

# Collected Scientific Research Relating to the Use of Osteopathy with Carpal Tunnel Syndrome

## 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:  
9

## Clinically and statistically significant results

Number  
of studies:  
8

## Other reviews

Number of studies: 1

Schreiber AL, Sucher BM, Nazarian LN 2014 **Two novel nonsurgical treatments of carpal tunnel syndrome**. *Phys Med Rehabil Clin N Am* May;25(2):249-64 <http://www.ncbi.nlm.nih.gov/pubmed/24787331>

"Osteopathic manipulative treatment (OMT) is commonly used for many medical problems, including musculoskeletal issues. OMT of the carpal tunnel is well described and researched, and can be clinically used by a skilled practitioner. "

Wolny T, Saulicz E, Linek P, Shacklock M, Myśliwiec A 2017 **Efficacy of Manual Therapy Including Neurodynamic Techniques for the Treatment of Carpal Tunnel Syndrome: A Randomized Controlled Trial.** *Journal of Manipulative and Physiological Therapeutics* May;40(4):263-272 <https://www.ncbi.nlm.nih.gov/pubmed/28395984>

**"OBJECTIVE:**

The purpose of this randomized trial was to compare the efficacy of manual therapy, including the use of neurodynamic techniques, with electrophysical modalities on patients with mild and moderate carpal tunnel syndrome (CTS).

**METHODS:**

The study included 140 CTS patients who were randomly assigned to the manual therapy (MT) group, which included the use of neurodynamic techniques, functional massage, and carpal bone mobilizations techniques, or to the electrophysical modalities (EM) group, which included laser and ultrasound therapy. Nerve conduction, pain severity, symptom severity, and functional status measured by the Boston Carpal Tunnel Questionnaire were assessed before and after treatment. Therapy was conducted twice weekly and both groups received 20 therapy sessions.

**RESULTS:**

A baseline assessment revealed group differences in sensory conduction of the median nerve ( $P < .01$ ) but not in motor conduction ( $P = .82$ ). Four weeks after the last treatment procedure, nerve conduction was examined again. In the MT group, median nerve sensory conduction velocity increased by 34% and motor conduction velocity by 6% (in both cases,  $P < .01$ ). There was no change in median nerve sensory and motor conduction velocities in the EM. Distal motor latency was decreased ( $P < .01$ ) in both groups. A baseline assessment revealed no group differences in pain severity, symptom severity, or functional status. Immediately after therapy, analysis of variance revealed group differences in pain severity ( $P < .01$ ), with a reduction in pain in both groups (MT: 290%,  $P < .01$ ; EM: 47%,  $P < .01$ ). There were group differences in symptom severity ( $P < .01$ ) and function ( $P < .01$ ) on the Boston Carpal Tunnel Questionnaire. Both groups had an improvement in functional status (MT: 47%,  $P < .01$ ; EM: 9%,  $P < .01$ ) and a reduction in subjective CTS symptoms (MT: 67%,  $P < .01$ ; EM: 15%,  $P < .01$ ).

**CONCLUSION:**

Both therapies had a positive effect on nerve conduction, pain reduction, functional status, and subjective symptoms in individuals with CTS. However, the results regarding pain reduction, subjective symptoms, and functional status were better in the MT group."

Fernández-de-Las-Peñas C, Cleland J, Palacios-Ceña M, Fuensalida-Novo S, Pareja JA, Alonso-Blanco C 2017 **The Effectiveness of Manual Therapy Versus Surgery on Self-reported Function, Cervical Range of Motion, and Pinch Grip Force in Carpal Tunnel Syndrome: A Randomized Clinical Trial.** *J Orthop Sports Phys Ther* Mar;47(3):151-161 <https://www.ncbi.nlm.nih.gov/pubmed/28158963>

"Study Design Randomized parallel-group trial. Background Carpal tunnel syndrome (CTS) is a common pain condition that can be managed surgically or conservatively. Objective To compare the effectiveness of manual therapy versus surgery for improving self-reported function, cervical range of motion, and pinch-tip grip force in women with CTS. Methods In this randomized clinical trial, 100 women with CTS were randomly allocated to either a manual therapy ( $n = 50$ ) or a surgery ( $n = 50$ ) group. The primary outcome was self-rated hand function, assessed with the Boston Carpal Tunnel Questionnaire. Secondary outcomes included active cervical range of motion, pinch-tip grip force, and the symptom severity subscale of the Boston Carpal Tunnel Questionnaire. Patients were assessed at baseline and 1, 3, 6, and 12 months after the last treatment by an assessor unaware of group assignment. Analysis was by intention to treat, with mixed analyses of covariance adjusted for baseline scores. Results At 12 months, 94 women completed the follow-up. Analyses showed statistically significant differences in favor of manual therapy at 1 month for self-reported function (mean change, -0.8; 95% confidence interval [CI]: -1.1, -0.5) and pinch-tip grip force on the symptomatic side (thumb-index finger: mean change,

2.0; 95% CI: 1.1, 2.9 and thumb-little finger: mean change, 1.0; 95% CI: 0.5, 1.5). Improvements in self-reported function and pinch grip force were similar between the groups at 3, 6, and 12 months. Both groups reported improvements in symptom severity that were not significantly different at all follow-up periods."

Burke J, Buchberger DJ, Carey-Loghmani MT, Dougherty PE, Greco DS, Dishman JD. 2007 **A pilot study comparing two manual therapy interventions for carpal tunnel syndrome.** *Journal of Manipulative and Physiological Therapeutics* Jan;30(1):50-61 <http://www.ncbi.nlm.nih.gov/pubmed/17224356>

"The purpose of this study was to determine the clinical efficacy of manual therapy interventions for relieving the signs and symptoms of carpal tunnel syndrome (CTS) by comparing 2 forms of manual therapy techniques: Graston Instrument-assisted soft tissue mobilization (GISTM) and STM [soft tissue massage] administered with the clinician hands."

"After both manual therapy interventions, there were improvements to nerve conduction latencies, wrist strength, and wrist motion. The improvements detected by our subjective evaluations of the signs and symptoms of CTS and patient satisfaction with the treatment outcomes provided additional evidence for the clinical efficacy of these 2 manual therapies for CTS. The improvements were maintained at 3 months for both treatment interventions. Data from the control hand did not change across measurement time points."

## Case series

Number of studies: 2

Sucher BM 1995 **Palpatory diagnosis and manipulative management of carpal tunnel syndrome: Part 2\_ 'double crush' and thoracic outlet syndrome** *J Am Osteopath Assoc* 95 (8):471-479 <http://www.ncbi.nlm.nih.gov/pubmed/7673008>

"The physician treating carpal tunnel syndrome needs to be aware of the possible concomitant occurrence of thoracic outlet syndrome, the so-called double crush syndrome. Palpation is used to differentiate carpal tunnel syndrome from thoracic outlet syndrome. Such palpatory examination assists the physician in planning the initial treatment, including osteopathic manipulation and self-stretching maneuvers, targeted specifically at the most clinically significant pathologic region. Supplemental physical medicine modalities such as ultrasound may enhance the treatment response. Some illustrative cases are reported."

Sucher BM 1994 **Palpatory diagnosis and manipulative management of carpal tunnel syndrome.** *J Am Osteopath Assoc* Aug;94(8):647-63 <http://www.ncbi.nlm.nih.gov/pubmed/7960973>

"Carpal tunnel syndrome was studied by use of supplemental palpatory diagnosis in 20 abnormal wrists. Restriction in motion at the carpal tunnel was quantified with a rating system. All wrists with carpal tunnel syndrome revealed at least moderate restriction to motion, as compared with only mild or no restriction in 20 wrists in normal, symptom-free subjects. Several participants (16 abnormal wrists) underwent osteopathic manipulative treatment, including a new "opponens roll" maneuver, and self-stretching, or a similar treatment accomplished by use of a self-treatment accomplished by use of a self-treatment appliance. In those treated, palpatory restriction decreased into the normal range, often before symptoms decreased. Improvement in nerve conduction studies usually followed within 1 to 3 months. Palpatory diagnosis is a useful adjunctive method of assessing patient status in carpal tunnel syndrome and helpful in prognosticating outcome. The modified manipulative technique described for the treatment of mild to moderate carpal tunnel syndrome may be effective in more severe cases."

## Non-human studies

Number of studies: 2

Sucher BM, Hinrichs RN, Welcher RL, Quiroz LD, St Laurent BF, Morrison BJ. 2005 **Manipulative treatment of carpal tunnel syndrome: biomechanical and osteopathic intervention to increase the length of the transverse carpal ligament: part 2. Effect of sex differences and manipulative "priming"**. J Am Osteopath Assoc Mar;105(3):135-43 <http://www.ncbi.nlm.nih.gov/pubmed/15863733>

"As a theoretical basis for treatment of carpal tunnel syndrome (CTS) and expanding upon part 1 of this study, the authors investigated the effects of static loading (weights) and dynamic loading (osteopathic manipulation [OM]) on 20 cadaver limbs (10 male, 10 female). This larger study group allowed for comparative analysis of results by sex and reversal of sequencing for testing protocols. In static loading, 10-newton loads were applied to metal pins inserted into carpal bones. In dynamic loading, the OM maneuvers used were those currently used in clinical settings to treat patients with CTS. Transverse carpal ligament (TCL) response was observed by measuring changes in the width of the transverse carpal arch (TCA) with three-dimensional video analysis and precision calipers. Results demonstrated maximal TCL elongation of 13% (3.7 mm) with a residual elongation after recovery of 9% (2.6 mm) from weight loads in the female cadaver limbs, compared to less than 1 mm as noted in part 1, which used lower weight loads and combined results from both sexes. Favorable responses to all interventions were more significant among female cadaver limbs. Higher weight loads also caused more linear translatory motion through the metal pins, resulting in TCA widening equal to 63% of the increases occurring at skin level, compared to only 38% with lower loads. When OM was performed first, it led to greater widening of the TCA and lengthening of the TCL during the weight loading that followed. Both methods hold promise to favorably impact the course of management of CTS, particularly in women."

Sucher BM, Hinrichs RN. 1998 **Manipulative treatment of carpal tunnel syndrome: biomechanical and osteopathic intervention to increase the length of the transverse carpal ligament**. J Am Osteopath Assoc Dec;98(12):679-86 <http://www.ncbi.nlm.nih.gov/pubmed/9885488>

"To quantify the amount of transverse carpal ligament (TCL) elongation in response to osteopathic manipulation or sustained load bearing (or both), a study involving seven cadaver limbs was conducted. Distances from the trapezium to the hamate (distance A) and from the scaphoid to the pisiform (distance B) were measured in five mounted cadaver limbs during and after the limbs bore the weight (2 newtons [N] to 4 N) for 2 several-hour periods. A several-hour period occurred between the weight bearing to assess recoil. Distances A and B were measured before and after the limbs were manipulated, according to previously described techniques, as well as with a new maneuver, termed the "guywire" technique. Two dissected limbs also were subjected to further weight bearing, this time increased to 8 N. Greater weight loads produced greater lengthening of the TCL, and recoil after removal of weight loads was slower than recoil after manipulation. Manipulation was more effective than weight loading for increasing distance A (distal canal), but weight loading generally was more effective than manipulation for increasing distance B (proximal canal). The guywire manipulation combined with direct transverse extension appeared to have the greatest impact on lengthening the TCL distally. These results show promise for the effective use of manipulation and load bearing for TCL elongation and nonsurgical relief of pressure on the median nerve in patients with carpal tunnel syndrome."

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

Number of studies: 1

## Other controlled clinical trials

Number of studies: 1

Burnham T, Higgins DC, Burnham RS, Heath DM. 2015 **Effectiveness of osteopathic manipulative treatment for carpal tunnel syndrome: a pilot project.** J Am Osteopath Assoc Mar;115(3):138-48 <http://jaoa.org/article.aspx?articleid=2211853>

"Osteopathic manipulative treatment resulted in patient-perceived improvement in symptoms and function associated with CTS [carpal tunnel syndrome]. However, median nerve function and morphology at the carpal tunnel did not change, possibly indicating a different mechanism by which OMT acted, such as central nervous system processes."