# WHICH EXERCISE CAN INFLUENCE THE PAIN CHARACTERISTICS OF PATIENTS WITH FIBROMYALGIA?

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## Introduction

Patients with fibromyalgia experience chronic pain. Is often recommended exercise in combination/or not, with medication treatment, in order to improve patients' physical condition and quality of life.

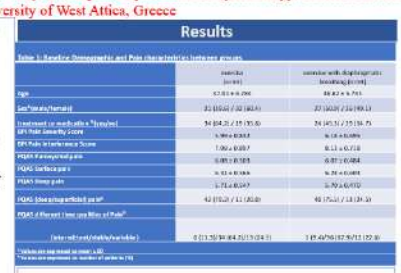
We investigate the possible influence and change of the pain characteristics of these patients, if we add to the exercise program that they follow, breathing exercises.

## Methods and Materials

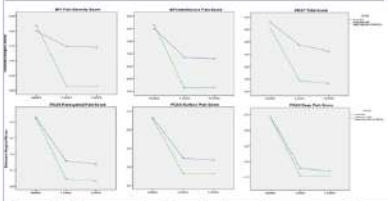
This is a double-blind randomized trial. The sample consisted of 106 outpatients suffering from fibromyalgia, while the referral orthopaedic had suggested physiotherapy. Assessment of pain characteristics in patients was through completing three questionnaires (FIRST, BRIEF PAIN INVECTORY, and PAIN QUALITY ASSESSMENT SCALE) once before starting the exercise, once 3weeks later and the final, after a three months period of exercise.Patients' recruitment took place through the 401 General Military Hospital of Athens. All questionnaires were translated and validated in the Greek Population (Zis,2017; Mystakidou,2001) except PQAS which the present study served as a mean for translation and validation in Greek language. Both groups followed the same 10-minute warm-up program of active mobilization, large joints stretching with each stretch lasting on average for 30 seconds (ACSM,2013;Guissard,2006; Kim,2019).

The first group of patients implemented a program of active exercises up to the limits of pain lasting 30 minutes with repetition 2 times a week for deltoids, quadriceps, trunk extensions, hip extensions, elbow flexors and gastrocnemius (Matsutani,2012; Richards,2002). For each muscle, the patient did a set of 10 repetitions ( Kim,2019). Patients of the second group followed the same program with the addition of diaphragmatic breaths, when they reached the pain limit The effect of the exercise by both programs (exercise and exercise combined with breathing) on clinical pain characteristics (BPIscale: Severity and Interference pain, FIRST and PQAS subscales: Paroxysmal, Surface and Deep pain) was examined with Anova repeated measurements analysis, within three time points and between the two different groups. Independent t-tests were carried out for all the mentioned variables initially to see if the two groups are comparable. Furthermore, in order to investigate the differences between the two programs of exercise after the completion of the intervention, independent t-tests were performed at the end of the intervention for the improvement in all pain scales. Possible dependencies between qualitative variables and categorical pain characteristics of the two different exercise groups were investigated by the use of Pearson's chi-squared test ($\chi 2$); Categorical characteristics of patients are presented as a number of patients (n) or percentages (%), while data of descriptive statistics are presented as mean ± SD. Statistical analysis was performed using the IBM SPSS Statistics v.19 for windows (SPSS Inc. Chicago. IL. USA) and statistical significance for all tests was set at 0.05.

## Results



Results of the between-subjects tests showed statistically significant deference in mean scores for BPI subscales; Severity and Interference, FIRST scale and PQAS subscales; Paroxysmal and Surface (p-values<0.05), but the difference between the two groups for the PQAS subscale Deep Pain found not statistically significant (p-value=0.446).



In addition, results from independent t-tests for the mean total change- improvement in pain scales shows off that for the second group there was a greater change-improvement in all pain scales. These differences were found statistically significant (p-values> 0.05), except for PQAS Deep Pain subscale (p-value= 0.381).


## Discussion

Low levels of flexibility have been associated with postural problems, pain, injuries, and increased neuromuscular tensions, which is the reason why the use of warmup and stretches was necessary (Kim, 2019). Induction of this program more than twice per week is not recommended as has proven to lead to increased fatigue and discomfort (ACSM,2013). This purpose is not only to increase fitness but also to provide a way of controlling allodynia and hyperalgesia that we are aware that exists in patients with fibromyalgia. Controlling the pain limit with breathing seems to have an effect because the sufferers from centralized pain such us fibromyalgia (Ablin,2017) learn through this technique that the point of pain is safe(Tabor,2017). In our study, exercise appeared to have a beneficiary impact in both groups, since we found statistically significant differences for all pain scales within time moments, for each group.

## Conclusions

Both groups demonstrate a significant improvement in all pain scale characteristics but the improvement of the second group, was significantly higher, except PQAS deep pain. The fact that this highest improvement in pain that the second group has occurred in a short period of just three weeks is worth mentioned.

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