

EFFECT OF SELECTED YOGIC PRACTICES ON LOW BACK PAIN AND ABDOMINAL STRENGTH AMONG WORKING MEN

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Abstract

Low-back pain (LBP) is an endemic disorder afflicting a large percentage of the population. Yoga is now regarded in the West as a holistic approach to health and recently has been classified by the National Institutes of Health as a form of Complementary and Alternative Medicine (CAM). This study will describe the therapeutic application of Yoga practices for reducing of chronic low back pain, the rationale behind the method, and evaluating the effect of a 14-week asana and pranayama program with working men with chronic low back pain. Methods: Thirty working employee with affected by back pain of IT companies age above 25 years and older were recruited to participate in this study used by Robert Jone's Spinal Disorder Scale. Participants practice a asanas and pranayama practice. Affect and trunk flexibility (sit and reach test) and abdominal strength (sit-up) were assessed before and after yoga session. Participants signed informed consents, liability waivers, and health screenings. Self-reports of home practice, barriers to practice, and pre-test and post-test were tested by using Pearson product moment correlation to find out the relationship among selected variables. The completed F- ratio is 268.8 and 11.48 which is found to be significant at .05level indicates that there was a significant difference between pre-test and post-test flexibility and abdominal strength. Thus, it clearly shows that Practice of Yogasana and Pranayama was effective in reducing the pain level and improving abdominal strength.

Keywords. yoga, pranayama, mind-body therapies, back pain, pain, abdominal strength

Introduction

Health requires the promotion of healthy lifestyles. In the last 20 years, a considerable body of evidence has accumulated which indicates that there is an association between health and lifestyle of individuals. Yoga means "to unify." It's the holistic approach to all aspects of life: physical, mental, and spiritual. Yoga views the person as a whole; as a unique combination of body, mind and soul, and its techniques maintain that body-mind-soul harmony.

The aim of Asana is not only to develop the muscles and the body but mainly to regulate the proper activities of all the internal organs and glands which affects the nervous system and control our well-being to a much greater degree than we suppose. Patanjali has said: "Perfection of the body consists of beauty of Form, Grace strength, compactness and the hardness and brilliance of a diamond." (Yoga Sutras, Vibhuti Pada, III.47).

The primary goal of this study Yoga practices for low back pain (LBP) is the relief of pain and functional limitation caused by a chronic lower back disorder. This is achieved by minimizing, healing, and ultimately correcting underlying physical malfunctions through a series of anatomically correct postures and strengthen the core muscles.

Yoga practices works to correct underlying internal malfunctions that contribute to mechanical causes of non-specific LBP. It is through the process of helping people with LBP to rest the area of pain and then educating them in proper alignment of bones, muscles, and connective tissue and movements that the healing occurs and changes the underlying root cause of the discomfort. The practice of Yoga is designed to educate students in the use of a daily regimen of self-care that acts to manage and ultimately prevent the recurrence of chronic LBP through healthy postural and movement patterns.

Yogis say that chakras are centers of spiritual energy. This energy is called prana or life force. Each chakra contains a definite number of nadis and these nadis possess a tone or vibration. The chakra centers circulate pranic energy and energy is activated through these centers. Each chakra sends energy to the particular part of the physical body and correspondingly, the mental body too. Prana is a link between gross body and subtle or astral body. The union of prana and mind with the self is the goal of Hatha yoga. There are three important Nadis in the spine. Health thus

can be taken as the harmony among body, mind and soul. Disharmony among them leads to disease. According to Yoga Philosophy the disturbance occurs in Manomaya kosha (mental body) as a result of interaction in the world. This is called ADHI. This, then disturbs the balance of prana in Pranamaya kosha (vital body) and finally manifests itself as disease in Annamaya kosha (physical body). In the industrialized countries, back pain today is the second most common reason for seeking medical care. Waddell stated: "At first glance, backache appears to be a problem only since World War II. At second glance, we realize that not back pain, but back related disability became a medical problem at the end of the last century even more in covid 19 work from home period".

Yoga is an excellent way to prevent and cure back pain. Yoga works on improving the elasticity of the muscle & strengthens the muscles thereby improving the condition of the spine in totality. It is the ultimate goal of Yoga practice to enable a student to attain a healthy back free from LBP. Practice of the classical postures furthers the student's awareness of latent imbalances and requires mastery of corrective movements.

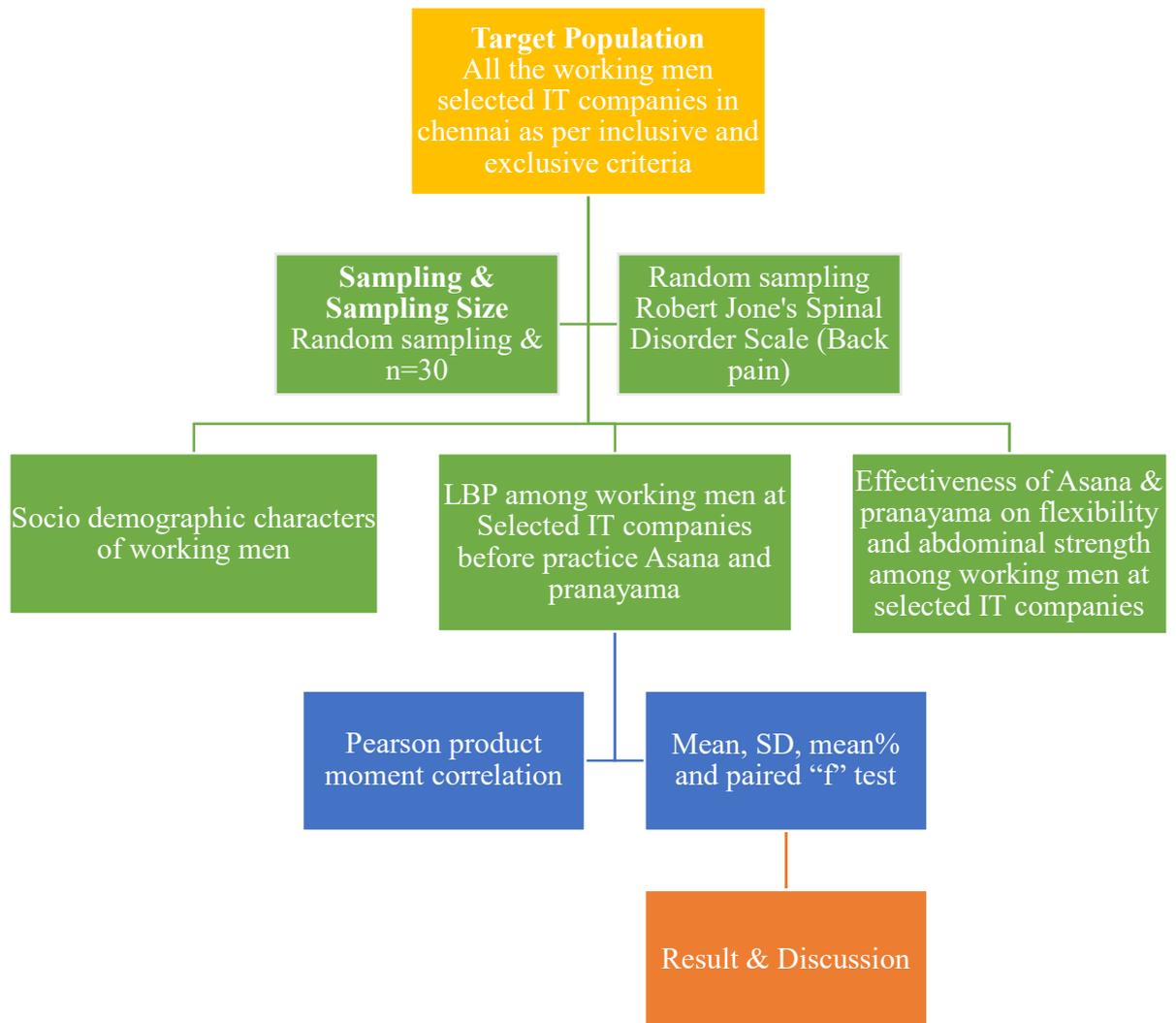
Methods

Experimental Design

To achieve the purpose of study, working men, from Chennai, who had a case history of the ailment (low back pain) were selected. Further the men were screened by a qualified medical officer who made a through medical examination to ascertain the possible causes for back pain and isolated those subjects who would not suffer any contra indication owing to administration of Asanas. Using random method of sampling they were selected for this study. Their age ranging from 25 to 50 years.

The subjects chosen for the study were divided randomly into two equal groups and designated as control group and experimental group. Each group consisted of 15 men selected. Asanas and pranayama were given to the experimental group. The control group was not allowed to participate in yogic practices, which were given for a period of 14 weeks.

The subjects were tested on, the low back pain questionnaire, hip flexibility (sit and reach test) and abdominal strength (sit-up) at the beginning (pre-test) and at the end of the experimental period (post-test).



Types of interventions

The method of Yoga practice for LBP targets a number of areas in the body by using a series of postures from all categories of poses to address imbalances in those areas. Total 12 Postures and

two pranayama practice are structured to some of postures work peripherally from the injury site. The initial poses address gross or superficial layers of the imbalance or misalignment. These are followed by more challenging poses that affect deeper or more subtle misalignments. Each pose in a sequence adds to students' understanding of the imbalance and teaches students how to correctly align and work their musculoskeletal system.

Students are first introduced to passive postures aimed at relieving pain. These postures are held from 1–2 minutes using props for support so that the student can learn to be aware of muscular and mental tension and allow it to release. According to the amount of pain the student is experiencing, instructions are repeated to help the student release incorrect gripping of the muscles and bring awareness of correct movements in the pose. Students experiencing greater pain have less capacity to focus attention and greater musculoskeletal imbalances to overcome. As a result, they require more repetition of instruction. The passive postures work to release tight superficial back muscles, increase circulation to the injured area, and decrease inflammation. It is important for the muscles to release and return to their normal position relative to tissues, bones, and organs prior to a more active phase of correcting underlying imbalances.

Later the passive postures impose a gentle lengthening of tight or inflexible areas and begin realigning imbalanced areas and increase flexibility in joints, connective tissues, and muscles.

Pranayama practices are reducing the stress level and balance sympathetic and para sympathetic nervous system.

Asanas

Savasana with chair, Pavanamuktâsana on the bench, Ardha-padhashtasana with support, Adho-Mukha-Svanâsana with props, Janu-Shirshasana with props, and Eka pada utthita-Padmasana with support.

Saral Bhujangasana, Eka pada pavanamuktasana, Trikonasana, Parshvottanasana, Parighasana, and Jathara-Parivartanasana

Pranayama

Abdominal Breathing and Nadisuddhi Pranayama

Results

TABLE I

MEAN, STANDARD DEVIATION ON SIT AND REACH, SIT - UP AND RANGE OF PAIN FOR CONTROL GROUP

Variables	Mean	S.D.	Minimum	Maximum	N
Pre sit & reach	52.00	6.53	38	60	15
Post sit& reach	52.40	6.49	39	62	15
Pre sit-up	2	2.45	0	5	15
Post sit-up	3	2.45	0	5	15
Pre range of pain	74.60	12.56	48	88	15
Post range of pain	74.73	11.77	49	88	15

The Table I indicated that pre sit and reach mean value in 52 with standard deviation of 6.53 the minimum is 38, maximum is 60. Post sit and reach mean values is 52.40 with the standard deviation of 6.49 the minimum is 39 the maximum is 62. Pre sit-up mean value is 2 with the standard deviation of 2.45, the minimum is 0, the maximum is 5. Post sit-up mean value is 3 the standard deviation of 2.45, the minimum value is 0, the maximum value is 5. The pre range of pain mean value is 74.60 with the standard deviation of 12.56 the minimum is 48, the maximum is 88. Post range of pain mean value is 74.73 with the standard deviation of 11.77, the minimum value is 49, the maximum value is 88.

ABLE II

MEAN, STANDARD DEVIATION ON SIT AND REACH, SIT - UP AND RANGE OF PAIN FOR EXPERIMENTAL GROUP

Variables	Mean	S.D.	Minimum	Maximum	N
Pre sit & reach	52.27	4.63	39	60	15
Post sit & reach	57.47	4.42	44	65	15
Pre sit-up	2	2.45	0	5	15
Post sit-up	6	2.88	0	10	15
Pre range of pain	70.00	14.13	48	90	15
Post range of pain	13.91	3.56	8	20	15

The Table II indicated that pre sit and reach mean value is 52.27 with the standard deviation of 4.63, minimum value is 38 and maximum value is 60. Post sit and reach mean value is 57.47 with the standard deviation of 4.42, the minimum value is 44 and maximum value is 65. Pre sit-up mean value is 2, with the standard deviation of 2.45 the minimum is 0 and maximum is 5. Post sit-up mean value is 6, with the standard deviation of 2.88, the minimum is 0 and maximum is 10. Pre range of pain mean value is 70.00 with the standard deviation of 14.13, the minimum is 48 and maximum is 90. Post range of pain mean value is 13.91 with the standard deviation of 3.56, the minimum is 8 and maximum is 20

TABLE III

INTER CORRELATION CO-EFFICIENT FOR SIT AND REACH, SIT-UP AND RANGE OF PAIN FOR CONTROL GROUP

Correlation	Pre sit & reach	Post sit & reach	Pre sit-up	Post sit-up	Pre range of pain	Post range of pain
Pre sit & reach	1.0000	.9940*	.2917	.2292	-.3120	-.2557
Post sit & reach		1.0000	.3266	.2596	-.3287	-.2757
Pre sit-up			1.0000	.1111	-.6672*	-.6057*
Post sit-up				1.0000	-.1343	-.0879
Pre range of pain					1.0000	.9819*

*Significant at .05 level of confidence 13 degrees of freedom of .514 respectively.

The obtained significant co-efficient of correlation between pre and post sit and reach test is .9940, pre sit-up test and pre range of pain -.6672, per range of pain and post range of pain is .9819.

The obtained insignificant co-efficient of correlation between pre sit and reach test and pre sit-up test is .2917, pre sit and reach test and post sit-up test is .2292, pre sit and reach test with pre and post range of pain are -.3120, -.2557 respectively. Pre sit-up and post sit-up test of .1111, post sit-up test with range of pain pre and post test are -.1343, -.0879 respectively. The association among selected variables; for experimented group is assessed by Pearson product moment correlation and the results are given below.

ABLE IV

INTER CORRELATION CO-EFFICIENT FOR SIT AND REACH, SIT-UP AND RANGE OF PAIN FOR EXPERIMENTAL GROUP

Corelation	Pre sit & reach	Post sit reach	Pre sit-up	Post sit-up	Pre range of pain	Post range of pain
Pre sit & reach	1.0000	.9840*	.1000	-.0017	.3014	.2694
Post sit & reach		1.0000	.1292	.0823	.3716	.3137
Pre sit-up			1.0000	.8068*	-.3178	.0077
Post sit-up				1.0000	.0422	-.0828
Pre range of pain					1.0000	.3171

*Significant at .05 level of confidence 13 degrees of freedom of .514 respectively.

The obtained significant co-efficient of correlation between pre and post sit and reach test is .9840, pre and post sit-up test is .8068.

The obtained insignificant co-efficient of correlation between pre sit and reach test and pre and post sit-up test are .1000, -.0017, pre sit and reach test with pre and post range of pain are .3014, .2694 respectively. Post sit and reach test and pre and post sit-up tests are .1292, .0823, post sit and reach with pre and post

range of pain are .3761, .3137, respectively. Pre-sit up test with pre and post range of pain are -.3178, .0077, respectively. Pre range of pain and post range of pain is .3171 respectively.

The Pearson product moment correlation indicated four significant

relationship they are pre sit and reach with post sit and reach; pre sit-up with pre range of pain: pre sit-up with post range of pain and pre range of pain with post range of pain in control group. Two significant relationship was noticed for experimental group. They are pre sit and reach with post sit and reach and pre sit-up with post sit-up. The investigator further applied analysis of variance for the mean gain scores so that the effect of yogic practices could assessed.

ANALYSIS OF SIT AND REACH

The mean gain data on sit and reach test before (pre test) and after the selected yoga asanas (post - test) of control group and experimental group were analysed and presented in Table V.

TABLE V

ANALYSIS OR VARIANCE FOR MEAN GAIN IN SIT AND REACH BETWEEN CONTROL AND EXPERIMENTAL GROUP

	Control group	Experimental group		Sum of square	Df	Mean square	F
Mean	0.40	5.20	B	172.80	I	172.80	268.80
Gain							
S.D	0.73	0.86	W	18.00	28	0.64	

*Significant at .05 level

The tabulated F-ration for degrees of freedom and 28 are 4.20 respectively.

An examination of Table V indicates that for the control group mean gain value is .40, experimental group mean gain value is 5.20 with the standard deviation of 0.73 and 0.86 respectively. The F- ratio is 268.8 which is found to be significant at .05 level as the obtained value is higher than the table value of 4.20 required for significance.

Analysis of sit - up

The mean gain data on sit-up test before (pre test) and after selected yogasanas (post test of control group and experimental group were analysed and presented in Table VI.

TABLE VI

ANALYSIS OF VARIANCE FOR MEAN GAIN IN SIT - UP BETWEEN CONTROL AND EXPERIMENTAL GROUP

	Control group	Experimental group		Sum of square	Df	Mean square	F
Mean gain	1.00	4.33	B	83.33	1	83.33	11.48*
S.D	3.38	1.76	W	203.33	28	7.26	

*Significant at .05 level

The tabulated F - ration for degrees of freedom 1 and 28 are 4.20 respectively.

An examination of Table VII indicates that for the control group mean gain value is 1.00, experimental group mean gain value is 4,33 the standard deviation of 3,38 and 1.76 respectively. The G - ratio is found to be significant at .05 level as the obtained value is higher than the table value of 4.20 required for significance

Analysis of Range of Pain

The mean gain data on range of pain questionnaire test before (pre test) and after the selected yogasanas (post test) of control and experimental group were analysed and presented in Table VII.

	Control group	Experimental group		Sum of square	Df	Mean square	F
Mean Gain	.13	-61.20	B	28213.33	1	28213.33	340.49
S.D	2.53	12.62	W	2320.13	28	82.86	

*Significant at .05 level

The tabulated F- ratio for degrees of freedom 1 and 28 are 4.20 respectively.

An examination of Table VIII indicates that for the control group mean gain is .13, experimental group mean gain value is -61.20 with the standard deviation 2.53 and 12.62 respectively. The F - ratio is 340.49 which is found to be significant at .05 level as the obtained value is higher than the table value of 4.20 required for significant

Discussion on Findings

The results of the study clearly indicate that there is significant relationship between pre hip flexibility (sit and reach test) with post hip flexibility: pre abdominal strength with pre range of pain; pre abdominal strength with post range of pain and pre range of pain with post range of pain for control group. The experimental group having significant relationship between pre hip flexibility with post hip flexibility and pre abdominal strength with post abdominal strength. The analysis of variance mean gain scores indicate increase in hip flexibility and abdominal strength and decrease in range of pain to a significant level for experimental group as compared to control group.

The results of the study indicate that the pain has decreased due to the practices of selected Asanas and pranayama training the abdominal strength and hip flexibility have improved.

The results of the study clearly indicate that regular and systematic yogic practice helps the person to recover from back pain.

Conclusions

The results of the study indicate that lack of physical exercise is also one of cause for low back pain. Regular Asana practices reduce the pain, increase the flexibility of the joints and abdominal strength. Stress plays a vital role in inducing, precipitating, or worsening all lifestyle disorders and hence it is imperative to understand that we can manage it better through pranayama practice. To maintain a healthy back, it is important to do healthy things and follow a right practice. The modern world is facing a pandemic of lifestyle disorders that require changes to be made consciously by individuals themselves.

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