The Effectiveness of Manual Osteopathy Treatment for Individuals with Lumbar Disc Herniation

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Low back pain is very common, and affects 70-85% of adults at least once during their lifetime.[i] Low back pain can be very severe, resulting in a sharp shooting pain, or can be mild, and be perceived as a dull ache. In the past, consensus among professionals was that bed rest was the best cure for acute low back pain.[ii] Current trends are moving away from that way of thinking, and exercise is now being prescribed as a form of treatment.[iii] Furthermore, there is evidence to show that spinal manipulation is an option for symptomatic relief in patients with lumbar disc herniation with radiculopathy. More specifically, several studies have examined the efficacy of osteopathic manipulative treatment as a complementary treatment for low back pain.

Osteopathic manual treatment (OMT) centers on treating the body by improving its natural functions rather than using medicine. The three underlying concepts of OMT are, firstly, that the parts of the body make up a unified whole. Secondly, that the body has a natural ability to self-regulate and self-heal. Lastly, that the musculoskeletal system is a key element in maintaining health. Thus, treating specific, isolated systems ignores the interconnectedness of the body, and using OMT rather than drugs alone, promotes healthy body functions that are designed to help repair injury. The aim of this paper is to examine whether there is scientific merit in the use of OMT to treat patients with lumbar disc herniation.

The study entitled, *The Change in the Clinic in Lumbar Disc Herniation After Osteopathic Treatment*[iv], looked at the efficiency of Osteopathic treatment in cases of lumbar disc herniation. In the study, it was examined whether surgery could be avoided in patients with lumbar disc herniation with osteopathic treatment and whether the clinic condition could be changed in a positive way. In comparison, a group that received physiotherapeutic treatment was examined as well, and the emphasis in this control group was on stabilization and strength exercises. Thirteen subjects were treated in the experimental group, and eleven acted as controls and received physiotherapeutic treatment. In all patients, a herniated disc or disc protrusion had to be diagnosed and proved by a Computer Tomogram (CT) or by Magnetic Resonance Imaging (MRI). The test patients treated with osteopathic treatment were treated according to pain and not to the diagnosis. Thus, there was no predetermined course of therapy. Rather, every patient was treated individually according to osteopathic principles. The treatment consisted of purely passive techniques, and the patients were not instructed to carry out any physiotherapeutic exercises, and were not show any exercises for stabilization or strengthening. As the cause of disc herniation can vary greatly from patient to patient, the treatment was based on individual osteopathic findings. In the treatment, structural techniques, thrusts, visceral and cranio sacral techniques were used. Structural treatment comprised of techniques that refer to the locomotor system. The thrust techniques were used in the thoracic spine and the thoraco-lumbar junction. Additionally, a correction of the iliosacral joints was often necessary. The hip joint and the ankle joint were the joints

for which most corrections were necessary in the lower body, and nearly every patient had trigger points in the lumbar spine and pelvic region that had to be treated. To provide relief of the strain, the patient lay in a prone position, and the therapist stood on the side on which the patient feels pain. The therapist fixes L4 with the thumb of one hand on the spinous process. With the other hand on the anterior ilium, the therapist turns the pelvis to the contralateral side. Due to this maneuver, an opening forms at the facet between L5/S1 on the ipsilateral side that results in a relief of the load on the intervertebral disc and subsequent reprieve of pain. Fascial techniques were also applied, specifically, trigger ligaments on the dorsal thigh, and gluteal region. In terms of visceral treatment, tension in the diaphragm was regularly found and treated, along with tension in the second section of the duodenum. With respect to cranio sacral techniques, quite often hypermobility of the sacrum was diagnosed and treatments were performed on the fourth cervical vertebrae. The patients in the control group were treated with exercises for stabilization and strengthening of the trunk and the affected spinal segments. If necessary, manual techniques such as mobilization for limited joints or spinal sections were also used. The statistical evidence suggests that patients in the test group reduced the duration of their sick leave by half a week on average, and were treated for three weeks less than the control group. Furthermore, the test group took 1.7 treatments less to reach a distinct reduction in pain. There was a considerable improvement in lateral flexion of the control group over the control group in terms of spine mobility. The most significant difference between the two groups appeared in the pain parameter. On a scale from 1 to 6, the test group improved on average by 4-5 points, while in the control group, the improvement amounted to only two points. Paraesthesiae and sensitivity disorders decreased and medication with analgesics could be stopped before the final diagnostic findings. In view of these results, the questions as to whether osteopathic treatment improves the clinic in patients with a lumbar disc herniation could be confirmed. The study also concludes that in practice, the treatment could be extended by adding exercises for stabilization and strengthening to osteopathic treatment. The lingering benefit of the treatment in years to come is still unknown. A. Hack[v] observed that after muscular exercise, symptoms improved considerably in lumbar disc herniation patients, however, after six months, the improvement was no longer noticeable. Therefore, continuous training is required to preserve the reprieve in pain.

Dr. Walter Packi[vi] observed that the cause for disc herniation is a contracted m. psoas, and the cause of paralyses does not lie in the compressed nerves, but in the malfunctioning of the m. iliacus. This would therefore prove that the nature of osteopathic treatment, which to take into account all structures that could be connected to the patient's pain is theoretically and fundamentally sound. By treating muscles in the lumbar and pelvic regions, the symptoms of the patient could be relieved.[vii]

A clinical trial completed by Santilli et al[viii], assessed the short and long term effects of spinal manipulation on acute back pain and sciatica with disc herniation. Half of the participants were treated with spinal manipulation, and the others received sham manipulation. The patients were then assessed at 180 days, and a significantly greater number of patients that were treated with spinal manipulation had no back, buttock or leg pain at 180 days. Santilli et al concluded that active spinal manipulations have more

effect than simulated manipulations on pain relief for acute back pain and sciatica with lumbar disc herniation.[ix]

Burton et al[x], performed a randomized controlled trial to test the hypothesis that manipulative treatment provides at least equivalent outcomes when compared with chemonucleolysis treatment for patients with sciatica due to confirmed lumbar disc herniation. Outcomes were assessed at one year using the Roland Morris Disability Questionnaire, a pain thermometer and lumbar range motion. Both groups showed significant improvements in mean scores, without significant difference between groups. Therefore, Burton et al concluded that osteopathic manipulation could be considered a safe and effective treatment option for patients with lumbar radicular syndrome due to lumbar disc herniation, in the absence of clear indications for surgical intervention.

The purpose of the study conducted by Licciardone et al[xi], was to assess the efficacy of OMT as a complementary treatment for low back pain. Overall, OMT significantly reduced low back pain during short, intermediate, and long-term follow up. The authors found that the level of pain reduction was greater than expected from placebo effects alone and persisted for three months. OMT versus no treatment control demonstrated pain reductions twice as great as previously observed in clinical trials of placebo versus no treatment control. Therefore, OMT may eliminate or reduce the use of medication that has the potential for adverse effects. The authors explain that from their meta analysis and a review of previous literature that the results from the comparison between patients in the United Kingdom, treated by osteopaths who are not licensed physicians, were generally comparable to the results from the review in the United States, where licensed physicians provide OMT. This suggests that the results reflect the effects of OMT itself, and not other elements of low back care. Thus, this study indicates that OMT is a distinctive modality that significantly reduces low back pain, with the resulting pain reduction being greater than expected from placebo effects alone, and persists for at least three months. However, additional research is required to explain how OMT exerts its effects, to determine if OMT benefits are long lasting, and how to assess the cost-effectiveness of OMT as a complementary treatment.

The study entitled, *The Effects of Manual Therapy Using Joint Mobilization and Flexion-Distraction Techniques on Low Back Pain and Disc Heights*[xii], examined the effects of manual therapy using joint mobilization and flexion-distraction techniques versus a group treated with spinal decompression therapy. Joint mobilization techniques affect the neurophysiological and mechanical aspects of pain, pain arc, or muscle spasm, and they have been proven effective in treating joints with hypomobility, those that gradually become restricted and those that are functionally fixed. Treatment with flexion-distraction techniques is used to restore damaged spinal nerves and surrounding structures by reducing the stricture of paraspinal ligaments, increasing the movement of metabolites in discs, reducing the stress and internal pressure imposed on the posterior discs through the opening of the spinal facet joint, and expansion of the intervertebral foramen. Spinal decompression theory is employed to treat radiating pain resulting from chronic low back pain. It works by removing the pressure imposed on the discs by creating zero gravity or negative pressure within the spinal canal so that oxygen and

minerals are supplied to the discs. While various studies have examined manual therapy methods for chronic low back pain, few have compared manual therapy using joint mobilization techniques and flexion-distraction techniques with spinal decompression therapy. Thus, the goal of this study was to examine the effects of the aforementioned treatments on low back pain and disc heights of patients with chronic low back pain. The patients in the study had experienced low back pain for at least three months, and had been diagnosed as having radiating pain resulting from chronic low back pain. All patients were treated three times a week for a six-week period. The manual therapy group was treated for 15 minutes per visit, and the spinal decompression therapy group was treated with spinal decompression therapy for 20 minutes, after which, both groups received hot pack, ICT, and ultrasound therapy for approximately 45 minutes per time. Two techniques were used on the manual therapy group. They were lumbar segmental flexion mobilization and lumbar segmental extension mobilization. Lumbar segmental flexion mobilization was described as having the patient lie on his or her side while the hip joint and knee joints were bent. While facing the patient, the therapist placed their right hand on the lumbar vertebrae of the patient and fixed their fingers on the transverse process or spinous process to be treated. The therapist's left hand was placed on the sacral vertebrae, and their fingers were placed on the transverse process or spinous process to be treated. The therapist's chest was placed in tight contact with the two knee joints of the patient to move the patient's pelvis in a caudal-ventral direction. The lumbar segmental extension mobilization technique was described as having the patient lie in the same position as used for the lumbar segmental flexion mobilization. The fingers of the therapist's right hand were placed on the spinous process of the vertebrae, and the therapist's left hand was placed behind the knees of the patient to extend the patient's pelvis in a cranial-dorsal direction, with the patient's lower extremities lifted slightly from the floor. In the study, the patients in both the manual therapy group and the spinal decompression therapy group indicated decreased pain. The decrease in pain reported by the manual therapy group is thought to have occurred because the joint mobilization techniques and the flexion-distraction techniques applied to the spine stimulate the receptor that suppresses the transmission of pain stimuli at the level of the spinal cord and brain stem. Furthermore, the movements of the joints reduce the transmission of stimuli by the ligaments and articular capsules, which are pain sensitive tissues in the spine. The decrease in pain scores reported by the spinal decompression therapy group occurred because spinal decompression therapy creates a negative pressure within the intervertebral disc, increases the diameter of the intervertebral foramen and relieves the pressure on the nervous tissues, thereby reducing radiating pain. Furthermore, an increase in the diameter of the intervertebral foramen can accommodate an increase in blood flow in the spinal nerves, and the increased blood flow can remove inflammatory precursors. In the aforementioned study, comparisons between the two treatment groups showed that disc heights significantly increased in the manual therapy treated group with joint mobilization techniques and flexion-distraction techniques, but showed no significant difference in the spinal decompression therapy group. This is as a result of the manual therapy techniques producing negative pressure in the intervertebral disc space so that the portion of the disc that was pushed to the rear went inside and the vertebral pulp was positioned in the center of the annulus fibrosus. This removed stimuli from the annulus fibrosus fibers that feel pain and restored the normal movements of the spinal joints,

reducing low back pain and inducing structural changes. The manual therapy techniques employed increased the diameter of the intervertebral foramen, reduced pressure on the nervous tissues, widened the spaces between the intervertebral discs, and opened the posterior motor units by enlarging the sagittal diameter in the spinal canal. Consequently, the stress imposed on the posterior disc decreased as the spinal facet joints opened by flexion-distraction technique, and the incompletely dislocated spinal facet joints recovered to provide the normal range of motion in the posterior spine.

Among the multitude of musculoskeletal diseases, low back pain is one that frequently occurs on a daily basis. It greatly affects quality of life, leading to socioeconomic problems due to increases in treatment expenses, increased time away from work, and other troubles that affect a person's life. The goal of any back care plan is to treat the patient in a manner that would allow them to bypass surgical intervention and to allow them to participate in their daily activities free from pain and with full range of motion and normal function. The above-mentioned studies indicate that manual therapy and more specifically, osteopathic manual therapy, is beneficial in providing pain relief in patients with lumbar disc herniation, and furthermore that osteopathic manipulation can be considered a safe and effective treatment option for patients with lumbar disc herniation in the absence of clear indications for surgical intervention.

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