



Effect of chair yoga on pain and functional disability in competitive exam appearing students with non-specific low back pain

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Abstract

Background: Non-specific low back pain is defined as low back pain not attributable to recognizable known specific pathology (infection, tumor, osteoporosis, fractures, inflammatory disorder and cauda equina syndrome). Sedentary lifestyle leads to greater risk of non-specific low back pain. Sedentary behavior has been defined as “any behavior characterized by an energy expenditure of ≤ 1.5 METs while in a sitting or reclining posture”. Coaching institutes attract students from high school onwards aspiring for admission to professional courses to post- graduates aspiring for jobs in private and public sectors. Physical stress imposed on the body during coaching includes poor study posture and sitting on chairs improperly in overcrowded classes. Chair Yoga is suitable for students who are new to yoga, confined to desk at work, or unable to participate in a traditional yoga class because of chronic pain, disability, osteoporosis, injury, carpal tunnel syndrome and aging.

Aim and Objective: To study the effect of Chair Yoga on pain and functional disability in competitive exam appearing students with non-specific low back pain using NPRS and Roland-Morris Low back pain and disability questionnaire.

Methods and Materials: Various Study rooms were visited in and around Pune. Participants (Total n=30) were selected according to the Inclusion and Exclusion criteria. Informed consent was taken. Participants with non-specific low back pain were assessed using NPRS and RMQ, pre intervention data was noted. Chair Yoga intervention was demonstrated in 1st week and then was gradually progressed till 2nd week. Post intervention based assessment was done.

Results: Total 14 males and 16 females were evaluated with mean age (25.53). Data analysis was done using paired t-test. Post intervention pain ($p > 0.0001$) and functional disability ($p > 0.0001$) was statistically significant.

Conclusion: The study concluded that Chair Yoga was effective in reducing pain and functional disability in competitive exam appearing students with non-specific low back pain.

Keywords: non-specific low back pain, chair yoga, functional disability

Introduction

Coaching institutes attract students from high school onwards aspiring for admission to professional courses to post- graduates aspiring for jobs in private and public sectors. These coaching institutes offer coaching for students appearing in competitive exams like entrance exams for medical, engineering, law, CA, post-graduate medical courses, public service commission, banking, etc [1]. Physical stress imposed on the body during coaching includes poor study posture and sitting on chairs improperly in overcrowded classes. This produces muscle strain, joint imbalance, and soft-tissue stress. The muscles must hold the body in single position for a long time, leading to prolonged immobility with a subsequent reduction in blood flow that results in muscle tension [1]. Over time, this becomes habitual, leading to chronic, recurring pain and episodes of pain. Students tend to change their posture according to habits, such as slouching, crossing the legs and they maintain the incorrect posture for hours. Studies show overall prevalence of musculoskeletal pain of 87.1% in these students. Most students reported pain in low back (18.6%) [1]. Competitive exam appearing students undergo physical stress imposed on body during study duration due to-

- Poor study postures.

- Sitting improperly on chairs for long duration [1].

Sedentary lifestyle leads to greater risk of non-specific low back pain- reported in a Dutch population-based study. Sedentary behaviour has been defined as “any behaviour characterized by an energy expenditure of ≤ 1.5 METs while in a sitting or reclining posture [16]. Prolonged sitting behaviour raises the risk of musculoskeletal disorders, especially low back pain [18]. Non-specific low back pain is defined as low back pain not attributable to recognizable known specific pathology (infection, tumor, osteoporosis, fractures, inflammatory disorder and cauda equina syndrome) [2].

Yoga is a non-pharmacological mind-body therapy that involves a combination of physical postures (asanas), breathing (pranayama), relaxation (shavasana) and meditation [20]. Chair Yoga is a term generally used to describe a gentle form of yoga that is practiced sitting in a chair or standing and using a chair for support. The poses are often adaptations of asanas in modern yoga as exercise [20]. It was developed by Lakshmi Binder in 1982. It is suitable for students who are new to yoga, confined to desk at work, or unable to participate in a traditional yoga class because of chronic pain, disability, osteoporosis, injury, carpal tunnel syndrome and aging [7].

Materials

- **Study design:** Experimental.
- **Sample size:** 30
- **Sample method:** Purposive.
- **Study population:** Students (both males and females between 18-35 years old.)
- **Study setting:** Study rooms and OPD
- **Treatment duration:** Alternate days for 2 weeks. (7 sessions in 14 days)
- **Study duration:** 6 months
- **Material:** pen, paper, chair, scale, consent form.
- **Outcome measure:** Roland Morris questionnaire, NPRS.

Method

30 subjects were selected who had non-specific low back pain. Detailed instructions were given to the subjects regarding the study and consent was taken from the subjects who were willing to participate. Subjects were selected according to the inclusion and exclusion criteria. Pre-intervention assessment was done using Nprs and Roland Morris questionnaire and data was recorded. Intervention was demonstrated and taught to the subjects and then follow-up was taken till the end of 2nd week. Post - intervention assessment was done using NPRS and Roland-Morris disability questionnaire. Data was collected and was analysed using Graphpad Prism 9.1.1 version. Results were recorded.

Data Analysis

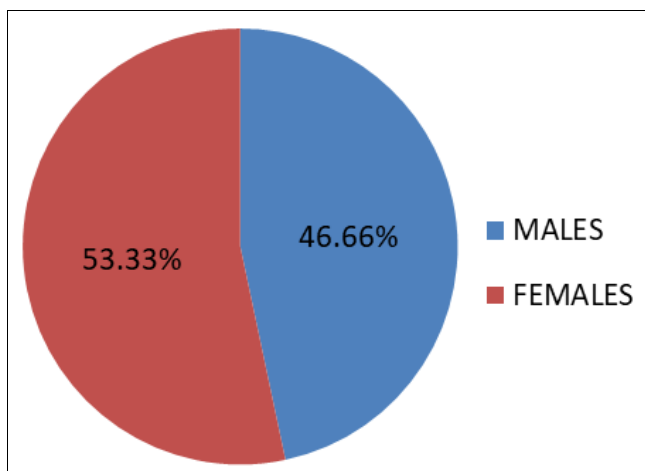


Fig 1: Gender Wise Distribution

Statistical analysis

Table 1

Outcome Measure (NPRS)	Mean	T Value	P Value	Significance
Pre	5.4	13.24	<0.0001	Highly Significant
Post	2.96666			

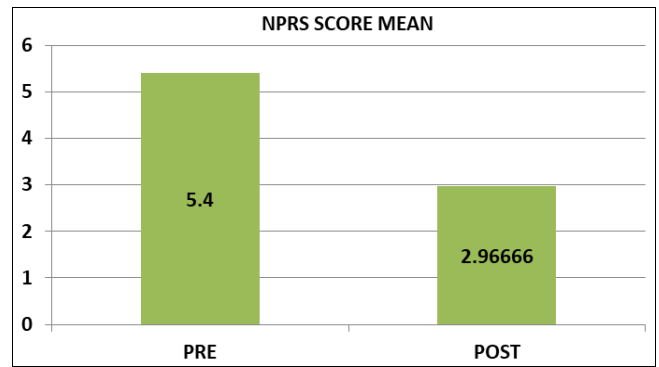


Fig 2

Roland-Morris Disability Questionnaire

Table 2

RMDQ	Mean	T Value	P Value	Significance
Pre	10.666	11.12	<0.0001	Highly Significant
Post	7			

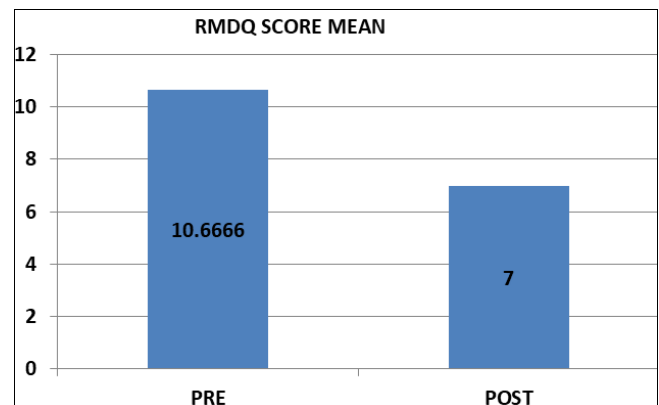


Fig 3

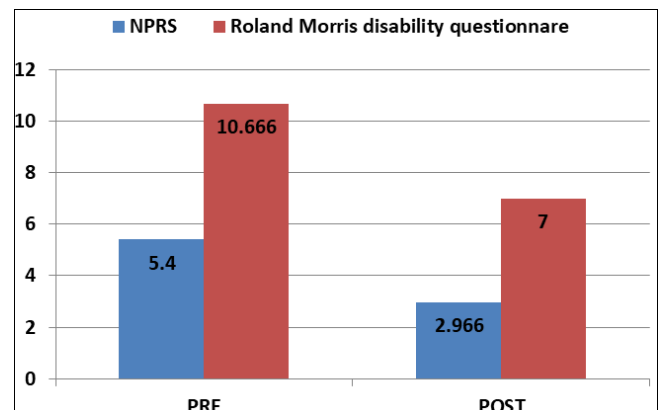


Fig 4

Results

- This study evaluated 30(n) subjects out of which 14 were males (46.66%) and 16 were females (53.33%) with mean age (25.53) range 18-35.
- Paired t-test was done to compare the Pre and Post NPRS values of non-specific low back pain which showed p value<0.0001 which is considered highly significant.
- Also, when compared the Pre and Post functional disability score using paired t-test, it gave p value <0.0001 which is highly significant.

Discussion

The objective of current study was to find out whether Chair Yoga poses were effective on pain and functional disability in Competitive exam appearing students with non-specific low back pain. In this study, total 30 individuals (n=30) both males and females participated. The result showed that Chair yoga poses have significant effect on reducing pain (pre mean 5.4, post mean 2.96) and disability (pre mean 10.66, post mean 7).

John Santoshi, *et al.* Described in his study that there is prevalence of musculoskeletal pain in competitive exam aspirants, in which non-specific low back pain was most prevalent. Low back pain occurrence at an early age can cause disease progression, resulting in chronic LBP that has potential to reduce individual's quality of life. Mauricio *et al.*, revealed that there is significant co-relation between pain and functional disability in patients with chronic low back pain. Our study results support this co-relation. Fernie GR, *et al.*, revealed that static muscle load and flexion of the lumbar spine have been postulated as risk factors for LBP development; thus, prolonged sitting or sitting in an abnormal posture can aggravate LBP. In our study, most of the subjects reported that slouching and prolonged sitting led to their LBP. Sudhir Ganesan, *et al.*, revealed that the number of daily hours spent studying had a significant association with LBP. LBP precipitated by studying for ≥ 5 hours on an average ($p < 0.05$) daily. Similarly, our study revealed that long periods of study duration is a major contributing factor to LBP occurrence. Studies show Chair yoga aided participants to feel better specifically in physical posture, strength and stretch. Some studies have shown that Chair Yoga reduces pain and physical limitations and offers to be a low-cost exercise program to prevent or reduce functional disability due to inactivity. Our study results, reveal the same. This study showed that physical limitations like walking slowly, difficulty in getting out of a chair, turning over in bed, disturbed sleep improved after 2 weeks of chair yoga intervention.

Conclusion

- Hence, it shows that Chair yoga intervention was effective in reducing pain and disability in Competitive exam appearing with Non-specific Low back pain at end of 2nd week.
- Hence, our null hypothesis is rejected and alternate hypothesis is accepted.

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