

Yoga as an Adjunct in Tobacco Cessation: A Narrative Review

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Abstract: Tobacco use remains one of the most significant preventable causes of morbidity and mortality worldwide, accounting for over eight million deaths annually. Despite extensive public health efforts, long-term cessation rates remain suboptimal due to nicotine dependence, strong conditioned behaviors, psychological distress, and sociocultural factors. Conventional treatment options—including behavioral counseling, nicotine replacement therapy, and pharmacotherapies—provide modest abstinence benefits, but relapse rates remain high. Therefore, exploring complementary adjunct strategies is essential to strengthen tobacco cessation outcomes. Yoga, an ancient mind–body discipline originating in India, incorporates physical postures (āsana), breath regulation (prāṇāyāma), and meditation (dhyāna) to harmonize physiological and psychological function. Growing evidence suggests that yoga can modulate stress responses, reduce autonomic arousal, enhance affect regulation, and improve cognitive control—mechanisms that may be particularly relevant to the management of nicotine withdrawal and relapse prevention. This narrative review synthesizes existing literature on yoga-based interventions for tobacco cessation, exploring their effectiveness, theoretical mechanisms, and integration potential.

Keywords: Tobacco Cessation, Yoga, Smoking, Meditation, Pranayama, Behavioral Counseling.

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I. INTRODUCTION

Tobacco use continues to be one of the most preventable causes of disease and premature death across the world. According to global estimates, more than eight million deaths annually are associated with tobacco consumption, including a substantial proportion arising from exposure to second-hand smoke^{1,2}. India is one of the highest burdened countries, as both smoked and smokeless tobacco products are widely cultivated and consumed, contributing to increased incidence of cardiovascular disease, chronic respiratory illness, and oral cancer^{3,4}.

Addiction to nicotine is complicated and is affected by behavioral, psychological, neurological, and pharmacological factors. When quitting, people frequently experience withdrawal symptoms such as restlessness, anxiety, irritability, depression, and increased appetite, all of which increase the risk of relapse^{5,6}. Although evidence-based interventions such as nicotine replacement therapy (NRT), behavioral counseling, and pharmacotherapy have proven beneficial, long-term success rates remain low. Several

individuals report stress, mental instability, and social stimuli as the main barriers to maintaining abstinence.⁷⁻⁹

Given these challenges, researchers are looking for complementary therapy to boost tobacco cessation outcomes. Yoga, a classic mind-body discipline that includes physical postures (āsana), breath management (prāṇāyāma), and meditation (dhyāna), is gaining popularity and acceptance for its therapeutic benefits¹⁰. This method is known to affect both psychological and physiological responses by improving autonomic balance, reducing sympathetic activity, and increasing parasympathetic activation^{11,12}. This shift has been associated with less stress reactivity, better emotional control, and increased resilience—factors crucial to minimizing withdrawal-induced distress^{13,14}. Yoga is culturally acceptable, widely available, and cost-effective in India, making it a potentially scalable adjunct within community-level cessation campaigns¹⁴.

Several studies have demonstrated that yoga enhances mental well-being, reduces anxiety and depressive symptoms, and promotes mindful awareness^{15,16}. These

effects may be particularly beneficial during cessation, as negative mood and stress are well-documented contributors to relapse¹⁷. Yoga may help patients monitor urges without reacting impulsively by strengthening internal awareness and self-regulation—a mechanism similar to the cognitive-behavioral models applied in traditional cessation therapy¹⁸.

Preliminary trials of yoga-based therapies for tobacco cessation have yielded promising outcomes. Research among women attempting to quit indicated that yoga-based interventions increased short-term abstinence, reduced perceived stress, and promoted self-efficacy¹⁹. Pilot trials integrating yoga with behavioral therapy indicated a reduction in intensity, better psychological management, and fewer lapses^{20,21}.

Mindfulness-based therapies, which overlap strongly with the meditative parts of yoga, have also been proven to lower craving-related distress and relapse risk²². Physical activity also tends to decrease withdrawal symptoms; hence, yoga, which combines movement and meditation features, may give dual benefit²³.

Furthermore, concerns about post-cessation weight gain, particularly among female smokers, frequently hamper quit attempts. Evidence suggests that yoga may aid in weight management and promote body satisfaction, thereby supporting successful cessation efforts^{24,25}.

This narrative review aims to summarize current scientific evidence on yoga-based interventions for tobacco cessation, explore underlying mechanisms, and identify existing research gaps to guide future inquiry.

II. METHOD OF LITERATURE REVIEW

The literature search covered studies published between January 2000 and December 2025, ensuring inclusion of both foundational and contemporary research on yoga-based tobacco cessation. Searches were conducted across major databases, including PubMed/MEDLINE, Scopus, Web of Science, and Google Scholar. The search strategy incorporated predefined keywords and Boolean operators, using combinations such as: “yoga” AND “tobacco cessation”, “yoga” AND “smoking cessation”, “pranayama” OR “meditation” AND “nicotine dependence”, “mind–body intervention” AND (“addiction” OR “relapse prevention”), and (“yoga” OR “mindfulness”) AND (“craving” OR “withdrawal”). After systematic screening of titles, abstracts, and full texts, 18 studies met the eligibility criteria and were included in the final review. Key data—including study design, population characteristics, intervention type, comparators, outcomes, and major findings—were extracted into a structured data extraction sheet. The included evidence was synthesized narratively, organized under thematic domains such as abstinence outcomes, craving and withdrawal symptoms, psychological benefits, weight-related effects, and physiological mechanisms, providing a comprehensive and structured interpretation of the literature^{26,27,28}.

➤ Smoking Abstinence Outcomes

Yoga reduces sympathetic overactivity and promotes parasympathetic activation, which lowers stress reactivity—a known trigger for tobacco use. The mechanism is thought to involve regulation of the hypothalamic–pituitary–adrenal (HPA) axis, reduced cortisol levels, and enhanced mindfulness, collectively improving individuals’ ability to control urges. A pilot RCT among women demonstrated that yoga combined with cessation counseling significantly increased 7-day point-prevalence abstinence at the end of treatment compared with a wellness-education control¹⁹. Participants in the yoga arm also reported significantly reduced anxiety and improved mood.

Yoga also has the ability to increase interoceptive awareness and activate prefrontal cortical networks associated with self-control and emotional regulation. In another trial, participants in the *Quitting-in-Balance* project who received yoga alongside standard counseling reported better emotional regulation, enhanced self-efficacy, and greater confidence in their ability to quit²⁰. Although abstinence rates did not differ significantly at long-term follow-up, the study suggested that yoga may improve short-term quitting success.

The combined therapy like yoga and CBT, attenuates physiological arousal and craving intensity, restructures maladaptive cognitions, and enhances the coping capacity during quit attempts. The ongoing *BreathEasy* RCT is evaluating Iyengar yoga integrated with cognitive–behavioral therapy (CBT) and reports early improvements in abstinence-related psychological mediators (e.g., improved mood, reduced cravings, greater self-efficacy)²¹.

➤ Effects on Cravings and Withdrawal

Yoga plays a role in modulating neurobiological systems involved in craving, particularly by reducing activity in the mesolimbic dopaminergic pathways that are sensitized by nicotine dependence. Slow, controlled breathing practices (pranayama) enhance parasympathetic tone via vagal activation, which lowers physiological arousal that typically precipitates craving episodes. Mindfulness components additionally downregulate the amygdala and improve prefrontal cortical engagement, enabling individuals to observe cravings without reacting impulsively.

Craving reduction was observed in three pilot studies evaluating yoga or combined yoga-mindfulness interventions^{22–24}. Reductions were more pronounced among participants who practiced pranayama or meditation daily at home. It also has a regulatory effect on the autonomic nervous system, shifting the balance from sympathetic “fight-or-flight” activation, which is common during nicotine withdrawal, towards parasympathetic dominance. Breath-focused practices modulate baroreceptor sensitivity and stabilize heart-rate variability, both markers of improved autonomic flexibility. Additionally, yoga has been shown to decrease cortisol and other stress biomarkers, thereby buffering withdrawal-induced distress. The calming and breath-focused components of yoga may therefore help regulate autonomic arousal and alleviate early abstinence symptoms, facilitating greater emotional stability during the initial quitting phase.

Several studies showed that yoga reduced symptoms such as irritability, anxiety, and restlessness during early abstinence^{25,26}. The calming and breath-focused components of yoga may help regulate autonomic arousal and buffer withdrawal-induced distress.

➤ *Psychological and Emotional Benefits*

Yoga has an integrative influence on both physiological and psychological stress pathways. Yoga activates parasympathetic (vagal) responses, reduces HPA-axis overactivation, lowers cortisol, and enhances prefrontal cortical control over limbic emotional centers. Together, these mechanisms reduce overall stress load and enhance resilience during quit attempts. In the trials involving smokers attempting cessation, yoga produced significant improvements in perceived stress, anxiety, depressive symptoms, emotional regulation, and sleep quality^{19,22,27}. Because psychological distress is a strong predictor of relapse, these improvements are clinically meaningful¹⁷. Studies on mindfulness-based interventions—which overlap with yoga’s meditative components—demonstrated reductions in emotional reactivity, rumination, and relapse rates^{28–30}.

➤ *Weight Management and Self-Efficacy*

Three studies highlighted yoga’s potential in reducing weight-gain concerns during cessation, particularly among women^{20,31,32}. Regular yoga practice supported moderate physical activity and improved body awareness.

Improved self-efficacy was consistently reported across multiple trials. Participants felt more confident resisting urges to smoke and managing stress triggers^{19,21,26}.

➤ *Physiological Effects*

Yoga practices, particularly pranayama and meditation, have demonstrated:

- Increased vagal tone
- Reduced sympathetic drive
- Improved heart-rate variability
- Reduced cortisol levels

These physiological changes support stress relief and improved autonomic balance, which may help individuals cope with withdrawal triggers^{11,12,33}.

➤ *Mechanisms Supporting Yoga’s Role in Cessation*

The efficacy of yoga in tobacco cessation is likely attributable to multiple complementary mechanisms. One key pathway is stress reduction. Stress and negative affect are well-established triggers for smoking initiation and relapse^{17,24,28}. Yoga enhances parasympathetic activation and reduces sympathetic overdrive, leading to improved autonomic balance^{11,12}. Controlled breathing (pranayama) slows respiration, decreases heart rate, and may lower circulating cortisol, reducing withdrawal-related distress³³.

Second, yoga supports emotional regulation. Meditation and mindfulness components help cultivate non-reactivity and awareness of craving cues. This allows individuals to recognize urges without immediately responding, a mechanism similar to principles employed in cognitive-

behavioral therapy^{18,28}. Multiple studies report reductions in anxiety, depressive symptoms, and perceived stress following yoga-based programs^{19,22,27}. These improvements may indirectly contribute to enhanced abstinence rates²⁴.

Third, yoga may improve self-efficacy, reflecting increased confidence in one’s ability to abstain. Several trials reported that individuals practicing yoga felt more capable of handling withdrawal symptoms and resisting urge triggers^{19,21,26}. Increased self-efficacy has been shown to mediate successful cessation attempts and predict sustained abstinence^{30,31}.

Finally, yoga may support weight management during quitting. Post-cessation weight gain is a commonly cited concern, especially among women, and has been associated with reduced motivation to quit^{31,32}. Gentle postural practice and mindful eating behavior fostered through yoga may mitigate weight gain and promote more positive body image, thereby reinforcing continued abstinence.

➤ *Comparison with Other Mind–Body Approaches*

Because yoga encompasses both physical exertion and mindfulness components, it offers benefits similar to exercise-based and mindfulness-based cessation interventions. Exercise reduces cravings and withdrawal symptoms through dopaminergic and endorphin-mediated effects²³. Likewise, mindfulness-based programs reduce relapse risk by improving attentional regulation and dampening automatic responses to craving cues^{28–30}. Yoga integrates both mechanisms by combining movement with meditative attention, theoretically offering a synergistic benefit that may surpass either component alone.

➤ *Integration with Conventional Cessation Programs*

Integrating yoga into cessation clinics, community health centers, and wellness programs could be feasible, particularly in culturally aligned contexts. Simple pranayama and guided meditation practices can be delivered in low-resource settings without specialized equipment, making yoga accessible and scalable²⁵.

Most studies had integrated yoga with behavioral counseling. These hybrid models yielded stronger outcomes than yoga practiced alone^{19,20}. Given that counseling provides structured quit planning and relapse-prevention skills, yoga may improve emotional resilience and craving management, thereby enhancing adherence to behavioral recommendations.

➤ *Implications for Low-Resource Settings*

India carries a significant tobacco burden with limited cessation support infrastructure³⁴. Yoga’s affordability, cultural acceptability, and adaptability provide unique advantages in low-resource environments. Task-sharing strategies, such as having community workers teach basic yoga modules, could increase access to underserved areas. Additionally, digital delivery formats such as apps and videos may broaden reach²⁷.

III. LIMITATIONS IN IMPLEMENTING YOGA AS AN ADJUVANT FOR TOBACCO CESSATION THERAPY

➤ *Heterogeneity in Yoga Protocols*

Yoga interventions vary widely across studies in terms of style (Hatha, Iyengar, Ashtanga, mindfulness-based yoga, pranayama), duration, frequency, and instructor expertise. This lack of standardization makes it difficult to determine which specific components are most effective and limits the generalizability of findings^{34,35,36}.

➤ *Limited High-Quality Evidence*

Most available studies on yoga for tobacco cessation involve small sample sizes, short follow-up periods, and non-randomized or quasi-experimental designs. Few trials directly compare yoga with established cessation methods, and long-term abstinence outcomes remain inadequately evaluated^{34,38-40}.

➤ *Adherence and Motivation Challenges*

Tobacco users often experience low motivation, withdrawal symptoms, and psychological distress, which can reduce adherence to yoga practice. Ensuring consistent participation—particularly in multi-session or long-duration programs—is challenging in real-world settings³⁷.

➤ *Resource and Infrastructure Requirements*

Implementing yoga as an adjunct therapy requires trained instructors, conducive spaces, and repeated supervised sessions. These resource demands may limit feasibility in low-resource settings, busy clinical practices, or rural cessation clinics⁴⁰.

➤ *Cultural and Acceptability Barriers*

Although yoga is widely practiced in India, acceptability can vary based on cultural beliefs, religious interpretations, physical limitations, or preferences for pharmacological over behavioral interventions. Some individuals may perceive yoga as time-consuming or unrelated to addiction treatment^{37,40}.

➤ *Variability in Instructor Skill and Delivery*

Outcomes may depend on the expertise of the yoga instructor. Differences in teaching style, therapeutic orientation, and protocol adherence can influence effectiveness, reducing uniformity in clinical settings^{36,40}.

➤ *Difficulty in Isolating Mechanisms of Action*

Yoga combines physical postures, breath regulation, meditation, and relaxation. This multimodal nature makes it difficult to isolate which components reduce cravings, withdrawal symptoms, or psychological distress, complicating the development of evidence-based protocols^{35,36}.

➤ *Limited Integration into Conventional Clinical Pathways*

Many tobacco cessation programs lack structured pathways to incorporate yoga. Healthcare providers may have limited knowledge of yoga therapy, and interdisciplinary coordination between cessation counselors and yoga therapists is still evolving⁴⁰.

➤ *Potential Physical Limitations Among Participants*

Individuals with chronic conditions such as COPD, cardiovascular disease, obesity, or musculoskeletal issues may find certain yoga postures difficult, limiting universal applicability. Modified or therapeutic yoga requires specialized training that may not be widely available³⁸.

➤ *Measurement and Evaluation Issues*

Studies often rely on self-reported tobacco abstinence or psychometric scales for stress and mood, which may introduce bias. Objective biomarkers (e.g., cotinine, carbon monoxide) and long-term relapse tracking are not consistently used^{34,39}.

IV. RECOMMENDATIONS FOR FUTURE RESEARCH

Future studies should employ adequately powered RCT designs with standardized yoga modules. Comparative studies could investigate whether certain components (e.g., pranayama vs. asana vs. meditation) provide distinct benefits. Mixed-methods approaches may help contextualize patient preferences and barriers.

Long-term follow-up is required to assess sustained abstinence. Incorporating biochemical verification will improve validity. Research exploring cost-effectiveness would inform implementation in public health systems. Because yoga is accessible and culturally embedded in India, pragmatic trials conducted in community settings may offer valuable real-world insight.

Despite limitations, the cumulative evidence indicates that yoga is a safe, feasible adjunct for tobacco cessation that may strengthen coping capacity during early abstinence. Its benefits in stress reduction, emotional regulation, self-efficacy, and weight management address key challenges associated with relapse. Integrating yoga into conventional cessation strategies may enhance outcomes, particularly in resource-limited settings such as India.

V. CONCLUSION

This narrative review suggests that yoga can be a valuable adjunct to conventional approaches for tobacco cessation. Evidence from randomized trials, pilot studies, and observational research demonstrates that yoga practices—including asana, pranayama, and meditation—may help reduce cravings, withdrawal symptoms, and psychological distress, while supporting improvements in self-efficacy and emotional regulation. These benefits address key barriers to sustained abstinence, particularly during the early withdrawal period when relapse risk is highest. Larger, standardized trials are needed to determine optimal yoga dosage, key components, and integration pathways. Given its cultural acceptance, low cost, and feasibility of delivery, yoga may be particularly suitable in low-resource settings such as India. Integrating yoga into public health cessation programs could enhance reach and facilitate holistic addiction care. Overall, yoga represents a promising, safe, and accessible adjunct that may improve the success of tobacco cessation strategies.

➤ *Highlights*

- Yoga is a promising adjunctive strategy for tobacco cessation.
- Evidence indicates reductions in cravings, withdrawal symptoms, and stress.
- Improvements in emotional regulation and self-efficacy may enhance abstinence.
- Meditation and *prāṇāyāma* appear especially beneficial.
- Current evidence is limited by small trials and heterogeneous protocols.
- Larger, standardized RCTs with long-term follow-up are required.

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The author declares no conflict of interest.

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