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ORIGINAL ARTICLE

THE EFFICACY OF MAITLAND'S MOBILIZATION ON THE INDIVIDUALS WITH SACROILIAC JOINT DYSFUNCTION

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Abstract

Aims and Objectives: The term dysfunction describes the loss of movement known as joint play or accessory joint movement. The purpose of the study is to identify the sacroiliac dysfunction and to study the effect of Maitland's Mobilization on the individuals diagnosed with Sacroiliac dysfunction. The objective of the study is to find out the efficacy of Maitland's Mobilization on the individuals with Sacroiliac dysfunction. **Methods:** The total subjects (N = 30) for the study were selected by Purposive sampling. The age of study population ranged from 20-50 years of both sexes. The patients were randomly assigned into two groups, experimental and control. The experimental group is given Maitland's mobilization and exercises for Abdominal and Multifidus muscle strengthening. The control group is given Abdominal and Multifidus muscle strengthening exercises. **Results:** Two groups were compared for pain using V.A.S & functional disability by Modified Oswestry Low Back Pain Disability Questionnaire (M.O.L.B.P.D.Q). Pre & post assessment values within the same group were analysed by paired "t" test. The mean difference of M.O.L.B.P.D.Q after 7 days treatment was 25.67 and 3.47, V.A.S showed a mean difference of 6.47 and 3.47 respectively in experimental and control group. The Values between the experimental & control group were compared using the student "t" test and found significant difference in reduction of pain and functional disability. **Conclusion:** The study concluded that Maitland's mobilization is a highly effective technique for the treatment of sacroiliac joint dysfunction.

Keywords: Sacro Iliac Joint Dysfunction, Maitland's Mobilization, Modified Oswestry Low Back Pain Disability Questionnaire, Visual Analog Scale.

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INTRODUCTION

Pain in the low back has been diagnosed and misdiagnosed, treated and mistreated for decades, Richard L. Dontigny¹. It is now incontrovertible that some proportion of painful spinal disorders is secondary to [sacroiliac] joint dysfunction, Vert Mooney².

The term "dysfunction" was originally coined by Mennell (1960) to describe the loss of movement known as joint play or accessory joint movement. It implies incorrect functioning of S.I.J without trying to state a particular pathology or pinpoint a single structure. Loss of joint play (dysfunction) can be due to adaptive shortening, contracture, scarring, adherence or fibrosis. Sacroiliac joint was recognized as a source of pain from the time of Hippocrates¹¹. At the time it was thought to be a source of pain only in pregnant women. Later it was recognized as a source of pain in men too.

The purpose of the study is to identify the sacroiliac dysfunction and to study the effect of Maitland's Mobilization⁵ on the individuals diagnosed with Sacroiliac dysfunction.

Research Objective

The objective of the study is to find out the efficacy of Maitland's Mobilization on the individuals with Sacroiliac dysfunction.

METHODS

Samples for the study is selected by Purposive sampling .The age of study population ranges from 20-50 years of the both sexes.

The total subjects (N = 30) are identified. The assessment of the patient is taken if the special tests are positive. The patients are randomly assigned into two groups, experimental and control. The experimental group is given Maitland's mobilization⁵ and exercises for Abdominal and Multifidus muscle strengthening .The control group is given Abdominal and Multifidus muscle strengthening exercises.

Following Maitland's mobilization techniques are used as treatment.

1.Opening anterior surfaces = Patient is supine lying. Therapist will produce an opening stress on the anterior surfaces of both sacroiliac joints. The therapist pushes his hands from each other to produce oscillatory movement , which stresses sacroiliac joints anteriorly.

2.Opening posterior surfaces with Patient lying in supine. Therapist gives oscillatory movement by placing his both hands laterally to patient's pelvis; apply stress on S.I joint to posteriorly.

3.Direct pressure over the Sacrum and the Ilium with the patient lies prone and therapist places his hands centrally at first over the upper Sacrum. Oscillatory pressure is applied to the S1 level, and then it is applied to all levels until reaching the distal end of Sacrum. The pressure is given for stressing the posterior joint and compressing it anteriorly.

4. Backward tilt of upper pelvis with the patient lies on the opposite side. Hip and knee flexed 90 degree. The therapist is standing in front of the patient, places his heel of right hand over the posterior surface of the patient's left Ischial tuberosity with the fingers and forearm pointing over patient's hip towards therapists face and left hand over patient's ASIS and exerts a rotary strain on the S.I joint by pushing ASIS upwards and backwards and Ischial tuberosity forwards.

5. Forward tilt of upper pelvis with the patient adopts the same position and the therapist places heel of his left hand against the postero lateral margin of the iliac crest. Therapist's fingers point upwards, containing around the Ilium and cups the palm of his right hand over the left ischial tuberosity, fingers joint backwards over the patient's buttock uses alternate rotary strain on the S .I joint and upper pelvis is tilted forward.

6.Caudad and cephalad movement of ASIS with the Patient in supine lying, therapist places his hand, under side of ASIS which

need to move cephalad and other hand over the opposite ASIS need to move caudally. Movement of symphysis pubis via the ASISs is produced by the therapist using her pectoral muscle to simultaneously move the ASIS in opposite caudad & cephalad direction.

The amount of each treatment was approximately three to four mobilizations of a joint lasting approximately 30 seconds.

Core stabilization exercises: Core stability relates to the bodily region bounded by the abdominal wall, the pelvis, the lower back, the diaphragm and its ability to stabilize the body during movement. It is necessary to maintain upright posture & for movements.

Important instructions to the patients: subjects do not hold breath while exercising. Must maintain muscle contraction for at least 10 seconds. When activating these muscles do not push stomach outwards, but rather bring navel closer to spine. Perform all exercises 10 times each, holding for 10 seconds & twice each day.

Procedures:

1. Patient is in supine position, with knees bent. Spine is in neutral position. The patient presses the spine down and holds for 10 seconds and then relaxes it. This exercise is to be repeated 5 times.

2. The patient is in supine & is asked to hold core muscles & pick up on foot & straighten the leg without touching the floor & to hold for 10 seconds and then return to starting position then repeat for 5 times.

3. The patient is in quadruped position. The patient is asked to lift one leg backward with knee straight & hold for 10 seconds and repeat 5 times.

Progression:

1. Side bending from side lying: Patient leaning on elbow, both feet together on a step. Now patient activates "core" muscles & raises pelvis off the floor & is asked to count for 10

seconds, then repeat at least three to ten times on each side (Fig.3).



Fig.3 Patient performing bird-dogs exercises

2. Patient on his hand & knees flexed at 90° (Bird-Dog exercises) Activates "core" muscles & then lifts one hand and opposite leg at the same time and told to hold for 10 seconds. Repeated for the opposite hand & leg. The patient was asked to perform at least three to ten times for each side (Fig.4).



Fig.4 Patient performing bird-dogs exercises

The assessment was taken before treatment and on seventh session after treatment. A comparison of assessment made between the two groups regard to V.A.S and Modified Oswestry Low Back Pain Disability Questionnaire.

Materials used for the study:

Materials used were examination table, Visual analogue scale (V.A.S)⁹, Modified Oswestry Low Back Pain Disability Questionnaire.⁸

Inclusion Criteria

The inclusion criteria were Age group between 20-50 years of both sexes. Dull aching pain in the buttock but can be referred to the groin or posterior aspect of the thigh. Pain may be unilateral or bilateral.^{5,6}

Exclusion Criteria

Patients with Ankylosing Spondylitis, Rheumatoid Arthritis, Tuberculosis of the spine, Women in menstrual period, Spondylolisthesis, Malignancy, Pelvic inflammatory disease, Gout, Osteoporosis, Fracture of Pelvis were excluded from the study.

Parameters used for the study:

Mobilization grade used I to IV and duration of the treatment was 7 Days.⁶

Intervention conducted on patients:

After identification of subjects through inclusion and exclusion criteria, special tests done on the subjects along with measurement of range of motion of internal rotation of both hip joints affected sides range of motion will be lesser than the other. These tests⁵ are,

1. Direct pressure: With the patient lying prone, a firm direct springing pressure will be applied directly downwards over the sacrum. Patient tells about the pain. The test is positive.

2. Patrick or Faber test: The patient lies supine on the examination table and the foot of the involved side and extremity is placed on the opposite side (the hip joint is now flexed, externally rotated and abducted). The knee and opposite ASIS are gently pressed. If pain is present, the test is positive.

3. Winged compression test: With the patient lies supine with the examination table. The examiner's arms crossed "separate" the iliac crests with a downward and outwards pressure, this compresses the Sacroiliac, if the pain is present the test is positive.

4. Winged distraction test: With the patient lying on the examination table, the examiner's hands placed on the iliac crests, thumbs on the ASIS and heels of the hand on the rim of the pelvis, compresses the pelvis. This distracts the Sacroiliac joint; if the pain is present the test is positive.

5. Piedallu's test: Physiotherapist will stand behind the sitting patient and place the thumb under but on both the PSIS, ask the patients to bend slowly forwards and observes for symmetry. If one side moves higher relative to the other, problem may exist in the Sacroiliac joint, invariably a hypo mobile lesion in the painful side if that side PSIS moves higher.

6. Lewin-Gaenslen test: The patient lies on the uninvolved side on the examination table the uninvolved knee and hip slightly flexed. Examiner stands behind the patient. He holds the knee joint and extends the hip joint. If the pain is present, the test is positive.

7. Resisted Hip Abduction test: The patient lies on the opposite side. Ask him to abduct the affected hip and resistance. If the patient feels pain, the test is positive.

8. Standing flexion test: The therapist squatting behind the standing patient. The therapist's both thumb on patient's PSIS, ask the patient to bend forward as "trying to touch the ground", the involved side PSIS will move first or farther cranially than the other.

RESULTS

Data was collected and analyzed statistically. The two groups (experimental & control group) were compared for pain using V.A.S & functional disability was assessed by Modified Oswestry Low Back Disability Questionnaire.

Pre & post assessment values within the same group were analyzed using paired "t" test. Values between the experimental & control group were compared and significance of difference scores was tested using the student "t" test.

The scores obtained for the sample before starting the treatment are indicated in table 1.

In Table 1 the mean score of disability & pain are lesser for male patients as compared to female patients. The variances in scores are higher in the experimental group.

Comparison of samples on pre-score experimental & control group. A further analysis of the pre-test scores in experimental & control group was carried out to test the comparability of the two groups as indicated in Table 2.

Sl. No	Group	n	M.O.L.B.P.D.Q		V.A.S	
			Mean	SD	Mean	SD
1	Total	30	36.92	12.29	8.37	2.14
2	Male	17	33.98	10.65	8.06	2.22
3	Female	13	40.77	13.03	8.77	2.05
4	Experimental group	15	36.29	14.50	8.00	2.54
5	Control group	15	37.56	10.09	8.73	1.67

Table 1: Descriptive analysis of demographic data of M.O.L.B.P.D.Q and V.A.S on experimental & control group

M.O.L.B.P.D.Q				V.A.S			
Experimental group 0 DAY	Mean	SD	"t" value ($t_{tab}^{28}=2.05$)	Experimental group 0 DAY	Mean	SD	"t" value ($t_{tab}^{28}=2.05$)
	36.29	14.50	-0.27		8	2.54	-1.46
Control group 0 DAY	37.56	10.09	-0.27	Control group 0 DAY	8.73	1.67	-1.46

Table 2: Comparison of M.O.L.B.P.D.Q and V.A.S on pre-score experimental & control group

Experimental group				M.O.L.B.P.D.Q.I		
Groups	n	0 Day		7 th Day		't' value ($t_{tab}^{14}=2.15$)
		Mean	SD	Mean	SD	
Female	7	41.37	17.34	15.85	12.35	3.06
Male	8	31.85	10.69	6.05	4.35	7.52
Total	15	36.29	14.50	10.62	10.02	13.43

Table 3.1: Mean difference between pre and post score between female and male in the experimental and control group.

Experimental group				V.A.S		
Groups	n	0 Day		7 th Day		't' value ($t_{tab}^{14}=2.15$)
		Mean	SD	Mean	SD	
Female	7	8.14	2.67	1.71	1.11	7.22
Male	8	7.88	2.59	1.38	0.74	6.19
Total	15	8.00	2.54	1.53	0.92	9.51

Table 3.2: Mean difference between pre and post score between female and male in the experimental and control group.

Control group				V.A.S		
Groups	n	0 Day		7 th Day		't' value ($t_{tab}^{14}=2.15$)
		Mean	SD	Mean	SD	
Female	6	9.5	0.55	5.55	1.22	6.9
Male	9	8.22	1.99	5.11	1.45	11.96
Total	15	8.73	1.67	5.27	1.83	11.97

Table 3.3: Mean difference between pre and post score between female and male in the experimental and control group.

Control group				M.O.L.B.P.D.Q.I		
Groups	n	0 Day		7 th Day		't' value ($t_{tab}^{14}=2.15$)
		Mean	SD	Mean	SD	
Female	6	40.07	6.67	32.89	6.37	7.34
Male	9	35.89	11.91	30	8.18	3.46
Total	15	37.56	10.09	31.15	7.41	5.94

Table 3.4: Mean difference between pre and post score between female and male in the experimental and control group.

Treatment has brought about significant reduction in measures of pain and disability in all the sub groups as indicated by the significant 't' values.

The "t" test values were not statistically significant and there was no significant difference in the pre-test scores of the two groups both on disability & pain measures.

Effect of treatment: The impact of the two treatments viz., Maitland’s mobilization and exercises for abdominals and back extensors on measures of disability and pain is studied by comparing the measures before and after treatment as shown in Table 3.

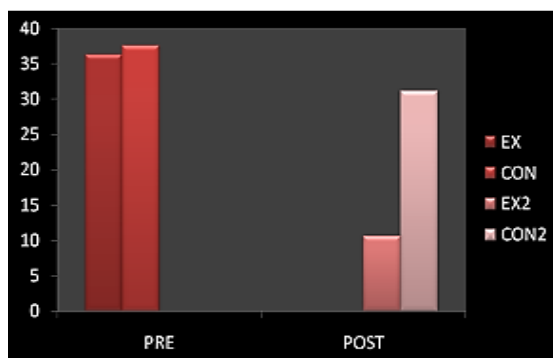
Groups	Mean	SD	“t” value ($t_{tab}^{28}=2.05$)
Experimental Group	25.67	7.39	4.44
Control Group	6.41	4.17	

Table 4. Comparison of Pre and Post score of M.O.L.B.P.D.Q.I

Groups	Mean	SD	“t” value ($t_{tab}^{28}=2.05$)
Experimental Group	6.47	2.62	4.87
Control Group	3.47	1.31	

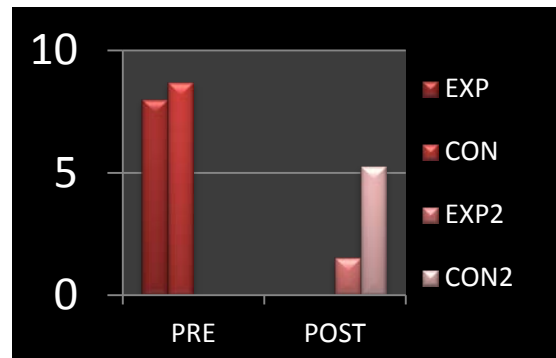
Table 5. Comparison of Pre and Post score of V.A.S

Comparative study shows significant difference in score for experimental and control group for pre to post score (Table 4 and 5).



Graph 1: Comparison of Pre and Post score between Experimental and Control Group on M.O.L.B.P.D.Q.I

The score in pre-treatment for experimental group was (EX) 36.29, and for control group (CON) 37.56. After the post-treatment for experimental group the score was (EX2) 10.62, and for control group (CON2) 31.15 respectively in Graph 1.



Graph 2: Comparison of Pre and Post score between Experimental and Control Group on VAS

The VAS score in pre-treatment for experimental group was (EX) 8, and for control group (CON) 7.3. After the post-treatment for experimental group the score was (EX2) 1.53, and for control group (CON2) 5.27 respectively in Graph 2.

Comparative study shows significant difference in score for experimental and control group for pre to post score. (Graph 1 and 2)

DISCUSSION

A group of 30 patients with a mean age of 33.93 years and mean duration of complain 4.87 months (SD = 3.15) took part in the study. The control group consisted of 15 patients who received only core stabilization exercises as treatment and the experimental group consisted of 15 patients who received Maitland’s mobilization in addition to the exercises.

The ‘t’ values is statistically significant and suggest better results in experimental group who received both core stabilization exercises and Maitland’s mobilization as opposed to the group that received only exercises. The mean of V.A.S on the first day before treatment was

8 in experimental group and 8.73 in the control group. After the treatment on the 7th day, the V.A.S showed a mean of 1.53 in the experimental group and 5.27 in the control group.

The mean value of M.O.L.B.P.D.Q on the first day before treatment was 36.29 in experimental group and 37.56 in the control group. After the treatment on the 7th day, the M.O.L.B.P.D.Q showed a mean of 10.62 in the experimental group and 35.15 in the control group.

According to the result obtained the decrease in the value for the experimental group is for more as compared to the decrease in the value for control group. This is supported by the significant value of mean in Table 4, where the mean of M.O.L.B.P.D.Q is 25.67 and V.A.S is 6.47 in the experimental group and mean of M.O.L.B.P.D.Q is 6.41 and V.A.S is 3.47 in the control group.

These results shows that although there was reduction of pain & functional disability of sacroiliac joint in both the groups, the decrease in pain and functional disability was more in the experimental group than the control group.

This clearly indicates that Maitland's mobilization is an effective therapy for individuals with sacroiliac dysfunction and this study supports the fact.

CONCLUSION

The study concluded that Maitland's mobilization is highly effective technique for sacroiliac dysfunction. In this study the treatment period has been taken for a shorter period. Hence further study can be done for a longer period of treatment time, to determine the duration required by the patients to report complete recovery in all aspects. Research with a large number of subjects

need to be carried out to make generalizations.

REFERENCES

1. Weisl H (1954), The articular surfaces of the sacroiliac joint and their relation to the movements of the sacrum. *Acta Anat.* Vol. 22, page: 1-13.
2. Mooney Vert (1995), Evaluation and treatment of sacroiliac dysfunction, page: 561.
3. John E. Murtagh (1997), *Back Pain and Spinal Manipulation.* 2nd Edn. Butterworth-Heinemann, page-374-377.
4. Richard L. Don Tigny (1999), Critical analysis of the sequence and extent of the results of the pathological failure of self-bracing of the sacroiliac joint, *The Journal of Manual & Manipulative Therapy*, vol. 7, page-173-181.
5. G. D. Maitland (2001), *Maitland's Vertebral manipulation*, 6th Edn, page-3,4,15, 43,58,211,216,217,220,387,393.
6. David C. Reid (1992), *Sports injury assessment and rehabilitation*, 1st edition, page-662.
7. Joseph J Godges et al. (2002), Impairment-Based examination and disability management of an elderly woman with sacroiliac region pain. *Physical therapy.* Vol.82, No.8, page-812-821.
8. Nadine E. Foster et al. (1992), Management of non-specific Low Back Pain by physiotherapists in Britain and Ireland. *Spine.* Vol.24, No.13, page-1332-1342.
9. Tom Arild Torstensen et al. (1998), Efficiency and costs of Medical exercise therapy, conventional physiotherapy and self-exercise in patients with chronic Low Back Pain. *Spine.* Vol. 23, No.23, page-2616-2619.
10. Richard Don Tigny. (1993), Mechanics and treatment of the sacroiliac joint. *The Journal of Manual and Manipulative Therapy.* Vol.1, No.1. page-3-12.
11. Gary M. Souza, Lucinda L. Baker (2001), Electromyographic Activity of Selected Trunk Muscles during Dynamic Spine Stabilization Exercises, *Arch Phys Med Rehabil*, vol: 82, page-1551-155.

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