Summer 8-11-2012

The use of Yoga for the Treatment of Fibromyalgia in Adult Women

Jason L. Johnston

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Background: Fibromyalgia (FM) is a somewhat poorly understood and controversial pain syndrome effecting approximately 5 million persons in the United States. The pathophysiology of fibromyalgia is not completely understood and traditional therapy includes pharmacologic agents of mixed effectiveness.

Method: An exhaustive literature search was conducted using Medline, CINAHL, PsychINFO, EBMR multifile, and Web of Science using the search terms fibromyalgia, yoga, treatment, and adult. Reference lists from identified articles were also reviewed for additional studies. Two studies met the criteria of this systematic review.

Results: Two studies met the eligibility criteria. Both were randomised controlled trials, one conducted at Oregon Health and Sciences University in Portland, OR and the other in India. The participant demographics between studies were similar with respect to age and race.

Conclusion: The benefits of yoga in the treatment of adult women with fibromyalgia are promising but preliminary. More studies are needed to adequately address the potential benefits of yoga for treatment of fibromyalgia. Future research is warranted on this topic due to its potential impact on changing the management of fibromyalgia patients, reducing strain on the healthcare system, and lowering costs for patients.

Keywords: Fibromyalgia, yoga, treatment, adult.

Degree Type
Capstone Project

Degree Name
Master of Science in Physician Assistant Studies

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Keywords
yoga, fibromyalgia, treatment, adult

Subject Categories
Medicine and Health Sciences

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The use of Yoga for the Treatment of Fibromyalgia in Adult Women

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A Clinical Graduate Project Submitted to the Faculty of the

School of Physician Assistant Studies

Pacific University

Hillsboro, OR

For the Masters of Science Degree, August 11, 2012

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Biography

Jason Johnston is a native of Oregon.

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Acknowledgements

To my parents, without whose unending support I never would have made it this far. I love you guys.

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List of Abbreviations

FIQ……...… Fibromyalgia Impact Questionnaire

FIQR……..… Revised Fibromyalgia Impact Questionnaire

FM……...…… Fibromyalgia

OHSU……..… Oregon Health & Science University

PGIC…….. Patient Global Impression of Change

VAS……...……. Visual Analog Scales

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The use of Yoga for the Treatment of Fibromyalgia in Adult Women

BACKGROUND

Overview

Fibromyalgia (FM) is a somewhat poorly understood and controversial pain syndrome. Typical symptoms include sleep disturbances, fatigue, widespread pain, and impairment of thinking and memory[1],[2]. Together these factors contribute to a general decline in ability to function effectively and impact activities of daily living. The pathophysiology of fibromyalgia is not completely understood.[1] It is thought to arise from defects in ascending pain pathways and descending inhibitory pathways[3]. Ascending pathways are responsible for relaying information from the body to the brain where the sensation of pain is interpreted. These signals may become confused either by damage to neurons or repeated activation of the neural pathways leading to a perception of pain when no painful stimulus is actually present[3]. Descending inhibitory neuronal pathways help to suppress stimulus from the peripheral neurons. In patients with fibromyalgia it is hypothesized that the brain centers responsible for this down regulation are less active[1] perhaps because of an imbalance in neurotransmitters such as serotonin and norepinephrine[3].

Prevalence

In 2005, fibromyalgia was estimated to effect approximately 2% (about 5 million people) of the US population[4]. Women have been diagnosed to a greater extent than men (3.4% versus 0.5%)[4]. Rheumatic conditions, such as rheumatoid arthritis and systemic

lupus erythematosus, occur with FM in 25-65% of patients[5]. Other co morbidities like depression, anxiety, cognitive dysfunction, and insomnia often accompany FM as well[6].

Diagnosis of fibromyalgia

The criteria for diagnosing fibromyalgia were established in 1990 by the American College of Rheumatology and include a history of widespread pain for at least 3 months and pain upon digital palpation of 11 of 18 specific tender point sites using approximately 4kg of force[7]. More recent diagnostic guidelines were adopted in 2010 and eliminate the use of tender point palpation and establish a severity scale using typical fibromyalgia symptoms[2].

Assessment Tools

Assessment of fibromyalgia patient status, progress, and outcomes of therapy is evaluated with The Fibromyalgia Impact Questionnaire (FIQ). This self-report instrument was presented in 1991 and is composed of 10 items totaling 20 questions that assess function, overall impact, and symptom severity. A higher score indicates a greater impact of the syndrome, with a maximum score of 100[8]. The Revised Fibromyalgia Impact Questionnaire (FIQR) was developed in 2009 to address limitations in the FIQ by adding modified function questions and questions on memory, tenderness, balance and environmental sensitivity[9]. The Patient Global Impression of Change (PGIC) is another questionnaire assessing overall improvement of symptoms. Unlike the previously described questionnaires, the PGIC is only administered once at the completion of therapy to determine overall improvement in fibromyalgia symptoms. Visual Analog Scales (VAS) were also used to determine pain on a numeric or sliding scale.

Traditional Therapy

Typical therapy for treating fibromyalgia follows the pathophysiologic theories surrounding the disorder and is therefore based around pharmacologic agents such as antidepressants, nonsteroidal anti-inflammatory drugs (NSAIDs), muscle relaxants, and others[10]. Use of these medications follows the pathophysiologic model of defects in ascending pain pathways and descending inhibitory pathways[3]. The effectiveness of these agents is mixed[6]. Their use carries the risk of adverse effects and drug-to-drug interactions. Recommendations have been made to incorporate exercise and coping skills into management of fibromyalgia[11].

Yoga

Yoga is a collection of physical, spiritual, and philosophical practices that collectively aim at relaxing, energizing, and strengthening the body and mind[12]. In its most commonly practiced form, this is accomplished through physical poses, deep breathing, and meditation. The low impact and relaxing nature of yoga is generally considered safe for the majority of the population[12]. Furthermore, yoga incorporates exercise and mind/body discipline while maintaining a very low risk of injury. Relaxation techniques such as yoga may provide some analgesic effect, which is deemed useful in dealing with pain and stressors[13].

Costs of Therapy

Patients with fibromyalgia tend to be frequent users of medical services. Annual costs of treating fibromyalgia, both direct and indirect, average $5945 per patient. Since fibromyalgia is often a diagnosis of exclusion, office, emergency room, and inpatient tests and procedures are often extensive, and can exceed $20 billion per year[14].

Clinical Question and its Significance

Is yoga effective for the treatment of fibromyalgia in adult women? If this were found to be so, yoga as therapy could help alleviate financial burden for the individual and the health care system and also provide lasting coping mechanisms for patients.

METHODS

Description of Search

An exhaustive literature search was conducted using Medline, CINAHL, PsychINFO, EBMR multifile, and Web of Science using the search terms fibromyalgia, yoga, treatment, and adult. Reference lists from identified articles were also reviewed for additional studies. Two studies met the criteria of this systematic review.

Eligibility Criteria

Studies included in this systematic review were randomized trials of adult women. Primary outcomes were measured by either the FIQ or FIQR questionnaire. All articles used were full-text and published in the English language.

RESULTS

Two studies met the eligibility criteria outlined in the methods section. Both were randomised controlled trials, and one used a standard of care control while the other used an active control group. The participant demographics between studies were similar with respect to age and race. While primary outcomes were not measured by the same questionnaire, the FIQR has scoring characteristics comparable to the original FIQ making comparison between the two possible[9].

The OHSU study

A pilot randomized controlled trial of the yoga of awareness program in the management of fibromyalgia was conducted by Oregon Health & Science University (OHSU) in 2010 and randomized patients into either an 8 week yoga of awareness program or a wait-listed standard care group. The yoga group met once per week for 120-minute sessions and were encouraged to practice at home as well as complete daily diaries to access symptoms and coping mechanisms. Participants were evaluated using questionnaires including the FIQR and PGIC, physical tests to assess balance, strength, and tender points, as well as a questionnaire to determine coping strategies. Patients were also asked to complete daily diaries of fibromyalgia symptoms and coping strategies. Yoga and control groups had no significant differences in demographics, clinical characteristics, or baseline measurements. The FIQR was the primary assessment measure for determining effect of therapy. There was significant improvement in the yoga group demonstrated by a total FIQR reduction from a mean score of 48.32 to 35.49 (a 26.55% reduction) as opposed to the control group which showed a reduction from a mean score of 49.26 to only 48.69. Greater reductions in the yoga group versus the control group were reported in all specific areas of the FIQR, which are pain, fatigue, stiffness, depression, poor memory, anxiety, tenderness, poor balance, and environmental sensitivity. These collectively averaged a 27.87% reduction in FIQR scores while the control group averaged a 13.10% increase in scores. Retention was 91%, home yoga practice averaged 40 minutes a day, and diary completion was 87%[15].

The India study

Effects of Yoga and the Addition of Tui Na in Patients with Fibromyalgia was a randomized trial published in 2007 and sought to verify whether yoga with or without the addition of Tui Na (a modified form of massage) would improve pain symptoms in patients with fibromyalgia. Individuals were similar with regard to demographic characteristics, medication use for symptoms, and initial values for FIQ and pain threshold. Participants were randomized into yoga only and yoga plus Tui Na for 8 weekly sessions with a median duration of 50 minutes each. Results were measured with the FIQ questionnaire, pain threshold at each of the 18 tender points, and verbal reports of pain. These were conducted one week before the first session and 4-6 weeks after completion. A visual analog scale to assess pain was performed before and after each session and at follow-up. While specific numerical data was not reported in the results for the FIQ, a nearly 20-point reduction in FIQ scores was observed for the yoga group from before treatment to follow up. A nearly 15-point reduction was reported in the yoga plus Tui Na group. VAS results were consistently lower after each session for both groups, yet at follow up the yoga plus Tui Na group saw a rise to nearly the initial level. Whereas, the yoga only group's pain VAS remained nearly 20 points lower at follow-up. Retention was 82%[13].

DISCUSSION

These two studies suggest that the stretching, relaxation, and coping techniques provided by yoga are beneficial as adjunctive treatments of symptoms in adult female patients with fibromyalgia.

Limitations of Study

The small number of participants in these studies is a major limitation[15],[13]. Many more trials are needed which examine the causal and statistical links between the yoga regimen and the effects on the participant. The general lack of follow-up in the OHSU study is a major limitation. They used the yoga of awareness program applied during the study as compensation for the otherwise untreated wait-list control group. Though this proved effective in maintaining the participants, a reported 100% retention, it served to remove the control component and therefore did not allow for follow-up comparison to identify any lasting treatment effect. Likewise, no follow up was conducted on the therapy group[15].

Above all, the limitations caused by the lack of an equivalent control intervention inherent to most exercise or coping skills studies is likewise limiting to the conclusions of these trials[15],[13]. Deficiencies created by the relatively small sample sizes of both studies could be supplemented by limiting the use of self-reported outcomes and including an appropriate control condition.

While skilled yoga instruction is readily available in most urban areas, it is often not the case in smaller rural communities. Cost, both monetary and time, should also be considered since yoga therapy is not covered by insurance[12]. Since the mechanisms of fibromyalgia syndrome are poorly understood[3], likewise the potential mechanisms of yoga therapy will continue to be poorly understood.

In brief, small sample size and over reliance on self-reported data introduces major risks of bias in both studies.

Recommendations for Future Studies

Further studies should be conducted to more thoroughly explore the potential of yoga as therapy for fibromyalgia. Future studies should include larger numbers of participants to ensure greater validity and include an equivalent treatment group. It would also be beneficial to assess if adjunctive yoga therapy reduces the need for use of prescription medications in treatment of fibromyalgia symptoms.

Clinical Application

While no insurance carrier currently covers yoga, it can still be recommended or its benefits explained during patient education. These studies suggest that any female currently diagnosed with FM who is capable of performing the required movements would likely benefit from the addition of regular yoga participation. Those who are unable to perform the movements could potentially benefit from the relaxation and breathing techniques that accompany yoga, yet this is even more speculative since the mechanism of treatment effect is not known.

CONCLUSION

The benefits of yoga in the treatment of adult women with fibromyalgia are promising but preliminary. Too few studies have been performed to adequately address the clinical question posed. Future research is warranted on this topic due to its potential impact on changing the management of fibromyalgia patients, reducing strain on the healthcare system, and lowering costs for patients.

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TABLES

Table 1

Study	Number of participants randomized		Age range	Assessments	Randomization	Description of loss to follow up
	Participant	Control				
OHSU	25	28	mean 53.7	FIQR, PGIC	Adequate	Yes
India	17	16	25-60	FIQ, VAS	Adequate	No

Table 2

Study	Reduction in FIQ/FIQR	PGIC Improvement	Reduction in VAS	Quality of Evidence (GRADE)
OHSU study	12.83	5.05	NA	1
India study	20	NA	20	0

APPENDICIS

Appendix A

FIBROMYALGIA IMPACT QUESTIONNAIRE (FIQ)

Last name: **First name:** **Age :** **Todays date :**

Duration of FM symptoms (years) : **Years since diagnosis of FM :**

Directions: For questions 1 through 11, please check the number that best describes how you did overall for the *past week*. If you don't normally do something that is asked, place an 'X' in the 'Not Applicable' box.

Were you able to:	Always	Most	Occasionally	Never	Not Applicable
1. Do shopping?	☐0	☐1	☐2	☐3	☐4
2. Do laundry with a washer and dryer?	☐0	☐1	☐2	☐3	☐4
3. Prepare meals?	☐0	☐1	☐2	☐3	☐4
4. Wash dishes / cooking utensils by hand?	☐0	☐1	☐2	☐3	☐4
5. Vacuum a rug?	☐0	☐1	☐2	☐3	☐4
6. Make beds?	☐0	☐1	☐2	☐3	☐4
7. Walk several blocks?	☐0	☐1	☐2	☐3	☐4
8. Visit friends or relatives?	☐0	☐1	☐2	☐3	☐4
9. Do yard work?	☐0	☐1	☐2	☐3	☐4
10. Drive a car?	☐0	☐1	☐2	☐3	☐4
11. Climb stairs?	☐0	☐1	☐2	☐3	☐4
Sub-total scores *(for internal use only)*	☐	☐	☐	☐	☐
Total score *(for internal use only)*	☐				

12. Of the 7 days in the past week, how many days did you feel good?

☐0 ☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

Score ☐

13. How many days last week did you miss work, including housework, because of fibromyalgia?

☐0 ☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

Score ☐

(Continued)

(Continuation)

Directions: For the remaining items, mark the point on the line that best indicates how you felt overall for the past week.

14. When you worked how much did pain or other symptoms of your fibromyalgia interfere with your ability to do your work, including housework?

No problem with work — Great difficulty with work

15. How bad has your pain been?

No pain — Very severe pain

16. How tired have you been?

No tiredness — Very tired

17. How have you felt when you get up in the morning?

Awoke well rested — Awoke very tired

18. How bad has your stiffness been?

No stiffness — Very stiff

19. How nervous or anxious have you felt?

Not anxious — Very anxious

20. How depressed or blue have you felt?

Not depressed — Very depressed

(for internal use only)

Score

Score

Score

Score

Score

Score

Score

Sub-total

FIQ TOTAL

Appendix B

SYMPTOM IMPACT QUESTIONNAIRE (FIQR)

Last Name: **First Name:** **Age:**

Directions: For each question, place an "**X**" in the box that best indicates how much difficulty you have experienced in doing the following activities during the past 7 days.

Brush or comb your hair	**No difficulty**	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ **Very difficult**
Walk continuously for 20 minutes	**No difficulty**	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ **Very difficult**
Prepare a homemade meal	**No difficulty**	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ **Very difficult**
Vacuum, scrub or sweep floors	**No difficulty**	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ **Very difficult**
Lift and carry a bag full of groceries	**No difficulty**	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ **Very difficult**
Climb one flight of stairs	**No difficulty**	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ **Very difficult**
Change bed sheets	**No difficulty**	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ **Very difficult**
Sit in a chair for 45 minutes	**No difficulty**	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ **Very difficult**
Go shopping for groceries	**No difficulty**	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ **Very difficult**

Sub-total *(for internal use only)* ☐

Directions: For each question, check the one box that best describes the overall impact of any medical problems over the past 7 days:

My medical problems prevented me accomplishing goals for week	**Never** ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ **Always**
I was completely overwhelmed by my medical problems	**Never** ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ **Always**

Sub-total *(for internal use only)* ☐

Directions: For each of the following 10 questions, select the one box that best indicates the intensity, over the past 7 days, of the following common symptoms.

Please rate your level of pain	**No pain**	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	**Unbearable pain**
Please rate your level of energy	**Lots of energy**	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	**No energy**
Please rate your level of stiffness	**No stiffness**	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	**Severe stiffness**
Please rate the quality of your sleep	**Awoke well rested**	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	**Awoke very tired**
Please rate your level of depression	**No depression**	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	**Very depressed**
Please rate your level of memory problems	**Good memory**	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	**Very poor memory**
Please rate your level of anxiety	**Not anxious**	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	**Very anxious**
Please rate your level of tenderness to touch	**No tenderness**	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	**Very tender**
Please rate your level of balance problems	**No imbalance**	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	**Severe imbalance**
Please rate your level of sensitivity to loud noises, bright lights, odors and cold	**No sensitivity**	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	**Extreme sensitivity**

Sub-total *(for internal use only)* ☐

SIQR TOTAL *(for internal use only)* ☐