

Effect of Yogic Practices and Therapeutic Exercises on Pain and Disability among Women Software Professionals with Non-Specific Low Back Pain

V. Subbulakshmi, Ph.D. Scholar, Department of Yoga, and

R.Elangovan, Professor and Head, Department of Yoga, Tamilnadu Physical Education and Sports University, Chennai.

Abstract

The present study was designed to find out the effect of yogic practices and therapeutic exercises on pain and disability among women software professionals with non-specific low back pain. It was hypothesized that there would be significant differences on pain and disability among women software professionals with non-specific low back pain due to six weeks of yogic practices and therapeutic exercises. To achieve the purpose of the study, 45 software professionals from Chennai city aged from 35 to 40 years were selected randomly into two experimental and one control group of 15 each. Group A underwent yogic practices and Group B underwent therapeutic exercises for the period of 6 weeks, four days per week for the maximum of an hour in the evening. The control group was not exposed to any specific training. The pre and post-tests were conducted before and after training for the above three groups. The pain was measured by "Numeric Rating Scale (NRS)" and disability was measured by a questionnaire called "Oswestry Disability Index (ODI)". The data pertaining to the variables collected from the three groups before and after the training period were statistically analyzed by using Analysis of Covariance (ANCOVA) to determine the significant difference and tested at 0.05 level of significance. The results of the study showed that pain and disability were reduced significantly as a result of yogic practices and therapeutic exercises. Hence, the hypothesis was accepted at 0.05 level of confidence. The results of the study showed that yogic practices showed good improvement than therapeutic exercises in reducing pain and disability among women software professionals with non-specific low back pain.

Key words: Yoga, Therapeutic exercises, Non-specific low back pain.

Introduction

Non-specific low back pain has become a major public health problem worldwide. The lifetime prevalence of low back pain is reported to be as high as 84%, and the prevalence of chronic low back pain is about 23%, with 11-12% of the population being disabled by low back pain. About 8 in 10 people have one or more bouts of low back pain. In most cases, it is not due to a serious disease or serious back problem, and the exact cause of the pain is not clear. This is called nonspecific lower back pain. The usual advice is to keep active, and do normal activities as much as possible. Exercise therapy is the most widely used type of conservative treatment for low back pain. A study published in the journal *Spine* found that yoga for lower-back pain is an effective way to erase the pain. It was also found those who practiced yoga twice a week experienced significantly less lower-back pain, disability, and depression than those using conventional treatment.

Purpose of the Study

The present study was designed to find out the effect of yogic practices and therapeutic exercises on pain and disability among women software professionals with non-specific low back pain.

Hypothesis

1. It was hypothesized that there would be significant differences on Yogic practices and therapeutic Exercises (Experimental groups) than control group on pain and disability among women software professionals with non-specific low back pain.
2. It was hypothesized that there would be significant differences on Yogic practices and therapeutic exercises on pain and disability among women software professionals with non-specific low back pain.

Review of Related Literature

Carneiro KA, Rittenberg JD (2010), conducted a study on the role of exercise and alternative treatments for low back pain. The determination of whether a patient should pursue an active or passive treatment program is often made by medical practitioners. Knowledge about all forms of treatment, including complementary and alternative (CAM) treatments, is essential in the treatment of low back pain. Medical practitioner-directed active treatments that have been shown to be effective for the treatment of low back pain include physical therapy-directed exercise programs such as core stabilization and mechanical diagnosis and therapy (MDT). Based on the current literature, it appears that yoga is the most effective nonphysician-directed active treatment approach to nonspecific low back pain when comparing other CAM treatments.

Acupuncture is a medical practitioner-directed passive treatment that has been shown to be a good adjunct treatment. More randomized controlled studies are needed to support both CAM treatments and exercise in the treatment of low back pain.

van Middelkoop M et. al. (2010), conducted a study on exercise therapy for chronic nonspecific low-back pain. Exercise therapy is the most widely used type of conservative treatment for low back pain. Systematic reviews have shown that exercise therapy is effective for chronic pain, but not for acute low back pain. This journal aims to give an overview on the effectiveness of exercise therapy in patients with low back pain. The authors concluded that evidence from randomized controlled trials demonstrated that exercise therapy is effective at reducing pain and function in the treatment of chronic low back pain.

Methodology

To achieve the purpose of the study, 45 women software professionals from Cameo Corporate Services, Chennai city were selected as subjects, their age was ranged from 35 to 40 years.

All the subjects were assigned to two experimental groups (A and B) and one control group (C), each consisting of 15 subjects.

In this study Yogic practices and therapeutic exercises were given to Experimental groups (A & B) for the period of six weeks, four days per week for the maximum of one hour in the evening. The control group was not given any specific training but they participated in the regular activities.

Yogic practices given to the experimental group A were individualistic, depending on their pain and disability; appropriate modifications were adopted to suit the individual, according to Sri Krishnamacharya Tradition.

The therapeutic exercises given to the experimental group-B includes standing hamstring stretch, pelvic tilt, partial curl, piriformis stretch, extension exercises, quadruped arm/leg raise, gluteal stretch, side plank, single knee to chest, double knee to chest, hip flexor stretch, cat-camel, pelvic rock, press up, curl-ups and front plank.

The pain was measured by "Numeric Rating Scale (NRS)" and disability was measured by Questionnaire called "Oswestry Disability Index (ODI)"

Results and Discussions

The data pertaining to the variables collected from the three groups before and after the training period were statistically analyzed by using Analysis of Covariance (ANCOVA) to determine the significant difference and tested at 0.05 level of significance.

Table - I
Analysis of Co-Variance of Experimental Groups and the Control Group on Pain

	Group A	Group B	Group C	Source of variance	Sum of squares	Df	Mean squares	Obtained F-ratio
Pre test mean	5.00	4.93	5.00	Between	0.04	2	0.02	0.03
				Within	28.93	42	0.68	
Post test mean	0.53	1.80	4.93	Between	153.91	2	76.95	169.51*
				Within	19.07	42	0.45	
Adjusted post test mean	0.54	1.79	4.94	Between	154.16	2	77.08	178.17*
				Within	17.73	41	0.43	

* Significant at 0.05 level of confidence

Table F ratio at 0.05 level of confidence for df 2 and 42 = 3.22, 2 and 41 = 3.23

Table one shows that the obtained F value on pre test scores of 0.03 was lesser than the required F value of 3.22 to be significant at 0.05 level. This proved that there was no significant difference between the groups and the randomization at the pre test was equal. The post test scores analysis proved that there was significant difference between the groups, as the obtained F value of 169.51 was greater than the required F value of 3.22.

This proved that the differences between the post test means of the subjects were significant. Taking into consideration of the pre and post test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value of 178.17 was greater than the required F value of 3.23. This proved that there was a significant difference among the means due to six weeks of Yogic practices and therapeutic exercises on pain.

Since significant improvements were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test.

Table - II
Scheffe's Post-Hoc Test for Pain

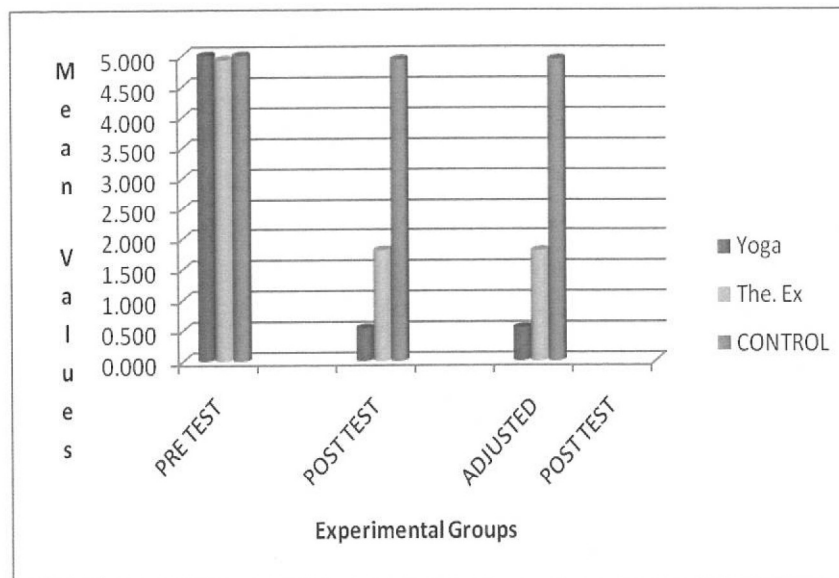
Means			Mean difference	Required C.I
Group-A	Group-B	Control		
0.54	1.79		1.25*	0.69
0.54		4.94	4.40*	0.69
	1.79	4.94	3.14*	0.69

* Significant at 0.05 level of confidence

The table shows that, the multiple mean comparisons shown proved that there existed significant differences between the adjusted means of Yogic practices (Group A) and control group (Group-C), therapeutic exercises (Group-B) and control group (Group-C). There was significant difference between Yogic practices (Group A) and therapeutic exercises (Group-B).

Figure-1

**Bar Diagram Showing the Mean Difference among Yogic Practices
Physical Exercises and Control Group on Pain**



The Analysis of Covariance (ANCOVA) on disability of Yogic practices, therapeutic exercises and control group was analyzed and are presented in table - III.

Table - III

**Analysis of Co-Variance of the Means of Two Experimental Groups
and the Control Group on Disability**

	Group A	Group B	Group C	Source of variance	Sum of squares	Df	Mean squares	Obtained F-ratio
Pre test mean	29.26	28.93	30.80	Between	29.73	2	14.86	0.36
				Within	1698.26	42	40.43	
Post test mean	7.40	17.26	32.53	Between	4810.53	2	2405.26	454.50*
				Within	222.27	42	5.29	
Adjusted post test mean	7.42	17.31	32.47	Between	4714.488	2	2357.24	446.96*
				Within	216.22	41	5.27	

* Significant at 0.05 level of confidence

Table F ratio at 0.05 level of confidence for df 2 and 42= 3.22, 2 and 41=3.23

The obtained F value on pre test scores 0.36 was lesser than the required F value of 3.22 to be significant at 0.05 level. This proved that there was no significant difference between the groups and the randomization at the pre test was equal. The post test scores analysis proved that there was significant difference between the groups, as the obtained F value 454.50 was greater than the required F value of 3.22.

This proved that the differences between the post test means of the subjects were significant. Taking into consideration the pre and post test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value of 446.9 was greater than the required F value of 3.23. This proved that there were significant differences among the means due to six weeks of Yogic practices and Therapeutic exercises on disability.

Since significant improvements were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in table - IV.

Table - IV

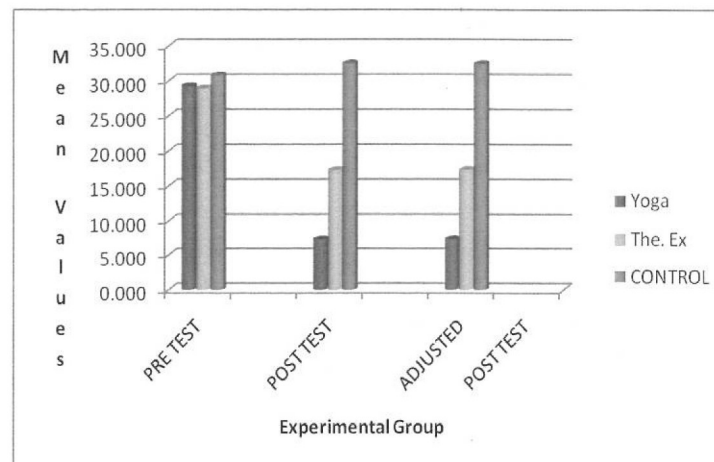
Scheffe's Post-Hoc Test for Disability

Means			Mean difference	Required C.I
Group-A	Group-B	Control		
7.42	17.31		9.88	2.43
7.42		32.47	25.04*	2.43
	17.31	32.47	15.15*	2.43

* Significant

The multiple mean comparisons shown in table II (A) proved that there existed significant differences between the adjusted means of Yogic practices (Group A) and control group (Group-C), therapeutic exercises (Group-B) and control group (Group-C). There was significant difference between Yogic practices (Group A) and therapeutic exercises (Group-B).

Figure-2
Bar Diagram Showing the Mean Difference among Yogic Practices, Physical Exercises and Control Group on Disability



Conclusion

Based on the results obtained, the following conclusions were drawn:

1. It was concluded that pain and disability were significantly reduced due to the influences of six weeks training of yogic practices (Group A) and therapeutic exercises (Group-B) than the control group C among the women software professionals with non-specific low back pain.
2. It was concluded that yogic practices (Group-A) was slightly effective than therapeutic exercises (Group-B) in reducing pain and disability among the women software professionals with non-specific low back pain.

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