Effect of Selected Yoga Asana on Pain and Flexibility Levels among Patients with Chronic Low Back Pain

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Abstract: *Yoga therapy can complement traditional medical treatments for various health conditions, such as chronic pain, cardiovascular diseases, respiratory disorders, and musculoskeletal issues. The objectives of the study concerning the effect of selected Yogasana on Pain and trunk flexibility of patients with chronic lower back pain. To achieve this research goal, forty men experiencing low back pain in Puducherry, ranging in age from 35 to 55 years, were randomly selected as study participants. The participants were randomly divided into two groups, each consisting of twenty individuals. Group I received training in asanas, while Group II served as the control group. Group I engaged in their respective training programs for five days per week over eight weeks, while Group II, the control group, did not undergo any specialized training beyond their regular routines. The researcher obtained approval and cooperation from various healthcare facilities and factories in Puducherry, making it the chosen location for the study. The data associated with these variables were subjected to statistical analysis using one - way univariate analysis of variance (ANOVA) for each variable separately. This analysis was performed whenever the 'F' ratio of the adjusted post - test results was found to be statistically significant. The study group showed a substantial reduction in pain levels and increased range of motion after an eight - week yogasana intervention. Based on these results, it may be concluded that yogasana can help lower pain levels and improve flexibility.*

Keywords: Yoga, Asana, Back Pain, and Flexibility

1. Introduction

Yoga works on one's body, mind, and soul. Therefore, it is known as the global art. When our body, mind, and soul are healthy and harmonious, we will bring health and harmony to the world by withdrawing from the world and by being a healthy living organ of the body of humanity. Aim of the Yoga therapy to the application of Yoga for individuals to empower them to progress towards greater health and freedom from disease.

Yoga therapy is a self - empowering process in which the care - seeker collaborates with a Yoga therapist to implement a personalized and evolving Yoga practice. This practice not only addresses the illness from a multidimensional perspective but also aims to alleviate suffering progressively, in a non - invasive and complementary manner.

The spine is influenced by two primary muscle groups: extensors and flexors. Extensor muscles facilitate standing up and lifting objects, anchoring to the back of the spine. Conversely, flexor muscles, located in the front and including the abdominal muscles, enable flexion or bending forward, crucial for lifting and maintaining the arch in the lower back. Furthermore, the back muscles play a vital role in stabilizing the spine. Common issues like poor muscle tone or excess belly fat can disrupt alignment, exerting significant strain on the spine.

The Modified - Modified Schober test, also known as a skin distraction test, was first described by Dr Paul Schober (1937 - German physician) as a means of measuring lumbar flexion and extension. The test was later modified by Macrae and

Wright (1969) and again by Van Adrichem and vander Korst (1973) to enhance its reliability and ease of application.

Low - back pain (LBP) is a prevalent disorder affecting a significant portion of the population, imposing a substantial burden on the workforce and the healthcare system. It has proven to be challenging to treat and is one of the most frequently cited reasons for the use of complementary and alternative medicine. Various methods of Yoga are available, each offering its techniques for preventing and addressing diseases. Etiological factors contributing to LBP include psychosomatic elements, postural deficiencies, occupational predispositions, and sedentary lifestyles. Back pain is a functional disorder. In this pain felt in the back usually originates from the myofascial, muscles, ligaments, nerves, bones, joints, or other structures in the spine.

Yoga enhances flexibility and strengthens muscles, which can be beneficial for athletes in various sports. Increased flexibility can help prevent injuries, while improved strength can enhance performance. Yoga encourages a strong mind - body connection, helping individuals become more attuned to their physical sensations and emotional states.

2. Materials and Methods

The selection of subjects, variables, training procedure, and statistical techniques are explained below.

The investigator convenience sampling method selected 40 patients with chronic low back Pain from Puducherry. The age range of the selected participants was between 35 to 55 years. These individuals were then divided into three groups

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for the study. Group I underwent yogasana training, and Group II did not engage in yoga practice.

The two selected physical variables for investigation were Pain and Lumber flexibility. To measure these variables, the following tools were used: the "Visual Analogue Scale (VAS) " for assessing pain levels, and Range of motion was evaluated using the Modified Schober method (Inch Tape) Test. "

The training procedures for the experimental and control groups involved Yoga training in the morning for one hour five days a week, over eight weeks.

To analyze the data and determine the significant differences between the control group and experimental groups I and II, the statistical tool employed was the Analysis of variance (ANOVA). This statistical technique assessed the pre and post - mean data for pain and lumber flexibility. The significance level for the analysis was set at 0.05.

Analysis of PAIN:
The analysis of variance on the data obtained for the Pain of pre and post - test of Asanas training Group (EG) and control (CG) groups have been presented in Table I.

Group	Yogic Practice	Control Group	Source of variance	Sum of squares	df	Mean square	'F' Ratio
Pre Test Mean	6.85	6.06	Between	108.900	1	108.900	2.10
SD	1.38	1.87	Within	75.500	38	1.987	
Post test Mean	3.55	7.20	Between	25.600	1	25.600	11.055*
SD	1.43	1.05	Within	88.000	38	2.316	
Adjusted Post test mean	5.20	6.40	Between	156.300	1	156.300	10.267*
			Within	113.600	37	3.670	

* $F_{(0.05)}$ (1, 38 and 1, 37) = 4.10, *Significant at 0.05 level of confidence.

Table –I shows that the pre - test means of Pain for the experimental group and control group were 6.85 + 1.38 and 6.06 + 1.87 respectively. The obtained 'F' ratio value of 2.10 for the pre - test score of the experimental group and control group on Pain was less than the required table value of 4.10 for no significance with df 1 and 38 at 05 levels of confidence. This proved that there was no significant difference between the groups of pre - test and post - test and the randomization at the pre - test was equal.

The post - test mean values of Pain for the experimental group and control group were 3.55 + 1.43 and 7.20 and 1.05 respectively. The obtained 'F' ratio value of 11.055 for post - test scores of the experimental group and control groups was greater than the required table value of 4.10 for significance with df 1 and 38 at 05 levels of confidence. This proved that there was a significant difference among the means due to Asana practices on a physical variable of Pain.

The adjusted post - test mean values of the experimental group and control group were 5.20 and 6.40 respectively. The obtained 'F' group and control group were greater than the required table value of 4.10 for significance with df 1 and 37 confidence levels.

The result of this study showed that there was a significant difference between the experimental group and the control group in the changes in Pain after eight weeks of training. The study's results also showed a significant change in Pain after the Asanas practice.

Lumbar Flexion
The analysis of variance on the data obtained for the Lumbar Flexion of pre and post - test of the Asanas training Group (EG) and control (CG) groups have been presented in table II.

Group	Yogic Practice	Control Group	Source of variance	Sum of squares	df	Mean square	'F' Ratio
Pre Test Mean	2.08	2.31	Between	86.436	1	86.436	1.72
SD	0.52	0.58	Within	12.755	38	0.336	
Post - test Mean	4.94	1.93	Between	1.406	1	1.406	5.247*
SD	0.63	0.44	Within	10.183	38	0.268	
Adjusted Post - test mean	3.46	2.12	Between	96.548	1	96.548	8.791*
			Within	24.065	37	0.631	

* $F_{(0.05)}$ (1, 38 and 1, 37) = 4.10, *Significant at 0.05 level of confidence.

Table –II shows that the pre - test means of Lumbar flexion for the experimental group and control group were 2.08 + 0.52 and 2.31 + 0.58 respectively. The obtained 'F' ratio value of 1.72 for the pre - test score of the experimental group and control group on Lumbar flexion was less than the required table value of 4.10 for no significance with df 1 and 38 at 05 levels of confidence. This proved that there was no significant difference between the groups a pre - test and post - test and the randomization at the pre - test was equal.

The post - test mean values of Lumbar flexion for the experimental group and control group were 4.94 + 0.63 and

1.93 and 0.44 respectively. The obtained 'F' ratio value of 5.247 for post - test scores of the experimental group and control groups was greater than the required table value of 4.10 for significance with df 1 and 38 at 05 levels of confidence. This proved that there was a significant difference among the means due to Asana practices on the physical variable of Lumbar flexion.

The adjusted post - test mean values of the experimental group and control group were 3.46 and 2.12 respectively. The obtained 'F' group and control group were greater than the

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required table value of 4.10 for significance with df 1 and 37 at 05 confidence levels.

The result of this study showed that there was a significant difference between the experimental group and the control group in the changes in Lumbar flexion after eight weeks of training. The study's results also showed a significant change in Lumbar flexion after the Asanas practice.

Lumbar Extension

The analysis of variance on the data obtained for the Lumbar Extension of pre and post - test of the Asanas training Group (EG) and control (CG) groups have been presented in table III.

Group	Yogic Practice	Control Group	Source of variance	Sum of squares	df	Mean square	'F' Ratio
Pre Test Mean	1.46	1.57	Between	29.929	1	29.929	1.44
SD	0.45	0.41	Within	7.766	38	0.204	
Post - test Mean	3.19	1.14	Between	2.450	1	2.450	15.180*
SD	0.44	0.38	Within	6.134	38	0.161	
Adjusted Post - test mean	2.32	1.39	Between	36.795	1	36.795	20.64*
			Within	8.516	37	0.257	

* $F_{(0.05)}$ (1, 38 and 1, 37) = 4.10, *Significant at 0.05 level of confidence.

Table –III shows that the pre - test means of Lumbar Extension for the experimental group and control group were 1.46 + 0.45 and 1.57 + 0.41 respectively. The obtained 'F' ratio value of 1.44 for the pre - test score of the experimental group and control group on Lumbar Extension was less than the required table value of 4.10 for no significance with df 1 and 38 at levels of confidence. This proved that there was no significant difference between the groups a pre - test and post - test and the randomization at the pre - test was equal.

The post - test mean values of Lumbar Extension for the experimental group and control group were 3.19 + 0.44 and 1.14 and 0.38 respectively. The obtained 'F' ratio value of 15.180 for post - test scores of the experimental group and control groups was greater than the required table value of 4.10 for significance with df 1 and 38 at the 05 levels of confidence. This proved that there was a significant difference among the means due to asana practices on the physical variable, Lumbar Extension.

The adjusted post - test mean values of the experimental group and control group were 2.32 and 1.39 respectively. The obtained 'F' group and control group were greater than the required table value of 4.10 for significance with df 1 and 37 at 05 levels of confidence.

The result of this study showed that there was a significant difference between the experimental group and the control group regarding the changes in Lumbar Extension after eight weeks of training. The study's results also showed a significant change in Lumbar Extension after the asana practice.

3. Discussion of the Results

The study's findings show that following the training period, Pain and Luber flexibility levels in the experimental group significantly changed in comparison to those in the control group.

Regular yogasana practice lowers the chance of developing back pain and may even be a treatment for it. Yoga, with its specially created activities for strengthening the Spine, including stretching, relaxation, and stability, is recommended by medical professionals all over the world.

Yoga is a practice that encourages total self - realization by balancing the enhancement of one's innate powers. The word "yoga" is a Sanskrit word that means "yoke, " denoting the joining of the individual spirit with the all - pervasive spirit of God. Yoga, according to its creator, Sage Patanjali, entails using the mind's changes to create balance and unification between the body, mind, and spirit. Yoga and yogic practices have shown to be useful in the treatment of particular illnesses as well as the prevention of disease.

4. Conclusions

In summary, this study concludes that the selected yogic techniques effectively reduce low back pain and enhance flexibility levels. The potential for future research in the field of back pain prevention, control, and management is underscored by the numerous benefits of yoga practice.

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