

# Yoga for Sleep Quality, Postural Balance and Quality of Life in Geriatric Population: A Narrative Review

Priyanshi Kaushik<sup>1</sup>, Abhishek K. Bhardwaj<sup>2</sup>

## How to cite this article:

Priyanshi Kaushik, Abhishek K. Bhardwaj/Yoga for sleep Quality, Postural balance and Quality of Life in Geriatric Population: A Narrative Review/Cognitive Impairment/RFP Journal of Gerontology and Geriatric Nursing. 2023; 6(2): 53-58.

## Abstract

Yoga brings equanimity in our lives and it can play an exigent contribution in removing many psycho-physiological problems concerned to geriatric population. Present study is focusing to review the effectiveness of yoga for different psychological factors such as sleep quality, balance, gait and life satisfaction in geriatric population. Total 11 relevant review articles were found in PubMed (the medical database) using different keywords. Evidence showed that in comparison to other physical activities, yoga is providing to be a better solution. Daily practice of yoga is beneficial to increase balance and decrease the falls in geriatric population.

**Keywords:** Yoga; Geriatric population; Balance; Sleep quality; Quality of life.

## INTRODUCTION

Yoga is an ancient art and science of healthy living which improves physical, mental, social and spiritual health with the quality of in expensiveness and without any side-effects. Yoga is one of the mind-body practices which are harmless, generalized and better solution to remove psycho-physiological illness. As per yogic scriptures, yoga is an inner science through which human can realize their existence and achieve

their basic goal that is liberation. The aim of yoga is self-realization, wellness, freedom and finally liberation<sup>1</sup> (Basavaraddi, 2015). Yoga is a practical discipline that consists of a range of postures that are intended to promote good physical and mental health as well as wellbeing, inner peace and ultimately union with the supreme perfection of all things<sup>2</sup> (Aurobindo, 1999). Yoga as a supplemental medicine is more beneficial than regular exercise since it calls for active participation from both the body and the mind. It primarily focuses on developing body awareness and perception which helps older persons to maintain their balance<sup>3</sup> (Patel, Deshmukh and Parlekar, 2019).

According to a report, India's population consists of an adequate proportion of elderly people and 3.4 percent of those above the age of 45 years live alone. About 5.7 percent of the country's senior citizens live on their own without the support of family or friends<sup>4</sup> (Sengupta & Guha, 2021). These old people have to face a variety of physical, psychological and social changes. It is inevitable that these people lose

**Author's Affiliation:** <sup>1</sup>Ph.D. Scholar, <sup>2</sup>Associate Professor, Department of Psychology, University of Patanjali, Haridwar 249405, Uttarakhand, India.

**Corresponding Author:** Abhishek K. Bhardwaj, Associate Professor, Department of Psychology, University of Patanjali, Haridwar 249405, Uttarakhand, India.

**E-mail:** [abhishek@uop.edu.in](mailto:abhishek@uop.edu.in)

**Received on:** 27.04.2023

**Accepted on:** 31.05.2023

their old friendship ties as they get older and they are hesitant to form new friendships. Loneliness and depression are common in old age, resulting in the inability of many to actively participate in close relationships as well as community activities<sup>5</sup> (Singh & Misra, 2009).

Globally, the population is increasing hurriedly. The population of people over 60 years will almost double in whole world between 2015 and 2050 from 12% to 22%. About 15% of people aged 60 and over are mentally unwell<sup>6</sup> (WHO, 2017). The geriatric population is large in general and growing due to advancement of healthcare education<sup>5</sup> (Singh & Misra, 2009). The level of satisfaction related to body and mind is decreasing due to aging<sup>7</sup> (Osth *et. al.*, 2019). During this age many of the systems undergo deterioration. This has the potential to affect balance, restrict safe mobility as well as it adversely affects quality of life<sup>3</sup> (Patel, Deshmukh and Parlekar, 2019). These older people are facing a number of changes such as physical, psychological and social changes that challenge their ability to live

happily. Altered balance is the largest collaborator for falls in geriatric population with advance correlation between balance deficiency and the event of falls<sup>3</sup> (Patel, Deshmukh and Parlekar, 2019). Sleep problems in older people make it difficult to stay awake during the day, hence the need for management that is free from side effects. Daily yogic practice improves the quality of sleep in old peoples<sup>8</sup> (Manjunath & Telles, 2005).

## METHODS

Present study is focusing to review the effectiveness of yoga for different psychological factors such as sleep quality, balance, gait and life satisfaction in geriatric population. Total 11 relevant review articles were found on PubMed (the medical database) using different keywords (Table 1). Articles are eliminated only if they are not properly focused on selective variable and if they are on proceeding.

**Table 1:** Summary of searched article using different keywords.

Keywords	Available Review Articles on PubMed	Relevant Articles	Selected Articles for Review
Yoga, geriatric population, sleep	6 articles	Four are relevant and one is on proceeding.	4 articles
Yoga, geriatric population, balance	7 articles	Not relevant.	-
Yoga, geriatric population, balance gait	4 articles	All are relevant.	4 articles
Yoga, geriatric population, Life satisfaction	2 articles	1 is on proceeding and another one is not relevant.	-
Yoga, geriatric population, quality of life	6 articles	Four are satisfactory and 1 is on proceeding.	-
Yoga, old aged people, life satisfaction	4 articles	Three are relevant and 1 is on proceeding.	3 articles

## YOGA AND SLEEP QUALITY

Sleep is an essential function of the human daily routine. Preferable physical, cognitive and psychological development hardily depends on restoring sleep. Actually, human sleep features and behaviour depends on different events both physiological and mental<sup>9</sup> (Crivella, Barsocchi, Girolami, Pulunto, 2019). A study was conducted to assess the effect of yoga and Ayurveda on quality of sleep in seniors having age range above 60 years. In this randomized trial there were three groups i.e., yoga (physical postures, relaxation techniques, breathing ways and speech on yoga philosophy), ayurveda and wait list control (no intervention). Self-assessment of sleep was done in the first week

then after 3 months and then after 6 months during intervention. Result showed that a decrement in time taken for sleep, total number of hours slept is increased and increment in the feeling of being rested in the morning after six months. Apart from this, no change was seen in other groups. This study was concluded that daily yoga practice improves sleep in geriatric population<sup>8</sup> (Manjunath & Telles, 2005).

Another randomized controlled trial expressed the role of yoga therapy in improving digestive health and quality of sleep in an elderly population. Pittsburg sleep quality index (PSQI) and Patient assessment for constipation (PAC-QOL) were administered on 81 participants (Yoga = 48, waitlisted control = 33). They concluded that three months of yoga intervention can enhance sleep

quality, remove constipation and improve quality of life in geriatric population<sup>10</sup> (Ganesh, Subramanya, Raghvendra, Udupa, 2021).

In a review study, literature was searched by using PubMed and Science Direct search engines. Quality of sleep, cognitive functions were assessed in seniors having age range above 60 years. After giving different yogic interventions they conclude better results can be achieved in daily life by balancing sleep and cognitive functions with the practice of yoga. Evaluation of published studies stated that regular practices of yoga increase sleep and cognitive functions as well as autonomic function, structural changes, changes in metabolism, neurochemistry and also enhance functional brain network connectivity in key regions of the brain. They analyze the positive outcome of yoga on sleep and cognitive functions among healthy older adults as well as patients of some neurological diseases<sup>11</sup> (Panjwani, Dudani & Wadhwa, 2021).

In a systematic review on the effect of yoga on physical functioning and health related quality of life in geriatric population, self rated health status, aerobic fitness, strength, depression, sleep, and bone mineral density were assessed. The study evaluated that yoga is more effective in comparison to other conventional exercises on depression, sleep and bone mineral density. They concluded that regular practice of yoga is providing to be a better solution than other physical activities<sup>12</sup> (Patel, Newstead & Ferrer, 2012).

## YOGA AND BALANCE

The capacity to maintain bodily equilibrium and regain balance following a shift in body parts is known as postural balance<sup>13</sup> (Ludwig, 2017). A comparative study stated that hatha yoga influences positively the physical changes like reduce hip extension. The assessment criteria were peak hip extension, average anterior pelvic tilt, and stride length at comfortable walking speed. This was a single group pre-post test exploratory study. Twenty three healthy adults with age range 62-83 years were participated and out of them 19 participants finalized the program. 8 weeks iyengar hatha yoga intervention was provided for 90 minutes classes per week with 20 minutes home practices on alternate days. Result indicated that peak hip extension and stride length both were raised. Study showed that regular practice of yoga can improve gait functions in healthy older people as well as reduce the expansion of the hips and decrease the pelvic tilt<sup>14</sup> (DiBenedetto *et. al.*, 2005).

Another study expressed that the intervention of Yoga, Tai-Chi, gait and balance training may improve the balance confidence and it also reduce the falling risk in geriatric population with type-2 diabetes. In this review, 21 studies search was made through CINAHL, Embase and PubMed. Assessment criteria were fear of falling and balance confidence. Decided group based interventions were given to the participants. Evaluation of published study concluded that gait and balance training, tai chi and yoga practices decreased falling risk and also minimize the low balance confidence<sup>15</sup> (Hewston & Deshpande, 2018).

A prospective study suggested that Wii Fit Balance Board is useful for the assessment for preventing falls among the older adults. In this study, 41 healthy participants were given Tree pose under yoga and a table tilt game. Assessment criteria were postural stability, fall reduction measured by Wii Fit Balance Board. This study was finalized that these tools are beneficial for the older adults for evaluation to prevent falls<sup>16</sup> (Rohof *et. al.*, 2020).

Another study with randomized control design indicates Yoga's effect on falls in rural, geriatrics. Under this study, 8 weeks of hatha yoga intervention with 10 minutes daily at home was given in 16 sessions to 38 participants (17 each group). Balance and self-reported fall were measured. Result showed that daily practices of yoga were beneficial to increase balance, decreases the falls in geriatric population<sup>17</sup> (Hamrick *et. al.*, 2017).

## YOGA AND QUALITY OF LIFE

The cognitive component of subjective well being is satisfaction with life and because it is the main consistent factor in subjective well being, it entails an appraisal of all aspects of an individual's existence. The best predictor of one's perceived quality of life is most commonly recognised as life satisfaction. A study of 2011 in which a sixty nine year old women who was suffering from Parkinson's disease (PD) for the past eight years, one week baseline was followed by an eight weeks period of weekly 60 min yoga classes and a further 5 weeks of treatment withdrawal<sup>18</sup> (Hall, Verheyden and Ashburn, 2011). Assessment criteria were balance, mobility, quality of life. They concluded that there is no difference found in the quality of life as calculated by the PDQ-39 was noted but some positive changes was observed during intervention in balance measured by BBS (Berg Balance Scale) and mobility measured by TUG (Timed Up and

Go). These all improvements were not included because they are clinically insignificant<sup>18</sup> (Hall, Verheyden and Ashburn, 2011).

A Randomized controlled study investigated that for enhance life satisfaction and to reduce depression of older depressed females, Kataria's Laughter Yoga is also affecting positively same as group exercise program. There were 70 depressed old women with age range above 60 but only 60 participants finished study. Assessment Criteria were Depression, measured by Geriatric Depression Scale and quality of life measured by Life Satisfaction Scale. The investigation

indicates decrement in the scores of depression in experimental groups. No considerable difference was found between Laughter Yoga and exercise therapy groups.<sup>19</sup> (Shahidi *et. al.*, 2011).

Another study of 2015 reported that there is no overall improvement of 12 week practices of Hath Yoga in quality of life as well as Gait functioning with spinal injury of a 59 years old male. Yoga affects positively balance; body movements, poses; muscle strength of the hip extensors, hip abductors and knee extensors. One hour session twice per week for twelve weeks hath yoga intervention given during study<sup>20</sup> (Moriello *et. al.*, 2015).

**Table 2:** Summary of relevant studies based on evidence

Sl. No.	Authors	Study Design	No. of Participants	Intervention	Assessment	Result
1	Ganesh, Subramanya, Raghvendra, Udupa, 2021	Randomized control trial	81 participants with age range 60-75	3 months yoga intervention with frequency of 3 session per week	Pittsberg sleep quality index (PSQI) and Patient assesement for constipation (PAC-QOL) were used	Yoga can improve sleep quality and remove constipation
2	Panjwani, Dudani, Wadhwa, 2021	Review	Above 60 years	Different Yogic interventions	Sleep quality and cognitive dysfunction	Intervention helps improving sleep quality and cognitive functions.
3	Patel, Newstead & Ferrer, 2012	Systematic review with both narrative synthesis and meta-analysis	<35 participants (above 60 years)	Yoga and conventional exercises	Self-rated health status, aerobic fitness, power, depression, sleep, and bone-mineral density	Yoga provides more effective benefits than conventional exercises on Depression, sleep and bone-mineral density.
4	Rohof, B. <i>et. al.</i> , 2020	Prospective study	41 participants (above 60 years)	Using two measurements: yoga task "tree" and balance game "table tilt"	Postural stability, fall reduction measured by Wii Fit Balance Board.	Wii Fit Balance Board is useful for the assessment for preventing falls among the older adults
5	Hewston & Deshpande, 2018	Review	≥65 years of age	Selected group-based interventions	Fear of falling, balance confidence	Gait and balance training, tai chi and yoga practices reduce the of falling risk and also minimize low balance confidence.
6	Hamrick, Mross, Christopher, Smith, 2017	Randomized Controlled Trial	38 participants (Above 65 years)	16 sessions of hath yoga over 8 weeks	Balance, Self reported fall.	Yoga is beneficial to improve balance and reduce fall.
7	Moriello, Proper, cool, Fink, Schock & Mayack, 2015	Case reports	1 participant with C3-C6 spinal cord injury (Above 60 year)	Hatha yoga for one hour sessions, twice per week for twelve weeks	Balance, power; body movements muscle strength of the hip extensors, hip abductors and knee extensors;	After yoga positive effect were observed in Balance, body movements, poses, muscle strength of the hip extensors, hip abductors and knee extensors.

*table cont....*

8	Shahidi <i>et. al.</i> , 2011	Randomized Controlled Trial	70 depressed old women (Above 60 year)	Laughter therapy, Exercise therapy	Depression, measured by Geriatric Depression Scale and Life satisfaction measured by Life Satisfaction Scale	Laughter yoga affects positively same as exercise program on depression and life satisfaction in geriatric females.
9	Hall, Verheyden, Ashburn, 2011	Case report	1 participant with 8 year history of Parkinson's disease (69 year)	One week baseline was followed by an eight-week period of weekly one hour yoga classes and a further five weeks of treatment withdrawal.	Balance measured by Berg balance scale, mobility measured by Timed Up and go and quality of life measured by PDQ-39.	No difference in quality of life but some positive changes are observed in balance and mobility during intervention period these change are not clinically significant.
10	DiBenedetto, M. <i>et. al.</i> , 2005	Single group pre-post test exploratory study	23 healthy adults (62-83 years)	Eight week Iyengar Hatha yoga program, 90 minute yoga classes per week, at least twenty minutes of home practice on alternate days.	Peak hip extension, average anterior pelvic tilt, and stride length at comfortable walking speed.	Yoga practice raised hip extension, stride length, and decrease anterior pelvic tilt in healthy elders.
11	Manjunath & Telles, 2005	Randomized clinical trial	69 participants, divided in three groups (above 60 years)	6 month intervention, Yoga (physical postures, relaxation techniques, breathing ways and speech on yoga philosophy), Ayurveda and control group	Self-rated sleep in older adults	Yoga practice enhanced different aspects of sleep in a older adults.

## CONCLUSION

This is a narrative review article in which the selective studies related to yoga on geriatric population are observed. Yoga practices positively affect the daily lives of older adults. Yoga may play a prominent role in achieving better results in the quality of sleep, postural balance as well as life satisfaction in older adults. On the basis of above mentioned studies, we can say that the positive effect of yoga is seen in geriatric population. Some studies which are related to our topics and which have been scientifically investigated are shown here, although apart from these many other important studies have been done. The limitations of this review article are: (i) this is not a structured review and (ii) The search was limited to PubMed database only.

## REFERENCES

1. Basavaraddi, I. (2015). Yoga : Its Origin, History and

Development. <https://yoga.ayush.gov.in>.

- Aurobindo, S. (1985). *The Synthesis of Yoga* (5th ed.) Pondicherry, India: Sri Aurobindo Ashram, Publication Department.
- Patel, K., Deshmukh, M., & Palekar, T. (2019). Effect of Yoga on Balance in Geriatric Population. *International Journal of Scientific Research in Science and Technology*, 6(2). <https://doi.org/10.32628/IJSRST11962130>.
- Sengupta, A. & Guha, S. (2021, Feb). Lonely twilight: Highest rate of seniors living alone in Tamil Nadu, Nagaland. Down to earth. <https://www.downtoearth.org.in>.
- Singh, A., & Mishra, N. (2009). Loneliness, depression and sociability in old age. *Industrial psychiatry journal*, 18(1), 51-55. <https://doi.org/10.4103/0972-6748.57861>.
- World Health Organization (2017). Mental health of older people. <https://www.who.int>.
- Osth, J., Diwan, V., Jirwe, M., Diwan, V., Choudhary, A., ...Hallgren, M. (2019). Effects of yoga on well-being and healthy ageing: study protocol for a randomized controlled trial (Fit For Age). *BMJ Open*, 9(5), e027386. <https://doi.org/10.1136/>

- bmjopen-2018-027386.
8. Manjunath, N., & Telles, S. (2005). Influence of Yoga and Ayurveda on self-rated sleep in a geriatric population. *The Indian journal of medical research*, 121(5), 683-690.
  9. Crivello, A., Barsocchi, P., Girolami, M., & Pulunto, F. (2019). The Meaning of Sleep Quality: A Survey of Available Technologies. *Research gate*. <https://doi.org/10.1109/ACCESS.2019.2953835>.
  10. Ganesh, H., Subramanyam, P., Raghavendra, M., & Udupa, V. (2021). Role of yoga therapy in improving digestive health and quality of sleep in an elderly population: A randomized controlled trial. *Journal of bodywork and movement therapies*, 27,692-697. <https://doi.org/10.1016/j.jbmt.2021.04.012>.
  11. Panjwani, U., Dudani, S., & Wadhwa, M. (2021). Sleep, Cognition, and Yoga. *International journal of Yoga*, 14(2), 100-108. <https://doi.org/10.4103/ijoy.IJOY-110-20>.
  12. Patel, N., Newstead, A., & Ferrer, R. (2012). The effects of yoga on physical functioning and health related quality of life in older adults: a systematic review and meta-analysis. *Archives of physical medicine and rehabilitation*, 18(10), 902-917. <https://doi.org/10.1089/acm.2011.0473>.
  13. Ludwig, O. (2017). Inter relationship between postural balance and body posture in children and adolescents. *Journal of physical therapy sciences*, 29(7), 1154-1158. <https://doi.org/10.1589/jpts.29.1154>.
  14. DiBenedetto, M., Innes, K., Taylor, A., Rodeheaver, P., Boxer, J., Jeffrey Wright, H., & Kerrigan, D. (2005). Effect of a gentle Iyengar yoga program on gait in the elderly: an exploratory study. *Archives of physical medicine and rehabilitation*, 86(9), 1830-1837. <https://doi.org/10.1016/j.apmr.2005.03.011>.
  15. Hewston, P., & Deshpande, N. (2018). Fear of Falling and Balance Confidence in Older Adults With Type 2 Diabetes Mellitus: A Scoping Review. *Canadian journal of diabetes*, 42(6), 664-670. <https://doi.org/10.1016/j.jcjd.2018.02.009>.
  16. Rohof, B., Betsch, M., Rath, B., Tingart, M., & Quack, V. (2020). The Nintendo Wii Fit Balance Board can be used as a portable and low-cost posturography system with good agreement compared to established systems. *European Journal of Medical Research*, 25(1), 44. <https://doi.org/10.1186/s40001-020-00445-y>.
  17. Hamrick, I., Mross, P., Christopher, N., & Smith, P. (2017). Yoga's effect on falls in rural, older adults. *Complementary therapies in medicine*, 35, 57-63. <https://doi.org/10.1016/j.ctim.2017.09.007>.
  18. Hall, E., Verheyden, G., & Ashburn, A. (2011). Effect of a yoga programme on an individual with Parkinson's disease: a single-subject design. *Disability and Rehabilitation*, 33(15-16), 1483-1489. <https://doi.org/10.3109/09638288.2010.529233>.
  19. Shahidi, M., Mojtahed, A., Modabbernia, A., Mojtahed, M., Shafiabady, A., Delavar, A., & Honari, H. (2011). Laughter yoga versus group exercise program in elderly depressed women: a randomized controlled trial. *International Journal of Geriatric Psychiatry*, 26(3), 322-327. <https://doi.org/10.1002/gps.2545>.
  20. Moriello, G., Proper, D., Cool, S., Fink, S., Schock, S., & Mayack, J. (2015). Yoga therapy in an individual with spinal cord injury: A case report. *Journal of Bodywork and Movement Therapies*, 19(4), 581-591. <https://doi.org/10.1016/j.jbmt.2014.08.004>.

