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## YOGA EFFECTS ON PHYSICAL ACTIVITY AND SEXUAL SATISFACTION AMONG IRANIAN WOMEN WITH MULTIPLE SCLEROSIS: A RANDOMIZED CONTROLLED TRIAL.

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### Abstract

**Background:** Multiple Sclerosis (MS) is a chronic and disabling disease resulting in disabilities in young and middle-aged persons. In this study, researchers explored the effect of yoga techniques on physical activities and sexual function among some Iranian women with MS.

**Materials and Methods:** In this study, 60 Iranian women with multiple sclerosis (MS) were placed in two equally divided control and case groups through random selection to assess pre- and post- effects of yoga exercises on their physical activities and sexual satisfaction levels. Women in case group were offered a series of yoga training and exercises for 3 months, which consisted of 8 sessions per month for 60 to 90 minutes at each session. Yoga training program included the 3 principles of slow motions (Hatayoga), respiratory exercises (Pranayama) and centralization to control mind via meditation, expansion and stasis (Rajayoga). After 3 months both groups were surveyed using the initial questionnaire to evaluate and compare findings with the base-line data.

**Results:** Researchers found significant statistical difference in physical activity and sexual satisfaction levels among the women in case group (P=0.001). Women in case group showed improvement in physical ability while women in control group manifested exacerbated symptoms.

**Conclusion:** Yoga techniques may improve physical activities and sexual satisfaction function of women with MS.

**Key Words:** Yoga; Multiple sclerosis; Quality of life; Sexual satisfaction

### Introduction

Multiple Sclerosis (MS) is a chronic and disabling disease resulting in several disabilities in young and middle-aged persons (Delisa, 1998). A global rate increase in the prevalence of MS and equally observed in Iran. Etiology of MS remains unknown, but some sources report genetic and immune system involvement in the presence of infectious diseases without scientific evidence to support such hypothesis (Allen, 1991). This disease is prevalent among young adults and manifests several neurological symptoms (Levis, 2000). Pathologically, MS is diagnosed when several regions of white matter are inflamed with demyelination and glial scars in the central nervous system (CNS) and clinical aspects of MS vary from benign or symptom-free state to sudden progression and disabling type (Ropper and Brown, 2005).

The economic aspect of MS is largely imposed on the family members and society as the American Neurological Institute reported an annual cost of greater than \$2.5 billions (Marvin, 2000). In addition to financial burden, MS patients experience significant threat to their economic livelihood, personal independence, an individual ability to participate in the activities of daily living, family functions and social events. Disease related limitations are often internalized by patients and perceived as incompetence, loss of self-confidence leading to an altered sense of body image (Morgante, 2000). Also, considering the chronic and recurrent nature of the disease and involvement of various sensory-motor systems among such patients which itself could be resulted in limitation of communicative and physical activity, the effect of this disease on physical and sexual activity of patients is a fact (Sadr arhami et al., 2009). 30.0-80.0% of women with MS are suffering from sexual disorders which are resulted from injury of neural fibers translating the sense from genital organ to the brain ([www.tanzime.khanevade.ir](http://www.tanzime.khanevade.ir),2012).

On the other hand, fatigue (Atashzadeh et al.,2003., Neill et al.,2006), depression (Stachowiak, 2010, Dalton and Heinrichs,2005) and pain are also the prevalent complication of MS disease which could affect the sexual function and ability of individuals in doing physical activities. The results of various studies also indicate the effect of this disease on reducing the physical (Sadr arhami et al.,2009.,Motl,2008., Motlet et al., 2005) as well as sexual (Demerkiranet al., 2006) activity of patients.

In Iran, there is no statistical data on the number of people afflicted or diagnosed with MS. In 2004, the Iranian MS Society director (Lotfi, 2004) reported that 30, 000 Iranians have been diagnosed with MS. Despite medical advances and new treatments, MS remains as one of the most disabling chronic diseases with immeasurable effects on the patient's quality of life (Kesselring, 2002).

Although current medical treatments help improve some aspects of the disease, they also have shown alarming adverse effects, leaving room for the use of supplemental and non-traditional treatment modalities. Complementary and alternative medicine (CAM) has gained a positive reputation among patients and healthcare professionals who once questioned their validity and effectiveness. Yoga and aerobic exercise are suggested as non-traditional methods with potential benefits to improve MS symptoms and patients' quality of life (Pozzilli et al., 2006).

Yoga is a form of physical activity and exercise that could be performed by anyone when trained by an experienced person. Yoga training for healthy or ill persons must be monitored to promote health and prevent injury. In this study, explored the effect of yoga techniques on physical activities and sexual function among the Iranian women with MS.

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## Materials and Methods

In this study, 60 Iranian women with MS were enrolled after obtaining an informed consent approved by the institutional research committee at the Yasuj University of Medical Sciences. Yasuj University of Medical Sciences affiliated with academic and research base hospitals provided the list of MS patients for a random sample selection. Researchers followed the inclusion criteria to screen candidates by telephone contact or home visits. Later, a formal written invitation from the regional Yoga Association was sent to each participant explaining the research purpose and to seek consent for participation in yoga classes. Inclusion criteria consisted of: 1) age 18 years and older; 2) diagnosed with MS disease for the last 2 years; 3) no history of other disabling diseases; 4) physically able to participate in the study and perform yoga exercises. Also, patients who were at the acute phase of the disease or were under simultaneous therapeutic interventions and also sufferers from metabolic and psychical disorders and cardiovascular diseases were eliminated from the study. After sample selection, women were equally and randomly divided into two groups of 30 MS cases and 30 control groups. (Figure 1).

## Measurement

The rate of physical activity and sexual satisfaction were pre-evaluated for both groups to establish data-base by using the standard questionnaires (MSQoL-54). Instrument validity and reliability was determined by the faculty members at Shiraz University of Medical Sciences (BorhaniHaghighi and Ghaem, 2005). A score range from 1 (worst) to 3 (best) conditions was assigned to each domain for physical activities and Likert scale was applied to assess sexual satisfaction domain with 1 (very satisfied) to 5 (very unsatisfied) as shown in Tables 1 and 2.

In the domain of physical activities, the cases like doing semi-heavy activities, climbing from the steps of one floor, bending down, kneeling down, walking more than 1,600 meters, lifting and transporting the purchased goods from supermarket, passing through one cross, taking bath and dressing, doing heavy activities, climbing from the steps of many floors and passing through many crosses were studied.

Written informed consent assured women of voluntary participation with right to disengage at anytime. Privacy, confidentiality and data security was emphasized. Women in MS case group had yoga training for 3 months consisting of 8 sessions per month for 60 to 90 minutes at each session. Yoga programme was based on the 3 principles of slow exercises (Hatayoga), respiratory exercises (Pranayama) and centralization to control mind via meditation, expansion and stasis (Rajayoga). Women in control group did not receive any yoga training or exercise. Each yoga session began in a supine position for 10 to 15 minutes of motion, followed by respiration and mindful concentration simultaneously. Participants rotated between physical and mental activities at different rates to gain mind control over motion, breathing, strength development and concentration.

Yoga training included 4 slow motions in a supine position where participants were encouraged to focus on a specific body part. After each physical activity with breathing women were asked to mentally perceive physical improvement with each breath and mental attention to the specific body part. Respiratory exercise and mental focus was carried out with each body motion. This pattern continued 3 times in sitting position and followed by 4 slow motions in standing position, where participants engaged in mindful breathing and mental focus on every body part.

In order to control the mind in this study, each patient was asked to carry out the following: direct their attention on their right foot, relax and leave all foot muscles, focus their attention on on the right sole and pay attention to the concerned feelings including cold, hot or tingling. After which attention to the thumb of the right foot, second, third, fourth and fifth fingers should be paid. Each patient should now transfer herself to the back of right foot, relax for some seconds, transfer knowledge and make mental attention to the right ankle. Transfer knowledge and make attention to the right thigh. Now transfer your attention and knowledge to the left foot and make attention to the left sole.

The remaining stages which were performed for the right foot were repeated for the left foot, right and left hand and even all internal organs like heart, stomach and intestine so as to make patient having sufficient knowledge on his/her own body.

All these stages lasted for about 40 minutes and then patients were again placed at dead body position and for 10-15 minutes the concentration was made on the knowledge and body of patient so as to find good feeling about him/her self and surrounding world. Then the mind of patients were focused on the natural environment, trees, green place and voice of the birds so as to have a better feeling about him/her self.

As a whole, each session consisted of three parts: 1) slow body motion; 2) controlled respiration; and 3) mental concentration. Three months after yoga training, participants in both groups were reevaluated using the same instrument for physical activity and sexual satisfaction and results were compared with data-base.

## Data analysis and results

Data were analyzed using SPSS software for descriptive and paired t-test.

## Results

Results showed that participants' mean age in the case group was  $31.6 \pm 8.0$  with the age range of 18-45 years. Seventy percent (70%) of women were married and 30% were single. Among them 23 (77 %) had high school education and 7 (23 %) had college degrees. In the control group 21 (70%) of women had high-school education and 9 (30 %) were college educated. We found that yoga training improved physical activity and sexual satisfaction for women in the case group as shown in Tables 1 and 2. Women in MS case group showed statistically significant ( $P=0.001$ ) improvement in their physical activity when compared to control group. Yoga training had no statistical significance in some of physical activity domains such as: heavy activities, climbing stairs in a multiple story buildings and walking through several intersections. We observed slight but statistically insignificant improvements in some of the items for women in case group. We also found statistical significance ( $P=0.001$ ) in control group with exacerbation of MS symptoms.

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**Discussion**

Yoga exercises help improve various domains of physical activity as found among women in this study. Case group had difficulty with more strenuous or heavy activities compared to light physical movements, which required less energy expenditure. Yoga helped women with MS improve their physical activity level and delay or reduce physical disability. Time was an important factor for yoga training to be learned and practiced. Researchers and participants agreed that longer than 3 months period would have been more effective to assess the yoga exercise benefits on MS patients. In fact, Ahmadi, et al. (2010) found statistical significance in certain domains of life quality when they applied yoga as an intervention and compared case with control group before and after intervention. They found improvement in physical ability, sexual functions, reduced severity in physical disability and no changes in control group (Ahmadi et al.,2010).

Nearly fifty to ninety percent (50-90 %) of men and forty to eighty percent (40-80%) of women with MS complain of sexual dysfunction (Foley, 2005). Research results show that yoga can effectively improve and sustain ejaculation among men with precocious ejaculation (Dhikavet al.,2007). Meanwhile Ahmadi et al., (2010) found no statistical significance among MS patients with premature ejaculation or sexual satisfaction after yoga exercises. Here, several factors may have attributed to the research findings such as the yoga techniques and cultural issues, where patients feel uncomfortable to discuss sexual matters. Perhaps in certain conditions, researchers could focus on yoga to improve physical ability and assess

**Table 1:** Comparing the mean and standard deviation (SD) of physical activities among women with MS before and after yoga intervention in case and control

Physical activities						
Groups	Variable	Before the intervention	After the intervention	Score differences		
		mean± standard deviation	mean± standard deviation	CI	t	P
Case	Doing light to heavy activities	1.9 ± 0.3	2.1 ± 0.7	- 0.61- 0.2	- 1.0	0.05
	Climbing 10 stairs	2.5 ± 0.51	2.5 ± 0.68	- 0.3 - 0.3	0.0	0.04
	Bending down, kneeling	2.1 ± 0.55	2.5 ± 0.51	- 0.63 - 0.16	-3.5	0.01
	Walking >1600 meters	2.3 ± 0.8	2.7 ± 0.47	- 0.63- -0.16	-3.5	0.001
	Lifting or transporting goods bought from store	1.9 ± 0.3	2.1 ± 0.7	- 0.61- 0.21	- 1.0	0.05
	Walking through one intersection	2.5 ± 0.51	2.5 ± 0.68	- 0.3 - 0.3	0.0	0.04
	Taking a bath or dressing	2.4 ± 0.68	2.6 ± 0.5	- 0.39 - -0.008	- 2.1	0.001
	Doing heavy activities	2.3 ± 0.58	2.3 ± 0.58			NS
	Climbing stairs to several floors	2.2 ± 0.79	2.3 ± 0.8			NS
	Walking through several intersections	2.4 ± 0.65	2.5 ± 0.68			NS
Control	Doing light to heavy activities	2.35 ± 0.67	2.15 ± 0.58	0.008 - 0.39	2.1	0.001
	Climbing 10 stairs	2.1 ± 0.3	1.95 ± 0.5	- 0.02 - 0.32	1.8	0.001
	Taking a bath or dressing	2.6 ± 0.5	2.3 ± 0.65	0.08 - 0.52	2.8	0.001
	Lifting or transporting goods bought from store	2.5 ± 0.68	2.3 ± 0.65	0.008 - 0.39	2.1	0.001
	Bending down, kneeling	2.0 ± 0.68	1.8 ± 0.61	0.04 - 0.45	2.5	0.001
	Walking > 1600 meters	1.7 ± 0.47	1.7 ± 0.47			NS
	Walking through several intersections	1.7 ± 0.47	1.7 ± 0.47			NS
	Walking through one intersection	2.15 ± 0.58	2.15 ± 0.58			NS
	Doing heavy activities	1.85 ± 0.58	1.85 ± 0.58			NS
	Climbing stairs to several floors	1.5 ± 0.51	1.5 ± 0.5			NS

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improvement in sexual function as a by-product of yoga training instead of being the main focus. This approach may yield unexpected results in different cultures with hesitant participants.

Considering the effects of yoga on various physical and psychological domains, sexual health and improved functions were often an unexpected finding and because yoga has a greater emphasis on respiration and attention to breathing, participants often experience reduced stress and anxiety (Gupta et al., 2006). Deep breathing promotes calm and relaxation (Smith et al., 2007), and once the entire body and mind is calm (Krishnamurthy and Telles, 2007), an overall change can take place. Yoga practitioners frequently report sexual health and satisfaction (Broto and Mehakl Kit, 2009).

The chronic nature of MS leads to the loss of sensory functions and gradual decline in gross motor abilities. Over all, individuals with MS experience low self confidence and fear total loss of independence for activities of daily living. This important issue contributes to stress and anxiety among MS patients as psychological and physical domains suffer. Published research on the positive effects of yoga on reducing stress, improving physical abilities, enhancing psychological and sexual health have addressed the issues from different dimensions with the main focus on reducing the disease symptoms.

Yoga exercises improve coping skills and the ability to manage physical functions by focusing on multiple systems such as immunity, cognitive, modulate autonomic nervous system (ANS). Yoga helps increase physical stability, body resistance, modulation of immune system to improve total health (Parshad, 2004) and when MS patients feel healthy, various domains are effected to promote wellness and better quality of life (Parshad, 2004).

In a study by Zifko (2003) in the United States, 70-90% of MS patients reported symptoms of pain and fatigue, 50-60% perceived fatigue which prohibited the scope of their activities of daily living. Fatigue was also associated with reduced sexual desires in MS patients (Zifko, 2003). Other studies have shown how yoga training was used to reduce fatigue and improve MS patients' sleep quality (Sookcharoen, 2001; Wood, 1993), and because sleep is one of the most important fatigue related factors among the MS patients, it seems prudent to consider yoga for its multidimensional benefits. Results of this study is closely aligned with current published literature as we found yoga training improved physical ability and sexual satisfaction along with stress reduction, improved sleep and life quality.

**Table 2:** Comparing the mean and standard deviation (SD) of quality of life (physical activities and sexual satisfaction) of women with MS before and after intervention among two control and case groups

Variable	Group	Before the intervention	After the intervention	Score differences		
		mean± standard deviation	mean± standard deviation	CI	t	P
Physical Activity	Case	23.7±4.25	24.7±3.94	- 2.42-0.42	-1.46	0.001
	Control	20.55±3.5	19.45±4.1	0.49-1.7	3.8	0.001
Sexual Satisfaction	Case	1.8±2.0	1.4±1.5	- 0.09-0.89	1.7	0.001
	Control	2.1±1.2	2.1±1.2	NS		

## Conclusion

The results of this research indicated the positive effect of yoga techniques in improving the physical activities and satisfaction from sexual function of women with MS. Therefore, it may be said that, using yoga techniques as a complementary method in improving such complication among sufferers to MS are profitable even though it is necessary to carry out more studies in various societies and among both sexes.

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## References

- Ahmadi, A., Nikbakh, M., Arastoo, AA., Habibi, A.H. (2010). The effects of Yoga Intervention on balance, speed and endurance of walking, fatigue and quality of life in people with multiple sclerosis. *Journal of Human Kinetics*. 23: 71-8.

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2. Allen, IV. (1991). A etiological hypothesis for multiple sclerosis: evidence from human and experimental diseases. In: Matthews WB (ed). *Mc Alpin's multiple sclerosis*. 2nd edition. New York: Churchill Livingstone.
3. Atashzadeh, F., Shiri, Z., Moshtagh, Z., Saniee, M. (2003). [The Effect Of Exercise Training On Activity Of Daily Living in Women Multiple Sclerosis in Iranian Multiple Sclerosis in 2001-2]. *Rafsanjan University Of Medical Science J*, 3-4(2), 164-171. (In Persian).
4. BorhaniHaghighi, A., Ghaem, H. (2005). Quality of Life in Multiple Sclerosis: Translation & cultural adaptation in Persian version of the MSQoL-54). *Iranian Journal of Neurology*. 10-11: 40.
5. Brotoo, L.A., Mehakl Kit, C. (2009). Yoga and Sexual Functioning: A Review. *Journal of Sex & Marital Therapy*. 35:378–390.
6. Dalton, E.J., Heinrichs, R.W. (2005). Depression in multiple sclerosis: a quantitative review of the evidence. *Neuropsychology*. 19(2): 152-8.
7. Delisa, J.A. (1998). *Rehabilitation Medicine: Principles and practice*. 3th ed. Philadelphia: Lippincott-Raven publisher.
8. Demerkiran, M., Sarica, Y., uguz, S., Yerdelen, D., Aslan, k. (2006). Multiple sclerosis patients with and without sexualDysfunction; are there any differences. *Mult Scler*. 12(2):209-14.
9. Dhikav, V., Karmarkar, G., Gupta, M., Ananda, K.S. (2007). Yoga in premature ejaculation: A comparative trial with fluoxetine. *Journal of Sexual Medicine*. 4:1726-1732.
10. Foley, F. Introduction to intimacy and sexuality in MS. (2005). In M. M. Uccelli (Ed.), *MS in focus: Intimacy and sexuality*. Cambridge, UK: Cambridge Publishers.
11. Gupta, N., Khera, S., Vempati, R.P., Sharma, R., Bijlani, R.L. (2006). Effect of yoga based lifestyle intervention on state and trait anxiety. *Indian Journal of Physiology and Pharmacology*. 50: 41–47.
12. Kesselring, J. (2002). Rehabilitation in multiple sclerosis. *Journal of ACNR*. 2(6):6-8.
13. Krishnamurthy, M.N., Telles, S. (2007). Assessing depression following two ancient Indian interventions: Effects of yoga and ayurveda on older adults in a residential home. *Journal of Gerontological Nursing*. 33: 17–23.
- Levis, R. (2000). *Merritt's neurology*. 10th ed. Philadelphia: Lippincott Williams & Wilkins.
14. Lotfi, G. (2004). Message, the first M.S. (multiple sclerosis) disease Journal with simple language. *Informing, educative and social Journal*. 4:62. [in Persian]
15. Marvin, D.W. (2000). Multiple sclerosis: continuing mysteries and current management. *Drug Top*. 144 (12): 93-102.
16. Morgante, L. (2000). Hope in multiple sclerosis, a nursing perspective. *Int J MS Care*. 2 (2): 3.
17. Motl, RW. (2008). Physical activity and its measurement and determinants in multiple sclerosis. *Minerva Med*. 99:157–65.
18. Motl, R.W., McAuley, E., Snook, E.M. (2005). Physical activity and multiple sclerosis: a meta-analysis. *MultScler*. 11:459–63.
19. Neill, J., Belan, I., Ried, K. (2006). Effectiveness of non-pharmacological interventions for fatigue in adults with multiple sclerosis, rheumatoid arthritis, or systemic lupus erythematosus: a systematic review. *J of Advanced Nursing*. 56 (6), 617-635.
20. Parshad, O. (2004). Role of yoga in stress management. *West Indian Med J*. 53(3):191-194.
21. Pozzilli, C., Sbardella, E., De Gigilo, L., Tomassini, V. (2006). Treatment of multiple sclerosis-related fatigue : pharmacological and non pharmacological approaches. *Neurol Sci*. 27(4):297-299.
22. Ropper, A.H., Brown, R.H. (2005). *Adams and Victor Principle of Neurology*. 8th ed. New York: McGrawHill.
23. Sadr arhami, N., Atarod, S., Amanat, S., Hoseini, S.A. (2009). Attitude of patients with MULTIPLE SCLEROSIS towards the impacts of the disease on their social and sexual activities. *Behavioral Sciences Research Journal*. 6(2). 79-88. [in Persian].
24. Sexual dysfunction in women with multiple sclerosis. <http://www.tanzime.khanevade.ir>. 2012. [in Persian].
25. Smith, C., Hancock, H., Blake-Mortimer, J., Eckert, K. (2007). A randomized comparative trial of yoga and relaxation to reduce stress and anxiety. *Complementary Therapies in Medicine*. 15:77–83.
26. Sookcharoen, K. (2001). Meditation: Therapeutic tool for managing stress. *Literature Review*. 78: 3-5.
27. Stachowiak, J. Multiple sclerosis symptoms overview [Online]. [cited 2010 Mar 10]; Available from: URL: [http://ms.about.com/od/signssymptoms/a/ms\\_symptoms.htm](http://ms.about.com/od/signssymptoms/a/ms_symptoms.htm).
28. Svendsen, K.B., Jensen, S.J., Overvad, K., Hansen, H.J., Kock-Henriksen, N., Back, F.W. (2003). Pain in patients with multiple sclerosis. *Arch Neurol*. 60:1089–1094.
29. Wood, C. (1993). Mood change and perception of vitality; a comparison of the effects of relaxation, visualization and yoga. *Journal of Royal Society of medicine*. 89:254-258.
30. Zifko, U. (2003). Treatment of fatigue in patients with multiple sclerosis. *Wien Med wochenschr*. 153(3-4):65-72.