

## Non-Pharmacological Treatment Options for Patients with Fibromyalgia, a Review of Literature

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### 1. Abstract

Fibromyalgia is a generalized chronic pain syndrome characterized by widespread pain and tenderness to palpation at multiple anatomically defined soft tissues associated with depression, anxiety, insomnia, cognitive dysfunction, chronic fatigue, and autonomic dysfunction. Fibromyalgia lies at the end of a continuum of polysymptomatic distress rather than being a discrete disorder. This is one of the most common musculoskeletal complaints in physician's chambers. For lack of specific pharmacological treatment options, non-pharmacological treatments modalities are found to have some immediate efficacy and a variable efficacy in the long term. We searched literatures and reviewed randomized, controlled trials for possible predictors of outcome in fibromyalgia. The effects of non-pharmacological interventions are limited and positive outcomes largely disappear in the long term. However, within the various populations with fibromyalgia, treatment outcomes showed considerable individual variations. Subgroups of patients with high levels of psychological distress may benefit from non-pharmacological interventions. Some of the relevant published articles so reviewed demonstrated the beneficial effects of non-pharmacological treatment options specially exercise and relaxation techniques like yoga and Tai Chi in many cases in the context of non-availability of specific pharmacotherapy. Alternative and complementary medicines were found to have variable efficacy.

### 3. Introduction

According to American College of Rheumatology (ACR) 1990 criteria fibromyalgia (FM) is a chronic musculoskeletal pain syndrome characterized by widespread pain and tenderness in at least 11 of the 18 so-called tender points. Patients frequently report sensations of fatigue, sleep disturbances, morning stiffness, and symptoms associated with irritable bowel syndrome and affective distress [1]. The prevalence of FM in Western countries varies between 2% and 10% and the majority of the patients are female [2,3]. Most patients report a high degree of impairment in their daily functioning. In comparison with other chronic pain conditions, patients with FM report higher levels of pain and functional disability and judge their quality of life as poorer [4-6]. Over the past few decades, a wide range of potential treatments has been applied and evaluated. Medication mainly focuses on short-term relief of symptoms, whereas non-pharmacological interventions aim to address the long-term consequences of the dis-

ease, such as disability, psychological distress, muscular deconditioning and weakness. Interventions mainly consist of elements of Cognitive - Behavioral Therapy (CBT), exercise training, or a combination of the two. Overall, reviews have shown non-pharmacological approaches to be more effective than pharmacological treatments [7,8].

### 4. Non Pharmacological Treatments

At present, pharmacological treatments for fibromyalgia have a rather discouraging cost/benefit ratio in terms of poor symptom control and high incidence of side effects. The interdisciplinary treatment programs have been shown to improve subjective pain with greater success than mono therapy with drugs. Physical therapies, rehabilitation and alternative therapies are generally perceived to be more "natural," to have fewer adverse effects, and in some way, to be more effective [9]. Exercise and cognitive-behavioral treatments which exist in the multimodal approach

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and encompass largely self-managed strategy, demonstrate the beneficial effects of both different types of exercise and cognitive-behavioral treatment [10]. Non-pharmacological treatments, in particular exercise and CBT, have yielded effect sizes and cost-benefit ratios comparable to medications [11].

## 5. Cognitive–Behavioral Therapy

CBT is one of the most prevalent treatments for patients with FM. A distinction can be made between single-method interventions such as education and relaxation programs, and multi method. Educational programs provide information about active self-management of pain, coping, relaxation techniques, the importance of physical activity and social support, and individual strategies for behavioral change. Few studies investigated the effect of education as a single-method intervention [12-14] and found the educational programs to yield some benefits for the patients' self-efficacy and pain-coping skills [13]. However; the programs were not effective in diminishing pain and disability or in improving mood. Other single-method CBTs are relaxation techniques - for example, progressive relaxation, biofeedback and autogenic training - which are used in patients with FM to diminish muscular tension and interrupt the pain - tension cycle. The other studies that investigated the effects of relaxation failed to find any results for disability and mood [15-17]. Multi method CBT typically consists of a combination of various therapeutic elements, such as cognitive restructuring, pain-coping skills, problem-solving techniques, goal setting, increasing activity levels, activity pacing, stress management and adjustment of pain-related medication, and frequently also comprises educational and relaxation components. Some studies evaluated the outcome of multi method CBTs [18-21]. Two studies found no effects on pain, disability and mood [10,15], while three studies reported varying effects [22-24].

## 6. Exercise Training

Exercise training programs include aerobic exercise, strength training, flexibility exercises and hydrotherapy. Aerobic exercise is the most widely used exercise intervention and comprise various types of exercises such as cycling, walking and aerobic dancing. Aerobic exercises increases cardiovascular fitness and reduces pain and other fibromyalgia symptoms. Many studies investigated the effect of aerobic exercise [14,19,22-29], and some of these found improvements on disability [19,26,29]. Only three studies conducted follow-up assessments [14,19,28] of which one showed limited long-term improvements in pain and disability [28]. Strength training has been investigated three times in randomized, controlled trials [30-32] and positively affected disability in two of the three studies. Finally, five studies evaluated aerobic exercise in combination with muscle-strength training and ob-

tained mixed results. Three studies demonstrated a decrease in pain and disability [33-35] and these effects were maintained at follow-up. Treatments that incorporate improved physical function and relaxation, such as yoga and Tai Chi may also be helpful [36].

## 7. Combinations of Education and Exercise Training

Six studies examined the effectiveness of education in combination with exercise [12,14,37-40]. Two other studies reported positive effects for disability, such as an enhanced physical condition [41,42]. Of the three studies that included follow-up assessments [14,38,40], two studies found long-term effects on pain and disability [38,40]; and one also on mood [38]. Relaxation combined with exercise training appeared to be effective in diminishing pain and disability in daily life, and the effects were maintained at the 1-year follow-up [12]. King and coworkers showed that socio demographic and psychosocial variables were relevant in predicting the success of treatment, but the explained variance was relatively small [43]. In recent years, alternative and complementary medicine has been requested by the population, especially by individuals with fibromyalgia, for whom the isolated conventional therapy has shown limited benefits, requiring multidisciplinary treatment [44]. In alternative medicine, the best results have been obtained by use of acupuncture, whose benefits for patients with fibromyalgia have been mostly reported in studies inadequately controlled and non-double-blind [45].

## 8. Conclusion

Advanced neuroimaging techniques indicate that central factors are important in the processing of pain in people with fibromyalgia and suggest that they have a narrow range of pain tolerance and perhaps other sensory stimuli before it becomes noxious. Pharmacological treatment has limited value but comprehensive treatment care including non-pharmacological modalities can make a difference. Patients with fibromyalgia with a relatively high level of psychological distress and impact of the disease on daily living are likely to benefit most from non-pharmacological interventions. Associated contributing factors of fibromyalgia should be addressed with relevant pharmacological options in adjunct to physical approach. Future research and the clinical practice should respect the heterogeneity and individual variability in patients with fibromyalgia and should aim at developing non-pharmacological interventions that best match the needs of the individual patient. The target should focus on health related quality of life. Taken as a whole although some patients improve, the data tend to suggest minimal improvement in most case despite treatment.

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