To Find Out the Effectiveness of Modified Pilates Based Exercise in Patient with Non Specific Chronic Low Back Pain

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Abstract:-

Aim of the Study: **The aim of the study is to find out the effectiveness of modified Pilates based exercise in patient with non specific chronic low back pain.**

Method of Study: **A total ten patients with age of 18-60 years based on inclusion and exclusion criteria in patient with non specific chronic low back pain selected.**

Duration of treatment was 4 weeks .the outcome measure are analyzed before and after with use of visual analogy scale

Result**: - At the end of the treatment program there was significant relief of pain and improve core muscle strength sub maximally in patient treated with modified Pilates based exercise.**

Conclusion**:- From this study it was concluded that Modified Pilates based exercise is effective to relive pain and improve core muscle strength sub maximally in patient with non specific chronic low back pain.**

I. INTRODUCTION

The Pilates method is a unique approach to training mind-body awareness and control of movement and posture. Pilates technique aim to specifically train the "core muscle" sub maximally to increase tone and strength of muscles, to length and stretch the lumbar spine that decreasing compression of the joints, and cause an alteration in the tilt of the pelvis. The efficient movement patterns that are taught help keep joints healthy. The focused breathing exercise increase lung capacity and circulation. The exercises encourage awareness and control over your body; will improve your strength, balance, flexibility, co-ordination, posture and mental focus.

Principles

Centering – tightening of the muscular center of the body or "power house", located between the pelvic floor and rib cage during exercises.

Concentration – cognitive attention required to perform exercise

Control – close management of posture and movement during exercise.

Precision - accuracy of exercise technique.

Flow – smooth transition of movements within the exercise sequence.

Breathing – moving air in to and out of the lung in co-ordination with exercise.

History:

Joseph h Pilates was born in 1883 Germany. His father was a price winning gymnast. He was a sickly child (asthma, rickets, rheumatic fever). He dedicated his entire life to improve his health. He studied body building, yoga, kung fu and gymnastic. By age 14 he was fit enough to pose for anatomical charts. He believed that "modern life" bad posture and inefficient breathing were the roots of poor health. He devised a series of exercise and training techniques and engineered all equipment to teach his methods. He migrated to US in 1925 he met his wife Clara and founded a studio called his method "CONTROLOGY". Contrology encourage mind to control the muscles

Pilates focuses on core muscles that keep body balanced and provide support for spine.

Low back pain is a major health and socioeconomic problem and is associated with high cost in care, work absenteeism and disability worldwide. Prevalence of Low back pain is the fifth most common reason for physician visits, which affects nearly 60-80% of people throughout their life time. The life time prevalence of low back pain is reported to be as 84% and the prevalence of chronic low back pain is about 23% with 11-12% of population being disabled by low back pain.

Nonspecific low back pain – 90%

According to European guidelines It is defined as, "pain and discomfort, localized below the coastal margin and above the inferior gluteus fold, with or without leg pain".

According to s. kin kade " Pain that occurs posteriorly in the region between the lower rib margin and the proximal thighs".

Pathology

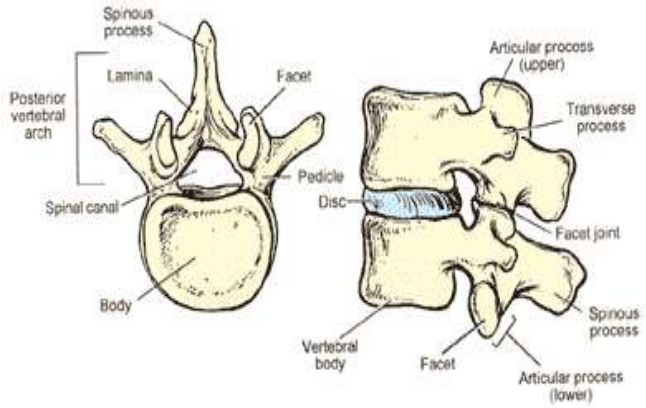
The core muscle situated in the back of the spine, and is important for keeping the spine straight and stable during many common movements such as sitting, walking and

lifting. A problem with these muscles is often found in someone with chronic low back pain, because the back pain causes the person to use the back muscles improperly in trying to avoid the pain. The problem with these muscles continuous even after the pain goes away, and is probably and important reason why the pain comes back.

Anatomy and biomechanics

The first four lumbar vertebrae are similar in structure. the fifth lumbar vertebrae has structural adaptation with the sacrum.

Body: a transverse diameter that is greater than the anterior diameter and greater than the height. **Arches Pedicles**: it is short and thick and project posterolatrealy **Laminae:** it is short and board



Kinematics: The lumbar region is capable of moving in the direction of flexion, extension, lateral flexion and rotation. The lumbar zygoapophyseal facet favour flexion, extension because of predominant sagital plane orientation. Flexion of lumbar spine is more limited than extension and normally it is not possible to flex the lumbar spine to form a kyphotic curve During flexion and extension the greatest mobility of spine occurs between L4 ,S1, which is the area must support the weight Rotation is more limited due to shape of zygoapophyseal joint the effectiveness of zygoapophyseal joints depends on the extend that the superior facet face medially the greatest medial orientation of the joint surface the greater the resistance to the axial rotation.

In Lumbar Region: Pure flexion and extension can occur but coupled motion always occurs with lateral flexion and axial rotation in contralateral direction occurs Lateral flexion and rotation are free in the upper lumbar region and progressively diminish in the lower lumbar region. The largest lateral flexion and axial rotation occurs between L2, L3.

Kinetics: One of the primary function if the lumbar spine is to provide support for the weight of the upper part of the body in static as well as in dynamic situation. The lumbar region must also withstand the tremendous compressive loads produced by muscle contractions.

Aim of Study

To find out the effectiveness of modified Pilates based exercise on improving core muscle strength sub maximally and reduction of pain in patient with non specific chronic low back pain.

Need Of Study

Low back pain is the major and common problems among younger and older age group.

Back pain has been associated with dysfunction and weakness of deeper abdominal muscles are referred as **core muscles**

Hence there is a need for an effective intervention to enhance core muscle strength sub maximally in patient treated with modified Pilates based exercise in individual with non specific chronic low back pain.

II. DESIGN AND METHODOLOGY

Study Design

- quasi experimental study

Sampling Method

- convenient sampling

Inclusion Criteria:

- Patient with low back pain for 3months
- The age group between 18 years to 60 years
- patients with low back pain not more than 5 in visual analog scale
- Patient doing normal ADL activities with painfull.

Exclusion Criteia

- Patients with inter vertebral disc prolapsed
- Patients with radiating pain
- Patients with stenosis
- Patients with severe spondylosis and spondylolisthesis
- patients with structural deformities

Sample Size

- 10 patients

Study Setting:

Physiotherapy outpatient department

Adhiparasakthi college of physiotherapy Melmaruvathur.

Variables

Independent Variable - Modified Pilates based exercise

Dependent Variables: - pain

Methodology

In this study total 10 patients are conveniently selected and the patients are treated with modified Pilates based exercises.

Duration of treatment: 4 weeks , 2session per day

Modified Pilates Based Exercise

- ✓ Total Duration of treatment- **45mins**
- ✓ General flexibility exercise- **15mins**
    - Gluteus muscle
    - Hip flexors
    - Quadriceps muscles
    - Hamstring muscles
    - Pilates exercise – 30mins
    - Modified side kick.
    - Swimming.
    - Modified Shoulder Bridge.
    - Modified spine twist.
    - Modified one leg stretch

REPITITION – **6 TO 8**

Treatment Technique

General Flexibility Exercise

1. Gluteus maximus
    - Position of the patient: supine lying
    - Procedure: flex the trip and knee towards chest
2. Iliacus and Psoas
    - Position of the patient: fall on outstretched hand
    - Procedure: stretched side hip and knee are extended and kept backwards, the opposite side hip and knee are medium flexed and kept forwarded.
3. Quadriceps
    - Position of the patient: standing
    - Procedure: standing with one feet support and the other foot ankle grasped by the respective side hand by knee flexion then the hip is extended.
4. Hamstring
    - Position of the patient: standing
    - Procedure: standing on one leg and other leg over the table and then bend the hip and trunk to touch the toe with hand. NOTE: 15 SECONDS HOLD.

Techniques:

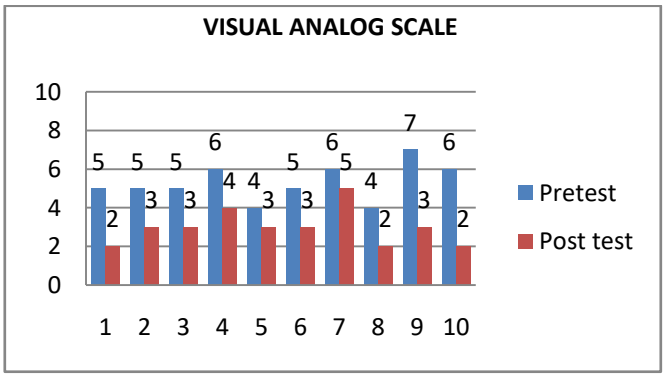
1. Modified spine twist.
    - Position of the patient- long sitting with arm stretch outwards
    - Procedure-inhale rotate thoracic spine to the left exhale de-rotate the spine back to normal (vice versa)
2. Modified shoulder bridge.
    - Position of the patient- crook lying
    - Procedure- inhale as lift the pelvis; lumbar; thorax and top of shoulder blades exhale and return to normal position and keep the pelvis neutral.
3. Modified one leg stretch.
    - Position of the patient- supine lying
    - Procedure- inhale and bring one knee towards the chest and extend the other leg away inhale as switch legs exhale as alternate legs and exhale again.

    Note: inhale one set and exhale another set
4. Modified side kick.
    - Position of the patient- side lying
    - Procedure- inhale and flex the foot as swing the leg forward exhale and extend the foot as swing the leg backward
5. Swimming:
    - Position of the patient- prone lying
    - Procedure- inhale for 2 strokes while reach one leg and opposite arm upward exhale for 2 strokes while reach one leg and opposite arm upward

III. DATA ANALYSIS

Visual analog scale

S.NO	PRETEST	POST TEST
1	5	2
2	5	3
3	5	3
4	6	4
5	4	3
6	5	3
7	6	5
8	4	2
9	7	3
10	6	2



MEAN VALUE

VISUAL ANALOG SCALE

PRE TEST -5.3

POST TEST- 3

IV. RESULTS

Comparison of pre-test and post-test values of visual analog scale shows a considerable reduction of pain and improve core muscle strength sub maximally in patient treated with modified Pilates based exercise.

V. CONCLUSION

From this study it was concluded that modified Pilates based exercise is effective in reducing the pain and improve core muscle strength sub maximally in patient with non specific chronic low back pain.

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