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Implementation of Yoga as a Holistic Intervention Strategy to Improve Cognitive and Motor Function in the Elderly: Literature Review

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Abstract. The natural process of aging is characterized by a decline in cognitive and motor functions, which impacts the quality of life of older adults. Yoga and other non-pharmacological therapies have shown promising results in maintaining and improving these abilities. As a comprehensive intervention approach, yoga not only improves motor skills but also influences cognition through meditation, breathing exercises, and mental focus. As a result, yoga falls into the category of holistic intervention techniques that are ideal for older adults. The purpose of this article is to review scientific research on the benefits of yoga as a comprehensive intervention strategy to improve cognitive and motor functions of older adults. A systematic review of several empirical studies and related literature was the methodology used. According to the findings, frequent yoga practice can improve balance, flexibility, executive function, and general quality of life of older adults. Therefore, yoga can be viewed as a preventive and restorative strategy in the field of geriatric care.

Keywords: yoga, elderly, cognitive function, motor function, holistic intervention.

1 Introduction

Decline in physical function, especially motor skills, is a common side effect of aging, which is a natural process. Reduced muscle strength, balance, balance, and coordination are some of the declines that can reduce quality of life and increase the risk of falls. To address this problem, yoga has become a popular and friendly non-pharmacological intervention for the elderly. Cognitive and physical decline are one of the health problems caused by Indonesia's growing elderly population. Elderly people are the final stage of the human development cycle (Komsin, 2020). Law No. 13 of 1998 concerning the Welfare of the Elderly stipulates that the age limit for elderly people in Indonesia is 60 years and above (Afriansyah & Santoso, 2019). The world's elderly population is estimated to increase by 223% or 694 million people between 1970–2025. This figure is even estimated to reach 2 billion people by 2050, and 80% of the population is in developing countries (WHO, 2002). InfoDATIN data shows that compared to its age group, there is a tendency for a fairly high increase in the percentage of the elderly group since 2013 (13.4% in the world and 8.9% in Indonesia), in 2050 (25.3% in the world and 21.4% in Indonesia), and in 2100 (35.1% in the world and 41% in Indonesia) (Kemenkes, 2014).

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The body often experiences a number of changes due to natural aging, including decreased bone density, muscle strength, and agility and coordination of movement. The mobility, independence, and capacity of the elderly to engage in physical activity can all be affected by these factors (Dwisetyo, 2024). The elderly usually have decreased motor skills, such as muscle strength, balance, and coordination, as well as decreased cognitive abilities, such as memory, focus, and executive function. The elderly cannot prevent cognitive decline, and in certain situations, the decline can even be disruptive (Putri et al., 2019).

Problems with memory, focus, orientation, and executive function are some of the conditions of cognitive decline that affect the elderly. Age, gender, mental and emotional health, exercise and physical activity, education, and environmental factors all impact cognitive function (Pragholapati et al., 2021). Elderly people who experience cognitive decline can lose their identity, forget the names of family members, be unable to perform daily tasks such as eating, drinking, and bathing, and experience decreased levels of independence and productivity (Nurlianawati et al., 2020). Poor quality of life in the elderly is also influenced by cognitive decline, which is closely related to increased depression. Treatment for Alzheimer's disease and severe cognitive dysfunction includes avoiding confrontation, avoiding situations that can provoke patients, individual and group psychotherapy, mental support, increasing independence and adaptability, accepting reality, reassuring patients about their location, and medical therapy under the supervision of a doctor (Azizah, 2011). The motor skills of the elderly are influenced by various physical, psychological, and social factors, each of which has its own impact on motor decline (Dewi, 2019). The increasing prevalence of overweight and obesity among the elderly, a demographic group at high risk for cognitive and motor decline, is largely due to a sedentary lifestyle and lack of physical activity (Arfanda et al., n.d.). According to (Aeni & Gustiawati, 2024), elderly people who feel safe or stressed tend to be physically inactive, which impairs their motor skills. The elderly face a number of problems, including decreased sensory function, impaired gross and fine motor movements, decreased musculoskeletal function, and decreased capacity and behavior towards daily tasks (Prastiwi & Wahyuningtyas, 2023).

To address this issue, a number of intervention strategies have been developed, including holistic strategies such as yoga. Yoga combines aspects of meditation, mind-body awareness, and breathing (pranayama) in addition to physical exercise (Sindhu, 2015). This combination is believed to improve sensory integration and activate the central nervous system. Yoga and other non-pharmacological methods are becoming increasingly popular as the population ages.

Holistic intervention strategies are intervention approaches that view individuals as a whole, not only focusing on physical aspects (physical health, mobility, strength), but also paying attention to psychological aspects (mental, emotional, stress, anxiety), social aspects (interpersonal relationships, social support), spiritual aspects (meaning of life, inner values, self-peace). Because it has a direct impact on their capacity to perform daily tasks comfortably and independently, physical health is an important factor in the lives of the elderly (Ariyanto et al., 2020). The purpose of this article is to provide an overview of the use of yoga as a comprehensive intervention technique to improve cognitive and motor function abilities, so that it can be used as a suggestion for holistic interventions for the elderly.

2 Method

This study used the Systematic Literature Review (SLR) approach to collect, assess, and analyze various studies related to yoga interventions in the elderly. The search was conducted on the following databases: PubMed, Scopus, ScienceDirect, and Google Scholar, with a combination of keywords: yoga, elderly, cognitive function, motor function, holistic intervention. The inclusion criteria were articles that: were published between 2013–2024, examined the effect of yoga on cognitive and/or motor function in the elderly, were written in English or Indonesian, were reviewed in depth and selected based on relevance and methodological quality. Of the total 315 articles found, 29 articles had their abstracts read, and 18 articles met the inclusion criteria for further analysis.

3 Result

Implementation of Yoga on Cognitive Function

Most studies show that yoga can improve cognitive function, especially memory, focus, and information processing speed. Yoga is a form of exercise that can help regulate the body and soul. Yoga is essential for developing mental, spiritual, and physical exercises to improve mental conditions. Yoga can also help respiratory function, which can affect body and emotional function in carrying out daily activities. Elderly people who experience cognitive changes can also benefit from yoga (Juwita et al., 2023). Stretching, relaxation and meditation exercises, and breathing methods (pranayama) are basic components of yoga practice (Windo Wiria Dinata, 2015). Pranayama and blood supply exercises are believed to improve cognitive performance by reducing stress and increasing the amount of oxygen reaching the brain.

Implementation of Yoga on Motor Function

Yoga has been shown to be effective in improving motor function in the elderly, especially in terms of balance, mobility, and muscle strength. The benefits of yoga for motor function in the elderly: improving balance and stability showed that elderly people who followed the Iyengar yoga program for 12 weeks experienced significant improvements in balance and walking ability (Ko et al., 2023). In the elderly population, yoga has little impact on mobility, shivering, and muscle strength (Shin, 2021). The elderly can perform daily tasks such as walking, sitting-standing, and climbing stairs more easily because they become more curious and stronger. Yoga also helps reduce muscle stiffness and joint pain (Petric et al., 2014). There is an increase in balance, muscle strength, flexibility, and walking speed.

4 Discussion

A comprehensive healing method originating from ancient Indian culture, yoga is a science that connects the physical, mental, and spiritual components of a person (Surpi et al., 2022). Yoga is associated with a number of health benefits, including improved balance, relaxation, and physical endurance (Halimsetiono, 2023). Physical exercise interventions have been found to be effective in reducing the risk of falls in older adults in a number of previous studies. A review of the evidence suggests that yoga is a successful holistic intervention technique for improving cognitive and motor function in older adults. According to the review's findings, yoga is a safe and efficient non-pharmacological strategy for improving cognitive and physical

abilities in older adults. The effectiveness of yoga likely stems from the combination of light physical exercise, breathing techniques, and relaxation that can increase blood flow to the brain, lower cortisol levels, and stimulate neuroplasticity. Yoga programs specifically designed for older adults can be both preventive and therapeutic tools in geriatric care. Regular yoga practice improves mental and emotional well-being in addition to physical well-being, ultimately contributing to an improved overall quality of life for older adults (Permana et al., 2020)

Yoga Improves Cognitive Function in the Elderly

According to (Juwita et al., 2023), yoga is one method to improve cognitive changes because its techniques in making the mind calmer, more peaceful, and relaxed can improve cognitive function. Cognitive function as a form of a person's mental process includes the functions of attention, memory, perception, knowledge and thought processes (Halimsetiono, 2023). Mind-body interventions related to yoga for the elderly appear to be a safe, feasible, and effective alternative practice to maintain cognitive function in both age-related cognitive decline and disease (Bhattacharyya et al., 2021). Cognitive changes that interfere with function will result in emotional problems, tension, anxiety, and aggressive depressionif.

Yoga Improves Motor Function in the Elderly

Motor function in the elderly tends to decline with age. This decline includes reduced stiffness, weakened muscle strength, and loss of balance and body coordination. These conditions can increase the risk of falls, loss of independence, and decreased quality of life (Nurulita et al., 2024). According to (Youkhana et al., 2016), yoga is a cheap, safe, and efficient intervention to maintain and improve motor function in the elderly. Daily activities involve a complex relationship between sensory perception, brain integration, and motor output based on motor function (Case-Smith, 2014).

A study in the Czech Republic involved 500 elderly people who underwent a 6-month yoga program. The results showed significant improvements in static and dynamic balance, as well as a reduced risk of falls. A weekly yoga program and daily independent practice have been shown to be effective in improving postural control and mobility (Prihandhani & Bulan Trisna, 2023). The main benefits of yoga for improving motor function in the elderly include improving balance and training the body to maintain stability and posture through standing poses such as Mountain Pose (Tadasana) and Tree Pose (Vrksasana). This can significantly reduce the risk of falls. The elderly can move more easily and without stiffness by increasing the point where structured yoga stretching poses help relieve joint and muscle stiffness. Improving coordination, breathing exercises and controlled movements in yoga improve the connection between the body and the brain, which supports movement coordination (Setiyorini et al., 2018). Increase muscle strength: The main muscles of the body, especially the back and legs, are strengthened by various yoga positions including Chair Pose (Utkatasana) and Warrior Pose (Virabhadrasana). The body can move more easily and independently in daily activities thanks to a series of light yoga exercises that increase mobility (Prihandhani & Bulan Trisna, 2023).

5 Conclusion

Yoga as a holistic intervention approach has been shown to have significant benefits in improving cognitive and motor function in the elderly. Through a combination of physical exercise, breathing techniques, and meditation, yoga can improve balance, muscle strength, coordination, and slow down the decline in cognitive function that often occurs in the aging process. The results of various studies show that a structured and sustainable yoga program can reduce the risk of falls, improve memory, focus, and improve overall quality of life.

The implementation of yoga in the elderly also has a positive impact on psychosocial aspects, such as reducing anxiety, stress, and depression, which also contribute to optimizing brain function and body movement. Therefore, yoga is worthy of being used as a complementary intervention strategy in geriatric health services, both on an individual and community scale.

For maximum effectiveness, yoga interventions need to be carried out under the supervision of trained instructors and adjusted to the physical abilities and health conditions of each elderly person. Cross-sector collaboration is also needed, such as health workers, families, and communities, in integrating yoga as part of a program to improve the quality of life of the elderly in a sustainable manner.

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