
Evidence Map of Massage Therapy for Painful Conditions: Update from 2018–2023

October 2023

VA



U.S. Department of Veterans Affairs

Veterans Health Administration
Health Services Research & Development Service

Recommended citation: Mak S, Allen J, Begashaw M, Miake-Lye I, Beroes-Severin J, Lawson E, Shekelle P. Evidence Map of Massage Therapy for Painful Conditions: Update from 2018–2023. Washington, DC: Evidence Synthesis Program, Health Services Research and Development Service, Office of Research and Development, Department of Veterans Affairs. VA ESP Project #05-226; 2023.

AUTHORS

Author roles, affiliations, and contributions to the present report (using the [CRediT taxonomy](#)) are summarized in the table below.

Author	Role and Affiliation	Report Contribution
Paul Shekelle, MD, PhD, MPH	Co-Director, VA Greater Los Angeles Evidence Synthesis Program (ESP) Center Los Angeles, CA	Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Resources, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing
Jennifer Allen, ANP-BC APHN-C	Nurse Practitioner at VA Greater Los Angeles Healthcare System Whole Health Program Manager Los Angeles, CA	Conceptualization, Formal analysis, Investigation, Methodology, Validation, Visualization, Writing – original draft, Writing – review & editing
Selene Mak, PhD, MPH	Program Manager, VA Greater Los Angeles ESP Center Los Angeles, CA	Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing
Meron Begashaw, MPH	Project Coordinator, VA Greater Los Angeles ESP Center Los Angeles, CA	Data curation, Project administration, Software, Validation, Visualization, Writing – original draft, Writing – review & editing
Isomi Miake-Lye, PhD, MPH	Co-Director, VA Greater Los Angeles ESP Center Los Angeles, CA	Conceptualization, Funding acquisition, Methodology, Project administration, Resources, Software, Supervision, Visualization
Jessica Severin, BA	Administrative Coordinator, VA Greater Los Angeles ESP Center Los Angeles, CA	Data curation, Project administration
Emily Lawson, MSLIS, AHIP	Research and Consulting Librarian, RAND Corporation Santa Monica, CA	Data curation

This report was prepared by the Evidence Synthesis Program Center located at the **VA Greater Los Angeles Healthcare System**, directed by Paul Shekelle, MD, PhD and Isomi Miake-Lye, PhD and funded by the Department of Veterans Affairs, Veterans Health Administration, Health Services Research and Development.

The findings and conclusions in this document are those of the author(s) who are responsible for its contents and do not necessarily represent the views of the Department of Veterans Affairs or the United States government. Therefore, no statement in this article should be construed as an official position of the Department of Veterans Affairs. No investigators have any affiliations or financial involvement (eg, employment, consultancies, honoraria, stock ownership or options, expert testimony, grants or patents received or pending, or royalties) that conflict with material presented in the report.

PREFACE

The VA Evidence Synthesis Program (ESP) was established in 2007 to provide timely and accurate syntheses of targeted health care topics of importance to clinicians, managers, and policymakers as they work to improve the health and health care of Veterans. These reports help:

- Develop clinical policies informed by evidence;
- Implement effective services to improve patient outcomes and to support VA clinical practice guidelines and performance measures; and
- Set the direction for future research to address gaps in clinical knowledge.

The program comprises four ESP Centers across the US and a Coordinating Center located in Portland, Oregon. Center Directors are VA clinicians and recognized leaders in the field of evidence synthesis with close ties to the AHRQ Evidence-based Practice Center Program. The Coordinating Center was created to manage program operations, ensure methodological consistency and quality of products, interface with stakeholders, and address urgent evidence needs. To ensure responsiveness to the needs of decision-makers, the program is governed by a Steering Committee composed of health system leadership and researchers. The program solicits nominations for review topics several times a year via the [program website](#).

The present report was developed in response to a request from the Integrative Health Coordinating Center under the Office of Patient Centered Care & Cultural Transformation. The scope was further developed with input from Operational Partners (below), the ESP Coordinating Center, and the review team. The ESP consulted several technical and content experts in designing the research questions and review methodology. In seeking broad expertise and perspectives, divergent and conflicting opinions are common and perceived as healthy scientific discourse that results in a thoughtful, relevant systematic review. Ultimately, however, research questions, design, methodologic approaches, and/or conclusions of the review may not necessarily represent the views of individual technical and content experts.

ACKNOWLEDGMENTS

The authors are grateful to the following individuals for their contributions to this project:

Operational Partners

Operational partners are system-level stakeholders who help ensure relevance of the review topic to the VA, contribute to the development of and approve final project scope and timeframe for completion, provide feedback on the draft report, and provide consultation on strategies for dissemination of the report to the field and relevant groups.

Juli Olson, DC, DACM

National Lead Clinical Champion

Integrative Health Coordinating Center

VHA Office of Patient Centered Care & Cultural Transformation

Sharon M. Weinstein, MD, MT, FAAHPM

VA National Lead, Massage Therapy

Integrative Health Coordinating Center

VHA Office of Patient Centered Care & Cultural Transformation

Alison Whitehead, MPH, C-IAYT, E-RYT200

National Program Lead

Integrative Health Coordinating Center

VHA Office of Patient Centered Care & Cultural Transformation

Peer Reviewers

The Coordinating Center sought input from external peer reviewers to review the draft report and provide feedback on the objectives, scope, methods used, perception of bias, and omitted evidence (see Appendix D for disposition of comments). Peer reviewers must disclose any relevant financial or non-financial conflicts of interest. Because of their unique clinical or content expertise, individuals with potential conflicts may be retained. The Coordinating Center works to balance, manage, or mitigate any potential nonfinancial conflicts of interest identified.

TABLE OF CONTENTS

Authors.....	i
Preface.....	iii
Acknowledgments.....	iii
Abbreviations Table.....	vii
Executive Summary.....	1
Methods.....	1
Results.....	2
Introduction.....	5
Purpose.....	5
Background.....	5
Methods.....	6
Topic Development.....	6
Data Sources and Searches.....	6
Study Selection.....	6
Data Abstraction and Presentation.....	7
Results.....	9
Literature Flow.....	9
Literature Overview.....	9
Evidence Map.....	13
Discussion.....	19
Limitations.....	20
Future Research.....	21
Conclusions.....	21
References.....	22
Appendix A. Search Strategies.....	24
Appendix B. Excluded Studies.....	27
Appendix C. Evidence Table.....	29
Appendix D. Peer Review Disposition.....	32

FIGURES AND TABLES

ES Figure. Evidence Map.....	2
Figure 1. Literature Flowchart.....	9
Table 1. Conditions in Both 2018 and 2023 Evidence Maps.....	11
Table 2. Newly Identified Conditions in 2023 Evidence Map.....	12

Table 3. Selected Conditions in Previous Evidence Map Not in 2023 Evidence Map..... 12

Figure 2. Evidence Map..... 15

Table 4. Certainty of Evidence Conclusions from Systematic Reviews Included
in the Evidence Map 16

ABBREVIATIONS TABLE

Abbreviation	
AHRQ	Agency for Healthcare Research & Quality
CIH	Complementary and integrative health
EPC	Evidence-based Practice Center
ESP	Evidence Synthesis Program
GRADE	Grading of Recommendations, Assessment, Development and Evaluations
MFR	Myofascial release
VA	Department of Veterans Affairs
VERDICT	Veterans Response to Dosage in Chiropractic Therapy
VHA	Veterans Health Administration

EXECUTIVE SUMMARY

Key Findings

- We included 15 reviews of massage therapy describing health conditions with pain as an outcome in the evidence map. These conditions include cancer-related pain, back pain (including chronic back pain, chronic low back pain, and low back pain), mechanical neck pain, myofascial pain, palliative care needs, post-breast cancer surgery, post-caesarean pain, post-partum pain, and post-operative pain.
- We found conclusions of potential benefit for massage therapy with moderate certainty of evidence in 6 reviews published since July 2018, which suggests that conclusions of benefit of massage therapy have a stronger evidence base now than in 2018. These conditions include back pain (including chronic low back pain and chronic back pain), fibromyalgia, myofascial pain, and breast-cancer-related pain.
- Almost all conclusions about benefit for massage therapy for pain were drawn from a small number of primary studies (*ie*, 2 to 5).

INTRODUCTION

Massage therapy is a popular and widely accepted complementary and integrative health (CIH) modality for individuals seeking relief from pain. Despite its popularity and long history in practice, evidence of beneficial effect of massage therapy remains limited.

METHODS

Data Sources and Searches

Search strategies were based on those used for an earlier ESP evidence map of massage therapy and subsequent journal article, which included literature published through June 2018. Five databases were searched for relevant records published from July 2018 to April 2023: PubMed, Allied and Complementary Medicine Database (AMED), Cumulated Index to Nursing and Allied Health Literature (CINAHL), Cochrane Database of Systematic Reviews (CDSR), and Web of Science.

Study Selection

Eligible publications were systematic reviews of studies that examined the efficacy or effectiveness of massage therapy for pain in adults. In general, any therapist-delivered modality described as “massage therapy” by review authors was considered eligible; these included acupressure, Tuina, Thai, Swedish, myofascial release, *etc*. Sports massage therapy, osteopathy, dry cupping/dry needling, and internal massage therapy (*eg*, for pelvic floor pain) were ineligible, however, as were self-administered massage therapy techniques like foam rolling. Studies were required to compare massage therapy to a sham/placebo massage, usual care, or other active therapies (exercise, physical therapy, *etc*). Further details about the study selection process are described in the main report.

Data Abstraction and Presentation

Each included systematic review had data abstracted by 1 reviewer and verified by a second reviewer. Abstracted data included but were not limited to: number of studies included in the review that had massage therapy as the intervention, condition, type of massage therapy, comparators, certainty of evidence rating, and certainty of evidence conclusion(s) relevant to massage therapy as treatment for pain. Our evidence mapping process resulted in a visual depiction of the evidence for massage therapy, as well as an accompanying narrative with an ancillary figure and table.

RESULTS

We identified 1,164 potentially relevant citations. A total of 38 publications were retained and reviewed at full text. We included 15 publications in this map (ES Figure). In this map, bubble color denotes intervention type, shape denotes type of comparator, and size of shape indicates the number of studies included in the review.

ES Figure. Evidence Map

	Potential Benefit for Massage Therapy	No Benefit for Massage Therapy
Conclusion Rated as High or Strong Certainty		
Conclusion Rated as Moderate Certainty	<ul style="list-style-type: none"> Post-breast cancer surgery Chronic low back pain Chronic low back pain (short-term)* 	<ul style="list-style-type: none"> Low back pain (physical therapy)* Fibromyalgia Myofascial pain
Conclusions are Rated as Low or Very Low Certainty	<ul style="list-style-type: none"> Post-operative pain* Plantar fasciitis Chronic neck pain* Palliative care needs* Post-partum pain* Post-operative pain* Cancer-related pain (auricular acupressure) 	<ul style="list-style-type: none"> Chronic back pain Low back pain* Cancer-related pain Palliative care needs* Post-partum pain* Post-caesarean pain Mechanical neck pain Chronic low back pain (intermediate-term)*

*This review included distinct conclusions about separate conditions and comparators, and so it appears in this map more than once.

Number of Included Primary Studies

- 10+ included studies
- 6-9 included studies
- 2-5 included studies

Interventions

- Massage (general)
- Acupressure

Comparators

- Mixed with subgroups
- Mixed with no subgroups
- Sham/placebo
- Other Active Therapy/ Usual Care/Control

Three high-level observations can be made from the evidence mapping process:

- 1) Our update identified 6 reviews describing conditions with moderate certainty of evidence of potential benefit from reviews published since July 2018. There were only reviews with conclusions of low and very low certainty of evidence in the last review. This suggests that there is a stronger evidence base for the potential benefit of massage therapy for pain in some conditions since the last review.
- 2) Only 20% of reviews (3 of 15) included more than 10 primary studies. This means a majority of the conclusions about potential benefit for massage therapy for pain were drawn from a small number of primary studies.
- 3) Five of 6 reviews with moderate certainty of evidence included analyses comparing massage therapy to more than 1 comparison group. One review compared myofascial release to sham only. Except for the review by Li et al, the other reviews all included sham or placebo as a comparison group. Since manual therapies like massage therapy require some form of touching, without further details about what “sham” or “placebo” treatment entailed in these primary studies, the effect of massage therapy detected from only sham/placebo studies should be interpreted with caution and may not be as informative or useful compared to an effect detected from active therapies studies.

Evidence about adverse events was collected by 60% of the included reviews and no serious adverse events were reported. While 9 of 15 reviews mentioned adverse events, only 2 reviews included certainty of evidence conclusions for adverse events.

DISCUSSION

Key Findings

Our update search identified 15 new reviews since 2018, and from these, 6 reviews described conditions that had moderate certainty of evidence for beneficial effect of massage therapy for pain. There were a variety of massage therapy techniques included in the primary studies of included reviews, but inconsistent reporting of details about the interventions (*eg*, frequency, duration, follow-up) made it difficult to provide further synthesis of the data regarding the delivery of massage therapy.

The moderate certainty of evidence conclusions identified in the current review of massage therapy’s potential benefit for chronic low back pain, fibromyalgia, low back pain, myofascial pain, and breast-cancer-related pain represent a step in the right direction toward establishing a stronger evidence base for effect of massage therapy for pain, but more work in producing high-quality RCTs needs to be done to advance the field. It is only when systematic reviews and meta-analyses are conducted with high-quality primary studies that the effects or lack of effects of massage therapy for pain will reach higher certainties of evidence. For any conclusion of potential benefit, a high certainty of evidence rating means “we are very confident that the true effect lies close to that of the estimate of the effect.”

Future Research

For painful conditions of priority to the VA that currently do not have at least moderate-certainty evidence supporting use of massage therapy, new studies that address limitations of existing

research are needed. The field of massage therapy would be best advanced by educating the wider research community with clearer definitions of “massage therapy” and whether it is appropriate to include multiple modalities in the same systematic review.

Conclusions

There is a paucity of systematic reviews of massage therapy for pain. Although the number of conclusions about the effectiveness of massage therapy that were judged to have at least moderate certainty of evidence is greater now than in 2018, it is still small relative to the need. More high-quality randomized controlled trials are needed to provide a stronger evidence base to assess the effect of massage therapy for pain.

EVIDENCE REPORT

INTRODUCTION

PURPOSE

The Evidence Synthesis Program (ESP) is responding to a request from the VHA Office of Patient Centered Care & Cultural Transformation, Integrative Health Coordinating Center to provide current evidence regarding use of massage therapy for pain as treatment for conditions of interest to the VA. Findings from this review will be used by VA referring providers, site leadership, and policy makers to improve Veteran access to non-pharmacologic treatment approaches and improve outcomes for Veterans by utilizing evidence-based care pathways.

BACKGROUND

Massage therapy is a popular and widely accepted complementary and integrative health (CIH) modality for individuals seeking relief from pain.¹ Massage therapy is the practice of manual assessment and manipulation of the superficial soft tissues of skin, muscle, tendon, ligament, fascia, and the structures that lie within the superficial tissues for therapeutic purpose.² Individuals may seek massage therapy to address pain where conventional treatments may not always provide complete relief or may come with potential side effects. Massage therapy encompasses a range of techniques (*eg*, massage, acupressure, myofascial release), styles, (*eg*, sports massage, deep tissue, Tui Na, shiatsu), and duration (*eg*, 10-minute, hour-long).³ Massage therapists are uniquely trained, qualified, and credentialed to deliver massage therapy. Other health care professionals, such as physical therapists, chiropractors, nurses, and acupuncturists may provide massage therapy when properly trained and qualified.

Massage therapy has been part of many ancient cultures, with historical records predating 3000 BC.^{4,5} The field of massage therapy has evolved from being regarded as folk medicine in the Middle Ages to the introduction of Swedish massage therapy as a medical treatment by Johann Mezger in the late 1800s.⁶ The first massage therapy school in the United States was established in 1916 as the Swedish Gymnastic Institute in New York City for medical gymnastics and massage therapy.⁷ Despite its popularity and long history in practice, evidence of beneficial effect of massage therapy remains limited.

Massage therapy has seen a dramatic increase in the number of users and visits since 2016 across the Veterans Health Administration (VHA).⁸ Massage therapy has been part of Veterans' standard medical benefits package under VHA Directive 1137 since 2017.⁹ Veterans utilize massage therapy for a variety of reasons and conditions, including relaxation, musculoskeletal pain, lymphedema, anxiety, and depressive symptoms.⁸ While there may be evidence supporting the use of massage therapy for other indications, the scope of this report was to focus on pain as an outcome. The last ESP evidence map of massage therapy for pain was published in 2016 with an accompanying review article published in 2019. VHA stakeholders were interested in new evidence since publication of the earlier review; thus, we conducted an update of the previous report and present a new evidence map of massage therapy for pain.

METHODS

TOPIC DEVELOPMENT

This topic was developed in response to a nomination from Juli Olson, DC, DACM, National Lead for Acupuncture, Integrative Health Coordinating Center; Sharon M. Weinstein, MD, MT, FAAHPM, VA National Lead of Massage Therapy, Integrative Health Coordinating Center; and Alison Whitehead, MPH, C-IAYT, E-RYT200, National Lead for Integrative Health Coordinating Center. The scope was further developed with input from the topic nominator, the ESP Coordinating Center, and the review team. The scope of this report includes: 1) One or more evidence maps that provide a visual overview of the distribution of evidence for massage therapy for pain, and 2) an accompanying narrative that helps stakeholders interpret the state of the evidence to inform policy and clinical decision-making.

DATA SOURCES AND SEARCHES

Search strategies were based on those used for the original ESP evidence map of massage therapy¹⁰ and subsequent journal article,¹¹ which included literature published through June 2018. Five databases were searched for relevant records published from July 2018 to April 2023: PubMed, Allied and Complementary Medicine Database (AMED), Cumulated Index to Nursing and Allied Health Literature (CINAHL), Cochrane Database of Systematic Reviews (CDSR), and Web of Science. See Appendix A for full search strategies.

STUDY SELECTION

Eligible publications were systematic reviews of studies that examined the efficacy or effectiveness of massage therapy for pain in adults. In general, any therapist-delivered modality described as “massage therapy” by review authors was considered eligible; these included acupressure, Tuina, Thai, Swedish, myofascial release, *etc.* Sports massage therapy, osteopathy, dry cupping/dry needling, and internal massage therapy (*eg*, for pelvic floor pain) were ineligible, however, as were self-administered massage therapy techniques like foam rolling. Studies were required to compare massage therapy to a sham/placebo massage, usual care, or other active therapies (exercise, physical therapy, *etc.*). Reviews that included studies of other interventions were eligible if results for massage therapy were reported separately. Examples of such reviews are: *Effects of Therapeutic Interventions on Pain Due to Plantar Fasciitis: A Systematic Review and Meta-Analysis*¹² or *The Effectiveness of Aromatherapy, Massage and Reflexology in People with Palliative Care Needs: A Systematic Review*.¹³

Titles of potentially eligible reviews were screened for relevance by 2 authors independently; any article chosen by either reviewer was included in the abstract screen. Abstracts were then reviewed in duplicate, with any discrepancies resolved by group discussion. We recorded condition type when reviewing abstracts and presented a list of conditions for which we found reviews to the Operational Partners to determine which conditions were of interest to the VA. Operational Partners elected to focus only on pain for the evidence map. Any conditions not selected were then excluded. Reviews that did not employ systematic methods for identifying and critically appraising studies were also excluded.

We next restricted eligibility to reviews that used formal methods to assess the certainty (or strength or quality) of the evidence for conclusions. In most reviews, this involved use of the

Grading of Recommendations, Assessment, Development and Evaluations (GRADE) approach.¹⁴ However, other formal methods were accepted, such as the approach developed by the Agency for Healthcare Research & Quality (AHRQ) Evidence-based Practice Center (EPC) program.¹⁵ To remain eligible, a systematic review had to 1) state or cite the method used to formally assess the certainty (or strength or quality) of included evidence, and 2) report the certainty (or strength or quality) of evidence for the effect of massage therapy on pain.

After applying this restriction, almost all health conditions had only 1 systematic review meeting eligibility criteria, and we included this review in the map. Back pain was the only health condition with multiple reviews meeting eligibility criteria. For this condition, we first assessed whether the review differed in some other feature used to classify reviews on our map. For example, 1 systematic review on back pain included only studies comparing massage therapy to a mixed group of comparators, while another systematic review on back pain only included studies comparing massage therapy to other active therapies. In such cases, we included both reviews in the map, with the appropriate designations (such as “versus mixed with subgroups” and “versus active therapy/usual care”). If there were multiple reviews on the same condition and they did not differ in some other feature, then we selected the 1 systematic review that we judged as being most informative to stakeholders. In general, this was the most recent review or the review with the greatest number of included studies. Systematic reviews otherwise meeting eligibility criteria that were not included in the map for this reason are listed in Appendix B.

DATA ABSTRACTION AND PRESENTATION

Each included systematic review had data abstracted by 1 reviewer and verified by a second reviewer. Abstracted data included, but were not limited to: number of studies included in the review that had massage therapy as the intervention, treated condition, type of massage therapy, comparators, certainty of evidence rating, and certainty of evidence conclusion(s) relevant to massage therapy as treatment for pain.

Our evidence mapping process resulted in a visual depiction of the evidence for massage therapy for pain, as well as an accompanying narrative with an ancillary figure and table. The visual depiction or evidence map uses a bubble plot format to display information on 4 dimensions: bubble size, bubble label, x-axis, and y-axis. This allowed us to provide the following types of information about each included systematic review, as follows:

Number of articles in systematic review (bubble size): The size of each bubble corresponds to the number of relevant primary research studies included in a systematic review.

Condition (bubble label): Each bubble is labeled with the condition discussed by that systematic review.

Shapes and colors: Intervention characteristics for each condition are presented in the form of colors (type of intervention) and shapes (comparators). For type of intervention, orange represents massage therapy and blue represents acupuncture. Massage therapy may include singular interventions or a combination of massage therapy (not otherwise specified), Tuina, myofascial release, and/or reflexology. Acupuncture may include auricular acupuncture. For comparators, a circle denotes mixed comparators with subgroups, rectangle for mixed comparators with no subgroups, triangle for sham/placebo, and octagon for active/usual care. A

condition can show up more than once if multiple systematic reviews included either different types of massage therapy and/or different comparators.

Strength of findings (rows): Each condition is plotted on the map based on the certainty of evidence statement as reported in the systematic review. We have 3 categories: “Conclusion is rated as low or very low certainty,” “Conclusion is rated moderate certainty,” and “Conclusion is rated as high or strong certainty.”

Effect of massage therapy (columns): Each condition is plotted in either “potential benefit” or “no benefit” as effect of massage therapy based on conclusion of systematic review.

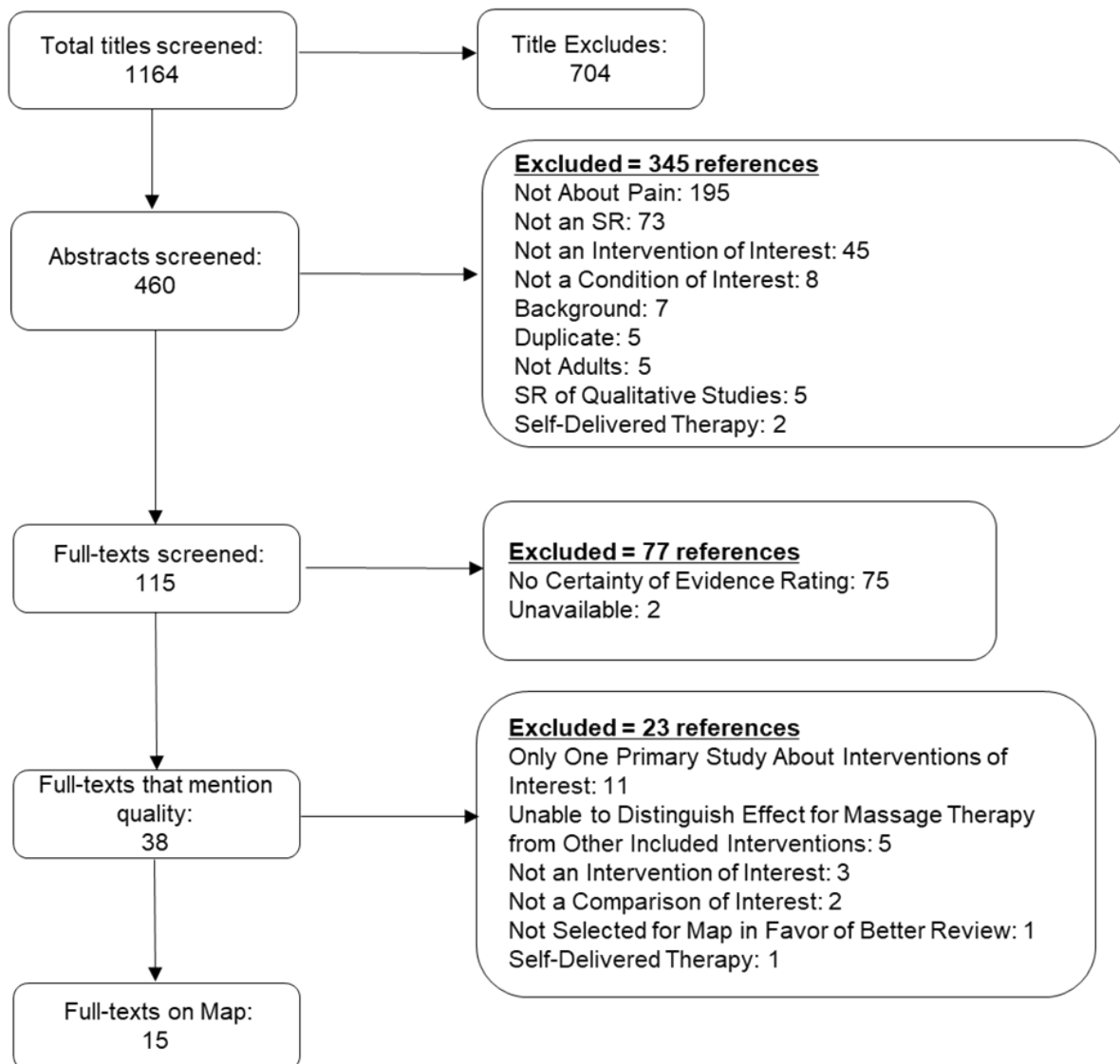
Narrative synthesis: The narrative synthesis expands upon the visual evidence map to provide overarching conclusions from the map. Details about the conclusions in individual reviews are included in the table.

RESULTS

LITERATURE FLOW

The literature flow diagram (Figure 1) summarizes the results of the study selection process (the full list of excluded studies is available in Appendix B).

Figure 1. Literature Flowchart



LITERATURE OVERVIEW

We identified 1,164 potentially relevant citations (Figure 1). We applied the inclusion and exclusion criteria to these titles and excluded 704 titles. A total of 460 abstracts were reviewed at abstract stage. From these, a total of 345 abstracts were excluded for the following reasons: not about pain ($N = 195$), not a systematic review ($N = 73$), not an intervention of interest ($N = 45$), not a condition of interest ($N = 8$), background ($N = 7$), duplicate ($N = 5$), not adults ($N = 5$),

systematic review of qualitative studies ($N = 5$), and self-delivered therapy ($N = 2$). This left a total of 115 publications for review at full-text stage. A total of 75 publications were excluded at this stage because the authors did not state or cite the method used to formally assess the certainty or strength or quality of the evidence and 2 publications were unavailable. See Appendix B for a full list of excluded reviews. A total of 38 publications were retained for further review and potential inclusion on the map. Of these, 23 publications were excluded from the map for the following reasons: only 1 primary study about interventions of interest ($N = 11$), unable to distinguish effect for massage therapy from other included interventions ($N = 5$), not an intervention of interest ($N = 3$), not a comparison of interest ($N = 2$), not selected for map in favor of better review ($N = 1$), and self-delivered therapy ($N = 1$). We included 15 publications in this map. See Appendix C for more details about the included reviews.

Characteristics of Included Reviews

The number of primary studies about massage therapy for pain in the included reviews ranged from 2 studies to 23 studies. Ten reviews included fewer than 10 primary studies,^{12,16-24} and 5 reviews included 10 to 25 studies about massage therapy for pain.^{13,25-28} One of the included reviews was completed by the Cochrane Collaboration,²⁴ and 2 reviews were completed by the AHRQ EPC program.^{19,27}

The country of origin for reviews varied, with the largest number of reviews originating from China ($N = 4$),^{17,20,23,26} followed by the US ($N = 2$),^{19,27} Brazil ($N = 2$),^{12,24} Australia ($N = 1$),²² England ($N = 1$),¹³ and India ($N = 1$).¹⁸ Four reviews were conducted by authors from multiple countries: China and Australia,¹⁶ China and Iran,²⁵ China, Korea, and the US,²⁸ and Spain, Chile, and Paraguay.²¹

Of the 15 included reviews, 2 reviews included more than 1 type of massage therapy and 13 reviews included only 1 type of massage therapy. The reviews by Chou et al and Smith et al both included acupressure and massage therapy (not otherwise specified) or mixed massage therapy as interventions.^{19,22} Of the 13 reviews with only 1 type of massage therapy, 4 reviews described massage therapy (not otherwise specified) or mixed massage therapy,^{13,21,24,27} 1 review was about Tuina,²⁸ 5 reviews were about myofascial release,^{12,17,18,20,23} 2 reviews were about acupressure,^{25,26} and 1 review was about auricular acupressure.¹⁶

Since we excluded reviews that explicitly stated massage therapy was self-delivered, any review that did not specify the mode of delivery was included. Three of the 15 included reviews provided details of personnel who administered the therapy, including massage therapist, nurse, aromatherapist, physiotherapist, and reflexologist.^{13,18,22}

There was substantial variation in the reporting of details from the primary studies in the included reviews. Most reviews presented length of sessions, from 5- to 90-minute sessions for massage therapy studies and 30-seconds to 5-minute sessions for acupressure studies. With the exception of the review by He et al,¹⁶ all reviews reported details about frequency and/or duration when available. From reviews that included frequency information, we found a range from 1 session only to once every 3 weeks for massage therapy studies, and 4 times a day to daily for acupressure studies. For duration, some reviews reported interventions lasted from one session only to 3 months. Seven reviews included details about follow-up (eg, 1 week, 12 months).^{13,18,20,24,26-28}

A variety of comparators were included in the reviews. Six reviews included more than 1 comparator in their analyses.^{18,19,21-23,27} Of these, 1 review did not conduct separate analyses by comparator (labeled “mixed with no subgroups”)²¹ and 2 reviews did conduct separate analyses by comparator (labeled “mixed with subgroups”);^{18,23} the other 3 reviews included a mix of comparators: sham/placebo and active therapy/usual care,¹⁹ mixed with no subgroups and active therapy/usual care,²⁷ and mixed with subgroups and active therapy/usual care.²² Eight reviews described interventions compared to active therapy/usual care only,^{12,13,16,20,24-26,28} while 1 review limited inclusion to primary studies with a sham or placebo comparator.¹⁷

We categorized the included 15 reviews into health conditions with pain as an outcome. Conditions include cancer-related pain,^{16,25} back pain (including chronic back pain,^{23,28} chronic low back pain,^{27,20} and low back pain),²⁶ chronic neck pain,²⁷ fibromyalgia,¹⁸ mechanical neck pain,²⁰ myofascial pain,²¹ palliative care needs,¹³ post-breast cancer surgery,¹⁷ post-caesarean pain,²⁴ post-partum pain,²² and post-operative pain.¹⁹

Five reviews were mapped more than once. Skelly et al included chronic low back pain with short-term effect and intermediate-term effect, as well as neck pain in their review;²⁷ Li et al included several active therapies as comparators resulting in different certainty of evidence conclusions;²⁶ Candy et al included both reflexology and massage therapy in their review about palliative care needs;¹³ Chou et al included different comparators (sham and active therapy) and interventions (massage therapy and acupressure) in their review about post-operative pain;¹⁹ and Smith et al included both acupressure and massage therapy in their review about post-partum pain.²²

We mapped conclusion(s) for the effect of massage therapy on the conditions that were also included in the previous evidence map: back pain (including chronic low back pain and chronic back pain), cancer-related pain, fibromyalgia, myofascial pain, neck pain (including chronic neck pain and mechanical neck pain), palliation-related pain, and post-operative pain (Table 1).

Table 1. Conditions in Both 2018 and 2023 Evidence Maps

Condition	Primary Studies Published Since 2018	# of Reviews for the Condition
Back pain (including chronic low back pain and chronic back pain)	16	4
Cancer-related pain	13	2
Fibromyalgia	0	1
Myofascial pain	3	1
Neck pain (including chronic neck pain and mechanical neck pain)	0	2
Palliation-related pain	1	1
Post-operative pain	2	1

We surveyed the publication year of the primary studies included in the 11 reviews about these 7 conditions to assess the number of new trials published in or after 2018. With the exception of fibromyalgia,¹⁸ the other 6 conditions were represented by reviews which had included primary studies that were published in 2018 or after. For back pain, 16 studies from 3 reviews were published since 2018: myofascial release for chronic back pain ($N = 4$),²³ Tuina for chronic back

pain ($N = 7$),²⁸ and acupressure for low back pain ($N = 5$).²⁶ A fourth review about the short and intermediate-term effect of massage therapy for chronic low back pain did not include trials published since 2018.²⁷ For cancer-related pain, 13 studies about acupressure from 1 review were published since 2018.²⁵ No primary studies contributing to the potential benefit of auricular acupressure for cancer-related pain were published prior to 2018.¹⁶ For myofascial pain, 3 studies about massage therapy from 1 review were published since 2018.²¹ For neck pain, 7 studies about myofascial release from 1 review were published since 2018.²⁰ A second review about massage therapy for neck pain did not include trials published since 2018.²⁷ For palliation-related pain, 1 review had included 1 primary study about reflexology which was published in 2018.¹³ For post-operative pain, 2 reviews about massage therapy were published since 2018.¹⁹

This map includes 4 conditions that were not part of the previous map (Table 2).

Table 2. Newly Identified Conditions in 2023 Evidence Map

Plantar fasciitis	2
Post-breast cancer surgery	1
Post-caesarean pain	2
Post-partum pain	2

Eleven conditions were included the previous map but are not in the current report: arthritis, cervical radiculopathy, dysmenorrhea, elbow pain, headache, labor pain, mixed musculoskeletal pain, muscle soreness, pain in critical care setting, scar pain, shoulder pain, and temporomandibular joint pain. We did not identify citations about arthritis, cervical radiculopathy, or muscle soreness in the update search to be reviewed at full text. Table 3 provides details for the other 8 conditions.

Because we applied an additional criterion that reviews had to report a method used for grading certainty of evidence to be included in this map, a few conditions that had appeared in the previous map were not included in this map. Some publications were excluded due to only including 1 primary study with an intervention of interest; 1 publication did not include pain as an outcome of interest; and other reviews did not separate the analysis of the effect of different treatments for a condition, which means we were unable to distinguish the effect for massage therapy from other included interventions.

Table 3. Selected Conditions in Previous Evidence Map Not in 2023 Evidence Map

Condition	New Systematic Review Identified in Update Search?	Exclusion Reason
Arthritis	No	N/A
Cervical radiculopathy	No	N/A
Critical care	1	• No certainty of evidence rating ($N = 1$)
Dysmenorrhea	5	• No certainty of evidence rating ($N = 4$) • Included only 1 primary study of interest ($N = 1$)

Condition	New Systematic Review Identified in Update Search?	Exclusion Reason
Elbow	1	• No certainty of evidence rating ($N = 1$)
Headache	5	• No certainty of evidence rating ($N = 2$) • Included only 1 primary study of interest ($N = 1$) • 2 not separate
Labor	3	• No certainty of evidence rating ($N = 1$)
Mixed musculoskeletal		
Knee osteoarthritis	7	• No certainty of evidence rating ($N = 6$) • Unable to distinguish effect for massage therapy from other included interventions ($N = 1$)
Carpal tunnel syndrome	1	• Included only 1 primary study of interest ($N = 1$)
Acute/chronic	3	• No certainty of evidence rating ($N = 3$)
Muscle soreness	No	N/A
Scar	3	• No certainty of evidence rating ($N = 1$) • No outcome of interest ($N = 1$)
Shoulder	1	• No certainty of evidence rating ($N = 1$)
Temporomandibular joint	2	• No certainty of evidence rating ($N = 1$) • Included only 1 primary study of interest ($N = 1$)

EVIDENCE MAP

In the evidence map, columns correspond to whether a conclusion of the review was that 1) there was a potential benefit of massage therapy relative to a comparison treatment, or 2) there was no benefit of massage therapy relative to the comparison treatment. Columns *are not* mutually exclusive: a review could have more than 1 conclusion for separate comparators or type of massage therapy, and those conclusions could differ in the potential benefit of massage therapy.

Rows correspond to GRADE ratings of certainty of evidence:¹⁴

- High certainty: We are very confident that the true effect lies close to that of the estimate of the effect.
- Moderate certainty: We are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
- Low certainty: Our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
- Very low certainty: We have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

In contrast to columns, all rows *are* mutually exclusive. The top row indicates that the review's conclusion about massage therapy for pain as rated by its authors have high (or strong) certainty

of evidence. The middle row indicates that the review’s conclusion about massage therapy for pain was rated as moderate certainty of evidence (and none rated as high or strong, in which case it would be in the top row). The bottom row indicates that the review’s conclusion about massage therapy for pain was rated as low or very low certainty of evidence. Since GRADE assesses certainty of evidence, it is possible for a body of evidence to demonstrate low or moderate estimates of effect but with high certainty of evidence; conversely, it is possible to have evidence with large effect sizes but with low certainty.

Each conclusion is then mapped onto this framework and identified by the name of the condition, *eg*, “chronic back pain,” “fibromyalgia,” “post-operative pain,” *etc*. Shapes are used to distinguish between the types of comparison treatments: conclusions only about comparisons to sham/placebo, conclusions only about comparisons to active therapy/usual care, conclusions where the comparison treatments were a mix of these and no subgroup analysis was presented, and conclusions where comparison treatments were a mix of these with subgroup analyses. Symbols are used to identify the conclusions specific to massage therapy (*eg*, Tuina, myofascial release, reflexology, massage therapy—not otherwise specified) or acupressure (*ie*, including auricular acupressure).

The size of the bubble is used to indicate how many original research studies were included in the review about massage therapy for pain: the smallest bubble denotes reviews with 2–5 primary studies included, the medium bubble with a pattern of diagonal lines denotes reviews with 6–9 primary studies included, and the largest bubble denotes reviews with 10 or more primary studies included.

For example, in Figure 2, the large orange hexagon in the middle column of the bottom row indicates that there is a review about chronic back pain that included 10 or more original studies and had a conclusion rated as low or very low certainty of evidence that message therapy was better than the comparison treatment of active therapy/usual care/control. In the same figure, the small blue circle in the lower right-hand corner indicates that there is a review about post-partum pain that included 2 to 5 original studies and had a conclusion rated as low or very low certainty of evidence that acupressure was not of greater benefit than the comparison treatment of mixed therapies with subgroups.

Figure 2. Evidence Map

	Potential Benefit for Massage Therapy	No Benefit for Massage Therapy
Conclusion Rated as High or Strong Certainty		
Conclusion Rated as Moderate Certainty	Post-breast cancer surgery Chronic low back pain Chronic low back pain (short-term)*	Low back pain (physical therapy)* Fibromyalgia Myofascial pain
Conclusions are Rated as Low or Very Low Certainty	Post-operative pain* Plantar fasciitis Chronic neck pain* Palliative care needs* Post-partum pain* Post-operative pain* Cancer-related pain (auricular acupressure)	Chronic back pain Low back pain* Cancer-related pain Palliative care needs* Post-partum pain* Post-caesarean pain Mechanical neck pain Chronic low back pain (intermediate-term)*

*This review included distinct conclusions about separate conditions and comparators, and so it appears in this map more than once.

Number of Included Primary Studies

- 10+ included studies
- 6-9 included studies
- 2-5 included studies

Interventions

- Massage (general)
- Acupressure

Comparators

- Mixed with subgroups
- Mixed with no subgroups
- Sham/placebo
- Other Active Therapy/ Usual Care/Control

There were 5 reviews with more than 1 conclusion about effect of massage therapy on pain and were mapped twice, denoted by an asterisk after the health condition.^{13,19,22,26,27}

In addition to this map, we collected all certainty of evidence conclusions about massage therapy for pain in Table 4. There are 6 systematic reviews that described conditions that had moderate certainty of evidence conclusions for the potential benefit of massage therapy by the original review authors. All the remaining conclusions were judged by the original authors as being low or very low certainty of evidence, meaning “Our confidence in the effect estimate is limited. The true effect may be substantially different from the estimate of effect” or “We have very little confidence in the effect estimate.”

Table 4. Certainty of Evidence Conclusions from Systematic Reviews Included in the Evidence Map

Author, Year	Condition	Certainty of Evidence Conclusion
<i>Moderate Certainty of Evidence Conclusions</i>		
Wu, 2021 ²³	Chronic low back pain	Compared to sham or active therapy, myofascial release significantly improved pain in patients with chronic low back pain.
Skelly, 2020 ²⁷	Chronic low back pain (short-term)	Compared to sham and active therapy/usual care, massage therapy was associated with small, short-term improvements in pain.
Ughreja, 2021 ¹⁸	Fibromyalgia	Compared to sham or active therapy, myofascial release has effect on pain.
Li, 2021 ²⁶	Low back pain	Compared to active therapy (physical therapy), there was evidence of pain relief using acupressure for low back pain.
Guzman Pavon, 2022 ²¹	Myofascial pain	Compared with no treatment, placebo, and active therapies, massage therapy had a greater effect on pain.
Kannan, 2022 ¹⁷	Post-breast cancer surgery	Compared to placebo, there were positive treatment effects for myofascial release on pain.
<i>Low or Very Low Certainty of Evidence Conclusions</i>		
He, 2020 ¹⁶	Cancer-related pain	Compared to active therapy, auricular acupressure was associated with reduced pain intensity.
Mai, 2022 ²⁵	Cancer-related pain	Compared to usual care, acupressure demonstrated a reduction in pain intensity.
Yang, 2023 ²⁸	Chronic back pain	Compared to active therapy, Tuina might be an effective and safe strategy for treating chronic low back pain in terms of pain.
Skelly, 2020 ²⁷	Chronic low back pain (intermediate-term)	Compared to sham and active therapy/usual care, massage therapy has no difference in intermediate-term improvements in pain.
Skelly, 2020 ²⁷	Chronic neck pain	Compared with attention or waitlist control, massage therapy was associated with a small to moderate improvement in short-term pain.
Li, 2021 ²⁶	Low back pain	Compared to active therapy or usual care, acupressure could provide clinical benefits to low back pain conditions and had a significant short-term response rate in low back pain management.
Guo, 2023 ²⁰	Mechanical neck Pain	Compared to active therapy, myofascial release had no significant difference between MFR and conventional intervention for mechanical neck pain.
Candy, 2020 ¹³	Palliative care needs	Compared to active control, there was some evidence that reflexology reduced pain. Compared to active therapy, evidence on the effectiveness of massage therapy in reducing pain was inconclusive.
Guimarães, 2022 ¹²	Plantar fasciitis	Compared to the control in the short-term, there is low certainty of evidence of myofascial release resulting in effective treatment for pain.
Zimpel, 2020 ²⁴	Post-caesarean pain	Compared to active therapy, we are uncertain if hand and foot massage therapy plus analgesia has any effect on pain.

Author, Year	Condition	Certainty of Evidence Conclusion
Chou, 2020 ¹⁹	Post-operative pain	Compared to sham, acupuncture is effective for post-operative pain. Compared to active therapy, massage therapy is effective for post-operative pain with decreased pain medication use at <1 week.
Smith, 2022 ²²	Post-partum pain	Compared to active or routine care, there was a reduction in pain from massage therapy following recovery from caesarean birth within 24 hours and at 7 days. Compared to sham or routine care, acupuncture studies found no improvement in pain.

Three high-level observations can be made from the evidence mapping process:

First, our update search identified 6 reviews describing conditions with moderate certainty of evidence of potential benefit from reviews published since July 2018. There were only reviews with conclusions of low and very low certainty of evidence in the last review. This suggests there is a stronger evidence base for the potential benefit of massage therapy for pain in some conditions since the last synthesis of literature.

Second, only about 13% of reviews (2 of 15) included more than 10 primary studies; 53% (8 of 15) reviews included between 2 and 5 studies as the basis for their conclusions about massage therapy for pain. This means a majority of the conclusions about the potential benefit for massage therapy were drawn from a small number of primary studies.

Third, 5 of 6 reviews with moderate certainty of evidence included analyses comparing massage therapy to more than 1 comparison group. Kannan et al compared myofascial release to sham only.¹⁷ Except for the review by Li et al,²⁶ the other reviews all included sham or placebo as a comparison group. Since manual therapies like massage therapy require some form of touching, without further details about what “sham” or “placebo” treatment entailed in these primary studies, the effect of massage therapy detected from only sham/placebo studies should be interpreted with caution and may not be as informative or useful compared to an effect detected from active therapies studies. Two reviews on chronic low back pain²⁷ and myofascial pain²¹ did not conduct separate analyses by comparison condition, so it is unclear whether the reported benefits of massage therapy indicate that massage therapy is superior to other treatment approaches for these conditions, or that the observed effects of massage therapy are driven mainly by a comparison to no treatment (in which any active treatment would be expected to have some effect). Three reviews about chronic low back pain,²³ fibromyalgia,¹⁸ and low back pain²⁶ did conduct separate analyses by comparator, and in these reviews, beneficial effects of massage therapy were apparent in comparisons to sham/placebo as well as to active therapy.

Adverse Events

Evidence about adverse events was collected by about half of the included reviews and no serious adverse events were reported. While 9 of 15 reviews described adverse events, only 2 reviews included certainty of evidence conclusions for adverse events.

In a review about post-caesarean pain, the authors reported data for adverse events in the form of “anxiety assessed by different scores with the use of massage therapy at 90 minutes after the

intervention and at 60 minutes after the intervention.”²⁴ It is uncertain if there was a difference between groups, and the authors rated this conclusion very low certainty of evidence. In another review about low back pain, <1% to 26% of participants reported additional pain after receiving massage therapy.²⁷ The authors found no difference between groups for pain experienced post-massage therapy and rated this conclusion low certainty of evidence. The same review also included neck pain. There were reports of mild adverse effects such as discomfort or pain during or after Swedish massage therapy, increased pain after Tuina, or “dizziness, sleepiness, mood swings, nausea, difficulty staying asleep, difficulty moving the head and neck.”²⁷ The authors found no difference between groups for these adverse events and rated this conclusion low certainty of evidence.

DISCUSSION

Our evidence map includes 15 new systematic reviews published since July 2018, and from these, 6 reviews reported moderate certainty of evidence for beneficial effect of massage therapy for pain. Most of these conditions were also represented in the previous evidence map. Post-breast cancer surgery pain is a newly identified condition with moderate certainty of evidence that myofascial release compared to sham has a potential beneficial effect on pain.¹⁷ There was a variety of massage therapy techniques included in the primary studies of included reviews, but inconsistent reporting of details about the interventions (*eg*, frequency, duration, follow-up) made it difficult to provide further synthesis of the data regarding the delivery of massage therapy for pain. An implication of this ambiguity is that translating this research into practice is challenging, since the provider needs to know what type of massage therapy was used for which condition and at what frequency/duration to deliver it in a clinical setting. The ongoing VERDICT trial is attempting to determine this kind of “dose” information for chiropractic care; a similar effort is needed for massage therapy.

Massage therapy is a broad term that is inclusive of many styles and techniques. We applied exclusion criteria determined *a priori* to help identify publications for inclusion in the evidence map. Despite that, there was still a lack of clarity in determining “what is massage therapy.” For instance, acupressure is sometimes considered acupuncture and other times considered massage therapy, depending on author definition. We encountered this situation in a separate evidence map of acupuncture, in which we found acupressure studies labeled as a type of acupuncture in acupuncture reviews. We excluded these primary studies of acupressure from the acupuncture evidence map. Similarly, we came across acupressure studies within reviews of acupuncture in the current search. In this case, we only reviewed and included publications that were explicitly labeled acupuncture *and* acupressure and did not review any publications about acupuncture only. This highlights a fundamental issue with examining the evidence base of massage therapy for pain when there is ambiguity in defining what is considered massage therapy.

Another limitation is the use of sham/placebo treatment as a comparison group for massage therapy. Most reviews did not specify what the sham treatment entailed. For reviews that did include additional details, sham was listed as “sham short-wave diathermy, and ultrasound,”¹⁸ “sham dry needling,”¹⁸ or “sham myofascial release.”²¹ It is conceivable that even the “light touch” or touch “with no clear criterion”²⁹ used in sham massage therapy may have some positive effect, meaning that patients who receive the massage therapy intervention and those who receive a sham massage therapy *both* could demonstrate some degree of symptom improvement. In other words, unlike a pharmaceutical placebo, sham massage therapy may not be truly inactive. Use of a partially active sham condition tends to attenuate observed treatment effects: between-group differences in the outcome are smaller than they would be if the sham condition had been truly inactive. Without further details regarding sham/placebo treatments, findings from systematic reviews with primary studies comparing massage therapy versus sham/placebo should be interpreted with caution, and these findings may not be as informative or useful compared to an effect detected from active therapy/usual care studies. Moreover, limitations of sham comparators raise the question of whether sham/placebo treatment is an appropriate comparison group in massage therapy trials. It may be more informative to compare massage therapy to other treatments that are accessible and whose benefits are known, so that any added beneficial effect of massage therapy could be better isolated and understood.

Because all conclusions were rated low or very low certainty of evidence in the previous review, having identified 6 moderate certainty of evidence conclusions suggests there may be a stronger evidence base for the potential benefit of massage therapy now than in 2018. However, all 6 conclusions were drawn from analyses completed with fewer than 10 primary studies in each of the respective reviews. In addition, only 3 of the 6 reviews included primary studies published in or after 2018. Reviews by Ughreja et al about the effect of myofascial release on fibromyalgia,¹⁸ by Li et al about the effect of acupressure compared to active therapy on low back pain,²⁶ and by Skelly et al about the short- and intermediate-term effect of massage therapy on chronic low back pain²⁷ did not include any primary studies published after 2018. Guzmán Pavón et al included 8 primary studies about massage therapy for treatment of myofascial pain, of which 3 studies were published in and after 2018;²¹ Wu et al included 4 of 8 studies published since 2018 about myofascial release for chronic low back pain,²³ and Kannan et al include 2 studies about myofascial release for post-breast cancer surgery pain, of which 1 study was published in 2018.¹⁷ This means no studies in the first 3 reviews and only about 50% of primary studies in the latter 3 reviews are considered “new” evidence which contributed to the higher certainty of evidence rating since our last literature search.

Despite these limitations, the moderate certainty of evidence conclusions identified in the current review of massage therapy’s potential benefit for back pain (including chronic low back pain and chronic back pain), fibromyalgia, myofascial pain, and breast-cancer-related pain represent a step in the right direction toward establishing a stronger evidence base for effect of massage therapy on pain, but more work in producing high-quality RCTs needs to be done to advance the field. It is only when systematic reviews and meta-analyses are conducted with high-quality primary studies that the effects or lack of effects of massage therapy on pain will reach higher certainties of evidence. For any conclusion of potential benefit, a high certainty of evidence rating means “we are very confident that the true effect lies close to that of the estimate of the effect.”³⁰

LIMITATIONS

There are two main limitations to this evidence map. The first, common to all systematic reviews, is that we may not have identified all the potentially eligible evidence. If a systematic review was published in a journal not indexed in any of the 5 databases we searched, and we did not identify it as part of our search of references of included publications, then we would have missed it. Nevertheless, our search strategy did identify more than 200 publications about massage therapy for pain published since July 2018, so we did not suffer from a lack of potential reviews to evaluate.

The second limitation of evidence maps is that we did not independently evaluate the source evidence; in other words, we took the conclusions of the authors of the systematic review “at face value.” That is the nature of an evidence map. Particular to this application of the mapping process, for the 1 health condition that had more than 1 eligible review (*ie*, back pain), we only mapped the review we deemed most informative. This necessarily requires judgment, and others could disagree with that judgment. We included the citation for the review excluded from the map for this “overlap” reason in Appendix B, and interested readers can review it for additional information. As in all evidence-based products, and particularly in one such as this covering a large and complex evidence base, it is possible that there are errors of data extraction and compilation. We used dual review to minimize the chance of such errors, but if we are notified of errors, we will correct them.

FUTURE RESEARCH

The vast majority of the conclusions of the eligible systematic reviews were classified as low or very low certainty of evidence, indicating that the most critical research need is for better evidence to increase certainty of evidence for massage therapy for pain. Studies comparing massage therapy to placebo or sham are probably not the priority; rather the priority should be studies comparing massage therapy to other recommended/accepted/active therapies for pain. Studies comparing massage therapy to other recommended therapies should also have a sufficiently long follow-up time period to allow any non-specific effects (*eg*, of getting something “new”) to dissipate. For example, for studies of chronic pain, this time period has been proposed to be at least 6 months.

Furthermore, the importance of reporting sufficient details about massage therapy as the intervention of interest, as well as details about the comparison group, cannot be overstated. The type and schedule of massage therapy needs careful documentation so findings can be applied in other settings. In addition, although adverse events from massage therapy for pain appear to be rare, instituting more consistent and standardized reporting of adverse events in clinical trials will provide additional insights to the application and appropriateness of massage therapy as a non-pharmacological treatment for pain.

For painful conditions of priority to the VA that currently do not have at least moderate-certainty evidence supporting use of massage therapy, new studies that address limitations of existing research are needed. The field of massage therapy would be best advanced by educating the wider research community with clearer definitions of “massage therapy” and whether it is appropriate to include multiple modalities in the same systematic review.

CONCLUSIONS

There is a paucity of systematic reviews of massage therapy for pain. Although the number of conclusions about the effectiveness of massage therapy that were judged to have at least moderate certainty of evidence is greater now than in 2018, but it is still small relative to the need. More high-quality randomized controlled trials are needed to provide a stronger evidence base to assess the effect of massage therapy on pain.

REFERENCES

1. Vickers A, Zollman C. Massage therapies. *BMJ*. 1999;319(7219):1254-7.
2. Department of Veterans Affairs. *VA HANDBOOK 5005/108 Transmittal Sheet*. 2019.
3. NCCIH. Massage Therapy: What You Need To Know. National Institutes of Health. <https://www.nccih.nih.gov/health/massage-therapy-what-you-need-to-know>
4. Fritz S. *Mosby's fundamentals of therapeutic massage*. 2000.
5. Tarver HM, Luchau, T., & Salvo, S. G. *History of Massage Therapy. Massage Therapy-E-Book: Principles and Practice*. 2015.
6. Moyer CA, Rounds J, Hannum JW. A meta-analysis of massage therapy research. *Psychol Bull*. Jan 2004;130(1):3-18. doi:10.1037/0033-2909.130.1.3
7. Swedish Institute College of Health Sciences. <https://www.swedishinstitute.edu/history/>
8. Taylor SL, Gelman HM, DeFaccio R, et al. We Built it, But Did They Come: Veterans' Use of VA Healthcare System-Provided Complementary and Integrative Health Approaches. *J Gen Intern Med*. Mar 2023;38(4):905-912. doi:10.1007/s11606-022-07889-4
9. Veterans Health Administration. VHA Directive 1137. 2017.
10. Miake-Lye I, Lee J, Lugar T, et al. *Massage for Pain: An Evidence Map*. 2016. <https://www.ncbi.nlm.nih.gov/pubmed/28211657>
11. Miake-Lye IM, Mak S, Lee J, et al. Massage for Pain: An Evidence Map. *J Altern Complement Med*. May 2019;25(5):475-502. doi:10.1089/acm.2018.0282
12. Guimarães JS, Arcanjo FL, Leporace G, et al. Effects of therapeutic interventions on pain due to plantar fasciitis: A systematic review and meta-analysis. *Clin Rehabil*. Dec 26 2022;2692155221143865. doi:10.1177/02692155221143865
13. Candy B, Armstrong M, Flemming K, et al. The effectiveness of aromatherapy, massage and reflexology in people with palliative care needs: A systematic review. *Palliat Med*. Feb 2020;34(2):179-194. doi:10.1177/0269216319884198
14. The GRADE Working Group. Grading of recommendations assessment, development and evaluation (GRADE).
15. AHRQ. Evidence-based Practice Center. <https://www.ahrq.gov/research/findings/evidence-based-reports/index.html>
16. He Y, Guo X, May BH, et al. Clinical Evidence for Association of Acupuncture and Acupressure With Improved Cancer Pain: A Systematic Review and Meta-Analysis. *JAMA Oncol*. Feb 1 2020;6(2):271-278. doi:10.1001/jamaoncol.2019.5233
17. Kannan P, Lam HY, Ma TK, Lo CN, Mui TY, Tang WY. Efficacy of physical therapy interventions on quality of life and upper quadrant pain severity in women with post-mastectomy pain syndrome: a systematic review and meta-analysis. *Qual Life Res*. Apr 2022;31(4):951-973. doi:10.1007/s11136-021-02926-x
18. Ughreja RA, Venkatesan P, Balebail Gopalakrishna D, Singh YP. Effectiveness of myofascial release on pain, sleep, and quality of life in patients with fibromyalgia syndrome: A systematic review. *Complement Ther Clin Pract*. Nov 2021;45:101477. doi:10.1016/j.ctcp.2021.101477
19. Chou R, Wagner J, Ahmed AY, et al. AHRQ Comparative Effectiveness Reviews. *Treatments for Acute Pain: A Systematic Review*. Agency for Healthcare Research and Quality (US); 2020.
20. Guo Y, Lv X, Zhou Y, et al. Myofascial release for the treatment of pain and dysfunction in patients with chronic mechanical neck pain: Systematic review and meta-analysis of

- randomised controlled trials. *Clin Rehabil*. Oct 27 2022;2692155221136108. doi:10.1177/02692155221136108
21. Guzmán Pavón MJ, Cavero Redondo I, Martínez Vizcaíno V, Ferri Morales A, Lorenzo García P, Álvarez Bueno C. Comparative Effectiveness of Manual Therapy Interventions on Pain and Pressure Pain Threshold in Patients With Myofascial Trigger Points: A Network Meta-analysis. *Clin J Pain*. Dec 1 2022;38(12):749-760. doi:10.1097/ajp.0000000000001079
 22. Smith CA, Hill E, Denejkina A, Thornton C, Dahlen HG. The effectiveness and safety of complementary health approaches to managing postpartum pain: A systematic review and meta-analysis. *Integr Med Res*. Mar 2022;11(1):100758. doi:10.1016/j.imr.2021.100758
 23. Wu Z, Wang Y, Ye X, et al. Myofascial Release for Chronic Low Back Pain: A Systematic Review and Meta-Analysis. *Front Med (Lausanne)*. 2021;8:697986. doi:10.3389/fmed.2021.697986
 24. Zimpel SA, Torloni MR, Porfirio GJ, Flumignan RL, da Silva EM. Complementary and alternative therapies for post-caesarean pain. *Cochrane Database Syst Rev*. Sep 1 2020;9(9):Cd011216. doi:10.1002/14651858.CD011216.pub2
 25. Mai QL, Li XJ, Yang D, Zhang XY, Peng K, Hao YF. Effects of acupressure on cancer-related pain management: A systematic review and meta-analysis of randomized controlled trials. Article. *Eur J Integr Med*. Apr 2022;51:9. 102120. doi:10.1016/j.eujim.2022.102120
 26. Li T, Li X, Huang F, Tian Q, Fan ZY, Wu S. Clinical Efficacy and Safety of Acupressure on Low Back Pain: A Systematic Review and Meta-Analysis. *Evid Based Complement Alternat Med*. 2021;2021:8862399. doi:10.1155/2021/8862399
 27. Skelly AC, Chou R, Dettori JR, et al. AHRQ Comparative Effectiveness Reviews. *Noninvasive Nonpharmacological Treatment for Chronic Pain: A Systematic Review Update*. Agency for Healthcare Research and Quality (US); 2020.
 28. Yang J, Zhou X, Ma QY, et al. Efficacy and safety of Tuina for chronic nonspecific low back pain: A PRISMA-compliant systematic review and meta-analysis. Review. *Medicine*. Mar 2023;102(9):11. doi:10.1097/md.00000000000033018
 29. Lavazza C, Galli M, Abenavoli A, Maggiani A. Sham treatment effects in manual therapy trials on back pain patients: a systematic review and pairwise meta-analysis. *BMJ Open*. May 4 2021;11(5):e045106. doi:10.1136/bmjopen-2020-045106
 30. Li H, Liu H. Combined effects of acupuncture and auricular acupressure for relieving cancer-related fatigue in patients during lung cancer chemotherapy: A protocol for systematic review and meta-analysis. *Medicine (Baltimore)*. Oct 22 2021;100(42):e27502. doi:10.1097/md.00000000000027502

APPENDIX A. SEARCH STRATEGIES

PubMed

7/10/2018 – 12/31/2022; English Language

massag*[tiab] OR shiatsu[tiab] OR "myofascial"[tiab] OR acupressure*[tiab] OR
 Massage[Mesh] OR Acupressure[Mesh] OR "Myofascial Release Therapy"[Mesh]
 AND

(systematic*[tiab] AND review[tiab]) OR "systematic overview*"[tiab] OR "Cochrane
 review*"[tiab] OR "systemic review*"[tiab] OR meta-analy*[tiab] OR metaanaly*[tiab] OR
 "meta analysis"[tiab] OR meta-review[tiab] OR meta-synthesis[tiab] OR "meta synthesis"[tiab]
 OR metasyntesis[tiab] OR "quantitative review"[tiab] OR "quantitative synthesis"[tiab] OR
 meta-analy*[tiab] OR (meta-analytic*[tiab] AND review[tiab]) OR meta-analysis[pt] OR
 "systematic review"[pt] OR "systematic review*"[tiab]

Results: **709**

CINAHL

07/2018 – 12/2023; English; Academic Journals

((TI massag* OR AB massag*) OR (TI shiatsu OR AB shiatsu) OR (TI myofascial OR AB
 myofascial) OR (TI acupressure* OR AB acupressure*) OR (MH "Massage+") OR (MH
 Acupressure+) OR (MH "Myofascial Release"))

AND

((TI systematic* OR AB systematic*) AND (TI review OR AB review)) OR (TI "systematic
 overview*" OR AB "systematic overview*") OR (TI "Cochrane review*" OR AB "Cochrane
 review*") OR (TI "systemic review*" OR AB "systemic review*") OR (TI meta-analy* OR AB
 meta-analy*) OR (TI metaanaly* OR AB metaanaly*) OR (TI "meta analysis" OR AB "meta
 analysis") OR (TI meta-review OR AB meta-review) OR (TI meta-synthesis OR AB meta-
 syntesis) OR (TI "meta synthesis" OR AB "meta synthesis") OR (TI metasyntesis OR AB
 metasyntesis) OR (TI "quantitative review" OR AB "quantitative review") OR (TI "quantitative
 synthesis" OR AB "quantitative synthesis") OR ((TI meta-analytic* OR AB meta-analytic*)
 AND (TI review OR AB review)) OR (TI "systematic review*" OR AB "systematic review*")
 OR (MH "Systematic Review")

Results: **555**

Cochrane Database of Systematic Reviews

Filters: 07/2018 – 12/2023; Excluding Trials

((massag* OR shiatsu OR myofascial OR acupressure*):ti,ab OR [mh Massage] OR [mh Acupressure] OR [mh "Myofascial Release Therapy"])

Results: **36****Web of Science**

Filters: 2018-2023; English

(TS=massag* OR TS=shiatsu OR TS=myofascial OR TS=acupressure*)

AND

((TI=systematic* OR AB=systematic*) AND (TI=review OR AB=review)) OR (TI="systematic overview*" OR AB="systematic overview*") OR (TI="Cochrane review*" OR AB="Cochrane review*") OR (TI="systemic review*" OR AB="systemic review*") OR (TI=meta-analy* OR AB=meta-analy*) OR (TI=metaanaly* OR AB=metaanaly*) OR (TI="meta analysis" OR AB="meta analysis") OR (TI=meta-review OR AB=meta-review) OR (TI=meta-synthesis OR AB=meta-synthesis) OR (TI="meta synthesis" OR AB="meta synthesis") OR (TI=metasynthesis OR AB=metasynthesis) OR (TI="quantitative review" OR AB="quantitative review") OR (TI="quantitative synthesis" OR AB="quantitative synthesis") OR ((TI=meta-analytic* OR AB=meta-analytic*) AND (TI=review OR AB=review)) OR (TI="systematic review*" OR AB="systematic review*")

Results: **960****AMED**

Filters: 07/2018 – 12/2022; English; Academic Journals

((TI massag* OR AB massag*) OR (TI shiatsu OR AB shiatsu) OR (TI myofascial OR AB myofascial) OR (TI acupressure* OR AB acupressure*) OR (DE "MASSAGE") OR (DE "ACUPRESSURE"))

AND

((TI systematic* OR AB systematic*) AND (TI review OR AB review)) OR (TI "systematic overview*" OR AB "systematic overview*") OR (TI "Cochrane review*" OR AB "Cochrane review*") OR (TI "systemic review*" OR AB "systemic review*") OR (TI meta-analy* OR AB meta-analy*) OR (TI metaanaly* OR AB metaanaly*) OR (TI "meta analysis" OR AB "meta analysis") OR (TI meta-review OR AB meta-review) OR (TI meta-synthesis OR AB meta-

synthesis) OR (TI "meta synthesis" OR AB "meta synthesis") OR (TI metasynthesis OR AB metasynthesis) OR (TI "quantitative review" OR AB "quantitative review") OR (TI "quantitative synthesis" OR AB "quantitative synthesis") OR ((TI meta-analytic* OR AB meta-analytic*) AND (TI review OR AB review)) OR (TI "systematic review*" OR AB "systematic review*")

Results: **960**

APPENDIX B. EXCLUDED STUDIES

Only One Primary Study About Interventions of Interest, $N = 11$

1. Anderson, L., et al., Effectiveness of breast massage for the treatment of women with breastfeeding problems: a systematic review. *JBIC Database System Rev Implement Rep*, 2019. 17(8): p. 1668-1694.
2. Asquini, G., et al., Effectiveness of manual therapy applied to craniomandibular structures in temporomandibular disorders: A systematic review. *Journal of Oral Rehabilitation*, 2022. 49(4): p. 442-455.
3. Crepinsek, M.A., et al., Interventions for preventing mastitis after childbirth. *Cochrane Database Syst Rev*, 2020. 9(9): p. Cd007239.
4. Fan, Z., et al., The effectiveness and safety of Tuina for tension-type headache: A systematic review and meta-analysis. *Complementary Therapies in Clinical Practice*, 2021. 43: p. N.PAG-N.PAG.
5. Franco, J.V.A., et al., Non-pharmacological interventions for treating chronic prostatitis/chronic pelvic pain syndrome: a Cochrane systematic review. *BJU Int*, 2019. 124(2): p. 197-208.
6. Hadoush, H., et al., Effectiveness of non-pharmacological rehabilitation interventions in pain management in patients with multiple sclerosis: Systematic review and meta-analysis. *NeuroRehabilitation*, 2022. 50(4): p. 347-365.
7. Huisstede, B.M., et al., Carpal Tunnel Syndrome: Effectiveness of Physical Therapy and Electrophysiological Modalities. An Updated Systematic Review of Randomized Controlled Trials. *Arch Phys Med Rehabil*, 2018. 99(8): p. 1623-1634.e23.
8. Juncker, R.B., F.M. Mirza, and J.J. Gagnier, Reduction in opioid use with perioperative non-pharmacologic analgesia in total knee arthroplasty and ACL reconstruction: a systematic review. *Sicot j*, 2021. 7: p. 63.
9. López-Liria, R., et al., Efficacy of Physiotherapy Treatment in Primary Dysmenorrhea: A Systematic Review and Meta-Analysis. *Int J Environ Res Public Health*, 2021. 18(15).
10. Schulze, N.B., et al., Efficacy of Manual Therapy on Pain, Impact of Disease, and Quality of Life in the Treatment of Fibromyalgia: A Systematic Review. *Pain Physician*, 2020. 23(5): p. 461-476.
11. Zakarija-Grkovic, I. and F. Stewart, Treatments for breast engorgement during lactation. *Cochrane Database Syst Rev*, 2020. 9(9): p. Cd006946.

Unable to Distinguish Effect for Massage Therapy from Other Included Interventions, $N = 5$

1. Denny, D., et al., Trigger Point Manual Therapy for the Treatment of Chronic Noncancer Pain in Adults: A Systematic Review and Meta-analysis. *Archives of Physical Medicine and Rehabilitation*, 2019. 100(3): p. 562-577.
2. Jung, A., et al., Effectiveness of physiotherapy interventions on headache intensity, frequency, duration and quality of life of patients with tension-type headache. A systematic review and network meta-analysis. *Cephalalgia*, 2022. 42(9): p. 944-965.
3. Kamonseki, D.H., et al., Effectiveness of manual therapy in patients with tension-type headache. A systematic review and meta-analysis. *Disability and Rehabilitation*, 2022. 44(10): p. 1780-1789.

4. Qin, D., et al., Acupuncture and related techniques for postoperative pain after hemorrhoidectomy: A systematic review and network meta-analysis. *Eur J Integr Med*, 2020. 37.
5. Wu, Q., J. Zhao, and W. Guo, Efficacy of massage therapy in improving outcomes in knee osteoarthritis: A systematic review and meta-analysis. *Complement Ther Clin Pract*, 2022. 46: p. 101522.

Not an Intervention of Interest, $N = 3$

1. Effects of Myofascial Manipulative Therapies in Chronic Pelvic Pain Syndromes: A Systematic Review and Meta-Analysis. *Journal of Bodywork & Movement Therapies*, 2023. 33: p. e92-e92.
2. Dal Farra, F., et al., Effectiveness of Myofascial Manual Therapies in Chronic Pelvic Pain Syndrome: A Systematic Review and Meta-Analysis. *Int Urogynecol J*, 2022. 33(11): p. 2963-2976.
3. Fuentes-Márquez, P., I. Cabrera-Martos, and M.C. Valenza, Physiotherapy interventions for patients with chronic pelvic pain: A systematic review of the literature. *Physiother Theory Pract*, 2019. 35(12): p. 1131-1138.

Not a Comparison of Interest, $N = 2$

1. Lavazza, C., et al., Sham treatment effects in manual therapy trials on back pain patients: a systematic review and pairwise meta-analysis. *BMJ Open*, 2021. 11(5): p. e045106.
2. Mo, Z., et al., Comparisons of the Effectiveness and Safety of Tuina, Acupuncture, Traction, and Chinese Herbs for Lumbar Disc Herniation: A Systematic Review and Network Meta-Analysis. *Evidence-based Complementary & Alternative Medicine (eCAM)*, 2019: p. 1-10.

Review Meeting Eligibility Criteria but Not Included in Evidence Map in Favor of a Better Review, $N = 1$

1. Chen, Z., et al., The effects of myofascial release technique for patients with low back pain: A systematic review and meta-analysis. *Complement Ther Med*, 2021. 59: p. 102737.

Self-Delivered Therapy, $N = 1$

1. Cao, X., et al., PFMT relevant strategies to prevent perineal trauma: a systematic review and network meta-analysis. *Arch Gynecol Obstet*, 2022.

APPENDIX C. EVIDENCE TABLE

Author, Year Country	Condition	Type of Massage Therapy Comparator # of Included Primary Studies About Massage Therapy (New Studies Published Since 2018)	Certainty of Evidence Rating	Certainty of Evidence Conclusion
He, 2020 ¹⁶ China, Australia	Cancer-related pain	Auricular acupressure Active therapy/usual care/control 2 (0)	Low or Very Low	Compared to active therapy, auricular acupressure was associated with reduced pain intensity.
Mai, 2022 ²⁵ Iran, China	Cancer-related pain	Acupressure Active therapy/usual care/control 23 (13)	Low or Very Low	Compared to usual care, acupressure demonstrated a reduction in pain intensity.
Wu, 2021 ²³ China	Chronic low back pain	Myofascial release Mixed with subgroups 8 (4)	Moderate	Compared to sham or active therapy, myofascial release significantly improved pain in patients with chronic low back pain.
Yang, 2023 ²⁸ China, Korea, USA	Chronic back pain	Tuina Active therapy/usual care/control 12 (7)	Low or Very Low	Compared to active therapy, Tuina might be an effective and safe strategy for treating chronic low back pain in terms of pain.
Skelly, 2020 ²⁷ USA	Chronic low back pain	Massage therapy Mixed with no subgroups 5 (0)	Moderate	Compared to sham and active therapy/usual care, massage therapy was associated with small, short-term improvements in pain.
		Massage therapy Mixed with no subgroups 3 (0)	Low or Very Low	Compared to sham and active therapy/usual care, massage therapy has no difference in intermediate-term improvements in pain.
	Chronic neck pain	Massage therapy Active therapy/usual care/control 3 (0)	Low or Very Low	Compared with attention or waitlist control, massage therapy was associated with a small to moderate improvement in short-term pain.
Ughreja, 2021 ¹⁸ India	Fibromyalgia	Myofascial release Mixed with subgroups 2 (0)	Moderate	Compared to sham or active therapy, myofascial release has effect on pain.

Author, Year Country	Condition	Type of Massage Therapy Comparator # of Included Primary Studies About Massage Therapy (New Studies Published Since 2018)	Certainty of Evidence Rating	Certainty of Evidence Conclusion
Li, 2021 ²⁶ China	Low back pain	Acupressure Active therapy/usual care/control 3 (0)	Moderate	Compared to active therapy (physical therapy), there was evidence of pain relief using acupressure for low back pain.
		Acupressure Active therapy/usual care/control 13 (5)	Low or Very Low	Compared to active therapy or usual care, acupressure could provide clinical benefits to low back pain conditions and had a significant short-term response rate in low back pain management.
Guo, 2023 ²⁰ China	Mechanical neck pain	Myofascial release Active therapy/usual care/control 9 (7)	Low or Very Low	Compared to active therapy, myofascial release had no significant difference between MFR and conventional intervention for mechanical neck pain.
Guzmán Pavón, 2022 ²¹ Spain, Chile, Paraguay	Myofascial pain	Massage therapy Mixed no subgroups 8 (3)	Moderate	Compared with no treatment, placebo, and active therapies, massage therapy had a greater effect on pain.
Candy, 2020 ¹³ England	Palliative care needs	Reflexology Active therapy/usual care/control 3 (1)	Low or Very Low	Compared to active control, there was some evidence that reflexology reduced pain.
		Massage therapy Active therapy/usual care/control 5 (0)	Low or Very Low	Compared to active therapy, evidence on the effectiveness of massage therapy in reducing pain was inconclusive.
Guimarães, 2022 ¹² Brazil	Plantar fasciitis	Myofascial release Active therapy/usual care/control 4 (2)	Low or Very Low	Compared to the control in the short-term, there is low certainty of evidence of myofascial release resulting in effective treatment for pain.
Kannan, 2022 ¹⁷ China	Post-breast cancer surgery	Myofascial release Sham/placebo 2 (1)	Moderate	Compared to placebo, there were positive treatment effects for myofascial release on pain.

Author, Year Country	Condition	Type of Massage Therapy Comparator # of Included Primary Studies About Massage Therapy (New Studies Published Since 2018)	Certainty of Evidence Rating	Certainty of Evidence Conclusion
Zimpel, 2020 ²⁴ Brazil	Post-caesarean pain	Massage therapy Active therapy/usual care/control 9 (2)	Low or Very Low	Compared to active therapy, we are uncertain if hand and foot massage therapy plus analgesia has any effect on pain.
Chou, 2020 ¹⁹ USA	Post-operative pain	Acupressure Sham/placebo 2 (0)	Low or Very Low	Compared to sham, acupressure is effective for post-operative pain.
		Massage therapy Active therapy/usual care/control 5 (2)	Low or Very Low	Compared to active therapy, massage therapy is effective for post-operative pain with decreased pain medication use at <1 week.
Smith, 2022 ²² Australia	Post-partum pain	Massage therapy Active therapy/usual care/control 4 (1)	Low or Very Low	Compared to active or routine care, there was a reduction in pain from massage therapy following recovery from caesarean birth within 24 hours and at 7 days.
		Acupressure Mixed with subgroups 2 (1)	Low or Very Low	Compared to sham or routine care, acupressure studies found no improvement in pain.

APPENDIX D. PEER REVIEW DISPOSITION

Comment #	Reviewer #	Comment	Author Response
<i>Are the objectives, scope, and methods for this review clearly described?</i>			
1	1	Yes	Thank you.
2	2	Yes	Thank you.
3	3	Yes	Thank you.
4	4	Yes	Thank you.
5	5	Yes	Thank you.
6	7	Yes	Thank you.
7	8	Yes	Thank you.
8	9	Yes	Thank you.
<i>Is there any indication of bias in our synthesis of the evidence?</i>			
9	1	No	Thank you.
10	2	No	Thank you.
11	3	No	Thank you.
12	4	No	Thank you.
13	5	No	Thank you.
14	7	No	Thank you.
15	8	No	Thank you.
16	9	Yes - sample bias, although the author recognized that on their limitations. my recommendations were included. At least from my conclusion, i will say " The number of conclusions about the short-term effectiveness of massage that were judged to have at least moderate certainty of evidence is greater now that in 2018, but still small relative to the need. Also if you try to compare the previous review with the new one, using "benefit" instead of "potential benefit" in my opinion mislead the reader.	We have revised the wording based on your suggestions.

Comment #	Reviewer #	Comment	Author Response
<i>Are there any published or unpublished studies that we may have overlooked?</i>			
17	1	No	Thank you.
18	2	No	Thank you.
19	3	No	Thank you.
20	4	No	Thank you.
21	5	No	Thank you.
22	7	No	Thank you.
23	8	No	Thank you.
24	9	<p>Yes - Synthesizing the Strength of the Evidence of Complementary and Integrative Health Therapy for Pain. Giannitrapani, etal. Pain Medicine, 0(0), 2019, 1-10. see my comments in the review. But, this is an article in a peer review journal with an Evidence map (including massage). The used the proper wording or "Evidence of a Potential Positive effect" or "Potential Benefit". The majority of the evidence suggested Massage has unclear or mixed effect. Only a small group of article confirmed your finding regarding "chronic back pain", "Chronic low back pain", "Myofascial pain".</p>	<p>Our search strategy was limited to publications that are systematic reviews. Since this publication is not a systematic review, it would not have been identified in our search.</p>
<i>Additional suggestions or comments can be provided below.</i>			
25	1	<p>Would it be possible to indicate the colors for the intervention in the key to the Evidence Map with some other shape rather than a circle. I found interpreting the map to be confusing with too many circles. Maybe a thin rectangle or some other shape.</p>	<p>We have updated the key.</p>
26	1	<p>On page 2 in the Executive Summary the word Results is there on line 17/18. Is the rest of the sentence missing or just an error? I would like to see a sentence in the Executive Summary describing the colors, shapes and size key. Something like "Color denotes intervention</p>	<p>This has been edited, thank you. We have added to sentence to the executive summary.</p>

Comment #	Reviewer #	Comment	Author Response
		type, shape denotes type of comparator and size indicates the number of studies included in the review". Also listing an example would be helpful like in the text of the Evidence Report on page 14 line 6-15. If the reader is only reading the Executive Summary then the map is quite confusing without some additional explanation.	
27	1	I'm curious as to why the following reviews listed in Appendix B were not included in the analysis: Number 3 (chronic noncancer pain); 5 (Jung) & 6 (Kamonseki) for headache and 8 Wu et al regarding knee arthritis? Table lists this reason: "Not an Intervention of Interest". Page 8 line 6,7 says that "The operational partner selected only painful conditions to be included the evidence map" Does this mean that headaches, non-cancer pain and knee arthritis aren't painful conditions or was there another reason they were excluded? If there are other reasons then the table and text should be changed to reflect that.	This exclusion reason refers to the included interventions used for treatment of the respective conditions. These reviews did not separate the analysis of the effect of different treatments for a condition, which means we were unable to distinguish the effect for massage therapy from other included interventions. We have relabeled the exclusion reason for this group of publications to better describe the reason for exclusion.
28	1	Page 10, line 61 reads "See Appendix B for more details about the included reviews". I think you mean Appendix C.	This has been edited, thank you.
29	1	Page 13: Text says "message" instead of "massage" in three different spots, line 30, 32, 35.	This has been edited, thank you.
30	2	please consider using the term "massage therapy" consistently throughout the document, importantly here in this Executive Summary Key Findings	We have made edits to use the term "massage therapy" consistently throughout the document.
31	2	Suggest clarification here, if the "sham/placebo" control in some studies included hands on contact (touching) without soft-tissue manipulation, that could have some therapeutic benefit, yes; would also clarify what was meant as "active therapies" if there is	We added details in methods to clarify what "active therapies" could be.

Comment #	Reviewer #	Comment	Author Response
		detail (exercise?) meaning the patient performed the activities	
32	2	Not sure if you want to elaborate here that our VHA data being published showing benefits of these non-pharmacologic cares, such as Massage Therapy, has much broader implications for the health of the general US population, not only Veterans.	We have revised the introduction, thank you
33	2	Prefer we use VA definition of Massage Therapy: "Massage Therapy is the practice of manual assessment and manipulation of the superficial soft tissues of skin, muscle, tendon, ligament, fascia, and the structures that lie within the superficial tissues for therapeutic purpose"	This has been edited, thank you.
34	2	Here I would indicate that Massage Therapy comprises different techniques, styles, applications (sports massage, deep tissue, tui na, shiatsu, etc.); the word "modalities" implies something else. I would make the distinction that Massage Therapists are uniquely trained, qualified and credentialed to deliver Massage Therapy. Other health care professionals, such as physical therapists, chiropractors, nurses, and acupuncturists may provide manual therapy, massage, soft-tissue manipulation and acupressure when properly trained and qualified.	We have revised the introduction, thank you.
35	2	notes - historical records predate 3000 BC; the first massage therapy school in the United States was established in 1916 as the Swedish Gymnastic Institute (NYC) - for Medical Gymnastics and Massage	We have revised the introduction, thank you.
36	2	Please include my middle initial: Sharon M Weinstein, thank you	This has been added.

Comment #	Reviewer #	Comment	Author Response
37	2	typo - message, should read "massage," suggest scan document for word "message" and correct as needed, thank you	This has been edited.
38	2	please see prior comment about "sham/placebo" - hands on contact, or touch without soft-tissue manipulation may have therapeutic benefit, multiple contributing factors to pain relief, agree that without details of control intervention, interpretations of studies is limited	Thank you for your comment.
39	2	massage is a general term not reflective of any one technique; in VHA we have defined Massage Therapy specifically (see previous comment); we refer to acupressure specifically as a defined technique; acupressure falls under the category of Massage Therapy as it is a manipulation of soft-tissue for a defined therapeutic purpose; acupressure is the point pressure manipulation (without needles) following the same theory on which acupuncture needling is based; important to include acupressure but not acupuncture as massage therapy for purposes of this review, if a study cannot separate them as treatments, I would hold it out	Thank you for your comment.
40	2	I could not agree more; in studies the treatment technique/frequency/duration must be described in detail AND ALSO details of the pain condition(s) must be included; pain research has been generally flawed in that regard, "back pain" for example comprises multiple pathophysiologies, some of which will respond quite well to soft-tissue manipulation and others not as well -- will have better predictions for outcomes and adverse events from future studies hopefully with these inclusions in designs	Thank you for your comment.

Comment #	Reviewer #	Comment	Author Response
41	2	again, please consider using term "massage therapy" throughout, thank you	We had edited the document to use "massage therapy" throughout, thank you.
42	2	I am curious why this review was held out for "not an intervention of interest" as it appears to me there was inclusion of massage therapy as the intervention ?	This review was excluded because we were unable to separate the effect of massage therapy for studies of interest from studies which had employed self-delivered massage therapy as treatment.
43	3	Please use consistency in office name here: Integrative Health Coordinating Center VHA Office of Patient Centered Care and Cultural Transformation	This has been edited.
44	3	Update Juli title to: National Lead Clinical Champion	This has been edited, thank you.
45	3	Please update: Alison M. Whitehead, MPH, C-IAYT, E-RYT200 (and see office comment above)	This has been edited, thank you.
46	3	which Coordinating Center? ESP? Might note that since the operational partners are all from Integrative Health Coordinating Center	This has been edited, thank you.
47	3	perhaps note that there are other indications for massage therapy as well but this was focused on pain management	This has been edited, thank you.
48	3	use massage therapy (instead of massage) throughout	We have edited this throughout, thank you.
49	3	please update per above: Alison M. Whitehead, MPH, C-IAYT, E-RYT200	This has been edited, thank you.
50	3	sounds odd to say "painful conditions" do you mean "pain conditions"?	This has been edited, thank you.
51	4	Please list Clinical Champion here as national role.	This has been edited, thank you.
52	4	Maybe something about how there is other evidence for the usefulness of MT other than pain but this initial scope was to look only at pain as an outcome.	We have revised the introduction, thank you.
53	4	The word results looks like a sentence fragment.	This has been edited, thank you.

Comment #	Reviewer #	Comment	Author Response
54	4	I think we should consider if we want to include reflexology as a massage therapy intervention here.	Upon discussion with the OPs, reflexology will be included as a massage therapy intervention.
55	4	Maybe say from : "other interventions" instead of "active therapies". Maybe it is a presumption that active therapy is a good comparison vs. usual care.	We have changed the label to "active therapies or usual care" throughout
56	4	Again wonder if we should state in this area that massage may be used for conditions other than pain but this review is focused on pain and doesn't exclude that there are other indications.	This has been edited, thank you.
57	4	People use massage for things other than pain. Relaxation, lymphedema, etc.	The has been edited, thank you.
58	4	This is the definition of MT that we use in VA: "Clinical massage therapy is the manipulation of the soft tissues of the human body for therapeutic purposes."	The has been edited, thank you.
59	4	I think I would use physical therapist over chiropractor here.	This has been edited, thank you.
60	4	Add "for pain" at the end of this sentence - this is only for pain.	This has been edited, thank you.
61	4	Again active therapies or usual care, not just active therapies.	We have changed the label to "active therapy/ usual care" throughout
62	4	Might be helpful to have an overarching statement here that where evidence was collected about adverse events they were mild. I see that this is partially discussed later, but starting the paragraph with an assessment or ending the paragraph with an assessment based on the literature would be very helpful for the VA field.	We have added this statement, thank you.
63	5	Great job. I felt this research was thorough. Thank you	Thank you for your comment!
64	7	Indeed this is challenign as Massage therapy is credentially in carious ways in each country and state and region. The nomenclature of the	Thank you for the comment.

Comment #	Reviewer #	Comment	Author Response
		<p>specific techniques is also varied. It is vital that we continue this process and then build our staffing within VA to then be able to initiate more research. Massage therapists in the community often do not have the time, knowledge nor foudnation to create research into their techniques and results. Documentation of pain versus function also is a challenge. As we well know more often manyal techniques along with behavioral and exercise or movement otpimize outcomes. Many of us have been trained in manual techniques and various professional group have offered signficant manual interventions (physiotherapy, occupational therapy, nursing, chiropractic, physician, kinesiotehrapy, massage therapy). Thank you for this work. I look forward to additional contributions based on medical massage interventions including aquatic massage and body work techniques.</p>	
65	9	<p>Should be Potential Benefit (instead of Benefit) Please refers to previous review. Table was accurately using Potential benefits. Current title might mislead reader recommendations.</p>	<p>This has been edited, thank you.</p>
66	9	<p>Consider full table as previous Evidence Map. Also, although you are mention Number of included Studies to describe the evidence, most of the individuals or the sample was very small. For example, Skelly 2020 et al, suggested moderate SHORT-TERM (no more than a month) in a small sample study. Remember that this study might be use for implement project but this is not strong evidence.</p>	<p>The evidence table is in the appendix.</p>
67	9	<p>The question here is in the previous review, those 4 were classified as low to very low certainty but now they were upgraded to moderate certainty? what was changed? the author did a new study? From clinical</p>	<p>Thank you for the comment.</p>

Comment #	Reviewer #	Comment	Author Response
		perspective, that doesn't sound right. I don't think I will use this argument to support a stronger evidence base compared to 2018. That is the author's point of view? or this is supported by the evidence?	
68	9	Correct, considering the small number of primary studies. Too small a sample may prevent the findings from being extrapolated. -- Conclusion from this review can falsely mislead that massage has strong evidence.	Thank you for the comment.
69	9	This observation made the moderate certainty of evidence more weaker as it's difficult to separate to sham or placebo. For those 5, you have two reviews showing beneficial effect of massage for sham/placebo and active therapies.	Thank you for the comment.
70	9	Conclusions. Exercise, multidisciplinary rehabilitation, acupuncture, CBT, and mind-body practices were most consistently associated with durable slight to moderate improvements in function and pain for specific chronic pain condition -- Short term improvement in pain	Thank you for the comment.
71	9	This is an important limitation as the reviewers were unable to corroborate the data and follow the conclusions of the authors. Remembers that authors might introduce a bias opinion regarding their research program if this might affect their reputation.	Thank you for the comment.
72	9	This is an important topic. Glad that you add this comment in your article. Well said.	Thank you for the comment.
73	9	Great point. based on your data, the moderate evidence might suggest some improvement at short term, not indeterminate or long. This is important when we are reviewing clinical practice, and outcomes in rehabilitation.	Thank you for the comment.
74	9	"short-term effectiveness of massage"	This has been edited, thank you.

Comment #	Reviewer #	Comment	Author Response
75	9	<p>Surprise that the following article was not included on this review, keeping in mind that was funded by VA.</p> <p>Synthesizing the Strength of the Evidence of Complementary and Integrated Health Therapy for Pain. Giannitrapani et al. Pain Medicine0(0) 2019 1-10.</p> <p>It was conducted by your office VA Evidence Synthesis Program.</p>	This is not a systematic review.
76	9	<p>As i mentioned before, the evidence map, use "evidence of Potential Positive Effect (not benefit)" They pointed out the size of the literature review for the one that you are consider moderate certainty, quiet small. And for massage as part of the CIH Type. really small. Acupuncture showed more evidence. This report will contradict your finding as they have massage in common.</p>	This has been edited, thank you.
77	9	<p>The study recognized that two of the studies posted high risk of bias and a very small sample size. Only one in the US. None of the studies with control group.</p>	Thank you for the comment.