

THE BENEFITS OF YOGA FOR RHEUMATOID ARTHRITIS: RESULTS OF A STRUCTURED 8 WEEK PROGRAM

Dr. Humeira Badsha ¹, Dr. Vishwas Chhabra ² Dr.Cathy Leibman³ Dr. Ayman Mofti ⁴ and Dr. Kok Ooi Kong ⁵

1. Dubai Bone and Joint Center, Dubai, UAE 2. Prime Medical Center, Dubai, UAE, 3. Emirates Arthritis Foundation, Dubai, UAE, 4. American Hospital, Dubai, UAE, 5. Tan Tock Seng Hospital, Singapore, Singapore.

ABSTRACT

BACKGROUND: It is possible that yoga may have important physical and psychological benefits for patients with rheumatoid arthritis RA.

AIM: The aim of our study was to measure the effects of an 8 week, bi-weekly Raj yoga program on RA diseases activity, disability and quality of life indices.

METHODS: Patients and controls were recruited among RA patients in 2 Rheumatology clinics in Dubai, UAE. Inclusion criteria were age over 18 years and diagnosis of RA by ACR criteria. Patients were excluded if they were unable/ unwilling to give consent or had severe physical disabilities which would prevent them from participating.

Demographic data, disease activity indices, health assessment questionnaire (HAQ) and quality of life (QOL) by SF-36 were documented at enrollment and after completion of 12 sessions of Raj yoga. Assessments were done by 2 Rheumatologists, who were not blinded to treatment. All other medical care was carried on as usual and usual care for RA was provided.

The yoga program was run by a licensed practitioner with a Master's qualification in Yoga. Statistical analysis. Data were presented as mean±SD (if data normally distributed) or median and range. Paired data were analysed using Wilcoxon matched-pairs signed-ranks test.

RESULTS: A total of 47 patients were enrolled, 26 yoga patients and 21 controls. Baseline demographics were similar in both groups. Patients who underwent yoga improved in all RA disease activity parameters (table 2). QOL of life scores did not change significantly in either group although there was a trend toward improvement in the yoga group. At baseline 70% of yoga patients and 86% of Controls were on disease modifying drugs (DMARDs). In the yoga group 3 patients discontinued steroids, 1 discontinued Etarnecept and 2 discontinued methotrexate, all because of clinical improvements.

Table 2 – Changes in Disease parameters at week 8

	YOGA			CONTROL		
	BASELINE	8 WEEK VISIT	P VALUE	BASELINE	8 WEEK VISIT	P VALUE
TENDER	3.5	2.11	0.038	5	5.3	NS
SWOLLEN	3.2	1	0.003	3.9	3.8	NS
GLOBAL	32	25	NS	26	40	NS
ESR	31	27	NS	24.9	25.7	NS
DAS28	3.9	3.3	0.021	3.8	3.9	NS
HAQ	0.8	0.49	0.0015	0.78	0.75	NS
Fatigue	34	26	NS	32	44	NS

CONCLUSIONS: Our small pilot study of 12 sessions of yoga for RA was able to demonstrate statistically significant improvements in RA disease parameters and especially HAQ scores. Some patients in the yoga group were able to decrease or discontinue RA medications. We believe that a longer duration of treatment could result in more significant improvements.

BACKGROUND: Despite many advances in treatment it remains difficult to achieve or maintain disease remission in Rheumatoid Arthritis (RA). Small studies have shown the benefits of yoga in RA. It is possible that yoga may have important physical and psychological benefits for patients with RA who are already being treated for rheumatoid arthritis.

AIM: The aim of our study was to measure the effects of an 8 week, bi-weekly Raj yoga program on disease activity, disability and quality of life indices in RA patients as compared with controls.

METHODS: Patients were recruited among RA patients in 2 Rheumatology clinics in Dubai, United Arab Emirates (UAE). The inclusion criteria were age over 18 years and diagnosis of RA by American College of Rheumatology (ACR) criteria. Patients were excluded if they were unable/ unwilling to give consent or had severe physical disabilities which would prevent them from participating. Controls were selected among patients who presented to the RA clinic at 2 centers.

Demographic data, tender, swollen joint counts, global assessment, pain and fatigue scales, das28 scores, health assessment questionnaire (HAQ) and quality of life (QOL) by SF-36 were documented at enrollment and after completion of 12 sessions of Raj yoga. The assessments were done by 2 Rheumatologists, who were not blinded to treatment. All other medical care was carried on as usual and usual care for RA was provided by Rheumatologists in the clinic.

The yoga program was run in sessions of 10 patients each, by a licensed practitioner with a Master's qualification in Yoga and Ayurveda. The exercises were decided on in conjunction with the Rheumatologists and also with the yoga videos from the ACR. The method of yoga was Raj-Yoga, modified for arthritis patients and called the Vishwas-Raj yoga ©2008 vishwas . The Patients were required to complete 12 sessions of yoga and also were required to be able to do at least 80% of the prescribed exercises.

Statistical analysis. Data were presented as mean±SD (if data normally distributed) or median and range. Paired data were analysed using Wilcoxon matched-pairs signed-ranks test.

INTRODUCTION:

Most patients with arthritis do not exercise regularly, although it has been reported that those who exercise report less pain and have better social and physical function (1, 2). Studies have shown the benefits of dynamic exercises programs and Tai Chi in Rheumatoid Arthritis (RA) (3, 4). There have been small studies showing that yoga is beneficial for rheumatoid arthritis and other forms of arthritis (5-7). However, there is a lack of information on the effect of yoga on RA disease activity indices and quality of life.

In the United Arab Emirates (UAE) RA patients have high disease activity. They have also been found to exercise rarely or not at all (8). We believed that Yoga would be a good form of exercise for our multi-ethnic population. However, there was a lack of enough evidence to support its use.

The aim of our study was to measure the effects of an 8 week, bi-weekly Raj yoga program on diseases activity, disability and quality of life indices in RA patients as compared with controls.

Methods: A sample size (n= 40) was calculated assuming an alpha error of-----, B error of--- and an effect size of and accounting for 10% non-completion rate, estimated from previous RA and exercise literature. Patients were recruited through email of Rheumatoid arthritis patients' database. The inclusion criteria were age over 18 years and diagnosis of RA by American College of Rheumatology (ACR) criteria (9). Patients were excluded if they were unable/ unwilling to give consent or had severe physical disabilities which would prevent them from participating. Controls were selected randomly among patients who presented to the RA clinic at 2 centers in Dubai, UAE. All patients were required to fill the following self report questionnaires at baseline and the completion of 12 sessions of yoga: Health Assessment Questionnaires (HAQ), SF-36 Quality of Life (SF QOL), and fill in visual analog scales relating to pain, global assessment and fatigue indices. The Rheumatologist collected data on DMARD, disease duration, demographics, das 28 scores, ESR, at baseline and also follow-up visit after 12 sessions of yoga. Patients were given usual Rheumatology care by their Physicians. The rheumatologists were not blinded to treatment. Lab technicians carrying out ESR testing were at an offsite location and blinded to treatment.

The yoga program was run in sessions of 10 patients each, by a licensed practitioner with a Master's qualification in Yoga and Ayurveda. The exercises were decided on in conjunction with the Rheumatologists and also with the yoga videos from the ACR. A structured program was developed consisting of stretches, strengthening, meditation and deep breathing and called the Vishwas-Raj yoga (©2008 vishwas) for arthritis program (table1). Patients were required to complete 12 sessions of yoga and also were required to be able to do at least 80% of the prescribed exercises.

Vishwas-Raj yoga ©2008 vishwas for arthritis program

Week 1-2	Week 3-4	Week 5-6	Week 7-8
Chair Yoga a. Basic Stretching	Chair Yoga a. Basic Stretching	Chair Yoga a. Basic Stretching	Chair Yoga a. Basic Stretching
Sukhasm Viyam: (Easy postures) a. Joints rotations b. Warm-ups	Sukhasm Viyam: (Easy postures) a. Joints rotations b. Warm-ups	Sukhasm Viyam: (Easy postures) a. Joints rotations b. Warm-up	Sukhasm Viyam: (Easy postures) a. Joints rotations b. Warm-ups
Asanas: A. Standing: a. Tadasana (Palm Tree pose) b. Veerasana (Warrior's Pose) B. Supine: a. Merudandasana (Spinal column pose) b. Uttan Padasana (Raised foot pose) c. Shavasana (Corpse pose) C. Sitting: a. Vajrasana (Thunderbolt pose) b. Sukhasana (Easy pose) D. Prone: a. Ardh Dhanurasana (Half Bow pose) b. Ardh Shalabasana (Half Locust pose)	Asanas: A. Standing: a. Triyak Tadasana (Triangular Palm Tree pose) b. Ardachakarasana (Half- Wheel Pose) B. Supine: a. Merudandasana (Spinal column pose) b. Setubandhasana (Bridge pose) c. Matsyasana (Fish pose) C. Sitting: a. Marjariasana (Cat stretch pose) b. Janu Sirshasana (Head to knee pose) D. Prone: a. Bhujangasana (Cobra pose) b. Ardh Shalabasana (Half Locust pose)	Asanas: A. Standing: a. Trikonasana (Triangular pose) b. Dwikonasana (Double angle pose) B. Supine: a. Pavanmuktasana (wind releasing pose) b. Matsyasana (Fish pose) c. Shavasana (Corpse pose) C. Sitting: a. Vajrasana (Thunderbolt pose) b. Veerasana (Hero's pose) D. Prone: a. Sarapasana (Snake pose) b. Makarasana (Crocodile pose)	Asanas: A. Standing: a. Dolasana (Swinging pose) b. Vrukshasana (Tree pose) B. Supine: a. Setubandhasana (Bridge pose) b. Kadharasana (Shoulder pose) c. Shavasana (Corpse pose) C. Sitting: a. Ardhpadasana (Half Lotus pose) b. Veerasana (Hero's pose) D. Prone: a. Dhanurasana (Bow pose) b. Supta Sahajasana (Sleeping pose)
Pranayama: a. Kapalbhathi(Basic) (Frontal brain cleansing breath) b. Nadi Shodhana (Psychic passage purification) c. Bhramara (Humming Bee)	Pranayama: a. Kapalbhathi (Frontal brain cleansing breath) b. Nadi Shodhana (Psychic passage purification) c. Bhramara (Humming Bee)	Pranayama: a. Kapalbhathi (Frontal brain cleansing breath) b) Nadi Shodhana (Psychic passage purification) c.. Samaveta (Together breathing)	Pranayama: a. Bhastrika (Bellow's breath) b. Morchna (Fainting breathing) c. Bhramara (Humming Bee)

Statistical analysis. Data were presented as mean±SD (if data normally distributed) or median and range. Paired data were analysed using Wilcoxon matched-pairs signed-ranks test.

RESULTS: A total of 47 patients were enrolled, 26 yoga patients and 21 controls. Baseline demographics were similar in both groups (Table 2) (age: yoga= 44.0 ± 10.0; control= 46.4 ± 10.7 / Race Yoga Indians 69% Caucasians 23% Asians and Arab 8% and Controls Indian 38% Caucasian 42% and Others 14%. Baseline das 28 was 3.9, HAQ 0.8 , fatigue 34 mm ESR 31 mm(yoga) vs. 3.8, 0.78, 32 mm and 25 mm (control).

Patients who underwent yoga improved in all RA disease activity parameters (table 3). Most of these improvements in the yoga group were statistically significant, especially the HAQ scores (p = 0.015).

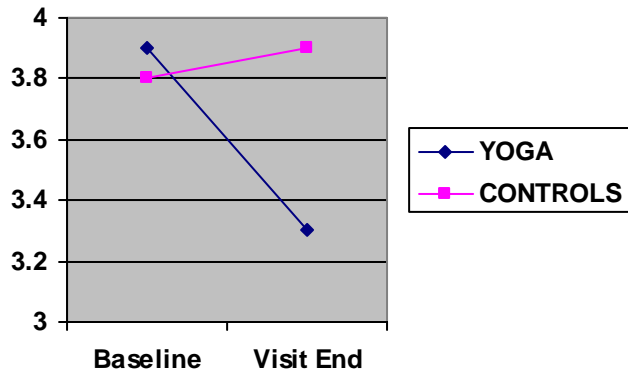
Quality of life (QOL) scores did not change significantly in either group except yoga patients had improvements in Role Limitations due to emotional health (RE). Population norms are not available.

At baseline 70% of yoga patients and 86% of Controls were on disease modifying drugs (DMARDs). In the yoga group no new drugs were added while in the control group 2 patients experienced flares – 1 was started on rituximab treatment and the other on Etarcept. In the yoga group 3 patients discontinued steroids, 1 discontinued Etarcept and 2 discontinued methotrexate, all because of clinical improvements.

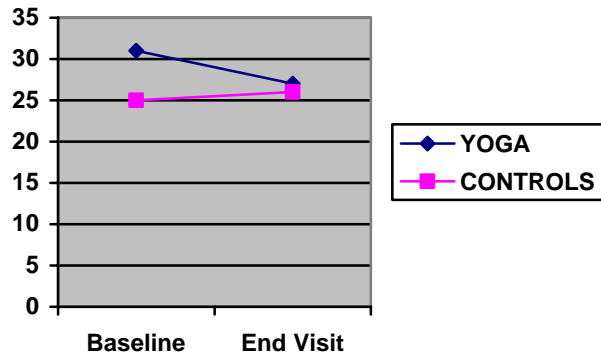
Table 2: Baseline characteristics of Patients were similar in Yoga and Control groups

	YOGA (n= 26)	CONTROL (n=21)	P VALUE
AGE	44± 10.0	46.2± 10.7	NS
ARAB	1(4%)	0	NS
INDIAN	18 (69%)	8 (38%)	NS
CAUCASIAN	6 (23%)	9 (42%)	NS
ASIAN	1(4%)	3 (14%)	NS
SYMPTOM DURATION	72.4±94	73.6±64	NS
LAG TIME	9.3±11.8	8.2±10	NS
DMAARD	70% (MTX38% ANTI-TNF 12%) 1 discontinued ANTI-TNF, 3 discontinued steroids, 2 discontinued leflunomide; 1 discontinued MTX	86%(METHOTREXATE 47%, ANTI-TNF 9%) Biological started in 2 patients	
CHANGE IN DMARD			
TENDER	3.5	5	NS
SWOLLEN	3.2	3.9	NS
GLOBAL	32	26	NS
ESR	31	24.9	NS
DAS28	3.9	3.8	NS
HAQ	0.8	0.78	NS
Fatigue	34	32	NS

DAS 28 SCORES
P=0.021



ESR
 $P \geq 0.20$



HAQ
 $P = 0.0015$

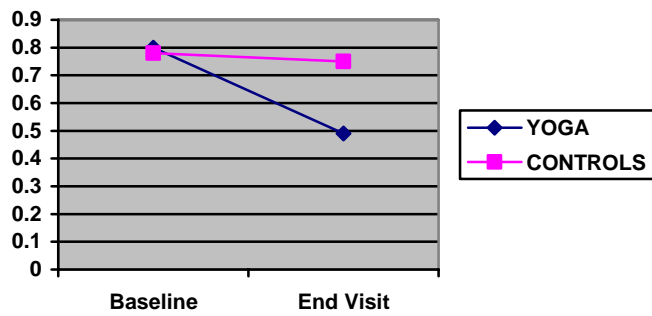


Table 3 – Changes in Disease parameters at week 8

	YOGA			CONTROL		
	BASELINE	8 WEEK VISIT	P VALUE	BASELINE	8 WEEK VISIT	P VALUE
TENDER	3.5	2.11	0.038	5	5.3	NS
SWOLLEN	3.2	1	0.003	3.9	3.8	NS
GLOBAL	32	25	NS	26	40	NS
ESR	31	27	NS	24.9	25.7	NS
DAS28	3.9	3.3	0.021	3.8	3.9	NS
HAQ	0.8	0.49	0.0015	0.78	0.75	NS
Fatigue	34	26	NS	32	44	NS

QUALITY OF LIFE

	YOGA		CONTROLS		P
	BASELINE	END	BASELINE	END	
PF (PHYSICAL FUNCTIONING)	65	66	63	65	
RP (ROLE LIMITATIONS DUE TO PHYSICAL FUNCTIONING)	61	64	59	48	
BP (PAIN)	43	33	39	39	
GH (GENERAL HEALTH)	52	53	51	53	
VT (ENERGY/FATIGUE)	52	55	51	55	
SF (SOCIAL FUNCTIONING)	49	49	50	47	
RE (ROLE LIMITATIONS DUE TO EMOTIONAL PROBLEMS)	73	85	69	68	
MH (MENTAL HEALTH)	62	64	64	63	

DISCUSSION:

We conducted an 8 week pilot study to evaluate an intervention of structured bi-weekly specially structured Yoga program for Rheumatoid arthritis. We looked at the impact of this program on disease activity indices, disability, quality of life and impact on treatment. Significant benefits in disease activity scores, ability to reduce medications and fatigue were noted.

A puzzling finding was that QOL was not much changed. We attributed this to the short study duration as well as small number of participants. Although yoga patients had reported improvements in fatigue on the visual analog scales the SF fatigue scales did not reflect this.

The biggest limitation of the study was the inability to blind Rheumatologists to the intervention. However, the study was designed to reflect daily practice where patients carry on their usual Rheumatological care in conjunction with exercise or other modalities. An encouraging trend was observed where patients who practiced yoga were able to discontinue or reduce medications. We acknowledge the role of a possible expectation bias in many of these indices both from the Rheumatologist's evaluation and patient's perspective. In addition, the control group did not benefit from the social and emotional benefits of group exercise and interactions. Another limitation of our study was the small study size of 47 participants. However, we still find that the improvements after just 12 sessions of yoga are significant and provide valuable data on feasibility and plausibility, meriting further study.

CONCLUSIONS: Our small pilot study of 12 sessions of yoga for RA was the first to study the effect of Yoga for RA disease parameters and especially HAQ scores. Despite a small study size, we were able to demonstrate statistically significant improvements in disease activity. Some patients in the yoga group were able to decrease or discontinue RA medications. We believe that a longer duration of treatment could result in more significant improvements and further study is warranted.

Reference List

- (1) Der AC, Wilcox S, Watkins K, Saunders R, Evans AE. Factors associated with exercise participation in adults with arthritis. *J Aging Phys Act* 2008 Apr;16(2):125-43.
- (2) Neuberger GB, Aaronson LS, Gajewski B, Embretson SE, Cagle PE, Loudon JK, et al. Predictors of exercise and effects of exercise on symptoms, function, aerobic fitness, and disease outcomes of rheumatoid arthritis. *Arthritis Rheum* 2007 Aug 15;57(6):943-52.
- (3) Han A, Robinson V, Judd M, Taixiang W, Wells G, Tugwell P. Tai chi for treating rheumatoid arthritis. *Cochrane Database Syst Rev* 2004;(3):CD004849.
- (4) Van den Ende CH, Vliet Vlieland TP, Munneke M, Hazes JM. WITHDRAWN: Dynamic exercise therapy for treating rheumatoid arthritis. *Cochrane Database Syst Rev* 2008 Jan 23;(1):CD000322.

- (5) Bukowski EL, Conway A, Glentz LA, Kurland K, Galantino ML. The effect of iyengar yoga and strengthening exercises for people living with osteoarthritis of the knee: a case series. *Int Q Community Health Educ* 2006;26(3):287-305.
- (6) Kolasinski SL, Garfinkel M, Tsai AG, Matz W, Van DA, Schumacher HR. Iyengar yoga for treating symptoms of osteoarthritis of the knees: a pilot study. *J Altern Complement Med* 2005 Aug;11(4):689-93.
- (7) Raub JA. Psychophysiologic effects of Hatha Yoga on musculoskeletal and cardiopulmonary function: a literature review. *J Altern Complement Med* 2002 Dec;8(6):797-812.
- (8) Badsha H, Kong KO, Tak PP. Rheumatoid arthritis in Dubai--delayed diagnosis and low usage of disease modifying antirheumatic drugs. *Ann Rheum Dis* 2007 Jun;66(6):835.
- (9) Arnett FC, Edworthy SM, Bloch DA, McShane DJ, Fries JF, Cooper NS, et al. The American Rheumatism Association 1987 revised criteria for the classification of rheumatoid arthritis. *Arthritis Rheum* 1988 Mar;31(3):315-24.

ACKNOWLEDGEMENTS; This study was funded by the Emirates Arthritis Foundation and by an unrestricted grant from Abbott Pharmaceuticals. We would like to acknowledge Ms. Gemma Tapado for support in data entry and logistics and Freiburg Medical laboratory, Dubai, UAE for ESR testing.
