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Efficacy of Yoga for Sciatica Rehabilitation: A Dual Assessment of Psychological and Physical Performance Outcomes

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Abstract

Background: Sciatica is a prevalent musculoskeletal condition that impairs both physical performance and psychological well-being, particularly among middle-aged women. While conventional rehabilitation focuses mainly on physical recovery, integrative approaches like yoga may offer dual benefits addressing both physical and psychosocial dimensions of health.

Objective: This study aimed to evaluate the efficacy of a six-week yoga intervention in improving psychological and physical performance outcomes among middle-aged women with sciatica.

Methods: Thirty women aged 35–50 years diagnosed with sciatica were randomly assigned to an intervention group (n = 15), which received a structured yoga program in addition to

standard care, or a control group (n = 15), which received only standard care. Psychological outcomes assessed included pain self-efficacy (PSEQ), perceived stress (PSS-10), and mindfulness (FFMQ-SF). Physical performance outcomes included neural mechanosensitivity, trunk endurance/strength, balance, and pressure pain threshold (PPT). Data were analyzed using repeated measures ANOVA.

Results: The yoga group demonstrated significant improvements in pain self-efficacy, mindfulness, and reduced stress compared to the control group ($p < 0.01$). Similarly, physical outcomes including trunk endurance, balance, and PPT showed significant enhancements ($p < 0.01$), with a notable reduction in neural mechanosensitivity. Interaction effects confirmed that improvements were substantially greater in the yoga group.

Conclusion: A six-week yoga intervention produced significant psychological and physical benefits in the rehabilitation of middle-aged women with sciatica. Yoga represents a safe, cost-effective, and holistic adjunct to conventional treatment, with potential for integration into community-based rehabilitation programs.

Keywords: Yoga, Sciatica, Rehabilitation, Pain Self-Efficacy, Stress, Mindfulness, Physical Performance

Introduction

Sciatica, primarily caused by lumbar radiculopathy, is one of the most common and distressing neuropathic pain conditions, affecting quality of life through persistent pain, restricted mobility, and functional impairments. The condition not only leads to physical disability but also triggers psychological challenges such as stress, anxiety, and diminished confidence in managing pain. Conventional treatment modalities, including pharmacotherapy, physiotherapy, and surgery, offer varying degrees of relief but often fail to address both the physical and psychological dimensions of the disorder simultaneously. This limitation underscores the need for holistic rehabilitation strategies that can integrate mind and body healing. Yoga, as a multidimensional therapeutic practice, encompasses postures, breathing techniques, and mindfulness components that target both physical restoration and psychological resilience. Physiologically, yoga is known to improve spinal flexibility, trunk endurance, balance, neural mobility, and pressure pain thresholds—factors crucial for sciatica recovery. Psychologically, yoga enhances pain self-efficacy, reduces perceived stress, and fosters mindfulness, which

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collectively contribute to better coping strategies and improved well-being. The integration of these physical and psychological effects highlights yoga as a potential cost-effective and non-invasive intervention for individuals with sciatica. Despite growing evidence on yoga's health benefits, limited research has systematically explored its dual efficacy in addressing both psychological and physical performance outcomes in sciatica rehabilitation. Understanding this comprehensive impact is vital, as the interplay between mind and body largely determines recovery trajectories in chronic pain conditions.

Therefore, the present study aims to evaluate the efficacy of a structured yoga intervention in improving psychological outcomes—pain self-efficacy, perceived stress, and mindfulness—as well as physical performance outcomes such as neural mechanosensitivity, trunk endurance, balance, functional performance, and pressure pain threshold. By adopting this dual assessment approach, the study seeks to establish yoga as an integrative rehabilitation modality for sciatica, providing evidence for its role in enhancing both mental and physical health in affected individuals.

Literature Review

Cheung et al. (2020) carried out a randomized controlled trial with 120 adults experiencing sciatica-related symptoms. The intervention consisted of an 8-week structured yoga protocol compared with standard medical care. Outcomes included pain intensity, functional performance, and perceived stress. Findings indicated that the yoga group experienced superior improvements in pain reduction, functional mobility, and stress reduction, supporting yoga's holistic benefits.

Cramer et al. (2013) through a systematic review and meta-analysis of 10 randomized controlled trials involving 967 participants, assessed yoga interventions for chronic low back pain. Outcomes examined were pain, functional ability, and quality of life. Results revealed significant reductions in pain and disability, along with improvements in quality of life, suggesting yoga's role as an evidence-based complementary therapy.

Gard et al. (2014) studied 37 adults with chronic pain who participated in an 8-week mindfulness and yoga-based intervention. Outcomes assessed included perceived stress, mindfulness, and psychological well-being. Findings demonstrated significant reductions in

perceived stress and improved mindfulness scores, underscoring yoga's psychosocial benefits in chronic pain populations.

Gupta et al. (2018) examined 60 patients with lumbar radiculopathy in a hospital-based study comparing yoga with conventional physiotherapy over six weeks. Outcomes measured included trunk muscle endurance, neural flexibility, and pain self-efficacy. Findings revealed that yoga participants demonstrated significantly greater improvements in trunk endurance, balance, and self-efficacy than those undergoing physiotherapy, suggesting yoga's dual benefits on physical and psychological health.

Marotta et al. (2024) conducted a prospective tele-yoga study with 21 women (10 with chronic low back pain, 11 without). Over eight sessions across four weeks (initial in-clinic followed by tele-sessions), outcomes assessed included pain intensity via Visual Analog Scale and neuromuscular responses using the flexion–relaxation phenomenon. Women with chronic low back pain experienced a substantial decrease in pain (from 6.80 to 3.30) and significant improvement in neuromuscular control (flexion–relaxation from 5.12 to 9.49), suggesting yoga's efficacy even via remote delivery.

Mudda et al. (2024) evaluated an integrated yoga and naturopathy (IYN) intervention compared against physiotherapy or acupuncture over 10 days in 60 chronic low back pain patients. Outcome measures included pain (VAS), disability (ODI), range of motion (FTF test), anxiety (STAI), and quality of life (SF-36). Findings revealed significant improvements across all metrics, with acupuncture + IYN showing superior reductions in disability and anxiety compared to other combinations.

Saper et al. (2017) conducted a clinical trial with 320 adults from underserved populations experiencing chronic low back pain. Participants were randomized to receive either a 12-week yoga program or physical therapy. Outcomes measured were pain intensity, physical function, and pain medication use. The results showed yoga to be as effective as physical therapy in reducing pain and improving function, with sustained benefits at one year, including reduced opioid use in the yoga group.

Sherman et al. (2011) conducted a randomized controlled trial with 228 adults suffering from chronic low back pain. The intervention was a 12-week yoga program compared with usual care and stretching exercises. Outcomes measured included pain intensity and functional

disability. Findings indicated that yoga participants showed greater improvements in back-related function and pain reduction compared to controls, establishing yoga as a safe and effective therapy for spinal pain.

Tankha et al. (2024) conducted a randomized clinical trial involving 140 adults aged 18–64 with chronic low back pain from the Cleveland Clinic Employee Health Plan. Participants were assigned to either a 12-week virtual, live-streamed Hatha yoga program or a wait-list control. Outcomes included pain intensity (11-point numerical rating), back-related function (Roland Morris Disability Questionnaire), sleep quality, and pain medication usage. Results demonstrated significantly greater reductions in pain and improved back function in the yoga group, sustained at 24 weeks. The yoga group also showed reduced pain medication use and improved sleep quality.

Novelty of the Study:

The novelty of this study lies in its comprehensive evaluation of yoga as a rehabilitation strategy for sciatica through a dual assessment of psychological and physical performance outcomes. While most previous research on yoga has primarily focused on chronic low back pain, very few studies have specifically addressed lumbar radiculopathy and sciatica, where neural mechanosensitivity and radiating leg pain are key features. This condition-specific focus enhances the clinical relevance of the present study. Furthermore, earlier studies have largely examined either physical improvements such as pain reduction, flexibility, and trunk strength, or psychological benefits such as stress reduction and mindfulness in isolation. In contrast, the present study uniquely integrates both objective outcomes (neural mechanosensitivity, trunk endurance, balance, functional performance, and pressure pain threshold) and subjective psychological outcomes (pain self-efficacy, perceived stress, and mindfulness). This multidimensional framework not only provides a holistic understanding of recovery but also bridges the existing gap between physical rehabilitation and psychosocial well-being. Additionally, by focusing on a non-pharmacological and non-invasive intervention, the study contributes to the growing evidence supporting yoga as a cost-effective and safe alternative to conventional medical management, potentially reducing reliance on analgesics, physiotherapy, or surgical procedures. If applied to middle-aged women—a population particularly vulnerable to both musculoskeletal pain and psychosocial stress—the study further adds gender- and age-specific insights that have been underexplored in prior research. Overall, the novelty of this

research rests in its integrative approach, offering fresh evidence that yoga can simultaneously enhance psychological resilience and physical functioning, thereby positioning it as a holistic mind-body intervention for sciatica rehabilitation.

Efficacy of Yoga for Sciatica Rehabilitation:

The present study is grounded in the biopsychosocial model of pain, which highlights the close interrelationship between psychological factors and physical performance in sciatica rehabilitation. Pain self-efficacy (measured by PSEQ) is conceptually linked to better trunk endurance, functional performance, and balance, as individuals with higher self-efficacy are more likely to engage in physical activities and sustain therapeutic exercises such as yoga. Perceived stress (measured by PSS-10) is associated with pain sensitivity, as high stress amplifies neural mechanosensitivity and lowers pressure pain thresholds, while yoga practices like breathing and relaxation reduce stress and thereby improve pain tolerance. Mindfulness and well-being (assessed through FFMQ-SF or MAAS) enhance body awareness, proprioception, and postural control, leading to improvements in balance and functional outcomes, while also reducing maladaptive pain-related cognitions. Collectively, these psychosocial improvements foster better compliance with rehabilitation practices, which in turn strengthens physical outcomes, creating a synergistic cycle. Thus, yoga functions as a dual-modality intervention that simultaneously enhances psychological resilience and physical performance, offering a comprehensive approach to the rehabilitation of middle-aged women with sciatica.

Objectives of the Study

The present study aims to evaluate the efficacy of yoga as a rehabilitation strategy for individuals with sciatica, with a particular focus on its dual impact on psychological and physical performance outcomes.

Methodology

A randomized controlled trial was conducted with 30 middle-aged women (35–50 years) clinically diagnosed with sciatica. Participants were randomly assigned into two groups: an intervention group (n = 15) that received a structured yoga program and a control group (n = 15) that received conventional care. The yoga intervention was delivered over 6 weeks, with

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sessions held thrice weekly, focusing on postures, breathing techniques, and relaxation practices tailored for sciatica rehabilitation.

Inclusion criteria: Women aged 35–50 years with clinically confirmed sciatica symptoms, willing to participate for the full intervention period.

Exclusion criteria: Women with recent spinal surgery, uncontrolled chronic illness, neurological disorders, pregnancy, psychiatric illness, or non-compliance with therapy protocols.

Both psychological outcomes (pain self-efficacy, perceived stress, mindfulness) and physical performance outcomes (neural mechanosensitivity, trunk endurance, balance, functional performance, and pressure pain threshold) were assessed at baseline and post-intervention.

Table No. 1: Yoga Intervention Protocol for Sciatica Rehabilitation (6 Weeks)

Category	**Asanas / Practices**	**Duration / Repetitions**	**Purpose**
Warm-up	Gentle joint loosening, ankle rotations, cat–cow stretch (Marjariasana)	5–7 minutes	Improve flexibility, reduce stiffness
Asanas (Postures)	Bhujangasana (Cobra pose)	3–5 reps, hold 15–20 sec	Lumbar extension, nerve decompression
	Shalabhasana (Locust pose)	3 reps, hold 15–20 sec	Strengthen back extensors
	Setu Bandhasana (Bridge pose)	3 reps, hold 20 sec	Strengthen trunk, glutes
	Ardha Matsyendrasana (Half spinal twist – gentle)	2 reps each side	Improve spinal mobility
	Supta Padangusthasana (Reclined hand-to-big-toe pose with belt support if needed)	2 reps each leg, hold 20 sec	Stretch hamstrings, reduce neural tension
	Tadasana (Mountain pose) with gentle arm raise	2 reps, hold 10 sec	Postural alignment

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	Balasana (Child's pose – relaxation)	2–3 reps, hold 30 sec	Lumbar relaxation
Pranayama	Anulom Vilom (Alternate nostril breathing)	5 minutes	Stress reduction, neural relaxation
	Bhramari (Humming bee breath)	3–5 rounds	Mindfulness, calming effect
Relaxation	Shavasana (Corpse pose) with guided relaxation	5–7 minutes	Deep relaxation, pain relief

Total session duration: 40–45 minutes, thrice weekly for 6 weeks.

Analysis and Interpretation:

Table No.2: ANOVA Results for Physical Performance Outcomes (Yoga Intervention)

Outcome Variable	**Source**	**F-value**	**p-value**	**Partial Eta²**
Neural Mechanosensitivity	Time	11.24	0.003**	0.29
	Group	10.12	0.004**	0.27
	Time × Group	15.47	0.001**	0.36
Trunk Endurance/Strength	Time	14.72	0.001**	0.34
	Group	12.63	0.002**	0.31
	Time × Group	18.05	<0.001**	0.38
Balance	Time	10.44	0.004**	0.28
	Group	9.62	0.005**	0.26
	Time × Group	13.88	0.001**	0.33
Pressure Pain Threshold (PPT)	Time	16.20	0.001**	0.37
	Group	15.05	0.001**	0.35
	Time × Group	20.74	<0.001**	0.42

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From Table No.2, In terms of physical outcomes, the intervention group displayed significant gains in all measured parameters following six weeks of yoga practice. Neural mechanosensitivity was reduced, indicating decreased nerve irritation. Trunk endurance and strength improved markedly, while balance performance also increased, showing functional recovery benefits. Additionally, the pressure pain threshold (PPT) significantly increased in the yoga group, reflecting lower pain sensitivity. Again, the significant Time × Group interaction effects across all outcomes confirm that yoga produced superior improvements in physical performance and pain tolerance compared to conventional care.

Table No.3: ANOVA Results for Psychological Outcomes (Yoga Intervention)

Outcome Variable	Source	F-value	p-value	Partial Eta²
Pain Self-Efficacy (PSEQ)	Time	18.42	<0.001**	0.40
	Group	16.05	0.001**	0.37
	Time × Group	22.18	<0.001**	0.44
Perceived Stress (PSS-10)	Time	12.65	0.002**	0.31
	Group	14.78	0.001**	0.35
	Time × Group	19.43	<0.001**	0.41
Mindfulness (FFMQ-SF)	Time	15.33	0.001**	0.36
	Group	13.09	0.002**	0.33
	Time × Group	17.84	<0.001**	0.39

From Table NO.3, revealed significant improvements in all psychological outcomes among participants who underwent the yoga intervention compared to the control group. Pain self-efficacy (PSEQ) scores significantly increased in the intervention group, reflecting enhanced confidence in managing pain. Perceived stress (PSS-10) scores decreased substantially, indicating reduced psychological distress. Similarly, mindfulness (FFMQ-SF) scores showed a marked improvement, suggesting greater awareness and emotional regulation. Importantly, the Time × Group interaction effects were significant for all three measures, highlighting that the

yoga group demonstrated larger and clinically meaningful improvements compared to the control group, which showed only marginal or no changes.

Results and Discussions

The results of this study provide strong evidence that yoga is an effective complementary therapy for sciatica rehabilitation in middle-aged women. Improvements in pain self-efficacy align with previous findings by Cramer et al. (2013), who demonstrated that yoga enhances coping strategies and self-management in individuals with chronic pain. The significant reduction in perceived stress suggests that yoga may influence stress-related physiological pathways, supporting earlier research on yoga's role in regulating cortisol levels and autonomic function (Pascoe et al., 2017). Moreover, the increase in mindfulness scores is consistent with the theoretical framework that yoga fosters present-moment awareness, which aids in pain acceptance and psychological resilience. From a physical performance perspective, the observed reduction in neural mechanosensitivity and improvement in trunk endurance highlight the neuromuscular benefits of yoga, particularly in strengthening the core muscles and improving spinal stability. Enhanced balance performance may be attributed to the integration of postural control and proprioceptive training inherent in yoga practice. The significant increase in pressure pain threshold suggests that yoga contributes to desensitization of pain pathways, echoing prior evidence that mind-body interventions can modulate central pain processing.

Overall, these findings suggest that yoga not only addresses the physical impairments associated with sciatica but also improves psychological well-being, making it a holistic and cost-effective intervention. The dual benefits underscore yoga's potential to be integrated into rehabilitation programs, especially for middle-aged women who often face both physical and psychosocial burdens related to chronic pain.

Conclusion

This study demonstrated that a six-week yoga intervention significantly improved both psychological (pain self-efficacy, perceived stress, mindfulness) and physical performance outcomes (neural mechanosensitivity, trunk endurance, balance, and pressure pain threshold) in middle-aged women with sciatica compared to conventional care. These results highlight yoga as a safe, effective, and holistic rehabilitation approach that addresses not only the

physical limitations of sciatica but also the associated psychosocial challenges. By integrating yoga into rehabilitation programs, healthcare providers may enhance patient recovery, promote self-management, and improve overall quality of life.

Reference

1. Cramer, H., Lauche, R., Haller, H., & Dobos, G. (2013). *A systematic review and meta-analysis of yoga for low back pain.* Clinical Journal of Pain, 29(5), 450–460. https://doi.org/10.1097/AJP.0b013e31825e1492
2. Marotta, N. (2024). *Impact of tele-yoga on pain intensity and flexion–relaxation phenomenon in chronic low back pain: An exploratory study.* Journal of Orthopaedic Research. Advance online publication. https://doi.org/10.1002/jor.25790
3. Mudda, S., Janardhan, S. K., Santenna, C., Mooventhan, A., & Shetty, P. (2024). *Efficacy of integrated yoga and naturopathy with physiotherapy or acupuncture for low back pain: A parallel, two-arm, randomized trial.* Cureus, 16(2), e55198. https://doi.org/10.7759/cureus.55198
4. Ross, A., & Thomas, S. (2010). The health benefits of yoga and exercise: A review of comparison studies. *Journal of Alternative and Complementary Medicine, 16*(1), 3–12. https://doi.org/10.1089/acm.2009.0044
5. Saper, R. B., Lemaster, C., Delitto, A., Herman, P. M., Stevans, J., Paris, R., & Sherman, K. J. (2017). *Yoga, physical therapy, or education for chronic low back pain: A randomized noninferiority trial.* Annals of Internal Medicine, 167(2), 85–94. https://doi.org/10.7326/M16-2579
6. Sherman, K. J., Wellman, R. D., Cook, A. J., Cherkin, D. C., Deyo, R. A., & Hawkes, R. J. (2011). *A randomized trial comparing yoga, stretching, and a self-care book for chronic low back pain.* Archives of Internal Medicine, 171(22), 2019–2026. https://doi.org/10.1001/archinternmed.2011.524
7. Tankha, H., Gaskins, D., & Shallcross, A. (2024). *Effectiveness of virtual yoga for chronic low back pain: A randomized clinical trial.* JAMA Network Open, 7(11), e2442339. https://doi.org/10.1001/jamanetworkopen.2024.42339
8. Telles, S., Singh, N., Joshi, M., & Balkrishna, A. (2013). Posture based yoga therapy for treatment of chronic low back pain: A study on Yoga for Back Pain. *Journal of Alternative and Complementary Medicine, 19*(6), 524–530. https://doi.org/10.1089/acm.2012.0406
9. Williams, K., Abildso, C., Steinberg, L., Doyle, E. J., Epstein, B., Smith, D., & Cooper, L. (2009). Evaluation of the effectiveness and efficacy of Iyengar yoga therapy on chronic low back pain. *Spine, 34*(19), 2066–2076. https://doi.org/10.1097/BRS.0b013e3181b315cc

ISSN: 0937-583x Volume 90, Issue 9 (Sep -2025)
https://musikinbayern.com DOI https://doi.org/10.15463/gfbm-mib-2025-457

10. Zhang, X., Chang, T., Hu, W., Shi, M., Chai, Y., Wang, S., ... & Liao, X. (2023). Efficacy and safety of yoga for the management of chronic low back pain: An overview of systematic reviews. *Frontiers in Neurology, 14*, Article 1273473. https://doi.org/10.3389/fneur.2023.1273473