

Review Article

Non-Pharmacological Treatment Options for Patients with Fibromyalgia

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Abstract

Fibromyalgia is a generalized chronic pain syndrome characterized by widespread pain and tenderness to palpation at multiple anatomically defined soft tissues and associated with depression, anxiety, insomnia, cognitive dysfunction, chronic fatigue, and autonomic dysfunction. In 2010, American College of Rheumatology modified classification criteria defined in 1990. This is one of the most common musculoskeletal complaints in physician's chambers. For lack of specific pharmacological treatment options, non-pharmacological treatment 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 demonstrated the beneficial effects of non-pharmacological treatment options, specially exercise, cognitive behavioral therapy and alternative and complementary medicine, in the context of non-availability of specific pharmacotherapy.

Key words: *Fibromyalgia; Non-pharmacological; Treatment options*

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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.¹ The publication of American College of Rheumatology (ACR) preliminary diagnostic criteria for fibromyalgia (FM) in 2010 (ACR 2010) eliminated the tender point examination, thus making it possible to study FM in survey and clinical research. The diagnostic criteria for FM are satisfied if the following 3 conditions are met: 1) The Widespread Pain Index (WPI) ≥ 7 and the Symptom Severity Score (SS) ≥ 5 , or the WPI is 3–6 and the SS ≥ 9 ; 2) Symptoms have been present at a similar level for at least 3 months; and 3) The patient does

not have a disorder that would otherwise explain the pain.² Fibromyalgia lies at the end of a continuum of polysymptomatic distress rather than being a discrete disorder. Advanced neuroimaging techniques showed dysfunctioning of hippocampus and other cerebral abnormalities in fibromyalgia patients as well as greater gray matter loss than in healthy controls.³ The prevalence of FM in western countries varies between 2% and 10% and the majority of the patients are female.^{4,5} 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.^{6–8} Over the past few decades, a wide range of potential treatments has been applied and evaluated. Medication mainly

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focuses on short-term relief of symptoms, whereas non-pharmacological interventions aim to address the long-term consequences of the disease, 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.^{9,10}

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 monotherapy with drugs. Physical therapies, rehabilitation and alternative therapies are generally perceived to be more “natural”, having fewer adverse effects, and in some way, to be more effective.¹¹ Exercise and cognitive-behavioral treatments which exist in the multimodal approach and encompass largely self-managed strategy, demonstrate the beneficial effects of both different types of exercise and cognitive-behavioral treatment.¹² Non-pharmacological treatments, particularly exercise and CBT, have yielded effect sizes and cost-benefit ratios comparable to medications.¹³

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^{14–16} and found the educational programs to yield some benefits for the patients’ self-efficacy and pain-coping skills.¹⁵ 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.^{17–19}

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.^{20–23} Two studies found no effects on pain, disability and mood^{10,15} while two other studies reported varying effects^{24,25}.

Exercise-training

Exercise training programs include aerobic exercise, strength training, flexibility exercises and hydrotherapy. Aerobic exercise is the most widely used exercise intervention and comprises of various types of exercises such as cycling, walking and aerobic dancing. Aerobic exercises increase cardiovascular fitness and reduce pain and other fibromyalgia symptoms.

Many studies investigated the effect of aerobic exercise^{16,21,24–31} and some of these found improvements on disability^{21,28,31}. Only three studies conducted follow-up assessments^{16,21,30} of which one showed limited long-term improvements in pain and disability.³⁰ Strength training has been investigated three times in randomized controlled trials^{32–34} and positively affected disability in two of the three studies. Finally, five studies evaluated aerobic exercise in combination with muscle-strength training and obtained mixed results. Three studies demonstrated a decrease in pain and disability^{35–37} and these effects were maintained during follow-up. Treatments that incorporate improved physical function and relaxation, such as yoga and Tai Chi may also be helpful.³⁸

Combination of education and exercise training

Six studies examined the effectiveness of education in combination with exercise.^{14,16,39–42} Two other studies reported positive effects for disability, such as an enhanced physical condition.^{43,44} Of the three studies that included follow-up assessments,^{16,40,42} two studies found long-term effects on pain and disability^{40,42} and one also on mood.⁴⁰ 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.¹⁴ King and coworkers⁴⁵ showed that socio-demographic and psychosocial variables were relevant in predicting the success of treatment, but the explained variance was relatively small.

Alternative and complementary medicine

In recent years, alternative and complementary medicines have been requested by the population, especially by individuals with fibromyalgia, for whom the isolated conventional therapy has shown limited benefits, requiring multidisciplinary treatment. From February to July 2003, Wahner-Roedler et al⁴⁶ carried out a study to assess the use of alternative and complementary medicine in a tertiary center for treatment of fibromyalgia. Of the 289 participants (263 women and 26 men), 98% reported the use of some type of alternative and complementary therapy, and the most frequently reported were: exercises (48%); treatment through prayers (45%); therapeutic massages (44%); chiropraxis (37%); use of vitamin C (35%) and vitamin E (31%), magnesium (29%), complex B (25%), and green tea (24%); and weight loss programs (20%). Moreover, 51% of the patients reported using one or more medicinal herbs or dietary supplements, and 8% of patients of all ages, mainly those between 18 and 64 years, reported the use of ginseng.⁴⁶ Literature has shown low level of evidence for the above-described alternative and complementary treatments for fibromyalgia, except for acupuncture, some phytotherapeutic agents, nutritional supplements, and massages.^{47,48}

A challenge in the treatment of fibromyalgia is the inclusion of an alternative and complementary therapy in the daily routine of rheumatologists, when the previously indicated therapy fails, in the presence of side effects, or when the patient refuses to undergo the conventional treatment. In fact, little is known about the efficacy of alternative and complementary therapies in fibromyalgia and their tolerance. Studies of scientific quality are scarce, and they are always questioned due to the reduced size of their samples, and the lack of both adequate control groups and adequate follow-up.⁴⁹ 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 which are inadequately controlled and non-double-blind.⁵⁰

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 cases despite treatment.

References

1. Wolfe F, Smythe HA, Yunus MB, Bennett RM, Bombardier C, Goldenberg DL et al. The American College of Rheumatology 1990 criteria for the classification of fibromyalgia. Report of the multicenter criteria committee. *Arthritis Rheum* 1990; 33: 160–172.
2. Wolfe F, Clauw DJ, Fitzcharles MA, Goldenberg DL, Hauser W, Katz RS et al. Fibromyalgia criteria and severity scales for clinical and epidemiological studies: a modification of the ACR preliminary diagnostic criteria for fibromyalgia. *The Journal of Rheumatology* 2011; 38: 6.
3. Wolfe F, Rasker JJ. Fibromyalgia. In: Firestein GS, Budd RC, McInnes IB, O' Dell JR (eds). *Kelly's Textbook of Rheumatology*. 9th edn. Philadelphia: Elsevier, 2013: 733–751.
4. Wolfe F, Ross K, Anderson J, Russel IJ, Hebert L. The prevalence and characteristics of fibromyalgia in the general population. *Arthritis Rheum* 1995; 38: 19–28.
5. Forseth KO, Gran JT. The occurrence of fibromyalgia-

- like syndromes in a general female population. *Clin Rheumatol* 1993; 12: 23–27.
6. Burckhardt CS, Clark SR, Bennett RM. Fibromyalgia and quality of life: a comparative analysis. *J Rheumatol* 1993; 20: 475–479.
 7. Mannerkorpi K, Burckhardt CS, Bjelle A. Physical performance characteristics of women with fibromyalgia. *Arthritis Care Res* 1994; 7: 123–129.
 8. Martinez JE, Ferraz MB, Sato EI, Atra E. Fibromyalgia versus rheumatoid arthritis: a longitudinal comparison of the quality of life. *J Rheumatol* 1995; 22: 270–274.
 9. Rossy LA, Buckelew SP, Dorr N, Hagglund KJ, Thayer JF, McIntosh MJ et al. A meta-analysis of fibromyalgia treatment interventions. *Ann Behav Med* 1999; 21: 180–191.
 10. McCain GA. Treatment of the fibromyalgia syndrome. *J Musculoskelet Pain* 1999; 7: 193–208.
 11. Casale R, Cazzola M, Arioli G, Gracely RH, Ceccherelli F, Atzeni F et al. Non pharmacological treatments in fibromyalgia. *Reumatism* 2008; 60 (Suppl 1): 59–69.
 12. Kurtais Y, Kutlay S, Ergin S. Exercise and cognitive-behavioural treatment in fibromyalgia syndrome. *Curr Pharm Des* 2006; 12(1): 37–45.
 13. Friedberg F, Williams DA, Collinge W. Lifestyle-oriented non-pharmacological treatments for fibromyalgia: a clinical overview and applications with home-based technologies. *J Pain Res* 2012; 5: 425–435.
 14. Hadhazy VA, Ezzo J, Creamer P, Berman BM, McCain GA. Mind-body therapies for the treatment of fibromyalgia. A systematic review. *J Rheumatol* 2000; 27: 2911–2918.
 15. Vlaeyen JW, Teeken-Gruben NJ, Goossens ME, Rutten-van Molken MP, Pelt RA, van Eek H et al. Cognitive-educational treatment of fibromyalgia: a randomized clinical trial. Clinical effects. *J Rheumatol* 1996; 23: 1237–1245.
 16. King SJ, Wessel J, Bhambhani Y, Sholter D, Maksymowych W. The effects of exercise and education, individually or combined, in women with fibromyalgia. *J Rheumatol* 2002; 29: 2620–2627.
 17. Buckelew SP, Conway R, Parker J, Deuser WE, Read J, Witty TE et al. Biofeedback/relaxation training and exercise interventions for fibromyalgia: a prospective trial. *Arthritis Care Res* 1998; 11: 196–209.
 18. Ferraccioli G, Ghirelli L, Scita F, Nolli M, Mozzani M, Fontana S et al. EMG-biofeedback training in fibromyalgia syndrome. *J Rheumatol* 1987; 14: 820–825.
 19. Van Santen M, Bolwijn P, Verstappen F, Bakker C, Hidding A, Houben H et al. A randomized clinical trial comparing fitness and biofeedback training versus basic treatment in patients with fibromyalgia. *J Rheumatol* 2002; 29: 575–581.
 20. Nicassio PM, Radojevic V, Weisman MH, Schuman C, Kim J, Schoenfeld-Smith K et al. A comparison of behavioral and educational interventions for fibromyalgia. *J Rheumatol* 1997; 24: 2000–2007.
 21. Wigers SH, Stiles TC, Vogel PA. Effects of aerobic exercise versus stress management treatment in fibromyalgia. A 4.5 year prospective study. *Scand J Rheumatol* 1996; 25: 77–86.
 22. Williams DA, Cary MA, Groner KH, Chaplin W, Glazer LJ, Rodriguez AM et al. Improving physical functional status in patients with fibromyalgia: a brief cognitive behavioral intervention. *J Rheumatol* 2002; 29: 1280–1286.
 23. Thieme K, Gromnica-Ihle E, Flor H. Operant behavioral treatment of fibromyalgia: a controlled study. *Arthritis Rheum* 2003; 49: 314–320.
 24. Gowans SE, deHueck A, Voss S, Silaj A, Abbey SE, Reynolds WJ. Effect of a randomized, controlled trial of exercise on mood and physical function in individuals with fibromyalgia. *Arthritis Rheum* 2001; 45: 519–529.
 25. McCain GA, Bell DA, Mai FM, Halliday PD. A controlled study of the effects of a supervised cardiovascular fitness training program on the manifestations of primary fibromyalgia. *Arthritis Rheum* 1988; 31: 1135–1141.
 26. Mengshoel AM, Komnaes HB, Forre O. The effects of 20 weeks of physical fitness training in female patients with fibromyalgia. *Clin Exp Rheumatol* 1992; 10: 345–349.
 27. Nichols DS, Glenn TM. Effects of aerobic exercise on pain perception, affect, and level of disability in individuals with fibromyalgia. *Phys Ther* 1994; 74: 327–332.
 28. Schachter CL, Busch AJ, Peloso PM, Sheppard MS. Effects of short versus long bouts of aerobic exercise in sedentary women with fibromyalgia: a randomized controlled trial. *Phys Ther* 2003; 83: 340–358.
 29. Norregaard J, Lykkegaard JJ, Mehlsen J, Danneskiold-Samsoe B. Exercise training in treatment of fibromyalgia. *J Musculoskelet Pain* 1997; 5: 71–79.

30. Richards SC, Scott DL. Prescribed exercise in people with fibromyalgia: parallel group randomized controlled trial. *BMJ* 2002; 325: 185–188.
31. Valim V, Oliveira L, Suda A, Silva L, de Assis M, Barros Neto T et al. Aerobic fitness effects in fibromyalgia. *J Rheumatol* 2003; 30: 1060–1069.
32. Jones KD, Burckhardt CS, Clark SR, Bennet RM, Potempa KM. A randomized controlled trial of muscle strengthening versus flexibility training in fibromyalgia. *J Rheumatol* 2002; 29: 1041–1048.
33. Kingsley JD, Panton LB, Toole T, Sirithientad P, Matis R, McMillan V. The effects of a 12-week strength-training program on strength and functionality in women with fibromyalgia. *Arch Phys Med Rehabil* 2005; 86: 1713–1721.
34. Valkeinen H, Hakkinen K, Pakarinen A, Hannonen P, Hakkinen A, Airaksinen O et al. Muscle hypertrophy, strength development, and serum hormones during strength training in elderly women with fibromyalgia. *Scand J Rheumatol* 2005; 34: 309–314.
35. Martin L, Nutting A, MacIntosh BR, Edworthy SM, Butterwick D, Cook J. An exercise program in the treatment of fibromyalgia. *J Rheumatol* 1996; 23: 1050–1053.
36. Verstappen FTJ, van Santen-Hoeufft HMS, Bolwijn PH. Effect of a group activity program for fibromyalgic patients on physical fitness and well being. *J Musculoskelet Pain* 1997; 5: 17–28.
37. Da Costa D, Abrahamowicz M, Lowensteyn I, Bernatsky S, Dritsa M, Fitzcharles MA et al. A randomized clinical trial of an individualized home-based exercise programme for women with fibromyalgia. *Rheumatology* 2005; 44: 1422–1427.
38. Croford LJ. Fibromyalgia. In: Longo DL, Fauci AS, Kasper DL, Hauser SL, Jameson JL, Loscalzo J (eds). *Harrison's principles of internal medicine*. 18th edn. New York: McGraw Hill Education Medical, 2012: 2849–2855.
39. Gowans SE, deHueck A, Voss S, Richardson M. A randomized, controlled trial of exercise and education for individuals with fibromyalgia. *Arthritis Care Res* 1999; 12: 120–128.
40. Mannerkorpi K, Nyberg B, Ahlmen M, Ekdahl C. Pool exercise combined with an education program for patients with fibromyalgia syndrome. A prospective, randomized study. *J Rheumatol* 2000; 27: 2473–2481.
41. Cedraschi C, Desmeules J, Rapiti E, Baumgartner E, Cohen P, Finckh A et al. Fibromyalgia: a randomized, controlled trial of a treatment program based on self-management. *Ann Rheum Dis* 2004; 63: 290–296.
42. Zijlstra TR, van de Laar MA, Bernelot Moens HJ, Taal E, Zakraoui L, Rasker JJ. Spa treatment for primary fibromyalgia syndrome: a combination of thermotherapy, exercise and patient education improves symptoms and quality of life. *Rheumatology* 2005; 44: 539–546.
43. Keel PJ, Bodoky C, Gerhard U, Muller W. Comparison of integrated group therapy and group relaxation training for fibromyalgia. *Clin J Pain* 1998; 14: 232–238.
44. Lemstra M, Olszynski WP. The effectiveness of multidisciplinary rehabilitation in the treatment of fibromyalgia: a randomized controlled trial. *Clin J Pain* 2005; 21: 166–174.
45. King SJ, Wessel J, Bhambhani Y, Sholter D, Maksymowych W. Predictors of success of intervention programs for persons with fibromyalgia. *J Rheumatol* 2002; 29: 1034–1040.
46. Wahner-Roedler DL, Elkin PL, Vincent A, Thompson JM, Oh TH, Loehrer LL et al. Use of complementary and alternative medical therapies by patients referred to a fibromyalgia treatment program at a tertiary care center. *Mayo Clinic Proceeding* 2005; 80: 55–60.
47. Ernst E. Complementary medicine. *Curr Opin Rheumatol* 2003; 15: 151–155.
48. Holdcraft LC, Assefi N, Buchwald D. Complementary and alternative medicine in fibromyalgia and related syndromes. *Best Pract Res Clin Rheumatol* 2003; 17: 667–683.
49. Braz AS, de Paula AP, Fátima FM, Diniz M, de Almeida RN. Non-pharmacological therapy and complementary and alternative medicine in fibromyalgia. *Rev Bras Reumatol* 2011; 51(3). Available at: http://www.scielo.br/scielo.php?pid=S0482-50042011000300008&script=sci_arttext&tlng=en. Accessed May 2018.
50. Berman BM, Ezzo J, Hadhazy V, Swyers JP. Is acupuncture effective in the treatment of fibromyalgia? *J Fam Practice* 1999; 48: 213–218.