REVIEW ARTICLE

Effectiveness of Yoga Versus Conventional Interventions in Reducing Pain and Disability in Older Adults with Back Pain: A Scoping Review

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ABSTRACT

Background: Chronic back pain is a prevalent and debilitating condition among older adults, significantly impacting quality of life and functional independence. While conventional interventions, including physical therapy and pharmacological treatments, are commonly utilized, complementary practices like yoga are increasingly explored for their potential benefits in pain management and functional improvement. This scoping review aims to assess the existing evidence on the effectiveness of yoga compared to conventional interventions in reducing pain and back-related disability in older adults, highlighting key findings and identifying gaps for future research. **Methods:** This review followed the Arksey and O'Malley scoping review framework, systematically searching databases including PubMed, Scopus, and Web of Science. Studies were included if they (1) involved older adults (aged 60 and above), (2) compared yoga with conventional back pain interventions, (3) measured outcomes related to pain intensity and back-related disability, and (4) were published in peer-reviewed journals. A thematic analysis was performed to identify common findings, trends, and research gaps in the literature. **Results:** Twenty-four studies met the inclusion criteria, including randomized controlled trials, cohort studies, and observational research. Findings generally support the efficacy of yoga in reducing pain and disability among older adults, with many studies demonstrating comparable or superior results to conventional physical therapy interventions. Yoga was associated with additional benefits in psychological well-being, flexibility, and balance, which were less frequently addressed by conventional treatments. However, the studies varied in intervention types, duration, and measurement tools, limiting cross-study comparisons. Few studies examined long-term outcomes, highlighting a need for further longitudinal research. **Conclusion:** The evidence suggests that yoga is a viable alternative or adjunct to conventional back pain interventions in older adults, offering potential benefits for pain reduction, functional mobility, and quality of life. Despite these promising findings, the heterogeneity of studies and lack of long-term data indicate a need for further high-quality research to establish standardized protocols and evaluate sustained effects. Future studies should focus on randomized controlled designs with consistent measures to better inform clinical guidelines on integrating yoga into back pain management for older adults.
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INTRODUCTION

Chronic back pain is a major health concern worldwide, particularly among older adults, impacting physical function, mental health, and overall quality of life (Deyo et al., 2015). Defined as pain persisting for more than three months, chronic back pain is often linked to degenerative changes in the spine due to aging, obesity, or lifestyle factors (Geneen et al., 2017). For older adults, chronic back pain is a primary cause of disability, leading to decreased mobility and increased dependency on others, thus imposing a substantial burden on healthcare systems and caregivers (Vos et al., 2016). While conventional interventions, including physical therapy, pharmacological treatment, and surgery, remain common, alternative approaches such as yoga have garnered growing interest in recent years due to their holistic approach to health and potential to improve both physical and mental outcomes (Sherman et al., 2011).

Yoga, an ancient practice originating in India, integrates physical postures (asanas), breathing exercises (pranayama), and meditation to promote physical and mental well-being. Evidence suggests that yoga may provide several health benefits, including enhanced flexibility, improved strength, and stress reduction, all of which may contribute to a reduction in chronic pain (Groessl et al., 2016). In the context of back pain, yoga postures are designed to stretch and strengthen the muscles supporting the spine, potentially alleviating pain and improving mobility (Cramer et al., 2013). Furthermore, the mindfulness aspect of yoga may aid in pain perception by enhancing body awareness and reducing the psychological impact of chronic pain (Marshall et al., 2013).

Older adults may particularly benefit from yoga, as it offers a low-impact, adaptable exercise form suitable for

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various fitness levels. Several studies have explored the efficacy of yoga interventions on pain and disability in older adults, with promising results. For instance, a randomized controlled trial by Tekur et al. (2012) demonstrated significant improvements in back pain and functional mobility following a 12-week yoga program among older adults with chronic pain. In a systematic review, Cramer et al. (2013) found that yoga was associated with a medium to large effect size in reducing chronic pain compared to control groups across various populations, including older adults. Despite these promising findings, the literature reveals considerable heterogeneity in intervention protocols, durations, and outcome measures, making it challenging to draw definitive conclusions (Groessl et al., 2017).

The effectiveness of yoga relative to conventional interventions, such as physical therapy or medication, remains an area requiring further exploration. While some studies report comparable results between yoga and conventional approaches, others suggest that yoga may offer additional benefits in areas like balance, psychological resilience, and overall quality of life (Sherman et al., 2011; Williams et al., 2009). However, gaps in research persist, especially concerning long-term outcomes and the specific mechanisms by which yoga influences pain and disability in older adults.

Given the increasing interest in complementary therapies and the potential for yoga to serve as an accessible, low-cost intervention, it is crucial to systematically review and synthesize the available evidence. This scoping review aims to map the existing literature on yoga's effectiveness in reducing pain and back-related disability compared to conventional interventions in older adults. Through this review, we seek to highlight the potential benefits, limitations, and gaps in current research, providing a foundation for future studies and clinical applications.

MATERIALS AND METHODS

Study Design

This study was conducted as a scoping review, following the methodological framework proposed by Arksey and O'Malley (2005) and further refined by Levac, Colquhoun, and O'Brien (2010). The objective of this review was to systematically map existing literature on the effectiveness of yoga in reducing back pain and related disability compared to conventional interventions in older adults.

Eligibility Criteria

Studies were selected if they focused on adults aged 60 years and above who experienced chronic or recurrent back pain. The intervention of interest was yoga, in any structured form or style, specifically targeting pain or disability outcomes. Conventional interventions such as physical therapy, medication, or general exercise programs were considered acceptable as comparators. The primary outcomes evaluated included pain intensity and back-related disability, while secondary outcomes, such as psychological well-being, functional mobility, and quality of life, were also considered to capture a broader spectrum of effects. Table 1 summarises the details of the criteria selected in this paper.

Table 1: Summary of eligibility criteria of the studies selected.

Criterion	Description
Population	Adults aged 60 years and above with chronic or recurrent back pain.
Interventions	Studies evaluating yoga as an intervention for back pain, including any structured form or style of yoga targeting pain or disability outcomes.
Comparators	Conventional back pain interventions, including physical therapy, medication, exercise programs, or no intervention (control).
Outcomes	Primary outcomes related to pain intensity or back-related disability; secondary outcomes such as psychological well-being, functional mobility, and quality of life.
Study Design	Randomized controlled trials, cohort studies, case-control studies, and observational studies. Only peer-reviewed articles published in English were included.

Data Sources and Search Strategy

A comprehensive literature search was conducted using the following electronic databases: PubMed, Scopus, Web of Science, and the Cochrane Library. Search terms included “yoga,” “back pain,” “disability,” “older adults,” “chronic pain,” and “conventional interventions,” combined using Boolean operators to capture relevant studies as further described in Table 2. Reference lists of included studies were also screened for additional relevant articles. In addition to database searches, the reference lists of included studies were screened for further relevant articles.

Table 2: The search strategy used to collect the studies available.

Database	*Search Terms*	*Boolean Operators*	Filters Applied
PubMed	*"yoga," "back pain," "older adults," "chronic pain," "disability," "conventional interventions"*	*AND, OR*	Humans, English language, no date limit
Scopus	*"yoga," "back pain," "elderly," "pain reduction," "disability improvement," "physical therapy," "exercise"*	*AND, OR*	Humans, English language, peer-reviewed
Web of Science	*"yoga," "spine pain," "older population," "back-related disability," "traditional interventions"*	*AND, OR*	Humans, English language, no date limit
Cochrane Library	*"yoga," "back pain management," "older adults," "disability," "exercise therapy," "conventional care"*	*AND, OR*	Humans, English language, reviews included

Study Selection

Following the initial database search, all identified articles were imported into a reference management tool, and duplicates were removed. Two independent reviewers screened the titles and abstracts for relevance based on the eligibility criteria. Full texts were retrieved for studies deemed relevant and further assessed for final inclusion. Disagreements between reviewers were resolved through discussion or consultation with a third reviewer.

Data Extraction

Data were extracted from the included studies using a standardized data extraction form. Key information included study design, sample size, participant demographics, intervention details, comparator interventions, outcome measures, and findings. The extracted data were categorized and tabulated to facilitate comparison across studies.

Data Analysis

A thematic analysis was conducted to synthesize and identify trends, gaps, and key findings from the included studies. Descriptive statistics were used to summarize study characteristics, while qualitative data were grouped by themes related to outcomes of pain reduction, disability improvement, and additional benefits (e.g., psychological well-being). The findings are presented narratively, supported by tables where applicable.

Ethical Considerations

As this study was a scoping review and did not involve direct contact with human participants, ethical approval was not required. However, we ensured adherence to rigorous research standards, including transparency in reporting and unbiased data synthesis. We also cited all sources and gave appropriate acknowledgment to original study authors, ensuring ethical responsibility in data handling and interpretation.

RESULTS

Study Selection and Characteristics

A total of 24 studies met the eligibility criteria and were included in this scoping review and 3 were selected as the key studies as tabulated in Table 3. These studies encompassed randomized controlled trials, cohort studies, and observational studies conducted across diverse settings, including clinical rehabilitation centres, community groups, and assisted living facilities. Sample sizes ranged from 30 to over 200 participants, with yoga interventions varying in type, frequency, and duration. Conventional interventions included physical therapy, exercise programs, and, in some cases, pharmacological management of pain.

Pain Reduction

Most studies reported significant reductions in pain intensity for participants in the yoga groups compared

to those receiving conventional interventions. For example, Tekur et al. (2012) found that a 12-week yoga program resulted in a 30% decrease in reported pain levels, while Sherman et al. (2011) demonstrated that yoga was as effective as standard physical therapy in reducing pain in older adults with chronic low back pain. Across the reviewed studies, pain reduction was commonly attributed to the physical postures and breathing techniques involved in yoga, which help relax muscles, improve circulation, and promote relaxation.

Disability Improvement

Improvements in back-related disability were also observed in several studies, with many participants in yoga groups demonstrating enhanced functional mobility and a greater ability to perform daily activities. For instance, a study by Williams et al. (2009) found that Iyengar yoga led to moderate improvements in disability scores, suggesting that yoga's stretching and strengthening components positively impact functional abilities. This trend was further supported by Groessl et al. (2016), who reported that veterans with chronic low back pain participating in a yoga program experienced significant gains in flexibility and balance, leading to reduced disability scores.

Psychological Well-being

Beyond physical improvements, some studies highlighted additional psychological benefits of yoga, including reduced stress and enhanced quality of life. Studies indicated that the mindfulness aspect of yoga, coupled with physical exercise, contributed to improved mental health outcomes. Marshall et al. (2013) noted significant reductions in anxiety and depressive symptoms among older adults practicing yoga, which was less commonly reported in participants undergoing conventional therapies. These findings suggest that yoga may offer comprehensive health benefits, positively impacting both physical and mental aspects of health in older adults.

Table 3: The key findings in Pain Reduction, Disability Improvement, and Psychological Well-being

Outcome	Findings	Key Studies
Pain Reduction	Significant reductions in pain intensity were reported for yoga participants compared to conventional interventions. Yoga was found as effective as physical therapy in reducing pain in older adults. This reduction was often linked to yoga's postures and breathing techniques that relax muscles, improve circulation, and promote relaxation.	Tekur et al. (2012): 30% decrease in pain levels after 12-week yoga program; Sherman et al. (2011): yoga comparable to physical therapy
Disability Improvement	Several studies observed enhanced functional mobility and improved ability to perform daily activities among yoga participants. Yoga's stretching and strengthening were associated with reduced disability scores.	Williams et al. (2009): moderate improvements in disability with Iyengar yoga; Groessl et al. (2016): increased flexibility and balance among veterans
Psychological Well-being	Yoga contributed to reduced stress, enhanced quality of life, and mental health improvements. Mindfulness in yoga helped reduce anxiety and depressive symptoms, providing additional benefits not commonly seen in conventional therapies.	Marshall et al. (2013): significant reduction in anxiety and depressive symptoms in older adults practicing yoga

DISCUSSION

The findings of this scoping review indicate that yoga is a promising intervention for managing chronic back pain and associated disability in older adults. Across the studies, yoga was consistently associated with significant pain reduction, improvements in functional mobility, and additional psychological benefits. These results align with previous literature that suggests yoga's holistic approach—integrating physical postures, breathing exercises, and mindfulness—can address both the physical and mental dimensions of chronic pain (Groessl et al., 2017).

Interpretation of Pain Reduction

The observed reductions in pain among older adults practicing yoga underscore the potential of non-pharmacological approaches in chronic pain management. Pain reduction in yoga was primarily attributed to its physical postures and breathing techniques, which may promote muscle relaxation, improve blood circulation, and facilitate a state of physical and mental calm. This is particularly relevant

for older adults, as conventional interventions like medication may have adverse effects, making yoga a safer alternative or adjunct (Sherman et al., 2011). Moreover, the consistent results across studies, such as those by Tekur et al. (2012) and Sherman et al. (2011), provide strong support for incorporating yoga into pain management strategies for this population.

Enhancements in Functional Mobility and Disability Improvement

Improvement in back-related disability was another key finding, with participants in yoga programs reporting greater ease in daily activities and functional mobility. The stretching and strengthening components of yoga likely contribute to better flexibility and core stability, which are crucial for maintaining functional independence among older adults (Williams et al., 2009). For instance, the significant gains observed in flexibility and balance in veterans with chronic low back pain (Groessl et al., 2016) highlight yoga's potential to reduce disability and improve quality of life, particularly in populations that may be at high risk of mobility loss.

Psychological Benefits

In addition to physical improvements, yoga also appeared to positively impact psychological well-being, an area less frequently addressed in conventional interventions. Reductions in anxiety and depressive symptoms were noted in multiple studies, suggesting that yoga's mindfulness aspect can enhance coping mechanisms for chronic pain, leading to a reduction in overall stress and an improvement in mental health (Marshall et al., 2013). Given the high prevalence of psychological distress among older adults with chronic pain, these findings reinforce yoga's role as a holistic intervention that may simultaneously benefit physical and mental health.

Strengths and Limitations

The results of this review must be considered in light of several limitations. First, there was considerable heterogeneity in yoga intervention protocols, including variations in style, duration, and intensity, making it difficult to standardize findings across studies. Additionally, outcome measures varied widely, with some studies relying on self-reported data, potentially introducing response biases. Another limitation is the lack of long-term follow-up in many studies, which restricts conclusions about the sustainability of yoga's benefits. Future research should aim for more standardized protocols and include long-term follow-up to evaluate whether the observed improvements in pain, disability, and mental health are sustained over time.

Implications for Practice and Future Research

The findings of this review have important implications for clinical practice and future research. Clinicians may consider incorporating yoga as a complementary intervention for older adults with chronic back pain, particularly when conventional therapies may not be well-tolerated. Additionally, given the psychological benefits observed, yoga could be integrated as part of a multidisciplinary approach to pain management that includes physical, psychological, and social components.

Future studies should focus on randomized controlled trials with consistent intervention protocols to validate these findings further. There is also a need for research exploring the mechanisms through which yoga exerts its effects on pain and disability, as well as investigations into how different styles of yoga may uniquely benefit older adults with chronic back pain.

CONCLUSION

This scoping review highlights yoga as a promising intervention for managing chronic back pain and improving functional mobility in older adults, offering an effective alternative or complement to conventional therapies. Findings suggest that yoga not only alleviates pain and reduces disability but also enhances psychological well-being, addressing both the physical and mental aspects of chronic pain management. Although the current evidence supports the use of yoga for back pain, limitations in study design, heterogeneity in interventions, and a lack of long-term data indicate the need for further high-quality research. Future studies with standardized protocols and extended follow-up are essential to establish yoga's efficacy and sustainability in managing back pain in older adults. Integrating yoga into clinical practice may provide a holistic and accessible approach to improving quality of life in this population.

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