

Yoga for Rheumatic Conditions: Potential Physical, Cognitive and Affective Advantages

Matthew C Sullivan BA, Elena Manning BS and Raveendhara R Bannuru*

Center for Treatment Comparison and Integrative Analysis, Division of Rheumatology, Tufts Medical Center, Boston, MA, USA

Abstract

Rheumatic conditions such as osteoarthritis, rheumatoid arthritis, and fibromyalgia are common, chronic and debilitating disorders associated with considerable physical and psychological symptoms. Although no effective disease-modifying treatments are available for most of these conditions, physical exercise routines have been found to be useful alternatives for the conservative management of these disorders. Yoga is a physical exercise regimen that incorporates controlled breathing practices and efforts to increase mindfulness, a state of heightened attention and awareness that has been found to be associated with reductions in chronic pain and anxiety. In this article, we examine the current state of research on yoga for rheumatic conditions, and discuss potential advantages of yoga therapy for reducing the physical, cognitive, affective, and autonomic associated with rheumatic disease.

Keywords: Yoga for rheumatic conditions; Potential physical; Cognitive and affective advantages

Musculoskeletal diseases, including conditions such as osteoarthritis, rheumatoid arthritis, and fibromyalgia, are among the leading causes of pain and disability worldwide, with an estimated global prevalence of 810 million in 2010 [1]. In 2005, it was estimated that nearly 27 million US adults have clinical osteoarthritis (OA), a number which is likely to increase significantly in the next 20 years as the proportion of adults over 65 years of age rises [2]. Arthritis and other rheumatic conditions represent the most common cause of disability in the US [3]. Most of these rheumatic conditions do not have effective disease modifying treatments; furthermore, commonly used pharmacological treatments are expensive and are associated with significant adverse events [4]. These chronic, debilitating conditions can also alter psychological well-being in affected individuals. Thus, rheumatic conditions pose a major public health concern.

Physical exercise interventions that build strength, increase range of motion, and provide aerobic activity have been widely studied and supported for the maintenance treatment of disabling rheumatic conditions [4,5]. These interventions include a broad range of regimens with varying practical benefits [6]. As with conventional exercise interventions, yoga has been found to have significant benefits for reducing chronic pain and related disability [7]. Studies conducted in individuals with OA, fibromyalgia, and rheumatoid arthritis (RA), also suggest efficacy among rheumatic populations (Table 1).

Yoga interventions in western complementary medicine are distinct from other modes of physical activity due to their composite mental and physical components. Although variations exist among yoga interventions, yoga typically consists of a combination of physical postures, breathing techniques, and a state of concentration on the moment-to-moment present, otherwise known as mindfulness. As with other forms of physical exercise, yoga—in particular the “asana” body positioning component—has been found to increase physical flexibility, balance, and strength [8]. However, in addition to these suggested functional benefits, the breathing and meditation components of yoga may also help to increase awareness and decrease stress [9]. Mindfulness—the increased awareness of one’s emotions and pain symptoms—is the goal of numerous psychotherapeutic and mind-body interventions for chronic pain. Such approaches aim to increase acceptance of—and habituation to—pain, in order to reduce unsuccessful attempts to control or avoid the pain [10]. Applied in

chronic pain management, mindfulness-based techniques have been found to be associated with significantly decreased pain symptoms and increased emotional and physical functioning, both in OA and in other chronic pain conditions [11,12]. Furthermore, yoga has been found to be associated with improvements in autonomic regulation, including decreases in anxiety and blood pressure, and improved metabolic regulation [13].

Given that individuals with OA and RA often suffer from co-morbid depression and anxiety symptoms, a physically active regimen that also provides cognitive and emotional benefits may be especially effective for reducing disability and improving quality of life in such individuals [14,15]. In a recent meta-analysis of yoga for depression, yoga was found to significantly reduce depressive symptoms relative to control interventions [16]. Furthermore, for individuals with fibromyalgia, yoga was found to reduce pain symptoms, increase mindfulness, and decrease cortisol levels in a recent prospective cohort study [17]. Considering the potential of yoga interventions to increase physical functioning and decrease cognitive, affective, and autonomic symptoms in this large clinical population, future research should be directed at determining the efficacy and feasibility of yoga interventions in rheumatic individuals with co-morbid clinical depression and anxiety.

Because patient attitudes regarding yoga are not fully understood among patients with rheumatism, patient interest in yoga practices should also be investigated in this clinical subpopulation. Although exercise interventions can confer significant benefits for arthritis-related pain and disability, noncompliance may hamper the potential effectiveness of such treatments. Previous research has indicated that yoga is commonly used among patients with rheumatic diseases; the

***Corresponding author:** Raveendhara R Bannuru, Director, Center for Treatment Comparison and Integrative Analysis (CTCIA), Tufts Medical Center, 800 Washington St #63, Boston, MA 02111, USA, Tel: (617) 636-8284; E-mail: rbannuru@tuftsmedicalcenter.org

Received November 21, 2013; **Accepted** March 01, 2014; **Published** March 05, 2014

Citation: Matthew C Sullivan BA, Elena Manning BS, Bannuru RR (2014) Yoga for Rheumatic Conditions: Potential Physical, Cognitive and Affective Advantages. J Yoga Phys Ther 4: 160. doi:10.4172/2157-7595.1000160

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Study ID	Rheumatic disease	Trial N	Age (Mean ± SD)	% female	Study Duration (weeks)	Comparison (Yoga intervention (I), Control (C))	Outcome measures reported	Withdrawals n (%)	Study Conclusions	Risk of Bias?†
Osteoarthritis (OA)										
Ghasemi et al. [20]	OA of the knee	30	51 ± 9 53 ± 11	100	8	I: Group Hatha yoga 3 times weekly C: Usual care	VAS pain, daily activity, quality of life	5 (17)	There were no significant between-group differences in VAS pain, activity, or quality of life, though each of these measures improved significantly from baseline to follow-up in the yoga group (p<0.05).	High
Ebnezar et al. [12]	OA of the knee	250	60 ± 10 59 ± 11	70	12	I: Independent Hatha yoga‡ C: Ind. therapeutic exercise‡	Walking pain, Knee disability score, Knee flexion	15 (6)	Significant between-group differences were found in favor of yoga for all outcome variables (all p<0.001).	Moderate
Park et al. [21]	OA of the hip or knee	21	80 ± 8.3	31	8	I: Group chair yoga C: Pain management education	WOMAC pain, CES-D	8 (28)	A statistically significant decrease in WOMAC pain (p=0.048) was found in the chair yoga group only. CES-D scores decreased, but not statistically significantly, in the yoga group.	High
Taibi and Vitiello [22]	OA and insomnia symptoms	14	65 ± 7	100	8	I: Independent Hatha yoga No control group	PSQI, ISI, HAQ	1 (8)	Participants experienced significant improvement from baseline in ISI but not PSQI or HAQ scores.	High
Ulger and Yağlı [23]	OA (n=11), back pain (n=16)	27	44 ± 7	100	4	I: Group yoga twice weekly No control group	Static balance (stabilometer), Gait measures	nd	Participants' post-treatment gait speed, cycle, and ambulation index scores were significantly improved from baseline (p<0.05). Step irregularity decreased from pre- to post-treatment. Balance improved (p<0.05).	High
Hansen [24]	OA (19 of 23 patients)	23	71	82	6	I: Group yoga once weekly for six weeks No control group	Pain, tightness, and sleep disturbance (5-point scale)	1 (4)	Pain and stiffness were significantly reduced at 6-week follow-up (p≤0.001). The yoga intervention had no significant effect on sleeplessness.	High
Kolasinski et al. [25]	OA of the knee	11	59	100	8	I: Group Iyengar yoga once weekly No control group	WOMAC, AIMS2 PGA (100-mm VAS)	4 (36)	Improvement in pain and function from baseline were statistically significant (p=0.04). Stiffness improvement was not statistically significant (p=0.06).	High
Garfinkel et al. [26]	OA of the hand	25	nd	56	10	I: Yoga group once weekly for 8 weeks C: No intervention group	Finger joint tenderness, Handgrip strength, Range of motion	1 (4)	Improvement vs. control was statistically significant for joint tenderness and range of motion (p≤0.01). Handgrip strength and finger joint circumference changes were not statistically significant.	Moderate
Fibromyalgia (FM)										
Carson et al. [27]	FM	53	51 ± 14 56 ± 9	100	8	I: Group yoga of awareness C: Wait-list control	FIQR, PGIC, Timed chair rise, CPAQ	10 (19)	FIQR, PGIC, timed chair rise, and CPAQ activity despite pain score were statistically significantly improved in the yoga group (p<0.05).	Low
Rheumatoid Arthritis (RA)										
Evans et al. [28]	RA or JIA	70	30 ± 3 27 ± 7	100	6	I: Group Iyengar yoga twice weekly C: Wait-list control	SF-36; PDI; CPAQ; DAS28; ASES; HAQ disability index	4 (13)	Yoga group experienced statistically significant improvement vs. control in ASES pain, disability index, SF-36 general health, mood, and CPAQ scores (all p<0.05).	Moderate
Singh et al. [29]	RA	80	35 ± 7 35 ± 7	70	7	I: Yoga, 540 min/week C: Usual care	Pain (SDPIS) Function, Stiffness, Blood Pressure (BP)	0 (0)	Statistically significant positive effects of yoga vs. control for pain, stiffness, inflammation, systolic and diastolic BP.	High
Badsha et al. [30]	RA	47	44 ± 10 46 ± 11	nd	8	I: Raj yoga 1 hour twice weekly C: Wait-list control	DAS28, HAQ, SF-36 Quality of Life	0 (0)	Statistically significant reduction in HAQ scores in yoga group (p=0.015). No statistically significant improvement in QOL scores.	High
Bosch et al. [31]	RA	20	56 ± 8 67 ± 6	100	10	I: Group hatha yoga 3 times weekly C: No intervention	HAQ, BDI, BBT, Diurnal Cortisol, Resting Heart Rate	3 (15)	HAQ, BDI, and pain scores significantly decreased in the yoga group vs. control (p≤0.05). No significant between-group difference was found in diurnal cortisol or resting heart rate.	High

*Randomized controlled trial; †Assessed using Cochrane Risk of Bias Tool; ‡Each group also received two weeks of transcutaneous electrical nerve stimulation and ultrasound

Abbreviations: ACR: American College of Rheumatology; nd: no data reported; TENS: Transcutaneous Electrical Nerve Stimulation; WOMAC: Western Ontario and McMaster Universities Arthritis Index; VAS: Visual Analog Scale; HAQ: Health Assessment Questionnaire; QOL: Quality of life; BDI: Beck Depression Inventory; BBT: Berg Balance Test; DAS28: Disease Activity Score for Rheumatoid Arthritis; FIQR: Fibromyalgia Impact Questionnaire Revised; SF-36: Short form-36 Health Survey; CPAQ: Chronic Pain Acceptance Questionnaire; SDPIS: Simple Descriptive Pain Intensity Score; ASES: Arthritis Self-Efficacy Scale; CES-D: Center for Environmental Studies Depression Scale; PSQI: Pittsburgh Sleep Quality Index; ISI: Insomnia Severity Index; AIMS-2: Arthritis Impact Measurement Scale-2; PGA: Patient Global Assessment; PGIC: Patient Global Impressions of Change; PDI: Pain Disability Index; JIA: Juvenile Idiopathic Arthritis

Table 1: Trial characteristics and results.

2002 National Health Interview Survey found that such patients were 1.56 times more likely to have engaged in yoga in the past year than the general population [18]. Since studies of yoga have suggested potential benefits for rheumatic disorders, this practice may have particularly strong appeal if it is found to be preferentially capable of eliciting and maintaining patient adherence [12,19].

Considering the increased rate of yoga use among those with rheumatic conditions, in addition to its potential somatic, autonomic, and emotional health benefits, further research is warranted in this clinical population to substantiate these preliminary findings. Though this alternative treatment regimen may not be suited for all individuals with rheumatic disorders, yoga's distinctive mindfulness component may hold particular value for certain subgroups of rheumatic patients, including clinically depressed or anxious individuals. Because the current evidence supporting yoga for rheumatic conditions relies largely on the findings of small trials of poor methodological quality, future research should strive to replicate preliminary findings in larger, well-randomized trials [19]. These trials should aim to identify clinical subpopulations that may be particularly likely to maintain yoga and benefit from its meditational components. Furthermore, contemporary yoga practices may need to be adapted to fit the specific needs of the predominately elderly individuals who suffer from rheumatic diseases such as osteoarthritis. Most rheumatic conditions lack effective disease modifying treatments, and commonly used treatment alternatives are associated with considerable safety concerns. This poses a major challenge in treating the many individuals with rheumatic conditions in addition to co-morbid physical and psychological health conditions. Given the interrelated mechanical and psychological components of chronic musculoskeletal pain, yoga may serve as a valuable adjunctive therapy for improving physical function, mental wellness, and overall quality of life among individuals with rheumatic disease.

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