EFFECT OF MYOFASCIAL RELEASE TECHNIQUE VERSUS MULLIGAN MOBILIZATION TECHNIQUE ON POST NATAL LOW BACK PAIN

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Abstract:

Background: Low back pain (L.B.P) and pelvic girdle pain are common during pregnancy in many countries. The prevalence rates are variable depending on the criteria used for diagnosing the pain. **Purpose:** This study was conducted to compare the effect of myofascial release technique and mulligan mobilization technique on post-natal low back pain. **Subjects:** Fifty primegravidae or multigravidae postnatal women complained of low back pain selected randomly from physical therapy department in Al Zahraa University Hospital. Their ages ranged from 25 to 35 years old. Their body mass index was not exceeding 30 kg/m^2. They were medically stable and consented to participate in the study. They did not receive any medical treatment during the research period. They were divided into two equal groups (A&B). Group A: 25 women received Myofascial release technique three times a week for sex weeks. Group B: 25 women received Mulligan mobilization technique three times a week for sex weeks. **Methods:** Visual analogue scale (VAS) was used to measure pain intensity and Oswestry Disability Questionnaire was used to assess functional disability for both groups (A&B) before and after treatment. **Results:** The results of this study found that, within groups there was a statistically highly significant decrease (P = 0.001) in low back pain intensity and functional disability in both groups (A&B). Between groups the obtained results showed there was no statistically significant difference in low back pain intensity and functional disability pre treatment. But post treatment there was a statistically highly significant difference in low back pain intensity and functional disability between both groups (more decrease in group A). **Conclusion:** Myofascial release technique is more effective in reducing pain and improving functional status by decreasing disability of patients with post natal low back pain than mulligan mobilization technique.

Key words: Myofascial Release Technique, Mulligan Mobilization Technique**,** Post-natal low back pain.

Introduction:

Back pain is a common post-natal complaint, which may not have been troublesome during pregnancy but frequently develops following the birth, 56% of patients suffer from low back pain during their pregnancy. State those two thirds of pregnant women after delivery had backache persisting into their post-natal period and that, in some patients, the pain persisted for at least one year. With the incidence and prevalence of low back pain being so high, it could be reasonably postulated that both sacroiliac and lumbar facet dysfunction could be instrumental as causative factors for low back pain **[1].**

Low back pain during pregnancy is commonly attributed to excessive lumbar lordosis, laxity of ligaments due to secretion of relaxin, fatigue and compensatory posture. Significant postural changes are first noted from the 5th month antenatal and extend into the post-natal period. These may be compensatory, as a result of an increase in weight gain, change in center of gravity and stretching or weakening of the abdominal muscles. Looking at the post-natal period, the following factors could play a role in the progression of low back pain: heavy enlarged breasts, swollen and achy legs, mood (post-natal depression) and increasing demands made by either the newborn infant or other children or the partner **[2].**

Myofascial release (MFR) is a therapeutic treatment that uses gentle pressure and stretching to facilitate the release of fascial restrictions caused by accidents, injury, stress, repetitive use, and traumatic or surgical scarring **[3].**
Myofascial release is a form of soft tissue therapy used to treat somatic dysfunction and accompanying pain and restriction of motion. This is accomplished by relaxing contracted muscle, increasing circulation, increasing venous and lymphatic drainage, and stimulating the stretch reflex of muscles and overlying fascia **[4].**

Myofascial release reduces pain in the lower back region. Myofascial release therapy reduces depression by touch of therapist that may help the nervous system through reducing the restriction in the dura mater which covers the brain and allowing better circulation and perfusion. Myofascial release allows freedom of movements and helps in emotional wellbeing of the person **[5].**

Myofascial release is a highly interactive stretching technique that requires feedback from the patient's body to determine the direction, force, and duration of the stretch and to facilitate maximum relaxation of tight or restricted tissues. Myofascial Release recognizes that a muscle cannot be isolated from other structures of the body. Fascia covers all structures of the body, including muscles and their individual myofibrils. Therefore, all "muscle stretching" is actually stretching of myofascial units **[6].**

Release of fascial restriction helps in reducing the anxiety levels, improves sleep quality, and reduces depression. It is considered as an alternative and complementary therapy that can improve the symptoms in low back pain patients. Myofascial release technique improves pain and quality of life in in patients with fibromyalgia **[5].**

In 2003, Brain Mulligan developed manual therapy techniques that widely used for peripheral joint pain **[7, 8].** Mulligan mobilization is a manipulative technique that is the natural continuance of the evolution of manual therapy from its foundations of active exercise to practitioner applied passive physiological movement and on to passive accessory mobilization techniques **[9].**

Mobilization with movement (MWM) is a manual therapy technique in which a manual force, usually in the form of a joint glide, is applied to a motion segment and sustained while a previously impaired action (e.g. painful reduced movement, painful muscle contraction) is performed. The technique is indicated if during its application the technique enables the impaired joint to move freely without pain or impediment. The direction of the applied force (translation or rotation) is typically perpendicular to the plane of movement or impaired action and in some instances it is parallel to the treatment plane **[10].**

Mobilization with movement (MWM) treatment techniques are gaining a reputation for use in musculoskeletal conditions, many of which have a reputation of being difficult to treat and for which manual therapy is not traditionally used(e.g. lateral epicondylalgia, complicated de Quervain's) **[11].**With respect to the research, the clinical efficacy of Mulligan’s (mobilization with movement) techniques has been established for improving joint function, with a number of hypotheses for its cause and effect. Mulligan’s original theory for the effectiveness of an MWM is based on the concept related to a ‘positional

fault' that occur secondary to injury and lead to mal-tracking of the joint: resulting in symptoms such as pain, stiffness or weakness **[12].** This theory in conjunction with the prescription of MWM is still advocated in Mulligan's latest edition and remains unchanged **[13].**The cause of positional faults has been suggested to be due to changes in the shape of articular surfaces, thickness of cartilage, orientation of fibers of ligaments and capsules, or the direction and pull of muscles and tendons. MWMs correct this by repositioning the joint, causing it to track normally **[14].**

Subjects, Materials and Methods:

I-Subjects:

Fifty primegravidae or multigravidae postnatal women complained of low back pain selected randomly from physical therapy department in Al Zahraa University Hospital in Cairo, Al Azhar University. The study was conducted from May 2018 to December 2018. Their ages ranged from 25 to 35 years old. Their body mass index was not exceeding 30 kg/m^2. All women were primegravidae or multigravidae women complaining from post natal low back pain (2 months after delivery). They were medically stable and consented to participate in the study. They did not receive any medical treatment during the research period. Women with musculoskeletal disorders as disc prolapse, spondylosis, lumbar canal stenosis and spondylysthesis, history of any medication affects back pain or pelvic pain, any back trauma or any surgery in the back region or the lower extremities are excluded from the study.

Study design:

Two groups pre and post experimental design. They were divided into two equal groups (A&B).

Group A: 25 women received Myofascial release technique

Group B: 25 women received Mulligan mobilization technique.

II-Materials:

1- **Informed consent form.**

2- **Standard weight scale:** It was used to measure weight & height to calculate body mass index (BMI) for each woman for both groups (A&B) before and after end of treatment.

3- **The visual analogue scale (VAS):** It was used to measure pain intensity for both groups (A&B) before and after end of treatment.

4- **Oswestry Disability Index:** It was used to assess functional disability for each woman of both groups (A&B) before and after the end of the treatment programme

5- **Mobilization belt:** It is an eight feet length (about 2.5 meter), nylon belt used to stabilize the women while movement occurs during the treatment for group B.

III- Procedures:

All women gave a full explanation of the protocol of the study and consent form signed for each woman before participating in the study.

A) For evaluation:

1- Weight and height measurements:

Weight and height measured while the woman wearing a thin layer of clothes to calculate the BMI according to the following equation: BMI=weight/height^2 (Kg/m^2), for both groups (A&B).

2- Visual Analogue Scale:

Pain assessed through VAS for each woman in both groups (A&B) before starting and after the end of treatment. It is usually a horizontal line, 100 mm long, whose ends are labeled as the extreme ("no pain" and "pain as bad as it could be"). The patient is asked to put a mark on the line indicating their pain intensity. Sometimes descriptive, such as 'mild', 'moderate', 'sever', or numbers are provided along the scale for guidance.

3- Oswestry disability questionnaire:

Oswestry disability questionnaire is also known as the Oswestry Low Back Pain Disability Questionnaire, which is an extremely important tool that researchers and disability evaluator's use to measure a patient's permanent functional disability. The test is considered the "gold standard" of low back functional outcome tools. Full instructions about questionnaire will be given for each patient and appropriate time will be allowed to

answer all questionnaire questions. For each section the total possible score is 5: if the first statement is marked the section score =0: if the last statement is marked it is = 5.

It is consisted of 60 questions covering 10 sections, which are pain, personal care, lifting, sitting, standing, walking, sex life, sleeping, social life and travelling.

B) For treatment:

Group A:

It consisted of twenty five women who treated by myofascial release technique, for 20 minutes, three sessions per week, for sex weeks.

MFR technique was applied on the following structures:

1- Hamstring muscle.
2- Tensor fascia latae and illiotibial band.
3- Piriformis muscle.
4- Quadratus lumborum muscle.
5- Erector spinae muscle.

1-MFR of hamstring:

a) Cross hand technique:

The patient was in the prone lying position while therapist's proximal hand applied sustained pressure to the lower hamstring area caudally and the distal hand applied sustained pressure to the upper hamstring area in cephalic direction, barrier upon barrier for a minimum of two minutes or until release occurred, the same procedure was repeated on the other side (Figs.1).

Fig. (1): Application of MFR for left hamstring muscle (cross hand technique).

b) Knuckle technique:

The patient was in the prone lying position while therapist's proximal hand applied sustained pressure to the lower hamstring area caudally and the distal knuckle applied sustained pressure to the upper hamstring area in cephalic direction, barrier upon barrier for a minimum of two minutes or until release occurred, the same procedure was repeated on the other side(Figs.2).

Fig. (2): Application of MFR for left hamstring muscle using (knuckle technique).

2-MFR of tensor fascia latae and illiotibial band:

The patient was in the side lying position. The treated limb was the uppermost, the lowermost limb was extended, while the upper one was flexed. At initial stage the uppermost limb was rested on a pillow, for more stretch, the pillow was removed. The therapist stood behind the patient at the level of the hip. The therapist applied vertical stroking. Counter pressure was applied on the hip cephalic, while performing deep pressure with knuckle slowly in caudal direction through the course of illiotibial band till the knee, the same procedure was repeated on the other side (Fig.3).

Fig (3): Application of MFR for tensor fascia latae and iliotibial band.

3-MFR of piriformis:

The patient was side lying position on the non-treated side, with the side treated the uppermost; the upper most thigh was adducted and flexed 90 degrees, placed in front of the lower most leg. The therapist stood behind the patient at the waist level, counter pressure was applied by one hand on hip and with the other hand, vertical stroking was performed by the knuckles through the muscle, from the greater trochanter till the sacrum. For more stretching the thigh was moved to more adduction for a minimum of 2 minutes or until a release occurred, the same procedure was repeated on the other side (Fig.4).

Fig. (4): Application of MFR for piriformis muscle.

4-MFR of quadratus lumborum:

Patient was side lying position, with a pillow under waist to exaggerate stretch. The therapist stood at the level of the patient`s hip, posterior to her, cross-hand technique was applied, as one hand pushes the lower ribs in cephalic direction, while the lower hand grasping the illiac crest caudally, the same procedure was repeated on the other side (Fig.5).

Fig. (5): Application of MFR for quadratus lumborum muscle.

5-MFR of erector spinae muscles:

The patient was prone with the head turned toward the therapist, the therapist stood at the side of the table at the level of the patient`s pelvis. The heal of the therapist`s cephalic hand was placed over the base of the patient`s sacrum with the finger pointing toward the coccyx. The therapist`s caudal hand was placed over the lumbar spinous processes with the fingers pointing cephalic, contacting the paravertebral soft tissues with the thenar and hypothenar eminences. The therapist exerted a gentle force with both hands ventrally to engage the soft tissues and to create a separation and distracting effect in the direction the fingers of each hand are pointing, the same procedure was repeated on the other side (Fig. 6).

Fig. (6): Application of MFR of erector spinae muscles.

Group B:

It consisted of twenty five women who received Mulligan mobilization technique program three times a week for sex weeks.

Technique: Starting position:

- Woman in sitting, facing away from therapist.
- The pelvis is stabilized via a belt being placed around the woman's anterior superior iliac spine and around the therapist's ischeal tuberosity.
- Therapist palpate between adjacent spinous processes (Fig.7).

Fig.(7): Flexion with belt in sitting upright

Method:

- The woman actively flexed the lumbar spine and extended to a neutral position.

- The therapist maintained the tension on the belt throughout all movement.
- The problematic level palpated and when the women actively move into flexion, a sustained posteroanterior force is applied throughout the whole movement of flexion to the painful spinous process.
- The therapist should bent knees and be able to lean onto the belt to increase the tension of the belt (Fig.8).

All women received 10 repetitions for 3 sets in each session, provided there was no pain. Duration of technique took 15 minutes. It did for three times a week for four weeks. It was generally agreed that the oscillation depth and amplitude of movement is dependent on the patient's symptoms. If the patient's main symptom was pain then oscillation depth remained shallow and maintained within a pain free range.

Fig. (8). Flexion with belt in sitting with forward flexion

Statistical analysis:

Results were expressed as mean ± standard deviation (SD). Comparison between different variables in the two groups was performed using either unpaired t test or Mann-Whitney U test whenever it was appropriate. Pair-wise comparison (pre- versus post-treatment) within the same group for different variables was performed using either paired t test or Wilcoxon Signed Ranks test whenever it was appropriate. Statistical Package for Social Sciences (SPSS) computer program (version 22 windows) was used for data analysis. P value ≤ 0.05 was considered significant and < 0.01 was considered highly significant.

Results:

I-General characteristics of the patients:

There was no statistical significant difference between mean value of age, weight, height and BMI between groups A and B with T value = (-1.237, -1.331, -1.147 and -0.293) respectively and P value = (0.227, 0.191, 0.259 and 0.771) respectively (Table.1).

Table (1): General characteristics of the two studied groups.

	Group A	**Group B**	**t value**	**P value**
Age (yrs.)	26.25 ± 3.73	27.40 ± 1.85	-1.237	0.227 (NS)
Weight (kg)	71.60 ± 4.63	73.95 ± 6.39	-1.331	0.191 (NS)
Height (cm)	165.35 ± 5.78	167.35 ± 5.23	-1.147	0.259 (NS)
BMI (kg/m^2)	26.23 ± 1.90	26.42 ± 2.07	-0.293	0.771 (NS)

Data are expressed as mean ± SD. NS= p> 0.05= not significant.

II-Visual analogue scale (VAS):

(A) Within groups:

There was a statistical highly significant decrease in the mean value of VAS measured post-treatment when compared with its corresponding value in pre-treatment in both groups A and B with t value = (16.433, 16.088 respectively) and p value =(0.001, 0.001 respectively). The percentage of improvement was higher in group A (59.38%) than in group B (44.19%) (Table. 2).

B) Between groups:

Pre-treatment, there was no statistical significant difference between the mean value of VAS of both groups A and group B with t value = -1.710 and p value = 0.096. Post-treatment there was a statistical highly significant difference between the mean value of VAS of group B when compared with its corresponding value in group A with t value = -5.431 and p value = 0.001 (more decrease in group A) (Table 2).

Table (2): Inter and intra-group comparison between mean values of VAS in the two studied groups measured before and after treatment.

	Group A	Group B	t# value	P value
Before treatment	8.00 ± 1.21	8.60 ± 1.00	-1.710	0.096 (NS)
After treatment	3.25 ± 0.97	4.80 ± 0.83	-5.431	0.001 (HS)
Mean difference	4.75	3.80		
% change	59.38%	44.19%		
t## value	16.433	16.088		
p value	0.001 (HS)	0.001 (HS)		

Data are expressed as mean ± SD. t# value= unpaired t test. t## value= paired t test.

NS= p> 0.05= not significant. S= p< 0.05= significant.

III-Oswestry disability questionnaire:

(A) Within groups:

There was a statistical highly significant decrease in the mean value of Oswestry disability questionnaire measured post-treatment when compared with its corresponding value in pre-treatment in both groups A and B with the Z value = (-3.924, -3.930 respectively) and p value = (0.001, 0.001 respectively). The percentage of improvement was higher in group A (73.91%) than in group B (33.52%) (Table. 3).

(B) Between groups:

Pre-treatment, there was no statistical significant difference between the mean value of Oswestry disability questionnaire of both groups A and group B with the Z value = -1.140 and p value = 0.254. Post-treatment there was a statistical highly significant difference between the mean value of Oswestry disability questionnaire of group B when compared with its corresponding in group A with the Z value = -5.215 and p value = 0.001 (Table. 3).

Table (3): Inter and intra-group comparison between mean values of Oswestry disability questionnaire in the two studied groups measured before and after treatment.

	Group A	Group B	$Z^{\#}$ value	P value
Before treatment	37.75 ± 5.96	35.65 ± 3.20	-1.140	0.254 (NS)
After treatment	9.85 ± 5.53	23.70 ± 3.15	-5.215	0.001 (HS)
Mean difference	27.90	11.95		
% change	73.91%	33.52%		
$Z^{\#\#}$ value	-3.924	-3.930		
p value	0.001 (HS)	0.001 (HS)		

Data are expressed as mean ± SD. $Z^{\#}$ value = Mann-Whitney test. $Z^{\#\#}$ value = Wilcoxon signed ranks test. NS= p> 0.05= not significant. S= p< 0.05= significant.

Discussion:

Low back pain (L.B.P) and pelvic girdle pain are common during pregnancy in many countries. The prevalence rates are variable depending on the criteria used for diagnosing the pain. Several studies have shown that approximately 50 % of women have low back pain during pregnancy. Often the pain disappears within 1 to 3 months after delivery, however a substantial number of women do not recover after delivery **[15].**

More than 50% of women complain of some degree of low back pain during pregnancy, and many describe pubic, pelvic, hip, knee and various other joint discomforts. Backache often persists after delivery and may last up to one year. While the etiology of low back pain during pregnancy remains theoretical, three mechanisms regularly are described musculoskeletal, hormonal and vascular **[16].**

The treatment of low back pain includes proper posture, gentle mobilization, stabilization exercises, and core strengthening program, chiropractic manipulations as well as osteopathic manipulations, ball stability exercises, and pelvic support belt **[17].**

This study was conducted to compare the effect of myofascial release technique and mulligan mobilization technique on post-natal low back pain.

Fifty primegravidae or multigravidae postnatal women complained of low back pain selected randomly from physical therapy department in Al Zahraa University Hospital in

Cairo, Al Azhar University. The study was conducted from May 2018 to December 2018. Their ages ranged from 25 to 35 years old. Their body mass index was not exceeding 30 kg/m^2. All women were primegravidae or multigravidae women complaining from post natal low back pain (2 months after delivery). They were medically stable and consented to participate in the study. They did not receive any medical treatment during the research period. They were divided into two equal groups (A&B). Group A: 25 women received Myofascial release technique three times a week for sex weeks. Group B: 25 women received Mulligan mobilization technique three times a week for sex weeks.

Visual analogue scale (VAS) was used to measure pain intensity and Oswestry Disability Questionnaire was used to assess functional disability for both groups (A&B) before and after treatment.

The results of this study found that, within groups there was a statistically highly significant decrease (P = 0.001) in low back pain intensity and functional disability in both groups (A&B). Between groups, the obtained results showed there was no statistically significant difference in low back pain intensity and functional disability pre treatment. But post treatment there was a statistically highly significant difference in low back pain intensity and functional disability between both groups (more decrease in group A).

So, myofascial release technique is more effective in reducing pain and improving functional status by decreasing disability of patients with post natal low back pain than mulligan mobilization technique.

Results of this study found that there was a highly significant decrease in pain intensity and functional disability index in group (A) which treated by myofascial release technique.

Under normative conditions, fascia and connective tissues tend to move with minimal restrictions. However, injuries resulting from physical trauma, repetitive strain injury and inflammation are thought to decrease fascial tissue length and elasticity, resulting in fascial restriction. So pain relief due to MFR is secondary to returning the fascial tissue to its normative length by collagen reorganization **[18].**

The connective tissue affected by diffuse systemic sclerosis (dSSc) is subject to remodeling through MFR, receding when the work is interrupted. Resuming the treatment on a regular basis increased the ROM in joints, reduced the effects of the Reynaud Phenomenon and the pain **[19].**

Treatment with MFR after repetitive strain injury resulted in normalization in apoptotic rate, cell morphology changes, and reorientation of fibroblasts. So treatment with MFR in chronic low back pain (CLBP) patients result in a halt in the repetitive injury process of the soft tissues at the lower back by facilitating the healing process and the soft tissue architecture to return toward normality **[20].**

The results of this study agreed with that of **Stanborough, [21]** who found that there is an increase in the quality of movement at the joint nearest the site of the myofascial release. Also, direct technique myofascial release improves a client's ability to incorporate movement reeducation.

The results also agreed with that of **Ajimsha et al., [22]** who investigate whether myofascial release (MFR) when used as an adjunct to specific back exercises (SBE) reduces pain and disability in chronic low back pain (CLBP) in comparison with a control group receiving a sham Myofascial release (SMFR) and specific back exercises (SBE) among nursing professionals. The patients in the MFR group reported a 53.3% reduction in their pain and 29.7% reduction in functional disability in week 8, whereas patients in the control group reported a 26.1% and 9.8% reduction in week 8. So that MFR when used as an adjunct to SBE is more effective than a control intervention for CLBP in nursing professionals.

The results are also agreed with that of **Adelaida et al., [23]** who found that myofascial therapy contribute to improving physical function, fatigue, number of days feeling good, tiredness on walking, and stiffness in fibromyalgia patients. Myofascial therapy improves pain and other clinical, sensory and affective dimensions of fibromyalgia syndrome.

The results of this study supported by **Marzouk, [24]** who found that MFR are effective in reducing pain and functional disability and improving lumbar spine mobility in patients with CLBP.

The results are also supported by **Arun, [5]** who found that myofascial release therapy is effective in reducing pain, improving activities of daily living (ADL) activities and helping in the improvement of quality of sleep and depression. Myofascial release therapy loosens up restricted movements of spine, leading to reduction of pain in the lower back region. Pain reduction promotes changes in psychological factors in individuals with pain.

Results of this study found that there was a highly significant decrease in pain intensity and functional disability index in group (B) which treated by mulligan mobilization technique.

Mobilization used as a therapy can produce significant mechanical and neurophysiological effects. The explanation of these effects (the mechanism of mobilization) is still relatively unknown, especially in regards to the spine. However, several theories have been established in accordance with effects seen, including the effects of pain relief, increasing range of motion and the influence on the autonomic nervous system **[25].**

The immediate improvements in disability level following Mobilization With Movement were due to the pain relief afforded by MWM and other factors like that the MWM was largely conducted in a weight-bearing position which helped patients to receive simultaneous feedback of painless joint movements. This feedback might have modulated psychological features such as fear of movements and increased activity level **[26].**

The results of the current study are supported by those of **Horton, [27]** who found that mulligan's mobilization techniques are thought to increase the range of movement (ROM) in patients with low back pain. Mulligan's mobilization-with-movement (MWM) treatment techniques are gaining increasing popularity for use in musculoskeletal conditions, such as low back pain (LBP) and other disorders.

The results of the current study come in consistence with **Vicenzino et al., [28]** who performed a randomized controlled trial on 102 patients with lumbar radiculopathy. Both groups received conventional treatment in the form of hot packs, lumbar core activation exercises and ergonomic advice. In addition, Group A received Mulligan mobilization

technique. Patients treated with Spinal Mobilization technique produce more significant improvement than those treated with conventional treatment only.

It is the first study which compared between the effect of myofascial release technique and mulligan mobilization technique on post natal low back pain. Results found that both myofascial release technique and mulligan mobilization technique are effective in decreasing pain intensity and functional disability of post natal low back pain. But myofascial release technique is more effective than mulligan mobilization technique.

Conclusion:

It can be concluded that, myofascial release technique is more effective in reducing pain and improving functional status by decreasing disability of patients with post natal low back pain than mulligan mobilization technique.

References:

1. Berg G, Hammer M, Moller-Nielsen J, Linden U and Thorblad J. Low back pain during pregnancy, Obstetrics and Gynecology, 2006, 71: 71 – 75.

2. Polden M and Mantle J. Physiology of pregnancy. In Polden, M and Mantle, J. Physiotherapy in the Obstetrics and Gynecology. ed. pp. 222 -254. Oxford, London. Butterworth Heinemann, 1990.

3. Le Bauer A, Brtalik R and Stow K. The effect of myofascial release (MFR) on an adult with idiopathic scoliosis. Journal of bodywork and movements therapies, 2008, 12: 356-363.

4. DiGiovanna, Eileen, Stanley S and Dennis J. Myofascial (Soft Tissue) techniques (Chapter 12). An Osteopathic Approach to Diagnosis and Treatment, Text book. 3rd edition, Philadelphia, PA: Lippincott Williams and Wilkins. 2005**,** 80-82.

5. Arun B. Effects of Myofascial release therapy on pain related disability, quality of sleep and depression in older adults with chronic low back pain. Int J Physiother Res, 2014, 2(1):318-23. Issn 2321-1822.

6. Manheim C. The Myofascial Release Manual. Text book. 4th Edition, Slack Inc, 2008, 304-350.

7. Collins N, Teys P and Vicenzino B. The initial effects of a Mulligan's mobilization technique on dorsiflexion and pain in subacute ankle sprains. Man Ther, 2004**,** 9: 77-82.

8. Teys P, Bisset L and Vicenzino B. The initial effects of Mulligan's mobilization with movement technique on range of movement and pressure pain threshold in pain limited-shoulders, 2006**,** 6 (2):72-81.

9. Paungmali A, O'Leary S, Souvlis T and Vicenzino B. Hypoalgesic and sympatho excitatory effects of mobilization with movement for lateral epicondylalgia. Journal of Physical Therapy, 2003**,** 83(4): 374-383.

10. MulliganB. The painful dysfunctional shoulder: A new treatment approach using 'Mobilization with Movement, The New Zealand Journal of Physiotherapy, 2003**,** 31 (3): 140-142.

11. Vicenzino B, Paungmali A and Teys P. Mulligan's mobilization-with-movement, positional Faults, and pain relief: Current concepts from a critical review of literature, Man Ther, 2007**,** 12: 98–108.

12. Mulligan B. Manual therapy: "NAGS", "SNAGS", "MWMS" etc. Text Book (5th ed. ed.) Wellington: Plane View Services Ltd, 2004.

13. Mulligan B. Manual Therapy: "NAGS", "SNAGS", "MWMS"" etc. Text Book 6th ed. Wellington.NZ: Plane View Services Ltd, 2006.

14. Wilson E. The Mulligan concept: NAGS. SNAGS and mobilizations with movement, J Bodywork Movement Ther, 2001**,** 5: 81– 89.

15. Britt S, Even I, Gitle K and Nina V. The efficacy of treatment program focusing on specific stabilizing exercises for pelvic girdle pain after pregnancy, a randomized, controlled trial, Spine, 2004**,** 29: 351-359.

16. Darryl B, Sneag A, John A and Bendo M. Pregnancy related low back pain, orthopedics, 2007**,** 30: 830-839.

17. Alicia MS. Preventing and Managing Back Pain during Pregnancy, Text book. 1st edition, Expect Fitness, 2010, 6, 31-39.

18. Schleip R. Fascial plasticity - new neurobiological explanation: part I. J. Bodyw. Mov. Ther, 2003, 7, 11-19.

19. Martin M. Effects of the myofascial release in diffuse systemic sclerosis. J. Body. Mov. Ther, 2009, 13, 320-327.

20. Meltzer K, Cao T, Schad J, King H, Stoll S and Standley P. In vitro modeling of repetitive motion injury and myofascial release. J. Bodyw. Mov. Ther, 2010, 14, 162-171.

21. Stanborough M. 2004: Direct release myofascial technique. Text book, 1st ed. Elsevier Churchill Livingstone. Pp.12-50.

22. Ajimsha M, Binsu D and Chithra S. Effectiveness of Myofascial release in the management of chronic low back pain in nursing professionals. Journal of Bodywork & Movement Therapies, 2014, 18, 273-281.

23. Adelaida M, Guillermo Matara, Manuel A, Manuel S, Cayetano F and Carmen M. Effects of myofascial release techniques on pain, physical function, and postural stability in patients with fibromyalgia: a randomized controlled trial. Clinical Rehabilitation, 2011, 25(9) 800–813.

24. Marzouk A. Effectiveness of Myofascial Release Technique in Management of Patients with Chronic Low Back Pain. Bull. Fac. Ph. Th. Cairo Univ., 2011, 16(2): 151-157.

25. Zusman M. Mechanism of mobilization. Physical Therapy Reviews, 2011, 16, (4): 233-236.

26. Abbott J. Mobilization with movement applied to the elbow affects shoulder range of movement in subjects with lateral epicondylalgia, Man Ther, 2001, 6: 170–177.

27. Horton S. Acute locked thoracic spine: treatment with a modified SNAG, Man Ther, 2002**,** 7**:**103-107.

28. Vicenzino B, Hall T, Hing W and Rivett D. A new proposed model of the mechanisms of action of mobilization with movement; Mobilization with Movement: The Art and the Science, London, Churchill Livingstone. 2nd ed. 2011**,** 75–85.

المستخلص

الهدف: أجريت هذه الدراسة لمقارنة تأثير الإنفراج الليفى العضلى مقابل تقنية موليجان للتليين على آلام أسفل الظهر بعد الولادة.

الأشخاص: شارك في هذه الدراسة خمسون سيدة بكرية أو متعددة الولادة تشكو من آلام أسفل الظهر. تم إختيارهن عشوائيا من قسم العلاج الطبيعى فى مستشفى الزهراء الجامعى بالقاهرة، جامعة الأزهر. تراوحت أعمارهن بين ٢٥-٣٥عاماً ومؤشر كتلة أجسامهن لاتزيد عن٣٠ كيلوجرام/مترمربع. حالتهن الطبية كانت مستقرة و لم يتعاطين أى علاج دوائى أثناء فترة البحث.

تم تقسيمهن إلى مجموعتين متساويتين فى العدد: المجموعة (أ) عولجت بإستخدام الإنفراج الليفى العضلى ثلاث جلسات أسبوعياً لمدة أربعة أسابيع ،ثلاث جلسات أسبوعياً لمدة أربعة أسابيع بينما المجموعة (ب) عولجت بإستخدام تقنية موليجان للتليين ثلاث جلسات أسبوعياً لمدة ستة أسابيع ،ثلاث جلسات أسبوعياً لمدة ستة أسابيع.

الطرق: تم قياس شدة آلام أسفل الظهرعن طريق بيان تحديد درجة الألم، ومقياس عجز أوسويسترى لتقييم الاعاقة الوظيفية للمجموعتين (أ ، ب) قبل و بعد العلاج.

النتائج: أوضحت نتائج هذه الدراسة وجود نقصان ذات دلالة إحصائية عالية فى شدة آلام أسفل الظهر و الاعاقة الوظيفية فى كلتا المجموعتين (أ ، ب).

بمقارنة المجموعتين(أ ، ب) معا أوضحت نتائج هذه الدراسة عدم وجود فرق ذو دلالة احصائية بين المجموعتين (أ ، ب) فى شدة آلام أسفل الظهر و الاعاقة الوظيفية قبل العلاج. و لكن بعد العلاج أوضحت النتائج وجود فرق ذو دلالة احصائية عالية فى شدة آلام أسفل الظهر و الاعاقة الوظيفية بين المجموعتين (أ ، ب) (نقصان أكثر فى المجموعة أ).

الخلاصة: وهكذا يمكن أن نستخلص أن الإنفراج الليفى العضلى أفضل فى تقليل شدة آلام أسفل الظهر و الاعاقة الوظيفية من تقنية موليجان للتليين لدى السيدات بعد الولادة.

الكلمات الدالة: الإنفراج الليفى العضلى - تقنية موليجان للتلىين – آلام أسفل الظهر بعدالولادة.