

A LITERATURE REVIEW OF MANUAL THERAPIES FOR THE MANAGEMENT OF LOW  
BACK PAIN AND A STUDY PROPOSAL OF THE COMPARISON OF THREE DIFFERENT  
MANUAL THERAPIES

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by

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## Abstract

Background: Low back pain (LBP) is a common disorder in the U.S., but lacks consensus regarding its treatment. Commonly, manual therapies such as massage, trigger point therapy, and traction are used in conjunction with a rehabilitation program to reduce LBP in the patient. These manual therapies are used to create an optimal environment for the body to heal and/or fix problems due to injury. Massage is theorized to increase blood flow in the soft tissues, which increases oxygen levels within the soft tissue and furthermore provokes the healing process. In addition to this, suggestions of gate control theory contribute to massage's effectiveness. Trigger point theory has been thought to release tender points in the tissue that are creating pain to normalize the tissue and restore function. Traction is noted to create more space between the vertebrae and therefore counteract compressive forces on the spine that are creating pain.

Purpose: To gain knowledge on the application and observed effectiveness thus far of massage, trigger point therapy, and traction for the treatment of LBP. The proposed study is designed to investigate which manual therapy in conjunction with a physical therapy protocol is most effective in the reduction of LBP. This study will be beneficial in providing helpful information for clinicians and their patients on the treatment of LBP by observing the methods and effectiveness of massage, trigger point therapy, and traction.

Methods (proposal): Study subjects will range from 20-65 years of age with a diagnosis of non-specific LBP. Patients will be randomized into one of four treatment groups

(massage, trigger point therapy, traction or control group) using block randomization.

Treatment will take place three times a week for ten weeks.

Results: No results are available due to the lack of time to conduct this study.

Conclusion: Future findings of this study will provide education on treating LBP by providing insight into what are the most appropriate methods of manual therapy for the treatment of LBP.

## LITERARY REVIEW

### Introduction to Low Back Pain (LBP)

LBP is one of the most common complaints among developed societies. It can be defined as pain in the region between the twelfth rib and the bottom of the buttocks.<sup>1,2</sup> Approximately 80% of the adult population will suffer at least one episode of LBP in their lifetime.<sup>3</sup> Not only this, but LBP is one of the leading causes of disability, work loss, and is an expensive health issue.<sup>4,5</sup> The majority of cases of LBP do not have a specific underlying cause and last about 3 months.<sup>1,2,6</sup> However, LBP has a high reoccurrence rate, anywhere between 50-80%, and therefore relapse pain commonly occurs.<sup>6</sup> Despite LBP being one of the most common musculoskeletal disorders, there is still little agreement as to what treatment is the best approach. In addition to this, the effectiveness of treatment for LBP is also questionable.<sup>7</sup> Therefore, further investigation in the management of LBP needs to be reviewed.

### Massage for Low Back Pain (LBP)

#### Definition:

Massage has numerous methods of administration and can be defined as manipulation in the form of rubbing and pressing into skin, muscles, tendons, joints, and ligaments to help increase blood flow and/or provide relaxation to the patient.<sup>8,9</sup>

## History:

Massage Therapy, as a medical practice, dates back to the colonial era. During that time, those who practiced the “Rubbing System” were known as “rubbers” and would be used to rub athletes, individuals with rheumatic diseases, or would set up their own private practices. Education for “rubbing” was primarily through experience. As the medical field progressed, it became clear that knowledge of anatomy and physiology was needed for the use of “rubbing” to stay in the medical field. This brings us to the modern-day term “massage.”<sup>10</sup> By the late 1800s, massage, specifically Swedish Massage, was commonly discussed in medical journals. During this time, massage was a primary mode of care rather than a complementary therapy as it is today.<sup>11</sup>

## Indications:

Massage has been shown to be beneficial for many conditions some of which include anxiety, stress, fibromyalgia, soft tissue injuries, and sports injuries.<sup>8</sup>

## Contraindications:

Due to the effects of massage, there are times where massage would not be a beneficial tool for healing and pain relief. Contraindications for massage consist of the following conditions: use of blood thinners, bleeding disorders, open wounds, deep vein thrombosis, fractures and bone diseases like osteoporosis.<sup>8</sup>

Effectiveness:

Massage is thought to increase blood flow, which increases oxygen levels in the affected soft tissues such as muscles, tendons, and ligaments. This is important as oxygen is essential for the body's natural healing process. It is also suggested that mood and pain perception can be altered through an increase in neurological activity that is induced by massage. Furthermore, massage demonstrates the gate-control theory of pain perception.<sup>9</sup> The body has nerves throughout that send messages to the brain. Nerves are responsible for carrying that message of pain to the brain to produce a response to that signal of pain. Response to pain is muscle tension, which can cause further pain in the form of tight muscles and muscle spasms. This pain-spasm-pain cycle often results in chronic pain. When in chronic pain, the nerves are continuously sending pain messages to the brain. This may be referred to as an "open gate." Interventions such as massage, are used to close the gate with a faster message to the brain. This allows the muscles to relax while the patient is receiving treatment and therefore creating an optimal environment to promote healing.<sup>12</sup>

Massage therapy is commonly used to supplement a physical therapy program to decrease LBP. Research has shown massage in addition to therapy to be effective at reducing pain and improving disability better than therapy alone. Massage has been found to have not only short term pain reduction, but also long term even after treatment has ceased. Although effects do wear off with time, massage in conjunction with physical therapy does show increased improvement in pain and function.<sup>13</sup>

Massage coupled with nonsteroidal anti-inflammatory drugs (NSAID), a commonly over the counter prescribed medication for LBP, has been found as effective as massage alone. Therefore, massage is as effective as taking an NSAID for pain reduction. Furthermore, massage can be beneficial as an alternative to NSAIDs, which are known to potentially cause unfavorable health effects if taken frequently such as stomach bleeding, liver problems, or kidney problems.<sup>14</sup>

Massage reduces pain more than rehabilitation alone. However, massage therapy coupled with an exercise program yields the greatest results with pain reduction.<sup>15</sup> Massage therapy shows promise in reducing pain in patients with LBP but needs further investigation, especially against other types of manual therapies, to estimate its effectiveness.

### Trigger Point Therapy

Definition:

Trigger points can be defined as a muscle being “stuck” in a contracted or tightened position. This causes a taut band in the muscle that is tender to touch and can refer pain to different spots in the muscle or in the body. This occurrence is typically caused by muscle overuse, trauma, or injury to the tissue, poor posture, tension in muscles caused by stress, and even extended amounts of inactivity. Trigger points may be either be active or latent. Active meaning, they are causing pain presently while latent means they may not be causing pain despite being present in the muscle. Trigger point therapy, by definition, is the application of pressure onto a trigger point until the pain is alleviated.<sup>16</sup>



### History:

The term “trigger point” was not termed until the 1950s by Travell and Rinzler. However, details of muscle disorders were written by Guillaume de Baillous of France in the late 1500s to early 1600s. In 1816, Balfour, a British physician, described thickenings or hard nodules in the muscle that created local and regional pain. Many other terms have been coined for this same phenomena. For example, “muskelshwiele,” which can be translated to muscle callouses, was termed by Froriep to describe a “callus” of connective tissue found in patients with rheumatic disorders. Also, in 1904, Gowers used the term “fibrositis” to suggest that inflammation takes place in the fibrous tissue and causes hard nodules or bumps.<sup>17</sup>

### Indications:

Trigger point therapy is becoming a popular manual therapy for the treatment of pain.<sup>17</sup> Other uses or indications for trigger point therapy include correction of tissue damage, improving mobility, increasing blood circulation, reducing swelling, and increasing strength.<sup>18</sup>

### Contraindications:

Although there are many situations that could benefit from trigger point therapy, there are certain conditions that trigger point therapy should not be applied to such as open wounds, sutures, fractures, hematomas, sensitive skin, and infection.<sup>18</sup>

Effectiveness:

When pressure is applied to the trigger point, it allows the trigger point to release so the muscle can come out of its contracted state and into a relaxed state furthermore decreasing pain.<sup>16</sup> Trigger point therapy, applied either by hand or by instrument such as an inflatable ball, has been shown to be effective in reducing LBP and restoring function.<sup>19,20</sup> Some research has found trigger point therapy to be more effective than superficial massage at improving pain and range of motion (ROM).<sup>20</sup>

Unfortunately, limited research on the effectiveness of trigger point therapy in relieving back pain has been conducted.<sup>19</sup> However, it has been found to be effective in pain reduction in other structures of the body like the neck and shoulder muscles, particularly the trapezius muscle.<sup>21,22</sup> Trigger point therapy has been found to decrease muscle stiffness in the upper trapezius, which could further lead to decreased pain and increased ROM. The lasting effects of trigger point therapy remain unclear.<sup>21</sup> Trigger point therapy has the potential to be a beneficial addition to a treatment program for LBP. However, more meaningful research needs to be conducted to prove this assumption.<sup>17,19</sup>

### Traction

Definition:

Traction can be simplified as a method to provide a separating force to create space between the vertebrae to relieve possible compression on the nerves from a protruding intervertebral disc in hopes of providing pain relief. There are at least ten different types of traction that are utilized in a clinical setting.<sup>23</sup> The most commonly used

are sustained and intermittent mechanical traction as well as sustained and intermittent manual traction.<sup>23,24</sup> Mechanical traction uses a device that pulls on the lumbar spine in order to create space between the vertebrae. This device pulls on the legs while stabilizing the upper body. Sustained traction uses a certain amount of weight that is applied continuously for a short amount of time. Intermittent traction uses the same weight and time period as sustained traction but alternates between the force being applied and rest.<sup>23</sup> Manual traction involves the clinician providing the pulling force either with their hands or a belt.<sup>24</sup>

#### History:

In the 1950s-1960s, James Cyriax popularized the use of traction for relieving back pain produced by disc protrusions. However, methods similar to traction have been around since prehistoric times. Cyriax claimed traction had threefold beneficial effects. These effects were increasing the space between vertebrae, creating tension on the longitudinal ligament that runs along the spine, which creates force at the back of the joint, and creating a suction effect to draw the disc back to the center of the joint.<sup>23</sup>

#### Indications:

Traction is typically used with patients with disc protrusions that have caused nerve compression.<sup>23</sup> The main rationale behind traction is to increase the space between the vertebrae, which will take pressure off of the nerve that is causing pain. Traction is typically used for LBP related to intervertebral disc issues in hopes to decrease the pressure within the disc and cause the protrusion of the disc to slide back into the disc.

An additional benefit of traction is its ability to relax the muscles of the back by stretching them. This is important because commonly overactive back muscles can cause significant pain.<sup>25</sup> Another benefit of traction is that it has been observed to flatten out lordosis, which is an excessive curvature of the lower back. Excessive curvature in the lumbar spine has been thought to be a cause of LBP and disc protrusion.<sup>23</sup> Although many benefits of traction have been proposed, evidence towards the benefits of traction have been contradictory.<sup>25</sup>

#### Contraindications:

Traction is not encouraged for those with respiratory disease, heart disease, uncontrollable hypertension, osteoporosis or rheumatoid arthritis.<sup>23,25</sup>

#### Effectiveness:

Traction has been found to be more beneficial in relieving leg pain rather than back pain, as well as reducing acute LBP over chronic pain.<sup>25,26</sup> In terms of chronic LBP, there has been a lack of consensus towards the effectiveness of traction.<sup>26</sup> Some studies dealing with specific types of traction have yielded positive results. For example, inversion traction was found to produce a significant increase in creating space between the vertebrae and therefore proved this type of traction as an effective modality for LBP. Inversion traction positions the patient to be upside-down, and uses gravity to provide the effects of traction instead of a device or clinician. Inversion traction has also been found to return patients to an almost pain-free state after 8 weeks.<sup>27</sup>

## STUDY PROPOSAL

### Participants

Inclusion criteria consists of an age range from 20-65 with non-specified LBP lasting at least 3 months. Exclusion criteria consists of specified LBP or other conditions that are contraindications of either massage, trigger point, traction, or a combination of the three manual therapies. Patients will be randomized into one of the three groups of treatment therapy (massage, trigger point or traction) along with physical therapy or the control group of physical therapy alone.

### Study Parameters

Patients will assess their pain using the visual analog scale (VAS) before and after each therapy session. Therapy will continue for 6 weeks with therapy taking place twice each week, totaling to 12 treatment sessions.

### Treatment

Patients will undergo a traditional physical therapy protocol of a moist hot pack applied to the low back region followed by core strengthening exercises. After the physical therapy protocol, patients will receive the manual therapy in which they were assigned. The control group will have no additional therapy performed. Therapy will take place three times a week for 10 weeks.

## Results

In consequence of the lack of time to perform this study, it is currently a proposal and therefore results have not been produced yet.

## Conclusion

The purpose of this study is to evaluate which manual therapies are most effective in combination with physical therapy to reduce LBP. More research is needed to investigate the effectiveness of different types of manual therapies for LBP to evaluate which therapy is most efficient in resolving LBP.

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