

**EFFICACY OF YOGA AND ACUPUNCTURE AS NON-PHARMACOLOGICAL INTERVENTIONS FOR BACK PAIN MANAGEMENT: A NARRATIVE REVIEW**<sup>1</sup>Dr. S. Madankumar

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**Abstract:**

Back pain stands as a prevalent and pervasive ailment afflicting a substantial global demographic. Conventional therapeutic modalities encompass pharmaceutical agents, physiotherapeutic interventions, and surgical procedures. In recent times, alternate methodologies, including yoga and acupuncture, have garnered substantial attention due to their purported capacity to ameliorate back pain and enhance holistic well-being. The present scholarly inquiry undertakes an exploration into the efficaciousness of yoga and acupuncture as non-pharmacological modalities for the management of back pain. The investigation explores the inherent mechanistic underpinnings, empirical clinical substantiation, and conceivable merits associated with the assimilation of yoga and acupuncture into the habitual care regimen tailored for individuals contending with back pain. The contemplation of these interventions within the backdrop of their theoretical and empirical tenets underscores the potential utility of a diversified therapeutic armamentarium in the pursuit of back pain alleviation and overall recuperative enhancement.

**Keywords:** back pain, yoga, acupuncture, alternative therapies, non-pharmacological interventions, mind-body connection.

**Introduction**

In the realm of musculoskeletal disorders, back pain constitutes a ubiquitous and intricate predicament afflicting a substantial proportion of the global populace<sup>1,2</sup>. The multifaceted aetiology and diverse clinical manifestations of this affliction pose challenges to both patients and healthcare providers alike<sup>2</sup>. Conventional therapeutic paradigms encompassing pharmacological interventions, physical therapies, and surgical interventions have been employed to varying degrees of success<sup>3,4</sup>. Nonetheless, an evolving understanding of holistic well-being and an inclination towards integrative healthcare approaches have precipitated the exploration of alternative non-pharmacological modalities for back pain management<sup>5</sup>.

In recent times, two such modalities, namely yoga, and acupuncture, have garnered noteworthy attention for their potential contributions to alleviating back pain and

ameliorating the associated functional impairments. Yoga, an ancient practice rooted in mind-body awareness and physical postures, embodies a comprehensive approach that addresses the interplay of physical, psychological, and emotional factors in pain perception and management<sup>6,7</sup>. Acupuncture, on the other hand, hails from traditional Chinese medicine and involves the strategic insertion of fine needles into specific points along meridians to restore the harmonious flow of vital energy, or "qi."<sup>8,9</sup>

Back pain is a common health issue that can significantly impact an individual's quality of life. Traditional treatment methods may not always provide satisfactory results or involve potential side effects. Therefore, exploring alternative therapies, such as yoga and acupuncture, is essential for a comprehensive approach to back pain management<sup>10</sup>. This comprehensive review endeavors to critically examine and synthesize the existing body of knowledge surrounding the efficacy of yoga and acupuncture as non-pharmacological interventions in the management of back pain.

Through a meticulous analysis of empirical studies, clinical trials, and scholarly discourse, this review aspires to contribute to the empirical foundation underpinning the role of yoga and acupuncture in the holistic management of back pain. The elucidation of their individual and synergistic potentials as well as an exploration of the underlying mechanisms paves the way for informed clinical decision-making and augments the armamentarium of interventions available to healthcare practitioners in their pursuit of optimal patient care.

### **Yoga as an Intervention for Back Pain - Summarization of clinical trials investigating the effects of yoga in individuals affected with back pain**

An investigation was undertaken within the premises of a tertiary care hospital situated in South India. This empirical inquiry encompassed a cohort of 88 female nurses, who were subjected to a randomized allocation into distinct groups, namely the yoga and physical exercise cohorts. The results showed that integrated yoga was more effective in improving physical, psychological, and social health domains of quality of life than physical exercises among nursing professionals with chronic low back pain. The study suggests that there is a need to incorporate yoga as a lifestyle intervention for nursing professionals<sup>11</sup>. It was observed that Yoga participants improved more in pain intensity at 12 weeks and at 6 months. In this study, One hundred and fifty military veterans with Chronic Low back pain were led by a certified instructor twice weekly for 12 weeks and consisted primarily of physical postures, movement, and breathing techniques. Opioid medication use declined among all participants, but group differences were not found. There was also another study on veterans, which also concluded similar results. The findings support wider implementation of yoga programs for veterans<sup>12,13</sup>. A comparative study was conducted to find the effectiveness of yoga, physical therapy, and education for treating chronic low back pain in a group of low-income, racially diverse patients. The results showed that yoga was as effective as physical therapy and education in reducing pain and improving function in patients with chronic low back pain. The study suggests that yoga may be a cost-effective alternative to physical therapy and education for treating chronic low back pain in underserved populations<sup>14</sup>. A yoga class designed for chronic low back pain in patients was as effective as physical therapy for reducing pain, improving function, and lowering the use of pain medicine. The study looked at a racially diverse group of 320 adults with chronic low back pain<sup>15</sup>.

A significant decrease in chronic low back pain, anxiety, and depression levels was found after the yoga module. This yoga module was given to information technology professionals to evaluate its effect on chronic low back pain, anxiety, and depression levels. The study design involved a two-group pre-post design, where pre and post-measurements were taken for anxiety levels (STAI), depression levels (BDI), and back pain. The data was analyzed

using non-parametric tests, and the results showed a significant change in STAI(X1) and BDI variables between groups and no significant change in STAI(X2)<sup>16</sup>. To determine whether 12 weeks of yoga practice in patients with chronic low back pain and MRI-based degenerative changes would result in differences in self-reported pain, anxiety, spinal flexibility, and the structure of the discs or vertebrae, a study was conducted. The study included 62 persons with MRI-proven degenerative intervertebral discs, out of which only 40 subjects' data were included in the study. The yoga group was taught light exercises, physical postures, breathing techniques, and yoga relaxation techniques for 1 hour daily for 3 months, while no intervention was given to the control group except for routine medical care. The results showed that within 12 weeks, yoga practice reduced pain and state anxiety but did not alter MRI-proven changes in the intervertebral discs and in the vertebrae<sup>17</sup>.

The efficacy of the Integrated Approach of Yoga Therapy (IAYT) as an add-on in patients undergoing conventional treatment for chronic low backache was assessed. The study included 120 patients suffering from chronic low back ache, who were randomly assigned into two groups; the yoga group (YG) and the control group (CG) to receive IAYT or Therapeutic exercises after Intermittent lumbar traction and ultrasound. Both groups practiced supervised interventions for 3 weeks at the center and later for 12 weeks at their residences after the completion of treatment. The results showed that the integrated approach of yoga therapy (IAYT) as an add-on with conventional physiotherapy significantly reduces the pain in patients suffering from chronic low backache. Pain in the yoga group improved better than the control group on the 21st day, 3rd month, 6th month, and 1-year respectively<sup>18</sup>.

#### **Acupuncture as an Intervention for Back Pain - Synoptic evaluation of clinical trials assessing the efficacy of acupuncture in the amelioration of back pain**

The effect of Acupuncture over TENS was analyzed in a study, where it was found that both the Acupuncture therapy and Placebo transcutaneous electrical nerve stimulation (TENS) groups showed significant pre-post improvements for all scores, except for MPQ scores in the Placebo-TENS group. Results from the 6-month follow-up would suggest that the response was better in the acupuncture group<sup>19</sup>. The efficacy of Yamamoto's acupuncture method was assessed on pain, drug intake, functional capacity, and quality of life for the treatment of acute non-specific low back pain (ANLBP). The study was a prospective, randomized, parallel-group, double-blind, placebo-controlled trial performed on 80 men and women with ANLBP. The results showed that Yamamoto's new scalp acupuncture was more effective than sham treatment with regard to decreasing pain and anti-inflammatory intake as well as improving functional status and quality of life for patients with ANLBP<sup>20</sup>.

A study to understand the effectiveness of acupuncture and local anaesthetic injection for low back pain was conducted. Specifically, it compares the immediate and sustained effects of repeated acupuncture stimulation and local anaesthetic injection at the most painful points in patients with low back pain. The study found that both acupuncture and injection relieved pain, but acupuncture was superior for the immediate and sustained effects, suggesting that it is a useful treatment for low back pain. This study also highlights the need for larger sample sizes and multiple outcome measures in future studies<sup>21</sup>. A study in which 57 patients were receiving treatment at a university oncology center, with 25 patients completing 9 or more sessions of acupuncture. The primary outcome measure was the Brief Pain Inventory (BPI), and secondary outcome measures included the Edmonton Symptom Assessment System (ESAS) ratings of current symptoms. Acupuncture may be a beneficial treatment option for cancer-related pain and associated symptoms. The study found that 60% of patients experienced a clinically meaningful reduction of 30% in pain severity and interference. Acupuncture also resulted in significant improvement in associated symptoms<sup>22</sup>.

A study contributed to the understanding of the effectiveness of acupuncture for chronic low back pain. Here, the effectiveness of individualized acupuncture, standardized acupuncture, simulated acupuncture, and usual care were compared. At 8 weeks, mean dysfunction scores for the individualized, standardized, and simulated acupuncture groups improved by 4.4, 4.5, and 4.4 points, respectively, compared with 2.1 points for those receiving usual care ( $P < .001$ ). Participants receiving real or simulated acupuncture were more likely than those receiving usual care to experience clinically meaningful improvements on the dysfunction scale (60% vs 39%;  $P < .001$ ) and symptom bothersomeness scale (53% vs 38%;  $P = .02$ ) at 8 weeks. The study found that acupuncture-like treatments significantly improved function in persons with chronic low back pain<sup>23</sup>. The feasibility of a randomized controlled trial investigating the optimal number of treatment sessions of acupuncture, used as an adjunct to usual care, for managing chronic low back pain was evaluated. 45 participants with chronic low back pain were recruited and randomly allocated to receive usual care plus 4, 7, or 10 sessions of acupuncture. Primary outcomes were recruitment rate, randomization rate, treatment compliance, completion of the outcome measures, and retention rates. Secondary outcomes included back function, pain intensity and bothersomeness, generic health status, activity disability, and participant satisfaction. Compliance with treatment was high among participants (86.7%, 86.7%, and 100% for the 4-, 7-, and 10-session groups, respectively). The paper provided insights into the feasibility of conducting a larger randomized controlled trial on the optimal number of acupuncture sessions for managing chronic low back pain<sup>24</sup>.

### **Comparative analysis of the efficacies of acupuncture and yoga in alleviating back pain**

The feasibility of combining group acupuncture therapy with yoga therapy to address chronic neck, low back, and osteoarthritis pain in an underserved population was observed. It outlined the design and rationale for a pilot study conducted in a safety net setting<sup>25</sup>. The barriers and facilitators associated with implementing bundled acupuncture and yoga therapy for the treatment of chronic pain in community healthcare settings were studied. Through a feasibility pilot, the research shed light on the practical considerations and challenges involved in integrating these therapies into mainstream healthcare practices<sup>26</sup>. The state insurance coverage for nonpharmacological treatments for low back pain based on the guidelines recommended by the American College of Physicians was analyzed. It examines the extent to which these treatments, such as acupuncture, chiropractic care, and physical therapy, are covered by state insurance policies, highlighting potential disparities and areas for improvement<sup>27</sup>.

The discussion surrounding the potential combined application of acupuncture and yoga in the management of back pain is grounded in a compelling synthesis of physiological and therapeutic principles. This study posits that the synergistic effects resulting from the integration of these two distinct modalities may offer enhanced relief and benefits compared to their individual utilization.

Acupuncture has been shown to modulate pain perception through neurophysiological pathways, possibly involving the release of endogenous analgesic substances. In parallel, yoga encompasses physical postures, controlled breathing, and mindfulness techniques that can foster relaxation, alleviate muscle tension, and promote overall well-being. The confluence of these mechanisms may target not only the physical aspects of back pain but also its psychosomatic dimensions, providing a more comprehensive relief.

One of the key advantages that the combined intervention offers is the potential for sustained relief. Acupuncture has demonstrated a capacity to extend the duration of pain alleviation beyond the immediate treatment period, possibly due to its influence on neuroendocrine and

autonomic pathways. The incorporation of yoga into this paradigm may prolong the benefits achieved during acupuncture sessions. Regular yoga practice has the potential to reinforce musculoskeletal integrity, maintain neural plasticity, and foster a state of general relaxation, collectively contributing to long-term pain management.

Furthermore, the amalgamation of acupuncture and yoga holds the promise of enhanced musculoskeletal function and improved mobility. Yoga's emphasis on core strength, flexibility, and postural alignment complements the potential of acupuncture to mitigate muscle tension and promote local circulation. This interplay may engender a positive feedback loop wherein the benefits of each modality are mutually reinforcing, leading to more sustained improvements in back pain-related functional limitations.

### Safety Profile and Adverse Events

It is remarkable to observe that no adverse reactions were reported in connection to the practice of yoga. In a limited number of studies, it was duly noted that some participants experienced an exacerbation of pain subsequent to engaging in the aforementioned yoga practice. This particular outcome could potentially be attributed to the participant's tendency to excessively engage in the practice, thus surpassing their own physical limitations and boundaries.

There were incidental occurrences of minor adverse reactions with Acupuncture therapy, primarily characterized by minimal bleeding. Notably, these occurrences were observed with instances of electrical stimulation also. It is noteworthy that these instances of minor bleeding were of such a nature that they did not necessitate any form of medical intervention or attention. These findings underscore the generally benign nature of these reactions in the context of acupuncture practice.

### Illumination of research lacunae and prospects for prospective inquiries

While yoga and acupuncture have shown promise in managing back pain, there are still several areas that require further research to better understand their efficacy and mechanisms of action. Here are some future directions and research gaps in the field:

- **Comparative Studies:** More well-designed comparative studies are needed to directly compare the effectiveness of yoga and acupuncture in managing back pain. These studies should consider various outcome measures, including pain intensity, functional improvements, and long-term effects.
- **Mechanisms of Action:** This can involve exploring neurophysiological and biochemical changes that occur during these practices and their impact on pain pathways, inflammation, and neural modulation.
- **Optimal Treatment Parameters:** Research is needed to determine the optimal dosage, frequency, and duration of yoga and acupuncture interventions for various types of back pain. This includes investigating the most effective yoga styles, specific postures, acupuncture techniques, and treatment schedules to maximize therapeutic outcomes.
- **Individual Variability:** Research should focus on identifying factors that influence individual responses to yoga and acupuncture, such as age, sex, body type, psychological factors, and specific back pain characteristics. This can help develop personalized treatment strategies and optimize outcomes.

By addressing these research gaps, we can gain a deeper understanding of the effectiveness, mechanisms, and optimal utilization of yoga and acupuncture in managing back pain<sup>28,29</sup>. This knowledge can guide evidence-based recommendations and enhance the integration of these complementary therapies into conventional healthcare approaches.

## Conclusion

In conclusion, the conjecture that a combined application of acupuncture and yoga could confer superior relief for back pain is substantiated by a synthesis of their complementary physiological effects, a holistic multi-dimensional approach, the potential for prolonged benefits, and the augmentation of musculoskeletal function. While empirical validation is requisite, the proposed synergy between these interventions portends a novel and promising avenue in the endeavor to ameliorate back pain, thus warranting further investigation and clinical exploration.

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