# The Effects of Manual Therapy in Three Clinical Cases with Low Back Pain Combined with Lumbar Disc Herniation

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## Abstract

**Background**

Lumbar disc herniation associated with fissure of annulus fibrosis and exit out of nucleus pulposis. This fissure can be caused by biomechanic forces by movements like rotation, extension and degenerative disc. While spondylolisthesis is characterized by the slipping of a vertebral body. The aim of this study was examination of the effects of three manual methods in patients with low back pain and lumbar disc herniation .Evaluation of the efficacy of the Maitland method positive and fast compared two other methods regardless the same diagnosis

**Methods of study:** The comparative experimental study. Participated in this study was a limited number of patients. This study was conducted in Fisiomed clinic for e period of 3 months

**Clinical Features:** Three patients aged 34,23,24 presented with low back pain combined with lumbar disc herniation with more than one different attacks and different duration of pain . Pain which is present no more than 12 weeks and was accompanied by loss of functionality

**Intervention:** Physiotherapy treatment relied on Manual Therapy Maitland, Postural Reeducation Mezieries, Back school exercise. Patients underwent rehabilitation for a period of 10-15 sessions, where the results of 3 patients were better

**Results:** Each patients has undergone three different methods of physiotherapy. The tests in which we use to each patient, were SLC Straight Leg Raise Test; PBT Prone Bridge Test;ST Slum test; VAS*Numerical rating scale; ODI Oswestry Disability Index. In patient that we used Maitland method the pain was eliminated completely ,the time of rehabilitation was 10 sessions and the time for the release the therapy was 25 min.

**Conclusion:** That the three studies are effective in eliminating pain and restoring functionality of the patient. Maitland method is a favorite regarding the shorter time requesting in return of positive patient condition

**KEYWORD** Low Back pain ,Therapy manuale, physiotherapy

## Introduction

*Andrew J Schoenfeld et al* definitions that lumbar disc herniation is a common condition that frequently affects the spine in young and middle-aged patients , in our study wherein the paricipants are young than 35 years old .Lumbar hernia associated with fissure of annulus fibrosis and exit out of nucleus pulposis.This fissure can be caused by biomechanic forces by movements like rotation,extension ,return from e flexed position of lumbar spine and degenerative disc.The lumbar intervertebral disc is a complex structure composed of collagen, proteoglycans, and sparse fibrochondrocytic

cells that serve to dissipate forces exerted on the spine. As part of the normal aging process, the disc fibrochondrocytes can undergo senescence, and proteogly can production diminishes. This leads to a loss of hydration and disc collapse, which increases strain on the fibers of the annulus fibrosus surrounding the disc. Tears and fissures in the annulus can result, facilitating a herniation of disc material, should sufficient forces be placed on the disc. Silvano Ferrari et al in his study saying that pain is typical signs of patients with lumbar hernia usually is a central pain combined with radicular in one leg .In some cases, patients may report radicular symptoms both legs . Hod et al say thar low back pain has a lifetime prevalence ranging from 60% to 70% in industrialised countries, causes more years of disability than any other health condition and is the second most frequent reason for absence from work. Roger Chou said that prevalence of low back pain were Over 70% of people in developed countries will experience low back pain at some time in their lives. Each year, between 15% and 45% of adults suffer low back pain, and 5% of people present to hospital with a new episode. About 10% remained off work and about 20% had persistent symptoms at 1 year. In our study we used three different methods but there are some previously published case studies that describe other forms of physical therapy treatment like spinal manipulation, physical therapy modalities, rehabilitative exercises, Williams low back exercises and interferential therapy in studies of Taylor DN, Excoffon SG et al ,Wrong LC et al. But the purpose of previously study was evaluation of the effectiveness of each method conservative. The aim of this study is to specify the importance of different method conservative physiotherapy different times of rehabilitation and to describe the period of time appeasing symptoms almost identical regardless of varying clinic patients and corresponding ages.

OUTCOME MEASURES

Outcome measures included:

1. Numerical rating scale VAS ,
2. Disability outcome measure (Oswestry Disability Index),
3. Muscle function tests (a) Active Straight Leg Raising, b)Prone and Supine Bridge Tests),c) Slum test.

a) Straight Leg Raise Test (SLR)—This test investigates the ability of the pelvic girdle to transfer loads from the lumbopelvic region to the legs. The patient lies in the supine position with his legs straight and relaxed in physiological lateral rotation, and feet 20 cm apart. The patient is instructed to raise a straight leg about 20 cm off the table. The patient is asked to report any weakness, pain, or other unpleasant feelings during the test and any difference in feeling between the 2 sides. The examiner observes the speed of raising, the appearance of a tremor in the leg, the amount of rotation of the trunk, and the verbal and nonverbal emotional expressions of the patient. If the patient have pain between 30 to 60 degrees flexed position of femoral test is positive

b)To perform the Prone Bridge Test, the patient lies in the prone position propped on his elbows. The elbows are spaced shoulder-width apart; and the feet are placed with a narrow base, but not touching. The patient raises his or her pelvis off the table so that only the forearms and the toes are in contact with the table. Shoulders, hips, and ankles

are maintained in a straight line. This position is sustained until fatigue or pain prevents the maintenance of the test position. The Supine Bridge Test is performed in the supine position, with the lower limbs flexed and the soles of the feet on the table with a narrow base, but without touching. The thighs should not be in contact. The hands are positioned by the ears. The patient raises his pelvis from the table so that the shoulders, hips, and knees are maintained in a straight line. This position is held until fatigue or pain prevents the continued holding of the test position.

C)Slum test ,the patient stays sits in the corner of the bed, hands behind the body, the axaminer realizes flexion vertebral column while accompanies the dorsal flexion of the ankle. If the patient feels pain and posterior leg during the test is positive. Slump test is used to put pressure on the sciatic nerve to test for sciatica coming from a lumbar disc herniation or bulge.

Inclusion Criteria

- Age less than 35 years
- Back pain of greater than 3 mounth duration
- Pain present only in one leg
- Physician diagnosis of back pain combined with lumbar disc herniation

Exclusion criteria

- Age greater than 35 years
- Back pain more than 1 year
- Instability on lumbar flexion-extension radiographs
- Lumbar spinal stenosis and pain of both legs

CASE REPORT

This study was conducted at e private center of physiotherapy in Fisiomed Tirana.All participants in this study are been informed in advance of their inclusion in this study and have received their approval and that patient confidentiality would be protected.

First case

Woman 34 years old ,housewife, years ago she worked as a teacher .Diagnosed with lumbar disc herniated L5-S1 and L4-L5 proturzion first degree.VAS scale shows a significant pain referred of the right ankle. The first attack during pregnancy two years ago, that pain was reduced and became central after birth is take place over time were eliminated without treatment with conservative physiotherapy. The second attack after two years with pain in the foot right, sensitivity disorders with paresthesia,VAS scale considered significant .During the postural evaluation was observed with hiperlodoz lumbar and pelvic anteroversion, modifications of walking and rotation of pelvic part.

Palpation of lumbar multifidus. iliopsoas, piriformis muscles revealed less muscular tone on the painful side, contracted and asymmetry in their length.

*Physiotherapy treatment*

On this patient was applied Maitland Method which consists in mobilizing the joints of the lumbar region. Maitland is based on the evaluation and treatment by oscillatory ,rhythmic passive movements. The evaluation is performed by passive movement and palpation of the area to be treated suggested by Costa D et al .The passive movements are graduated into five levels according to the degree of accessory movements present in the joints. Grades 1 and 2 correspond to the application of slow ascillatory oscillatory movements in the early range of motion in the presence of pain assessed regions. Grades 3 and 4 are carried out at the end of range of motion ,or from the resistance given by the periarticular tissues to restore joint mobility in the presence of restraint .The 5 level ,known as manipulation is small amplitude and height speed this was said in the study Maitland GD et al and Corrigan B et al.

In the patient is applied Maitland method for duration 25 min ,with an intensity of 2 sessions in week .Pressure is applied to lumbar joint in the longitudinal direction with cranial caudal ,on right transverse processes with central pressure .The patient underwent 10 sessions in total where improvements were sensitive to the general condition. Positive results were observed in the second session of Maitland method .

They are listed below the results of the patient before and after treatment

| First case treatment | Initial evalutation | Final |
|---|---|---|
| 34 years old | female after 10sessions for 2 months | |
| **SLC** | + | - |
| **PBT** | + - | |
| **ST** | + | - |
| **VAS** | 10 | 0 |
| **ODI** situation | Moderate disability 30% | Normal |

SLC *Straight Leg Raise Test; PBT* Prone Bridge Test;ST * Slum test; VAS* Numerical rating scale; ODI Oswestry Disability Index.

Second case

A 23 years old girl, student , working part time at her family business. Presented with lumbar disc hernation L4-L5 and spondyliolisthesis L5-S1.VAS scale shows a significant pain in the right lumbar zone and referred along the right leg down to the ankle , with light sensitivity disorder, paresthesia.MRI assesses and quantifies the presence of osteopenia after the girl suffers from talesemia.This Is the first attack of pain which is significant in extended position with tummy down .During the postural evaluation noted the moderate lumbar lordosis and the bacinit persuasions. Palpation of lumbar multifidius muscle, piriformis, iliopsoas observed slight decrease of tone.

*Physiotherapy treatment*

Patients has undergone a program back school exercise with a duration of 60 minutes at a frequency of 2 times per week.

The total number of sessions is 15 .Improvement of pain and restore total functionality is achieved for 3 months. Back school exercise or this program exercise includes :

- Mobilization exercises femoral art in rotation, flexion and abduksion
- Strengthening of the abductor muscle, erector multifidus, rectus abdominal, abdominal transversus
- Vertebral traction exercises near the scale of swedish
- Stretching latissimus dorsi muscle, posterior spinal
- Exercises of bilateral flexionit
- Exercises to stimulate the lumbar region with lubrication of Bobath ball or the Swiss ball
- Finalize the position for 10 min on a cylinder propioceptiv for vertebral column in the articulacion genus of bilateral flexion.

They are listed below the results of the patient before and after treatment

| Second case treatment | Initial evalutation | Final |
|---|---|---|
| 23 years old female after 15 sessions for 3 months | | |
| **SLC** | + | - |
| **PBT** | + | - |
| **ST** | + | - |
| **VAS** | 8 | 1 |
| **ODI** | Severe Disability 42% | Normal situation |

SLC *Straight Leg Raise Test; PBT* Prone Bridge Test;ST * Slum test; VAS* Numerical rating scale;ODI Oswestry Disability Index.

Third case

A 24 year old boy ,working economist very fit person .Presented with first grade prolapse L4-L5.MRI magnetic resonace imaging specifies diagnosis.VAS scale moderate rate with central pain without rradiacion without paresthesia. Pain is present during movement of bicycles and in specific exercises during gym. Second attacks pain treated with conventional physiotherapy and manual therapy, the cause of this attack was to set up a dumbbellsin the presence of gravity weighing 50 kg.Postural evaluation

normal lumbar lordosis while during palpation muscular was observed stiffness and contracted iliopsoas and piriformis muscle .

*Physiotherapy treatment*

The patient has undergone Mezeries method duration 45 minutes -60 minutes at a frequency of 1 times per week. The total number of sessions is 11 and ultimate relaxion was after 2 months

Mezerie method is postural re-education method where the steps are:

• The muscle Pompazh important for sustainability of bacinit entirely as iliopsoas muscles, lumbar quadratum

• The triggers point piriformis muscle

• stretching and reinforcements muscle as adduktore, abduktore in uni and bilateral way
• Setting the lower limb in bandage in position zeta three joints

• General pompazh fot the part cervical

• Reinorcemnets and stretching of upper extremities muscle and dorsal region as superior trapeze muscle, latisimus dorsi, rhomboid, pectoralis in uni and bilateral way .

• Finalise the sitting position postural we both physiotherapists in cooperation .We will help us stay in linezeta to sacrumit and cervical ,dorsal region, while another physiotherapist helps in external rotation of the femoral articulation and stretching and reinforcement of the lower extremities muscle

They are listed below the results of the patient before and after treatment

| Third case treatment | Initial evalutation | Final |
|---|---|---|
| 24 years old male | | after 11 sessions for 2 months |
| **SLC** | + | - |
| **PBT** | - | - |
| **ST** | - | - |
| **VAS** | 6 | 0 |
| **ODI** | Minimal disability | Normal situation |

SLC *Straight Leg Raise Test; PBT* Prone Bridge Test;ST * Slum test; VAS* Numerical rating scale;ODI Oswestry Disability Index.

## RESULTS

This is an experimental study with 3 clinical cases where each patients has undergone three different methods of physiotherapy. All three patients were selected after having diagnosis combination with lumbar disc hernation and spondilolisthesis at the level of L4-L5 , L5-S1.In the first case the patient was estimated and tests SLC, PBT, ST were positive while at the end of treatment the patient was revalued and test were negative.VAS pain scale at the beginning of the evaluation was 10 and at the end of physiotherapy treatment was eliminated in 0.ODI at the beginning of the evaluation was a moderate disability of 30% despite the pain that the patient perform basic vital functions. At the end of the physiotherapy treatment ODI oswestry Low back pain disability Questionnaire was normal. In the second case the patient was estimated and tests SLC, PBT ,ST were positive after 15 sessions of physiotherapy tests were negative .VAS pain scale at the beginning of evaluation was was 8 at the end of physiotherapy treatment was minimized in 1,the patient had pain with minimal intervals in lumbar region.ODI at the beginning of evaluation was severe disability assessment 42% ,where the patient can not perform even the minimum functions and the pain was persistent at the end of treatment ODI oswestry low back pain disability Questionnaire was normal .In the third case, unlike two other cases not all tests at the beginning of evaluation were positive only SLC test was positive at the end of treatment after 11 sessions this test became negative .While two other tests PBT , ST were negative at the beginning of the evaluation .VAS pain scale at the beginning was 6, so the patient does not consider it a big pain but was with the same intensity and concern for physical activity at the end of treatment the pain was completely eliminated.ODI disability at the beginning was minimal after 2 months treatment this scale was normalized .

## DISCUSSION

Study showed rapid and effective in eliminating pain and restoring functionality to the patient that was applied in Maitland methods. Luis Eugenio Silva de Agior et al who perform a randomized controlled trial study of the effects of mobilization time by Maitland method in nonspecific low back pain and neck pain .Results were significant in calming of pain for a time of one minute requiring this method to release the each articulation, as in our study where this method had effects faster to return in normal condition. While Geisser et al in randomized controlled trial study, examine the effects of manual therapy associated with the specific adjuvant exercise program for chronic low back pain , where the effects of appeasement pain they had differences before and after treatment. It should be noted that two other methods Mezeries and Back school exercise are effective in calming and eliminate pain but they require greater duration in giving the expected results. In Mariana Simoes Ferreira et al was studied the effects of a guidance program to adults with low back pain lasting for one hour ,with 41 patients this study resulted significance for improving the quality of life, functional capacity, the general health condition and not significance results in changes of pain. In Thayne Jose Maria Clemente da Silva et al study were studied the effects of back school program for back pain. Participated in the study 41 patients, who were divided into 4 groups according to a randomized controlled trial study, the results demonstrated positive effects in chronic pain. However Morone et al suggest that beneficial effects were

greater in pain relief when combined with physical exercise back school. Rosario Marco et al in his pilot study randomized , attended 20 patients resulted positive effects in the group of patients who was applied Mezeries method plus osteopathy compared with the group that did not apply the Mezeries method .

CONCLUSION

That the three studies are effective in eliminating pain and restoring functionality of the patient. Maitland method is a favorite regarding the shorter time requesting in return of positive patient condition. Future studies will focus on the inclusion of a larger number of patients to increase the credibility of the study.

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