot-Operations-Physiotherapy-Research-InternationalKessler-et-al-2003.pdf>

"BACKGROUND AND PURPOSE: Manual lymph drainage therapy is often prescribed following hindfoot operations. However, the relative efficacy of this treatment component has not yet been determined.

METHOD: A two-group pre-test-post-test study design was used in this preliminary randomized clinical trial of 23 subjects who underwent hindfoot surgery. Patients were randomly assigned into two groups: an intervention group of 11 patients who received standard physiotherapy plus manual lymph drainage; and a control group of 12 patients who received standard physiotherapy but no lymph drainage. The main outcome measure was the percentage reduction in excess limb volume, measured by the water displacement method at the second post-operative day (t_1) and at the day of discharge (t_2).

RESULTS: Compared to the control group, a significant reduction in post-operative swelling was measured in the intervention group only ($p = 0.011$).

CONCLUSIONS: Application of lymph drainage techniques after hindfoot operations, in combination with standard physiotherapy exercises, achieves greater limb volume reduction than exercise alone. The present study offers an insight into a treatment that may shorten rehabilitation and thereby control the cost of caring for post-operative treatment complicated by post-operative swelling."

Case reports

Number of studies: 1

Batt J, Neeki MM 2013 **Osteopathic manipulative treatment in tarsal somatic dysfunction: a case study.** J Am Osteopath Assoc Nov;113(11):857-61 <http://www.ncbi.nlm.nih.gov/pubmed/24174508>

"The authors present a case of a 24-year-old woman with left foot pain that began after an inversion injury obtained while running. The pain minimally improved with nonsteroidal anti-inflammatory medications. Clinical examination revealed a relatively normal foot with palpable changes in the bony structures at the midfoot consistent with a tarsal subluxation. Cuboid reduction was performed using high-velocity, low-amplitude manipulation, after which the patient reported immediate and near-complete pain relief. The authors also review mechanisms of injury, clinical findings, and treatment modalities for patients with tarsal subluxation."

Mixed results (significant for some outcomes, not others)

Number of studies: 1

Randomised controlled trials

Number of studies: 1

Collins CK, Masaracchio M, Cleland JA 2014 **The effectiveness of strain counterstrain in the treatment of patients with chronic ankle instability: A randomized clinical trial.** J Man Manip Ther Aug;22(3):119-28 http://www.researchgate.net/publication/264832772_The_effectiveness_of_strain_counterstrain_in_the_treatment_of_patients_with_chronic_ankle_instability_A_randomized_clinical_trial

"Study Design:Randomized clinical trial.Objective:To determine the effect of strain counterstrain (SCS) on dynamic balance and subjective sense of instability in individuals with chronic ankle instability (CAI).Although many studies have been published on CAI, the cause for this common clinical dysfunction remains inconclusive. No studies have assessed the effectiveness of SCS on CAI.Methods:At baseline all participants completed a demographic questionnaire, the star excursion balance test (SEBT), and the foot and ankle ability measure (FAAM). Following the baseline evaluation, participants were randomized into the SCS experimental group (EG) (n513) or the sham SCS group (SG) (n514). All participants received the assigned treatment once a week for 4 weeks and participated in a prescribed exercise program. At week 4, all participants repeated the outcome measures and completed a global rating of change (GROC) form. The primary aim was examined with a two-way analysis of variance (ANOVA).Results:A significant group-by-time interaction was found for seven directions in the SEBT (P,0.031). For subjective measures, no significant group-by-time interaction was found for the FAAM (P.0.548), but the GROC revealed a significant difference (P50.014) in the mean score for the EG (3.92;1.66) when compared to the SG (2.43;1.66).Discussion:Although SCS may not have an effect on subjective ankle function in individuals with CAI, preliminary evidence suggests that SCS may lead to an improvement in dynamic ankle stability and the subjective sense of ankle instability"