REVIEW ARTICLE

Influence of an active treatment on quality of life, pain and depression in women with fibromyalgia: a review article

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ABSTRACT

Fibromyalgia is a syndrome that causes widespread and diffuse muscle pain accompanied by fatigue, although other symptoms also appear, such as depression, anxiety, sleep and rest disorders, allodynia, and cognitive, psychological and social problems. These symptoms notably affect the patients' quality of life. The forms of presentation of the syndrome increase the difficulty of diagnosis and treatment for professionals who treat these patients, with a significant prevalence ratio of 21:1 in favor of women over men. On the other hand, this disease entails a high economic cost, as 2/3 of the expenses are not directly invested to treat it; therefore, they are considered losses.

The objective of this review is to demonstrate the efficacy of adding various active treatments, compared to the usual pharmacological treatment, in improving quality of life and reducing pain and depression in women with fibromyalgia. For this purpose, the WoS, Cochrane Library and PubMed databases were used. Seven articles were selected, aimed at analyzing the efficacy and safety of therapeutic exercise, a highly cost-effective tool, as part of the treatment of women with fibromyalgia. Clinical trials were selected with at least one intervention group that performed some type of physical activity.

The articles indicated that physical exercise as an additional therapy provided benefits in quality of life, pain relief and reduction of depression in women with fibromyalgia compared to those groups that simply followed the usual treatment. Therefore, we can conclude that the usual (drug-based) treatment, accompanied by an active treatment, offers greater benefits in the three abovementioned aspects when compared to treatment with drugs alone.

Active treatment is considered safe to add to our toolbox for treating the symptoms of fibromyalgia. Depending on the patient's symptoms, tastes and preferences, we could recommend or prescribe different types of physical activity to promote adherence and tailor the treatment for each case.

Keywords: Physical Therapy Modalities; Fibromyalgia; Quality of Life; Exercise; Pain (Source: MeSH NLM).

INTRODUCTION

Fibromyalgia is a syndrome that mainly produces widespread and diffuse muscle pain accompanied by fatigue [(1)]. Its etiology is unknown; it is said to be a multifactorial disorder involving both peripheral and central pain pathways [(2)]. It is also accompanied by various symptoms, such as depression, anxiety, sleep and rest disorders, allodynia, and cognitive, psychological and social problems, among others [(3)].

All of this diminishes the quality of life of patients with this condition from various aspects, making its diagnosis and treatment difficult to establish and structure. This, in turn, prevents a consensus among all professionals involved in patient care [(4-6)].

The prevalence of fibromyalgia in Spain is 2.45 % [(6)]. It ranks among other common and well-known rheumatologic, musculoskeletal diseases, such as osteoarthritis (6.2 %), and above arthritis (0.5 %) [(7)]. We should particularly emphasize its higher frequency in females compared with males (21:1), particularly in the group of 40-49 years [(8)]. Regarding the situation in the rest of the world, the prevalence of fibromyalgia ranges from 0.3 % to 9.3 %, with an average of 2.7 %, quite similar to that of Spain (3 %). Interestingly, there are differences with respect to other countries in the ratio of women to men, in which, in order of highest to lowest, Spain ranks first, followed by South America (12:1), Asia (5:1), North America (4:1) and Europe (3:1) [(6-10)].

The diagnostic complexity of this disease, due to its symptomatology, entails high costs [(11)]. In addition to the suffering and uncertainty of affected patients, this further justifies the need for research and resource allocation [(12)]. In Spain, the estimated cost is about €9,982, of which 32 % corresponds to direct healthcare expenses and the remaining 68 % to indirect expenses related to lost work productivity [(13)].

The lack of objective markers to aid recognizing the disease has been an obstacle in many aspects: research,

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clinical management, treatment, social recognition and, obviously, diagnosis [14]. There are complaints about the lack of precision in pain recognition, the lack of clinical standardization of the algometer, the idea of "all or nothing" instead of considering the disease as a continuum, and the failure to take into account other symptoms in the diagnosis (fatigue and depression, among others) [15].

In 2016, the American College of Rheumatology (ACR) conducted a systematic review, whose findings remain valid today, to address some limitations of its previous established diagnostic criteria [8]. The current ACR criteria (2016) were established considering four conditions:

1. Widespread Pain Index (WPI) ≥ 7 and Symptom Severity Scale (SSS) score ≥ 5, or WPI 4-6 and SSS score ≥ 9.
2. Widespread pain, which is defined as pain present in four of five areas. It is proposed to use a body map, such as the Michigan Body Map (jaw, chest and abdominal pain are not included in the definition of widespread pain) (Figure 1).
3. Symptoms must be present for at least three months.
4. A diagnosis of fibromyalgia does not exclude the presence of other diseases; therefore, it is valid alongside other diagnoses.

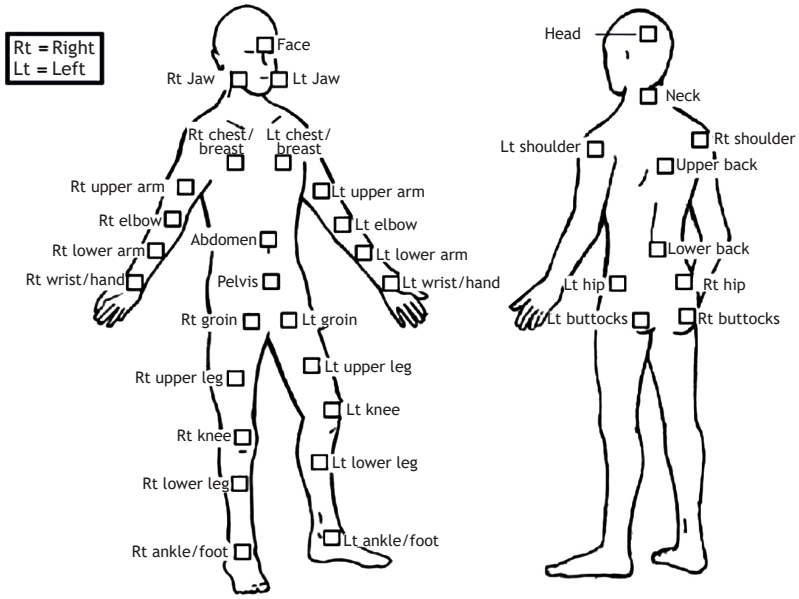

Figure 1. Michigan Body Map [9]
Recommended for the diagnosis of widespread pain according to Wolfe et al. [8]

The treatment of fibromyalgia is based on three fundamental pillars, which together form a comprehensive multidisciplinary approach. It includes a pharmacological component, physical exercise, and pain education [16].

When addressing pharmacological therapy, there is a diversity of treatment options and drugs available [17]. Pharmacological treatment options focus on symptom reduction rather than disease cure [18]. There is no drug approved by the European Medicines Agency as specifically indication for fibromyalgia, but blinded studies have demonstrated the usefulness of various drugs [7,19].

Pharmacological treatment has an intrinsic challenge, which is also faced by patients with fibromyalgia (especially as a chronic disease): nonadherence to treatment, which directly impacts treatment efficacy and healthcare system costs [20]. According to a study, nonadherence to pharmacological treatment increases the risk of poor quality of life in these patients by 12 [20,21].

Regarding pain education, it is known that informing individuals affected by fibromyalgia about the disease and its treatment can help improve their symptomatology [22]. First of all, it is necessary to understand the context of how pain affects brain modulation in this disease [23]. Pain and its chronicity are strongly conditioned by the patient's beliefs, learning and memory, to the extent that they even modulate brain chemistry and the response to different situations [24]. Drugs have the same function but in a nonspecific manner. This is why this therapy is important—it helps guide the brain back to proper functioning and behavior, with the main objective of controlling the pain sensation [25]. Thus, cognitive-behavioral methods work as a specific treatment under pain conditions, positively altering function and chemistry. They have also shown their efficacy

in reducing painful behaviors, fear of pain and of activity [26]. Pain education over long periods of time (3-12 months) has been shown to be beneficial in pain control [27].

Physical exercise

Exercise is defined as a type of physical activity based on "planned, structured and repetitive body movement done to improve and/or maintain one or more components of physical fitness" and health [28,29].

Scientific evidence confirms the benefits of exercise; however, this resource is not used considering the positive effects on people's health [30]. This underestimation may be justified among the general population due to a lack of knowledge and information, but it is not justified in clinical practice or among healthcare professionals, whose ultimate goal is to promote the well-being of the population [31,32].

This chain of benefits can help break the vicious circle in which patients with fibromyalgia are trapped [33]. It begins with the onset of symptoms, which will drastically reduce daily physical activity in most patients, leading to a decline in their physical condition and health [34]. This inactivity and physical deconditioning will lead to an increase in symptoms, further deteriorating the physical condition of these patients [35,36].

Physical activity has been part of the nonpharmacological treatment of fibromyalgia due to its cost-benefit and its contribution to symptom reduction and health promotion [37,38]. For example, physical activity has been shown to reduce pain and improve its modulation and perception. In addition, it provides benefits in sleep quality, functional capacity, vitality, depression reduction and quality of life [39,40].

Quality of life

After learning more about this disease, as well as its wide and complex symptomatology, it is normal to think that the life of those affected is totally impaired and conditioned [41]. Therefore, it is essential to study and measure how this condition affects the quality of life of those who suffer from it to assess individual progression and evolution and the impact of different treatments [42]. Quality-of-life scales can assess various dimensions, including physical, social and emotional aspects [43]. These items assess the biological, psychological and social dimensions of the individual [44], which allows the individual to be considered as an "integral whole".

Three examples of scales used to measure quality of life are the Medical Outcome Study Short Form, World Health Organization Quality of Life (WHOQOL-BREF) and Fibromyalgia Impact Questionnaire (FIQ)-1994 version, the latter being used specifically in patients with fibromyalgia [42,45].

Pain

According to the International Association for the Study of Pain (IASP), "Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage [46]." This definition highlights the challenges faced by patients with pain, both in their personal experience and for the healthcare professionals who care for them.

Pain in patients with fibromyalgia leads to significant work disability and is one of the primary causes of chronic non-cancer pain. Additionally, it has a high prevalence and is underdiagnosed. These factors contribute to its high social and economic impact [47]. It is a type of pain without a valid pathophysiological descriptor for its pain experience, but in which the clinical presentation of these patients suggests altered nociceptive function [48].

Pain is one of the most debilitating symptoms, as described by the patients themselves during consultation interviews. It is such that it is capable of potentially affecting all three areas measured in the quality-of-life scales [49,50]. According to the Sociedad Española de Reumatología (Spanish Society of Rheumatology), the main and most significant symptom is chronic pain, which is characterized by being diffuse, widespread and nonspecific [49,51].

When pain appears, the emotional aspect fosters negative feelings, such as anger, helplessness, and sadness. Conversely, when pain disappears, it generates positive feelings, such as well-being and happiness [52]. At the physical and social level, pain also affects, as it causes discomfort and a feeling of tiredness, which will lead the individual's physical and social activity to stop [53]. Pain can affect the patient's rest and quality of sleep [54].

For pain measurement, the most commonly used tools are the well-known Visual Analog Scale (VAS) and pain threshold measurement through the pressure exerted with a calibrated instrument, usually an algometer [48,55]. Since the diagnosis of the disease requires scales to determine the widespread pain index, the ACR recommends using the WPI and SSS Score [49,56,57].

Depression

Depression and fibromyalgia go together and are also a diagnostic criterion according to the ACR. It has been observed that, compared with the general population and patients with chronic pain, a high number of individuals with fibromyalgia also have depression.

Depression is characterized by a combination of sadness, loss of interest in daily activities, decreased energy, loss of confidence and self-esteem, unwarranted feelings of guilt, thoughts of death and suicide, impaired concentration and the onset of sleep and eating disorders [59].

Fibromyalgia shares symptoms with depression, which makes the diagnosis more challenging. Additionally, their complex relationship raises uncertainty about which of the two conditions appears first—whether one causes the other or vice versa [60,61]. All this makes depression one of the most worrying symptoms associated with the disease, both for patients [58,62] and healthcare professionals.

One of the most commonly used scales in Spain is the Hospital Anxiety and Depression Scale (HADS), which is useful for identifying depression and anxiety in individuals with fibromyalgia [60,63].

SEARCH STRATEGY

In October and November 2023, a literature review was conducted using the Medline PubMed, Cochrane Library and WoS databases. In order to meet the objectives, various keywords (MeSH terms) were used, along with the Boolean operator "AND" and the applied filters "Clinical Trial," "Randomised Controlled Trial" and "in the last 5 years."

The MeSH terms or "keywords" used were "Physical Therapy Modalities," "Fibromyalgia," "Quality of Life" and "Exercise," which were applied in different combinations across the aforementioned databases.

To improve the selection of articles, a set of inclusion and exclusion criteria was established.

The inclusion criteria were that the study involve a group of patients undergoing a treatment including physical exercise, pain, depression and/or quality of life before and after such treatment; that a control group undergo a conventional treatment (either without activity or only with activity recommendations); and that the intervention group be aged between 35 and 65 years.

The exclusion criteria were that the study last less than six weeks, that it be non-randomized, that the control group participate in other physical activity programs, that it not explain the intervention protocol of the control group and that it not be a "randomized controlled clinical trial."

After the search in the different databases using the selected terms and filters, 54 articles were found (11 in PubMed, 17 in the Cochrane Library, and 26 in WoS). Then, with the help of the Zotero reference manager, we removed duplicates, five in total. The next step was a critical reading of the abstracts, during which 42 articles were excluded for not meeting the inclusion and exclusion criteria. This resulted in a final sample of seven articles (four from PubMed, one from the Cochrane Library, and two from WoS).

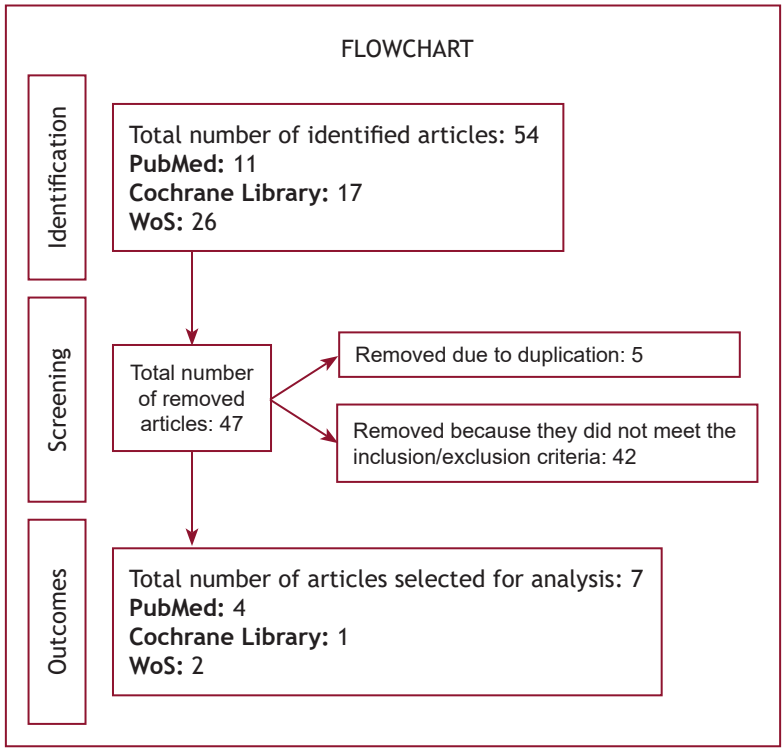

Figure 2. Flowchart of the article selection process from the literature search

RESULTS

Following article selection, the total sample consisted of 429 patients. All articles included at least one intervention group involving some form of physical activity (strength training, high-intensity interval training [HIIT], aerobic exercise, endurance and coordination training). These were compared with control groups or other types of interventions (hyperbaric therapy, transcranial neuromodulation, etc.). The duration of the interventions ranged from 6 to 16 weeks, with a frequency of one to five sessions per week, from 35 minutes to one hour of different types of physical activity. All articles assessed pain, quality of life and/or depression [64-70].

Regarding the results, we observed greater benefits in the active groups compared with the control groups that received usual treatment. The difference lies in the benefits of physical activity groups compared with other types of treatment. Sometimes, the group that performed physical activity did not show superiority in certain aspects compared with groups undergoing other types of interventions (stretching, hyperbaric therapy, transcranial neuromodulation, among others) [65,66,68]. To summarize these results, a table is provided as a synthesis (Table 1).

Table 1: Intervention protocols

Objective	Intervention	Sample	Groups	Duration of intervention	Assessment measures	Results	Conclusions
To compare HIIT and moderate-intensity continuous training (MICT) effects, combined with strength and stretching exercises, in patients with fibromyalgia.	HIIT (30 min). MICT (45 min). Control group = Usual treatment	60 patients	3 groups (HIIT, MICT and control group)	6 weeks, 5 days per week	Fibromyalgia (FIQ), Pain (VAS), (SF-36), cardiopulmonary exercise testing and body composition.	HIIT = MICT > control group across all variables	HIIT and MICT interventions along with strength and stretching exercises showed significant improvement in the impact of fibromyalgia, pain level, functional capacity and quality of life compared with the control group.
To analyze the effect of a low-intensity physical exercise program that combines endurance and coordination, psychological aspects, pain perception, quality of life and physical conditioning in women with fibromyalgia.	Physical exercise = (low intensity) endurance and coordination (1 h). Control group = Usual treatment	32 patients	2 groups (physical exercise and control group)	8 weeks, 2 days per week	Catastrophizing, Anxiety/Depression (HADS),Depression (Beck Depression Inventory-II - BDI-II), Stress (Perceived Stress Scale-10 - PSS-10), Pain acceptance (Fibromyalgia Participation and Activity Questionnaire - CPAQ-FM), Tenderness (algometer), Quality of life (Revised Fibromyalgia Impact Questionnaire - FIQR), Self-perceived functional capacity (Revised Fibromyalgia Impact Questionnaire - Physical function FIQR-PF), Endurance/ functionality (6-minute walk test - 6MWT), Strength (5-second Sit-to-Stand Test - 5STST) and Speed (4-meter Speed Gait- 4MGST).	Physical exercise > Control group: across all variables	A combined low-intensity physical exercise program that includes endurance training and coordination improves psychological variables, pain perception, quality of life and physical condition in women with fibromyalgia.
To verify and compare the efficacy of muscle stretching and endurance training for symptoms and quality of life in patients with fibromyalgia.	Stretching = without assistance and RPG (40 min). Strength = Progressive overload (40 min). Control group = Usual treatment	44 patients	3 groups (stretching, strength and control group)	12 weeks, 2 days per week	Pain (VAS), Pain threshold (algometer). Fibromyalgia (FIQ), Quality of life (SF-36).	Stretching > Strength: Quality of life. Strength > Stretching. Depression. Control group > Stretching = Strength: in no variable	Stretching exercise is more effective to improve quality of life. Endurance training was more effective to reduce depression. Both modalities are recommended for exercise programs as therapy in fibromyalgia.
To explore the effect of high-frequency transcranial magnetic stimulation (TMS) and physical exercise on pain, the impact of fibromyalgia, physical conditioning and emotional state in women with fibromyalgia.	TMS = Transcranial neuromodulation (20 min). Physical exercise = Endurance and coordination protocol (60 min). Control group = Usual treatment	49 patients	3 Groups (physical exercise, TMS and control group)	Physical exercise = 8 weeks, 2 days per week. TMS = 2 weeks, 5 days per week	Pain (VAS), Tenderness (algometer). Fibromyalgia (FIQ), Functional capacity (6MWT), Fatigue (Borg), Gait speed (4MGS), Strength to stand up (STST), Anxiety/ Depression (HADS), Depression (BDIS), Stress and Satisfaction	TMS = Physical exercise > Control group across all variables	Low-intensity physical exercise and TMS are effective to control pain, impact on fibromyalgia, physical and emotional condition. TMS achieved better results at the emotional and functional perception levels.
To research the efficacy of the physical exercise program vs. exercise for well-being, the improvement of pain control, flexibility, elastic balance, perceived exertion and quality of life in women with fibromyalgia.	Physical exercise = Mobilization and coordination (45 min). Qi Gong = traditional Chinese exercises for well-being (45 min). Control group = Usual treatment	141 patients	3 groups (active exercise, Qi Gong and control group)	6 weeks, 2 days per week	Stability (Wii), Flexibility (Wells and Dillon), Pain (VAS), Quality of life (FIQ), Fatigue (Borg).	Active exercise > Qi Gong > Control group: across all variables	The active exercise and the exercise for well-being program improved flexibility, static balance, pain and quality of life in women with fibromyalgia. The participants in the active exercise program showed better results than those in the exercise-for well-being program.
To analyze the effect of low-pressure hyperbaric oxygen therapy on induced fatigue, pain, endurance and functional capacity, physical performance and cortical excitability compared with a physical exercise program in women with fibromyalgia.	Low-intensity physical exercise (60 min). HBOT = hyperbaric oxygen therapy (90 min). Control group = Usual treatment	49 patients	3 groups (physical exercise, hyperbaric therapy and control group)	Hyperbaric therapy = 2 weeks. 5 days per week. Physical exercise = 8 weeks, 2 days per week	Fatigue (VAS), Tenderness (algometer), Endurance/Functional capacity (6MST), Physical state (Short Physical Performance Battery - SPPB), Cortical excitability (Resting Motor Threshold - RMT)	HBG > PEG > Control group. Fatigue and pain-HBG = PEG > Control group: across all the other variables	Low-pressure HBOT and physical exercise improve the pressure pain threshold, endurance and functional capacity, as well as physical performance. Induced fatigue and perceived pain during rest significantly improve only with low-pressure HBOT.
To assess variables related to oxygen consumption (VO2) in relation to lean body mass (LBM) and clinical symptoms in women with fibromyalgia undergoing aquatic training.	APT = aquatic physical training (45 min). Control group = Usual treatment	54 patients	2 groups (APT) and control group	16 weeks, 2 days per week	Tenderness (algometer), Submaximal cardiopulmonary exercise testing (CPET), Pain and fatigue (VAS), Fibromyalgia (FIQ), Anxiety (Beck Anxiety Inventory - BAI), Depression (BDI), Quality of life (SF-36), Quality of sleep (Pittsburgh Sleep Quality Index - PSQI), LBM	APT > Control group across all variables	It was concluded that 10 weeks of APT were effective in VO2, maximal CPET and improvement of symptoms in women with fibromyalgia.

DISCUSSION

After reviewing and analyzing seven articles, we found that including physical exercise within conventional pharmacological treatment led to statistically significant positive differences compared to groups that received medication alone. These benefits were notable, even when compared to other complementary treatments or different types of physical activity.

Different types of physical activity were identified, each differing from the others. These included HIIT [64], moderate-intensity continuous training (MICT) [64], endurance and coordination exercises [65], stretching [66], strength [66], low-intensity exercise [67], mobilization and coordination exercises [68], traditional Chinese exercises for well-being (Qi Gong) [68], stretching and coordination exercises [69] and aquatic physical training [70].

Tuğba Atan et al. [64] found no significant differences between their two physical activity groups (HIIT and MICT) in any of the variables related to pain, depression or quality of life. The two groups followed their respective protocols, with the only difference being the time of activity. The HIIT protocol group performed physical activity for an effective duration of 35 minutes, while the MICT group exercised for 55 minutes.

Ana Assumpção et al. [66] compared a stretching protocol with a strength training protocol. The first group obtained better results for quality of life and pain reduction, while the second group had better results for depression reduction. The two groups performed the same total time of activity over the 12-week study period. The stretching group completed seven exercises per session, with a progressive increase in discomfort up to a moderate level. The strength group performed nine exercises per session, with daily progressive overload and a perceived exertion of 13 on the Borg scale.

Juan Rodríguez-Mansilla et al. [68] compared a mobility and stretching group with a group of traditional Chinese exercises for well-being (Qi Gong). Qi Gong consists of aerobic exercises involving mental concentration, breathing, static postures and dynamic movements that combine stretching with activation of muscle chains through isometric and isotonic contractions. The first group performed active mobilization exercises of shoulders, spine and hips, as well as static balance exercises and stretching. Both showed significant benefits compared to the control group, with the mobility and stretching group showing better results compared to the Qi Gong group.

Regarding pain, all the selected articles analyzed this variable and found a reduction of this symptom with respect to the control groups [64,65,66,67,68,69,70]. However, there are differences in the types of physical activity performed [64,65,68].

Tuğba Atan et al. [64] compared HIIT and MICT and found no significant differences between them. Therefore, they concluded that both interventions effectively reduce pain in fibromyalgia.

Ana Assumpção et al. [66] compared stretching and strength training, finding similar improvements when compared with a control group. However, the stretching group had slightly better results.

Juan Rodríguez-Mansilla et al. [68] studied two active groups: one focused on mobilization and coordination exercises and the other on traditional Chinese exercises for well-being (Qi Gong). Both types of exercise reduced pain, but no differences were found between them.

Juan Rodríguez-Mansilla et al. [68] compared a group performing physical activities focused on endurance and coordination with another group undergoing high-frequency TMS therapy. Regarding pain measurement using the VAS, only the magnetic stimulation group showed a significant reduction in pain, with a four-point decrease by the end of the study. On the contrary, with respect to pressure pain threshold, both groups experienced improvements, but no significant differences were observed between them.

Ruth Izquierdo-Alventosa et al. [69] compared the effectiveness of an active group performing endurance and coordination exercises with another group undergoing low-pressure hyperbaric oxygen therapy (HBOT). Concerning pain, a significant reduction of 2.5 points on the VAS was observed only in the oxygen therapy group, which was not found in the other groups.

Only two of the review articles considered depression as a variable in this disorder [65,67]. Both reported improvements in scores for the HADS and Beck Depression Inventory (BDI) scales, indicating a reduction in this symptom across all cases and types of active treatment. A study conducted by Ruth Izquierdo-Alventosa et al. [69] compared a group that performed low-intensity endurance and coordination exercises with a control group. The former showed greater benefits across all variables compared to the latter. The latter, also by Ruth Izquierdo-Alventosa et al. [69], compared a physical activity protocol based on endurance and coordination exercise with transcranial stimulation. Both groups obtained positive results, but the transcranial stimulation group had significantly greater results than the active group.

Quality of life was assessed in five studies [64,65,66,67,68] using the FIQ. Additionally, one of these studies [64] also employed the SF-36 health questionnaire to measure

quality of life. In all cases, the groups that participated in physical activities showed significant improvements in quality-of-life scales compared to the control groups.

The study by Ana Assumpção et al. [66] compared a group following a stretching protocol with another undergoing strength training. Both groups showed significant benefits in the quality-of-life scales that were used. The strength training group experienced greater improvement in the depression aspect; on the other hand, the stretching group achieved better results in physical function and bodily pain compared to the strength group.

The article by Ruth Izquierdo-Alventosa et al. [69] compared the benefits in quality of life between a group undergoing an endurance and coordination exercise protocol and a group receiving transcranial neuromodulation. The neuromodulation group showed greater improvements compared to the endurance and coordination group.

The article by Juan Rodríguez-Mansilla et al. [68] compared a group that based its active treatment on stretching and coordination exercises with another that practiced traditional Chinese exercises for well-being (Qi Gong). Both groups showed positive results for quality of life.

As a strength, the broad approach of the present study is noteworthy due to the results, which cover a variety of types of physical activity as an active treatment to address fibromyalgia. Moreover, since no type of activity was excluded, the influence of each on fibromyalgia symptoms could be clearly distinguished. It should be noted that the analyzed articles had different types of intervention groups with various therapies, allowing for more comprehensive comparisons and conclusions.

A proposal for future lines of research in this field would be the development of a treatment protocol based on physical activity, structured into blocks that focus on the types of activity that, as reviewed, have the greatest benefit in reducing the most common symptoms of the disease—those that significantly impact daily life—such as pain, low quality of life and depression. Furthermore, taking into account that the studies did not classify the intervention groups with withdrawal of pharmacological treatment, it would be interesting to include this step in the protocol proposal in order to more thoroughly identify the effects of the technique itself on the symptomatology of patients with fibromyalgia.

In conclusion, the review indicates that treatment based on the combination of physical activity and drugs is more effective in reducing symptoms than using drugs alone in patients with fibromyalgia.

HIIT and MICT interventions, combined with strengthening and stretching exercises, had a significant impact on improving the three symptoms associated with fibromyalgia described in this study. Additionally, a low-intensity physical exercise program, including endurance and coordination training, improved psychological variables, pain perception, quality of life and physical condition in women with fibromyalgia. It should be noted that endurance training was the most effective modality for reducing depression. Likewise, stretching provided the greatest benefit to patients' quality of life as postural control and breathing are thought to foster a mind-body connection that contributes to this improvement. Furthermore, the 16-week active exercise program improved flexibility, static balance and quality of life while reducing pain in women with fibromyalgia.

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