

Collected Scientific Research Relating to the Use of Osteopathy with Infection

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: 2

Nelson EA, Mani R, Thomas K, Vowden K 2014 **Intermittent pneumatic compression for treating venous leg ulcers (Cochrane review)** Cochrane Database of Systematic Reviews May 12 http://www.cochrane.org/CD001899/WOUNDS_intermittent-pneumatic-compression-for-treating-venous-leg-ulcers.

BACKGROUND: Intermittent pneumatic compression (IPC) is a mechanical method of delivering compression to swollen limbs that can be used to treat venous leg ulcers and limb swelling due to lymphoedema. **OBJECTIVES:** To determine whether IPC increases the healing of venous leg ulcers. To determine the effects of IPC on health related quality of life of venous leg ulcer patients. **SEARCH STRATEGY:** For this update we searched the Cochrane Wounds Group Specialised Register (searched 10 December 2010); the Cochrane Central Register of Controlled Trials (CENTRAL) (The Cochrane Library 2010, Issue 4); Ovid MEDLINE (2007 to November Week 3 2010); Ovid MEDLINE (In-Process and Other Non-Indexed Citations December 09, 2010); Ovid EMBASE (2007 to 2010 Week 48); and EBSCO CINAHL (2007 to 3 December 2010). **SELECTION CRITERIA:** We included randomised controlled trials (RCTs) that compared the effects of IPC with control (sham IPC or no IPC) or made comparisons between IPC treatment regimens, in venous ulcer management. **DATA COLLECTION AND ANALYSIS:** Both review authors reviewed titles and abstracts and agreed on full studies to be retrieved. One review author extracted data and assessed studies for risk of bias and this was checked by a second review author. **MAIN RESULTS:** We identified seven randomised controlled trials (including 367 people in total). Only one trial was at low risk of bias having reported adequate randomisation, allocation concealment and blinded outcome assessment. In one trial (80 people) more ulcers healed with IPC than with dressings (62% versus 28%; $p=0.002$). Four trials compared IPC plus compression with compression alone. The first of these trials (45 people) found increased ulcer healing with IPC plus compression than with compression alone (risk ratio for healing 11.4, 95% Confidence Interval 1.6 to 82). The remaining three trials (122 people) found no evidence of a benefit for IPC plus compression compared with compression alone. One small trial (16 people) found no difference between IPC (without additional compression) and compression bandages alone. One trial (104 people) compared different ways of delivering IPC and found that rapid IPC healed more ulcers than slow IPC (86% versus 61%). **AUTHORS' CONCLUSIONS:** IPC may increase healing compared with no compression, but it is not clear whether it increases healing when added to treatment with bandages, or if it can be used instead of compression bandages. Rapid IPC was better than slow IPC in one trial. Further trials are required to determine whether IPC increases the healing of venous leg ulcers when used in modern practice where compression therapy is widely used.

Pepino VC, Ribeiro JD, Ribeiro MA, de Noronha M, Mezzacappa MA, Schivinski CI. 2013 **Manual therapy for childhood respiratory disease: a systematic review.** Journal of Manipulative and Physiological Therapeutics Jan;36(1):57-65 <http://www.ncbi.nlm.nih.gov/pubmed/23380215>

"Of the 8 studies included in the present review, 5 consisted of asthmatic children and the others of children with the following conditions: cystic fibrosis, bronchiolitis, recurrent respiratory infections, among others. Only 2 studies did not identify positive results with the use of manual therapy. The other 6 studies found some benefit, specifically in spirometric parameters, immunologic tests, anxiety questionnaire, or level of salivary cortisol."

"The use of manual techniques on children with respiratory diseases seems to be beneficial. Chiropractic, osteopathic medicine, and massage are the most common interventions. The lack of standardized procedures and limited variety of methods used evidenced the need for more studies on the subject."

Other reviews

Number of studies: 1

Noll DR 2016 **The Potential of Osteopathic Manipulative Treatment in Antimicrobial Stewardship: A Narrative Review.** J Am Osteopath Assoc Sep 1;116(9):600-8 <http://jaoa.org/article.aspx?articleid=2546796>

"The contemporary management of infectious diseases is built around antimicrobial therapy. However, the development of antimicrobial resistance threatens to create a post-antibiotic era. Antimicrobial stewardship attempts to reduce the development of antimicrobial resistance by improving their appropriate use. Osteopathic manipulative treatment as an adjunctive treatment has the potential for enhancing antimicrobial stewardship by enhancing the human immune system, shortening the duration of antimicrobial therapy, reducing complications, and improving treatment outcomes. The present article reviews the evidence published in the literature since this unique treatment approach was first developed more than 100 years ago. The evidence suggests that adjunctive osteopathic manipulative treatment has great potential for enhancing antimicrobial stewardship and should be further investigated."

Randomised controlled trials

Number of studies: 3

Joseph LH, Paungmali A, Dixon J, Holey L, Naicker AS, Htwe O 2016 **Therapeutic effects of connective tissue manipulation on wound healing and bacterial colonization count among patients with diabetic foot ulcer.** Journal of Bodywork and Movement Therapies Jul;20(3):650-6 [http://www.bodyworkmovementtherapies.com/article/S1360-8592\(16\)00011-5/abstract](http://www.bodyworkmovementtherapies.com/article/S1360-8592(16)00011-5/abstract)

"This study investigated the therapeutic effects of connective tissue manipulation (CTM) in diabetic foot ulcer (DFU). A total of 20 participants (10 in CTM group and 10 in conventional treatment group (CG)) with DFU underwent the conventional DFU treatment. In addition, the CTM group received CTM twice per week for 6 weeks. The percentage wound area reduction (PWAR) and bacterial colonization count (BCC) in log₁₀ colony-forming units (CFU) per ml wound fluid was evaluated at baseline and six weeks. Results showed a significant change in PWAR in CTM ($p < 0.05$, $t = 3.82$, $Df = 9$, $CI L = 0.98$ $U = 3.81$) and CG ($p < 0.05$, $t = 2.97$, $Df = 9$, $CI L = 0.26$ $U = 1.98$). Mean reduction of BCC showed a significant reduction ($p < 0.05$), with percentage of BCC reduction higher in CTM group (6.45%) than CG (3.55%). The findings suggest CTM as an effective adjunct therapy for DFU to enhance conventional treatments."

Noll DR, Degenhardt BF, Morley TF, Blais FX, Hortos KA, Hensel K, Johnson JC, Pasta DJ, Stoll ST. 2010 **Efficacy of osteopathic manipulation as an adjunctive treatment for hospitalized patients with pneumonia: a randomized controlled trial.** Osteopathic medicine and primary care Mar 19;4:2 <http://www.ncbi.nlm.nih.gov/pubmed/20302619>

"The Multicenter Osteopathic Pneumonia Study in the Elderly (MOPSE) is a registered, double-blinded, randomized, controlled trial designed to assess the efficacy of osteopathic manipulative treatment (OMT) as an adjunctive treatment in elderly patients with pneumonia."

"406 subjects aged \geq 50 years hospitalized with pneumonia at 7 community hospitals were randomized using concealed allocation to conventional care only (CCO), light-touch treatment (LT), or OMT groups. All subjects received conventional treatment for pneumonia. OMT and LT groups received group-specific protocols for 15 minutes, twice daily until discharge, cessation of antibiotics, respiratory failure, death, or withdrawal from the study. The primary outcomes were hospital length of stay (LOS), time to clinical stability, and a symptomatic and functional recovery score."

"Analysis found significant reductions in LOS [length of stay], duration of intravenous antibiotics, and respiratory failure or death when OMT was compared to CCO [conventional care only]. "

Measel JW 1982 The effect of the lymphatic pump on the immune response: 1. Preliminary studies on the antibody responses to pneumococcal polysaccharide assayed by bacterial agglutination and passive hemagglutination J Am Osteopath Assoc 82:28-31

"The effect of the lymphatic pump on the immune response of normal male medical students by two serologic tests to pneumococcal polysaccharide was investigated. Analysis of serum from experimental and control groups indicated that the lymphatic pump (experimental) group had a greater immune response, which was statistically different from that of the control on the basis of testing for polysaccharides by passive hemagglutination. The same increased immune response was seen on tests of bacterial strains 4, 6, and 8 assayed by bacterial agglutination. This study suggests that the lymphatic pump has some effect on the immune system."

Non-human studies

Number of studies: 3

Hodge LM, Creasy C, Carter K, Orlowski A, Schander A, King HH, 2015 Lymphatic Pump Treatment as an Adjunct to Antibiotics for Pneumonia in a Rat Model J Am Osteopath Assoc May Vol. 115, 306-316 <http://jaoa.org/article.aspx?articleID=2291219>

"Rats were infected intranasally with 5×10^7 colony-forming units (CFU) of *Streptococcus pneumoniae*. At 24, 48, and 72 hours after infection, the rats received no therapy (control), 4 minutes of sham therapy, or 4 minutes of LPT, followed by subcutaneous injection of 40 mg/kg of levofloxacin or sterile phosphate-buffered saline. At 48, 72, and 96 hours after infection, the spleens and lungs were collected, and *S pneumoniae* CFU were enumerated. Blood was analyzed for a complete blood cell count and leukocyte differential count."

"The combination of sham therapy and levofloxacin decreased bacterial load at 72 and 96 hours after infection, and LPT and levofloxacin significantly reduced CFU compared with sham therapy and levofloxacin at both time points ($P < .05$)."

"The results suggest that 3 applications of LPT induces an additional protective mechanism when combined with levofloxacin and support its use as an adjunctive therapy for the management of pneumonia; however, the mechanism responsible for this protection is unclear."

Creasy C, Schander A, Orlowski A, Hodge LM. 2013 Thoracic and abdominal lymphatic pump techniques inhibit the growth of *S. pneumoniae* bacteria in the lungs of rats. Lymphat Res Biol Sep;11(3):183-6 <http://www.ncbi.nlm.nih.gov/pubmed/24024572>

"Our data demonstrate that LPT [lymphatic pump technique] may protect against pneumonia by inhibiting bacterial growth in the lung; however, the mechanism of protection is unclear. Once these mechanisms are understood, LPT can be optimally applied to patients with pneumonia, which may substantially reduce morbidity, mortality, and frequency of hospitalization."

Schander A, Downey HF, Hodge LM. 2012 Lymphatic pump manipulation mobilizes inflammatory mediators into lymphatic circulation. Exp Biol Med (Maywood) Jan;237(1):58-63 <http://www.ncbi.nlm.nih.gov/pubmed/22169162>

This re-distribution of inflammatory mediators during LPT [lymphatic pump technique] may

Mixed results (significant for some outcomes, not others)

Number
of studies:
1

Other reviews

Number of studies: 1

Noll DR, Johnson JC, Brooks JE. 2008 **Revisiting Castlio and Ferris-Swift's experiments on direct splenic stimulation in patients with acute infectious disease.** J Am Osteopath Assoc Feb;108(2):71-9 <http://www.ncbi.nlm.nih.gov/pubmed/18303061>

"In 1934, Yale Castlio, DO, and Louise Ferris-Swift, DO, published the results of a within-subjects experiment on direct splenic stimulation in patients with acute infectious disease (N=100). Their results, which used rudimentary statistical analyses, are still cited as evidence that osteopathic manipulative treatment augments immunity."

"Contemporary statistical analysis confirms a modest posttreatment increase in leukocytes, a decrease in erythrocytes, a decrease in the Arneth index, and an increase in reticulocytes after the application of direct splenic stimulation for patients diagnosed with acute infectious disease. Contemporary reanalysis also confirms statistically significant posttreatment changes in the immune function tests. Findings were less conclusive for the leukocyte differential cell counts and for the effect of varying the number of splenic compressions."

"Analysis of Castlio and Ferris-Swift's 1934 data using contemporary statistical methods supports many of their original conclusions. However, faults in study design common to that era limit the article's applicability for modern researchers. Additional research on splenic pump techniques using contemporary study designs and statistical methods is recommended."