



## Effect of Aerobic Exercise in Fibromyalgia-A Pre-Post Test

Vishakha<sup>1</sup>, R Arunmozhi<sup>2</sup>, Pooja Yadav<sup>3\*</sup> and Shikha<sup>4</sup><sup>1</sup>Student Researcher, Department of Physiotherapy, Sardar Bhagwan Singh University, Dehradun, Uttarakhand, India<sup>2</sup>Professor, Department of Physiotherapy, Sardar Bhagwan Singh University, Dehradun, Uttarakhand, India<sup>3</sup>Assistant Professor, Department of Physiotherapy, Sardar Bhagwan Singh University, Dehradun, Uttarakhand, India<sup>4</sup>Student Researcher, Department of Physiotherapy, Sardar Bhagwan Singh University, Dehradun, Uttarakhand, India**\*Corresponding Author:** Pooja Yadav, Assistant Professor, Department of Physiotherapy, Sardar Bhagwan Singh University, Dehradun, Uttarakhand, India.**DOI:** 10.31080/ASOR.2023.06.0851**Received:** September 27, 2023**Published:** October 13, 2023

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**Abstract****Background:** A rheumatic disorder called fibromyalgia is characterised by widespread body aches, stiffness, and early exhaustion as symptoms. Mid-life is more typical in females than in males. The study's objective is to ascertain how aerobic exercise affects fibromyalgia symptoms.

Asian nations had less research, according to the authors. However, the proposed study has been made in order to fill the gap in the literature.

**Objective:** To determine the effect of aerobic exercise in fibromyalgia.**Method:** 14 participants between the ages of 18 and 50 who met the 2010 Fibromyalgia Diagnostic Criteria were enrolled in the study. First, each subject was evaluated to rule out potential inclusion and exclusion criteria. Pre and post treatment readings for the NPRS (Numerical Pain Rating Scale), FIQR (Fibromyalgia Impact Questionnaire Revised), and IADL (Instrumental Activities of Daily Living) were taken during the 4-week treatment period.**Result:** After following the recommended treatment plan for 4 weeks, the study's findings demonstrate that aerobic exercise had a positive effect on alleviating fibromyalgia patients' symptoms, with a significant outcome at a p value 0.05. The Fibromyalgia Impact Questionnaire Revised (FIQR), the Numerical Pain Rating Scale (NPRS), and Instrumental Activities of Daily Living (IADL) serve as outcome measures with t = 13.52, the mean and standard deviation (SD) of the NPRS scale improved from 6.21 0.89 to 2.85 1.09. The mean and standard deviation of the FIQR scale improved from 52.58 8.99 to 23.51 7.75 at t = 37.05. The mean and standard deviation of the IADL scale improved from 5.78 ± .80 to 7.42 ± .51 with t = 9.70.**Conclusion:** The results of the current study showed that patients with fibromyalgia significantly reduced their symptoms after following the recommended treatment plan for 4 weeks. Patients with fibromyalgia may also be prescribed the current treatment plan.**Keywords:** Prevalence; Incidence; Symptoms; Diagnosis; Treatment of Fibromyalgia; Fibromyalgia Impact Questionnaire; Numeric Pain Rating Scale; ACR Criteria for Fibromyalgia**Introduction**

A prevalent rheumatological illness called fibromyalgia (FM) is characterised by chronic, widespread pain, a decreased pain threshold, hyperalgesia, and allodynia. Fatigue, insufficient sleep, anxiety, depressive symptoms, headache, and gastrointestinal problems are all associated symptoms [1]. Widespread pain, stiffness, exhaustion, disturbed sleep, and cognitive dysfunction are

the main symptoms of fibromyalgia, a persistent, sometimes severe disorder. Fibromyalgia (FM) has been described as a persistent and widespread pain illness that is also accompanied by comorbid symptoms such as exhaustion, restless sleep, poor balance, issues with cognition and memory, psychological discomfort, and impairment of physical function. In FM, living quality is also diminished. About 2% of the overall population is impacted by it [2]. The diag-

nosis of FMS is most frequently made in middle age, with a global mean prevalence of 2.7% and a female to male ratio of 3:1 [3].

Fibromyalgia’s aetiology and pathogenesis are still poorly understood. The central and autonomic nerve systems, neurotransmitters, hormones, the immunological system, environmental stresses, psychiatric characteristics, and other elements all appear to have a role [4].

The goals of care are to improve symptoms, function, and quality of life because spontaneous recovery is uncommon. The therapy pathway consists of a number of steps, each of which should be customised for the patient. Treatment is interdisciplinary, multimodal, and incorporates both nonpharmacological and pharmacological methods. Some people either handle medications poorly or do not benefit from them. Only a supportive function for drug therapy is played in symptom control. Education and goal-setting, exercises, physical therapeutic modalities, cognitive behavioural therapies, and traditional and complementary medicines are examples of non-pharmacological techniques [5]. Exercise programmes for these individuals are different based on the scope and intensity of symptoms as well as elements that influence patient adherence and motivation [6]. The prevalence of limitations in daily living activities has been compared to those of rheumatoid arthritis and FM. Every part of life is impacted by FM symptoms, which also have a significant impact on employment. Even if the underlying pain is probably a factor in a sedentary lifestyle and poor physical health, people with FM can still engage in aerobic, flexibility, and muscle-building exercises [5].

**Materials and Method**

**Subject and procedure**

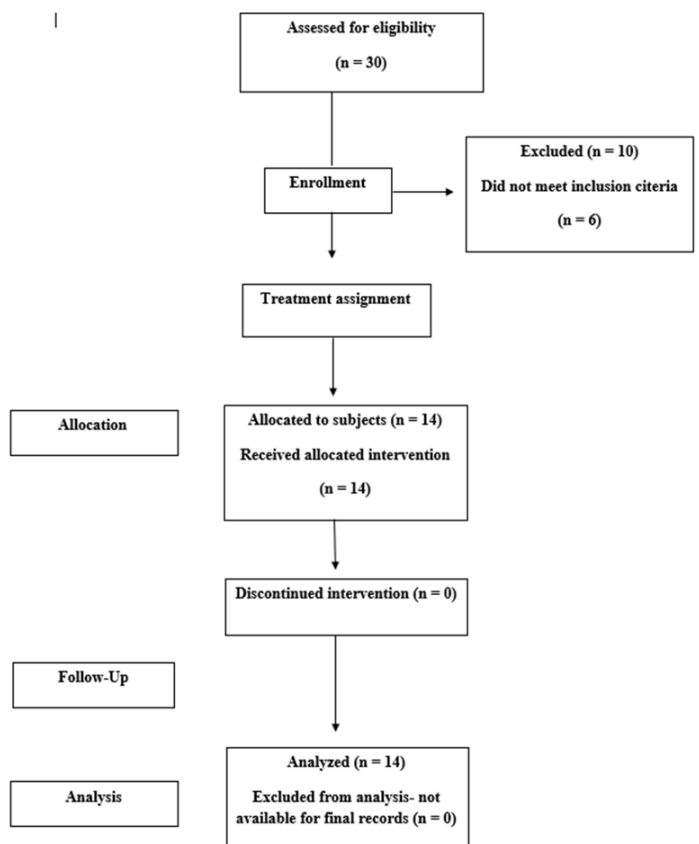
The study included 14 individuals in all, ranging in age from 18 to 50 years. Before the study began, the written informed consent of the chosen individuals was obtained after all the subjects had been initially evaluated to rule out inclusion and exclusion criteria. The study comprised people who met the Fibromyalgia Diagnostic Criteria ACR 2010 and were between the ages of 18 and 50. Individuals with a history of any known orthopaedic problems, such as CS, PIVD, or radiculopathy, as well as any known neurological or malignant conditions, recent surgical procedures, and psychological impairments were excluded from the study. It was pre-read for pain using the NPRS, function, overall impact, and symptoms using the FIQR, and functional activity using the IADL. Treatment consists of a 30-minute aerobic exercise programme spread over three phases: warm-up (generalised stretching, stationary jogging, deep breathing), primary activity (step touches, two-step touches, V steps, half-squats, and knee lifts up), and cool-down (Walking, Alternate heel-up). Readings for the NPRS, FIQR, and IADL scales were obtained one month after treatment.

NPRS- Numerical Pain Rating Scale (NPRS) has a range from 0 to 10 with the patients being asked to select a number that best represents their intensity of pain. The 0 represents no pain. The 10 however has been used to represent: pain as bad as it can be, pain as bad as it could possibly be, worst possible pain and worst imaginable pain. (r = 0.96).

FIQR-Fibromyalgia Impact Questionnaire Revised (FIQR) has 21 individual questions. All questions are based on an 11-point numeric rating scale of 0 to 10, with 10 being ‘worst’. The FIQR is divided into three linked sets of domains: (a) Function (b) Overall impact (c) Symptoms. (r = 0.83).

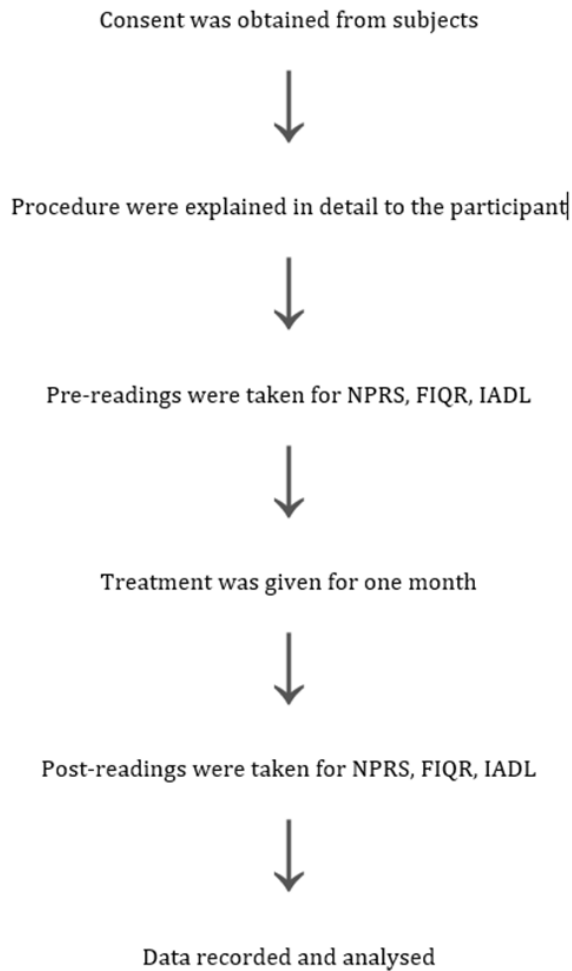
IADL- Instrumental Activities of Daily Living (IADL) scale measures more complex functional activities of ability to use the telephone, handle finances, self-administer medication, use transportation, shop independently, manage housekeeping, laundry and food preparation. (r = 0.93).

**Procedure**



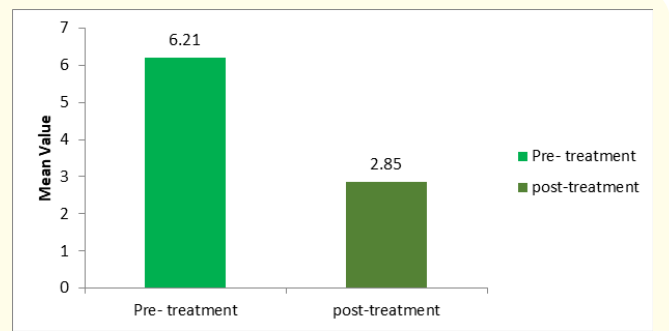
14 Subjects with fibromyalgia were selected according to inclusion and exclusion criteria.

**Statistical analysis**

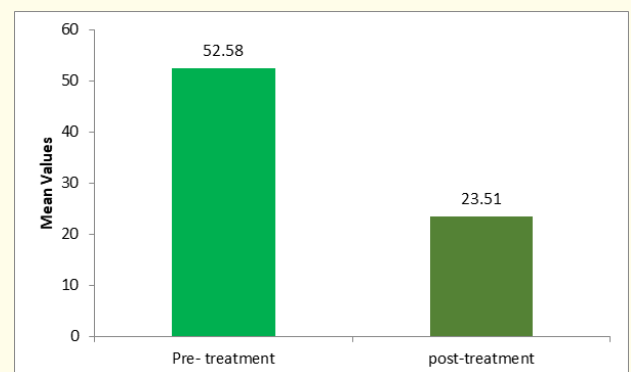


The statistical analysis was done using the SPSS 22.0 programme. Results were determined using a significance level of 0.05. For NPRS, FIQR, and IDAL, individual mean and standard deviation values were collected before and after therapy. To analyse the effects of aerobic exercise, a paired t-test was performed.

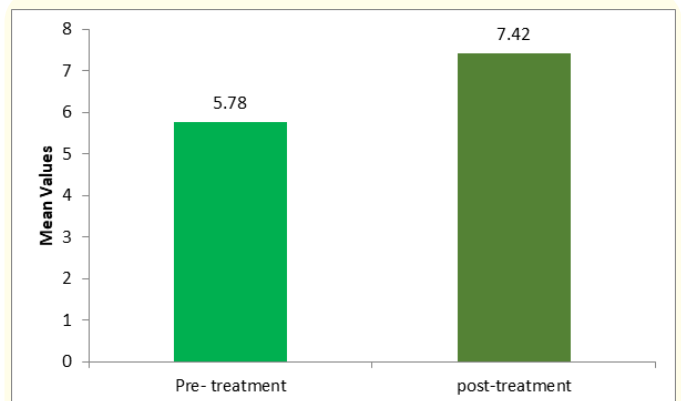
After following the recommended treatment plan for 4 weeks, the study’s findings demonstrate that aerobic exercise has a positive effect on reducing the symptoms of fibromyalgia patients, with a significant outcome at a p value 0.05. The Fibromyalgia Impact Questionnaire Revised (FIQR), the Numerical Pain Rating Scale (NPRS), and Instrumental Activities of Daily Living serve as outcome measures (IADL). With  $t = 13.52$ , the mean and standard deviation (SD) of the NPRS scale improved from 6.21 0.89 to 2.85 1.09: The mean and standard deviation of the FIQR scale improved from 52.58 8.99 to 23.51 7.75 at  $t = 37.05$ . The mean and standard



**Graph 1:** The graph shows mean comparison pre and post treatment of pain on Numeric Pain Rating Scale.

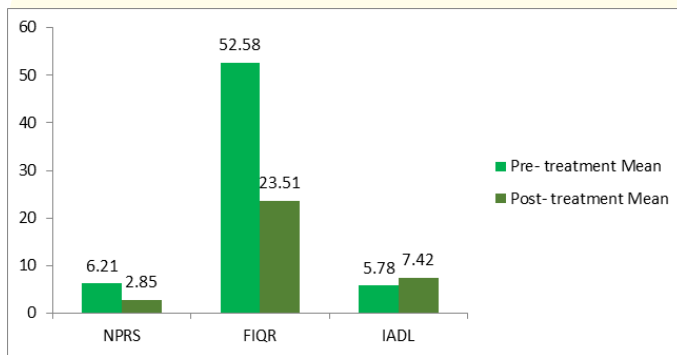


**Graph 2:** The graph shows mean comparison of FIQR score before and after treatment.



**Graph 3:** The graph shows mean comparison of IADL score before and after the treatment.

deviation (SD) values of the IADL scale improved from 5.78 to 7.42 with a  $t = 9.70$ .



**Graph 4:** The Graph shows mean comparison of NPRS, FIQR and IADL score before and after treatment.

## Discussion

The current study's objective is to ascertain how aerobic exercise affects fibromyalgia symptoms. According to the current study, individuals with fibromyalgia improved after receiving an aerobic exercise intervention, as seen by changes in their NPRS, FIQR, and IADL scores. Because it doesn't require any special equipment and can be done on one's own, aerobic exercise is an accessible type of exercise for those with fibromyalgia. The benefits of aerobic exercise include pain relief, increased FIQR score, and increased independence. It has been discovered that low- to moderate-intensity aerobic exercise is particularly efficient at easing fibromyalgia symptoms. As weariness overcame, the exercise protocol included patient education and provided relaxation time throughout the intervention to enhance adherence to the exercise schedule.

The current study has been supported by Thomas and Blotman (2010), whose review demonstrates that FM patients can exercise at a low intensity level without experiencing pain or a worsening of their fatigue. Aerobic exercise is also generally effective for improving physical function, the number of tender points, and the FIQR score. There is some evidence that aerobic exercise alone has considerable benefits for FM patients' physical function and perhaps for their tender spots and pain. It seems that there is enough proof to back up the idea that applying AE is a skill in the interdisciplinary management of FM [1].

Progressive, home-based, low-impact aerobic exercise only marginally improved physical function and fibromyalgia symptoms in participants who performed at least two-thirds of the advised exercise, according to Schachter, *et al.*, 2003 study. Exercise training fractionation did not increase exercise compliance, fibromyalgia symptom relief, or physical function [7]. In their study, Buschet, *et al.* (2007) found that supervised aerobic exercise training improves physical capability and FMS symptoms. The management

of FMS should consider aerobic exercise to be a valid and beneficial therapy option. Aerobic efficiency, tender spots, and general wellbeing should all improve. Psychological function cannot be anticipated to improve; pain severity, exhaustion, and sleep may or may not get better. Therefore, evidence suggests that only a few of this disorder's symptoms will improve. Instead of focusing on what would seem to be more limited advantages for FMS symptoms, the physician should do best to emphasise the increases in physical fitness and potential general health benefits that might arise from engaging in regular aerobic activity [8]. In their study, Busch, *et al.* (2008) discovered that there is moderate quality evidence that short-term aerobic exercise (at the intensity recommended to elicit increases in cardiorespiratory fitness) produces significant benefits in people with FM in terms of overall outcome measures, physical function, and possibly pain and tender points [9]. According to Brosseau, *et al.*, (2008), the Ottawa Panel discovered new data that supports the use of aerobic exercise programmes for the general management of FM. The majority of enhancements were for pain alleviation and quality of life. Exercises for aerobic fitness were also found to significantly boost endurance, which in turn significantly improved patients' daily functional mobility [10].

As Hauseret, *et al.*, (2010) found, there were no significant effects of moderate-intensity compared with low-intensity AE on the outcomes pain, depressed mood, and physical fitness at post-treatment, contrary to some earlier studies, aerobic exercise has been shown to be beneficial for fibromyalgia patients [11].

According to Bidonde, *et al.* (2017), moderate-quality evidence suggests that aerobic exercise likely improves HRQL and all-cause withdrawal when compared to control, while low-quality evidence suggests that aerobic exercise may slightly lessen pain intensity, may slightly improve physical function, and may result in little difference in fatigue and stiffness [12]. Thus, additional research is required.

The absence of long-term follow-up is the study's main drawback. Although exercise programme adherence is quite good while it is being monitored by a clinician, it declines when the physician is not present. The study's procedure was short in duration, and the sample size was modest.

The current study can be performed on a large sample size while using the same technique in the future to improve the generalizability of the results. The study can be conducted on a sizable sample size for a minimum of three months. To ascertain how long beneficial effects are sustained and the long-term impacts of exercise, research is required.

## Conclusion

Our investigation led us to the conclusion that aerobic exercise is an efficient means of alleviating pain, boosting independence, and enhancing fibromyalgia symptoms and function. Exercise should be considered an important part of the management of fibromyalgia. This study demonstrates a considerable increase in fibromyalgia pain relief and overall fibromyalgia impact reduction, increasing the patient's independence in everyday activities.

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