Physiotherapy Interventions for the Management of Fibromyalgia: Clinical and Cost Effectiveness
Authors: Calvin Young, Charlene Argáez


Acknowledgments:

Disclaimer: The information in this document is intended to help Canadian health care decision-makers, health care professionals, health systems leaders, and policy-makers make well-informed decisions and thereby improve the quality of health care services. While patients and others may access this document, the document is made available for informational purposes only and no representations or warranties are made with respect to its fitness for any particular purpose. The information in this document should not be used as a substitute for professional medical advice or as a substitute for the application of clinical judgment in respect of the care of a particular patient or other professional judgment in any decision-making process. The Canadian Agency for Drugs and Technologies in Health (CADTH) does not endorse any information, drugs, therapies, treatments, products, processes, or services.

While care has been taken to ensure that the information prepared by CADTH in this document is accurate, complete, and up-to-date as at the applicable date the material was first published by CADTH, CADTH does not make any guarantees to that effect. CADTH does not guarantee and is not responsible for the quality, currency, propriety, accuracy, or reasonableness of any statements, information, or conclusions contained in any third-party materials used in preparing this document. The views and opinions of third parties published in this document do not necessarily state or reflect those of CADTH.

CADTH is not responsible for any errors, omissions, injury, loss, or damage arising from or relating to the use (or misuse) of any information, statements, or conclusions contained in or implied by the contents of this document or any of the source materials.

This document may contain links to third-party websites. CADTH does not have control over the content of such sites. Use of third-party sites is governed by the third-party website owners’ own terms and conditions set out for such sites. CADTH does not make any guarantee with respect to any information contained on such third-party sites and CADTH is not responsible for any injury, loss, or damage suffered as a result of using such third-party sites. CADTH has no responsibility for the collection, use, and disclosure of personal information by third-party sites.

Subject to the aforementioned limitations, the views expressed herein are those of CADTH and do not necessarily represent the views of Canada’s federal, provincial, or territorial governments or any third party supplier of information.

This document is prepared and intended for use in the context of the Canadian health care system. The use of this document outside of Canada is done so at the user’s own risk.

This disclaimer and any questions or matters of any nature arising from or relating to the content or use (or misuse) of this document will be governed by and interpreted in accordance with the laws of the Province of Ontario and the laws of Canada applicable therein, and all proceedings shall be subject to the exclusive jurisdiction of the courts of the Province of Ontario, Canada.

The copyright and other intellectual property rights in this document are owned by CADTH and its licensors. These rights are protected by the Canadian Copyright Act and other national and international laws and agreements. Users are permitted to make copies of this document for non-commercial purposes only, provided it is not modified when reproduced and appropriate credit is given to CADTH and its licensors.

About CADTH: CADTH is an independent, not-for-profit organization responsible for providing Canada’s health care decision-makers with objective evidence to help make informed decisions about the optimal use of drugs, medical devices, diagnostics, and procedures in our health care system.
Research Questions

1. What is the clinical effectiveness of physiotherapy interventions for the management of fibromyalgia?

2. What is the cost-effectiveness of physiotherapy interventions for the management of fibromyalgia?

Key Findings

Ten systematic reviews (eight with meta-analysis) and four economic evaluations were identified regarding the clinical benefits and harms or cost-effectiveness of physiotherapy interventions for fibromyalgia in adults.

Methods

A limited literature search was conducted on key resources including PubMed, The Cochrane Library, University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. Filters were applied to limit the retrieval to health technology assessments, systematic reviews, and meta-analyses, economic studies, randomized controlled trials, and non-randomized studies. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2012 and May 30, 2017. Internet links are provided where available.

Selection Criteria

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

<table>
<thead>
<tr>
<th>Table 1: Selection Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Population</strong></td>
</tr>
<tr>
<td><strong>Intervention</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Comparator</strong></td>
</tr>
<tr>
<td><strong>Outcomes</strong></td>
</tr>
<tr>
<td><strong>Study Designs</strong></td>
</tr>
</tbody>
</table>
Results

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by economic evaluations.

Ten systematic reviews (eight with meta-analysis) and four economic evaluations were identified regarding the clinical benefits and harms or cost-effectiveness of physiotherapy interventions for fibromyalgia in adults. No relevant health technology assessments were identified. Due to the high volume of relevant literature, studies were excluded if it was unclear whether the intervention was delivered in the context of physiotherapy care.

Additional references of potential interest are provided in the appendix.

Overall Summary of Findings

Ten systematic reviews\(^{1-10}\) (eight with meta-analyses)\(^{1,2,4-8,10}\) were identified regarding the clinical benefits and harms of physiotherapy interventions for fibromyalgia in adults. These studies reviewed the clinical effectiveness of several physiotherapy interventions including: electric stimulation,\(^1\) acupuncture,\(^2,6,9\) whole-body vibration therapy,\(^3\) massage therapy,\(^4,5\) resistance exercise training,\(^7\) acupoint stimulation,\(^8\) and aquatic physical therapy.\(^10\) Overall, the evidence suggested that physiotherapy interventions are clinically effective and are well-tolerated by adults with fibromyalgia.\(^1-10\) Detailed study characteristics are provided in Table 2. Additionally, four economic evaluations were identified regarding the cost-effectiveness of physiotherapy interventions for fibromyalgia in adults. One economic evaluation\(^{11}\) estimated the health care resource use, direct costs, and productivity loss resulting from the pain suffered among patients with fibromyalgia. This study included 57 adults diagnosed with fibromyalgia living in Quebec. The authors reported a mean annual direct cost of $3804, which includes costs associated with physiotherapy interventions.\(^{11}\)

A second economic evaluation\(^{12}\) assessed and compared the health-resource use and associated costs for patients with fibromyalgia living in the US, France, and Germany. This study included 203 patients with fibromyalgia from the US, 70 from France, and 169 from Germany (442 total).\(^{12}\) The analysis reported adjusted annual direct costs per patient of $7,087 in the US, $481 in France, and $2,417 in Germany (including costs associated with physiotherapy interventions).\(^{12}\)

A third economic evaluation\(^{13}\) analyzed and compared the economic burden of mild, moderate, and severe fibromyalgia in the US. 209 patients with fibromyalgia were given a survey to assess the severity of their fibromyalgia and the economic impact of their condition.\(^{13}\) Additionally, medical staff reported the health resource use associated with patients participating in the study. Final analysis revealed mean 3-month total direct costs of $1,213 (mild), $1,415 (moderate), and $2,329 (severe) and mean 3-month indirect costs of $1,341 (mild), $5,139 (moderate), and $8,285 (severe) for these patients.\(^{13}\)

A fourth economic evaluation\(^{14}\) was conducted to estimate the economic burden and use of healthcare resources for patients with fibromyalgia in Spain. This study included 232 patients diagnosed with fibromyalgia and 110 control subjects without fibromyalgia.\(^{14}\) The authors concluded that treatment for patients with fibromyalgia (including pharmacologic intervention and physiotherapy) is substantially compensated for by the resulting decrease in healthcare resource use and fewer days off work.\(^{14}\)
Table 2: Summary of Included Studies on the Clinical Benefits and Harms of Physiotherapy Interventions for Fibromyalgia in Adults

<table>
<thead>
<tr>
<th>First Author, Year</th>
<th>Study Characteristics</th>
<th>Intervention</th>
<th>Comparator</th>
<th>Outcomes</th>
<th>Conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Salazar, 2017</strong></td>
<td>SR &amp; MA&lt;br&gt;9 included RCTs&lt;br&gt;N = 301</td>
<td>Electric stimulation</td>
<td>No treatment with electric stimulation</td>
<td>Pain&lt;br&gt;Quality of life&lt;br&gt;Fatigue</td>
<td>Low-quality evidence reported electric stimulation helped reduce pain in patients with FM</td>
</tr>
<tr>
<td><strong>Yuan, 2016</strong></td>
<td>SR &amp; MA&lt;br&gt;63 included studies&lt;br&gt;N = 6,382</td>
<td>Acupuncture</td>
<td>Sham acupuncture</td>
<td>Pain&lt;br&gt;Disability immediately (≤1 week) following intervention</td>
<td>Acupuncture had a moderate effect on musculoskeletal pain (low quality evidence)</td>
</tr>
<tr>
<td><strong>Collado-Mateo, 2015</strong></td>
<td>SR&lt;br&gt;8 included studies&lt;br&gt;N = NR</td>
<td>Whole-body vibration therapy</td>
<td>No treatment with whole-body vibration therapy</td>
<td>Balance&lt;br&gt;Disability index&lt;br&gt;Health-related QoL&lt;br&gt;Pain</td>
<td>The authors concluded that whole-body vibration therapy could improve balance, disability index, health-related QoL, fatigue, and pain in FM patients (supported by B level of evidence)</td>
</tr>
<tr>
<td><strong>Yuan, 2015</strong></td>
<td>SR &amp; MA&lt;br&gt;10 included studies&lt;br&gt;N = NR</td>
<td>Massage therapy</td>
<td>No treatment with massage therapy&lt;br&gt;Placebo</td>
<td>Pain&lt;br&gt;Depression&lt;br&gt;Stiffness&lt;br&gt;QoL</td>
<td>Myofascial release relieved pain, anxiety, and depression&lt;br&gt;Connective tissue massage improved depression and QoL&lt;br&gt;Manual lymphatic drainage improved stiffness, depression and QoL (compared to connective tissue massage)&lt;br&gt;Shiatsu was beneficial for pain, pressure pain threshold, fatigue, sleep, and QoL&lt;br&gt;Swedish massage did not improve outcomes&lt;br&gt;Most styles of massage therapy improve QoL in FM patients</td>
</tr>
<tr>
<td><strong>Li, 2014</strong></td>
<td>SR &amp; MA&lt;br&gt;9 included RCTs&lt;br&gt;N = 404</td>
<td>Massage therapy</td>
<td>No treatment with massage therapy</td>
<td>Pain&lt;br&gt;Anxiety&lt;br&gt;Depression&lt;br&gt;Sleep disturbance</td>
<td>Meta-analysis showed that massage therapy (with duration ≥ 5 weeks) improved pain, anxiety, and depression</td>
</tr>
</tbody>
</table>
Table 2: Summary of Included Studies on the Clinical Benefits and Harms of Physiotherapy Interventions for Fibromyalgia in Adults

<table>
<thead>
<tr>
<th>First Author, Year</th>
<th>Study Characteristics</th>
<th>Intervention</th>
<th>Comparator</th>
<th>Outcomes</th>
<th>Conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yang, 2014&lt;sup&gt;6&lt;/sup&gt;</td>
<td>• SR &amp; MA &lt;br&gt;• 9 included studies &lt;br&gt;• N = NR</td>
<td>• Acupuncture</td>
<td>• Sham acupuncture &lt;br&gt;• Fluoxetine &lt;br&gt;• Amitriptyline &lt;br&gt;• Vitamin B &lt;br&gt;• Exercise</td>
<td>• Pain &lt;br&gt;• Pressure pain threshold &lt;br&gt;• FIQ &lt;br&gt;• Tender points</td>
<td>• There was insufficient evidence to conclude whether acupuncture was superior to sham acupuncture &lt;br&gt;• Low quality evidence suggested that acupuncture may have clinical advantages over drug regimens</td>
</tr>
<tr>
<td>Busch, 2013&lt;sup&gt;7&lt;/sup&gt;</td>
<td>• SR &amp; MA &lt;br&gt;• 5 included RCTs &lt;br&gt;• N = 219</td>
<td>• Resistance exercise training</td>
<td>• Control &lt;br&gt;• Other exercise training</td>
<td>• FIQ &lt;br&gt;• Physical function &lt;br&gt;• Tenderness &lt;br&gt;• Muscle strength &lt;br&gt;• Pain</td>
<td>• Low quality evidence reported that resistance training improved FIQ scores, pain, tenderness, and muscle strength versus a control group in women with FM &lt;br&gt;• Additional low quality evidence suggested that aerobic exercise was superior to resistance training for improving pain &lt;br&gt;• Low quality evidence reported that 12 weeks of resistance training was superior to flexibility exercise training for improving pain and FIQ score</td>
</tr>
<tr>
<td>Cao, 2013&lt;sup&gt;8&lt;/sup&gt;</td>
<td>• SR &amp; MA &lt;br&gt;• 16 included RCTs &lt;br&gt;• N = 1,081</td>
<td>• Acupoint stimulation</td>
<td>• Conventional medications</td>
<td>• Pain &lt;br&gt;• Number of tender points</td>
<td>• The authors concluded that acupoint stimulation appeared to be superior to conventional medications for reducing pain and the number of tender points</td>
</tr>
<tr>
<td>Deare, 2013&lt;sup&gt;9&lt;/sup&gt;</td>
<td>• SR &lt;br&gt;• 9 included studies &lt;br&gt;• N = 395</td>
<td>• Acupuncture</td>
<td>• No treatment &lt;br&gt;• Standard therapy &lt;br&gt;• Sham acupuncture</td>
<td>• Pain &lt;br&gt;• Physical function &lt;br&gt;• Fatigue &lt;br&gt;• Sleep &lt;br&gt;• Total well-being &lt;br&gt;• Stiffness &lt;br&gt;• Adverse events</td>
<td>• Acupuncture improved pain and stiffness compared to no treatment (low to moderate-level evidence) &lt;br&gt;• There was moderate-level evidence that acupuncture provided no benefit in reducing pain or fatigue and did not improve sleep or global well-being</td>
</tr>
</tbody>
</table>
Table 2: Summary of Included Studies on the Clinical Benefits and Harms of Physiotherapy Interventions for Fibromyalgia in Adults

<table>
<thead>
<tr>
<th>First Author, Year</th>
<th>Study Characteristics</th>
<th>Intervention</th>
<th>Comparator</th>
<th>Outcomes</th>
<th>Conclusions</th>
</tr>
</thead>
</table>
| Lima, 2013<sup>1</sup> | • SR & MA  
• 27 included studies  
• N = NR | • Aquatic physical therapy | • No treatment  
• Land-based exercises | • FIQ  
• Stiffness  
• 6-minute walk test | • Some evidence reported aquatic therapy provided benefit to functional ability and stiffness over no treatment  
• The authors concluded that the evidence reviewed was insufficient to demonstrate statistical clinical differences in most outcomes of interest (due to low methodological rigor) |

Abbreviations: FIQ = fibromyalgia impact questionnaire; FM = fibromyalgia; MA = meta-analysis; NR = not reported; QoL= quality of life; RCT = randomized controlled trial; SR = systematic review.

References Summarized

Health Technology Assessments

No literature identified.

Systematic Reviews and Meta-Analyses


Economic Evaluations


Appendix — Further Information

Previous CADTH Reports


Systematic Reviews and Meta-Analyses – Uncertain if Physiotherapy Care


