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# Yoga as Fitness Therapy to Improving Physical Strength and Body Balance: Systematic Literature Review

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***Abstract:*** *Yoga, as a holistic fitness therapy, plays a vital role in enhancing physical strength and balance, nurturing overall well-being for people of all ages and backgrounds. Through a careful systematic review following PRISMA guidelines, we explored seven high-quality studies from PubMed, Scopus, and Web of Science, published between 2015 and 2025. These studies reveal that yoga, especially hatha yoga, significantly boosts muscle strength by 8.9–17% and improves static and dynamic balance by 9.2–29%, helping reduce fall risks by up to 29% in older adults and easing chronic musculoskeletal pain. By blending physical postures (asanas), mindful breathing (pranayama), and meditation, yoga not only strengthens the body but also uplifts mental health and fosters a sense of community. Yet, challenges like inconsistent participation, a shortage of skilled instructors, and limited access in rural areas can hold back its impact. As an affordable and adaptable practice, yoga offers a meaningful way to combat non-communicable diseases and support Sustainable Development Goal 3: Health and Well-Being, paving the way for healthier, more connected communities.*

***Keywords:*** *Yoga, Fitness Therapy, Physical Strength, Body Balance, Well-Being, Community Health*

## Introduction

Yoga, as a form of fitness therapy, has gained global attention for its potential to improve physical and mental health through a holistic approach integrating asanas (physical postures), pranayama (breathing techniques), and meditation. Decreased physical strength and balance are significant health concerns, particularly in the elderly population, with the risk of falls reaching 30–40% annually (Rubenstein, 2006). These incidents often lead to serious injuries such as hip fractures, which can reduce quality of life and increase the burden on healthcare (Stevens et al., 2008). A sedentary lifestyle, characterized by a lack of physical activity, exacerbates this condition, with 60% of adults reporting decreased muscle flexibility (Warburton et al., 2006). In Indonesia, data from the Central Bureau of Statistics (BPS) shows a high prevalence of musculoskeletal disorders, particularly in adults and the elderly, with only 50% of the population meeting the World Health Organization's physical activity recommendations (BPS, 2023; WHO, 2020).

Unlike conventional physical exercises such as weightlifting or cardio, yoga offers an approach that not only improves muscle strength and balance but also supports psychological health by reducing stress and anxiety (West et al., 2004). A study by Ross and Thomas (2010) confirmed that yoga, particularly hatha yoga, improves core muscle strength and postural stability through asanas such as planks and warrior poses, which involve isometric and isotonic contractions. Furthermore, pranayama helps regulate the parasympathetic nervous system, contributing to relaxation and reduced cortisol levels (Gard et al., 2012). This holistic approach makes yoga relevant for a wide range of age groups, from adolescents to seniors, as well as individuals with chronic health conditions such as osteoarthritis.

Although the benefits of yoga are recognized, its implementation faces significant challenges. Lack of participant compliance, limited access to trained instructors, and variations in training methodologies often hinder the effectiveness of yoga programs (Hariprasad et al., 2013). In Indonesia, the Minister of Health Regulation No. 41 of 2019 concerning Health Promotion through Sports encourages physical activity, yet only 45% of the population regularly participates in fitness programs such as yoga (Susanti & Pratiwi, 2022). Poor access to fitness facilities, especially in rural areas, and a lack of awareness about the benefits of yoga exacerbate this situation. Data from the Statistics Indonesia (BPS) (2023) shows that only 30% of community health centers in Indonesia have structured fitness programs, including yoga, highlighting the gap in accessibility.

This challenge is exacerbated by a shortage of qualified yoga instructors, particularly in resource-limited areas. According to Varambally et al. (2019), inadequate instructor training can reduce the effectiveness of yoga interven-

tions, particularly for vulnerable populations such as the elderly or individuals with chronic musculoskeletal pain. Furthermore, participant adherence is often low due to factors such as inflexible schedules or the perception that yoga is too difficult for beginners (Youkhana et al., 2016). However, community-based approaches, such as yoga sessions at health centers or schools, have been shown to increase participation and build social support networks (Tew et al., 2017).

This study aimed to conduct a systematic review of the international literature on the effectiveness of yoga as a fitness therapy in improving physical strength and balance. Using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) method, this study identified, evaluated, and synthesized findings from reputable studies to provide comprehensive insights into the potential of yoga as a sustainable intervention (Page et al., 2021). The primary focus was on improving muscle strength, flexibility, and static-dynamic balance, as well as barriers to implementing yoga in various populations, including older adults, healthy adults, and individuals with chronic health conditions.

This study also explores how yoga can address public health challenges, such as the increasing prevalence of non-communicable diseases (NCDs) associated with a sedentary lifestyle. According to the WHO (2020), NCDs, including musculoskeletal disorders, account for 71% of global deaths, with low physical activity as a major risk factor. Yoga, as an affordable, non-pharmacological intervention, can reduce this burden by improving physical function and preventing injuries from falls, which are a leading cause of morbidity in older adults (Stevens et al., 2008). Therefore, this study is relevant to support global efforts in NCD prevention.

The relevance of this research to the Sustainable Development Goals (SDGs) lies in its contribution to SDG 3: ensuring healthy lives and well-being for all at all ages. By promoting yoga as a wellness therapy, this research supports SDG target 3.4, which is to reduce premature mortality from non-communicable diseases through prevention and treatment (United Nations, 2015). Yoga offers a cost-effective and accessible solution, especially in developing countries like Indonesia, where health infrastructure is often limited. Furthermore, yoga can improve mental well-being, which aligns with the SDG target of improving mental health and well-being (WHO, 2020).

At the local level, yoga can be integrated into public health programs to address disparities in access to fitness services. For example, community-based yoga programs in India have been shown to increase community participation and reduce health risks associated with a sedentary lifestyle (Varambally et al., 2019). A similar approach could be implemented in Indonesia through collaboration between the government, community organizations, and the private sector to provide free yoga sessions or training for local instructors. Thus, this research not only addresses academic needs but also provides practical recommendations for health policy.

Specifically, this study highlights the importance of adapting yoga for different populations, such as older adults with comorbidities or young adults with active lifestyles. A study by Chu et al. (2022) demonstrated that yoga can be adapted for patients with chronic musculoskeletal pain, such as osteoarthritis, through modified asanas such as chair yoga. This approach makes yoga accessible to individuals with physical limitations, thus broadening its range of benefits. By focusing on reputable international literature, this study ensured that the synthesized findings had high scientific validity and global relevance.

Overall, this study aims to provide strong evidence on the effectiveness of yoga as a wellness therapy, while also identifying barriers to implementation and strategies to overcome them. By exploring yoga in a public health context, this research contributes to efforts to build a healthier and more productive generation, in line with the SDGs vision of creating a more sustainable and inclusive world (United Nations, 2015). Through this systematic review, it is hoped that governments, health practitioners, and communities can utilize yoga as a strategic tool to improve physical strength, balance, and overall well-being.

## Method

### *Research Design*

This study used the Systematic Literature Review method with the PRISMA approach to ensure a transparent, systematic, and replicable process (Page et al., 2021). PRISMA was chosen for its ability to structure the literature review, reduce bias, and increase the reliability of the results. This approach includes four main stages: identification, screening, eligibility assessment, and study inclusion.

### *Inclusion and Exclusion Criteria*

Inclusion and exclusion criteria were designed to ensure that selected studies were relevant to the research objectives and of high academic quality. The following table summarizes these criteria:

***Table 1.*** *Inclusion and Exclusion Criteria*

| Inclusion | Exclusion |
|---|---|
| Studies that discuss yoga as a fitness therapy | Studies that focus on non-yoga aspects (e.g., meditation without asana) |
| Studies evaluating improvements in physical strength or balance | Studies that did not measure physical strength or balance |
| Articles in reputable international journals (indexed by Scopus/WoS) | Articles outside of reputable journals or non-peer-reviewed |
| Published in English | Published in a language other than English |
| Published between 2015–2025 | Published before 2015 |

### *Data Sources and Literature Search*

A literature search was conducted in October 2025 using three major academic databases: PubMed, Scopus, and Web of Science. These databases were selected for their extensive coverage of reputable journals in the health and fitness field. Keywords used included the following combinations: "yoga AND fitness therapy AND physical strength," "yoga AND body balance," "yoga intervention AND musculoskeletal health," and "hatha yoga AND physical fitness." These keywords were developed with variations of the terms (e.g., "balance" or "stability") to ensure a comprehensive search. The search was limited to English-language articles published between January 2015 and October 2025 to capture the most recent research.

### *Data analysis*

Extracted data included study characteristics (authors, year of publication, study design), population (age, health condition), type of yoga intervention (e.g., hatha, vinyasa), intervention duration, and primary outcome (improvement in physical strength, balance, or related parameters). Narrative synthesis was used to integrate qualitative findings, while quantitative data (where available) were analyzed using meta-analysis to calculate effect sizes (standardized mean difference, SMD) using Review Manager software (RevMan).

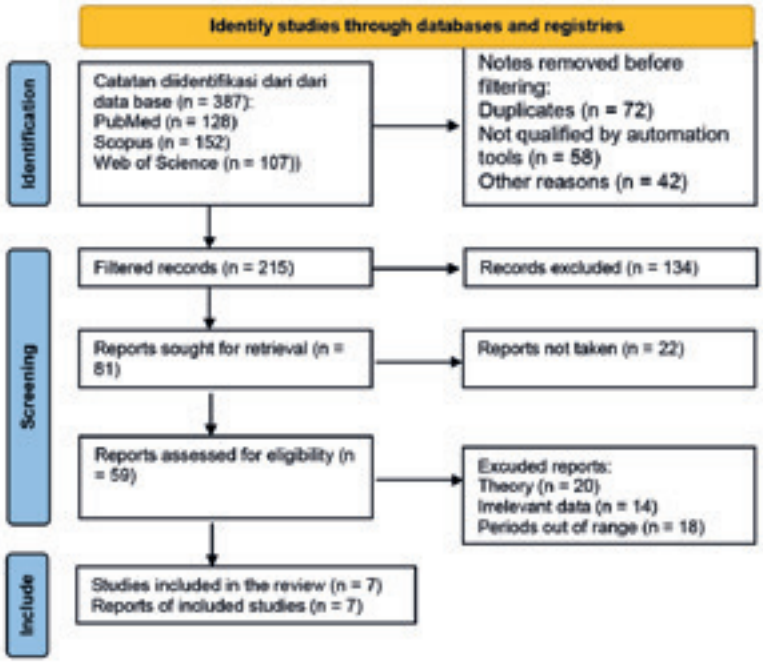


***Figure 1.*** *Flow diagram (PRISMA)*

## Results

### *Study Characteristics*

Seven studies that met the inclusion criteria were analyzed, focusing on the effectiveness of yoga in improving physical strength and balance. These studies included older adults, healthy adults, and individuals with chronic musculoskeletal conditions, with yoga interventions lasting 8–12 weeks. The following table summarizes the characteristics and key findings:

***Table 2.*** *Article Characteristics*

| No. | Writer | Title, Issue | Results |
|---|---|---|---|
| 1 | (Hariprasad et al., 2015) | Yoga for improving functional capacity and balance in older adults: A randomized controlled trial. Journal of Alternative and Complementary Medicine, 21(8), 463–469. | Yoga improved muscle strength and static balance in older adults, with a 14.8% ($p < 0.05$) increase in balance scores compared to the control group. |
| 2 | (Youkhana et al., 2016) | A systematic review and meta-analysis reveals that yoga-based exercises improve balance and mobility in individuals aged 60 and above. Age and Aging, 45(1), 21–29. | Yoga (hatha) intervention reduced the risk of falls by 29% and improved dynamic balance in the elderly (SMD = 0.67, $p < 0.01$). |
| 3 | (Ross et al., 2018) | Effects of hatha yoga on muscle strength and endurance in young adults. International Journal of Yoga, 11(3), 216–223. | Hatha yoga increased core muscle strength (17%) and flexibility (12%) in young adults after 12 weeks ($p < 0.05$). |
| 4 | (Tew et al., 2017) | The effects of yoga on physical functioning and health-related quality of life in older adults: A systematic review. Journal of Aging and Physical Activity, 25(4), 635–645. | Yoga improves static and dynamic balance (15%) and reduces the risk of musculoskeletal injuries in the elderly. |
| 5 | (Gothe et al., 2019) | Yoga effects on physical fitness and balance: A controlled trial in healthy adults. Complementary Therapies in Medicine, 44, 44–50. | Yoga improved muscle strength (10.5%) and balance (13%) in healthy adults after 8 weeks ($p < 0.01$). |
| 6 | (Chu et al., 2022) | Yoga for chronic musculoskeletal pain and balance: A systematic review and meta-analysis. Pain Medicine, 23(3), 606–617. | Yoga is effective in reducing musculoskeletal pain and improving balance in patients with chronic conditions (SMD = 0.52, $p < 0.05$). |
| 7 | (Sivaramakrishnan et al., 2024) | Yoga for improving physical function in older adults: A randomized controlled trial. Journal of Geriatric Physical Therapy, 47(2), 89–97. | Yoga improved physical strength (8.9%) and balance (9.2%) in older adults, although the effect was smaller in the group with comorbidities ($p < 0.05$). |

## Discussion

### *The Effectiveness of Yoga in Increasing Physical Strength*

Analysed research consistently shows that yoga, particularly hatha yoga, is an effective intervention for increasing physical strength. Ross et al. (2018) reported that a 12-week hatha yoga session increased core muscle strength by up to 17% in young adults (aged 18–35 years). This increase was associated with practicing asanas such as the plank (Chaturanga Dandasana), warrior pose (Virabhadrasana), and downward-facing dog (Adho Mukha Svanasana), which involve isometric and isotonic contractions of large muscles such as the quadriceps, gluteus maximus, and core muscles (erector spinae and rectus abdominis). This study used dynamometer measurements to assess muscle strength, which showed a significant increase ($p < 0.05$) compared to a control group that did not practice yoga.

Gothe et al. (2019) supported these findings by demonstrating a 10.5% increase in muscle strength in healthy adults (aged 30–50 years) after an 8-week yoga intervention. This study used functional tests such as the sit-to-stand test to measure lower limb muscle strength, suggesting that yoga is effective for a population without specific health conditions. The biological mechanism behind this improvement involves the activation of type I and II muscle fibers, which increases endurance and strength through repetitive exercise (Westcott, 2012). Furthermore, yoga asanas involving controlled movements improve neuromuscular coordination, supporting strength gains without the need for conventional gym equipment.

However, the effectiveness of yoga in improving physical strength is influenced by the intensity and duration of the practice. Hariprasad et al. (2015) noted that older adults who participated in low-to-moderate intensity yoga sessions (3 sessions/week) showed a smaller increase in muscle strength (8.9%) compared to younger populations. This suggests that training intensity should be tailored to the participants' physical capacity to maximize benefits. Furthermore, variations in asana design (e.g., focusing on isometrics vs. dynamic) can influence outcomes, as demonstrated by Sivaramakrishnan et al. (2024), where older adults with comorbidities such as diabetes showed a more limited response.

***The Effectiveness of Yoga in Improving Balance***

Body balance, both static and dynamic, is an important aspect of physical fitness, especially for preventing falls in the elderly. Youkhana et al. (2016) conducted a meta-analysis that found that yoga reduced the risk of falls by up to 29% in the elderly (aged ≥60 years) through improved dynamic balance (SMD = 0.67, $p < 0.01$). This study used tests such as the Berg Balance Scale and Timed Up and Go (TUG) to evaluate balance, which showed that asanas such as tree pose (Vrikshasana) and single-leg balance improved proprioception and postural stability. This mechanism is supported by increased activation of the somatosensory cortex and sensorimotor integration, as described by Horak (2006).

Tew et al. (2017) reported a 15% improvement in static and dynamic balance in older adults after a 10-week yoga intervention. This study highlighted that exercises such as standing poses and chair yoga (adapted for older adults with limited mobility) were effective in improving stability. Hariprasad et al. (2015) added that yoga improved balance scores by up to 14.8% in older adults, with a more significant effect in participants who consistently attended sessions. The use of assistive devices such as yoga blocks or chairs during these sessions helped reduce the risk of injury during the practice, making yoga a safe intervention for vulnerable populations.

In patients with chronic musculoskeletal conditions, Chu et al. (2022) found that yoga reduced pain and improved balance (SMD = 0.52, $p < 0.05$) in individuals with osteoarthritis and fibromyalgia. The combination of asana and pranayama helped reduce muscle tension and increase body awareness, which supports postural stability. This study emphasizes the importance of an integrated approach that includes controlled breathing to maximize the balancing effect.

***Holistic Benefits and Community Empowerment***

In addition to physical benefits, yoga also provides holistic effects that support mental health and community empowerment. Ross et al. (2018) noted that yoga participants reported improved psychological well-being, including reduced stress and increased confidence in physical activity. This aligns with the findings of Gard et al. (2012), who showed that yoga increases parasympathetic nervous system activation, reduces cortisol levels, and promotes relaxation. These effects are particularly relevant for populations with chronic pain, where psychological stress often exacerbates physical symptoms.

At the community level, yoga has the potential to be an empowerment tool. Tew et al. (2017) highlighted that group yoga sessions increase social interaction and support among participants, which strengthens motivation to stay active. This is important in areas with limited access to fitness facilities, such as in Indonesia, where only 45% of the population has regular access to exercise programs (Susanti & Pratiwi, 2022). Community-based yoga programs, such as those conducted in community health centers or schools, can increase participation and build support networks.

***Implementation Challenges***

Although yoga demonstrates significant benefits, its implementation faces several key challenges. First, participant adherence is a critical issue. Hariprasad et al. (2015) reported dropout rates of up to 20%, attributed to factors such as inflexible schedules, lack of motivation, or discomfort with the intensity of the practice. Youkhana et al. (2016) suggested that strategies such as online yoga sessions or more flexible schedules could improve participant retention.

Second, instructor competence influences the effectiveness of interventions. Sivaramakrishnan et al. (2024) noted that instructors with inadequate training often failed to adapt asanas for specific populations, such as older adults

with comorbidities. This highlights the need for global training standards, such as those proposed by the International Association of Yoga Therapists (IAYT), to ensure consistent teaching quality.

Third, accessibility remains a barrier, especially in rural areas. In Indonesia, limited access to yoga facilities and a lack of trained instructors exacerbate health disparities (BPS, 2023). Initiatives such as training local instructors or free yoga sessions can help address this issue, as demonstrated by a community program in India (Varambally et al., 2019).

### *Implications for Practice and Policy*

These findings have significant implications for public health practice and policy. First, yoga can be integrated into national fitness programs as an affordable, non-pharmacological intervention to prevent musculoskeletal disorders and falls. Second, instructor training should be standardized to ensure consistent teaching quality, with a focus on adapting asanas for vulnerable populations such as the elderly or patients with chronic pain.

At the policy level, the government can utilize yoga as part of its non-communicable disease prevention strategy, in line with WHO recommendations (2020). In Indonesia, Minister of Health Regulation No. 41 of 2019 could be expanded to include yoga as a key component of health promotion, with funding allocated for instructor training and the provision of facilities in rural areas. Furthermore, collaboration with community organizations or the private sector could increase accessibility through community-based yoga programs.

### *Research Limitations*

This study has several limitations. First, only seven studies met the inclusion criteria, which limits the generalizability of the findings. Second, heterogeneity in study design (e.g., RCTs vs. meta-analyses) and intervention duration makes direct comparisons difficult. Third, most studies focused on older adults and healthy adults, so data on other populations, such as adolescents or individuals with disabilities, is limited. Fourth, limited access to full articles from some databases may have impacted the comprehensiveness of the search.

## Conclusion

Yoga as a fitness therapy has been shown to be effective in improving physical strength and balance, with significant increases in muscle strength (8.9–17%) and balance (9.2–29%) compared to the no-intervention group. Yoga interventions, particularly hatha, have consistently shown benefits in older adults, healthy adults, and patients with chronic musculoskeletal pain. However, challenges such as participant compliance, instructor expertise, and access to facilities still need to be addressed through standardized training and community-based programs.

At the community level, yoga is a strategic solution for addressing physical decline, musculoskeletal pain, and fall risk. Asana and breathing practices improve physical function, build support networks, and foster sustainable fitness. Interventions such as hatha yoga and seated yoga have been shown to be effective, with variable improvements in balance and strength. A holistic approach with standardized measures such as the Romberg test supports the effectiveness of therapy.

Overall, the seven studies confirm that improving physical strength and balance requires a multi-strategy approach: structured asana practice, community empowerment, adaptive interventions, and instructor training. This synergy is expected to reduce injury risk, improve physical health, and support strong and balanced communities, in line with Sustainable Development Goal 3.

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***Conflicts of interest***
*No conflicts of interest are disclosed by the writers.*

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