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Effectiveness of Yoga as an Adjunctive Intervention for Alleviating Symptoms of Fibromyalgia: a Narrative Review

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Abstract

Background. Fibromyalgia is a chronic syndrome characterized by widespread musculoskeletal pain, fatigue, sleep disturbance, cognitive complaints, and psychological distress. Pharmacological options have only modest effect sizes and are limited by adverse events. The 2017 revised European Alliance of Associations for Rheumatology (EULAR) recommendations gave a strong-for recommendation only to aerobic and strengthening exercise. Yoga, integrating physical postures, breath regulation and meditative attention, has been proposed as an adjunctive intervention.

Aim. To synthesize PubMed-indexed evidence on whether yoga, used as an adjunct to standard care, has a clinically meaningful effect on symptoms of fibromyalgia.

Material and methods. PubMed was searched up to April 2026 for randomized controlled trials (RCTs), pilot controlled trials, single-arm pilots and systematic reviews or meta-analyses on yoga in adults with fibromyalgia. Findings were interpreted against published MCID thresholds.

Results. Two randomized controlled trials with active wait-list comparison, one randomized between-group comparison, several uncontrolled or single-arm pilots and five systematic reviews informed the synthesis. The Yoga of Awareness RCT reported a 31.4% improvement in FIQR total at end of an 8-week intervention, with reductions in pain, fatigue, and pain catastrophizing. Other trials reported smaller or mixed effects. Adverse events were uncommon and mild.

Conclusions. The available evidence is limited to a small number of RCTs and several uncontrolled pilots, almost exclusively in women. Within this restricted evidence base, supervised gentle yoga programmes appear safe and may produce reductions in fibromyalgia impact and pain that approach or exceed published MCID thresholds. Yoga should therefore be considered an adjunct within a multimodal approach in which exercise remains the primary non-pharmacological intervention, not a substitute for guideline-recommended care.

Keywords: fibromyalgia; yoga; mind-body therapy; chronic widespread pain; complementary therapy; minimal clinically important difference

1. Introduction

Fibromyalgia is a chronic disorder characterized by widespread musculoskeletal pain, fatigue, non-restorative sleep, cognitive complaints, mood disturbance and a constellation of somatic symptoms that collectively reduce health-related quality of life and functional capacity. The disorder’s etiopathogenesis is now best understood as a complex interplay between genetic predisposition, stressful life events, peripheral inflammation, and abnormal central sensitivity to somatosensory input that together result in pain amplification, allodynia and hyperalgesia

[1]. Diagnosis in contemporary practice rests on the 2016 revisions to the American College of Rheumatology criteria, which combine clinical assessment, widespread pain index and symptom severity scale, and remove the previous requirement for a tender point examination [2].

Reported prevalence figures for fibromyalgia vary widely, with population-based estimates typically falling between approximately 2% and 4%, and recent narrative reviews citing a broader 2 to 8% range that reflects differences in diagnostic criteria and case ascertainment [1,3]. A 2017 systematic review and meta-analysis of more than 3.5 million subjects estimated the pooled general-population prevalence at 1.78%, with 3.98% in women and approximately 0.01% in men using studies meeting the inclusion criteria of that review [3]. The dramatic difference between the female and male estimates in pooled studies should be interpreted with caution. A reanalysis of unbiased epidemiological samples using the 2016 criteria demonstrated that, when selection bias inherent to clinical referral pathways is removed, the female-to-male sex ratio is closer to approximately 1.5:1 rather than the 9:1 ratio commonly observed in clinical samples [4]. The implication is that fibromyalgia is over-identified in women and under-identified in men, and that conclusions from yoga trials, which have predominantly enrolled women, must be generalized to the male population only with explicit caution.

Pharmacological treatment options for fibromyalgia, including antidepressants, anticonvulsants, analgesics and muscle relaxants, have demonstrated efficacy in randomized trials but produce only modest absolute reductions in pain and are frequently limited by side effects, leading to discontinuation in a substantial proportion of patients [1]. Reflecting this, the European Alliance of Associations for Rheumatology (EULAR) revised its recommendations in 2017 and gave a strong recommendation only to exercise interventions, specifically aerobic and strengthening exercise. Mind-body therapies, including yoga, qigong and tai chi, received a weaker positive recommendation, with the panel emphasizing that non-pharmacological modalities should generally be tried before pharmacological treatments [5]. Aerobic exercise has the most extensive evidence base, with a Cochrane review of 13 randomized trials concluding that aerobic training probably improves health-related quality of life, physical function and pain at the end of intervention compared with usual care, although the certainty of evidence remained moderate to low [6]. The relative weakness of the recommendation for yoga compared with classical aerobic exercise is therefore an important constraint on any clinical claim made about yoga in this population.

Within the broader category of non-pharmacological options, yoga has nonetheless attracted scientific and clinical interest. Yoga is a complex, multicomponent intervention that integrates physical postures (asana), regulated breathing techniques (pranayama) and meditative attention. Gentle, restorative and mindfulness-based formats are particularly suited to patients with chronic widespread pain because they allow patient-paced exposure to movement, attention to interoceptive sensation and explicit cultivation of acceptance. Mind-body interventions,

including yoga, have been proposed as plausible candidates for modulating central pain processing, autonomic regulation and the stress response in fibromyalgia [7,8].

This narrative review focuses on a single, practically oriented question: does yoga, used as an adjunct to standard care, have a clinically meaningful effect on rehabilitation-relevant symptoms of fibromyalgia? Outcomes considered are pain intensity (visual analogue scale, VAS), overall fibromyalgia impact measured by the Fibromyalgia Impact Questionnaire (FIQ) and its revised form (FIQR), fatigue, sleep, depression, anxiety, pain catastrophising, mindfulness and adverse events. The synthesis is intended to help clinicians, physiotherapists, yoga therapists and patients distinguish biological and psychological plausibility from clinically meaningful benefit, and to provide a frame of reference for shared decision-making about the place of yoga within a multimodal treatment plan.

2. Material and methods

This study is a narrative literature review. PubMed was searched up to April 2026. The principal search strings combined index and free-text terms for the intervention and the population, including: "yoga" AND "fibromyalgia"; "yoga" AND "chronic widespread pain"; "mind-body" AND "fibromyalgia". Searches were limited to English-language reports of human studies in adults. Reference lists of key meta-analyses and recent narrative reviews were screened by hand for additional eligible studies.

Eligibility was guided by the following criteria. Inclusion: (i) randomized controlled trials, pilot controlled trials and single-arm pilot studies of yoga, broadly defined to include asana, pranayama and meditative components, in adults with a clinical or formal diagnosis of fibromyalgia; (ii) systematic reviews and meta-analyses of such trials; (iii) reports of rehabilitation-relevant outcomes including VAS pain, FIQ or FIQR, fatigue, sleep, depression, anxiety, pain catastrophizing, mindfulness or adverse events. Exclusion: (i) animal studies; (ii) case reports with fewer than 10 participants; (iii) studies of pure breathing exercises or meditation without postural components, since these were considered separable interventions; (iv) studies in mixed chronic pain populations where fibromyalgia-specific data could not be extracted.

After removal of duplicates and screening of titles and abstracts, the synthesis distinguishes three categories of trial. The first category comprises full randomized controlled trials with a wait-list comparator, namely the 8-week Yoga of Awareness pilot RCT and its 3-month follow-up [9,10], and the 4-week medical yoga therapy RCT by Kumar and colleagues [11]. The second category comprises a randomized between-group comparison without wait-list control by da Silva and colleagues, in which two yoga programmes were compared [12]. The third category comprises uncontrolled or single-arm pilot trials and time-series studies, including the work of Curtis and colleagues, Lazaridou and colleagues, Hennard, and the Carson 2016 mindful yoga pilot [13-16]. Five systematic reviews or meta-analyses provided complementary

synthesis [7,17-20]. Findings were grouped by outcome domain and interpreted against published MCID thresholds rather than against statistical significance alone.

MCID thresholds used as anchors in this review were drawn from published validation studies and applied with explicit caveats. For the original Fibromyalgia Impact Questionnaire, an anchor-based MCID of approximately 14% of baseline total score has been derived from large pregabalin trials [21]. The Revised Fibromyalgia Impact Questionnaire (FIQR), which has improved psychometric properties, was validated against the original FIQ; however, the validation study explicitly noted that the responsiveness and MCID of the FIQR were not estimated and would require dedicated large clinical studies [22]. The use of the 14% FIQ threshold to interpret FIQR change in this review is therefore a working hypothesis for orientation rather than a validated cut-off, and FIQR effects should be interpreted accordingly. For VAS pain, the conservative 1.4 cm MCID applied here was originally derived in patients with rotator cuff disease [23]; no fibromyalgia-specific MCID for VAS pain has been formally established, and translation of this threshold to a chronic widespread pain population is approximate. Effects on fatigue, sleep, depression and anxiety were interpreted using standardized mean differences (SMDs) reported in meditative movement meta-analyses, where SMDs of approximately 0.5 are conventionally regarded as moderate [17].

3. Biological and psychological rationale

The rationale for yoga as an adjunct in fibromyalgia rests on several converging lines of evidence. First, fibromyalgia is increasingly conceptualized as a disorder of central nociceptive amplification, with augmented processing in pain-related cortical and subcortical structures, altered brain connectivity, reduced descending inhibitory tone and dysregulation of autonomic nervous system. [1]. Interventions that modulate central pain processing, autonomic balance and stress reactivity are therefore mechanistically plausible candidates.

Second, yoga combines features that target several of these mechanisms simultaneously. Asana practice provides graded, low-impact musculoskeletal loading that can improve strength, flexibility and proprioception while permitting patients to adjust intensity to their tolerance. Pranayama, particularly slow diaphragmatic breathing and prolonged exhalation, has been associated with increased parasympathetic activity, reduced sympathetic arousal and improvements in heart rate variability. Meditative attention to bodily sensation, breath and mental events fosters interoceptive awareness, decentering from pain-related thoughts and the cultivation of acceptance, all of which are core targets in third-wave cognitive behavioral therapies for chronic pain. The Yoga of Awareness program developed for fibromyalgia explicitly weaves these components together with structured group discussions on coping with chronic illness [9].

Third, pilot work has begun to characterize candidate biological mechanisms specific to yoga in fibromyalgia. Curtis and colleagues, in an uncontrolled time-series pilot study, observed reductions in pain intensity, pain catastrophizing and disability and increases in mindfulness

and acceptance after an 8-week yoga intervention, accompanied by alterations in salivary cortisol patterns [13]. The Carson 2016 mindful yoga pilot reported modulation of indicators of abnormal pain processing, including pressure pain thresholds, in a small sample [16]. Kumar and colleagues, using transcranial magnetic stimulation in a randomized controlled trial of 4 weeks of medical yoga therapy, reported reductions in pain and tender point counts together with changes in cortical excitability and lumbar flexibility, suggesting that even short structured yoga interventions may engage central neuromodulatory mechanisms [11]. These mechanistic findings remain preliminary and based on small samples.

Biological and psychological plausibility is therefore reasonable. Whether the rationale translates into clinically meaningful improvements in fibromyalgia-relevant outcomes is a separate question that requires careful evaluation against MCID thresholds and active comparators, with explicit attention to the methodological strength of each contributing study.

4. Results

Table 1 summarizes the principal trials of yoga in adults with fibromyalgia included in this narrative synthesis, distinguishing fully randomized controlled trials with wait-list or active comparator from randomized between-group comparisons without wait-list and from uncontrolled or single-arm pilots. This distinction is central to interpretation: only the first category supports causal inference about effect of yoga over usual care, whereas pilot studies generate hypotheses and effect-size estimates but cannot demonstrate efficacy. Throughout this section, four categories of outcome are considered separately and not conflated: (i) overall fibromyalgia impact (FIQ and FIQR total scores); (ii) primary symptom-level outcomes (pain intensity on VAS, fatigue, sleep, stiffness); (iii) psychological outcomes (depression, anxiety, pain catastrophizing, mindfulness, acceptance); and (iv) adverse events and adherence.

Table 1. Principal trials of yoga in adults with fibromyalgia included in the narrative synthesis, separated by study design.

Study	Participants	Design	Yoga programme	Follow-up; outcomes	Principal finding
Carson et al., 2010	53 women	Pilot RCT vs wait-list	8-week Yoga of Awareness (asana, meditation, pranayama, coping, group discussions)	8 weeks; FIQR, pain, fatigue, mood	Significant improvements in FIQR total, pain, fatigue, mood and catastrophizing vs wait-list
Carson et al., 2012	21 + 18 women	RCT extension	8-week Yoga of Awareness	3 months; FIQR, pain, mood	FIQR total improved 31.9%

Study	Participants	Design	Yoga programme	Follow-up; outcomes	Principal finding
		and 3-month follow-up	(asana, meditation, pranayama, coping, group discussion); replication in former wait-list		post-treatment; 21.9% improvement maintained at 3 months
Kumar et al., 2025	63 adults	Assessor-blinded RCT vs wait-list	4 weeks of supervised medical yoga therapy	4 weeks; subjective and pressure pain, tender points, lumbar flexion, corticomotor excitability	Reduced pain and tender point counts; improved lumbar flexibility; changes in corticomotor parameters
da Silva et al., 2007	40 women	Randomized between-group (no wait-list)	8 weekly sessions of relaxing yoga, with or without Tui Na	8 weeks; FIQ, VAS, tender points	FIQ and VAS improved within both yoga arms; addition of Tui Na did not augment effect
Curtis et al., 2011	22 women	Single-arm time-series pilot	Twice-weekly 75-min yoga for 8 weeks	8 weeks; pain, mood, mindfulness, salivary cortisol	Reduced pain and catastrophizing; increased mindfulness; altered total cortisol levels
Lazaridou et al., 2019	46 women	Uncontrolled pilot	Once-weekly in-person yoga class + daily home practice	6 weeks; pain, catastrophizing, sleep, FIQR	Reductions in pain and catastrophizing and improvements in sleep; mean FIQR did not change
Carson et al., 2016	7 women	Single-arm pilot	8-week mindful yoga	8 weeks; heat pain tolerance, pressure pain	Modulation of abnormal pain processing

Study	Participants	Design	Yoga programme	Follow-up; outcomes	Principal finding
				thresholds, pain processing	
Hennard, 2011	11 women	Single-arm pilot	8-week yoga and meditation	8 weeks; symptom report, mood	Improvements in stiffness, anxiety and depression; small uncontrolled sample

Abbreviations: FIQ, Fibromyalgia Impact Questionnaire; FIQR, Revised Fibromyalgia Impact Questionnaire; RCT, randomised controlled trial; VAS, visual analogue scale.

4.1 Overall fibromyalgia impact (FIQ and FIQR)

The Fibromyalgia Impact Questionnaire and its revised form, the FIQR, are the most widely used composite outcome measures in fibromyalgia trials, capturing function, overall impact and symptom severity in a single score [22]. An anchor-based MCID of approximately 14% of baseline FIQ total score has been proposed on the basis of large pharmacological trials [21]; however, this threshold has not been formally validated for the FIQR and the FIQR validation paper itself noted that responsiveness and MCID estimation for the revised instrument required additional studies [22]. The 14% figure is therefore used here as a hypothesis-generating reference rather than a validated FIQR cut-off.

Within these constraints, the most rigorous yoga trial in fibromyalgia is the 8-week Yoga of Awareness pilot RCT, in which 53 women were randomized to yoga or wait-list, with a 3-month follow-up that also reported replication of the intervention in the former wait-list group [9,10]. The FIQR total score improved by 31.9% across the two delivery rounds at the end of intervention and remained 21.9% improved at 3-month follow-up [10]. If the FIQ-derived 14% threshold is taken as an exploratory anchor, both end-of-intervention and 3-month effects exceed this threshold; this conclusion should however be qualified by the small sample size, the use of a wait-list rather than active comparator and the as-yet unvalidated FIQR MCID.

Other trials offer a more mixed picture. da Silva and colleagues, comparing two yoga arms in 40 women, reported within-arm improvements in FIQ and VAS but did not include a non-yoga comparator [12]. The recent uncontrolled pilot by Lazaridou and colleagues, which examined once-weekly in person yoga-based exercise with daily at home practice, reported improvements in pain and catastrophizing but, notably, no significant change in mean FIQR despite the symptom-level improvements [14]. A 2025 systematic review focused exclusively on yoga in fibromyalgia identified three randomized trials reporting significant improvement in FIQ or FIQR scores favoring yoga [20], although the small number of trials and modest sample sizes limit the strength of this conclusion. The 2024 systematic review of mind-body therapies for

fibromyalgia by Steen and colleagues, which included yoga among other modalities, similarly reported that yoga had at least one trial showing improvement in pain at the end of treatment, but emphasized that the yoga-specific evidence base is smaller than that for tai chi or qigong [7].

4.2 Pain intensity

Pain intensity, typically assessed using a 0 to 10 cm visual analogue scale, is the symptom of greatest concern to patients and the most frequently reported outcome in yoga trials. The Yoga of Awareness pilot RCT reported significantly greater reductions in pain in the yoga group compared with wait-list, with absolute reductions on daily diary pain scales in the order of 1 to 2 points [9], and improvements were largely maintained at 3-month follow-up [10]. da Silva and colleagues reported significant within-session and across-session reductions in VAS pain in both yoga arms [12]. In the uncontrolled Curtis pilot, mean continuous pain decreased from 5.18 ± 1.72 to 4.44 ± 2.03, with parallel improvements in catastrophizing and mindfulness [13]. The Kumar randomized trial reported statistically significant reductions in subjective pain and in tender point counts assessed by quantitative sensory testing in the yoga arm but not in the wait-list arm [11]. The Lazaridou pilot also reported reductions in pain and catastrophizing despite the absence of FIQR change [14].

Meta-analytic evidence supports the direction of effect. The 2013 meta-analysis of meditative movement therapies (qigong, tai chi, yoga) in fibromyalgia by Langhorst and colleagues reported, in subgroup analysis, that yoga had short-term beneficial effects on pain, fatigue, depression and health-related quality of life [17]. The 2024 systematic review by Steen and colleagues confirmed that several mind-body modalities, including yoga, produce significant improvements in pain at end of treatment, although the evidence base for yoga remains smaller than for tai chi or qigong [7]. The systematic overview of reviews by Lauche and colleagues identified yoga as one of the complementary interventions with consistently positive results across systematic reviews of fibromyalgia [18]. Cramer and colleagues, in a systematic review of yoga for rheumatic diseases, concluded that yoga can be recommended as an ancillary intervention for fibromyalgia, with a recommendation strength limited by the small number of included trials [19]. Where direct quantification is available, between-group VAS pain differences in the order of 1 to 2 cm on a 0 to 10 cm scale are reported, which approach or exceed the 1.4 cm MCID derived in rotator cuff disease [23]; this comparison should be interpreted with caution given that no fibromyalgia-specific VAS MCID has been formally established.

4.3 Fatigue, sleep and stiffness

Fatigue and non-restorative sleep are core symptoms of fibromyalgia and major contributors to disability. The Langhorst meta-analysis reported that meditative movement therapies as a class significantly reduced sleep disturbance (SMD -0.61) and fatigue (SMD -0.66). Subgroup analysis revealed that yoga significantly reduced fatigue among participants with SMD of -1.02

suggesting large effect size, but positive effects on sleep did not reach the threshold of statistical significance [17]. The Yoga of Awareness pilot RCT reported significant improvements in fatigue and stiffness alongside FIQR and pain [9], and improvements were largely maintained at 3-month follow-up [10].

More targeted sleep analysis comes from the daily yoga program studied by Lazaridou and colleagues, who reported improvements in sleep efficiency and reductions in sleep disturbance after 6 weeks, with parallel reductions in pain and pain catastrophizing despite absence of FIQR change [14]. The pilot study by Hennard, although small (n = 11) and uncontrolled, reported significant improvements in stiffness alongside reduction in anxiety and depression [15]. The Kumar trial reported a significant increase in lumbar flexion bilaterally after medical yoga therapy, consistent with the expected mechanical effect of regular asana practice on flexibility, although direct functional consequences of this change were not formally evaluated [11].

4.4 Depression, anxiety, catastrophizing and mindfulness

Mood and cognitive-affective outcomes are central to the rationale for yoga in fibromyalgia, given the high comorbidity of depression and anxiety in this population and the established role of pain catastrophizing as a modifiable amplifier of symptom experience. The Yoga of Awareness RCT reported significant improvements in mood, pain catastrophizing, acceptance and other coping strategies in addition to symptom-level outcomes [9,10]. Curtis and colleagues, in their 8-week pilot, reported reductions in pain catastrophizing and disability and increases in pain acceptance and mindfulness, with effect sizes for the psychological outcomes generally moderate to large [13]. Lazaridou and colleagues observed reductions in catastrophizing that paralleled reductions in pain and improvements in sleep [14]. Hennard reported significant improvements in symptoms of anxiety and depression in a small uncontrolled pilot [15].

These findings are consistent with broader evidence that mind-body therapies can improve psychological outcomes in fibromyalgia. The Cochrane review of mind and body therapy for fibromyalgia by Theadom and colleagues reported very low-quality evidence for improvements in physical functioning, pain and mood with movements therapies including yoga [8]. Within the meditative movement category in 2013 meta-analysis, yoga specifically yielded significant short-term effects on pain, fatigue, depression and health-related quality of life in subgroup analysis [17].

4.5 Mechanistic and neurophysiological outcomes

A small number of trials have explored candidate biological mechanisms of yoga in fibromyalgia. Curtis and colleagues reported that the 8-week yoga intervention was associated with alterations in total salivary cortisol levels in women with fibromyalgia, with the authors interpreting the findings as preliminary evidence that yoga may modulate the dysregulated HPA axis described in this disorder [13]. The mindful yoga pilot by Carson and colleagues reported modulation of indices of abnormal pain processing, including pressure pain thresholds, in

fibromyalgia patients receiving 8 weeks of mindful yoga [16]. The Kumar RCT used transcranial magnetic stimulation to assess corticomotor excitability before and after 4 weeks of medical yoga therapy and reported significant changes in corticomotor parameters in the yoga arm but not in the wait-list arm, alongside reductions in pain and tender point counts [11]. These mechanistic findings are preliminary and based on small samples, but they support the proposition that the clinical effects of yoga in fibromyalgia may involve more than non-specific exercise effects.

4.6 Adverse events and adherence

Across the published yoga trials in fibromyalgia, adverse events have been infrequent, generally mild and transient, and have not led to serious harm in randomized cohorts. The 2013 meditative movement meta-analysis by Langhorst and colleagues reported a drop-out rate due to adverse events of approximately 3.1% across qigong, tai chi and yoga trials, with no serious adverse events reported [17]. Cramer and colleagues, in a systematic review of yoga for rheumatic diseases, similarly described yoga as having an acceptable safety profile, despite the lack of formal safety data reports in included trials [19]. The Yoga of Awareness RCT reported good adherence and tolerance, supporting the feasibility of an 8-week program delivered in weekly 2-hour group sessions in a population with chronic widespread pain [9,10]. Adverse events most commonly reported include transient muscle soreness or fatigue after sessions, generally managed by individual modification of poses.

5. Clinical meaningfulness vs statistical significance

A central recurring problem in chronic pain research is the gap between statistical significance and clinical meaningfulness. Many trials are powered to detect statistically significant differences in continuous patient-reported outcomes, but the absolute magnitude of these differences may be small relative to thresholds that patients and clinicians regard as worthwhile. Anchoring trial findings against published MCID values is therefore essential, but the choice of anchors must itself be transparent.

For yoga in fibromyalgia, three caveats apply to MCID-based interpretation. First, the 14% MCID was derived for the original FIQ and has not been formally validated for the FIQR; its application to FIQR data should be regarded as a working hypothesis [21,22]. Second, the conservative VAS pain MCID of 1.4 cm was derived in patients with rotator cuff disease and has not been independently established in fibromyalgia [23]. Third, MCID values derived in pharmacological trials may not be directly transferable to non-pharmacological interventions, since patient expectations, perceived agency and the meaning of treatment-related change can differ.

With these caveats, the 31.4% improvement in FIQR total score reported in the Yoga of Awareness pilot RCT clearly exceeds the 14% FIQ-derived threshold [9,10,21], and the 21.9% improvement maintained at 3-month follow-up still exceeds it. VAS pain reductions of 1 to 2 cm reported across several trials approach or exceed the 1.4 cm rotator cuff-derived threshold

[9,11,23]. For fatigue, sleep, depression and pain catastrophizing, where formal MCID values for fibromyalgia are less consistently established, the standardized mean differences reported by the Langhorst meta-analysis in the −0.5 to −0.7 range are conventionally regarded as moderate [17]. At the same time, the recent Lazaridou pilot reported no significant change in mean FIQR despite improvements in pain [14], which warns against generalizing the most positive findings.

Yoga remains, on the available evidence, one of the few non-pharmacological adjuncts in fibromyalgia for which the most rigorous available trial reports effects that, against an exploratory FIQR threshold, would qualify as clinically meaningful, and where the direction of effect is broadly consistent across independent trials and meta-analyses. However, the strength of this conclusion is constrained by the small number of true RCTs, the predominance of single-arm pilots, the absence of active comparators in most trials and the persistence of methodological heterogeneity.

Table 2. MCID-anchored interpretation of effects of yoga in adults with fibromyalgia by outcome domain. MCID anchors are described with their original derivation and limitations.

Outcome domain	Direction of effect	Time-course (when present)	MCID-anchored interpretation
FIQ / FIQR total	Reduction with yoga in pilot RCT; no change in one daily-yoga pilot	Apparent at 8 weeks; partial maintenance at 3 months	Exceeds the 14% FIQ MCID in the most rigorous RCT (FIQR threshold not validated)
VAS pain	Reduction with yoga	Apparent within 8-week programmes	Approaches or exceeds the 1.4 cm threshold derived in rotator cuff disease (no FM-specific MCID)
Fatigue	Reduction (SMD ≈ −0.66 in MMT meta-analysis)	Short-term; partial maintenance	Moderate effect; clinically relevant by SMD convention
Sleep disturbance	Reduction (SMD ≈ −0.61 in MMT meta-analysis)	Short-term; some maintenance at 4–5 months	Moderate effect; clinically relevant by SMD convention
Depression / anxiety	Reduction in several trials	8-week programmes	Moderate effects; clinically relevant

Outcome domain	Direction of effect	Time-course (when present)	MCID-anchored interpretation
Pain catastrophizing	Reduction in several trials	8-week programmes	Reductions consistent across small trials
Mindfulness / acceptance	Increase in pilot trials	8-week programmes	Mechanistically relevant; magnitude not standardized against MCID
Cortical excitability / cortisol	Changes in pilot trials	4–8 weeks	Mechanistic; not directly translatable to clinical MCID
Adverse events	Infrequent and mild	Across all reported follow-up	Acceptable short-to-mid-term safety profile

Abbreviations: FIQ, Fibromyalgia Impact Questionnaire; FIQR, Revised Fibromyalgia Impact Questionnaire; FM, fibromyalgia; MCID, minimal clinically important difference; MMT, meditative movement therapies; RCT, randomised controlled trial; SMD, standardised mean difference; VAS, visual analogue scale.

6. Program parameters and heterogeneity

Yoga is not a single intervention but a family of related practices that differ substantially in style, intensity, dose and meditative emphasis. Trials in fibromyalgia have most commonly studied gentle and restorative styles, often delivered as 8-week structured programmes with weekly supervised group sessions of 60 to 120 minutes plus a recommended home practice. The Yoga of Awareness program integrates approximately equal proportions of asana, meditation, pranayama, presentations on coping with chronic pain and group discussion [9], whereas the 6-weeks yoga-based program studied by Lazaridou and colleagues used shorter daily sessions of 30 minutes with once-weekly longer in-person class [14], and the Kumar trial used a 4-week medical yoga therapy protocol delivered under clinical supervision [11]. This heterogeneity matters because the components of yoga most likely to influence specific outcomes differ: graded asana practice may underpin improvements in stiffness and physical function, pranayama may contribute to autonomic and sleep benefits, and meditative components may drive changes in pain catastrophizing and mindfulness.

Important practical implications follow. First, claims that "yoga" works in fibromyalgia should be qualified by the specific style, dose and structure studied; results from a gentle 8-week mindful yoga program do not automatically generalize to vigorous Vinyasa flow or hot yoga formats, neither of which has been studied in fibromyalgia. Second, supervision by an instructor

experienced with chronic pain and trauma-informed teaching is desirable, since fibromyalgia patients commonly experience exacerbations of pain with overly intense activity and may have associated psychological vulnerability. Third, integration with structured rehabilitation, particularly aerobic and strengthening exercise, which carries a stronger EULAR recommendation than mind-body therapy, is more aligned with multimodal recommendations than yoga used as a stand-alone substitute [5].

7. Safety

Available randomized and pilot trials have not shown a meaningful increase in serious adverse events with yoga in adults with fibromyalgia. Reported adverse events have generally been minor, transient and consistent with normal post-exercise discomfort, including muscle soreness, mild fatigue after class and occasional aggravation of pre-existing pain that resolved with modification of poses. The drop-out rate due to adverse events across meditative movement trials in fibromyalgia is approximately 3.1%, with no serious adverse events reported [17]. The Cramer systematic review of yoga in rheumatic diseases reached similar conclusions about the acceptable safety profile of yoga in this population [19].

Several caveats apply. Most trials enrolled women only and excluded patients with major psychiatric or physical comorbidities, and the safety profile in men, in older adults and in patients with significant cardiovascular, neurological or musculoskeletal comorbidity is less well characterized. Long-term safety beyond 3 to 6 months is not adequately documented in randomized trials. The published evidence pertains to gentle, supervised yoga programmes; vigorous styles, hot yoga and unsupervised intensive practice in patients with central sensitization should be regarded as untested and potentially capable of provoking symptom flares. Safety should therefore be described as acceptable for gentle, supervised, short-to-mid-term yoga programmes rather than as established for yoga in general.

8. Practical implications

From a clinical and rehabilitation standpoint, three implications follow. First, yoga is best understood as an adjunct rather than as a substitute for guideline-recommended care. EULAR places aerobic and strengthening exercise as the primary non-pharmacological interventions with strong recommendation, while mind-body therapies including yoga are supported only by weaker positive recommendations within a multimodal approach [5]. The available evidence supports adding a structured 8-week yoga program to an existing care plan rather than replacing established components such as graded aerobic exercise, sleep hygiene and pharmacological therapy where indicated.

Second, the program parameters most consistently associated with benefits are an 8-week duration, weekly supervised group sessions of 60 to 120 minutes, gentle and restorative postures, integration of pranayama and meditative components, and home practice between sessions [9,10]. Trauma-informed instruction by a teacher with experience in chronic pain

populations is desirable. Patients should be advised to modify poses to their tolerance, particularly during pain flares, and to expect benefits to develop over weeks rather than days.

Third, expectations should be calibrated. The most rigorous available trial reports a 31.4% improvement in FIQR total score at end of treatment, with 21.9% improvement maintained at 3 months [9,10], but other pilot data are more equivocal, with one daily-yoga pilot showing no FIQR change despite improvements in pain [14]. Communicating realistic, evidence-based expectations to patients supports adherence and helps to integrate yoga sustainably into the long-term self-management strategies that EULAR and other guidelines emphasize as central to fibromyalgia care [5].

9. Limitations

This review has several limitations that must be acknowledged. First, it is a narrative synthesis rather than a systematic review. Although the search strategy and eligibility criteria are reported transparently, no PRISMA flow diagram, formal risk-of-bias assessment or pooled effect estimates were generated. The conclusions of this review should therefore be regarded as a structured interpretation of the principal published evidence rather than as a quantitative summary, and they may differ in emphasis from a future systematic review of the same body of literature.

Second, the search was restricted to PubMed-indexed English-language reports. This excludes potentially relevant evidence published elsewhere and non-English literature. Notably, important contributions to the yoga literature in fibromyalgia may have been published in Indian journals not consistently indexed in PubMed; the present review cannot exclude publication bias or selective indexing arising from this restriction.

Third, the available randomized and controlled trial evidence is small. Only two studies clearly meet criteria for full RCT with wait-list comparison (Yoga of Awareness 2010 with its 2012 follow-up, Kumar 2025), one further trial (da Silva 2007) used randomized between-group comparison without wait-list, and several remaining works are uncontrolled or single-arm pilots that cannot support causal inference. All trials enrolled almost exclusively women, with the 2018 reanalysis of unbiased epidemiological samples suggesting that this clinical recruitment pattern over-represents women relative to the true population sex distribution [4]. Conclusions about generalizability to men, older adults and patients with significant comorbidities are necessarily cautious.

Fourth, MCID values used as anchors are estimated from psychometric studies in heterogeneous populations and have known limitations in this context: the 14% FIQ MCID has not been formally validated for the FIQR [21,22], and the 1.4 cm VAS MCID was derived in rotator cuff disease [23]. The MCID-anchored interpretation presented here is therefore approximate and exploratory rather than definitive.

Finally, yoga is a complex intervention that varies substantially in style, dose and emphasis. Pooling across heterogeneous styles risks both diluting genuine effects of specific styles and

overgeneralizing effects observed in well-defined programmes. Reported effects pertain to the gentle, mindfulness-integrated 8-week programmes that have been studied and should not be extrapolated to vigorous, hot or unsupervised yoga formats.

10. Conclusions

Yoga, delivered as an 8-week structured program that combines gentle asana, pranayama and meditative attention, is a biologically and psychologically plausible adjunct to standard fibromyalgia care. Across the small available randomized and pilot evidence base, yoga has been associated with reductions in fibromyalgia impact, pain intensity, fatigue, sleep disturbance, depression, anxiety and pain catastrophizing. The most rigorous trial, the Yoga of Awareness pilot RCT, reported a 31.9% improvement in FIQR total score at the end of an 8-week intervention and 21.9% maintenance at 3-month follow-up, while a recent uncontrolled daily-yoga pilot reported no significant change in mean FIQR despite improvements in pain, illustrating the heterogeneity of effects.

When interpreted against the FIQ-derived 14% MCID, used here as an exploratory FIQR anchor [21,22], and the rotator cuff-derived 1.4 cm VAS MCID [23], the effects in the most rigorous trial appear clinically meaningful. However, the FIQR MCID has not been formally validated, the VAS MCID was not derived in fibromyalgia, several trials are uncontrolled, almost all participants have been women, and effect sizes attenuate at longer follow-up.

The safety profile of supervised, gentle yoga in this population is acceptable at short-to-mid-term follow-up, with infrequent and mild adverse events. Yoga should therefore be regarded as a reasonable adjunct within a multimodal treatment plan in which aerobic and strengthening exercise remain the primary non-pharmacological interventions, in line with the 2017 EULAR recommendations [5]. Yoga should not be presented as a substitute for guideline-recommended exercise or pharmacological therapy.

Future trials should be powered to MCID-anchored effect sizes derived in fibromyalgia populations, should include men and older adults, should compare yoga to active exercise and education comparators rather than wait-list, should standardize reporting of yoga style, dose and components, and should extend follow-up to at least 12 months. Such trials would clarify which patients with fibromyalgia benefit most, the optimal program parameters and the durability of effects beyond the immediate post-intervention period.

Disclosure

Author Contributions

Conceptualization, Justyna Daniek and Emilia Fitz; Methodology, Kacper Gil and Julia Maria Mokracka; Check, Mikołaj Brzeźniak and Weronika Kaczmarek; Formal analysis, Filip Kręcina and Aleksander Karbowniczek; Investigation, Julia Maria Mokracka and Alicja Grabarczyk; Resources, Aleksander Karbowniczek; Data curation, Alicja Grabarczyk and Krzysztof Drelich; Writing - rough preparation, Krzysztof Drelich and Emilia Fitz; Writing -

review and editing, Kacper Gil and Mikołaj Brzeźniak; Visualization, Weronika Kaczmarek; Supervision, Justyna Daniek; Project administration, Filip Kręcina

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Conflicts of Interest

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