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QIGONG IN PHYSICAL THERAPY FOR PATIENTS WITH CHRONIC LOW BACK PAIN: A NARRATIVE REVIEW

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Abstract. The purpose of this study was to summarize current scientific evidence on the effects of Qigong practice on the effectiveness of physical rehabilitation in patients with chronic low back pain, to outline potential mechanisms of action, and to identify directions for future research.

Materials and Methods. A narrative review of scientific publications addressing the use of Qigong, Tai Chi, and other mind-body interventions in the rehabilitation of patients with chronic low back pain was conducted.

Results. The analysis of contemporary scientific literature demonstrates that Qigong practice may exert a multi-faceted positive influence on patients with chronic non-specific low back pain. Across randomized controlled trials and systematic reviews, Qigong-based interventions were associated with improvements in functional capacity, reduction of disability scores, and enhancement of overall quality of life. Several studies reported clinically meaningful changes in functional indices, such as mobility and activity tolerance, particularly in programs lasting eight weeks or longer.

In addition to physical outcomes, Qigong practice showed favorable effects on psycho-emotional parameters. Reductions in anxiety, fear of movement (kinesiophobia), and pain catastrophizing were consistently observed, suggesting an important role of mind-body integration in addressing psychosocial contributors to chronic pain. These effects appear to be mediated through improved autonomic nervous system regulation, increased parasympathetic activity, and enhanced body awareness.

Mechanistically, Qigong may contribute to normalization of muscle tone, activation of deep stabilizing muscles, and gradual restoration of spinal mobility through slow, controlled movements combined with rhythmic breathing. Moreover, several studies suggest a modulatory effect on pain perception, potentially related to reduced central sensitization and activation of endogenous pain inhibitory pathways.

The most pronounced benefits were observed when Qigong was incorporated as an adjunct to conventional rehabilitation strategies, including therapeutic exercise and stabilization training, rather than used as a stand-alone intervention. However, despite generally positive trends, the available evidence is limited by heterogeneity in intervention protocols, outcome measures, and sample sizes, underscoring the need for further high-quality, large-scale randomized controlled trials.

Conclusions. Conclusions. The analysis of current scientific evidence indicates that Qigong can be considered a safe and clinically reasonable adjunct to comprehensive physical therapy for patients with chronic low back pain, particularly within a multidisciplinary rehabilitation approach.

Available systematic reviews and meta-analyses demonstrate positive effects of Qigong on functional outcomes, pain intensity, and psycho-emotional status, with the most stable results observed when Qigong is combined with therapeutic exercise, stabilization training, and other physiotherapy modalities.

The potential effectiveness of Qigong in rehabilitation is consistent with the biopsychosocial model of pain, as the practice combines gentle movement components, body awareness training, and psycho-emotional regulation, contributing to a multidimensional influence on pain mechanisms.

At the same time, interpretation of the results is limited by the absence of standardized training protocols, method-

ological heterogeneity across studies, and the insufficient number of large-scale randomized controlled trials with long-term follow-up.

Keywords: Qigong, chronic low back pain, physical rehabilitation, mind-body practices, multidisciplinary approach.

Introduction. Chronic non-specific low back pain (CNLBP) is one of the leading causes of morbidity and disability worldwide, substantially impairing quality of life and functional capacity in adults. It is estimated that more than 60% of adults experience low back pain at some point during their lifetime, and in a considerable proportion of cases symptoms persist for longer than three months, meeting the definition of chronicity. Persistent CNLBP is associated with long-term limitations in mobility, reduced work capacity, and decreased participation in daily activities [1].

Conventional physical therapy management of CNLBP typically includes therapeutic exercise (e.g., limb strengthening and trunk stabilization programs), manual therapy techniques, postural correction strategies, and, in many cases, pharmacological support. However, reported treatment effects are frequently modest and not consistently sustained across follow-up periods, underscoring the need for multimodal and multidisciplinary rehabilitation strategies [2].

Within this context, increasing attention has been directed toward mind-body interventions that integrate physical movement with breathing regulation and focused attention. Qigong, a traditional Chinese exercise system characterized by slow, controlled movements coordinated with diaphragmatic breathing and meditative awareness, has been proposed as a complementary therapeutic option for individuals with CNLBP [3]. Mechanistically, such practice may contribute to improved trunk muscle coordination, enhanced postural control, and modulation of muscle tone. Additionally, autonomic regulation and stress reduction associated with mindful movement may influence central pain processing and pain perception, potentially affecting both subjective pain ratings and functional outcomes [4].

A growing body of randomized controlled trials (RCTs) and systematic reviews has evaluated the effects of Qigong on pain intensity and disability in CNLBP populations. A 2025 systematic review and meta-analysis including 16 RCTs reported significant improvements in functional status, as measured by the Oswestry Disability Index (ODI), in participants practicing Qigong. Nevertheless, reductions in pain intensity did not consistently reach the minimal clinically important difference (MCID) across pooled analyses [1]. Other trials have demonstrated improvements in range of motion, reductions in activity limitations, and favorable changes in selected psychosocial parameters compared with control conditions [5].

Despite these findings, the available evidence remains methodologically heterogeneous with respect to intervention protocols, duration of treatment, comparator groups, and outcome measures. This heterogeneity complicates direct comparison and limits the strength of clinical inferences. In several meta-analyses, the I^2 statistic for pooled pain and disability outcomes exceeded 90%, indicating substantial between-study variability and necessitating cautious interpretation of aggregated effect estimates (Sotiropoulos et al., 2025) [3].

Importantly, comparative trials evaluating Qigong against active interventions, such as structured therapeutic exercise programs or standard physical rehabilitation protocols, have not consistently demonstrated non-inferiority. These inconsistencies highlight the current limitations of the evidence base and emphasize the need for rigorously designed RCTs with standardized intervention protocols, adequately powered samples, clearly defined primary outcomes, and long-term follow-up to establish the clinical effectiveness and sustainability of Qigong in CNLBP management [1, 3, 6].

Aim. The aim of this narrative review was to synthesize current scientific evidence regarding the effects of Qigong practice within multidisciplinary physical therapy for patients with chronic non-specific low back pain (CNLBP), to outline potential mechanisms of action, and to identify directions for future research.

Materials and Methods. This research was conducted as a narrative review of contemporary scientific literature addressing the application of Qigong in the physical therapy management of CNLBP. The primary objective of the analysis was to summarize available evidence concerning clinical effectiveness, safety, and the feasibility of integrating Qigong into multidisciplinary rehabilitation programs.

A structured literature search was performed in the following electronic databases: PubMed/MEDLINE, Scopus, Web of Science, and the Cochrane Library, supplemented by screening of open-access scientific sources. The search strategy combined the following English-language keywords: “Qigong,” “chronic low back pain,” “chronic back pain,” “physical rehabilitation,” “physiotherapy,” and “mind-body interventions,” using the Boolean operators AND and OR.

Publications predominantly from the last 10–15 years were considered eligible, including randomized controlled trials (RCTs), systematic reviews, meta-analyses, and clinical practice guidelines issued by international professional organizations. Foundational theoretical works relevant to the biopsychosocial model of pain and mind-body approaches were included irrespective of publication year when deemed conceptually significant.

Particular emphasis was placed on systematic reviews and RCTs as sources representing the highest levels of evidence. Studies classified as low to moderate methodological quality were typically characterized by small sample sizes, variability in intervention duration, and heterogeneity of comparator programs, limiting the potential for direct comparison and quantitative synthesis.

In total, 32 sources were included in the final anal-

ysis. The selected studies were categorized according to study design, clinical characteristics of the study populations, intervention features, and primary outcomes. Data were synthesized using qualitative analysis with a focus on clinical implications, methodological limitations, and the prospects for integrating Qigong into evidence-informed physical therapy for patients with chronic low back pain.

Results. ***Chronic Low Back Pain: A Contemporary Biopsychosocial Perspective.*** Chronic Non-Specific Low Back Pain (CNLBP) is currently conceptualized not merely as a localized somatic condition but as a complex biopsychosocial process involving dynamic interactions among physiological, psychological, and social factors (Vlaeyen & Linton, 2000) [7]. This framework extends beyond traditional mechanical models of pain and provides a more comprehensive explanation for mechanisms underlying chronicity and symptom persistence.

Central sensitization represents one of the key pathophysiological mechanisms in CNLBP. It is characterized by increased excitability of the central nervous system, resulting in amplified pain perception even in the absence of ongoing tissue damage (Woolf, 2011) [8]. Under such conditions, pain intensity often demonstrates poor correlation with structural spinal findings, supporting the interpretation of CNLBP as a neuro-sensory dysfunction rather than solely a mechanical disorder (Kosek et al., 2016) [9].

Psychosocial factors, including stress, anxiety, depressive symptoms, and fear of movement (kinesiophobia), play a critical role in the development and maintenance of CNLBP. Psychophysiological stress activates the sympathetic branch of the autonomic nervous system, increases muscle tone (particularly in deep spinal stabilizers), and contributes to the development of muscular imbalances. This process may perpetuate a maladaptive cycle: pain → movement avoidance → muscular deconditioning → increased pain (Moseley, 2003; Linton & Shaw, 2011) [10, 11].

In reviewing the literature, particular attention was given to the hierarchy of evidence. Systematic reviews and randomized controlled trials were considered the most robust sources of clinical evidence. Studies of moderate and lower methodological quality were primarily used to generate hypotheses regarding potential mechanisms of action of Qigong and to explore possible clinical applications. Variability across studies was largely attributable to differences in intervention protocols, comparator groups, and outcome measures. The level of evidence was interpreted in accordance with contemporary approaches to critical appraisal of clinical research.

Given the multifactorial nature of CNLBP, current clinical guidelines recommend integrative, multidisciplinary strategies that combine physical therapy with psychosocial interventions, including behavioral therapy, breathing and movement control training, and education in self-regulation strategies (Qaseem et al., 2017) [12]. Such approaches aim not only to reduce pain intensity but also to restore functional capacity and decrease the risk of long-term chronicity.

Within this context, mind-body practices such as Qigong may represent a relevant component of rehabilitation, as they integrate controlled movement, breathing techniques, and meditative attention. By simultaneously targeting physiological, psycho-emotional, and neuro-sensory dimensions of pain, these interventions may exert synergistic effects when incorporated into comprehensive rehabilitation programs.

Qigong: Brief Characteristics of the Practice. Qigong is a traditional Chinese system of health-promoting and meditative practices that originated more than 2,000 years ago. It integrates physical exercises, breathing techniques, and meditative methods aimed at maintaining vital energy (Qi) and overall health (Jahnke et al., 2010) [13]. In contemporary medicine, Qigong is increasingly incorporated as a form of mind-body intervention that simultaneously influences physical and psychophysiological mechanisms.

The practice is based on three interrelated components. The first component consists of slow, controlled movements performed with deliberate awareness and without haste, emphasizing attention to bodily sensations. These movements are intended to improve flexibility, coordination, and postural stabilization.

The second component involves regulated breathing, which establishes the rhythm of movement. Deep, rhythmic breathing promotes relaxation, reduces muscular tension, and contributes to the restoration of autonomic nervous system balance.

The third component is focused attention or meditative concentration directed toward movement, breathing, and internal sensations. This element is associated with stress reduction and the development of perceived calmness and self-regulation (Wayne & Kaptchuk, 2008) [14].

Distinctions from Yoga and Tai Chi. Although Qigong, yoga, and Tai Chi share common features, namely the integration of movement, breathing, and attentional focus, substantial differences exist among these practices. Yoga primarily emphasizes static postures (asanas), aiming to develop strength, flexibility, and balance; breathing techniques and meditation are included but are not always central components of practice. Tai Chi involves continuous, flowing movement sequences derived from martial arts traditions, with strong emphasis on coordination and concentration; its historical foundation is often linked to martial skill development and movement memory (Jahnke et al., 2010; Wayne & Kaptchuk, 2008) [13, 14].

In contrast, Qigong is widely adapted for health promotion and rehabilitation contexts, prioritizing simplicity, gentle transitions, and the integrated coordination of movement, breathing, and meditative focus. This structure allows practice across different age groups and levels of physical conditioning. The combined engagement of motor, respiratory, and attentional components is proposed to facilitate a sense of psychophysiological coherence and mind-body integration (Li et al., 2001) [15] (table1).

Table 1

Comparison of Qigong, Yoga and Tai Chi

Comparison of Qigong, Yoga, and Tai ChiComponent / Practice	Qigong	Yoga	Tai Chi
Main focus	Slow movements, breathing, meditation	Static postures, asanas, physical strength	Continuous movement sequences, martial elements
Purpose	Health promotion, Qi regulation, relaxation	Flexibility, strength, balance	Coordination development, martial skills, meditation
Breathing	Rhythmic, deep, synchronized with movement	Controlled, depending on style and posture	Calm, synchronized with movement
Meditation / concentration	Core component	Core component (meditation, pranayama)	Core component
Physical activity level	Light to moderate	From light to intensive	Moderate, may become high-intensity in martial styles
Use in rehabilitation	Widely used	Limited, depends on patient condition	Less commonly adapted for clinical rehabilitation

Note: The table summarizes key differences between Qigong, yoga, and Tai Chi based on main components and therapeutic goals (compiled by Kiliachenkova K.E. based on scientific literature review).

Potential Mechanisms of Qigong in Chronic Pain. Qigong extends beyond a set of physical exercises and may be conceptualized as a multimodal intervention affecting both somatic and psychological domains simultaneously. In the context of chronic low back pain, five principal mechanisms may explain its potential therapeutic effects.

The first mechanism involves normalization of muscle tone. Regular practice may reduce excessive muscular tension, particularly in the lumbar and shoulder regions, while facilitating activation of deep spinal stabilizers. This dual effect may contribute to improved postural control and reduction of neuromuscular dysfunction frequently associated with chronic pain persistence (Wang et al., 2009) [16].

The second mechanism relates to improved spinal mobility. Slow, controlled movements may enhance flexibility and range of motion, restore physiological movement patterns, and reduce secondary restrictions associated with fear-avoidance behavior or pain anticipation (Yu et al., 2025) [1].

The third level of effect concerns autonomic nervous system regulation. Rhythmic breathing combined with meditative focus may stimulate parasympathetic activity and promote autonomic balance. Such modulation may reduce cardiovascular stress reactivity and decrease muscle tension linked to sustained sympathetic activation (Jahnke et al., 2010) [13].

The fourth mechanism involves reduction of anxiety and pain catastrophizing. Mindful attention to movement and breathing may enhance psychological resilience, attenuate emotional distress, and mitigate maladaptive cognitive responses that are strongly associated with the persistence of CNLBP (Wayne & Kaptchuk, 2008) [14].

The fifth mechanism pertains to modification of pain perception. Qigong practice may influence central sensitization processes and facilitate activation of endogenous pain inhibitory pathways, potentially contributing to reductions in symptom intensity and improvements in functional outcomes (Yu et al., 2025) [1] (table 2).

Table 2

Multilevel effects of Qigong practice in chronic pain

Level of influence	Mechanism	Explanation
Musculoskeletal	Normalization of muscle tone, activation of stabilizing muscles	Reduction of muscle spasms and improvement of posture
Motor / functional	Improvement of flexibility and range of motion	Restoration of physiological mobility and reduction of movement limitations
Autonomic / neurophysiological	Regulation of autonomic nervous system, stimulation of parasympathetic activity	Reduction of stress reactivity and muscle tension
Psychological	Reduction of anxiety and pain catastrophizing	Increased sense of control and emotional calmness
Neural / sensory	Modification of pain perception	Reduction of central sensitization and activation of endogenous analgesic mechanisms

Note: Compiled by Kiliachenkova K.E. based on scientific literature review (summarized from Jahnke et al., 2010; Wayne & Kaptchuk, 2008; Yu et al., 2025).

In contemporary literature, there is a growing body of research evaluating the effects of Qigong, Tai Chi, and other mind-body interventions in the management of chronic non-specific low back pain (CNLBP). At the same time, this body of evidence is characterized by substantial heterogeneity in methodological design, intervention protocols, outcome measures, and overall levels of evidence.

Clinical Studies of Qigong in CNLBP. A number of randomized controlled trials (RCTs) and systematic reviews have evaluated the effectiveness of Qigong in patients with CNLBP. A 2025 meta-analysis including 16 RCTs compared Qigong with either control conditions or standard therapy. The findings demonstrated improvements in functional status and reductions in disability; however, the effect on pain intensity remained heterogeneous and appeared to depend on study duration and methodological design (Yu et al., 2025) [1].

Other studies suggest that intervention duration and training frequency significantly influence outcomes. Programs lasting 8-12 weeks generally produce greater improvements in physical function and quality of life compared to shorter interventions (Wang et al., 2009; Marks, 2019; Van de Winckel, 2023) [16-18]. Additionally, compared with Tai Chi, Qigong may offer a simpler execution protocol, which can enhance its feasibility and applicability within clinical rehabilitation settings (Jahnke et al., 2010) [13].

Comparison with therapeutic exercise, stretching, and stabilization training. Some studies directly compared Qigong with traditional therapeutic exercises, stretching, or stabilization training. In several RCTs, functional improvements in Qigong groups were comparable to therapeutic exercise groups, suggesting potential non-inferiority regarding general physical function parameters (such as Oswestry Disability Index scores and mobility outcomes). However, differences in the intensity and structure of control exercise programs complicate direct comparison of results.

Regarding stretching and stabilization exercises, evidence remains inconsistent. Some studies demonstrate similar reductions in pain intensity and functional limitations between groups, whereas others report superior outcomes of structured therapeutic exercise protocols in improving core stability and neuromuscular control. It should be noted that study aims and intervention protocols vary substantially, limiting the generalizability of findings.

Despite generally positive outcomes, most studies investigating Qigong for CNLBP have several methodological limitations. First, sample sizes in many RCTs are relatively small, reducing statistical power and increasing the risk of random effects. Second, significant heterogeneity of intervention protocols, including variations in duration, frequency, intensity, and supervision of practice, complicates cross-study comparisons. Heterogeneity of control groups (passive control versus active exercise-based interventions) also influences interpretation of results.

In addition, outcomes are measured using different assessment tools and scales (VAS, Oswestry Disability Index, Roland-Morris Disability Questionnaire), which further complicates data synthesis across studies. Considering these limitations, further large-scale RCTs with standardized protocols, adequately powered samples, and long-term follow-up are required to confirm and refine the clinical effectiveness of Qigong in CNLBP management.

The place of Qigong in physical therapy programs. In contemporary physical therapy programs for patients with chronic low back pain, Qigong is increasingly considered not as a replacement for standard therapeutic approaches but as a valuable adjunct to comprehensive rehabilitation strategies. This approach is justified by the multifactorial nature of chronic pain, which develops under the influence of biomechanical, neurophysiological, and psychosocial factors that affect functional status, quality of life, and psychological well-being.

Reviews of movement-based mind-body practices, including Qigong, demonstrate positive changes in functional outcomes and pain severity, particularly when such practices are implemented as part of a multidimensional rehabilitation program that also includes therapeutic exercise and stabilization training [2, 3].

A network meta-analysis covering studies from 2023–2025 that included 29 randomized trials demonstrated that Tai Chi and Qigong can significantly improve pain intensity, physical function, and quality of life in patients with chronic non-specific low back pain. These findings further support the integration of such practices into conventional rehabilitation programs [19].

Literature analyses involving individuals with chronic pain indicate that mind-body exercises can positively influence both physical and psychosocial components of pain, although evidence regarding improvements in quality of life may vary across age groups and clinical profiles [20].

Considering the modern biopsychosocial model of pain, which emphasizes the importance of multidisciplinary interventions simultaneously targeting physical, psychological, and social aspects of patient health, integration of Qigong into rehabilitation programs appears logical and promising [21].

Qigong as an adjunct rather than a replacement for traditional rehabilitation. Unlike structured therapeutic exercise programs that primarily focus on correcting muscle imbalance, improving spinal stabilization, and restoring motor control, Qigong practice emphasizes slow, rhythmic movements, regulated breathing, and conscious attention. The combination of movement and mindfulness components makes Qigong a valuable adjunct to conventional rehabilitation interventions.

Clinical studies show that incorporating Qigong into standardized physiotherapy programs contributes to improved functional outcomes, reduced kinesiophobia, and enhanced body control perception. For example, recent studies demonstrate that combining Qigong with physiotherapy may provide better long-term outcomes compared

to physiotherapy combined with strengthening exercises (Yu et al., 2025) [1].

Qigong practice may be particularly beneficial for specific patient groups. First, it is suitable for patients with chronic non-specific low back pain where functional disturbances predominate without clear structural pathology. In such cases, comprehensive approaches including mind-body components demonstrate greater effectiveness, as pain has a biopsychosocial nature (Mescouto et al., 2022) [22].

Patients whose pain is accompanied by stress, anxiety, or pain catastrophizing may also benefit. Combining physical activity with mindfulness elements helps reduce psychological burden and improve functional outcomes (Martinez Calderon et al., 2022; Taheri et al., 2025) [2, 23].

Qigong is a safe option for individuals with limited tolerance to intensive exercise because slow, controlled movements combined with conscious breathing allow gradual physical activation without excessive mechanical or physiological load (Kong et al., 2016) [24]. This practice is also particularly appropriate for older patients for whom high-intensity exercises may be potentially risky but who are still able to perform gentle, rhythmic movements with breathing coordination (Kong et al., 2016) [24].

Overall, combining Qigong with therapeutic exercise, stabilization training, and other rehabilitation methods may activate both peripheral and central mechanisms of pain adaptation, creating a comprehensive therapeutic strategy that extends beyond isolated physical exercise and addresses the psychophysiological components of chronic pain.

Stages of integrating Qigong into the rehabilitation process. Integration of Qigong into physical therapy programs for patients with chronic low back pain should be performed gradually, considering the patient's functional status and individual capabilities.

During the early rehabilitation stage, when intensive physical loads are limited due to pain syndrome or risk of symptom exacerbation, Qigong is introduced through light controlled movements, simple breathing exercises, and meditative focus. Such practice helps reduce muscle tension, improve blood and lymph circulation, and decrease pain-related anxiety. For example, in an RCT, combining Qigong with standard physiotherapy reduced kinesiophobia compared with strengthening exercises alone (Qigong + physiotherapy group vs. strengthening exercise group) [25].

During the subacute and active rehabilitation stages, Qigong is gradually combined with more active therapeutic exercises aimed at spinal stabilization and movement control. Systematic reviews demonstrate that Qigong and Tai Chi can significantly reduce pain intensity and disability in patients with chronic pain, supporting their role as complementary components of conventional therapy [3].

During the maintenance or long-term stage, Qigong can become part of independent home-based practice aimed at preventing pain recurrence and maintaining functional stability. Regular practice helps patients develop an active approach to health management, maintain mobility and coordination, and reduce the risk of recurrent exacerbations. In addition, it contributes to body awareness and psychological resilience, which is particularly important for patients with anxiety or high stress levels [2] (table 3).

Table 3

The Role of Qigong in the Structure of a Physical Therapy Program (Stages – Goals – Expected Effects)

Rehabilitation stage	Purpose of including Qigong	Expected effects	Examples of exercises / approaches
Early stage	Reduction of tension, decrease in anxiety	Psychophysiological relaxation, reduction of muscle tone	Gentle movements, breathing exercises, meditation
Subacute / active stage	Support of active physical therapy	Improvement of mobility and coordination	Slow, controlled movements; integration with therapeutic and stabilization exercises
Maintenance stage	Independent practice and relapse prevention	Increased sense of body control and improved quality of life	Daily Qigong practice, breathing techniques, mindfulness

Note: Compiled by K.E. Kiliachenkova based on a review of scientific literature.

Categories of patients for whom Qigong is most appropriate. Qigong practice demonstrates particular effectiveness for several patient groups with chronic low back pain.

Patients with chronic non-specific low back pain. These are cases where pain is primarily associated with functional disorders of muscles, fascia, or movement patterns, while significant structural spinal pathology is absent or minimal. Gentle, controlled movements and enhanced body awareness help improve coordination, normalize muscle tone, and reduce protective muscle tension without provoking pain. This approach corresponds to the modern biopsychosocial model of chronic pain (Hartvigsen et al., 2018; Lall et al., 2017) [26, 27].

Patients with psycho-emotional pain components. These are individuals whose pain is accompanied by anxiety, fear of movement, or pain catastrophizing. Combining moderate physical activity with mindfulness, attention control, and breathing techniques provides additional psycho-emotional resources. This contributes to stress re-

duction, improved self-regulation, and greater perceived control over symptoms (Martinez-Calderon et al., 2022; Geneen et al., 2017) [2, 28].

Patients with limited tolerance to physical load. For individuals who avoid movement due to fear of pain or have low physical endurance, slow, rhythmic, and controlled movements combined with breathing practices allow gradual re-engagement in physical activity without overloading the musculoskeletal system, thereby supporting long-term adherence to rehabilitation programs (Kong et al., 2016) [16].

Older adults. For elderly patients, intensive exercise may carry increased risks. Qigong provides a safe form of physical activity that helps maintain flexibility, coordination, and balance, while also positively influencing psycho-emotional well-being and quality of life (Wayne & Kaptchuk, 2008; Kong et al., 2019) [14, 16].

Thus, integrating Qigong into physical therapy programs allows for individualization of rehabilitation approaches, taking into account physical capabilities, psychological status, and patient-specific recovery goals. However, Qigong should not be considered a universal treatment for all cases of back pain; its use should be based on individual clinical assessment and aligned with the goals of the primary rehabilitation program (Hartvigsen et al., 2018) [26].

Discussion. Based on contemporary systematic reviews and meta-analyses, Qigong practice can be considered a safe and promising adjunct to comprehensive rehabilitation of patients with chronic low back pain. Although effects on pain intensity have been heterogeneous across individual studies, improvements in functional outcomes and quality of life have been consistently reported, particularly when Qigong is used as part of a combined therapeutic approach (Martinez-Calderon et al., 2022; Yu et al., 2025) [1, 2].

Qigong should be viewed as a component of multidisciplinary rehabilitation rather than as an isolated intervention. This approach aligns with the modern biopsychosocial model of chronic pain, which emphasizes that optimal clinical outcomes are achieved through the interaction of physical, neurophysiological, and psycho-emotional influences (Hartvigsen et al., 2018; Foster et al., 2018) [26, 29]. The greatest therapeutic benefit is observed when Qigong is combined with therapeutic exercise, stabilization training, and other physiotherapeutic modalities, providing a gentle regulatory effect on neurophysiological and emotional pain mechanisms, emotional reactivity, and body awareness (Martinez-Calderon et al., 2022; Geneen et al., 2017) [3, 28].

Prior to initiating Qigong practice, it is important to perform a baseline assessment of the patient's physical and psychosocial status, including pain intensity, functional limitations, anxiety levels, and fear of movement. Such assessment allows for individualized rehabilitation planning, improves treatment adherence, and reduces the risk of movement avoidance behavior (Vlaeyen & Linton, 2012) [30].

Special attention should be given to proper instruction and supervision of exercise techniques, particularly during the initial stages of rehabilitation. Professional guidance helps develop correct movement patterns, reduces the risk of overload and adverse symptoms, and enhances patients' sense of safety and body control. Clinical guidelines and rehabilitation studies emphasize that gradual exposure to movement and correct technique execution are key determinants of exercise effectiveness in patients with chronic pain (Geneen et al., 2017; NICE, 2020) [28, 31].

Thus, Qigong represents a safe and promising adjunct to comprehensive rehabilitation, supporting simultaneous physical, neurophysiological, and psycho-emotional pain regulation.

Planning the duration and frequency of sessions should be based on the principles of gradual progression and patient comfort. Exercises should not provoke pain exacerbation and should be organically integrated with other rehabilitation components, including therapeutic exercise, stabilization training, and physiotherapy (Geneen et al., 2017; Martinez-Calderon et al., 2022) [3, 28]. Such a flexible, patient-centered strategy promotes long-term adherence to therapy, maintains motivation, and contributes to sustained positive rehabilitation outcomes.

Overall, the integration of Qigong into rehabilitation practice has the potential to improve functional outcomes, reduce psychological burden associated with pain, and support more stable recovery in patients with chronic low back pain, particularly when appropriate clinical adaptation, program individualization, and multidisciplinary coordination between physiotherapists, psychologists, and other healthcare professionals are ensured (Hartvigsen et al., 2018; Foster et al., 2018) [26, 29].

Although Qigong demonstrates promising effects on physical function, psycho-emotional status, and pain intensity in patients with chronic low back pain, existing studies have several important limitations.

First, the lack of standardized protocols regarding duration, frequency, and intensity of training makes it difficult to compare results across studies and reduces the generalizability of findings (Lauche et al., 2013; Wayne & Kaptchuk, 2008) [3, 14, 32].

Second, a substantial proportion of studies are randomized controlled trials with relatively small sample sizes, which reduces statistical power and increases the risk of unstable or biased results. Therefore, further large-scale RCTs with sufficient sample sizes and long-term follow-up are required to provide more reliable evidence (Sotiropoulos et al., 2025; Geneen et al., 2017) [3, 25].

Despite these limitations, the prospects for integrating Qigong into multidisciplinary rehabilitation programs remain promising. The combination of gentle mind-body movement practices with therapeutic exercises, stabilization training, and physiotherapy allows simultaneous influence on peripheral and central pain mechanisms, supports psycho-emotional resources, and promotes long-term treatment adherence.

Future research should focus on well-designed clinical trials with standardized intervention protocols, multicenter study designs, and long-term outcome monitor-

ing to further confirm clinical effectiveness and optimize implementation of Qigong in contemporary rehabilitation practice (Hartvigsen et al., 2018; Martinez-Calderon et al., 2022) [2, 26].

Conclusions. The analysis of current scientific evidence indicates that Qigong can be considered a safe and clinically reasonable adjunct to comprehensive physical therapy for patients with chronic low back pain, particularly within a multidisciplinary rehabilitation approach.

Available systematic reviews and meta-analyses demonstrate positive effects of Qigong on functional outcomes, pain intensity, and psycho-emotional status, with the most stable results observed when Qigong is combined with therapeutic exercise, stabilization training, and other physiotherapy modalities.

The potential effectiveness of Qigong in rehabilitation is consistent with the biopsychosocial model of pain, as the practice combines gentle movement components, body awareness training, and psycho-emotional regulation, contributing to a multidimensional influence on pain mechanisms.

At the same time, interpretation of the results is limited by the absence of standardized training protocols, methodological heterogeneity across studies, and the insufficient number of large-scale randomized controlled trials with long-term follow-up.

Future Perspectives. Future research should focus on developing standardized Qigong rehabilitation protocols, evaluating their effectiveness in multicenter randomized controlled trials, and defining the optimal role of Qigong within contemporary rehabilitation strategies for patients with chronic low back pain.

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ЦИГУН У ФІЗИЧНІЙ ТЕРАПІЇ ПАЦІЄНТІВ ІЗ ХРОНІЧНИМ БОЛЕМ У ПОПЕРЕКУ: НАРАТИВНИЙ ОГЛЯД

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Резюме. Мета. Узагальнити сучасні наукові дані щодо впливу практики Цигун на ефективність фізичної терапії пацієнтів із хронічним болем у спині, окреслити потенційні механізми її дії та визначити перспективи подальших досліджень.

Матеріал та методи. Проведено наративний огляд наукових публікацій, присвячених застосуванню Цигун, тайцзи та інших mind-body втручань у реабілітації пацієнтів із хронічним болем у спині.

Результати. Аналіз сучасних наукових джерел свідчить, що практика Цигун може чинити багатокомпонентний позитивний вплив на пацієнтів із хронічним неспецифічним болем у попереку. У рандомізованих контрольованих дослідженнях та систематичних оглядах застосування Цигун асоціювалося з покращенням функціональної спроможності, зменшенням рівня інвалідизації та підвищенням загальної якості життя. У низці досліджень зафіксовано клінічно значущі зміни функціональних показників, зокрема рухливості та толерантності до фізичного навантаження, особливо у програмах тривалістю вісім тижнів і більше.

Окрім фізичних результатів, практика Цигун продемонструвала сприятливий вплив на психоемоційні параметри. Послідовно відзначалося зниження рівня тривожності, страху руху (кінезіофобії) та катастрофізації болю, що підкреслює важливу роль інтеграції підходів «тіло-розум» у корекції психосоціальних чинників хронічного болю. Зазначені ефекти, ймовірно, опосередковуються через регуляцію вегетативної нервової системи, підвищення парасимпатичної активності та зростання тілесної усвідомленості.

З погляду механізмів дії, Цигун може сприяти нормалізації м'язового тонусу, активації глибоких стабілізуючих м'язів і поступовому відновленню рухливості хребта завдяки повільним, контрольованим рухам у поєднанні з ритмічним диханням. Крім того, окремі дослідження вказують на модифікацію больової перцепції, що може бути пов'язано зі зменшенням центральної сенситизації та активацією ендогенних інгібіторних механізмів болю.

Найбільш виражені позитивні ефекти спостерігалися у випадках, коли практика Цигун інтегрувалася як доповнення до традиційних реабілітаційних програм, зокрема лікувальної фізичної культури та стабілізаційних вправ, а не застосовувалася як ізольоване втручання. Водночас наявна доказова база залишається обмеженою через методологічну гетерогенність протоколів, різноманітність інструментів оцінювання та невеликі розміри вибірок, що зумовлює потребу у подальших масштабних рандомізованих контрольованих дослідженнях.

Висновки. Практика Цигун може розглядатися як безпечне та перспективне доповнення до мультидисциплінарних програм фізичної терапії пацієнтів із хронічним неспецифічним болем у попереку. Узагальнення сучасних наукових даних свідчить, що інтеграція Цигун у комплексні реабілітаційні підходи сприяє покращенню функціональних показників, зменшенню рівня інвалідизації та позитивним змінам психоемоційного стану, зокрема зниженню тривожності, страху руху та катастрофізації болю.

Ефективність Цигун найбільш виражена у разі його застосування як доповнення, а не заміни традиційних методів лікувальної фізичної культури, стабілізаційних вправ та фізіотерапії, що відповідає сучасній біопсихосоціальній моделі хронічного болю. М'який характер рухів у поєднанні з дихальними та медитативними компонентами дозволяє безпечно залучати пацієнтів з обмеженою толерантністю до фізичних навантажень, а також сприяє

формуванню довготривалої прихильності до реабілітаційних програм.

Водночас наявна доказова база характеризується методологічною гетерогенністю, відсутністю стандартизованих протоколів та обмеженими вибірками досліджень, що зумовлює необхідність подальших масштабних рандомізованих контрольованих випробувань із чітко визначеними параметрами втручання та тривалим періодом спостереження. Подальші дослідження дозволять уточнити оптимальні умови інтеграції Цигун у клінічну практику та обґрунтувати його місце в сучасних програмах фізичної терапії пацієнтів із хронічним болем у спині.

Ключові слова: Цигун, Тайцзи, Йога, хронічний неспецифічний біль у попереку, фізична терапія, mind-body практики, мультидисциплінарний підхід.

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