

EFFECT OF SELECTED YOGIC PRACTICES PHYSICAL EXERCISES AND PHYSIOTHERAPY TREATMENT ON PAIN INTENSITY OF LOW BACK PAIN PATIENTS

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ABSTRACT

The purpose of the study was to investigate the effect of selected yogic practices, physical exercises and physiotherapy treatment on pain intensity of low back pain patients. One hundred low back pain patients are taken from the Thavanur town, Kerala. The age, height and weight of the subjects ranged from 30 to 40 years, 158 to 169 centimetres and 55 to 70 kilograms respectively. The selected subjects were randomly assigned into five equal groups of 20 subjects each. Group-I underwent Yogic practices, group II underwent physical exercises, group III underwent physiotherapy treatments, group IV yoga and physiotherapy treatments and group V acted as control. Prior to and after the training the subjects were tested on pain intensity of low back pain patients through the Oswestry low back pain disability questionnaire. Analysis of covariance was used to determine the significantly difference existing between pre test and post test on pain intensity of low back pain patients. The result of the study proved that due to twelve weeks of the experimental training the pain intensity was reduced for the patients.

Key words: Yoga, Physical, Physiotherapy and pain intensity of low back pain.

INTRODUCTION

Low back pain is a common disorder involving the muscles, nerves, and bones of the back. Pain can vary from a dull constant ache to a sudden sharp feeling. Low back pain may be classified by duration as acute, sub-chronic or chronic (Koes, et al., 2010). The condition may be further classified by the underlying cause as either mechanical, non-mechanical, or referred pain (Manusov, 2012). The symptoms of low back pain usually improve within a few weeks from the time they start, with 40-90% of people completely better by six weeks (Menezes et al., 2012).

In most episodes of low back pain, a specific underlying cause is not identified or even looked for, with the pain believed to be due to mechanical problems such as muscle or joint strain (Casazza, 2012). Increasing general physical activity has been

recommended, but no clear relationship to pain or disability has been found when used for the treatment of an acute episode of pain. For acute pain, low- to moderate-quality evidence supports walking (Hendrick et al., 2010).

Yoga is the physical, mental, and spiritual practices or disciplines that aim at transforming body and mind. The term denotes a variety of schools, practices and goals in Hinduism, Buddhism and Jainism the best known being Hatha yoga and Raja yoga. The term yoga is derived from the literal meaning of "yoking together" a span of horses or oxes, but came to be applied to the "yoking" of mind and body.

Physical exercise is any bodily activity that enhances or maintains physical fitness and overall health or wellness. It is performed for various reasons. These include strengthening muscles and the cardiovascular system, honing athletic skills, weight loss or maintenance and for enjoyment. Physiotherapy is the treatment of disease, injury, or deformity by physical methods such as massage, heat treatment, and exercise rather than by drugs or surgery.

METHODOLOGY

Subjects and Variables

The purpose of the study was to investigate the effect of selected yogic practices physical exercises and physiotherapy treatment on pain intensity of low back pain patients. One hundred low back pain patients are taken from the Thavanur town, Kerala. The age, height and weight of the subjects ranged from 30 to 40 years, 158 to 169 centimetres and 55 to 70 kilograms respectively. The selected subjects were randomly assigned into five equal groups of 20 subjects each. Group I underwent Yogic practices, group II underwent physical exercises, group III underwent physiotherapy treatments, group IV yoga and physiotherapy treatments and group V acted as control. Prior to and after the training the subjects were tested on pain intensity of low back pain patients through the Oswestry low back pain disability questionnaire. Analysis of covariance was used to determine the

significantly difference existing between pre test and post test on pain intensity of low back pain patients.

Training Protocol

The Group I performed Yogic practices three sessions per week on alternative days for 12 weeks and each session lasted from 20 to 40 minutes. The following yoga was performed Naukasana, Dhanurasana, Bhujangasana, Uttanapadasana, Salabhasana, Janusirasana, Pavanamuktasana and Yog Mudra. The recovery period between asana was fifteen seconds and between sets one minute. The sets and repetition was increased in progress. Group II underwent physical exercises programme three sessions per week on alternative days for 12 weeks and each session lasted from 20 to 40 minutes. The recovery period between exercises was sixty seconds and between sets three minutes. The following physical exercises are performed by the subjects straight leg raise, single knee to chest stretch, hamstring stretch, hip flexes stretch, lower trunk rotation stretch, prone lumbar extension and pelvic tilt. Group III underwent physiotherapy treatments for 12 weeks. The following physiotherapy treatments are given to the subjects. 10 min ice therapy, hot moist packs, ultra sound therapy, short wave diathermy, infra red radiation and wax bath.

Group IV underwent the yoga practice and physiotherapy treatments for twelve weeks. Group V acted as control.

Experimental Design and Statistical Technique

The experimental design used in this study was random group design involving 100 subjects, who were divided at random in to five groups of twenty each. All the five groups were selected from the same population. The data collected from the five groups prior to and post experimentation on pain intensity was statistically analyzed to find out the significant difference if any, by applying the analysis of covariance (ANCOVA). Since five groups were involved, whenever the obtained 'F' ratio for adjusted post test means was found to be significant, the Scheffe's test was applied as post hoc test to determine the paired mean differences. In all the cases level of confidence was fixed at 0.05 for significance.

RESULTS

The pre and post test data collected from the experimental and control groups on pain intensity of low back pain patients were statistically analysed by ANCOVA and the results are presented in table-I.

Table-I: Analysis of Covariance on Pain Intensity of Experimental and Control Groups

	Yoga Practice	Physical Exercise	Physiotherapy	Yoga and Physiotherapy	Control Group	S o V	Sum of Squares	df	Mean squares	'F' ratio
Pre test	5.01	5.10	5.15	5.20	5.11	B	0.50	4	0.12	0.10
Mean SD	1.17	1.16	1.08	1.05	1.19	W	122.50	95	1.28	
Post test	4.25	4.70	3.80	3.25	4.94	B	36.06	4	8.01	9.44*
Mean SD	1.16	1.08	0.95	0.78	0.85	W	90.70	95	0.955	
Adjusted	4.26	4.70	3.79	3.23	4.94	B	36.81	4	9.20	9.77*
Post test Mean						W	88.53	94	0.94	

(The required table value for significance at 0.05 level of confidence with degrees of freedom 4 and 95 is 2.47 and degree of freedom 4 and 94 is 2.47)

*Significant at .05 level of confidence

Table-I shows that the pre test mean and standard deviation on pain intensity of low back pain patients of yoga practice, physical exercise, physiotherapy, yoga and physiotherapy and control groups are 5.01 ± 1.17 , 5.10 ± 1.16 , 5.15 ± 1.08 , 5.20 ± 1.05 and 5.11 ± 1.19 respectively. The obtained 'F' ratio value of 0.10 for pre test means on low back pain patients of yoga practice, physical exercise,

physiotherapy treatment, yoga and physiotherapy treatments and control groups were less than the required table value of 2.47 for the degrees of freedom 4 and 95 at 0.05 level of confidence. It reveals that there is statistically insignificant difference among the yoga practice, physical exercise, physiotherapy treatment, yoga and physiotherapy treatments and control groups during pre test period.

The post test mean and standard deviation on pain intensity of low back pain patients of yoga practice, physical exercise, physiotherapy, yoga and physiotherapy and control groups are 4.25 ± 1.16 , 4.70 ± 1.08 , 3.80 ± 0.95 , 3.25 ± 0.78 and 4.94 ± 0.85 respectively. The obtained 'F' ratio value of 9.44 for post test means on low back pain patients of yoga practice, physical exercise, physiotherapy treatment, yoga and physiotherapy treatments and control groups were higher than the required table value of 2.47 for the degrees of freedom 4 and 95 at 0.05 level of confidence. It reveals that there is statistically significant difference among the yoga practice, physical exercise, physiotherapy treatment, yoga and physiotherapy treatments and control groups during post test period.

The adjusted post test means on pain intensity of low back pain patients of yoga practice, physical

Table-II: Scheffe's Test for the Difference Between the Adjusted Post Test Paired Means of Pain Intensity

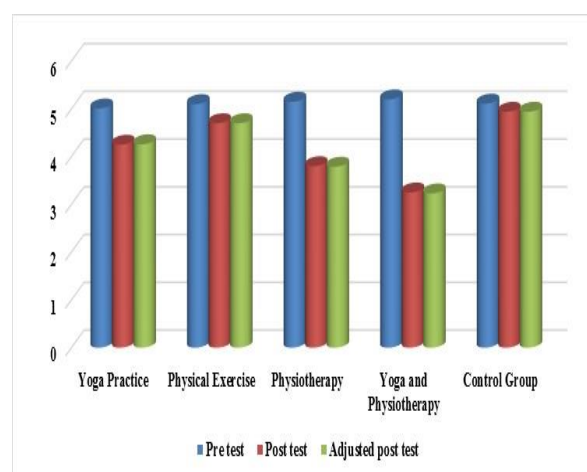
Adjusted Post Test Means					DM	CI
Yoga Practice	Physical Exercise	Physio-therapy	Yoga and Physio-therapy	Control Group		
4.26	4.70				0.44	0.68
4.26		3.79			0.47	0.68
4.26			3.23		1.03*	0.68
4.26				4.94	0.68*	0.68
	4.70	3.79			0.91*	0.68
	4.70		3.23		1.47*	0.68
	4.70			4.94	0.24	0.68
		3.79	3.23		0.56	0.68
		3.79		4.94	1.15*	0.68
			3.23	4.94	1.71*	0.68

Table-II shows the Scheffe's test results that there is significant difference exists between the adjusted post tests means of yoga practice and yoga & physiotherapy treatments groups; yoga practice and control groups; physical exercise and physiotherapy treatments groups; physical exercise and yoga & physiotherapy treatments groups; physiotherapy treatments and control groups; yoga & physiotherapy treatments and control groups on pain intensity of low back pain patients. And also there is no significant difference exists between yoga practice and control groups; yoga practice and physiotherapy groups; physical exercise and control groups; physiotherapy treatments and yoga & physiotherapy treatments groups on pain intensity of low back pain patients.

Figure – I: Cylinder Diagram Showing the Mean Value on Pain Intensity of Experimental and Control Groups

exercise, physiotherapy, yoga and physiotherapy and control groups are 4.26, 4.70, 3.79, 3.23 and 4.94 respectively. The obtained 'F' ratio value of 9.77 for adjusted post test means on low back pain patients of yoga practice, physical exercise, physiotherapy treatment, yoga and physiotherapy treatments and control groups were higher than the required table value of 2.47 for the degrees of freedom 4 and 94 at 0.05 level of confidence. It reveals that there is statistically significant difference among the yoga practice, physical exercise, physiotherapy treatment, yoga and physiotherapy treatments and control groups during adjusted post test period.

Since, the adjusted post test 'F' ratio value is found to be significant the Scheffe's test is applied as post hoc test to determine the paired mean differences, and it is presented in table-II.



Discussion

The following studies are supporting with my study results. Susan and Thomas (2013) findings provide the strongest support for the effects of yoga on short-term improvements in functional disability

among patients with chronic low back pain (CLBP). Hyden et al., (2005) study state that the effect size for yoga in reducing pain and functional disability appears to be similar to, if not higher than, effects sizes for more traditional exercise therapy. Carson et al., (2010) study result showed that across various chronic pain conditions, yoga has also been shown to reduce pain catastrophizing.

Conclusions

The result of the study showed that yoga practice, physical exercise, physiotherapy treatments, yoga & physiotherapy treatments and control groups had significant difference on pain intensity of low back pain patients. However yoga & physiotherapy treatments group is better influence to reduce the low back pain than the other experimental groups.

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