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# Effect of balloon blowing exercise in 90/90 bridge position with ball on chronic nonspecific low back pain

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### Abstract

Non-specific low back pain is the universal term that refers to any type of back pain in the lumbar region that is not related to severe pathology and does not have a specific cause. Impaired kinematics of diaphragm and pelvic floor muscle and changes in breathing pattern were observed in patient with back pain undergoing a motor task. Many factors are potentially involved with suboptimal respiration and suboptimal (faulty) posture and may be associated with musculoskeletal complaints such as low back pain, and/or sacroiliac joint pain. Only limited researches are available regarding the effect of integration of Diaphragm strengthening exercise with other core muscles strengthening in management of chronic Nonspecific LBP.

**Methods:** 30 subjects were selected by simple random sampling method and divided into two groups of 15 in each. Group A treated with Balloon blowing exercise and Core stability exercises and Group B treated with Core stability exercises. Baseline data were assessed on the basis of VAS and Oswestry Disability Index post test results were obtained after four weeks of treatment.

**Results:** The results showed that there was statistically significant difference between the effect of Balloon blowing exercise and Core stability exercises with Core stability exercises alone in management of Chronic Non-specific Low back pain.

**Conclusion:** It has been concluded that Integration of Balloon blowing exercises with core stability exercises is more effective than Core stability exercise alone in chronic Nonspecific Low back pain.

**Keywords:** Balloon blowing exercise, core stability exercises, Oswestry disability index

### Introduction

Non-specific low back pain is the universal term that refers to any type of back pain in the lumbar region that is not related to severe pathology and does not have a specific cause. The incidence of LBP in India has been reported to be 23.09%. It has a lifetime prevalence of 60% to 85%. Diaphragm plays two roles - it is a primary muscle for respiration and also acts as a trunk stabilizer.

Impaired kinematics of diaphragm and pelvic floor muscle and changes in breathing pattern were observed in patient with back pain undergoing a motor task. Many factors are potentially involved with suboptimal respiration and suboptimal (faulty) posture and may be associated with musculoskeletal complaints such as low back pain, and/or sacroiliac joint pain.

Only limited researches are available regarding the effect of integration of Diaphragm strengthening exercise with other core muscles in management of chronic Nonspecific LBP.

### Method and Methodology

**Study design:** Two group, pre-test and post-test experimental group design.

**Study setting:** Department of physiotherapy, New Aswini Hospital, Ottapalam, Pallakad, Kerala.

**Sample size:** 30 patients with Chronic Nonspecific Low back pain

### Inclusion criteria

1. Chronic nonspecific Low back pain diagnosed by senior orthopaedician.
2. Age group between 20 to 35 years.

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3. Pain in VAS with the range of 5 to 7.
4. Duration of symptoms with more than 3 months.
5. Both sexes.

#### Exclusion criteria

1. Low back pain with Specific Pathology.
2. Acute and sub-acute stage LBP.
3. Low back pain with radiating pain down to lower limb.
4. Low back pain with Sensory motor loss in lower limb.
5. Recent Trauma
6. Surgery in Low back

#### Outcome measure

1. VAS
2. Oswestry Disability Index

#### Procedure

30 Patients with Chronic Nonspecific Low back pain as per inclusion and exclusion criteria were taken up for the study and assigned to experimental and control group with 15 patients in each group. Patients in Experimental group received Core stability exercises concentrating on Lumbar spine stabilizer muscles like Transverse abdominis, Multifidus and pelvic floor muscles and Balloon blowing exercises concentrating on Diaphragm. Patients were made to lie on the back with feet flat on a wall with hips and knees bent at a 90°. With one hand placed above the head and other one holding the Balloon a ball of 5 inches in diameter were placed to hold in between the patient's knees. Patients were instructed to inhale through nose and exhale through mouth into the balloon while doing posterior pelvic tilt. This process was repeated for 4 to 5 times without substitutions strategies by phasic muscle groups. Control group received only Core stability exercises concentrating on Lumbar spine stabilizer muscles like Transverse abdominis, Multifidus and pelvic floor muscles. For short term pain relief both the group received Interferential therapy in addition to their respective exercise program with each session extending up to 45 minutes on Alternate days of the week for a month (4 weeks)

#### Statistical analysis

##### Pain

Paired 't' test – Visual analogue scale  
Post-test values of group A and group B

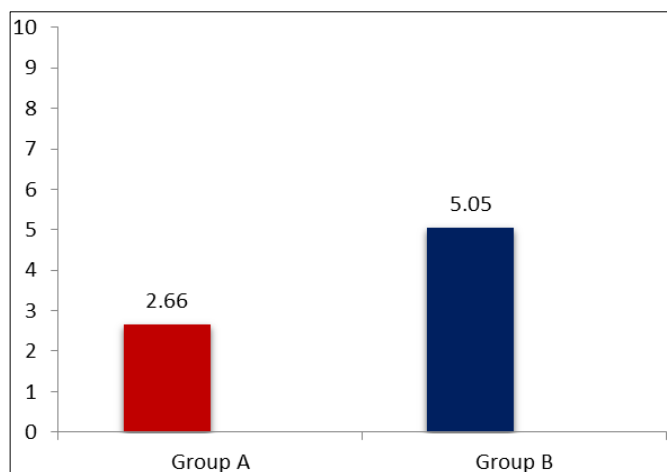


Fig 1: Pain

##### Disability

Paired 't' test – Oswestry Disability Index.  
Post-test values of group A and group B

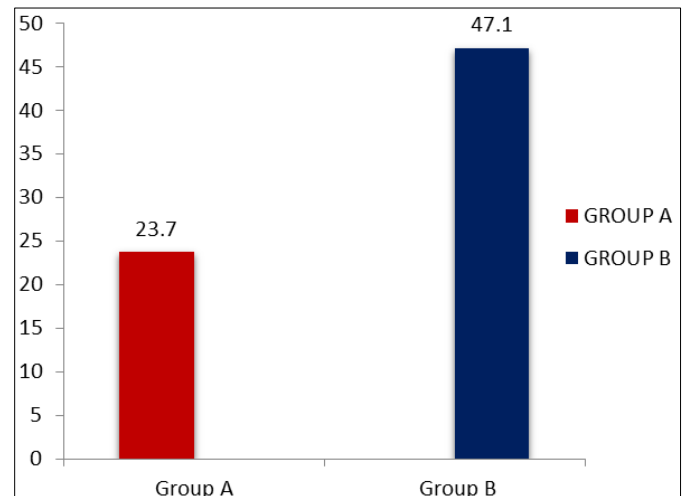


Fig 2: Disability

#### Results and Discussion

Statistical analysis using Paired 't' test concluded that there was a significant decrease in pre to post values of Pain and Disability in both Balloon blowing exercise group and Core stability exercise group. Unpaired 't' test has shown that there was a significant difference between the effect of Balloon blowing exercise along with core stability exercise and Core stability exercise alone in Chronic nonspecific Low back pain. In this study, Balloon blowing exercise with core stability exercise group has shown significantly better improvement than Core stability exercise group alone. The reason may be that The Balloon blowing exercises provide an optimal zone of apposition (ZOA) of the diaphragm that may help to address LBP and this exercise have been designed in such a way, that all the core muscles get recruited while performing the exercises. During inspiration, the diaphragm contracts concentrically, whereas the transversus abdominis contracts eccentrically. The muscles function in reverse during exhalation with the diaphragm contracting eccentrically while the transversus abdominis contracts concentrically. Optimal strength in diaphragm may optimally recruit and integrate all the stabilizer muscles of Thoracolumbar fascia which naturally stabilises the Low back area of spine.

#### Conclusion

This study concludes that balloon blowing exercise is a good exercise which can be done along with other core stability exercise to get the optimal pain reduction and improvement in functional status of patients with chronic Nonspecific low back pain than Core stability exercises alone.

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