



## Efficacy of Alexander Technique Versus Progressive Relaxation Technique in Improving the Functional Activity of Security Guards with Mechanical Low Back Pain- A Randomized Experimental Trial

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**Abstract:** Mechanical Low Back Pain is quite common in them. Changes in posture or poor body mechanics may cause the above spine-related problems, causing other muscles to be misused and become painful. However, mechanical Low Back Pain usually does not cause weakness or numbness in the lower extremities because the problem is not due to compression of the spinal nerves. The study aims to compare the effectiveness of the Alexander and progressive relaxation techniques in inducing relaxation and improving the functional activity of individuals with mechanical low back pain. It is a simple experimental study. For the study, 40 subjects were divided randomly into groups, namely group A and group B, each consisting of 20 subjects. Group A was given the Alexander technique, and Group B was given the progressive relaxation technique. The Visual Analogue Scale and the Oswestry Disability Index were used.: The collected data were recorded and tabulated. The data were analyzed using the Statistical Package for Social Science (SPSS 20 version – USA ) to present the study's findings. Comparison of pre-and post-visual analog scale (VAS) using the Alexander technique shows pre-VAS 6.75 and post-VAS reduced to 2.55, given t-value 20.03, thus providing significant results with  $p < 0.001$  s.s. Comparison of pre and post-VAS using progressive relaxation technique shows pre-VAS at 6.9 and post-VAS reduced to 3.6. Given a t-value of 14.91 gives a significant result with a  $p < 0.001$ . This study concluded that the Alexander technique is more effective in mechanical low back pain subjects. This study will help select interventions in mechanical low back pain subjects.

**Keywords:** Mechanical Low Back Pain, Alexander Technique, Progressive Relaxation Technique, Visual Analogue Scale, Oswestry Disability Index.

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## I. INTRODUCTION

Mechanical low back pain, referred to as simple or non-specific neck pain, is one of the most common problems. More than half of people develop mechanical low back pain at some time. Security guards usually involve standing for long durations. Therefore, LBP is quite common in them. Changes in posture or poor body mechanics may cause the above spine-related problems, causing other muscles to be misused and become painful. Mechanical low back pain usually does not cause weakness or numbness in the lower extremities because the problem is not due to compression of the spinal nerves<sup>12</sup>. According to another survey, one out of every four women and one out of every five men suffer from mechanical low back pain. A few long-term interventions, such as strengthening and stabilizing exercise, have been shown to significantly help patients with mechanical low back pain; however, there is a lack of evidence related to mechanical low back pain and exercise prescription. Relaxation is one method to reduce muscular skeletal pain. However, very few studies prove the effectiveness of relaxation methods in minimizing mechanical low back pain. Progressive relaxation technique not only cures taut muscles and cramps but also reduces the intensity of pain and relieves stress and anxiety<sup>3 45[ 61</sup>. Alexander's technique offers an individualized approach to developing skills that help people recognize, understand, and avoid poor habits affecting postural tone and neuromuscular coordination. Support the practice and the theory of the technique in conjunction with preliminary findings of changes in load and position. It potentially reduces mechanical low back pain by limiting muscle spasms, strengthening postural muscles, improving coordination and flexibility, and decompressing the spine<sup>789</sup>. The study aims to compare the effectiveness of the Alexander and progressive relaxation techniques in inducing relaxation and improving the functional activity of individuals with mechanical low back pain.

## 2. METHODOLOGY

### 2.1 Study-sampling

This study is quasi-experimental. In this study, a convenient sampling method was used. It was conducted among security guards at the Mahatma Gandhi medical college and research institute in Pondicherry. (IHEC/MGMCR/ Faculty/2019/07. Less than three months of mechanical low back pain, VAS more significant than 5.

### 2.2 Inclusion and exclusion criteria

Security guards who were willing to the study were included. This research included slum tests that were expected to be negative. Exclusion criteria for the study had a history of neurological disease, infection, trauma, tuberculosis, postural abnormalities, psychosis, uncooperative patients, and degenerative changes.

### 2.3 Randomization

The following were utilized: an assessment chart, a mat, a pillow, a chair, paper, a pencil, the VAS, and the Oswestry

Disability Index. For the study, 40 subjects were divided into groups A and B, each containing 20 subjects. The Alexander technique was trained to Group A, while the progressive relaxation technique was trained to Group B.

## 3. STATISTICAL ANALYSIS

The mean and SD were analyzed with student t-tests, and any ranking chi-square tests were done. A p-value of less than 0.05 was considered significant.

### 3.1 Outcome measure

Visual analog scale: Subjects are instructed to mark a (typically) 100 mm long horizontal line with labels reading "no pain" at one end and "worst pain conceivable" at the other to gauge the severity of the pain using VAS. <sup>10,11</sup>. Oswestry Disability Index: The Oswestry Disability Index assists in assessing a patient's lower back pain. It assesses the degree to which the patient's level of function is impaired by pain, focusing on the effects rather than the nature of the pain. Many physicians and academics believe the 10-question assessment to be the gold standard for determining the level of disability and measuring the quality of life of persons with back pain. It inquires about pain severity, daily activities, and sleep quality. <sup>1213</sup>.

### 3.2 intervention

#### 3.2.1 Alexander technique

The Alexander technique is internally conscious of releasing muscular tension. The Alexander technique includes Slide the feet closer to the body while standing; Utilize the hip joint, or the location where the top of the thigh bone attaches to the hip, to hinge forward; Apply force to the entire foot and then push off the ground; Slowly stand without adding tension to the spine or neck; While seated, move the hips back and the knees forward; Do not contract the lower back or neck; If they are rigid, take a step back and try again; Simply lying on the ground constitutes constructive rest; Lie on the back on the floor with the eyes open or closed; The knees should be carefully examined to remove stress from the joints; Flatten the feet against the floor; Concentrate on the breath using the "ahh" technique; Daily, lie for 10 to 15 minutes; Start by placing the fingers at the side while seated or standing; Raise the hand by visualising lifting only the fingertips; Frequently, we lift with our back, chest, and shoulder muscles instead of just the joints; Imagine lifting from the bones rather than the muscles; whispered "Ahh": Whispering "ahh" helps manage the cells in the head; The exhale should be at least 2 seconds longer than the inhale; Furthermore, muttering "ahh" reduces daily tension, relaxes the mind, and calms the body; There is no clear starting point for whispering "ahh." When inhaling, softly press the lips together while keeping the teeth apart; When exhaling, let the jaw open freely and pleasantly; The jaw and neck shouldn't be tense, and the shoulders should be loose. <sup>789</sup>. These protocols are intervened for Group A

#### 3.2.2 Progressive's relaxation technique

A progressive relaxation technique is a form of Therapy that involves progressively contracting and relaxing specific muscle

groups. Advanced relaxation therapy includes the following protocol: Start by lying down or sitting down; Relax the whole body and take five slow, deep breaths. Raising the toes upward, then holding and releasing; Pulling the toes downward, then having and releasing; Next, contract the calf muscles, then relaxing them; Thigh muscles should be contracted, held, and then relaxed. Pull the knee toward you, then release<sup>3,4,5,6</sup>. This technique intervened for Group B.

#### 4. RESULT ANALYSIS

The collected data were recorded and tabulated. The data were analyzed using the Statistical Package for Social Science (SPSS) to present the study's findings. The efficiency of the Alexander and progressive relaxation techniques in mechanical low back pain patients were identified through VAS (visual analog scale) and Oswestry Disability Index (ODI).

**Table 1: Statistical Analysis of Visual Analogue Scale among Group A**

S. No	Details	Mean	Standard Deviation	t-Value	Significance
1	Pre-Test	6.75	0.71635		
2	Post Test	2.55	0.604805	20.0347	P<0.001 s.s

**Table 2: Statistical Analysis of Oswestry Disability Index among Group A**

S. No	Details	Mean	Standard Deviation	t-Value	Significance
1	Pre-Test	16.95	1.986136		
2	Post Test	2.75	0.910465	29.0654	P<0.001 s.s

**Table 3: Statistical Analysis of Visual Analogue Scale among Group B**

S. No	Details	Mean	Standard Deviation	t-Value	Significance
1	Pre-Test	6.9	0.788069		
2	Post Test	3.6	0.598243	14.9159	P<0.001 s.s

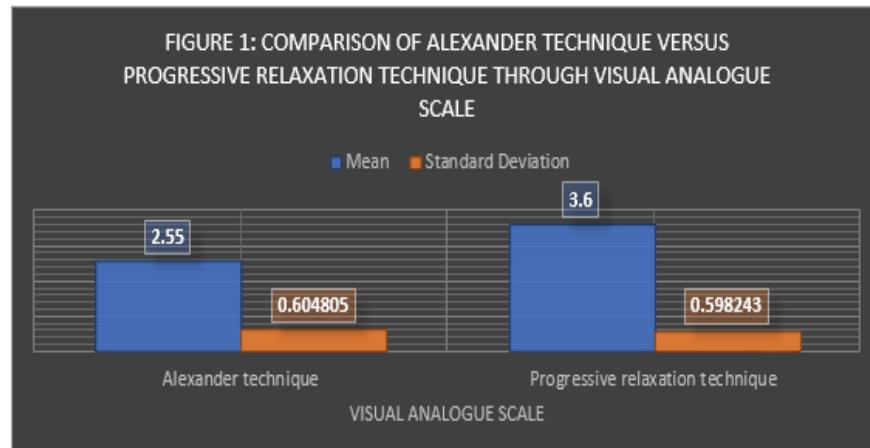
**Table 4: Statistical Analysis of Oswestry Disability Index among Group B**

S. No	Details	Mean	Standard Deviation	t-Value	Significance
1	Pre-Test	16.8	2.19089		
2	Post Test	5.05	0.944513	22.0250	P<0.001 s.s

**Tabulation 5: comparison of alexander technique versus progressive relaxation technique**

S. No	Details	Alexander technique		Progressive relaxation technique		t-Value	Significance
		Mean	Standard Deviation	Mean	Standard Deviation		
1	Visual Analogue Scale	2.55	0.604805	3.6	0.598243	5.5199	
2	Oswestry Disability Index	2.75	0.910465	5.05	0.944513	7.8405	P<0.001 s.s

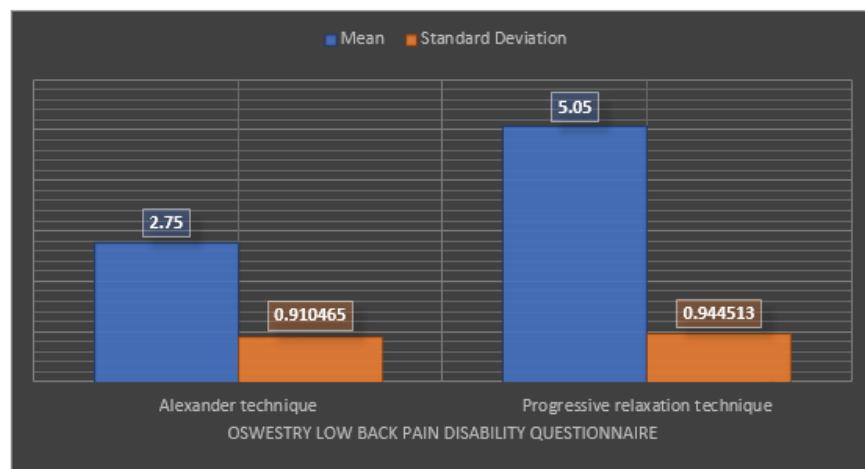
#### 4.1 Pain analysis



**Fig 1: Comparison of alexander technique versus progressive relaxation technique through Visual Analogue Scale**

Comparison of pre and post-visual analog scale (VAS) using the Alexander technique (table 1) shows pre-VAS 6.75 and post-VAS reduced to 2.55, given t-value 20.03, thus providing significant results with  $p < 0.001$  s.s. Comparison of pre and

post-VAS using progressive relaxation technique (table 3) shows pre-VAS at 6.9 and post-VAS reduced to 3.6. The t-value 14.91 gives a significant result with  $p < 0.001$  s.s.



**Fig 2: Comparison of alexander technique versus progressive relaxation technique through Oswestry low back pain disability questionnaire**

#### 4.2 Disability analysis

A comparison of pre and post-Oswestry Disability Index using the Alexander technique (table 2) reveals a pre-ODI value of 16.95 and a post-ODI value of 2.75, yielding a t-value of 29.06, a significant result with  $p < 0.001$  s.s. Comparison of pre and post-ODI using progressive relaxation technique (table 4) shows the pre-ODI value of 16.8 and the post-value reduced to 5.05, a significant result with  $p < 0.001$  s.s.

### 5. DISCUSSION

The current study shows a significant difference in both groups; both interventions are effective in mechanical low back pain. Little is stated that The Alexander technique is more effective in relieving numbness specific neck pain and improving functional activity<sup>8</sup>. The statistical results of the study for group A in tables 1 and 2 with Alexander show that there is a reduction in pain level and improvement in functional activity with Group A showing a p-value of 0.0001. The Alexander technique focuses on postural correction and improving the awareness of correct movement patterns. The cause of the pain is chronic tightness of the gluteal and thigh muscles, of which people are unaware. This results in stiffening of the spine. This tightness blocks the balance of information and interferes with the ability to perform activities. Over time, the faulty posture and pattern of movement become habitual and compensate for sensory misinformation. This faulty pattern appears normal and contributes to more significant stress and discomfort in individuals. The progressive relaxation technique is in tables 3 and 4, showing that pain is reduced with a statistically significant p-value of 0.001. The progressive relaxation technique focuses on initial tension followed by relaxation, releasing muscle tightness and reducing pain. This method is based on concentrating attention on a muscular group by paying attention to the sensation it produces. The Alexander technique offers a way to let go of such

destructive tension by learning to coordinate our activities with minimal strain. The Oswestry Disability Index is one of the best-validated self-reported measures for assessing the impact of mechanical low back pain<sup>14,15</sup>. Statistical analysis reveals that those in group A who were treated with the Alexander technique experienced less discomfort and were able to perform more activities than those in group B who were treated with the progressive relaxation technique. Innumerable indications to target low back aches and stress are being researched. Suryanamaskar performed with and without yoga When compared to the control group, Nidra helps to reduce stress among high school students. Suryanamaskar combined with Yoga Nidra<sup>16</sup> is more productive than Suryanamaskar alone in reducing stress. Various exercise forms have been proven effective in lowering stress incontinence. Yet another study found that improving Stress Urinary Incontinence symptoms in middle-aged women with kegel exercises combined with Utkatasana was far more effective than kegel exercises alone. These studies establish exercise's usefulness in relieving many symptomologies. The most important limitation of the study is the smaller sample size restricted to a single center.

### 6. CONCLUSION

Two popular approaches for treating low back pain are the Alexander and the progressive techniques. The study sought to assess the efficacy of these two techniques in security guards suffering from mechanical low back pain. According to the findings, both methods effectively reduced pain intensity and improved functional activity in these individuals. On the other hand, the Alexander technique was found to be more effective than the progressive technique. Participants in the study were split into two groups: Group A received the Alexander technique intervention, while Group B received the progressive technique intervention. Compared to Group B, the results showed that Group A improved more in pain reduction and

functional activity improvement. Therefore, the researchers concluded that the Alexander technique is more effective.

## 7. AUTHOR CONTRIBUTION STATEMENT

Srinivasan M, Murugaraj T, Venkatesh K, Sabarish Hariharan N, and Shanmugananth E contributed to the design and

implementation of the research, to the analysis of the results and to the writing of the manuscript.

## 8. CONFLICT OF INTEREST

Conflict of interest declared none.

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