

Living FRIendly Summaries of the Body of Evidence using Epistemonikos (FRISBEE)

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Does exercise improve symptoms in fibromyalgia?

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Abstract

It has been proposed that fibromyalgia could be managed by pharmacological and non-pharmacological interventions. Regular physical exercise is commonly used as a non-pharmacological intervention. Searching in Epistemonikos database, which is maintained by screening 30 databases, we identified 14 systematic reviews including 25 randomized trials. We combined the evidence using meta-analysis and generated a summary of findings table following the GRADE approach. We concluded regular physical exercise probably reduces pain in patients with fibromyalgia.

Problem

Fibromyalgia can be a highly incapacitating disease. In its pathophysiology, the presence of inadequate central sensitization and discordant muscle stimulation is proposed. Regular exercise, in addition to its many benefits at a general level, through muscular microstimulus would also allow a better muscular reeducation. However, there is controversy about whether these pathophysiological effects generate improvement in symptoms such as pain and fatigue.

Methods

We used Epistemonikos database, which is maintained by screening more than 30 databases, to identify systematic reviews and their included primary studies. With this information we generated a structured summary using a pre-established format, which includes key messages, a summary of the body of evidence (presented as an evidence matrix in Epistemonikos), meta-analysis of the total of studies, a summary of findings table following the GRADE approach and a table of other considerations for decision-making.

Key messages

- Regular physical exercise probably reduces pain in patients with fibromyalgia.
- The results of this summary are concordant with the main systematic reviews and clinical guidelines.

About the body of evidence for this question

<p>What is the evidence. See evidence matrix in Epistemonikos later</p>	<p>We found 14 systematic reviews[1],[2],[3],[4],[5],[6],[7],[8],[9],[10],[11],[12],[13],[14], which included 25 randomized controlled trials, reported in 32 references[15],[16],[17],[18],[19],[20],[21],[22],[23],[24],[25],[26],[27],[28],[29],[30],[31],[32],[33],[34],[35],[36],[37],[38],[39],[40],[41],[42],[43],[44],[45],[46].</p>
<p>What types of patients were included</p>	<p>The studies included patients diagnosed with fibromyalgia, according to the criteria of the American College of Rheumatology, with average ages between 38 and 60 years. Most patients were women.</p>
<p>What types of interventions were included</p>	<p>Eight studies included only aerobic exercise [16],[17],[25],[27],[28],[30],[31],[38],[41],[43],[46], three studies only included resistance exercise [21],[34],[35] and the remaining 14 studies included a combination of both forms of exercise. Exercise frequency was at least two times a week, with sessions lasting between 20 and 60 minutes. Most of the studies took place in sports facilities and under supervision [16],[19],[21],[22],[23],[24],[26],[28],[29],[30],[31],[32],[33],[34],[35],[36],[37],[38],[39],[40],[41],[42],[43],[44],[45],[46]. Interventions that combine mental and physical components as yoga, tai chi and qigong were excluded from this summary. All studies were compared against standard treatment or against a group that did not exercise.</p>
<p>What types of outcomes were measured</p>	<p>Pain, fatigue, quality of life, sleep, cardiorespiratory function, muscle strengthening, flexibility, depressive and anxious symptoms, self-efficacy.</p>

Summary of findings

Information about the effects of exercise in patients with fibromyalgia is based on 25 randomized trials that included 1350 patients. Only nine studies reported changes in pain measures [16],[18],[23],[24],[29],[31],[35],[37],[39],[41],[43],[44],[45],[46] and four studies reported variation in fatigue [19],[23],[24],[35],[37],[41],[43],[44],[45],[46].

Exercise in patients with fibromyalgia				
Patients	Fibromyalgia			
Intervention	Exercise			
Comparison	Standard treatment			
Outcomes	Absolute effect*		Relative effect (95% CI)	Certainty of the evidence (GRADE)
	WITHOUT exercise	WITH exercise		
	Difference: patients per 1000			
Pain reduction	On average pain was less with exercise, with a clinically important difference		SMD -0.59 (-0.80 to -0.39)	⊕⊕⊕○ ¹ Moderate
	Difference: SMD -0.59 ** (Margin of error: -0.39 to -0.80)			
Fatigue reduction	On average fatigue was less with exercise, with a clinically important difference		SMD -0.77 (-1.12 to -0.42)	⊕⊕⊕○ ² Moderate
	Difference: SMD -0.77 ** (Margin of error: -0.42 to -1.12)			

SMD: Standardised mean difference.
Margin of error = 95% confidence interval (CI).
GRADE: evidence grades of the GRADE Working Group (see later in this article).

* The risk WITHOUT exercise is based on the risk in the control group of the trials. The risk WITH exercise (and its margin of error) is calculated from relative effect (and its margin of error).

** Standardised mean difference is calculated when the outcome is measured using different scales, and its clinical interpretation is difficult. A general rule is values less than 0.2 have minor or no clinical importance, between 0.2 and 0.5 their clinical importance is moderate, and over 0.5 they are clinically important.

¹ The certainty of the evidence was reduced by one level, since the study with greatest weight showed no effect.

² We decreased the certainty of the evidence in one level because of risk of bias, since most studies were not blinded.

About the certainty of the evidence (GRADE)*

⊕⊕⊕⊕

High: This research provides a very good indication of the likely effect. The likelihood that the effect will be substantially different† is low.

⊕⊕⊕○

Moderate: This research provides a good indication of the likely effect. The likelihood that the effect will be substantially different† is moderate

⊕⊕○○

Low: This research provides some indication of the likely effect. However, the likelihood that it will be substantially different† is high.

⊕○○○

Very low: This research does not provide a reliable indication of the likely effect. The likelihood that the effect will be substantially different† is very high.

*This concept is also called 'quality of the evidence' or 'confidence in effect estimates'.

† Substantially different = a large enough difference that it might affect a decision.

Other considerations for decision-making

To whom this evidence does and does not apply

- The evidence presented in this summary can be applied to all patients with fibromyalgia who have no contraindication to exercise (e.g. cardiovascular or advanced respiratory disease, severe musculoskeletal conditions).
-

About the outcomes included in this summary

- The outcomes included are those considered critical to decision-making by both the authors of this summary and the main systematic reviews found.
 - Both outcomes are part of the set of main outcomes (core outcomes set) internationally agreed by the OMERACT group, which considered an active participation of patients in its development [47].
-

Balance between benefits and risks, and certainty of the evidence

- While certainty of the evidence is moderate, it is a low-risk intervention and benefits are important both at a general, and at a specific level on the symptoms of fibromyalgia, so the risk/benefit balance is probably favorable.
-

Resource considerations

- It is an intervention of moderate to low cost, depending on whether it is performed under supervision or not and the place where it takes place. However, given its benefits and certainty of the evidence, a favorable cost-benefit balance is very likely in most contexts.
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Differences between this summary and other sources

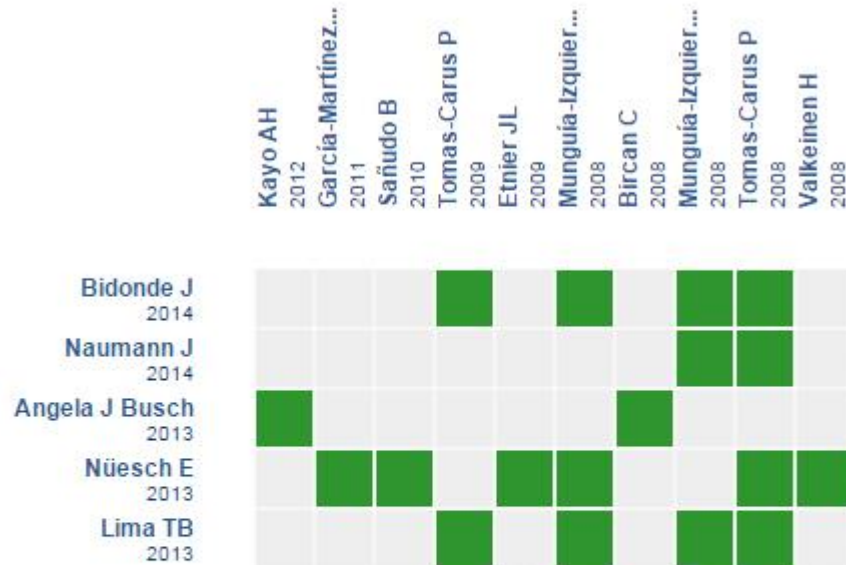
- The conclusions of this summary are consistent with the main systematic reviews identified [1], [3],[4],[5],[9],[11].
 - The recommendations of this summary agree with those of the main clinical practice guideline in this area [48], which recommends exercise as first-line therapy in the context of multidisciplinary treatment.
-

Could this evidence change in the future?

- The probability that this information change in the future is low, given the moderate certainty of existing evidence. However, there are at least four ongoing randomized trials [49],[50],[51],[52] that could eventually increase the accuracy of the evidence.
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How we conducted this summary

Using automated and collaborative means, we compiled all the relevant evidence for the question of interest and we present it as a matrix of evidence.



Starting from any systematic review, Epistemonikos builds a matrix based on existing connections in the database.

The author of the matrix can select relevant information for a specific health question (typically in PICO format) in order to display the information set for the question.

The *rows* represent systematic reviews that share at least one primary study, and *columns* display the studies.

The boxes in green correspond to studies included in the respective reviews.

Follow the link to access the **interactive version**: [Exercise for fibromyalgia](#)

Notes

The upper portion of the matrix of evidence will display a warning of “new evidence” if new systematic reviews are published after the publication of this summary. Even though the project considers the periodical update of these summaries, users are invited to comment in *Medwave* or to contact the authors through email if they find new evidence and the summary should be updated earlier. After creating an account in Epistemonikos, users will be able to save the matrixes and to receive automated notifications any time new evidence potentially relevant for the question appears.

The details about the methods used to produce these summaries are described here <http://dx.doi.org/10.5867/medwave.2014.06.5997>.

Epistemonikos foundation is a non-for-profit organization aiming to bring information closer to health decision-

makers with technology. Its main development is Epistemonikos database (www.epistemonikos.org). These summaries follow a rigorous process of internal peer review.

Conflicts of interest

The authors do not have relevant interests to declare.

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