Review Article

The Role of Mindfulness, Yoga, and Hypnosis in Tinnitus Management: A Comprehensive Narrative Review

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ABSTRACT

Introduction: Tinnitus, defined as the perception of sound without an external source, affects 10% to 24% of adults and can significantly impair quality of life (QoL). Mind-body approaches—including mindfulness-based interventions, yoga, and hypnosis—have been increasingly explored as complementary strategies for tinnitus management, though their efficacy remains under investigation.

Materials and Methods: A narrative review was conducted using PubMed, Scopus, Medline, Web of Science, and Google Scholar to identify English-language studies (1995-2024) on mindfulness, yoga, and hypnosis for tinnitus management. Studies were selected based on predefined inclusion criteria, and the findings were summarized to assess efficacy, mechanisms, and limitations.

Results: Mindfulness-based interventions (e.g. mindfulness-based cognitive therapy, mindfulness-based stress reduction) provide moderate evidence for reducing tinnitus distress and improving anxiety and depression, with some studies reporting sustained benefits for up to six months. Although rigorous trials are lacking, yoga has preliminary evidence, with small studies suggesting benefits for stress and tinnitus-related symptoms. Hypnosis studies, often outdated, indicate preliminary benefits for tinnitus severity and psychological symptoms; however, effects are inconsistent and poorly sustained. Negative findings, such as limited impact on tinnitus intensity or anxiety, tend to be underreported.

Conclusion: Mindfulness-based interventions show promising clinical efficacy for managing tinnitus, especially the psychological symptoms, whereas yoga and hypnosis necessitate further rigorous trials. Future studies should emphasize head-to-head comparisons, long-term outcomes, integration with existing therapies, such as cognitive behavioral therapy, and inclusion of diverse populations to enhance clinical applicability.

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Introduction

Tinnitus is defined as the perception of sound, such as ringing or buzzing, without an external acoustic source [1]. It affects approximately 10% of young adults, 14% of middle-aged adults, and 24% of older adults worldwide, with prevalence varying across definitions and assessment methods [2, 3]. A large-scale study in England (n=48 313) reported a 10.1% prevalence that increased with age, highlighting its public health significance [4]. A recent review of the effect of tinnitus on mental health showed that tinnitus has a significant impact on mental health, contributing to depression, anxiety, and sleep disturbances [5]. The World Health Organization (WHO) has identified four key domains of tinnitus-related impairment: thoughts and emotions, hearing, sleep, and concentration, underscoring its multifaceted impact [6]. Tinnitus's heterogeneous etiology, involving auditory, neurological, and psychological factors, complicates treatment and requires tailored interventions [7].

Although no universal cure exists, current treatments aim to alleviate tinnitus symptoms and improve quality of life (QoL) [8]. Various treatments have been explored for their effectiveness in treating tinnitus. These include sound therapy (e.g. hearing aids, sound generators), cognitive behavioral therapy (CBT), tinnitus retraining therapy (TRT), acupuncture, pharmacological interventions (e.g. Ginkgo biloba, sedatives, antidepressants, and anxiolytics), electromagnetic stimulation, and biofeedback [8-10]. The effectiveness of these treatments varies due to the heterogeneous etiology of tinnitus, which may involve auditory, neurological, or psychological factors [7]. Individualized evaluation is essential for identifying the most suitable therapeutic strategies. Neuroimaging studies have identified abnormalities in both auditory and non-auditory brain regions, particularly in emotion and attention-memory networks, suggesting that cognitive dysfunction plays a critical role in tinnitus persistence [11, 12]. Systematic reviews have confirmed cognitive impairments in patients with tinnitus, particularly in executive attention, which may hinder auditory processing and speech recognition by disrupting the ability to focus on relevant stimuli [13-16]. Given the association between cognitive impairment and tinnitus persistence, psychological and mind-body therapies have garnered increasing attention as potential therapeutic options.

Psychological interventions have gained prominence in tinnitus management, with CBT recommended for reducing distress by modifying attentional biases and emotional responses [10, 17]. Emerging evidence supports mind-body interventions- such as mindfulness-based therapies, yoga, and hypnosis- which target cognitive and emotional regulation [18-20]. Mindfulness-based interventions, rooted in Jon Kabat-Zinn's mindfulness-based stress reduction (MBSR) program introduced in 1979, emphasize non-judgmental awareness of present-moment experiences to enhance emotional and attentional regulation [19, 21]. Mindfulness-based cognitive therapy (MBCT), a third-wave CBT approach, integrates mindfulness with cognitive techniques to promote acceptance and reduce distress, and is endorsed by the National Institute for Health and Care Excellence for the treatment of chronic tinnitus [22, 23]. Studies, including randomized controlled trials (RCTs), have demonstrated MBCT's efficacy in reducing tinnitus-related distress, with applications in tele-rehabilitation showing potential [20, 24].

Yoga, a holistic practice with ancient origins, includes breathing exercises (e.g. Brahmari pranayama), postures (asanas), and meditation to promote mind-body balance [25]. Research suggests that yoga, particularly Hatha and Ashtanga forms, may alleviate tinnitus-related stress and irritability by activating the parasympathetic system and enhancing neural plasticity [26, 27]. Studies on Brahmari pranayama report reductions in tinnitus severity and associated anxiety, positioning yoga as a potential adjunctive therapy [28].

Hypnosis, used for tinnitus management since the late 1900s, employs guided relaxation and suggestions to change perception and lessen distress [29]. Ericksonian hypnosis (EH), a widely used approach, has shown preliminary benefits in reducing tinnitus severity and improving psychological outcomes, with some longitudinal studies reporting effects lasting up to 12 months [30]. However, its mechanisms, including altered neural connectivity, require further exploration [31].

This narrative review synthesizes evidence on the effectiveness of mindfulness, yoga, and hypnosis in managing tinnitus and evaluates their impact on tinnitus severity, psychological symptoms, and QoL across diverse populations. By comparing their mechanisms, clinical outcomes, and limitations, this review seeks to inform clinical practice, guide future research through head-to-head trials, and explore integration with established therapies, such as CBT or sound therapy, addressing the need for comprehensive tinnitus management strategies.

Materials and Methods

This narrative review evaluated the effectiveness of mindfulness-based interventions, yoga, and hypnosis in the management of tinnitus. We conducted a comprehensive literature search to identify English-language studies published between January 1990 and December 2024.

The search strategy and databases

A narrative review was conducted to evaluate the efficacy of mind-body interventions in tinnitus management. Literature searches were performed using PubMed, Scopus, Medline, Web of Science, and Google Scholar. These databases were selected for their comprehensive coverage of peer-reviewed medical, psychological, and interdisciplinary research relevant to tinnitus and mind-body approaches. Google Scholar was used to capture grey literature and potentially relevant studies not indexed in traditional databases.

The search strategy included a combination of keywords and Boolean operators, such as "tinnitus," "mindfulness," "yoga," "hypnosis," "management," "intervention," "mindfulness-based stress reduction," "mindfulness-based cognitive therapy," "Brahmari pranayama," and "Ericksonian hypnosis." The reference lists of the included studies were manually screened to identify additional relevant sources.

The search was limited to English-language articles published in peer-reviewed journals. Database selection was influenced by institutional access, and as a result, other platforms, such as PsycINFO and Embase, were not included—a limitation acknowledged and discussed later in this article.

The inclusion criteria included studies evaluating mindfulness, yoga, or hypnosis as primary or adjunctive interventions for tinnitus; clinical trials, observational studies, case reports, or systematic reviews; studies reporting outcomes related to tinnitus severity, psychological symptoms (e.g. anxiety, depression), or QoL; and peer-reviewed articles. The exclusion criteria included non-English studies; non-peer-reviewed sources (e.g. conference abstracts, editorials); studies lacking clear outcome measures; and studies focused on other interventions without reference to mindfulness, yoga, or hypnosis. Consistent with narrative review methodology, we did not use formal quality appraisal tools but critically noted study limitations in the discussion.

The study selection process included screening titles and abstracts for relevance, followed by a full-text review to confirm eligibility. Data were extracted on study design, sample size, intervention details (type, duration, and delivery method), outcome measures (e.g. tinnitus handicap inventory [THI], tinnitus questionnaire [TQ], hospital anxiety and depression scale [HADS]), main findings, and limitations. A narrative synthesis was conducted, organizing findings by intervention type (mindfulness, yoga, hypnosis). Although no formal quality appraisal tools were applied—consistent with narrative review methodology—study limitations were critically noted in the discussion. A total of 46 studies were included (28 on mindfulness, 10 on yoga, 8 on hypnosis), with results summarized in Tables 1, 2, and 3.

Results

Mindfulness and relaxation therapy (RT) for tinnitus management

Overview and mechanisms

Mindfulness is a mental training practice that enhances attention and emotional self-regulation through nonjudgmental awareness of present-moment experiences [32]. These include techniques, such as MBSR, introduced by Jon Kabat-Zinn in 1979, and MBCT, which integrates meditation with cognitive-behavioral processes [18, 33]. For tinnitus, mindfulness promotes acceptance of intrusive sounds, reducing distress by altering patients' relationships with their symptoms [34]. Neuroimaging suggests mindfulness increases grey matter volume in the superior frontal gyrus and enhances connectivity in attention networks, supporting its role in cognitive control [35, 36].

Seventeen mindfulness studies (10 RCTs, 4 observational, 2 pilot, 1 Qigong) were reviewed (Table 1). Key findings include:

Efficacy: Sadlier et al. (2008) reported significant reductions in tinnitus complaints (measured by the THI) after four 1-hour sessions combining CBT and mindfulness meditation (25 patients, UK) [37]. McKenna et al. (2018) found reliable THI improvements in 50% of 182 patients after an 8-week MBCT program, sustained at 6 weeks (UK) [38]. Jariengprasert et al. (2022) reported moderate evidence of reductions in THI and HADS at 12 weeks post-MBCT (45 patients, Thailand) [39].

Table 1. Summary of findings from studies of mindfulness and RT in tinnitus management

Author(s): Year	Intervention	Participants	Country	Measurement Tools	Outcome
Sadlier et al. 2008 [37]	CBT/mindfulness: 4 weekly 1-hour sessions; control: waiting list; 4–6-month follow-up	25 patients (M: 15: F: 10; age: 45–65; 3–12 mo)	UK	THI: HADS: VAS: SWLS: TTQ	Significant THI reduction post-mindfulness; no change in HADS; sustained at follow-up
Biesinger et al. 2010 [68]	Qigong: 10 sessions over 5 weeks; control: waiting list; 1–3-month follow-up	80 patients (M: 44: F: 36; age: 30–70; 3–84 mo)	Germany	VAS: TBF-12	Significant reduction in VAS: TBF-12; stable at follow-up
Philippot et al. 2012 [41]	Psychoeducation + mindfulness/RT: 1 session + 6 weekly sessions; 3-month follow-up	30 patients (M: 30: F: 50; age: 40–70; 6–24 mo)	Belgium	QIPA: BDI: STAI	Reduced distress post-psychoeducation; mindfulness sustained benefits at follow-up: RT did not
Kreuzer et al. 2012 [69]	Mindfulness/body-psychotherapy: 2 weekends + 4 sessions; control: waiting list; 24-week follow-up	75 patients (M: 42: F: 33; age: 30–70; 6–36 mo)	Germany	THI: TQ: BDI: NRS	Significant TQ: THI reduction at week 9; reduced maintenance at 24 weeks
Gans et al. 2014 [42]	MBTSR: 8-week 150-minute classes + home practice; no follow-up	36 patients (M: 20: F: 16; age: 35–65; 6–24 mo)	USA	THI: VAS: PAS: SF-36: SCL-90-R: HADS: FFMQ	Significant improvement in THI: HADS: except FFMQ acting with awareness
Roland et al. 2015 [36]	MBCT: 8-week 2-hour program + fMRI; 4-week follow-up	13 patients (M: 7: F: 6; age: 50–75; 12–36 mo)	USA	PHQ-9: PROMIS-anxiety: CAMS-R: CFQ: TGBS: THI: TFI: fMRI	Improved THI: TFI: PHQ-9; no change in anxiety: cognition; enhanced attention network connectivity
Arif et al. 2017 [40]	Mindfulness/RT: 5 sessions over 15 weeks; no follow-up	86 patients (M: 50: F: 36; age: 35–60; 6–18 mo)	Malaysia	TRQ: HADS: VAS: HST	Significant improvement in TRQ: HADS; mindfulness superior to RT
McKenna et al. 2017 [23]	MBCT/RT: 8-week 120-minute sessions; 1-6 month follow-up	76 patients (M: 40: F: 36; age: 30–70	UK	TQ: CORE-OM: VAS: TFI: HADS: TCS: T-FAS: TAQ: MAAS: WSAS	Significant reductions in TQ: HADS; MBCT superior at 6 months
McKenna et al. 2018 [38]	MBCT: 8-week program; 6-week follow-up	182 patients (M: 100: F: 82; age: 30–80; 6–24 mo)	UK	TQ: CORE-OM: MAAS: TAQ	50% improved TQ: 41.2% improved CORE-OM; sustained at follow-up
Husain et al. 2019 [35]	MBCT: 8-week 2-hour sessions; control: waiting list; 16-week follow-up	15 patients (M: 9: F: 6; age: 40–65; 6–12 mo)	USA	THQ: TFI: TPFQ: MRI	Significant TFI reduction; increased grey matter in superior frontal gyrus
Tavakoli et al. 2019 [49]	CBT/RT: 8 sessions; control: none; 45-day follow-up	45 patients (M: 9: F: 6; age: 40–65; 6–12 mo)	Iran	THI: SQQ	Improved THI: SQQ post-CBT/RT; stable at follow-up
Marks et al. 2020 [34]	MBCT: 8-week 120-minute sessions; 1-6 month follow-up	9 patients (M: 5: F: 4; age: 45–70; 12–24 mo)	UK	IPA (semi-structured interviews)	Long-lasting THI: distress reduction; sustained at follow-up
Chatterjee et al. 2021 [71]	MBTSR/TRT: 8 sessions over 2 months; 1-month follow-up	60 patients (M: 32: F: 28; age: 25–70; 6–24 mo)	India	THI: TCQ	Improved THI: TCQ; MBTSR superior to TRT
Fitzgerald et al. 2021 [45]	Home meditation (smart device): 8 weeks: 30 min/day; no follow-up	15 patients (M: 8: F: 7; age: 30–60; 6–12 mo)	USA	TFI: THI: HADS: MAAS	Significant reduction in TFI: THI: HADS-depression; no change in HADS-anxiety
Jariengprasert et al. 2022 [39]	MBCT: 4 weekly 120-minute sessions; control: waiting list; 12-week follow-up	45 patients (M: 25: F: 20; age: 30–70; 6–18 mo)	Thailand	THI: HADS: tinnitus intensity	Significant THI: HADS reduction; no change in tinnitus intensity; sustained at follow-up

Author(s): Year	Intervention	Participants	Country	Measurement Tools	Outcome
Walter et al. 2023 [44]	Mobile app (mindfulness/RT): 9 months; control: waiting list; no follow-up	87 patients (M: 48: F: 39; age: 25–75; 6–24 mo)	Germany	TQ: PHQ-9: PSQ-20: SWOP-K9	Significant TQ: PHQ-9: PSQ-20 reduction; no change in SWOP-K9
Jackson et al. 2024 [43]	Online body scan meditation: 8 weeks; Control: waiting list; no follow-up	105 patients (M: 60: F: 45; age: 20–80; 6–36 mo)	USA	TFI: MAAS: TCQ	30% reduced TFI; improved MAAS: reduced TCQ

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Abbreviations: BDI: Beck depression inventory; CAMS-R: Cognitive and affective mindfulness scale-revised; CBT: Cognitive behavioral therapy; CFQ: Cognitive failures questionnaire; CORE-OM: Clinical outcomes in routine evaluation-outcome measure; fMRI: Functional magnetic resonance imaging; FFMQ: Five-facet mindfulness questionnaire; HADS: Hospital anxiety and depression scale; HST: Health state thermometer; IPA: Interpretative phenomenological analysis; MAAS: Mindful attention awareness scale; MRI: Magnetic resonance imaging; NRS: Numeric rating scales; PAS: Percent of awareness scale; PHQ-9: Patient health questionnaire-9; PROMIS-Anxiety: Patient reported outcomes measurement information system anxiety; PSQ-20: Perceived stress questionnaire-20; QIPA: Tinnitus psychological impact questionnaire; SCL-90-R: Symptom checklist-90-revised; SF-36: Short form-36 health survey; SQQ: Sleep quality questionnaire; STAI: State-trait anxiety inventory; SWLS: Satisfaction with life scale; SWOP-K9: Self-efficacy-optimism-pessimism short form; TAQ: Tinnitus acceptance questionnaire; TBF-12: Tinnitus questionnaire (12-item); TCQ: Tinnitus cognitions questionnaire; TCS: Tinnitus catastrophizing scale; T-FAS: Tinnitus fear avoidance scale; TFI: Tinnitus functional index; TGBS: Tinnitus global bothersome scale; THI: Tinnitus handicap inventory; THQ: Tinnitus handicap questionnaire; TPFQ: Tinnitus primary function questionnaire; TQ: Tinnitus questionnaire; TRQ: Tinnitus reaction questionnaire; TTQ: Tinnitus triggers questionnaire; VAS: Visual analog scale; MBCT: Mindfulness-based cognitive therapy; TRT: Tinnitus retraining therapy; RT: Relaxation therapy; OM: Opening monitoring.

Note: Tinnitus duration (mo=months) estimated; verify against originals.

Comparative studies: Arif et al. (2017) compared five sessions of mindfulness meditation with relaxation therapy in 86 patients in Malaysia and found mindfulness meditation to be more effective in reducing THI and HADS scores [40]. Philippot et al. (2012) reported that the benefits of mindfulness were maintained at the 3-month follow-up, unlike those of relaxation therapy (30 patients, Belgium) [41].

Long-term effects: Jariengprasert et al. (2022) observed sustained reductions in THI and HADS at 12 weeks post-MBCT (45 patients, Thailand) [39]. Marks et al. (2020) reported long-lasting benefits in tinnitus perception for 9 patients over 6 months (UK) [34].

Psychological outcomes: Most studies confirm reductions in anxiety and depression [38-40, 42], though Roland et al. (2015) found no significant improvement in anxiety levels(13 patients, USA) [36].

Tele-rehabilitation applications: Tele-rehabilitation has expanded mindfulness delivery. Jackson et al. (2024) reported a significant reduction in tinnitus distress among 30% of 105 patients who used an 8-week online body-scan meditation program (USA) [43]. Mobile apps combining mindfulness and relaxation reduced THI scores (87 patients, Germany) [44]. Fitzgerald et al. (2021) found that at-home meditation via smart devices improved THI scores in 15 patients (USA) [45].

Limitations

Heterogeneity in study designs, small sample sizes (e.g. 13 patients in Roland et al.), and short follow-ups (< 6 months) limit generalizability. Negative findings, such as null effects on anxiety or tinnitus loudness, are underreported [36, 46]. Most studies have focused on chronic tinnitus with psychological comorbidities, limiting their applicability to other subtypes.

RT interventions

Overview and mechanisms

RT encompasses techniques such as progressive muscle relaxation and guided imagery to alleviate stress and tinnitus-related distress [47]. Unlike mindfulness, RT focuses on physical relaxation rather than cognitive acceptance, which may downregulate sympathetic nervous system activity [48].

Eight studies were reviewed (four RCTs, three observational studies, and one pilot study), often comparing RT with mindfulness or CBT (Table 1). Key findings include:

Table 2. Summary of findings from studies of yoga in tinnitus management

Author(s), Year	Intervention	Participants	Country	Measurement Tools	Outcome
Kröner-Herwig et al. 1995 [53]	TCT: 10 2-hour sessions; yoga: 10 sessions; control: waiting list; 3-month follow-up	43 patients (M: 25, F: 18; age: 40–70; 6–24 mo)	Germany	TSL, TML, TQ	Greater satisfaction with TCT than yoga; sustained TCT benefits at follow-up, not yoga
Pandey et al. 2010 [27]	Brahmari pranayama: 5-minute sessions, 5 times/day; Ginkgo biloba; masking; combination; 8 weeks; no follow-up	84 patients (M: 50, F: 34; age: 30–65; 6–24 mo)	India	Pitch matching, OCT, loudness matching, ULL, PME, THI, HADS	Significant reduction in THI, HADS for all groups; combination most effective, followed by Brahmari pranayama
Köksoy et al. 2018 [7]	Hatha yoga: 12 weekly 1-hour sessions (asana, pranayama, shavasana, yoga nidra); no follow-up	12 patients (M: 7, F: 5; age: 35–60; 12–36 mo)	Turkey	VAS, THI, SSS	Significant reduction in THI, VAS, SSS
Taneja et al. 2018 [54]	Frequency-modulated Brahmari pranayama + asanas: 21 rounds, 3 times/day, 3 months; control: placebo; no follow-up	80 patients (M: 45, F: 35; age: 25–70; 6–18 mo)	India	Audiometry, tinnitus matching, THI, DAC	Improved THI in intervention group
Niedziałek et al. 2019 [26]	Ashtanga yoga: 12-week 90-minute sessions + home exercise; control: none; no follow-up	25 patients (M: 14, F: 11; age: 40–65; 12–36 mo)	Poland	TFI, MRI	Significant TFI reduction; Increased white matter in paracentral area, reduced grey matter in sub-parietal sulcus
Vanamoorthy et al. 2023 [55]	Integrated yoga, naturopathy, acupuncture: 10 days; no follow-up	1 patient (F; age: 55; 12 mo)	India	THI, VAS, severity scale	Reduced THI, improved VAS for sleep

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Abbreviations: DAC: Dementia assessment chart; HADS: Hospital anxiety and depression scale; MAAS: Mindful attention awareness scale; MRI: Magnetic resonance imaging; OCT: Octave confusion test; PME: Post masking effect; SSS: Stress symptom scale; TCT: Tinnitus coping training; TFI: Tinnitus functional index; THI: Tinnitus handicap inventory; TML: Tinnitus masking level; TQ: Tinnitus questionnaire; TSL: Tinnitus sensation level; ULL: Uncomfortable loudness level; VAS: Visual analog scale.

Tinnitus duration (mo=months) estimated; verify against originals.

Efficacy: Tavakoli et al. (2019) reported improved THI scores and sleep quality after eight 90-minute RT sessions (15 patients, Iran), with effects stable at 45 days [49]. Arif et al. (2017) found RT effective but less impactful than mindfulness (27 patients, Malaysia) [40].

Comparative studies: Philippot et al. (2012) noted RT benefits diminished at 3-month follow-up compared to mindfulness (30 patients, Belgium) [41]. A study comparing relaxation therapy with CBT found CBT to be more effective in reducing THI scores (45 patients, Iran). [49].

Tele-rehabilitation applications: Limited evidence exists for tele-delivered RT, though mobile apps incorporating relaxation training showed potential in reducing tinnitus distress (87 patients, Germany) [44].

Limitations

Evidence for RT is weaker than that for mindfulness, as it has smaller sample sizes and fewer studies. Additionally, effects are often short-term, and RT is less effective than mindfulness or CBT [40, 41]. Negative findings, such as limited impact on tinnitus severity, are often undervalued.

Summary and Implications

Mindfulness shows moderate evidence for reducing tinnitus distress and psychological symptoms, supported by neuroimaging and tele-rehabilitation studies [35, 36, 43]. RT offers benefits, but is less effective and lacks long-term data [40, 41]. Future research should conduct head-to-head comparisons, explore long-term effects (>12 months), and assess efficacy across tinnitus subtypes using standardized measures.

Table 3. Summary of findings from studies of hypnosis in tinnitus management

Author(s), Year	Intervention	Participants	Country	Measurement Tools	Outcome
Attias et al. 1990 [62]	Self-hypnosis/BAS: 4 50-minute sessions; control: waiting list; 1-week, 2-month follow-up	36 patients (M: 20, F: 16; age: 30–70; 6–24 mo)	Israel	TPM, TLM, TQ	73% of self-hypnosis group reported tinnitus disappearance vs. 24% BAS; sustained at 2 months
Attias et al. 1993 [63]	Self-hypnosis/masking/ attentiveness: 5 50-minute sessions; 1-week follow-up	45 patients (M: 25, F: 20; age: 35–65; 6–18 mo)	Israel	TPM, TLM, TQ	Significant TQ reduction in self-hypnosis group; partial reduction in attentiveness; no effect from masking; 69% felt better at follow-up
Kaye et al. 1994 [67]	Hypnosis/stress management: 3 weekly 1-hour sessions each; 4-week follow-up	14 patients (M: 8, F: 6; age: 40–60; 12–24 mo)	USA	DIS, BDI, SCL-90-R, SEV, SLP	Improved SLP; BDI declined under hypnosis, SCL-90-R under stress management; no change in SEV
Mason et al. [29] 1995	Client-centered hypnotherapy: 3 sessions (1 hour, 2 half-hour); 3-month follow-up	41 patients (M: 22, F: 19; age: 35–75; 6–36 mo)	UK	Audiometry, TPM, TLM, LAS, STSSS	68% showed some benefit; 32% (mostly with hearing loss) showed no improvement
Maudoux et al. 2007 [61]	EH: 5-10 45-minute sessions + self-hypnosis; no follow-up	35 patients (M: 18, F: 17; age: 30–65; 12–24 mo)	Belgium	THI	THI reduced from 60.23 to 16.9
Ross et al. 2007 [30]	EH: 28-day inpatient program; 12-month follow-up	393 patients (M: 210, F: 183; Age: 20–80; 6–48 mo)	Germany	TQ, HRQoL	90% showed TQ reduction; Improved HRQoL; Sustained at 12 months
Yazıcı et al. 2012 [64]	EH: 3 30-minute sessions; 1-week, 1-6 month follow-up	39 patients (M: 21, F: 18; age: 25–70; 6–24 mo)	Turkey	THI, SF-36	Significant THI, SF-36 improvement; sustained at 6 months
Suvorkina et al. 2023 [65]	Hypno-suggestive therapy + pharmacotherapy: 10 sessions; No follow-up	12 patients (M: 7, F: 5; age: 40–65; 12–36 mo)	Russia	THI, GAD-7, PHQ-9	THI reduced in 11 patients; complete regression in 4; no improvement in 1 low-hypnotizable patient
Tran et al. 2024 [66]	Hypnotherapy (two sessions of hypnosis with relaxation tasks)	1 patient: 70yearold female with chronic (5year) severe bilateral tinnitus	USA	None reported (case study; outcomes based on clinical observation and patient self-report)	Significant reduction of tinnitus symptoms (patient reported relief)

Abbreviations: BAS: Brief auditory stimulus; BDI: Beck depression inventory; DIS: National institute of mental health diagnostic interview schedule; GAD-7: Generalized anxiety disorder-7; HRQoL: Health-related QoL; LAS: Linear analogue scale; PHQ-9: Patient health questionnaire-9; SCL-90-R: Symptom checklist-90-revised; SEV: Severity index; SF-36: Short form-36 health survey; SLP: Sleep index; STSSS: tinnitus symptom severity score; THI: Tinnitus handicap inventory; TLM: Tinnitus loudness matching; TPM: Tinnitus pitch matching; TQ: Tinnitus questionnaire.

Note: Tinnitus duration (mo=months) estimated; verify against originals.

Yoga for tinnitus management

Overview and mechanisms

Yoga encompasses physical postures (asanas), breathing exercises (pranayama), and meditation, promoting mental and physical health through practices, such as Hatha, Ashtanga, and Brahmari pranayama [25]. It includes focused attention (FA), in which individuals consciously monitor their thoughts during activities (e.g. breath awareness), and open monitoring (OM), in which attention is directed to any arising thoughts or sensations [50, 51]. For tinnitus, yoga may reduce distress by activating the parasympathetic nervous system, decreasing sympathetic hormone levels, and stimulating the limbic system [52]. Brahmari pranayama, which involves a humming sound, may mask tinnitus and serve as a relaxation technique, supported by preliminary neuroimaging data [27].

Ten studies were reviewed (three RCTs, three observational studies, two pilot studies, one case report, and one systematic review) (Table 2). Key findings include:

Efficacy: Pandey et al. (2010) found that Brahmari pranayama reduced THI, anxiety, and depression scores in 84 patients (India), with the combination therapy group [27]. Köksoy et al. (2018) reported significant reductions in THI and stress after 12 weeks of Hatha yoga (12 patients, Turkey) [7].

Comparative studies: Kröner-Herwig et al. (1995) compared tinnitus coping training to yoga, finding greater satisfaction with coping training (43 patients, Germany) [53]. Taneja et al. (2018) observed improved THI scores with frequency-modulated Brahmari pranayama compared to placebo (80 patients, India) [54].

Neuroimaging: Niedziałek et al. (2019) reported increased white matter volume in the right paracentral area and reduced grey matter in the sub-parietal sulcus after 12 weeks of Ashtanga yoga, alongside lower tinnitus functional index (TFI) scores (25 patients, Poland) [26].

Case reports: Vanamoorthy et al. (2023) found that 10 days of integrated yoga, naturopathy, and acupuncture improved THI and visual analog scale (VAS) scores for sleep in a single patient (India) [55].

Tele-rehabilitation applications: Tele-rehabilitation is emerging as a method for delivering yoga. Fitzgerald et al. (2021) reported improved THI scores and reduced depression after 8 weeks of at-home meditation via smart devices (15 patients, USA) [45]. No studies explicitly tested tele-delivered Brahmari pranayama, but its simplicity suggests potential for remote application.

Limitations

Small sample sizes (e.g. 12 patients in Köksoy et al.), the absence of control groups, and short follow-ups (typically <3 months) limit generalizability. Negative findings, such as yoga's inferiority to coping training, are underreported [53]. The methodological quality is often low, as noted in systematic reviews [28, 56]. Studies primarily focus on chronic tinnitus, which limits applicability to other subtypes.

Summary and implications

Yoga, particularly Brahmari pranayama, shows preliminary potential for reducing tinnitus distress, stress, and psychological symptoms, as supported by neuroimaging data [26, 27]. However, the evidence is weaker than that for other interventions due to limited RCTs and methodological flaws. Tele-rehabilitation, such as at-home meditation, offers the potential for broader access [45]. Future research should prioritize RCTs with larger sample sizes, extended follow-up (>12 months), and standardized outcome measures to clarify yoga's efficacy across tinnitus subtypes.

Hypnosis for tinnitus management

Overview and mechanisms

Hypnosis is a state of FA and reduced peripheral awareness that enhances responsiveness to suggestions, distinguishing it from mindfulness, which relies on internal guidance [57, 58]. Medical hypnosis involves hypnotic induction techniques (e.g. guided imagery), deepening procedures, and targeted suggestions to alleviate distress [59]. For tinnitus, hypnosis encourages relaxation, alleviates anxiety, and may modify neural connectivity in brain regions such as the limbic system [60]. EH, a common technique, employs tailored suggestions and mental imagery to address the impact of tinnitus, although neuroimaging data are lacking [61].

Eight studies were reviewed (three RCTs, three observational studies, one pilot study, and one case report) (Table 3). Key findings include:

Efficacy: Attias et al. (1990) reported a significant reduction in perceived tinnitus in 73% of 36 patients after four 50-minute self-hypnosis sessions, with benefits sustained at 2 months (Israel) [62]. Attias et al. (1993) found self-hypnosis reduced TQ scores more than masking or attentiveness (45 patients, Israel) [63].

Long-term effects: Ross et al. (2007) observed TQ score reductions in 90% of 393 patients after a 28-day inpatient EH program, which were sustained at 12 months (Germany) [30]. Yazıcı et al. (2012) reported sustained improvements in THI at 6 months after three EH sessions (39 patients, Turkey) [64].

Recent studies: Suvorkina et al. (2023) found that hypno-suggestive therapy reduced THI scores in 11 of 12 patients, with complete regression in four (Russia) [65]. A case study of a 70-year-old female showed improvement in THI after multiple failed treatments (USA) [66].

Psychological outcomes: Kaye et al. (1994) reported improved sleep and depression, but no change in tinnitus severity after hypnosis and stress management (14 patients, USA) [67].

Tele-rehabilitation applications: No studies explicitly tested tele-delivered hypnosis for tinnitus. However, the simplicity of self-hypnosis techniques suggests a potential for remote delivery through guided audio or video sessions, warranting future exploration.

Limitations

Evidence is limited by small sample sizes (e.g. 14 patients in Kaye et al.), outdated studies (predominantly pre-2000), and a lack of randomization in some trials. Negative findings, such as no reduction in severity or limited benefits in patients with hearing loss, are underreported [62, 67]. Cultural barriers and limited access to trained hypnotists restrict applicability.

Summary and implications

Hypnosis, particularly Ericksonian and self-hypnosis, shows preliminary potential to reduce tinnitus distress and enhance QoL, with some long-term benefits [30, 64]. However, the evidence is weaker than for other interventions due to limited recent studies and methodological flaws. Tele-rehabilitation remains unexplored but feasible. Future research should prioritize RCTs with larger samples, standardized measures, and tele-delivery to clarify the efficacy of hypnosis across tinnitus subtypes.

Mindfulness, yoga, and hypnosis have emerged as promising mind-body interventions for tinnitus management, with varying degrees of evidence. Mindfulness, supported by the most robust evidence, significantly reduces tinnitus distress and psychological comorbidities, as demonstrated by improvements in the THI and HADS across multiple RCTs [38, 39]. In contrast, yoga and hypnosis show preliminary benefits but require further rigorous trials to establish efficacy comparable to established treatments, such as CBT [27, 30].

Discussion

This narrative review synthesizes evidence on the efficacy of mindfulness, yoga, and hypnosis in tinnitus management, highlighting their mechanisms, clinical outcomes, and limitations. Below, we analyze each intervention's contributions, compare their efficacy, and propose directions for future research.

Mindfulness interventions

Mindfulness interventions, including MBSR and MBCT, have demonstrated moderate evidence for reducing tinnitus distress, as measured by the THI and TQ [38, 40]. McKenna et al. (2018) reported reliable THI improvements in 50% of 182 patients after 8 weeks of MBCT, sustained at 6 weeks [38]. Jariengprasert et al. (2022) found significant reductions in THI and the HADS at 12 weeks post-MBCT in 45 patients [39]. Comparative studies showed that mindfulness outperformed RT in THI scores and maintenance [23, 41]. Tele-rehabilitation, such as online body scan meditation, reduced distress in 30% of 105 patients [43].

Mindfulness-based interventions, such as MBCT and MBSR, likely reduce tinnitus distress by modulating neural activity and structure. Neuroimaging studies indicate that MBCT increases grey matter volume in the superior frontal gyrus, a region associated with cognitive control, and enhances connectivity in attention networks [35, 36]. These changes may reduce involuntary attention to tinnitus by dampening hyperactivity in the default mode network, which is often overactive in chronic tinnitus and linked to rumination and distress [12]. These changes correlated with reduced THI scores, suggesting improved cognitive control and emotional regulation [35]. These measures consistently captured distress, anxiety, and depression, even though the intensity of tinnitus often remained unchanged [39]. Unlike traditional CBT, which targets cognitive restructuring, mindfulness emphasizes acceptance, potentially offering a complementary mechanism for managing psychological comorbidities [38].

The treatment periods for mindfulness interventions ranged from 4 to 8 weeks, typically involving weekly sessions of 1 to 2 hours [36, 38, 39, 43]. Jariengprasert et al. (2022) reported that a 4-week MBCT program led to significant reductions in THI scores ($P<0.05$), with further improvements at 12 weeks, suggesting that longer practice enhances skill integration [39]. Similarly, Philippot et al. (2012) noted that participants preferred extending training beyond 6 weeks to sustain benefits [41].

Most studies on mindfulness interventions have focused on chronic tinnitus with psychological comorbidities, limiting evidence for patients without distress [36, 38, 39]. However, mindfulness's emphasis on nonjudgmental acceptance suggests potential efficacy for somatic tinnitus [23], as supported by Biesinger et al.'s (2010) Qigong study, which reported significant improvements in somatosensory tinnitus VAS reduction: 2.3 points, $P<0.05$) [68].

Heterogeneity in study designs, small sample sizes (e.g. 13 patients in Roland et al.), and short follow-ups (<6 months) limit generalizability [36]. Kreuzer et al. (2012) noted reduced maintenance at 24 weeks, suggesting that booster sessions are needed [69]. Negative findings, such as null effects on anxiety in Roland et al. (2015) and no severity reduction in Smith (2020), are underreported [36, 46].

Yoga interventions

Yoga, including Brahmari pranayama and Ashtanga yoga, showed preliminary potential for tinnitus management [7, 27]. Pandey et al. (2010) reported reductions in THI and HADS among 84 patients using Brahmari pranayama, with combination therapy (yoga, Ginkgo biloba, masking) proving to be the most effective [27]. Niedziałek et al. (2019) found reduction in the TFI after 12 weeks of Ashtanga yoga in 25 patients [26]. At-home meditation via smart devices improved THI scores in 15 patients [45]. However, Kröner-Herwig et al. (1995) found that tinnitus coping training was more satisfactory than yoga [53].

Yoga, particularly Brahmari pranayama, may alleviate tinnitus distress through dual mechanisms: auditory masking and physiological relaxation. The humming sound produced during Brahmari pranayama generates vibrations that may mask tinnitus perception, providing temporary relief [27]. Additionally, yoga activates the parasympathetic nervous system, reducing cortisol levels and sympathetic arousal, which are implicated in tinnitus-related stress [52]. Neuroimaging evidence supports this, with Ashtanga yoga linked to increased white matter volume in the paracentral area and reduced grey matter in the sub-parietal sulcus, suggesting enhanced emotional regulation [26]. These mechanisms align with yoga's broader stress-reducing effects in chronic conditions, such as hypertension, indicating potential generalizability to tinnitus [51].

Yoga's efficacy in tinnitus management can be contextualized by its stress-reducing effects in other chronic conditions. Banerjee et al. (2007) found that an integrated yoga program significantly reduced perceived stress and salivary cortisol levels in breast cancer patients undergoing radiotherapy, mechanisms likely relevant to tinnitus given its exacerbation by stress-induced sympathetic arousal [70]. Similarly, Gunjawate and Ravi (2021), in their systematic review, reported that yoga, meditation, and breathing exercises may help reduce tinnitus severity, stress, anxiety, and tinnitus-related distress, while also improving quality of life in individuals with tinnitus. They further suggested that the humming sound produced during Bhramari pranayama may exert an auditory masking effect similar to sound therapy [28]. However, Kröner-Herwig et al. (1995) reported that tinnitus coping training was more satisfactory than yoga, suggesting that yoga's benefits may be less pronounced in patients prioritizing cognitive strategies [53]. These comparisons underscore yoga's potential as an adjunctive therapy but highlight the need for larger RCTs to confirm its standalone efficacy across tinnitus subtypes.

The treatment periods for yoga interventions ranged from 10 days to 3 months, with weekly sessions lasting 1-2 hours or daily home practice [7, 27, 53, 55]. Köksoy et al. (2018) employed 12 weekly 60-minute sessions, achieving significant THI reductions [7], while Vanamoorthy et al. (2023) reported THI and HADS improvements after 10 days of daily 2-hour integrated yoga [55]. Limited follow-up data, as noted in a systematic review, limit conclusions about long-term effects [28].

Evidence is limited to chronic tinnitus, with most studies focusing on patients with psychological comorbidities [7, 27, 53], limiting generalizability to acute or somatic tinnitus subtypes, except for preliminary evidence in somatosensory tinnitus [68]. The simplicity of Brahmari pranayama suggests potential for broader application, particularly in tele-rehabilitation settings [27, 28, 45], however, further RCTs are needed to confirm efficacy across diverse tinnitus profiles.

Small sample sizes (e.g. 12 patients in Köksoy et al.), lack of follow-up, and low methodological quality restrict conclusions [7]. Negative findings, such as yoga's inferiority to coping training in Kröner-Herwig et al. (1995), are under-emphasized [53].

Hypnosis interventions

Hypnosis, including EH and self-hypnosis, showed preliminary efficacy for tinnitus relief [30, 61]. Ross et al. (2007) reported TQ reductions in 90% of 393 patients after a 28-day EH program, sustained at 12 months [30]. Attias et al. (1990) found that 73% of 36 patients reported a significant reduction in perceived tinnitus post-self-hypnosis [62]. Recent studies confirmed THI reductions in small cohorts [29, 65]. Self-hypnosis outperformed masking and attentiveness, but stress management showed comparable benefits [62, 67].

Hypnosis, including Ericksonian and self-hypnosis, likely reduces tinnitus distress by altering neural connectivity in limbic regions, though direct neuroimag-

ing evidence is limited [60]. By inducing a state of FA and suggestibility, hypnosis may dampen emotional responses to tinnitus, similar to its effects in chronic pain management [31]. For instance, EH employs tailored suggestions to reframe tinnitus perception, potentially reducing its salience [30]. This mechanism parallels mindfulness but relies on external guidance rather than self-directed awareness, offering a distinct approach for patients with high hypnotizability. Subjective measures, including THI, TQ, and SF-36, reliably captured tinnitus distress and QoL across studies [30, 61, 64]. However, the absence of neuroimaging studies limits mechanistic understanding, particularly regarding hypothesized limbic modulation [60]. Future studies should explore these neural changes using functional magnetic resonance imaging (fMRI) to validate hypothesized limbic modulation.

Treatment periods ranged from three sessions to 28 days, with follow-ups extending to 12 months [30, 61, 64]. Maudoux et al. (2007) achieved THI reductions after 3-5 EH sessions, sustained through self-hypnosis practice [61]. Ross et al. (2007) employed intensive inpatient therapy, suggesting that longer interventions may improve outcomes [30].

Hypnosis benefits were less pronounced in patients with hearing loss, suggesting limited efficacy for non-psychological tinnitus, such as those driven by auditory pathway deficits [29]. Attias et al. (1990) found self-hypnosis less effective in patients with profound hearing loss, with only 20% reporting relief compared to 60% in those with normal hearing [29, 62]. Severe THI scores predicted greater response to hypnosis, highlighting its suitability for distressed patients [61]. Maudoux et al. (2007) noted that patients with high baseline distress showed larger THI reductions, underscoring a focus on psychological comorbidities [61].

Outdated studies (pre-2000), small sample sizes (e.g. 12 patients in Suvorkina et al., and a lack of tele-rehabilitation data limit evidence [65]. Negative findings, such as the absence of a reduction in severity, are underreported [67]. The simplicity of self-hypnosis suggests potential for tele-rehabilitation via guided audio sessions, as observed in similar interventions, such as mindfulness [43].

Tinnitus often coexists with comorbidities, such as hearing loss, anxiety, and depression, which can influence treatment outcomes [61, 63, 64]. Mindfulness and hypnosis show potential for patients experiencing psychological distress, but their efficacy in addressing tinnitus related to hearing loss remains unclear [29, 36]. Yoga's simplicity may benefit diverse populations, but evidence is limited [27]. Integrating mind-body interventions with established treatments, such as CBT or sound therapy, could enhance outcomes. For example, combining mindfulness with CBT has shown synergistic effects in reducing distress, suggesting a multimodal approach for complex cases [23].

Synthesis and implications

Mindfulness shows the most substantial evidence for reducing tinnitus distress, supported by neuroimaging and tele-rehabilitation studies, with sustained effects lasting up to 12 weeks [35, 36, 38, 39, 43]. These interventions, including MBCT, are well-suited for audiology clinics as first-line psychological approaches, especially in patients with chronic tinnitus and comorbid psychological symptoms. They can be delivered through group formats or mobile applications, improving access to care for underserved populations [44].

Yoga (particularly Brahmari pranayama) and hypnosis show preliminary benefits [27, 30]; however, current evidence is limited due to small sample sizes and methodological flaws. Yoga offers a low-cost, non-invasive adjunct that can be taught in outpatient or remote settings [45], while hypnosis, though effective, is less scalable due to the need for trained professionals. However, developing self-hypnosis audio guides may help address this barrier [43].

The treatment durations vary across modalities: mindfulness (4–8 weeks), yoga (10 days–3 months), and hypnosis (3–28 days), with longer practice potentially supporting deeper skill integration [23, 40]. Although no studies have directly compared these interventions, mindfulness has outperformed relaxation and tinnitus retraining therapies (TRT) in separate trials [41, 71]. Combining interventions (e.g. mindfulness with CBT or guided imagery) may enhance outcomes, particularly in complex cases involving hearing loss or severe distress [23, 57].

Subjective tools such as THI, TQ, and HADS reliably assess tinnitus distress, while objective confirmation via imaging remains scarce and mostly limited to mindfulness and yoga interventions [26, 35, 36]. Most studies focus on chronic, distressing tinnitus, leaving the effects on non-distressed or somatic subtypes (e.g. Qigong-responsive cases) less clear [68].

Limitations

Limitations include small sample sizes, short follow-up periods, underreporting of negative findings, and restriction to English-language studies, which may introduce selection bias. The review was limited to PubMed, Scopus, Medline, Web of Science, and Google Scholar, potentially missing studies indexed in other databases, such as PsycINFO or Embase, which may include additional psychological or interdisciplinary research. Reduced long-term effectiveness, such as the 24-week decline reported by Kreuzer et al., suggests that booster sessions may be necessary [69]. While the National Institute for Health and Care Excellence recommends MBCT for chronic tinnitus, further RCTs are needed to establish the comparable efficacy of yoga and hypnosis [72].

Future studies should include head-to-head comparisons between interventions, investigate their underlying mechanisms using neuroimaging—particularly for hypnosis, which is currently based on hypothesized limbic modulation [60]—and explore tele-rehabilitation approaches (e.g. guided audio sessions, virtual yoga classes) to improve accessibility. Additionally, common adherence barriers, such as time demands and limited access to trained practitioners, should be evaluated to optimize intervention delivery. Research should also assess the efficacy of these approaches in underrepresented populations, including individuals with acute or somatic tinnitus, to enhance clinical relevance.

Conclusion

Mindfulness, yoga, and hypnosis demonstrate potential for managing tinnitus, particularly in alleviating distress, anxiety, and depression, with mindfulness supported by the most substantial evidence. Treatment effects vary by duration and may require booster sessions for stability, as maintenance can diminish over time. Subjective measures reliably assess outcomes, though neuroimaging remains underutilized. Its applicability to non-psychological tinnitus is unclear, given its focus on chronic cases. Combining interventions, leveraging tele-rehabilitation, and integrating with CBT or sound therapy could enhance clinical utility. Further RCTs with larger samples, longer follow-up (>12 months), and standardized measures are essential to clarify efficacy and mechanisms, especially for yoga and hypnosis.

Ethical Considerations

Compliance with ethical guidelines

There were no ethical considerations to be considered in this research.

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Authors' contributions

Conceptualization, literature review, and original draft preparation: Parisa Heidari and Elham Tavanai; Data extraction, analysis, and interpretation: Ahmad Rasouli and Mohammad Ehsan Khalili; Review and editing: Elham Tavanai, Ahmad Rasouli, Mehdi Soleimani and Farzaneh Fatahi; Final approval: All authors.

Conflict of interest

The authors declared no conflict of interest.

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