

Effect of Janda's Approach on Pain and Function in Patients with Non-Specific Low Back Pain- An Interventional Study

Sapna Nandlal Tank, Yagna Shukla

Government Physiotherapy College, Government Spine Institute, Civil Hospital, Ahmedabad.

Corresponding Author: Yagna Shukla

ABSTRACT

Background: Non-specific low back is the pain in which there is no attributable cause of back pain. It is mainly resulting from poor posture, which leads to imbalance in back muscles. Tightness of iliopsoas, rectus femoris and erector spinae along with weakness of gluteal and abdominal muscle create muscle imbalance and leads to non-specific low back pain. Janda's approach is used to correct muscle imbalance by using postural correction and manual therapy. It includes restoring length of tight muscles and strengthening of weak muscles.

Objective: To know the effect of Janda's approach on pain and function in patients with non-specific low back pain.

Methodology: An interventional study was conducted on 34 patients with age between 25 – 45 years. Both male and female were included and divided into two groups. Group A was a control group performed conventional exercise and Group B was an interventional group performed stretching of tight muscles and strengthening of weak muscles along with conventional exercise for 6 days a week for 2 weeks. Data were taken prior and at the end of 2 weeks for pain and function.

Results: Wilcoxon signed rank test and Mann Whitney U test was used to evaluate data. There was significant improvement in NPRS and Modified Oswestry Disability Index in both groups. ($p < 0.05$). NPRS and Modified Oswestry disability index improved more in interventional group as compared to conventional group ($p < 0.05$).

Conclusion: Janda's approach along with conventional treatment helps in greater improvement on pain and function in patients with non-specific low back pain.

Keywords: Janda's approach, non-specific low back pain

INTRODUCTION

Low back pain (LBP) is one of the most frequent causes of disability. Low back pain is defined as a pain or discomfort located below the margin of the 12th rib and above the inferior gluteal fold, with or without leg pain. ^[1]

In India, the incidence of low back pain has been reported to be 23.09% and has a lifetime prevalence of 60-85%. ^[2]

A simple and practical classification of low back pain, which has gained international acceptance, is to divide Low Back Pain into three categories – the so called “diagnostic triage” (Waddell 1987)

- Specific spinal pathology
- Nerve root pain / radicular pain
- Nonspecific low back pain

Non-specific low back pain is the one that is not attributable to a recognisable, known pathology (e.g.: infection, structural deformity, osteoporosis, fracture, inflammatory disorder like ankylosing spondylitis, radicular syndrome, cauda equina syndrome) ^[3] There is no specific problem or disease that can be identified as the cause of the pain. ⁽⁴⁾ It is typically associated with pain, soreness and/or stiffness in the lower back region and functional disability. ⁽⁴⁾ It typically results due to poor posture, poorly designed seating, incorrect bending and lifting

motions as required in various occupations. (4)

With regard to muscular influences on LBP, the hip musculature plays a significant role in transferring forces from the lower extremity up toward the spine during upright activities and thus theoretically may influence the development of LBP. Poor endurance and delayed firing of the hip extensor (gluteus maximus) and abductor (gluteus medius) muscles have previously been noted in individuals with lower extremity instability or LBP. Kankaanpaa et al. and Leinonen et al. demonstrated poor endurance of the gluteus maximus in those with chronic LBP.

Janda identified two groups of muscles based on their phylogenetic development (5) but functionally, muscles can be classified as tonic or flexors and phasic or extensors. (6)

It was noted that the tonic system muscles were more prone to tightness or shortness and the phasic system muscles would usually undergo weakness or inhibition and that this response depended on the neurological response of nociception in the muscular system. Lower crossed syndrome is characterized by facilitation of the thoraco-lumbar extensors, rectus femoris, and iliopsoas, as well as inhibition of the abdominals (particularly transversus abdominus) and the gluteal muscles. (6)

The Janda approach to treatment of musculoskeletal pain follows several steps. Treatment of muscle imbalance and movement impairment begins with normalizing afferent information entering the sensorimotor system. This includes providing an optimal environment for healing (by reducing effusion and protection of healing tissues, restoring proper postural alignment (through postural and ergonomic education), and correcting the biomechanics of a peripheral joint (through manual therapy techniques).

Once peripheral structures are normalized, muscle balance is restored. Normal muscle tone surrounding joints must be restored. Sherrington's law of reciprocal

inhibition (Sherrington, 1907) states that a hypertonic antagonist muscle may be reflexively inhibiting their agonist. Therefore, in the presence of tight and/or short antagonistic muscles, restoring normal muscle tone and/or length must first be addressed before attempting to strengthen a weakened or inhibited muscle. Techniques to decrease tone must be specific to the cause of the hypertonicity. These include post-isometric relaxation (PIR) (Lewit, 1994) and post-facilitation stretch (PFS) (Janda, 1988).

METHODOLOGY

RESEARCH METHOD

STUDY DESIGN: An Interventional study

STUDY SETTING: Physiotherapy Department of a Hospital

SAMPLE SELECTION: According to inclusion and exclusion criteria

SAMPLING TECHNIQUE: Convenient sampling

SAMPLE SIZE:

Group A: 17

Group B: 17

Age: 25-45 years

Gender: Both male and female

DURATION OF STUDY:

The study was conducted over a period of 2 weeks.

SELECTION CRITERIA-

INCLUSION CRITERIA:

- Patient with nonspecific low back pain.
- Age group: 25-45 years.
- Gender: Male and Female.
- Pain in low back lasting for more than 3 months.
- Subjects who are willing to participate in the study.

EXCLUSION CRITERIA:

- Back pain with trauma.
- Any neurological symptoms involving Prolapsed Intervertebral Disc, Radiculopathy.
- Any systemic disease like Rheumatoid Arthritis, Ankylosing Spondylitis.
- History of recent abdominal, back surgeries.

- Medical red flags.
- Any congenital condition of lumbar spine.
- Pregnancy.

- 2. gluteal maximus muscle
- Stretching exercise performed actively 30 second hold 3 repetitions.
- Strengthening exercise performed by 10 second hold 10 repetitions.

MATERIALS USED IN THE STUDY

Pen, Scale, Plinth, Stool, Consent form, Proforma, Stabilizer (pressure biofeedback), Camera, Bedsheet, Hot pack, Towel

OUTCOME MEASURES:

Numeric Pain Rating Scale [NPRS]
Modified Oswestry Disability Index [MODI]

PROCEDURE:

Sample of 34 had taken by convenience sampling from the population fulfilling the inclusion criteria. A written consent was obtained from all the subjects. 34 subjects were divided into two groups. NPRS score and MODI score of both the control group and the Interventional group was noted.

- **Protocol for Control Group:** (11)
 1. Hot pack- 20 min
 2. Prone press up
 3. Core stability exercise
 4. Ergonomics
- **Protocol for Interventional Group**
 - Stretching exercise for 1. erector spinae and back extensors muscles
 - 2. iliopsoas muscle and rectus femoris muscle
 - Strengthening exercise for 1. abdominal muscle

RESULTS

The results were analysed by Wilcoxon Signed Rank Test for comparison within group and Mann Whitney U test for comparison between the groups. There was significant difference within both the groups for NPRS and MODI outcome measure. There was statistically significant difference between both groups. The results shows that stretching and strengthening along with conventional treatment is more effective than conventional treatment alone on reducing pain (NPRS) and improving function (MODI). ($p < 0.05$)

Table7. 1: Gender distribution in both the groups

GENDER	GROUP A	GROUP B
MALE	9	8
FEMALE	7	7
TOTAL	16	15

Within group analysis of pre and post NPRS in group 1 and 2 was done using Wilcoxon Signed Rank test. Analysis showed significant difference between pre and post treatment NPRS scores in Group 1 and Group 2 ($p > 0.001$ for each).

Mean NPRS scores in both the groups

Group	Pre treatment		Post treatment		z- value	p-value	Significance
	Mean	SD	Mean	SD			
Group 1	5.37	0.957	1.75	1.064	-3.654	<0.001	YES
Group 2	5.33	0.899	3.20	1.146	-3.352	<0.001	YES

Within group analysis of pre and post MODI in group 1 and 2 was done using Wilcoxon Signed Rank test. Analysis showed significant difference between pre and post treatment MODI scores in Group 1 and Group 2 ($p > 0.001$ for each)

Mean MODI scores in both the groups

Group	Pre treatment		Post treatment		z- value	p-value	Significance
	Mean	SD	Mean	SD			
Group 1	28.87	6.02	11.50	4.22	-3.544	<0.001	YES
Group 2	29.37	4.26	18.26	4.52	-3.441	<0.001	YES

Mann- Whitney U test was applied to analyse the comparative effectiveness on NPRS scores of both the groups. Analysis showed there was significant difference between group A and group B (p=0.001)

OUTCOME MEASURE	GROUP - A (MEAN±SD)	GROUP - B (MEAN±SD)	U- VALUE	p VALUE
DIFFERENCE NPRS	3.62±1.07	2.13±0.247	33	0.001

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DISCUSSION

It is extensively documented that low back pain (LBP) is one of the most common and costly endemic medical conditions affecting up to 80% of people worldwide in their lifetime (Guzman et al., 2007; Diamond and Borenstein, 2006; Cairns et al., 2006).

Low Back Pain is defined as pain and discomfort in the lumbosacral region, below the twelfth rib and above the gluteal crease.

Low back pain may be classified by duration as acute (pain lasting less than 6 weeks), sub-chronic (6 to 12 weeks), or chronic (more than 12 weeks). The condition may be further classified by the underlying cause as either mechanical, nonmechanical, or referred pain.

The present study was designed to find the effect of stretching and strengthening exercise (Janda's approach) on pain and function in non-specific low back pain.

This study was conducted on 34 patients of non- specific low back pain with age 25-45 years and according to other inclusion and exclusion criteria, who were divided into two groups. Both the group underwent conventional physiotherapy treatment and interventional group underwent stretching and strengthening (Janda's approach) in addition. Due to 3 dropouts from the study, there were 31 patients remaining at the end. Both the groups were assessed before and after the treatment to determine the extent of reduction in level of pain and functional

limitation by using Numeric Pain Rating Scale and Modified Oswestry disability Index.

At the end of 2 weeks, the patients in the both control group and experimental group showed reduction in pain and improvement in function. But interventional group showed statistically significant improvement than control group (p<0.05).

Thus, the study result shows that stretching and strengthening (Janda's approach) along with conventional treatment is more effective than conventional treatment alone on outcome of pain (NPRS) and function (MODI).

The findings of this study are similar to Vijay Kageand B.B. Putti. Who did study on effectiveness of stretching and strengthening on subjects with postural backache a randomized controlled trial. [7]

In that study 40 participants were divided into two groups; Group A was the control group and Group B was the Janda's Approach group. Group A was given Shortwave Diathermy with Core Stability exercises and Group B was given SWD with Core Stability exercises followed by Janda's Approach Exercises. Pain Intensity, Severity of Spinal Malalignment and Muscle Strength and Flexibility were measured using Visual Analogue Scale (VAS), Index of Lumbar Lordosis were checked.

The results concluded that stretching and strengthening exercises are beneficial in reducing pain, normalizing the lumbar lordosis curvature, increasing strength of abdominals and gluteals and increasing

flexibility of rectus femoris, iliopsoas and erector spinae.

Recently, studies of low back pain, the hip joint, and hip muscle strength have been reported, and Reiman noted that for low back pain treatment, the causes and methods of treatment of diverse types of lumbar pain should be considered, including movements of the waist, pelvis, hip joint, and lower limbs. Reiman also observed that functional disorder resulting from weakening of the hip muscles and restricted hip joint range of motion has elements related to pathology of the waist and the lower limbs and that there is some association between the weakening of the hip muscles, functional disorder of the hip joint, and pathology of the waist. As mentioned by researchers, there is a biodynamic relationship between low back pain, the hip joint, and hip muscles, and when applying an exercise program for low back pain treatment to chronic low back pain patients, stability of the pelvis and hip joints and strengthening of the hip muscles are important. [8]

Ui-Cheol Jeong, MS et.al., did studied The effects of gluteus muscle strengthening exercise and lumbar stabilization exercise on lumbar muscle strength and balance in chronic low back pain patients. This study randomly and equally assigned 40 participants who divided into to a lumbar segmental stabilization exercise plus exercise to strengthen the muscles of the gluteus group (SMG + LES group) and a lumbar segmental stabilization exercise group.

Outcome measures of this study were : strengthen the muscles of the gluteus; lumbar stabilization exercise; Oswestry Disability Index; isometric lumbar flexion strength; isometric lumbar extension strength; stability index; and weight distribution index.

Results shows that both SMG+LSE and LSE were effective for improving the low back pain disability index, lumbar muscle strength, and balance in chronic low back pain patients. Comparison of the

changes in the two groups revealed that there was a more significant effect on low back pain index, lumbar muscle strength, and balance in the SMG+LSE group than in the LSE group. It is considered that the lumbar segmental stabilization exercise strengthened deep muscles, increasing lumbar segmental stability, and that hip muscle strengthening exercise increased the stability of the pelvis and hip joint, thereby positively affecting an increase in lumbar segmental stability. [8]

A study done by Monika et al presents use of strength exercises in rehabilitation process of persons with low back pain syndrome and concludes that increase of muscle strength also positive influence on range of motion of trunk and lower limbs and decrease of pain in persons with low back pain syndrome.

Mc Cearry proposed that in the erect position, weakness of abdominals permits an anterior pelvic tilt and a lordotic posture which lead to muscle imbalance hence cause low back pain. In this study decrease in pain and decrease in anterior pelvic tilt that could have been caused by strengthening of abdominals. [7]

KhwairakpamZhimina Devi et.,al studied effectiveness of muscle stretching on chronic low back pain, according to them stretching of erector spinae, tensor fascia lata and hamstring improves flexibility, reduces pain and improves function. [9]

Fa'bioRenovato Franc et., al studied comparison between Segmental stabilization and muscular strengthening in chronic low back pain. In this study 30 individuals, randomly assigned to one of two treatment groups: segmental stabilization, where exercises focused on the TrA and lumbar multifidus muscles, and superficial strengthening, where exercises focused on the rectus abdominis, abdominus obliquus internus, abdominus obliquus externus, and erector spinae. [10]

Outcome measures were pain (visual analogical scale and McGill pain questionnaire), functional disability (Oswestry disability questionnaire), and

TrA muscle activation capacity (Pressure Biofeedback Unit = PBU). Pre and after 6 weeks post measurement were taken. Result showed that both techniques lessened pain and reduced disability.

CONCLUSION

The present study concludes that stretching and strengthening exercise compared to control in terms of decreasing pain and improving function in Non-specific Low Back Pain.

Limitation of the Study

- The sample size was too small.
- Long term follow-up was not there to check the consistency & long term effect of the treatment.

Future Scope

- Multicenter trials with long-term follow-up can be carried out to check the carry over effect.
- One can also compare Janda's approach with other manual therapy.

REFERENCES

1. Daniele TatianeLizier Exercises for Treatment of Nonspecific Low Back Pain Rev Bras Anesthesiol 2012; 62: 6: 838-846
2. Shah S, Mahapatra R K. Effect of Mulligan Spinal Mobilization with Leg Movement and Shacklock Neural Tissue Mobilization in Lumbar Radiculopathy: A Randomised Controlled Trial. Journal Medical Thesis 2015 May-Aug ; 3(2):27-30.
3. Airakson, O, Brox J, Cedrasch, C ; Hildebrandt, J ; Klaber-Moffet et al. Chap 4 European guidelines for the management of chronic nonspecific Low Back Pain. European Spine Journal, 2006; 15(S2, pp. s192-s300). Peeyoosha V Nitsure et al. Comparison of Elastic Resistance Band exercises and Yoga in Physiotherapy students with chronic Non-Specific Low Back Pain: A Randomised Clinical Trial, J Yoga PhysTher (2014) Vol 5 (1), 3-7.
4. Peeyoosha V Nitsure et al. Comparison of Elastic Resistance Band exercises and Yoga in Physiotherapy students with chronic Non-Specific Low Back Pain: A Randomised Clinical Trial, J Yoga PhysTher (2014) Vol 5 (1), 3-7.
5. Umphred D. A., Byl N., Lazaro R T., Roller M. intervention for neurological disabilities. Neurological Rehabilitation, 2001; 4th ed. Mosby: St. Louis; 56-134.
6. Phil Phage, Clare C.Frank, The Janda Approach to Chronic Musculoskeletal Pain, 2007.
7. Vijay Kage et., al effectiveness of stretching and strengthening exercises (Janda's approach) in subjects with postural backache. International Journal of Physiotherapy and Research, Int J Physiother Res 2015, Vol 3(6):1301-06
8. Ui-Cheol Jeong et., al The effects of gluteus muscle strengthening exercise and lumbar stabilization exercise on lumbar muscle strength and balance in chronic low back pain patients.J. Phys. Ther. Sci. 27: 3813–3816, 2015
9. KhwairakpamZhimina Devi effectiveness of muscle stretching in occupation related chronic mechanical low back pain in community nurses –a single blind study International Journal of Physiotherapy and Research, Int J Physiother Res 2014, Vol 2(1):403-10.
10. Fabio et., al. Effects of muscular stretching and segmental stabilization on functional disability and pain in patients with chronic low back pain. J Manp. Phy. Ther. May2012. Vol 35(4):279-285
11. Kisner C, Colby L. Therapeutic exercise. Philadelphia: F.A. Davis; 2007;448,455-456,468,673

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