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Comparison between specific lumbar mobilization and core-stability exercises with core-stability exercises alone in mechanical low back pain in Indian population

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Abstract

Background: Scientific scrutiny of low back problems demonstrates its socio-economic importance in most industrialized societies. The patho-mechanics of low back pain is unknown. Physicians[1] are beginning to get better perception of what causes of pain psycho-social factors, PIVD, spondylolisthesis, OA, muscular imbalance etc or other pathological & bio-chemical factors. **Material and methods:** Patients from suspected cases of mechanical low back pain were received in my clinic. We selected a sample of 30 patients and placed into two groups. The specific lumbar mobilization techniques with core stability exercises was applied in group A and core stability exercises alone in group B for six weeks. The Oswestry Disability Index [ODI] and Visual Analog Scale [VAS] for mechanical low back pain were assessment tools assessed for all patients before and after six weeks of physiotherapy intervention. **Results:** After comparison between two groups, the group A treated with specific lumbar mobilization techniques shows better results in improving pain [p= 0.009] and reducing physical disability [p=0.005] as compared to the group B treated with specific lumbar mobilization techniques alone [pain intensity: p=0.173 and physical disability: p=0.202]. **Conclusion:** It is concluded that patients with mechanical low back pain will show more improvement in pain and function while treated by specific lumbar mobilization and core stability exercises as compared to those patients who will be treated by specific joint mobilization techniques.

Keywords: Specific lumbar mobilization, core stability exercises, mechanical low back pain.

Introduction

Pain is a distressing feeling often caused by intense or damaging stimuli. LBP is a common neuro-musculo-skeletal problem affecting 40% of population world-wide at some point in their life and causes significant disability with loss of productive working hours.[2] Low back pain may be linked to the bony lumbar spine, discs between the vertebrae, ligaments around the spine and discs, spinal cord and nerves, lower back muscles, abdominal and pelvic internal organs and the skin around the lumbar area. The common sign and symptoms are local or radicular pain, tenderness, which is aggravated by movement with loss of function.[3] The physical or mechanical causes of low back pain

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are osteoarthritis, rheumatoid arthritis, degeneration of the discs between the vertebrae or a spinal disc herniation, a vertebral fracture [such as from osteoporosis], or rarely, an infection or tumor.[4]

The individual effectiveness of manual physiotherapy and core-stability exercises are evident in the management of mechanical low back pain, but there is no single study available in the literature on the combined effects of manual physiotherapy and core stability exercise therapy in the management o mechanical low back pain.[5]

Manual therapy is commonly used in the management of mechanical low back pain to improve the mobility of lumbar spine. These techniques are based on glides in prone position. In this study, the techniques are used were central anterior-posterior glides and unilateral anterior-posterior glides. The aim of specific lumbar mobilization technique is to improve pain and increase mobility.[6]

The core stabilization exercises for strengthening of spinal muscles is to improve their ability to maintain neutral spine using the abdominal, back, neck and shoulder girdle muscles as stabilizers rather than movers. There are two types of core stability exercises: static activities exercise and dynamic floor exercise. In this study, authors use plank, side plunk, bridging as static activities core stabilization exercise and side lying with abduction, oblique crunch, straight leg raising as dynamic floor core stability exercises.[7]

Table-I

Static and dynamic activities for stability exercises

Static Activities Exercises	**Dynamic Floor Exercises**
Plank	Side lying with abduction
Side Plunk	Oblique crunch
Bridging	Straight leg raising

Material and Methods

Patients from suspected cases of mechanical low back pain were received in my clinic. We conveniently selected a sample of 30 patients and placed into two groups. The specific lumbar mobilization techniques with core stability exercises was applied in group A and core stability exercises alone in group B for six weeks. The Oswestry Disability Index [ODI] and Visual Analog Scale [VAS] for mechanical low back pain were assessment tools assessed for all patients before and after six weeks of physiotherapy intervention. Data was analyzed by SPSS and statistical test were applied at 95% level of significance determine the efficacy of both the treatment regimen and compared with each other.

All 30 patients were tested for six weeks at 4 days per week, for single session of 45 minutes. The specific lumbar mobilization techniques includes central antero-posterior and unilateral antero-posterior in prone lying at 6-8 glides per session from T12 to L5 and followed by core stability exercises for local muscles like multifidus, transverse abdominis, diaphragm, pelvic floor muscles

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and global dynamic muscles like rectus abdominis, internal oblique, external oblique, erector spinae. The physical activities for these core stability exercises are listed in Table-I and all the positions were maintained for 5-10 seconds for 10 repetitions. The specific joint mobilizations techniques were applied in group B alone.

Results

In this study, all 30 patients with low back pain underwent through a six week physiotherapy management. The result of this study shows that the mean pain intensity was 6/10 and disability score 36 on ODI [moderate disability] before intervention in group A, which was treated by specific lumbar mobilization and core-stabilization exercises improve pain intensity to 2/10 on VAS and disability score to 16 [minimal disability].

The mean pain intensity was 7/10 and disability score 38 on ODI [moderate disability] before intervention in group B, which was treated by specific lumbar mobilization techniques alone improve pain intensity to 5/10 on VAS and disability score to 26 [moderate disability].

After the comparison between two group, group A treated with specific lumbar mobilization techniques shows better results in improving pain [p=0.009] and reducing physical disability [p=0.005] as compared to the group B treated with specific lumbar mobilization techniques alone [pain intensity: p=0.173 and physical disability: p= 202].

Table-II

Basic characteristics of 30 patients of mechanical low back pain

Characteristics	Group A	Group B	Total
Male Patients	09	06	15
Female Patients	80	07	15
Sedentary Lifestyle	12	11	23
Active Lifestyle	05	02	07
VAS 0-10 [Mean]	6.85	7.0	6.92
ODI 0-50 [Mean]	23.4	26.0	24.70

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Table-III

Clinical and functional changes in all 30 patients at six weeks with mechanical low back pain

Characteristics	Group A			Group B		
	Mean	Standard Deviation	P-Value	Mean	Standard Deviation	P-Value
VAS	0.96	1.5±0.32	0.009	0.56	1.8±0.26	0.173
ODI	0.81	1.3±0.24	0.005	0.34	1.2±0.20	0.202

Discussion

The study revealed the overall prevalence of mechanical low back pain among house-wives, office-working male and females. The result of this study shows that specific low mobilization technique combined with core stabilization exercises are better manage pain and disability in the management of mechanical low back pain, as compared with lumbar specific mobilization alone.

Delitto and colleagues recommended that the non-thrust mobilization improves pain, spinal mobility and disability in both acute and chronic pain and pain related to lower extremity. These recommendations are based on strong evidence.[8]

Aure and group applied manual therapy on twenty-seven patients and exercise therapy on twenty-two patients for the period of two months. They concluded that the improvements in movement were more in manual therapy group as compare to the patient in the exercise therapy group.[9]

Cairns and team carried out a pragmatic, multicentered randomized controlled trial on ninety-seven patients of low back pain with 12 months follow-up. All patients were placed into two groups through random sampling techniques. The conventional physiotherapy including general active exercise combined with manual therapy was applied in group A, while conventional physiotherapy combined with core-stability exercises in group B. 68% patients out of ninety-seven completed the study and they concluded that both packages of treatment showed the same effects and sign and symptoms were improved with same degree in both treatment groups.[10]

Salven and group found multiple studies which provide evidence that single session of joint mobilization can lead to reduction in pain at rest and with most painful movement.[11] Xue-Qiang Wang and his team conducted a meta-analysis to review the effects of core-stability exercise or general exercise for patients with chronic low back pain. They found twenty-eight potentially relevant trials, which support the evidence for effectiveness of core stability exercises as compare to the general exercises in patients with chronic low back pain.[12]

Conclusion

It is concluded that patients with mechanical low back pain will show more improvement in pain and function while treated by specific lumbar mobilization and core-stability exercises as compared to those patients who will be treated by specific joint mobilization techniques.

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