

# Collected Scientific Research Relating to the Use of Osteopathy with Post surgical rehabilitation

## 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:  
16

## Clinically and statistically significant results

Number  
of studies:  
14

### Randomised controlled trials

Number of studies: 6

Racca V, Bordoni B, Castiglioni P, Modica M, Ferratini M 2017 **Osteopathic Manipulative Treatment Improves Heart Surgery Outcomes: A Randomized Controlled Trial**. *Ann Thorac Surg* Jan 18 <https://www.ncbi.nlm.nih.gov/pubmed/28109570>

"At the start of rehabilitation, the control group and the OMT group had similar Visual Analogue Scale median scores (controls 4, interquartile range [IQR]: 2 to 5; OMT 4, IQR: 3 to 5;  $p =$  not significant) and mean inspiratory volumes (controls  $825 \pm 381$  mL; OMT  $744 \pm 291$  mL;  $p =$  not significant). At the end of rehabilitation, the OMT group had a lower Visual Analogue Scale median score (controls 3, IQR: 2 to 4; OMT 1, IQR: 1 to 2;  $p < 0.01$ ) and higher mean inspiratory volume (controls  $1,400 \pm 588$  mL; OMT  $1,781 \pm 633$  mL;  $p < 0.01$ ). The analgesic drug intake was similar in the two groups. The hospitalization was shorter in the OMT group than in the control group ( $19.1 \pm 4.8$  versus  $21.7 \pm 6.3$  days;  $p < 0.05$ ).

**CONCLUSIONS:** The combination of standard care with OMT is effective in inducing pain relief and functional recovery, and significantly improves the management of patients after heart surgery with sternotomy."

Kim BJ, Ahn J, Cho H, Kim D, Kim T, Yoon B, 2015 **Rehabilitation with osteopathic manipulative treatment after lumbar disc surgery: A randomised, controlled pilot study** *International Journal of Osteopathic Medicine* Volume 18, Issue 3, September , Pages 181–188 <http://www.sciencedirect.com/science/article/pii/S1746068914001205>

"Randomised controlled pilot study."

"Patients who underwent lumbar microdiscectomy due to low back pain with referred leg pain resulting from a herniated disc were enrolled in the study. Thirty-three patients aged 25–65 years were randomly assigned using a random number table to the OMT ( $n = 16$ ) group or exercise group ( $n = 17$ ). Patients received the allocated intervention twice a week for 4 weeks. Each session was 30 min. Primary outcomes were post-surgical functional disability and intensity of low back and leg pain"

"Thirty-three participants were analysed. Both rehabilitation interventions improved all primary and secondary outcomes. Post-surgical physical disability improved more with OMT rehabilitation than the exercise programme (54% vs. 26%,  $P < 0.05$ ). Residual leg pain decreased with OMT (53%) and exercise (17%). Post-operative low back pain decreased by 37% in the OMT group and 10% in the exercise group. Patients in both groups required less frequent use of medication and were highly satisfied with the rehabilitation interventions. No side effects or complications from any intervention were reported."

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highly satisfied with the rehabilitation interventions. No side effects or complications from any intervention were reported."

Bertelli DF, de Oliveira P, Gimenes AS, Moreno MA. 2013 **Postural drainage and manual lymphatic drainage for lower limb edema in women with morbid obesity after bariatric surgery: a randomized controlled trial.** *Am J Phys Med Rehabil* Aug;92(8):697-703 <http://www.ncbi.nlm.nih.gov/pubmed/23370584>

"The treatment protocols promoted reductions in volume values, suggesting that both techniques could be used to help reduce lower limb edema"

"Nevertheless, the best results were obtained with MLD. [manual lymphatic drainage]"

Wieting JM, Beal C, Roth GL, Gorbis S, Dillard L, Gilliland D, Rowan J. 2013 **The effect of osteopathic manipulative treatment on postoperative medical and functional recovery of coronary artery bypass graft patients.** *J Am Osteopath Assoc* May;113(5):384-93 <http://www.ncbi.nlm.nih.gov/pubmed/23667192>

"Patients scheduled to undergo a CABG [coronary artery bypass graft] operation were voluntarily enrolled and randomly assigned to receive 1 of 3 treatment protocols after their surgical procedure: standardized daily OMT and conventional postoperative care (the OMT group), daily time-matched placebo OMT and conventional postoperative care (the placebo group), or conventional postoperative care only (the control group)."

"Specific OMT [osteopathic manipulative treatment] techniques used were thoracic inlet myofascial release, standard rib raising (with paraspinal muscle stretch to the L2 vertebral level), and soft tissue cervical paraspinal muscle stretch (with suboccipital muscle release). Primary outcome measures included time to discharge, time to postoperative bowel movement, and FIM functional assessment scores."

"Patients in the OMT group were discharged 0.55 days earlier than those in the control group and 0.16 days earlier than those in the placebo group. The mean (SD) number of days to first postoperative bowel movement was 3.5 (0.9), 4.0 (0.8), and 4.0 (0.9) for the OMT group, the placebo group, and the control group, respectively. On day 3 after surgery, the mean (SD) total score on the FIM was 19.3 (6.7), 15.4 (7.3), and 18.6 (6.5) for the OMT, the placebo, and the control group, respectively; total score for the OMT group was 0.81 greater than that of the control group and 3.87 greater than that of the placebo group. None of the differences achieved statistical significance ( $P < .05$ )"

"A daily postoperative OMT protocol improved functional recovery of patients who underwent a CABG operation."

Ebert JR, Joss B, Jardine B, Wood DJ. 2013 **Randomized trial investigating the efficacy of manual lymphatic drainage to improve early outcome after total knee arthroplasty.** *Arch Phys Med Rehabil* Nov;94(11):2103-11 <http://www.ncbi.nlm.nih.gov/pubmed/23810354>

"To investigate the efficacy of manual lymphatic drainage (MLD) in the early postoperative period after total knee arthroplasty (TKA) to reduce edema and pain and improve knee range of motion."

"Prospective randomized controlled trial."

"A significant group effect was observed for active knee flexion, with post hoc tests demonstrating a significantly greater active knee flexion in the MLD group when compared with the control (no MLD) group at the final measure prior to hospital discharge (day 4 postsurgery) and at 6 weeks postsurgery. There were no further group effects observed for the remaining patient-reported and functional outcomes."

"MLD in the early postoperative stages after TKA appears to improve active knee flexion up to 6 weeks postsurgery, in addition to conventional care."

Goldstein FJ, Jeck S, Nicholas AS, Berman MJ, Lerario M. 2005 **Preoperative intravenous morphine sulfate with postoperative osteopathic manipulative treatment reduces patient**

**analgesic use after total abdominal hysterectomy.** J Am Osteopath Assoc Jun;105(6):273-9  
<http://www.ncbi.nlm.nih.gov/pubmed/16118354>

"Administration of postoperative OMT enhanced pre- and postoperative morphine analgesia in the immediate 48-hour period following elective TAH, demonstrating that OMT can be a therapeutic adjunct in pain management following this procedure."

## Case controlled studies

Number of studies: 2

Crow WT, Gorodinsky L, 2009 **Does osteopathic manipulative treatment (OMT) improve outcomes in patients who develop postoperative ileus: A retrospective chart review** International Journal of Osteopathic Medicine Vol 12 (1) pages 32-37 <http://www.sciencedirect.com/science/article/pii/S1746068908000308>

"The OMT [osteopathic manipulative therapy] patients had a significantly shorter length of stay than the no treatment group (adjusted mean = 14.6 days for the non-treatment group versus 11.8 days for the treatment group) even after controlling for age differences"

Jarski RW, Loniewski EG, Williams J, Bahu A, Shafinia S, Gibbs K, Muller M 2000 **The effectiveness of osteopathic manipulative treatment as complementary therapy following surgery: a prospective, match-controlled outcome study.** Altern Ther Health Med Sep;6(5):77-81 <http://www.ncbi.nlm.nih.gov/pubmed/10979164>

"To assess osteopathic manipulative treatment as a complementary therapy for patients undergoing elective knee or hip arthroplasty."

"Of 166 eligible patients, 38 were assigned to a treatment group and matched with 38 control subjects."

"Compared to control subjects, the intervention group negotiated stairs 20% earlier (mean = 4.3 postoperative days, SD = 1.2; control subjects 5.4, SD = 1.6, P = .006) and ambulated 43% farther on the third postoperative day (mean = 24.3 m, SD = 18.3; controls = 13.9, SD = 14.4, P = .008). The intervention group also required less analgesia, had shorter hospital stays, and ambulated farther on postoperative days 1, 2, and 4."

"Patients receiving osteopathic manipulative treatment in the early postoperative period negotiated stairs earlier and ambulated greater distances than did control group patients."

## 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 (t1) and at the day of discharge (t2).

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."

## Cohort studies

Number of studies: 1

Baltazar GA, Betler MP, Akella K, Khatri R, Asaro R, Chendrasekhar A. 2013 **Effect of osteopathic manipulative treatment on incidence of postoperative ileus and hospital length of stay in general surgical patients**. *J Am Osteopath Assoc* Mar;113(3):204-9 <http://www.ncbi.nlm.nih.gov/pubmed/23485980>

"Of the 55 patients who met the study criteria, 17 had received postoperative OMT and 38 had not. The mean age was 60.3 years in the OMT group and 62.1 years in the non-OMT group ( $P=.70$ ). The 2 groups were similar in terms of American Society of Anesthesiologists class, number of comorbid conditions and of postoperative complications, presence of electrolyte abnormalities, and narcotic use. The time to bowel movement and to clear liquid diet did not differ significantly between the groups. The mean (standard deviation [SD]) time to flatus was 4.7 (0.4) days in the non-OMT group and 3.1 (0.6) days in the OMT group ( $P=.035$ ). The mean (SD) postoperative hospital LOS was also reduced significantly with OMT, from 11.5 (1.0) days in the non-OMT group to 6.1 (1.7) days in the OMT group ( $P=.006$ )."

"Osteopathic manipulative treatment applied after a major gastrointestinal operation is associated with decreased time to flatus and decreased postoperative hospital LOS [length of stay]"

Petree K, Bruner J 2015 **Postoperative singultus: an osteopathic approach.** *J Am Osteopath Assoc* Mar;115(3):166-8 <http://www.ncbi.nlm.nih.gov/pubmed/25722363>

"Singultus, or hiccups, is a common medical condition. Despite exponential leaps in medicine, the pathophysiologic cause remains poorly defined. Persistent singultus has been associated with conditions such as pulmonary embolism and myocardial infarction. Singultus is also a well-known postoperative complication. The criterion standard of care for patients with singultus involves ruling out lethal pathologic causes, attempting physical stimulation with Valsava maneuvers or drinking water, and, if no relief has been achieved, administering drugs to ease the symptoms. The authors report a case of a man whose postoperative singultus was successfully managed with osteopathic manipulative treatment. This approach addresses many of the possible underlying neuromechanical causes of the aberrant reflex with minimal potential for adverse effects. Physicians should consider osteopathic manipulative treatment in the care of patients with singultus."

LeBeau RT, Nho SJ 2014 **The use of manual therapy post-hip arthroscopy when an exercise-based therapy approach has failed: a case report.** *J Orthop Sports Phys Ther* Sep;44(9):712-21 <http://www.ncbi.nlm.nih.gov/pubmed/25098193>

"BACKGROUND: Although there is a growing body of literature on both surgical intervention and postsurgical rehabilitation of acetabular labral repairs and femoroacetabular impingement, there is a paucity of information on how to manage individuals who show a lack of progress postsurgery.

CASE DESCRIPTION: A 30-year-old woman underwent surgical labral repair with femoroacetabular impingement osteochondroplasty. Postsurgery, she was initially treated with an exercise-based approach, but experienced an increase in hip pain and further decline in function. Her primary functional deficits were difficulty standing and pain (6/10) with ambulation. A combination of soft tissue mobilization and trigger point dry needling was used to address perceived muscle dysfunction, and nonthrust manipulation was used to address perceived hip joint hypomobility.

OUTCOMES: Following 12 therapy sessions over 120 days, the patient returned to her demanding occupation with minimal residual symptoms. By the end of the period of care, the patient's Harris hip score had improved from 56 to 96 and her Lower Extremity Functional Scale score had improved from 26 to 70.DISCUSSION: This case describes a multimodal manual therapy approach and the health outcomes of a patient following labral repair with femoroacetabular impingement decompression who did not respond to an initial exercise-based postsurgical rehabilitation approach. Level of Evidence Therapy, level 4."

Wilson CM, Ronan SL 2010 **Rehabilitation postfacial reanimation surgery after removal of acoustic neuroma: a case study.** *J Neurol Phys Ther* Mar;34(1):41-9 <http://www.ncbi.nlm.nih.gov/pubmed/20212367>

"The patient had chronic difficulty with left-sided lymphedema, requiring frequent manual lymphatic drainage."

"Data from this case study suggest that physical therapy management improves functional outcomes for individuals with postoperative changes in facial motor function from facial reanimation surgery."

## Non-human studies

Number of studies: 1

Bove GM, Chapelle SL 2012 **Visceral mobilization can lyse and prevent peritoneal adhesions in a rat model** Journal of Bodywork and Movement Therapies Volume 16, Issue 1, January , Pages 76–82 [http://ac.els-cdn.com/S1360859211000544/1-s2.0-S1360859211000544-main.pdf?\\_tid=697e68d6-8ca1-11e5-af9c-00000aab0f6c&acdnat=1447706239\\_b9f9c6a4236a339993e23823505d9e20](http://ac.els-cdn.com/S1360859211000544/1-s2.0-S1360859211000544-main.pdf?_tid=697e68d6-8ca1-11e5-af9c-00000aab0f6c&acdnat=1447706239_b9f9c6a4236a339993e23823505d9e20)

"Cecal and abdominal wall abrasion was used to induce adhesions in 3 groups of 10 rats (Control, Lysis, and Preventive). All rats were evaluated 7 days following surgery. On postoperative day 7, unsedated rats in the Lysis group were treated using visceral mobilization, consisting of digital palpation, efforts to manually lyse restrictions, and mobilization of their abdominal walls and viscera. This was followed by immediate post-mortem adhesion evaluation. The rats in the Preventive group were treated daily in a similar fashion, starting the day after surgery. Adhesions in the Control rats were evaluated 7 days after surgery without any visceral mobilization."

"The therapist could palpate adhesions between the cecum and other viscera or the abdominal wall. Adhesion severity and number of adhesions were significantly lower in the Preventive group compared to other groups. In the Lysis and Preventive groups there were clear signs of disrupted adhesions."

## Mixed results (significant for some outcomes, not others)

Number of studies: 1

## Randomised controlled trials

Number of studies: 1

Pichonnaz C, Bassin JP, Lécureux E, Christe G, Currat D, Aminian K, Jolles BM. 2016 **Effect of Manual Lymphatic Drainage After Total Knee Arthroplasty: A Randomized Controlled Trial.** Arch Phys Med Rehabil May;97(5):674-82 <https://www.ncbi.nlm.nih.gov/pubmed/26829760>

"To evaluate the effects of manual lymphatic drainage (MLD) on knee swelling and the assumed consequences of swelling after total knee arthroplasty (TKA).

DESIGN: Randomized controlled trial.

SETTING: Primary care hospital.

PARTICIPANTS: Two groups of 30 patients were randomized before TKA surgery (N=60; 65% women [39]; mean age, 70.7±8.8y; weight, 77.8±11.3kg; size, 1.64±0.08m; body mass index, 29.9±4.1kg/m<sup>2</sup>).

INTERVENTIONS: Participants received either 5 MLD treatments or a placebo, added to rehabilitation, in between the second day and the seventh day after surgery.

MAIN OUTCOME MEASURES: Swelling was measured by blinded evaluators before surgery and at second day, seventh day, and 3 months using bioimpedance spectroscopy and volume measurement. Secondary outcomes were active and passive range of motion, pain, knee function, and gait parameters.

RESULTS: At seventh day and 3 months, no outcome was significantly different between groups, except for the knee passive flexion contracture at 3 months, which was lower and less frequent in the MLD group (-2.6°; 95% confidence interval, -5.0° to -0.21°; P=.04; absolute risk reduction, 26.6%; 95% confidence interval, 0.9%-52.3%; number needed to treat, 4). The mean pain level decreased between 5.8 and 8.2mm on the visual analog scale immediately after MLD, which was significant after 4 of 5 MLD treatments.

CONCLUSIONS: MLD treatments applied immediately after TKA surgery did not reduce swelling. It reduced pain immediately after the treatment. Further studies should investigate whether the positive effect of MLD on knee extension is replicable"

# Condition worsened

Number  
of studies:  
1

## Randomised controlled trials

Number of studies: 1

Licciardone JC, Stoll ST, Cardarelli KM, Gamber RG, Swift JN Jr, Winn WB 2004 **A randomized controlled trial of osteopathic manipulative treatment following knee or hip arthroplasty.** *J Am Osteopath Assoc* May;104(5):193-202 <https://www.ncbi.nlm.nih.gov/pubmed/15176518>

**Note: this study excluded the use of lymphatic techniques in the study protocol.**

### "CONTEXT:

Preliminary study results suggest that osteopathic manipulative treatment (OMT) may reduce pain, improve ambulation, and increase rehabilitation efficiency in patients undergoing knee or hip arthroplasty.

### OBJECTIVE:

To determine the efficacy of OMT in patients who recently underwent surgery for knee or hip osteoarthritis or for a hip fracture.

### DESIGN:

Randomized controlled trial involving hospital and postdischarge phases.

### SETTING:

Hospital-based acute rehabilitation unit.

### PATIENTS:

A total of 42 women and 18 men who were hospitalized between October 1998 and August 1999.

### INTERVENTION:

Patients were randomly assigned to groups that received either OMT or sham treatment in addition to standard care. Manipulation was individualized and performed according to study guidelines regarding frequency, duration, and technique.

### MAIN OUTCOME MEASURES:

Changes in Functional Independence Measure (FIM) scores and in daily analgesic use during the rehabilitation unit stay; length of stay; rehabilitation efficiency--defined as the FIM total score change per rehabilitation unit day; and changes in Medical Outcomes Study Short Form-36 scores from rehabilitation unit admission to 4 weeks after discharge.

### RESULTS:

Of 19 primary outcome measures, the only significant difference between groups was decreased rehabilitation efficiency with OMT (2.0 vs 2.6 FIM total score points per day;  $P = .01$ ). Stratified analyses demonstrated that poorer OMT outcomes were confined to patients with osteoarthritis who underwent total knee arthroplasty (length of stay, 15.0 vs 8.3 days;  $P = .004$ ; rehabilitation efficiency, 2.1 vs 3.4 FIM total score points per day;  $P < .001$ ).

### CONCLUSION:

The OMT protocol used does not appear to be efficacious in this hospital rehabilitation population."