



# CORRELATION BETWEEN PAIN, PHYSICAL PERFORMANCE AND DISABILITY IN CHRONIC LOW BACK PAIN

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## ABSTRACT

Chronic low back pain is a common musculoskeletal problem affecting the community. Patients with low back pain often suffer from physical discomfort and functional limitations that might result in disability and affect physical performance. This study was conducted to investigate the relation between pain, physical performance and disability in low back pain patients. Fifty subjects of either gender within the age range 35 to 55 years diagnosed with chronic low back pain were recruited. Pain was assessed using Visual Analog Scale, functional performance using Sock test and disability using Oswestry Disability Index. The mean age of the participants was  $42.38 \pm 8.24$  years. The study revealed that there was positive significant correlation between pain, physical performance and disability ( $p = 0.000$ ). All these factors should be taken into consideration during assessment which will provide a holistic and multimodal approach towards the understanding, planning and enhancement of management of these patients.

**KEYWORDS:** Low back pain, Sock test, Oswestry disability Index, physical performance.

## INTRODUCTION:

Low back pain is a common musculoskeletal problem affecting the community. It is a major burden on the socioeconomic status of the individual. It is a common health condition that affects most adults at some point during their lifetime, with a prevalence of up to 84%<sup>1</sup>. Low Back Pain (LBP) is neither a disease nor a diagnostic entity of any sort. It impairs individual's functional capacity in activities of daily living and at work, as well as their general health and quality of life<sup>2,3</sup>.

Low back pain (LBP) is defined as "pain and discomfort localized below the costal margin to the inferior gluteal folds with or without sciatica as viewed from the rear" It is usually accompanied by painful limitation of movement, often influenced by physical activities and posture, and which may be associated with referred pain in the leg; moreover, this pain is not related to such conditions as fractures, spondylitis, direct trauma, or neoplastic, infectious, vascular, metabolic, or endocrine-related processes. In most cases, LBP is benign and resolves within 6 weeks<sup>4</sup>. Patients with LBP often have symptoms like pain and physical discomfort which leads to functional limitations that might result in disability. This in turn has an effect on quality of life. LBP can interfere with activity that ranges from basic activities of daily living such as walking and dressing to many work-related functions<sup>5</sup>. The purpose of this study was to investigate the relation between pain, physical performance and disability in low back pain patients.

## MATERIALS AND METHODS:

A cross-sectional study was conducted after the approval of institutional research review committee. Fifty subjects in the age group of 35 to 55 years diagnosed with chronic mechanical low back pain were recruited. Subjects with prolapsed intervertebral disc, recent trauma, sacroiliac joint pain, any radiating pain, infectious conditions, pregnant women, malignancy and any surgery related to low back or abdomen were excluded from the study. Subjects were explained about the nature of the study in the language best understood by them. A duly signed written informed consent was taken from the subjects who were willing to participate. The demographic information of participants, such as, age, gender, occupation was recorded. A brief clinical examination was conducted. Pain was assessed using VAS (Visual Analog scale). It is a 0-10 visual analogue scale (VAS) anchored with the words 'no pain at all' and 'worst pain imaginable'. The participants were asked to mark a point on the scale which described their pain intensity

The physical performance was assessed using sock test. The sock test simulates the activity of putting on a sock. The test is standardized and does not allow alternative ways of moving. The therapist evaluates the patient performance by observing how far the patient reaches and how easily the activity is done. The activity is first demonstrated to the patient by the therapist. The patient is instructed to sit on a high bench, with their feet not touching the floor. The patient lifts up one leg at a time in the sagittal plane and simultaneously reaches down towards the lifted foot with both hands, one on each side, grabbing the toes with the fingertips of both hands. The foot should not touch the bench during the test. After testing each leg once, the patient is given a score on the most limited performance. Scores are given as ordinal values from 0 (can grab the toes with fingertips and perform the action with ease) to 3 (can hardly, if at all, reach as far as the malleoli)<sup>6</sup>.

The Oswestry Disability Index (ODI Score) is a tool used to evaluate functional disability in low back pain patients. The test is considered the 'gold standard' of low back functional outcome tools<sup>7</sup>. It is a self-administered questionnaire divided into ten sections designed to assess limitations of various activities of daily living. Each section is scored on a 0-5 scale, 5 representing the greatest disability. The scale contains 10 items ranging from 0 to 5: the first assesses pain intensity, and the remainder the consequences of pain on daily living. The score ranges from 0 (absence of disability) to 100 (maximum disability)<sup>7</sup>.

## Statistical analysis:

Data analysis was performed using SPSS software. The data was assessed for normality using Kolmogorov Smirnov Test and it was noted that it was not normally distributed. Hence, non-parametric test was used for statistical analysis. Spearman correlation test was used to assess the correlation between VAS, Sock test score and ODI score. The significance level was set at p-value less than 0.05.

## RESULTS:

The study sample consisted of 50 subjects with chronic low back pain. The mean age of the participants was  $42.38 \pm 8.24$  years. Table 1 shows the mean values of pain (VAS score), Oswestry Disability Index (ODI) score and Sock test score of both right and left leg.

**Table-1. Mean and Standard Deviation values of variables.**

Variables	Mean $\pm$ SD
Age (years)	$42.38 \pm 8.24$
VAS Score (cm)	$5.7 \pm 0.84$
ODI Score	$38.24 \pm 19.1$
Sock Test Score - Left Leg	$1.54 \pm 0.95$
Sock Test Score - Right Leg	$1.58 \pm 0.88$

Table 2 shows the relationship between pain and sock test score. There is a statistically significant positive correlation between pain and sock test score of right and left leg.

**Table-2. Correlation between VAS, ODI & Sock test score.**

	ODI Score	Sock Test Score - Left Leg	Sock Test Score - Right Leg
VAS	$r = 0.827^*$ $p = 0.000$	$r = 0.771^*$ $p = 0.000$	$r = 0.820^*$ $p = 0.000$

Table 3 shows the relationship between sock test score and ODI score. There is a statistically significant positive correlation between sock test score and ODI score.

**Table-3. Correlation between ODI & Sock test score.**

	Sock Test Score - Left Leg	Sock Test Score - Right Leg
ODI Score	r= 0.915*	r= 0.914*
	p = 0.000	p = 0.000

The study reveals statistically significant positive correlation between pain (VAS score), sock test score of both right and left leg and disability (ODI score).

#### DISCUSSION:

This study was designed to investigate the relationship between pain, physical performance and disability in patients with chronic low back pain. The present study showed statistically significant positive correlation between pain, physical performance and disability in chronic low back pain patients.

Low back pain (LBP) is a common condition that causes much individual suffering and a large burden on medical service and society. Persons with low back pain (LBP) often report impaired ability to perform daily activities and suffer from physical discomfort and functional limitations that might result in disability and suboptimal quality of life. LBP can interfere with both basic as well as instrumental activities of daily living and other work-related activities<sup>5</sup>. A positive correlation was noted between pain and ODI score. A review of literature noted that there is positive relationship between pain and self-reported functional disability<sup>8,9</sup>. According to the pathophysiology and pathomechanics of low back pain, there is perceived pain and reduced spinal mobility. In mechanical low back pain, the surrounding structures are under stress or inflammation, which during movement of spine in daily activities are loaded. This leads to a vicious circle and increases the pain perception. Hence, as the pain increases, there is increased difficulty in performance of activities of daily living which in turn increases the amount of disability. Disability related to chronic low back pain is a complex and multidimensional phenomenon.

#### CONCLUSION:

The study revealed that there was positive significant correlation between pain, physical performance and disability. All these factors should be taken into consideration during assessment which will provide a holistic and multimodal approach towards the understanding, planning and enhancement of management of these patients.

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