

Yoga Therapy to Reduce Pain and Improve Function in Chronic Low Back Pain



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Abstract

Introduction: The purpose of this critical review is to determine the effectiveness of yoga as a therapy to reduce pain and improve function in chronic low back pain.

Methods: A literature search was performed to locate randomized controlled studies, with keywords being, "Yoga Treatment and Chronic Low Back Pain" and "Yoga and Chronic Back Pain". Within the 5 studies, adults with chronic low back pain participated in a yoga program or a control group.

Discussion: Four studies utilized yoga therapy and showed improvements in function and pain at the end of the protocol. One study showed significant improvement in pain levels as early as 4 weeks. Improvements in spinal flexibility, pain self-efficacy, depression and reduced use of medication were also seen. As a collective group, these articles provide evidence that yoga therapy is beneficial to reduce chronic low back pain and improve function, with results lasting between 4 weeks to 1 year.

Conclusion: The study supports the use of yoga as an intervention to address chronic low back pain. Yoga helps to improve functional disability and reduce pain intensity.

Keywords: Yoga and Chronic Back Pain; Yoga Treatment and Chronic Low Back Pain

Introduction

Low back pain is a very common medical condition. At least 75-80% of Americans have had at least one episode of back pain in their lifetime [1]. Therapeutic exercise is used traditionally for treatment of chronic low back pain [2]. It has been reported that yoga treatments include not only exercise, but also attention to posture, self-awareness, breathing, mental focus and relaxation [3]. Yoga is a complementary alternative therapy with approximately 14.9 million people in the United States doing yoga, 21% of which use it for back and neck pain [4]. Yoga has been shown to be effective in improvement of neck pain and function [5]. The purpose of this literature review was to critically evaluate the literature to see if yoga therapy is beneficial to reduce pain and improve function in patients with chronic low back pain.

Methods

A literature search was conducted on July 18, 2016 and July 19, 2016 using PubMed database. Language was limited to English. Keywords included: "Yoga Treatment and Chronic Low Back Pain" which yielded 74 articles and "Yoga and Chronic back pain" which yielded 95 articles. The search was further narrowed and customized in the database by selecting randomized controlled trials. "Yoga treatment and chronic low back pain" yielded 18 articles and "yoga and chronic back pain" yielded 19 articles. 18 of the 19 articles were the same on both searches. Articles were

excluded if yoga was not incorporated into treatment or if the inclusion criteria did not contain subjects with chronic low back pain. Titles and abstracts were then reviewed to select studies that contained subjects with chronic low back pain and that showed yoga as an intervention for back pain. A total of five studies that fit the criteria were selected for review. Additional references were ascertained by cross referencing applicable articles.

Discussion

Five articles addressing the effect of yoga therapy on low back pain were reviewed. As a collective group, these articles support the use of yoga therapy for chronic low back pain, to improve function and reduce pain [6-10].

Four studies utilized yoga therapy and showed improvements in function and pain at the end of the protocol [6-10]. The pilot study by Cox, et al. [8] showed significant difference in improvement of pain levels as early as 4 weeks. Some studies individually also showed improvements in other aspects, such as, Tekur, et al. [6] showed improvement in spinal flexibility and Williams, et al. [9] showed reduced use of pain medication. Improvements in pain self-efficacy and depression along with improvements in functional disability were seen in studies by Tillbrook, et al. [7] & Williams, et al. [10] respectively.

Some of the limitations seemed to be usage of self- reliance instrumentation, missing data, small size and non- attendance for some studies.

Outside of the five studies that were reviewed, Sherman et al. [11] found that self- efficacy and also sleep were important psychological benefits of yoga on low back pain. Williams et al. [10] study included in our review has shown to improve

depression. An important research direction could be to study the effects of yoga on other psychological factors affecting low back pain. Overall, yoga seems to be a well- positioned intervention to reduce pain and improve function.

As a collective group, these articles provide evidence that yoga therapy is beneficial to reduce chronic low back pain and improve function, with results lasting between 4 weeks to 1 year Table 1.

Table 1: Result

Study	Sample Size	Methods/Study Design	Outcome Measures	Findings	Limitations	Statistical Methodology
Tekur et al. [6]	80 adults (36 females, 44-males) Age: 18-60years Back pain for more than 3 months.	RCT Two groups: Yoga and Physical exercise Control group; 7 days study on campus. Yoga group had all aspects of yoga, specific daily routine and vegetarian diet; control group had physical exercise, specific daily routine and vegetarian diet.	Goniometer for spinal mobility Oswestry Low back Pain Disability Index.	Yoga group showed -Decreased pain and related disability (ODI Scores decreased from 36.50+/-14.22 to 18.70+/- 11.55) -Improved spinal flexibility	Interaction between two groups, short duration of the study.	ANOVA was used to show a significant difference between groups.
Tilbrook et al. [7]	313 males Age: 18-65 years Back pain for 18 months	RCT Two groups: yoga and usual care group Yoga- 12 Goniometer for spinal mobility classes over 3 months for 75 min each and back pain education booklet. Other group- Usual care and back education booklet. Follow up to 12 months	Roland Morris Disability Questionnaire (RMDQ) Pain Self Efficacy Questionnaire General Health Measures	-Significant improvement in disability scores at 3,6 and 12 months --RMDQ score was 2.17 points lower at 3 months, 1.48 points lower at 6 months, and 1.57 points lower at 12 months. -Higher pain efficacy scores in the yoga group at 3 and 6 months -Similar reduction in back pain and general health scores at 3,6 and 12 months	Missing differential data for secondary outcome -Some missing data from primary outcome	Linear Regression to determine differences at baseline, 3 months, 6 months and 12 months. SAS software used.
Cox, et al. [8]	20 adults (13-females, 7-males) Age:18-65years Back Pain for 18 months	RCT Two groups: Yoga and usual care group; 12 weeks of yoga, plus written advice, 75min per class. Other group -Usual care and written advice.	-Roland and Morris Disability Scale (RDQ) -Aberdeen Back Pain Scale (ABPS) - SF-12 for general health status. -EQ-5D health index, -Pain Self Efficacy Questionnaire (PSEQ) -Simple quantifying measures for days spent in bed due to LBP, medication used, and restricted activity due to LBP.	Yoga group showed -Significant improvement in pain at 4 weeks. -RDQ score improved by at least 2 points. -- Mean Difference on RDQ 1.88(-3.18 to 6.94), ABPS 8.39(1.18-15.60) at 4weeks from baseline. -Improvement in pain and disability at 12 weeks. (not statistically significant) -This was a pilot study.	Small size, attrition, non-attendance, lack of returning questionnaires.	ANOVA was used to see the effect of treatment on the outcome measures.
Williams et al.[9]	44 adults Age: 18 and above Back pain for more than 3 months	RCT Two groups: yoga and Educational control group; Yoga group had 16 weeks of yoga, 1.5-hour class per week, back care newsletter weekly for 16 weeks and continued medical care for LBP. Control -16 weekly back care newsletter and continued medical care for LBP.	PDI (Pain Disability Index) - Short Form McGill Pain Questionnaire (SF-MPQ) -VAS (Visual Analogue Scale) - Present Pain Index (PPI) for pain measurement. -Tampa scale of Necrophobia - SOPA (Survey of Pain Attitudes) - CSQ-R (Coping Strategies Questionnaire- Revised) - BPSES (Back Pain Self Efficacy Scale) respectively. -Spinal Saunders Digital Inclinator for Spinal ROM – Interview for pain medication, herbal and dietary supplement.	Yoga group showed -Improvement on self- reported disability and pain and reduced use of medication. -Pain reduced by 64%, functional disability by 77% and pain medication usage by 88%	Lack of power, subjects were relatively healthy or were self-referred, lack of control for attention or physical activity, excessive number of outcomes.	Unpaired t tests, repeated measures multivariate analysis, Ancova, Chi- squares test and Bonferroni correction were used to determine statistical significance.

Williams et al. [10]	90 adults Age:18-70 years. Back pain for more than 3 months.	RCT Two groups: yoga and Standard Medical Care control group. Yoga- 24 week long, each class 90 min, twice a week. Control group continued self-directed medical care.	ODI (Oswestry Disability Index for function- VAS (Visual Analogue Scale) for pain-BDI-II (Beck Depression Inventory-Second Edition)	Yoga group showed -Significant reduction in functional disability and pain intensity -Clinical improvements at 12 and 24 weeks. -Reduced pain medication usage. -At 24 weeks 42.90% reduction in ODI, 56% reduction in VAS and 58.90% reduction in BDI-II. 63.2%Reduction in pain medication at 12 weeks, 20% improvement in functional disability at 12 weeks and 42.9% at 24 weeks.	Usage of self-reliance instrumentation, -minimal disability of participants -attention and group support was different for the two groups.	Statistical Analysis by 2 x 3 ANOVA, at 6 months repeated measures ANOVA, Linear Regression for making comparisons between groups at 12 and 24 weeks.
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Conclusion

The study supports the use of yoga as an intervention to address chronic low back pain. Yoga helps to improve functional disability and reduce pain intensity. Further research is needed to evaluate the psychological benefits of yoga therapy in low back pain.

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