Original Article

Effectiveness of 12 Weeks of Practice of Raja Yoga Meditation on Cognitive Functions in Young Adults

Aalasyam Naveen[1], Vijaykumar Sayeli[2], Uma Pokala[3]*, Kamatham Praveen[4], Sai Sailesh Kumar Goothy[5]

[1,4]Assistant professor, Department of Pharmacology, Mamata Medical College, Khammam, Telangana, India.
[2]Associate Professor, Department of Pharmacology, Mamata Medical College, Khammam, Telangana, India.
[3]*Associate professor, Department of ENT, Mamata Medical College, Khammam, Telangana, India. Email: umapokala221@gmail.com

[5]Associate Professor, Department of Physiology, Sri Madhusudan Sai Institute of Medical Sciences and Research, Muddenahalli, Karnataka, India.

***Corresponding Author:** Dr. Uma Pokala,

*****Associate professor, Department of ENT, Mamata Medical College, Khammam, Telangana, India. Email: umapokala221@gmail.com
DOI: 10.47750/pnr.2022.13.S08.586

Abstract

Background: Raja Yoga meditation is supreme meditation that helps to attain control over all the systems of the body including the brain. The studies related to raja yoga meditation and cognition are sparse.

Objectives: The current study aimed to assess the effectiveness of Raja Yoga Meditation on cognitive functions in young adults.

Materials and methods: A total of 50 male and female participants were part of the study after obtaining written informed consent. After recruitment, the participants were randomly divided into two groups with 25 participants in each group. The intervention group practiced Rajayoga meditation.

Results: Age, height, and weight were not significantly different between the control and intervention groups. There is no significant difference in spatial and verbal memory among the control and intervention groups. There was a significant improvement in spatial memory in the intervention group when compared with the control group. There was a significant improvement in verbal memory in the intervention group when compared with the control group.

Conclusion: There was a significant improvement in spatial and verbal memory in the intervention group after practicing the Rajayoga meditation. The study recommends practicing meditation on daily basis for more beneficial effects.

Keywords: Meditation, Stress, Memory, Students.

INTRODUCTIONS:

To lead a happy life one should have peacefulness in life. In today's busy lifestyle, each of us is very busy throughout the day and does not get time to spend for ourselves. In such circumstances, there is a strong need to follow some techniques which offer us peacefulness. One such method is Raja yoga meditation. Raja Yoga meditation is supreme meditation that helps to attain control over all the systems of the body including the brain. It is a simple meditation technique that anyone can be able to practice even at the home. However, meditation has a lot of differences from other types of meditation. Like it is a open eye meditation method. According to the raja yoga meditation, every individual has two aspects of personality which are body and soul. The soul is the component that has emotions and can think and it acts through the brain. Practicing the raja yoga meditation releases stress and anxiety and makes the brain active and alert. It ensures sound health and improves the quality of life. Earlier studies reported improvement in mood followed by the practice of Raja yoga meditation.[1] It has been used to manage certain psychological disorders like anxiety, and depression effectively.[2,3] It was reported that practicing the Raja yoga meditation causes an increase in the gray matter volume in the brain and this increases the happiness and reward mechanism.[4] Further, practicing meditation causes self-satisfaction and positive thinking which are essential to lead a happy life.[5] Long-term practice of meditation has benefits it increases the integrity of white matter.[6] The studies related to raja yoga meditation and cognition are sparse. Hence, the current study aimed to assess the effectiveness of Raja Yoga Meditation on cognitive functions in young adults.

MATERIALS AND METHODS:

Study design: Experimental study.

Study participants: A total of 50 male and female participants were part of the study after obtaining written informed consent. Apparently healthy and willing participants were included in the study. Unwilling participants and those already practicing any meditation were excluded from the study. After recruitment, the participants were randomly divided into two groups with 25 participants in each group.

Group 1: (n=25): Control group: No meditation was practiced
Group 2: (n=25): Intervention group: Practiced Rajayoga meditation for 12 weeks

Rajyoga meditation: Rajayoga meditation is a meditation course that is trained by Rajayoga Education and Research Foundation of Brahma Kumaris World Spiritual University (BKWSU). The participants were trained in the Rajayoga meditation by an expert for a weekday and then they started practicing the same for 12 weeks under the supervision of the experts.[4]

Outcome measures:

Spatial and verbal memory test: Spatial and verbal memory tests described in the literature will be used and done in consultation with the psychiatrist of our hospital. The test material was projected on a screen, allowing 10 seconds for each slide. After the 10 slides were shown, a mathematical problem (e.g. 2–7+5–1+10+11–2+5) was projected on the screen and the students were asked to immediately recall and write down (or in the case of spatial memory, to draw) within 60 seconds the 10 test items that had been shown to them. To test verbal memory, standard nonsense syllables of three letters, e.g. ZOL, were selected from a prepared list. The test for spatial memory consisted of 10 simple line drawings. Geometrical or other shapes that could be described verbally were not used, e.g. a square or a circle. The drawings were simple and easy to reproduce. For both verbal and spatial memory tests a correct answer was scored as '1' and a wrong answer was scored '0'. Different sets of 10 nonsense syllables and drawings were presented on different time periods of data collection.

Ethical considerations: The institutional human ethical committee approved the present study protocol.

STATISTICAL ANALYSIS:

Data was analyzed by SPSS 20.0 version. Student t-test was applied to observe the significance of the difference between the groups. A probability value of less than 0.05 was considered significant.

RESULTS:

Table 1 presents the demographic data and spatial and verbal memory before the intervention. Age, height, and weight were not significantly different between the control and intervention groups. There is no significant difference in spatial and verbal memory among the control and intervention groups. Table 2 presents the spatial and verbal memory after the intervention. There was a significant improvement in spatial memory in the intervention group when compared with the control group. There was a significant improvement in verbal memory in the intervention group when compared with the control group.

Table 1: Demographic data and spatial and verbal memory before the intervention

Variable	Control group (n=25)	Intervention group (n=25)	P value
Age (years)	19±0.40	20±0.40	0.0835
Height (cm)	161±11	175±13	0.4151
Weight (kg)	55±4.4	52±3.80	0.6082
Spatial memory	5±0.40	6±0.40	0.0835
Verbal memory	4±0.20	4±0.40	1.0000

Data were presented as mean and SEM

Table 2: Spatial and verbal memory after the intervention

Variable	Control group (n=25)	Intervention group (n=25)	P value
Spatial memory	6±0.40	8±0.20	0.0001***
Verbal memory	4±0.20	7±0.40	0.0001***

Data were presented as mean and SEM. ***P<0.001 is significant.

DISCUSSION:

As age advances, there is a decline in the volume of different areas of the brain. This can be reversed by stimulating the brain areas continuously with some methods. One such method of brain stimulation is Rajayoga meditation. Research supports that there was an increase in gray matter followed by the long-term practice of meditation.[7] Rajayoga meditation was special and unique compared to any other type of meditation. The main motto of this meditation is to attain the consciousness of God. This meditation helps to control all the sense organs of the body. Practicing the Rajayoga meditation in daily life ensures a healthy lifestyle. When recording the EEG during the Rajayoga meditation, it showed always the alpha wave which means deep relaxation.[8] Self-realization was ensured by the Rajayoga meditation and it helps to connect with the supreme soul. Rajayoga meditation was reported to increase life satisfaction and happiness so the individual lives a peaceful and stress-free life that can increase the life span of an individual also. [9] It was reported that brain connectivity also improves after the long-term practice of the Rajayoga meditation.[10] Rajayoga meditation helps to attain parasympathetic dominance and protects from the dangerous effects of stress.[11] In the present study, age, height, and weight were not significantly different between the control and intervention groups. There is no significant difference in spatial and verbal memory among the control and intervention groups. There was a significant improvement in spatial

memory in the intervention group when compared with the control group. There was a significant improvement in verbal memory in the intervention group when compared with the control group. The study results are in accordance with earlier studies.

CONCLUSION: There was a significant improvement in spatial and verbal memory in the intervention group after practicing the Rajayoga meditation. The study recommends practicing meditation on daily basis for more beneficial effects.

Conflicts of interest: None declared

Source of funding: Self-funding

REFERENCES:

1. Shapiro D Cline K. Mood changes associated with Iyengar Yoga International Journal of Health Sciences & Research (www.ijhsr.org) 45 Vol.3; Issue: 2; February 2013 practices: A Pilot Study. International Journal of Yoga Therapy 2004; 14: 35-44.
2. Janakiramaiah N, Gangadhar BN, Murthy PJ. Antidepressant efficacy of Sudarshan Kriya Yoga (SKY) in melancholia: A randomized comparison with electroconvulsive therapy (ECT) and imipramine. Journal of Affective Disorder2000; 57:255-259.
3. Kumar, S.S., Kaur, P. and Kaur, M.S. Effectiveness of Shavasana on depression among university students. Indian Journal of Clinical Psychology 1993; 20: 82-87.
4. Babu MGR, Kadavigere R, Koteshwara P, Sathian B, Rai KS. Rajyoga meditation induces grey matter volume changes in regions that process reward and happiness. Sci Rep. 2020 Sep 30;10(1):16177.
5. Ramesh MG, Sathian B, Sinu E, Kiranmai SR. Efficacy of rajayoga meditation on positive thinking: an index for self-satisfaction and happiness in life. J Clin Diagn Res. 2013 Oct;7(10):2265-2267.
6. Sharma K, Trivedi R, Chandra S, Kaur P, Kumar P, Singh K, Dubey AK, Khushu S. Enhanced White Matter Integrity in Corpus Callosum of Long-Term Brahmakumaris Rajayoga Meditators. Brain Connect. 2018 Feb;8(1):49-55.
7. Hölzel, B. K., Ott, U., Gard, T., Hempel, H., Weygandt, M., Morgen, K., & Vaitl, D. Investigation of mindfulness meditation practitioners with voxel-based morphometry. Social Cognitive and Affective Neuroscience. 2008;3(1), 55–61.
8. Kora P, Meenakshi K, Swaraja K, Rajani A, Raju MS. EEG based interpretation of human brain activity during yoga and meditation using machine learning: A systematic review. Complement Ther Clin Pract. 2021 May;43:101329.
9. Ramesh MG, Sathian B, Sinu E, Kiranmai SR. Efficacy of rajayoga meditation on positive thinking: an index for self-satisfaction and happiness in life. J Clin Diagn Res. 2013 Oct;7(10):2265-2267.
10. Savanth AS, Vijaya PA, Nair AK, Kutty BM. Classification of Rajayoga Meditators Based on the Duration of Practice Using Graph Theoretical Measures of Functional Connectivity from Task-Based Functional Magnetic Resonance Imaging. Int J Yoga. 2022 May-Aug;15(2):96-105.
11. Bharshankar JR, Mandape AD, Phatak MS, Bharshankar RN. Autonomic Functions In Raja-yoga Meditators. Indian J Physiol Pharmacol. 2015 Oct-Dec;59(4):396-401.