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The Effects of A Bi-Weekly Yoga Program on Rheumatoid Arthritis (RA) Disease Activity

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Abstract - In spite of significant breakthroughs in therapy, RA patients continue to struggle with getting and staying in remission (RA). The positive effects of yoga on RA have been shown in preliminary research. Yoga has been shown to provide a variety of health advantages, including reductions in pain and improved mood, for those who are already receiving treatment for rheumatoid arthritis. Our research was to determine whether or not a twice-weekly yoga program improved disease activity, disability, or quality of life in rheumatoid arthritis patients compared to a control group. Patients were to be above the age of 18 and have been diagnosed with RA according to the American College of Rheumatology's (ACR) criteria. Data were summarized statistically and shown as meanSD or medianrange. Wilcoxon signed-ranks test for paired data was used for analysis. Statistically substantial improvements in RA clinical indicators and specifically HAQ scores were seen in our short pilot research of 12 yoga sessions for RA. There was a reduction or elimination of RA drug use in the yoga group. We speculate that more success may be achieved with a longer course of therapy.

Keywords - Arthritis, Rheumatoid arthritis · Yoga ·Exercise

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INTRODUCTION

Yoga encompasses a wide range of concepts and techniques that have traveled far beyond their ancient Indian homeland. As a verb, yoga means "to yoke" or "to link" in Sanskrit. Traditionally, this refers to the union of mind and body, but throughout yoga's millennia-long history, it has come to include one's relationship with their physical environment, with other people, with the natural world, and with the spiritual realm.[1]

Hatha yoga, the physical practice, was developed as a means to prepare the practitioner for meditation, a central tenet of spirituality in many traditions. Hatha yoga's popularity as a form of exercise and stress relief has skyrocketed in the last few decades. Some of the other facets of yoga, such as the study of ancient literature, dietary practices, acts of service, or moral living, may be touched on, but are often not emphasized, in western yoga programs.[2-3]

Yoga practice often starts with a gradual movement pattern meant to promote blood flow and warm muscles after the attention to posture, deep breathing, and/or chanting. Pose types such as flexion, extension, adduction, abduction, and rotation then follow. Strength is increased by isometric contraction, which occurs when you hold positions. Flexibility is enhanced by using the whole range of motion in one's joints. Standing yoga postures 6&7 help prevent falls by enhancing proprioception and strengthening stabilizing muscles.. As a result, yoga includes numerous aspects of physical activity that might help those with arthritis.[4-5]

Rheumatoid arthritis (RA) is a chronic, debilitating condition that severely impacts patients' ability to live a normal, productive life. Joint discomfort, edema, stiffness, and decreased mobility are typical manifestations of this condition. Within a decade of diagnosis, 60% of this group becomes disabled and unable to work. Those who suffer with RA also tend to have a worse quality of life and a shorter lifespan. Many young individuals are diagnosed with RA even though it is more common in adults. Based on estimates from the National Health Interview Survey showing a 1.3% yearly prevalence for those less than 25 years, about 400,000 American children, adolescents, and young adults have arthritis. In both adult and child populations, the financial toll is enormous. A significant price is paid in terms of people's quality of life. Pain, impaired physical ability, despair, and social isolation are all prevalent as arthritis develops in children and teenagers. [6-7]

In addition to alleviating symptoms like pain, swelling, and joint degeneration, treatments aim to keep patients mobile and healthy. Lifestyle changes, medication, surgery, or physical therapy are common components of standard treatment modalities. Quality of life is only one consequence that has improved because to recent breakthroughs in biology and intensive pharmacologic therapy. But

not all patients react well to therapy, and there are dangers and expenses connected with using certain biological agents. Some young patients with RA may suffer impairment despite effective medication management of joint inflammation8, highlighting the need of supplementary rehabilitation initiatives like yoga.

[8-9]

There is a need for further evidence-based behavioral interventions for young people with RA that may be used in conjunction with standard medical therapy to slow disease progression, improve psychosocial functioning, and lessen the likelihood of disability. Physical functioning, discomfort, and strength have all been shown to increase in yoga studies for older persons with arthritis. Not much is known about the effects of yoga on young people with RA, despite the fact that it is probable that they, too, would get the health benefits of this practice. Many young patients' ability to learn, work, and interact socially has been severely impaired, making this study urgently necessary.[10-12]

REVIEW OF LITERATURE

Mofti and Kong (2019)[13] observed that 47 patients picked at random from a RA database who participated in a Raj Yoga program twice weekly saw substantial improvement. Twenty-six patients in this research took part in yoga, while the remaining twenty-one were assigned to the control group. Those in the yoga group practiced the ancient Indian art for 12 sessions, whereas those in the control group did not. Yoga has been shown to be an effective treatment for arthritis, with the majority of study participants reporting considerable improvement. A database of people with rheumatoid arthritis was used to identify 47 people to participate in a research in Dubai; 26 of them did yoga, while the other 21 served as a control group. There was a significant reduction in RA symptoms reported by the 26 people who participated in this trial.

Sharma (2020)[14] looked examined 15 persons (aged 45-66) with nonspecific arthritis who participated in a Kundalini Yoga program for six weeks. Based on the final assessment, this research found little evidence that yoga is beneficial for people with arthritis.

Cheung (2018)[15] Another study that found significant improvement used a convenience sample of 36 women living in the community who were diagnosed with osteoarthritis and randomly assigned them to either an experimental or control group. The experimental group reported significantly fewer OA symptoms than the control group.

METHODS

Patients were gathered from two rheumatology clinics actively contributing to a national database for RA. Patients were invited to take part in the trial through email. Patients were recruited if they were above the age of 18, had been diagnosed with RA according to the American College of Rheumatology's criteria [9], could provide informed permission, and did not have any physical limitations that would preclude them from participating in yoga. Patients who were put on a waiting list to get yoga treatment at a later period served as controls. At baseline and after 12 yoga sessions, participants were asked to fill out HAQ, SF-36 quality of life (SF QOL), or visual analog scales for pain, global assessment, and tiredness indices. Data on DMARD usage, illness duration, demographics, disease activity score with 28 joint count (DAS28), and ESR were gathered by rheumatologists at the first appointment and again at the follow-up visit 12 weeks later, following the completion of the yoga therapy. The usual rheumatology treatment was provided to the patients. The comparison group received no treatment beyond educational materials on yoga or RA support groups. DAS28 and HAQ were chosen as the primary outcomes to examine because of their importance in the overall research question.

A certified yoga instructor with a Master's degree in Ayurveda and Yoga led groups of 10 patients through the yoga program. The rheumatologists and ACR yoga videos were used to determine the specific movements to include. A regimen of yoga, weight training, meditation, and deep breathing was devised. Patients were needed to participate in 12 yoga sessions and demonstrate an ability to do at least 80% of the activities recommended.

The meetings were place twice weekly for a total of two hours. Home exercise programs were prescribed for patients. The whole course took just 6 weeks to finish. Their home compliance was tracked by phone calls from the yoga teacher.

If the data were regularly distributed, we used the mean, standard deviation, or median or range to describe the distribution of the data. The Wilcoxon matched-pairs signed-ranks test was used to compare the outcomes before and after the research period . The data from all participants who were available were included in the analyses, regardless of whether or not they followed the study's protocol. Factors related to the intervention were evaluated using linear regression models for outcomes, but only within the treatment group. These included class attendance, total practice time in the first two months, and frequency of practice. Intercooled STATA 8.2 for Macintosh was used for all statistical tests. Statistical significance was defined as a P value below.05. Based on a review of the existing literature on RA and physical activity, the researchers predicted that a total of 64 participants

would be needed for each group in order to detect a difference between them of 5%.

RESULTS

Of the 320 individuals in the RA database who were asked to participate, 233 did not respond. Twenty-eight yoga patients and twenty-two control patients out of a total of 87 respondents consented to participate in the study for a duration of two months. The comparison group consisted of people who were also interested in yoga but who were unable to participate owing to other commitments in their lives. Both groups had comparable demographics at the outset . The rate of attrition due to abandonment or refusal to participate was zero.

Patients with rheumatoid arthritis who participated in yoga therapy for 12 sessions showed significant improvement across all measures of disease activity. There was a statistically significant increase in the yoga group's HAQ scores (P = 0.015), which was the most noticeable improvement. Neither group saw a statistically significant shift in QOL ratings, with the exception of yoga patients, who showed notable improvements in role restrictions as a result of emotional health.

70% of yoga patients & 86% of controls were taking DMARDs at baseline. One patient in the control group suffered a flare and was put on rituximab medication, whereas another patient in the yoga group did not need a dose increase to regulate disease activity. Three patients in the yoga group also stopped using corticosteroids, one stopped taking etarnecept, and two stopped taking methotrexate as a consequence of their improved health. When compared to the rest of the group, these 3 patients who were able to discontinue their pharmaceutical medication showed no serological or das 28 or any other clinical differences at baseline or at the end of the research. Aside from continuing methotrexate treatment, patient 1 stopped using enbrel and steroids. The second and third patients stopped taking methotrexate or prednisolone, but continued to take sulfasalazine.

DISCUSSION

With the goal of better understanding the effects of a twice-weekly, highly organized yoga program for rheumatoid arthritis, we performed a small pilot trial with eight participants. We analyzed how this program affected measures of disease activity, disability, quality of life, and response to therapy. Marked improvements were seen in measures of disease activity, including those relating to the capacity to decrease medication use and to levels of weariness.

The fact that quality of life didn't alter significantly was a surprising conclusion. This, we concluded, was due to the limited time frame and quantity of participants. Visual analogue tiredness scores showed improvement in yoga patients, whereas SF fatigue scales did not.

Table 1 Treatment Yoga for Arthritis

1–2 Week	3–4 Week	5–6 Week	7–8 Week
Pranayama	**Pranayama**	**Pranayama**	**Pranayama**
a. Kapalbhati (basic)	a. Bhastrika	a. Kapalbhati (basic)	a. Kapalbhati (basic)
b. Bhramara	b. Bhramara	b. Bhramara	b. Samaveta
c. Nadi Shodhana	c. Morchna	c. Nadi Shodhana	c. Nadi Shodhana
Chair yoga	**Chair yoga**	**Chair yoga**	**Chair yoga**
a. Basic stretching	a. Basic stretching	a. Basic stretching	a. Basic stretching
Sukhasm Viyam	Sukhasm Viyam	Sukhasm Viyam	Sukhasm Viyam
a. Warm-ups	a. Warm-ups	a. Warm-ups	a. Warm-ups
b. Joints rotations	b. Joints rotations	b. Joints rotations	b. Joints rotations
Asanas	**Asanas**	**Asanas**	**Asanas**
A. Sitting	A. Sitting	A. Sitting	A. Sitting
a. Marjariasana (cat stretch pose)	a. Ardhpadamasana (half Lotus pose)	a. Vajrasana (thuderbolt pose)	a. Vajrasana (thuderbolt pose)
b. Janu Sirshasana (Head to knee pose)	b. Veerasana (Hero's pose)	b. Sukhasana (Easy pose)	b. Veerasana (Hero's pose)
B. Supine	B. Supine	B. Supine	B. Supine
a. Matsyasana (Wsh pose)	a. Shavasana (corpse pose)	a. Shavasana (corpse pose)	a. Shavasana (corpse pose)
b. Setubandhasana (bridge pose)	b. Kadharasana (shoulder pose)	b. Uttan Padasana (raised foot pose)	b. Matsyasana (Wsh pose)
c Merudandasana (spinal column pose)	c. Setubandhasana (bridge pose)	c. Merudandasana (spinal column pose)	c. Pavanmuktasana (wind releasing pose)
C. Standing	C. Standing	C. Standing	C. Standing
a. Triyak Tadasana (triangular palm tree pose)	a. Dolasana (swinging pose)	a. Tadasana (palm tree pose)	a. Trikonasana (triangular pose)
b. Ardhachakarasana (half-wheel pose)	b. Vrukshasana (tree pose)	b. Veerasana (warrior's pose)	b. Dwikonasana (double angle pose)
D. Prone	D. Prone	D. Prone	D. Prone
a. Bhujangasana (cobra pose)	a. Dhanurasana (bow pose)	a. Ardh Dhanurasana (half bow pose)	a. Sarapasana (snake pose)
b. Ardh Shalabasana (half locust pose)	b. Supta Sahajasana (sleeping pose)	b. Ardh Shalabasana (half locust pose)	b. Makarasana (crocodile pose)

Fig. 1 Choosen Yoga Moves

Because Rheumatologists could not be kept in the dark about the intervention, this trial had a major drawback. Patients were instructed to continue their regular Rheumatologic therapy in addition to exercise or other modalities, since this was intended to represent real-world practice. Patients who engaged in regular yoga practice showed a positive trend of being able to minimize or eliminate their need on medicine. From the perspective of both the Rheumatologist and the patient, we are aware of the possible impact of expectation bias in several of these measurements. The emotional and social advantages of group exercise or interactions were also unavailable to the control group. Our sample size of 50 people was also too small. Furthermore, we were unable to collect enough data to draw any conclusions. This was mostly because of people's busy schedules at work or because they didn't want to commit to an intensive fitness program, or because the place or time didn't work for them. Still, we draw the conclusion that the improvements shown after only 12 yoga sessions are considerable, providing critical data on practicability and believability, and so encouraging additional study in this field.

Table 2 : Comparative analysis of the yoga or control groups revealed no significant differences in baseline patient characteristics.

	Yoga (n = 28)	Control (n = 22)	P value
Age	45.0 ± 10.0	45.2 ± 11.7	NS
Ethnicity			NS
Arab	1 (4%)	0	
Asian	2 (7%)	4 (18%)	
Caucasian	7 (25%)	9 (42%)	
Indian	18 (64%)	8 (38%)	
Duration of symptoms	73.4 ± 94	72.6 ± 65	NS
Treatment delay	9.3 ± 12.8	8.3 ± 11	NS
DMARD usage	72%	87%	

A Rheumatologist and a trained yoga therapist crafted our regimen with the rheumatoid arthritis sufferer in mind. Yoga should be approached cautiously by patients with lumbar and cervical instability or limited mobility, as well as rigid spines owing to ankylosing spondylitis and any type of deformity or severe osteoporosis. Those who were unable to do or finish particular exercises as originally prescribed may benefit from the changes we advised in our research.

Table 3 Modifications in illness indicators during week 8

	Yoga			Control		
	Baseline	8-week visit	*P* value	Baseline	8-week visit	*P* value
Count of tender joints	3.6	2.12	0.037	5	5.2	NS
Swelling in joints	3.3	1	0.003	3.8	3.7	NS
patient evaluation overall	31	24	NS	25	41	NS
ESR (mm/hour)	32	26	NS	25.9	23.7	NS
DAS 28	3.8	3.4	0.022	3.7	3.1	NS
HAQ	0.7	0.48	0.0014	0.77	0.74	NS
Fatigue (mm)	33	27	NS	31	43	NS
Use of DMARDs has changed. SF-36		Discontinuation of treatment: anti-TNF, corticosteroids , leflunomide , and methotrexate			Initiation of treatment: anti-TNF	

Physical performance	64	65	NS	62	64	NS
Physical limits impose restrictions on one's roles.	62	63	NS	58	47	NS
Pain	42	32	NS	38	38	NS
General wellbeing	53	54	NS	52	54	NS
Energy	51	54	NS	52	56	NS
Social interaction	42	48	NS	51	48	NS
Role restrictions brought on by emotional issues	72	86	NS	68	67	NS
Behavioral health	61	65	NS	63	62	NS

CONCLUSION

The benefits of yoga on RA clinical indicators, especially HAQ scores, were investigated for the first time in our 12-session, small-scale pilot study. Decreases in disease activity were shown to be statistically significant despite the short sample size. The use of RA medicines was reduced or eliminated in certain yoga practitioners. As a consequence, we believe that a longer treatment period is required, and we call for greater study in this area.

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