

# The Effectiveness of Massage Therapy

A Summary of Evidence-Based Research

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# Preface

## **The purpose of this report**

Although massage therapy is recommended and administered to various extents by healthcare practitioners and patients alike, research evidence is required to advocate massage therapy effectively and safely.

This report reviews and collates existing evidence based research into the effectiveness of massage therapy, identifies recommendations for clinical practice and highlights research gaps. It is designed to be a reference tool for those interested in the available evidence about the effectiveness of massage therapy.

## **Who should read this report?**

- Massage therapists;
- Practitioners of complementary and alternative medicine;
- GPs and allied health professionals; and
- Researchers in the area of health, complementary and alternative medicine.

## Australian Association of Massage Therapy

### CEO message

On behalf of the Australian Association of Massage Therapists, I am pleased to present *'The Effectiveness of Massage Therapy'* report.

This report presents the body-of-knowledge of evidence-based research into the effectiveness of massage therapy, comprising a review of 740 existing Australian and international, academic research papers, published between 1978 and 2008.

The research includes systematic reviews, randomised controlled trials, comparative studies, case-series/studies and cross-sectional studies covering acupressure, bower therapy, lymphatic drainage, myofascial release, reflexology, rolfing, shiatsu, Swedish massage, sports massage, infant massage, tuina and trigger point therapies/modalities.



Key findings of this literature review show:

- A growing body of research supports massage therapy as being an evidence-based therapeutic modality
- There is strong evidence supporting acupressure management of nausea and vomiting
- Massage therapy is effective in managing subacute/chronic low back pain, delayed-onset muscle soreness (DOMS), anxiety, stress and relaxation, and helps support the wellbeing of patients with chronic and/or terminal diseases such as cancer.
- There are opportunities for further research into the benefits of massage therapy for infants, depression and post-natal depression, labour pain, fibromyalgia, premenstrual syndrome, urinary symptoms in multiple sclerosis, myofascial pain and knee osteoarthritis.
- There is consistent and conclusive evidence that massage therapy is safe. However, the importance of qualified massage therapists adhering to appropriate scopes of practice, safety guidelines and ethical procedures is stressed.
- Clinicians are encouraged to collaborate with professional massage practitioners for best practice management of patients who may benefit from massage therapy.

We certainly hope that this groundwork provides remedial massage therapists, complementary and alternative medicine practitioners and the broader allied health community with a basis to pursue evidence-based practice, and that this report leads the way for future research in the field of massage therapy.

I congratulate Dr Kenny Ng and thank Professor Marc Cohen, School of Health Sciences, RMIT University for their efforts in developing this report.

Tricia Hughes

## Introduction

Massage can be defined as “manual soft tissue manipulation, and includes holding, causing movement, and/or applying pressure to the body.”<sup>1</sup> Massage therapy is the practice of massage by accredited professionals to achieve positive health and well-being (physical, functional, and psychological outcomes) in clients.<sup>1,2</sup> As a distinct allied health and/or complementary and alternative medicine (CAM) practice, massage therapy encompasses different types of massage originating from Western and Eastern practice, alongside the use of various supplementary therapeutic modalities e.g. cupping and dry needling.<sup>2</sup>

In Australia, a recent national survey showed that 70% of respondents used one of 17 forms of CAM, with 45% of respondents having visited a CAM practitioner in the preceding year.<sup>3</sup> CAM use in the United States of America appear to be similar to Australia.<sup>4</sup> However CAM use in the United Kingdom was more protracted, with ten per cent of survey respondents receiving treatment from a CAM practitioner in a 12-month period.<sup>5</sup> Amongst the numerous forms of CAM surveyed, massage therapy ranked as one of the most commonly used.<sup>3,4,5</sup>

Although massage therapy is recommended and administered to various extents by healthcare practitioners and patients alike, research is required to determine its efficacy and safety. Numerous systematic reviews of massage therapy

**In 2007, a national survey of Australians showed massage therapy ranked as one of the most commonly used complementary and alternative medicine practices.**

have been performed and using variable search strategies and inclusion criteria to evaluate single or multiple types of massage therapy.<sup>6-13</sup> The broadest reviews were published by Beider et al<sup>6</sup> and Moyer et al,<sup>11</sup> yet these reviews are still quite limited. The review by Beider et al<sup>6</sup> was limited to randomized controlled trials (RCTs) and case-studies within a paediatric population, and the search terms used restricted the review to child/pediatric massage. The review by Moyer et al on the other hand used an exhaustive search strategy with defined massage therapies, yet limited the search to RCTs and excluded infant populations. Moyer et al did however, collate data from the included studies and provided recommendations for further research and best practice.<sup>11</sup>

Due to the nature of search strategies and inclusion/exclusion criteria, there were many studies that assessed the effects and safety of massage therapy not found in published reviews. The scattered nature of massage-related studies makes it challenging to confidently identify research evidence that can inform best practice. An archive that indexes the evidence of effectiveness for massage therapy would prove invaluable to assure access to the breadth of existing evidence. Once established, enhanced evidence-based massage practice would hopefully boost the growth of the massage profession and industry. The Massage Therapy Research Database, administered by the Massage Therapy Foundation since early 2000, appears to be the primary source of citations to massage therapy articles.<sup>14</sup> This established database indexes more than 4800 peer and non-peer reviewed journal articles and books, including non-English literature, with a recent addition of real-time access to PubMed.<sup>14</sup>

With an evidence-based practice focus and explicit methodology to source studies for inclusion, the Australian Massage Research Foundation<sup>15</sup> commissioned a body-of-knowledge (BOK), that would archive research evidence pertaining to effectiveness of massage therapy. Using a broader search strategy and inclusion criteria than previous reviews, this study systematically identified and compiled primary and secondary evidence that evaluated the effectiveness of massage therapy and presents a summary of the current state of massage therapy evidence.

## Methods

### Criteria for considering studies for this review

#### *Type of studies*

Studies published up to November 2008 that evaluated the effectiveness of massage therapy for the management of health, medical conditions or clinical symptoms were sourced for this review. This included studies that reported on the safety of massage therapies. Studies that assessed physiological effects of massage therapy were also considered for inclusion as these studies may lend support to further research or application in clinical practice.

Primary and secondary studies such as systematic reviews, RCTs, comparative studies (quasi-RCTs, cohort and case-controlled), case-studies/series, and cross-sectional studies were included. These comprised of quantitative and qualitative studies. Studies published in languages other than English were excluded unless an English abstract with sufficient eligibility information was available.

Reviews were included when a systematic and explicit search strategy appropriate to address the question of the review was conducted. These reviews may provide either quantitative and/or qualitative summary, along with assessment of methodological quality of included studies with or without a critical appraisal tool.

#### *Study populations\**

Included studies assessed measurable effects from massage treatment(s) relating to one of the following: -

- a) Diseased body systems and medical conditions (where available) consistent with allopathic principles of medical diagnoses
- b) Special groups
  - I. Paediatrics (includes neonates, infants and adolescents)
  - II. Obstetrics
- c) Clinical symptom(s)
- d) Sports and exercise
- e) Physiological change(s)

Study participants were limited to human subjects. No age restrictions were applied.

#### *Type of interventions\**

The types of massage therapies that were included in the review are presented in Table 1. These massage therapies were executed solely or in combination, and involved hands-on, direct physical contact without utilization or supplementation of machines, devices, equipment or tools including needles (acupuncture/dry-needling), bands and seeds (acupressure). Manual therapy techniques commonly used by massage therapists including trigger point therapy, myofascial release, deep transverse friction were also included.

**Table 1: Massage therapies/techniques sourced for inclusion in this review**

- Acupressure
- Aromatherapy
- Ayurvedic
- Bowen therapy
- Deep Tissue
- Deep Transverse Friction
- Hawaiian / Lomi-lomi
- Indian Head
- Infant
- Manual Lymphatic Drainage
- Myofascial Release
- Pregnancy
- Reflexology
- Remedial
- Roling / Structural Integration
- Seated
- Shiatsu
- Sports
- Swedish (includes effleurage/petrissage)
- Thai
- Traditional Chinese Medicine (TCM) including Tuina/Qigong
- Trager
- Trigger point therapy

Specific disciplines such as myotherapy, chiropractic, osteopathy and beauty therapy were included if a massage component was specified within the treatment regime and if the effects of massage therapy were measurable independently without confounding factors. Anatomical and internal massages such as cardiac, ocular, perineal, prostate, rectal and vaginal were excluded.

*\*Systematic reviews included in this study were exempted from assessment of these criteria as these studies will hold specific inclusion criteria of primary research. For inclusion into this review, systematic reviews needed to include massage therapy as a treatment modality.*

### **Search strategy**

Given the objective and breadth of this review, it was not possible to search through all available databases. The search strategy applied was aimed at sensitivity more than specificity in detecting studies. Several databases were used to increase the sensitivity of the search as evidence on CAM can be found in different sources.<sup>16</sup> The databases chosen for this review were based on their sophistication to obtain a workable number of studies (limited to <2500 hits/database and 8000 hits in total). Five (5) electronic databases available through RMIT University library website were searched to acquire studies for potential inclusion in this review (Table 2). These databases combined at least one (1) major mainstream<sup>a</sup> and one (1) major non-mainstream<sup>b</sup> medical database. EMBASE, SCOPUS, Web of Science and Proquest databases were not used because the workable number of hits was unattainable even when search limits as listed in Table 3 were applied.

**Table 2: Databases searched in this review**

- Evidence Based Medicine (EBM) Reviews
- <sup>a</sup> Pubmed (incorporating Medline)
- Cumulative Index to Nursing and Allied Health Literature (CINAHL)
- <sup>b</sup> Allied and Complementary Medicine (AMED)
- Meditext



Pilkington recommends that massage studies can mostly be identified through indexing terms, otherwise known as medical subject headings (MeSH), and that sensitivity can be increased if a textword search is also performed.<sup>16</sup> MeSH headings were used for the search term 'massage,' and where available the 'explode' function was applied (Table 3). Textword searches were carried out for all search terms, otherwise a keyword search was performed (Table 3 and 4). Citations and abstracts of studies identified through the electronic databases were imported and stored in an electronic library using bibliographical software, Endnote (Version X2). Specific searches through journals and unpublished literature i.e. theses and dissertations, or contact with institutions and field experts were not undertaken in this review.

**Table 3: Search methods and limits within databases used in this review (Appendix I)**

SEARCH METHOD	AMED	CINAHL	EBM Reviews	MEDITEXT	PubMed
MeSH Heading	✓	✓	✓	✓	✓
Textword		✓	✓		✓
Keyword	✓			✓	
Explode	✓	✓	✓		
<b>SEARCH LIMIT</b>					
English	✓	✓	✓		✓
Humans			✓		✓
Publication type*		✓	✓		✓

✓ denotes search function available within databases and utilized

\* reviews/meta-analysis, clinical trials (including RCTs, comparative studies, multicentre study) and case reports

**Table 4: Search terms applied to search strategy (Appendix I)**

- acupressure
- bower therapy / technique
- deep transverse friction
- manual lymphatic drainage / lymphatic massage
- massage
- myofascial release
- reflexology
- rolfing
- shiatsu
- trager
- trigger point therapy
- tui na / tuina / tui-na

### Methods of the review

The search strategy (Appendix I) was implemented by the primary reviewer (KN), who subsequently screened the titles and abstracts contained within an Endnote library to detect irrelevant and duplicate studies. Given the scope of this review, studies were not matched against the broad inclusion criteria individually. Instead, studies that met an exclusion criterion were removed. For studies that had insufficient information in the title and abstract to determine eligibility, a full-text version of the study was obtained via RMIT University library. To prevent potential loss of valuable evidence, studies that did not state exclusion criteria (e.g. utilization of massage devices) were included. The primary reviewer (KN) independently determined the study designs of the included studies.



### *Type of studies*

The number of studies included in this review was divided and presented graphically to indicate growth of published research evidence on the effectiveness of massage therapy. Study designs such as systematic reviews, RCTs, comparative studies and case-studies/series were ranked according to the National Medical and Research Council (NHMRC) Hierarchy of Evidence (2000)<sup>9</sup> (Table 5).<sup>17</sup> This provides an overview of the study designs used in massage-related research, and broadly informs the potential magnitude of bias contained within the studies included in this review. Critical appraisal of included studies was not within the scope of this review.

**Table 5: NHMRC Hierarchy of evidence (2000)<sup>9, 17</sup>**

<b>Level</b>	<b>Study Design</b>	<b>Characteristics</b>
I	Systematic review <sup>◊</sup>	Collation of studies, with methods of search, appraisal and synthesis specified
II	Randomized controlled trials (RCTs)	Subjects randomly allocated to groups
III	Comparative studies	
	1 - Pseudo-RCTs	Subjects allocated to groups but not at random
	2 - Comparative study	Comparison between groups: no allocation or matching of subjects in groups
	3 - Historical	Comparison with a historical control
IV	Case-studies/series	No comparison group

<sup>9</sup>NHMRC Hierarchy of Evidence does not rank cross-sectional studies

<sup>◊</sup>A systematic review will only be assigned a level of evidence as high as the studies it contains, excepting where those studies are of level II evidence<sup>18</sup>

### *Study populations and topic areas of study*

Studies included in this review included participants with particular medical conditions or clinical symptoms that were categorised into different subgroups. Initially, these subgroups were named according to allopathic medical specialties and special population groups. Where these sub-groups were inappropriate, either 'others' or 'physiological study' was designated. 'Others' encompassed participants:

- a) with medical diagnoses that does not fit into allopathic medical specialties or special population groups
- b) with clinical symptoms without established diagnoses
- c) who are well and healthy.

'Physiological study' refers to studies that primarily measured physiological changes induced by massage therapy. Thirty-six different subgroups were used to document the types of participants within included studies. The obstetrics sub-group included studies of massage in the antenatal, perinatal and postnatal periods.

### *Type of interventions*

Massage therapies were compiled as reported in the included studies. Not infrequently, the type of massage was undefined, however treatment protocols were described. These treatments were designated 'non-specified massage (NSM)' or 'protocol.' Massage

treatments indicated to impact exercise recovery, sports performance and sports psychology were designated 'sports massage' in this review.

Massage modalities and therapies that were not specifically searched for were considered for inclusion in this review. Body awareness and multi-dimensional therapies where the independent effect of massage was difficult to ascertain e.g. Alexander technique, Feldenkrais and Trager psychophysical integration were excluded.

While the status of the massage therapist was not routinely reported, massage was variably performed by professional healthcare practitioners including chiropractors, massage therapists, nurses, osteopaths, physicians, physiotherapists, Traditional Chinese Medicine (TCM) practitioners as well as research scientists and parents with varying degrees of massage training.

#### *Establishment of body-of-knowledge (BOK)*

Studies that were included in this review were indexed within an Endnote library. Keywords reflecting the types of studies (listed according to NHMRC Hierarchy of Evidence), participants and interventions were entered for each included study. This formed a basic searchable database that would constitute the foundation of a body-of-knowledge (BOK) that archives research evidence in massage therapy.

#### *Current massage therapy evidence*

Citations of included Level I studies were entered into a Microsoft Excel 2007 spreadsheet (Appendix III). Extraction of information was undertaken from these studies, which include:

- medical condition/symptoms
- number of included studies (where stated or reported)
- type of massage (if stated)
- findings and/or recommendations.

Based on the number of included studies, and the findings and/or recommendation as reported by the reviews, a grading of clinical recommendation adapted and modified from the NHMRC body-of-evidence matrix was applied (Table 6 and 7).

**Table 6: Body of evidence matrix (NHMRC 2009)<sup>18</sup>**

RECOMMENDATION	A	B	C	D	E
<b>Evidence Base</b>	1-2 high quality RCTs or multiple ( $\geq 4$ ) poor to fair quality RCT/CCTs  <i>and/or</i> recommended for clinical application by author	3-4 poor to fair quality RCT/CCTs  <i>and/or</i> recommended for further research of high methodological quality	1-2 poor to fair quality RCT/CCTs which may or may not be statistically significant  <i>and</i> further research recommended	Conclusions were not apparent from included studies	$\leq 1$ RCT/CCT of poor quality  <i>or</i> no studies available
<b>Rating of Evidence</b>	Strong	Good	Limited	Poor	Insufficient
<b>Clinical Impact</b>	Substantial	Moderate	Restricted	Minimal	No

Table 7: Definition of grades of recommendations (NHMRC 2009)<sup>18</sup>

Grade of Recommendation	Description
A	Body of evidence can be trusted to guide practice
B	Body of evidence provides moderate support to guide practice in most situations
C	Body of evidence provides limited support for recommendation(s) and care should be taken in its application
D	Body of evidence is weak and any recommendation must be applied with caution
E	Body of evidence is insufficient to provide recommendation

A narration of the current evidence is provided for respective recommendations with emphasis on those graded A, B and C due to greater clinical relevance. A narrative review was also undertaken to outline the safety profile of massage therapy, with reference to literature that highlighted safety/adverse effects in their titles and/or abstracts.

## Results

### Description of studies

#### *Selection of studies*

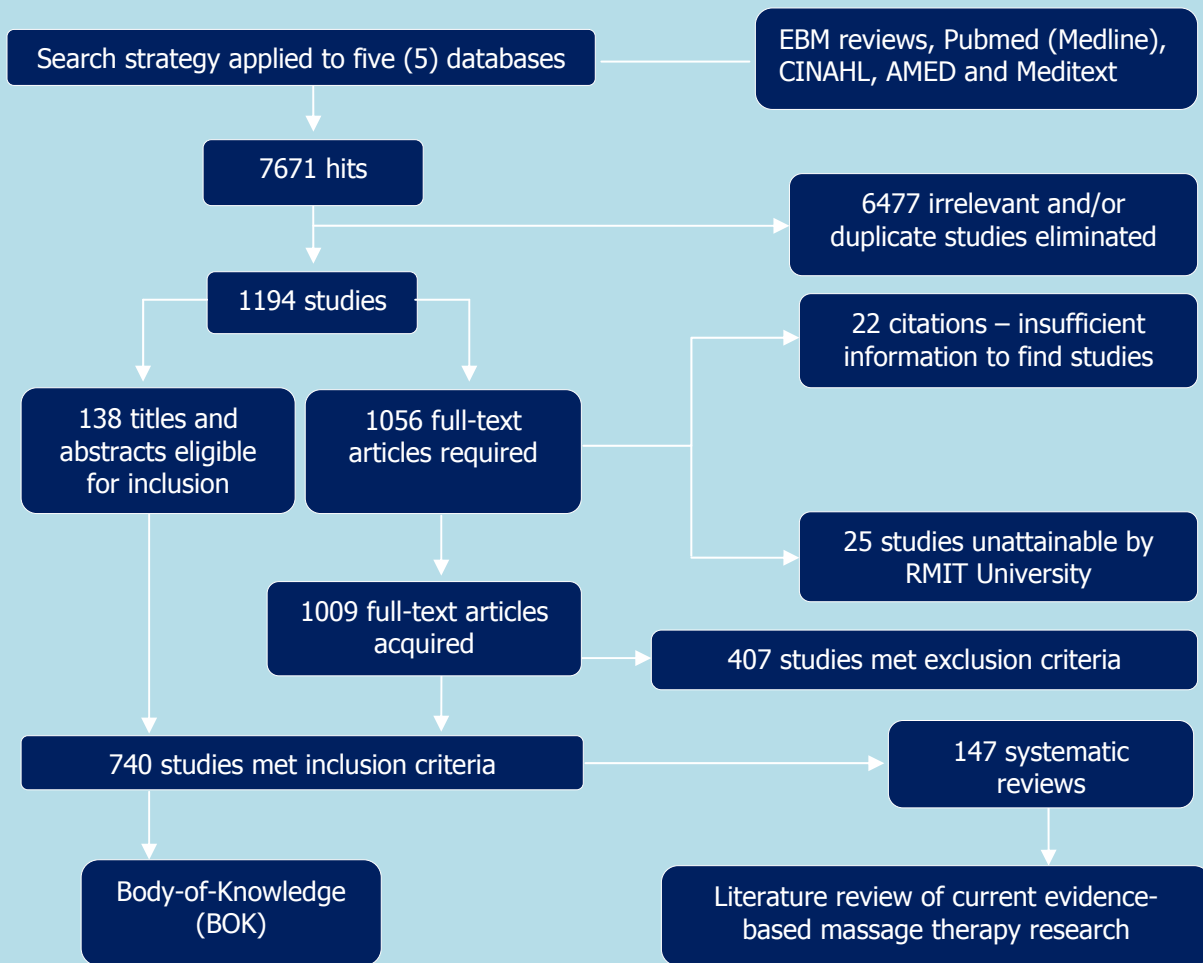
The search strategy (Appendix I) returned a total of 7671 hits (Figure 1). After eliminating irrelevant and duplicate studies, 1194 studies remained. 138 studies were included following review of titles and abstracts. 1056 full-text articles were required. Of these, 22 citations did not contain sufficient information to enable location of the studies and 25 unattainable through RMIT library due to inability to locate these articles within the time-frame of this review (Appendix II). After reviewing the full-text articles obtained, 740 studies were included within the body-of-knowledge<sup>±</sup>.

#### *Type of studies*

Research evidence that evaluated the effectiveness of massage therapy grew significantly from 1978 to 2008 (Figure 2). With reference to the NHMRC Hierarchy of Evidence,<sup>17</sup> Level II evidence (RCTs) was most widespread while Level III evidence (comparative studies) was most scarce (Table 8). Eight systematic reviews and 16 case-studies evaluated and/or reported on the safety of massage therapy.

<sup>±</sup> Due to the large volume, the list of included studies will be published on the website of Australian Association of Massage Therapists ([www.aamt.com.au](http://www.aamt.com.au))

Figure 1: Pathway for selection of studies in this review



Musculoskeletal, oncology combined with palliative care, paediatrics, sports, neurology, obstetrics, surgery, geriatrics, mental health and physiology represented the most common populations studied.

Figure 2: Growth of published studies on the effectiveness of massage therapy

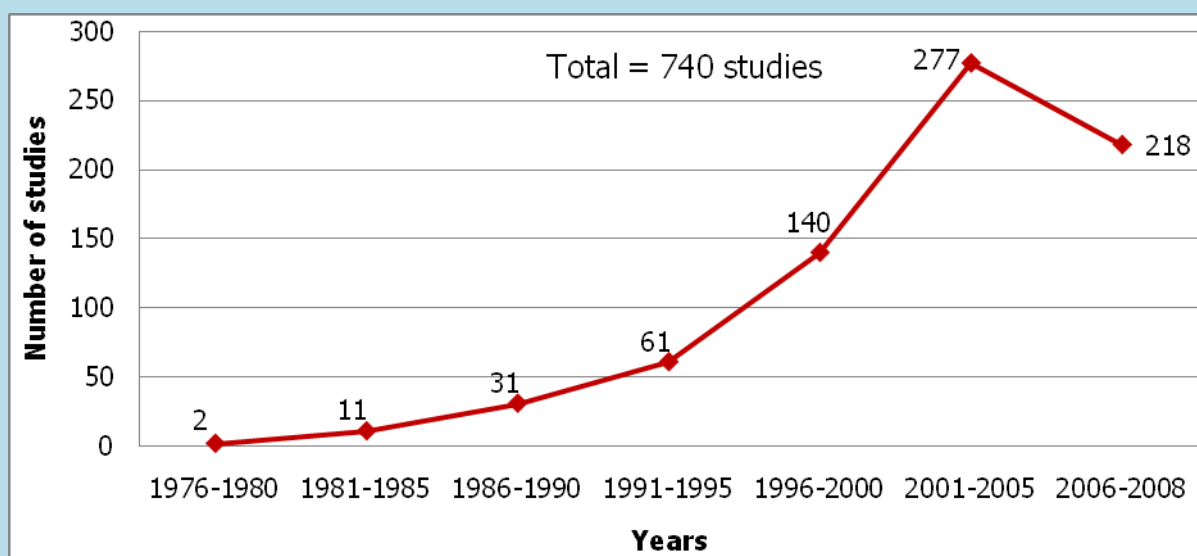


Table 8: Study design and ranking according to National Health and Medical Research Council (NHMRC) Hierarchy of evidence (2000)<sup>17</sup>

Study Design	Hierarchy of Evidence	Number of Included Studies
Systematic review	I	147
RCT	II	283
Comparative	III	100
Case-studies/series	IV	197
Cross-sectional	N/A	13
<b>Total</b>		<b>740</b>

*RCT, randomised controlled trial; N/A, not applicable*

*°A systematic review will only be assigned a level of evidence as high as the studies it contains, excepting where those studies are of level II evidence<sup>18</sup>*

Table 9: Subgroups of participants and topic areas of study included in this review

Participant Subgroups		Number of studies
Allopathic Medical Specialties & Special Population Groups	<i>Anaesthetic</i>	3
	<i>Cardiology</i>	12
	<i>Dermatology</i>	6
	<i>Endocrinology</i>	6
	<i>Gastrointestinal</i>	13
	<i>Genetics/Developmental</i>	14
	<i>Geriatrics (include psychogeriatric)</i>	▪ 32
	<i>Gynaecology</i>	13
	<i>Haematology</i>	7
	<i>Immunology</i>	2
	<i>Infectious diseases</i>	14
	<i>Intensive care</i>	9
	<i>Mental Health</i>	▪ 35
	<i>Musculoskeletal</i>	▪ 150
	<i>Neurology</i>	▪ 46
	<i>Neurosurgery</i>	1
	<i>Obstetric</i>	▪ 39
	<i>Oncology</i>	▪ 76
	<i>Ophthalmology</i>	1
	<i>Orthopaedic</i>	3
<i>Paediatrics</i>	▪ 88	
<i>Palliative Care</i>	▪ 24	
<i>Plastics</i>	6	
<i>Rehabilitation</i>	3	
<i>Respiratory</i>	15	
<i>Rheumatology</i>	15	
<i>Sexual &amp; Reproductive Health</i>	1	
<i>Spinal</i>	8	
<i>Surgery</i>	▪ 38	
<i>Urology</i>	4	
<i>Vascular</i>	6	
Sports	<i>Exercise recovery</i>	▪ 27
	<i>Sports performance</i>	▪ 28
	<i>Sports psychology</i>	2
Others	▪ 81	
Physiology	▪ 33	

▪ Represent the most active domains of research

Thirty-three different types of massage therapies and techniques used in the included studies are listed below (Table 10). The most commonly researched massage therapies included acupressure, Swedish massage, aromatherapy, reflexology, sports massage and infant massage. While 144 studies did not specify the type of massage, sixty-seven of these did describe a massage treatment protocol.

**Table 10: Massage therapies/modalities included in this review**

Sourced therapies/modalities	Number of studies
1. Acupressure	• 86
2. Aromatherapy	• 53
3. Ayurvedic	1
4. Bowen	7
5. Deep tissue	18
6. Deep transverse friction	4
7. Hawaiian/Lomi-lomi	Nil
8. Indian Head	Nil
9. Infant	• 40
10. Manual Lymphatic Drainage	15
11. Myofascial release	19
12. Reflexology	• 49
13. Remedial	Nil
14. Rolfing	5
15. Seated	10
16. Shiatsu	11
17. Sports	• 46
18. Swedish	• 82
19. Thai	3
20. Trager	Nil
21. TCM including Tuina/Qigong	22
22. Trigger point therapy	21
<b>Unsourced therapies/modalities</b>	
1. Anma (Japanese)	1
2. Back / Slow stroke back	19
3. Classical	1

- Represent therapies/modalities most commonly researched; NSM, non-specified (type of) massage; TCM, Traditional Chinese medicine



Table 10: Massage therapies/modalities included in this review (continued)

Unsourced therapies/modalities	Number of studies
4. Connective tissue	7
5. Malay	1
6. Medical	2
7. Neuromuscular	4
8. Orthopaedic	1
9. Rhythmical	2
10. Tactile	1
11. Therapeutic	12
12. Watsu	2
<b>Others</b>	
1. Protocol	• 67
2. NSM	• 77

- Represent therapies/modalities most commonly researched; NSM, non-specified (type of) massage

### Current evidence for massage therapy

Figure 3 provides a graphical representation for the summary of systematic reviews (Appendix III).

#### Grade A

Six systematic reviews consistently found acupressure effective for the management of nausea and vomiting.<sup>10,19-23</sup> Several different patient population groups were investigated including oncology,<sup>10</sup> palliative care,<sup>10</sup> obstetrics<sup>10,19,20,22</sup> and post-surgery.<sup>10,21-23</sup> The effectiveness of acupressure was deemed to be more effective over placebo across the different groups of patients,<sup>10,19</sup> and equivalent to first-line anti-emetics and acupuncture in obstetrics and post-operative patients.<sup>20-23</sup>

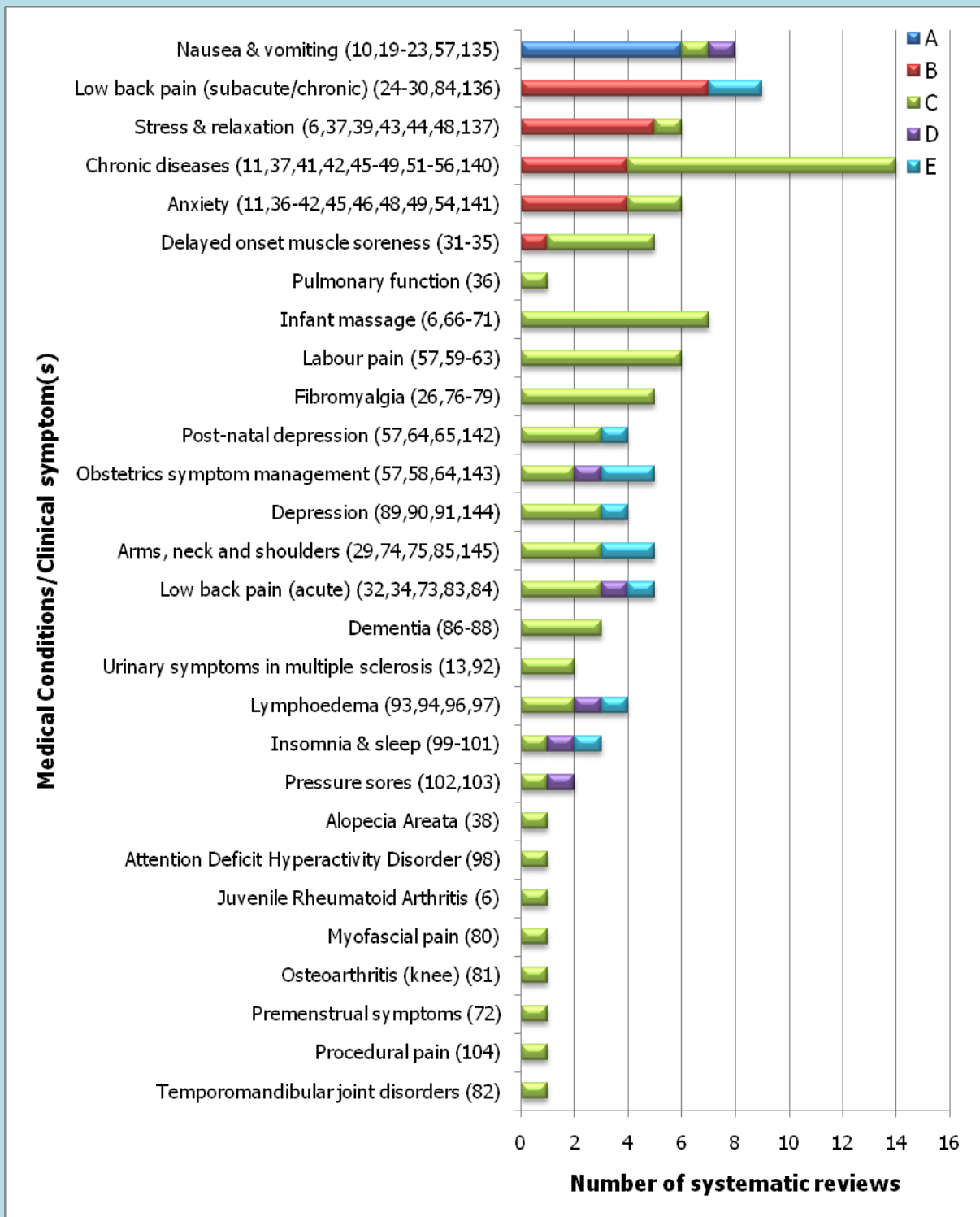
Six systematic reviews consistently found acupressure effective for the management of nausea and vomiting.

#### Grade B

Seven studies were in unison concluding that massage therapy for subacute and chronic low back pain to be more effective than placebo,<sup>24-30</sup> and comparable to spinal manipulative therapy.<sup>25</sup> Although further research with improved power and methodological quality appears warranted,<sup>24,26,30</sup> current evidence was reportedly moderate in strength and fairly robust.<sup>25,27-29</sup> The evidence suggested that massage therapy achieved significant patient satisfaction and reduction in pain levels, both in the short and longer term, as well as potential benefit in acute on chronic low back pain.<sup>26,28,30</sup>

Limited evidence from four reviews published between 1998 and 2004,<sup>31-34</sup> supported the use of massage for delayed onset muscle soreness (DOMS).

Figure 3: Summary of systematic reviews



Grade of Recommendation	Description
A	Body of evidence can be trusted to guide practice
B	Body of evidence provides moderate support to guide practice in most situations
C	Body of evidence provides limited support for recommendation(s) and care should be taken in its application
D	Body of evidence is weak and any recommendation must be applied with caution
E	Body of evidence is insufficient to provide recommendation

Seven studies were in unison concluding that massage therapy for subacute and chronic low back pain to be more effective than placebo.

However the latest review by Best et al<sup>35</sup> (2008) concluded moderate evidence for massage therapy in managing DOMS, although further high quality research is recommended. Huth et al<sup>36</sup> reviewed the effects of massage

therapy on pulmonary function to assess the potential application in paediatric patients with cystic fibrosis. These authors found moderate evidence for massage therapy in improving pulmonary function.<sup>36</sup> By extrapolating the data from relevant studies, the authors recommended massage therapy for this patient group.<sup>36</sup>

Multiple studies provided good evidence for massage therapy in managing anxiety, stress and promoting relaxation,<sup>11,37-50</sup> which was trialled in healthy adults,<sup>11,43,44</sup> and oncology<sup>39,41,42,46,47,49,50</sup> and intensive/critical care patients.<sup>48</sup>

Multiple studies provided good evidence supporting the effectiveness of massage therapy in managing anxiety, stress and promoting relaxation.

Massage was effective in modulating the physiological stress response as reflected in reduction of heart rate and blood pressure.<sup>11,43,44,48</sup>

Positive outcomes reported following massage therapy include pain reduction, better quality of life, improved sleep and function as well as reduced depressive symptoms.

Massage therapy also provided moderate clinical benefit for symptom management, quality of life and promotion of positive well-being in patients with chronic diseases and terminal illnesses e.g. cancer, multiple sclerosis and HIV/AIDS.<sup>37,41,42,45,48,50-56</sup> Alongside anxiety and stress, other positive outcomes from massage therapy include pain reduction, improved sleep, function, depressive symptoms, and quality-of-life amongst others.<sup>37,41,42,46,47,50-56</sup>

### Grade C

Massage therapy in women's health and for newborns dominated this grade of recommendation. Collectively, nine reviews provided limited evidence for massage therapy on obstetric patients; pre-partum (symptomatic management),<sup>58,59</sup> intra-partum (labour pain)<sup>57,59-63</sup> and post-partum (post-natal depression).<sup>57,64,65</sup> There were seven reviews that were dedicated to evaluate the effects of infant massage on both the newborn including pre-term and low birth weight babies, and the mother.<sup>6,66-71</sup> Positive outcome measures that were reported include reduction in infant distress, reduced length of newborn hospitalisation, significant newborn growth and development, improved mother-infant interaction, and symptoms of post-natal depression.<sup>6,67-69,71</sup> One review reported limited evidence for massage therapy in premenstrual syndrome.<sup>72</sup>

Limited evidence for massage therapy in musculoskeletal conditions were found in acute low back pain,<sup>32,34,73</sup> complaints of neck, arms and shoulder (CANS),<sup>29,74,75</sup> fibromyalgia,<sup>29,76-79</sup> juvenile rheumatoid arthritis,<sup>6</sup> myofascial pain,<sup>80</sup> knee osteoarthritis,<sup>81</sup> and temporomandibular dysfunction.<sup>82</sup> Fibromyalgia had five reviews with consistent conclusions,<sup>29,76-79</sup> where massage therapy is commonly practised in conjunction with other treatments. With acute low back pain<sup>32,34,73,83,84</sup> and CANS,<sup>29,74,75,85</sup> there were conflicting

findings in recommending massage therapy. The other conditions in this medical sub-group had only one review each to support their recommendation.<sup>6,80-82</sup>

Massage therapy for the management of dementia (behavioural and psychological symptoms of dementia)<sup>86-88</sup> and depression<sup>89-91</sup> was supported by limited evidence through three reviews each. Two reviews agreed that acupuncture appears to be an effective treatment modality for urinary symptoms in patients with multiple sclerosis.<sup>13,92</sup> There were also two reviews that support manual lymphatic drainage for treating lymphedema.<sup>93,94</sup> However, manual lymphatic drainage, commonly instituted in conjunction with compressive therapy within the context of complex physical therapy (CPT)<sup>95</sup> did not provide significant benefit when applied independently.<sup>96,97</sup> Similarly, the evidence for the effectiveness of massage therapy was poor or limited for treating alopecia areata,<sup>38</sup> attention deficit hyperactivity disorder (ADHD),<sup>98</sup> insomnia and sleep,<sup>99-101</sup> pressure sores<sup>102,103</sup> and procedural pain in children.<sup>104</sup>

Studies into the benefits of massage therapy for maternal and infant care reported a reduction in infant distress, significant newborn growth and development, improved mother-infant interaction and reduced symptoms of post-natal depression.

#### Grade D

Four medical conditions namely cervical spondylosis,<sup>105</sup> chronic constipation,<sup>106</sup> and ilio-tibial band syndrome<sup>107</sup> had inconclusive evidence.

#### Grade E

Table 11 lists medical conditions that were reported to have insufficient or no evidence.

**Table 11: List of medical conditions with Grade E recommendation**

Arthritis <sup>108</sup>	Knee pain <sup>121</sup>
Asthma and allergy <sup>13,109-111</sup>	Lateral epicondylagia <sup>122</sup>
Bell's palsy <sup>112</sup>	Menopause <sup>123,124</sup>
Carpal tunnel syndrome <sup>113</sup>	Neck pain/disorders including whiplash <sup>125-130</sup>
Diabetes <sup>114</sup>	Occupational stress prevention <sup>131</sup>
Headache (acute/chronic/recurrent) <sup>115-119</sup>	Smoking cessation <sup>132</sup>
Induction/Augmentation of labour <sup>120</sup>	Tendinopathy <sup>133</sup>
Irritable bowel syndrome <sup>13</sup>	Weight loss <sup>134</sup>

#### Safety

Review of the literature found that adverse events with massage therapy were scarce and treatments safe when guidelines are adhered to and instituted by appropriately trained and/or qualified massage practitioners.<sup>8,9,39,49,50,51,90,125</sup> Although it is non-invasive, massage therapy is not entirely risk-free. A recent cross-sectional study<sup>146</sup> with 91 out of 100 consecutive clients at a student massage clinic reported no significant adverse events with ten percent experiencing some minor discomfort including headache, soreness, fatigue and bruising. Ernst<sup>90</sup> and Ezzo et al<sup>125</sup> reviewed studies of patients with low back pain and

mechanical neck disorders and found that adverse events with massage were rare. In Ezzo et al's series,<sup>125</sup> only three studies out of 19 RCTs/quasi-RCTs had transient and benign post-treatment discomfort. In contrast to the results of these reviews, 16 case-studies<sup>147-162</sup> noted significant adverse events in association with massage treatments. In these instances, the massage practitioners were either traditional, had unknown qualifications or were not reported.

Case incidents of bruising, swelling,<sup>147</sup> internal haemorrhage<sup>148-149</sup> and thrombus embolization,<sup>150-154</sup> highlight the need to consider the site, intensity and depth of massage as well as coagulation states of patients, both hyper- or hypo-coagulable. Patients with prosthetic devices e.g. stents<sup>155-156</sup> and cardiac defibrillators, should be noted before massage to avoid displacements of these devices or trauma to surrounding tissue. Therapists should also be conscious about superficial neurovascular structures, as there have been cases of vertebral artery dissections<sup>9</sup> as well as neurovascular sequelae such as pseudoaneurysm<sup>157</sup> and posterior interosseous syndrome<sup>158</sup> associated with massage, although direct causation is difficult to ascertain. Grant<sup>9</sup> had advised that symptoms of vertebral artery compromise (dizziness, headache, loss of consciousness, vertigo) be monitored during massage of the posterior neck and post-treatment advice provided if appropriate. Isolated case reports of thyrotoxicosis in a patient with Hashimoto's disease,<sup>159</sup> bowel perforation<sup>160</sup> and herpes zoster<sup>161</sup> infection in an otherwise well patient are interesting but unlikely to be related to massage therapy.

Corbin,<sup>39</sup> Weiger et al<sup>49</sup> and Wilkinson et al<sup>140</sup> reviewed the safety of massage therapy in cancer patients. There has been no known evidence that massage therapy contributes to metastases from primary sites of cancer.<sup>39,49</sup> However avoidance of direct manipulation of the surrounds of tumour tissue that may or may not have been treated surgically or with radiotherapy is recommended.<sup>39,49</sup>

The safety of infant massage was assessed by White-traut and Goldman<sup>163</sup> with a randomised controlled trial in pre-mature infants, who found that pre-mature infants were susceptible to decrease body temperature and increased heart and respiratory rate when receiving massage. The authors advised caution in the selection of pre-mature infants and recommended monitoring of vital signs before, during and after massage to minimise risk. No other studies described any adverse effects of infant massage.

## Discussion

### Description of studies

#### *Selection of studies*

A systematic search strategy aimed at sensitivity over specificity was executed across five (5) databases. The high yield and repetition of studies suggest that the current search strategy was comprehensive, however the inclusion of more databases may have yielded more studies. More studies may have also be located through contact with professional institutions, experts in the field and search of unpublished literature especially thesis and dissertations.<sup>7,11,12</sup>

#### *Type of studies*

The criteria for selecting systematic reviews for inclusion in this review were broader than the NHMRC definition (Table 5). This is consistent with the primary objective of establishing a body-of-knowledge. Included reviews were either reviews of management

(medical/sports-related condition or clinical symptom) or effectiveness of massage as a therapeutic modality including safety. Non-systematic reviews that discussed the effects of massage therapy were frequently encountered. Within these reviews, case-studies were often used to provide specific examples, while authors of case-studies often provided a background literature review. Together, non-systematic reviews and case-studies occasionally posed difficulty in determining inclusion. These studies were generally included to prevent loss of potentially valuable evidence.

RCTs were the most frequently found study design in this review. However, many of these appear to be pilot studies with small sample sizes. After RCTs, case-studies/series were most common. In attempting to organise/analyse case-studies, difficulties were met due to poor structure, ill-defined objectives and/or lack-of-focus of some studies. In parallel, this may translate to difficulty for readers to decipher the message(s) authors were endeavouring to convey. In addition, case-studies were more common in massage-related or other complementary medicine journals.

It was not the aim of this review to conduct methodological quality assessment, data collation or meta-analysis. Although the NHMRC Hierarchy of Evidence<sup>17</sup> was used to rank the study designs of included studies, study designs do not reflect the breadth of methodological quality. Therefore critical appraisal of the studies included in this review will be required to properly assess the strength of current evidence.

Adverse reactions and side effects are usually secondary outcome measures in clinical trials (RCTs, comparative studies, case-studies/series). Case-studies were frequently found to highlight single episodes of adverse reactions in association with massage therapy. However, caution must be exercised in attributing causation in these instances.

Articles that represent knowledge of the art and science of massage were abundant and widespread in the literature. While this wealth of knowledge may not embody research evidence of effectiveness, archiving these massage-related articles will enable preservation of knowledge and benefit healthcare practitioners, students and patients alike. With a broader scope than the body-of-knowledge (BOK), the established Massage Therapy Foundation Database would presently be the best reference for this purpose.<sup>14</sup>

#### *Type of participants*

The breadth of participant subgroups included in this review demonstrated the versatility of massage therapy. Due to the direct soft-tissue manipulation of massage, it was not surprising that the most active research domains included musculoskeletal, neurological and sports-related conditions.

The breadth of participant subgroups included in this review demonstrated the versatility of massage therapy. Due to the direct soft-tissue manipulation of massage, it was not surprising that the most active research domains included musculoskeletal, neurological and sports-related conditions.

The other active domains such as oncology/palliative care, obstetrics, surgery, geriatrics and mental health utilised the indirect effects of massage for symptomatic relief e.g. pain, nausea, anxiety and depression. In paediatrics, growth and developmental effects of infant massage may be largely attributed for driving

research in this domain. The broad scope of this review made it impossible to present the



outcome measures that were assessed in the included studies because there was too much variability. Frequently, more than one objective and/or subjective outcome measures were used in single studies to measure the effectiveness of massage therapy. Depending on the patient population group, recurrent outcome measures in the literature include pain, nausea, anxiety, mood, behaviour, stress, function, wellbeing and quality-of-life.

One of the most common effects of massage therapy includes benefits as an adjunctive treatment of anxiety and depression. However, while the diagnostic criteria for anxiety disorders and clinical depression are defined in the Diagnostic and Statistical Manual (DSM) of Mental Disorders<sup>163</sup> and International Classification of Diseases (ICD) -10 Classification of Mental and Behavioural Disorders,<sup>164</sup> the delineation between normal and disordered states of anxiety and depression were rarely defined in the included studies.

#### *Type of interventions*

Although the majority of studies specified the type of massage therapy applied, several massage therapies e.g. remedial massage and sports massage that were specifically searched for were rarely or never encountered in the literature. Coupled with the high numbers of massage treatments that were either non-specified or described with a protocol, the names of different massage therapies merely infer a characteristic combination of strokes and techniques. This is largely reflected in clinical massage practice, whereby massage practitioners commonly combine techniques and modalities from two or more massage therapies/techniques within a single treatment. With the exclusion of effleurage and petrissage that is characteristic of Swedish massage, there was no attempt to classify non-specified massage treatment protocols, despite knowledge of described strokes and techniques exemplifying a particular massage therapy.

**Massage practitioners commonly combine techniques and modalities from two or more massage therapies/techniques within a single treatment.**

#### **Current evidence for massage therapy**

This review provides an overview of existing massage therapy evidence, and should be utilised as a resource to access and review areas of interest within the scope of massage practice. Although clinical recommendations of evidence-based massage therapy were extrapolated from existing systematic reviews, critical appraisal of these reviews was not undertaken. Consequently, biased inclusion/exclusion criteria, and a flawed search strategy

**The numbers of cases with known adverse events associated with massage therapy compared with its widespread practice were very few. In fact the numbers were deemed too small to be statistically meaningful in estimating risk.**

or review methodology could impact on the interpretation of the conclusions and/or recommendations of these reviews. Clinicians are cautioned in directly applying the recommendations of this review without reviewing the original article. Critical appraisals of respective systematic reviews are

encouraged with conclusions and/or recommendations interpreted in light of methodological quality of the review and included studies.



Massage therapy, although non-invasive is not truly risk free. Serious complications were rare in the literature, and despite its widespread practice, the numbers of cases with known adverse events associated with massage therapy were very few and too small to be statistically meaningful in estimating risk.<sup>9</sup>

## Conclusions

The evidence presented in this review is a summary of existing research on the use of massage. A summary of systematic reviews included in this review found moderate to strong (Grade A and B) evidence to support massage therapy for nausea and vomiting, anxiety, stress, chronic disease management, delayed onset muscle soreness (DOMS) and pulmonary function. There was limited evidence (Grade C) for recommending massage therapy in over 20 other conditions while there were many other conditions with inconclusive or no evidence. There is consistent and conclusive evidence that massage therapy is generally safe.

### *Implications for research*

Throughout the literature, the need for higher quality research studies especially RCTs that are sufficiently powered with strong methodological quality was highlighted. Further research on the longer term effects, cost-effectiveness and feasibility of massage therapy is required to better define the scope for massage therapy. Publication of clear and focussed case studies may enable future researchers elicit potentially promising areas for further research.

**There is a need for more, higher quality research studies and controlled trials backed by strong methodology in the field of massage therapy.**

### *Implications for practice*

This review highlights the volume and significant growth of massage-related evidence over which in turn reflects growing interest in the effectiveness of massage as a therapeutic modality. This growing evidence base should aid clinicians in recommending massage as a therapeutic modality. While numerous indications for massage therapy are yet to be supported by research, massage may still be recommended based on its excellent safety profile as well as anecdotal evidence. In the context of integrative medicine, clinicians are encouraged to collaborate with professional massage practitioners in the interest of the best management of their patients.

**This growing evidence base should aid clinicians in recommending massage as an evidence-based therapeutic modality.**

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## Appendix I: Search strategy

### AMED

No.	Search term(s) and applied functions	Hits
1	Acupressure/ or acupressure.mp.	298
2	bowen technique.mp.	6
3	bowen therapy.mp.	0
4	deep transverse friction.mp.	4
5	dry needling.mp.	21
6	lymphatic massage.mp.	0
7	manual lymphatic drainage.mp.	8
8	massage.mp. or exp Massage/	1790
9	myofascial release.mp.	38
10	reflexology.mp. or exp Reflexology/	203
11	rolfing.mp.	21
12	shiatsu.mp. or exp Shiatsu/	226
13	trager massage.mp.	0
14	trager therapy.mp.	1
15	trigger point therapy.mp.	23
16	tui na.mp.	15
17	tuina.mp.	20
18	tui-na.mp.	15
19	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18	2502
20	limit 19 to English	2286

### CINAHL

No.	Search term(s) and applied functions	Hits
1	exp SWEDISH MASSAGE/ or exp DEEP TISSUE MASSAGE/ or exp MASSAGE/ or exp SPORTS MASSAGE/ or exp NEUROMUSCULAR MASSAGE/	4282
2	massage.tw.	2637
3	acupressure.tw.	244
4	bowen technique.tw.	24
5	bowen therapy.tw.	5
6	deep transverse friction.tw.	5
7	dry needling.tw.	48
8	lymphatic massage.tw.	3
9	manual lymphatic drainage.tw.	24
10	myofascial release.tw.	60

No.	Search term(s) and applied functions	Hits
11	reflexology.tw.	222
12	rolfing.tw.	22
13	shiatsu.tw.	70
14	trager massage.tw.	0
15	trager therapy.tw.	1
16	trigger point therapy.tw.	40
17	tui na.tw.	12
18	tui-na.tw.	12
19	tuina.tw.	11
20	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19	5325
21	limit 20 to English	5162
22	limit 21 to (case study or clinical trial or "systematic review")	651
23	limit 21 to research	1191
24	22 or 23	1478

### *EBM Reviews*

No.	Search term(s) and applied functions	Hits
1	acupressure.tw.	238
2	bowen technique.tw.	0
3	bowen therapy.tw.	0
4	deep transverse friction.tw.	2
5	dry needling.tw.	35
6	lymphatic massage.tw.	2
7	manual lymphatic drainage.tw.	16
8	myofascial release.tw.	12
9	reflexology.tw.	72
10	rolfing.tw.	5
11	shiatsu.tw.	9
12	trager massage.tw.	0
13	trager therapy.tw.	0
14	trigger point therapy.tw.	11
15	tui na.tw.	3
16	tuina.tw.	16
17	tui-na.tw.	3
18	massage.tw,sh,xs.	1073
19	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18	1380
20	limit 19 to english language [Limit not valid in CDSR,ACP Journal Club,DARE,CCTR,CLCMR; records were retained]	1375
21	limit 20 to humans [Limit not valid in CDSR,ACP Journal Club,DARE,CCTR,CLCMR; records were retained]	1366



No.	Search term(s) and applied functions	Hits
22	limit 21 to (case report or clinical trial or comparative study or multicenter study or "review") [Limit not valid in CDSR,ACP Journal Club,DARE,CLCMR,CLHTA,CLEED; records were retained]	746

### *Meditext*

No.	Search term(s) and applied functions	Hits
1	MHJ=message	83
2	Reflexology	8
3	Shiatsu	1
4	Rolfing	0
5	(bowen technique)	2
6	(bowen therapy)	3
7	Acupressure	8
8	(dry needling)	2
9	(myofascial release)	2
10	deep transverse friction)	0
11	Tuina	0
12	(tui na)	2
13	tui-na	0
14	(trigger point therapy)	6
15	(lymphatic massage)	1
16	(manual lymphatic drainage)	0
17	1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16	108

### *Pubmed\**

No.	Search term(s) and applied functions	Hits
1	((massage[MeSH Terms]) OR ("massage"[Text Word]))	2182
2	((("acupressure"[Text Word]) OR ("shiatsu"[Text Word]))	276
3	("reflexology"[Text Word])	64
4	((("tuina"[Text Word]) OR ("tui-na"[Text Word])) OR ("tui na"[Text Word]))	4
5	("rolfing"[Text Word])	8
6	((trager therapy) OR (trager massage))	35
7	((lymphatic massage) OR (manual lymphatic))	93
8	((("bowen therapy"[Text Word]) OR ("bowen technique"[Text Word]))	2
9	((("trigger point therapy"[Text Word]) OR ("dry needling"[Text Word]))	51
10	((("myofascial release"[Text Word]) OR ("deep transverse friction"[Text Word]))	27

*\*Each entry was searched independently. Limits: Humans, Clinical Trial, Meta-Analysis, Randomized Controlled Trial, Review, Case Reports, Comparative Study, Multicenter Study, English*

## Appendix II: Studies excluded due to time constraints in obtaining full-text article

No.	Author	Year	Citation
1	Bailey	2003	The use of Shiatsu in a patient with depression and anxiety. <i>Shiatsu Society News</i> , 85:7.
2	Chung et al	2003	Effects of LI4 and BL 67 acupressure on labor pain and uterine contractions in the first stage of labor. <i>J Nurs Res</i> , 11:251-60.
3	Dundee	1988	Acupuncture/acupressure as an antiemetic: studies of its use in postoperative vomiting, cancer chemotherapy and sickness of early pregnancy. <i>Complement Med Res</i> , 3:2-14.
4	Harris and Lewis	1995	Acupressure and traditional Chinese massage. <i>Int J Alternat Complement Med</i> , 13:8.
5	Jackson	1995	Acupressure for post-operative nausea. <i>Nurs Times</i> , 91(26):58.
6	Kalauokalani et al	2003	Lessons from a trial of acupuncture and massage for low back pain. <i>Massage Ther J</i> , 42:112-23.
7	Lee	2005	The effect of infant massage on weight gain, physiological and behavioral responses in premature infants. <i>Taehan Kanho Hakhoe Chi</i> , 35:1451-60.
8	Littmann et al	1988	Treatment of 11 cases of chronic enuresis by acupuncture and massage. <i>Chest</i> , 94:650-2.
9	Martin	1993	Acupressure technique: menstrual pain in athletes. <i>Int J Alternat Complement</i> , 11:23-4.
10	Moriarty	2007	Psychophysiological responses to acupressure used as a pre-birth treatment at full term gestation ( <i>Dissertation</i> ); 232 pages.
11	O'Mathuna	2003	Bone marrow transplant patients perceive benefits from massage therapy, but the value of therapeutic touch is more questionable. <i>Focus Altern Complement Ther</i> , 8:342-3.
12	Philips and Gill	1993	Acupressure. A point of pressure. <i>Nurs Times</i> , 89:44-5.
13	Pouresmail and Ibrahimzadeh	2002	Effects of acupressure and ibuprofen on the severity of primary dysmenorrhea. <i>J Tradit Chin Med</i> , 22:205-10.
14	Rappenecker and Gordon	2000	Shiatsu for chronic pain in the lower back. <i>Shiatsu Society News</i> , 76:2-5.
15	Sadler	1989	Can acupressure relieve nausea? <i>Nurs Times</i> , 85:32-4.
16	Symons and McNeil	1987	Analgesic effects of acupressure on experimental pain. <i>NZ J Physiother</i> , 15:26.
17	Zeidenstein	1998	Alternative therapies for nausea and vomiting of pregnancy. <i>J Nurse Midwifery</i> , 43:392-3.
18		2004	Sports massage case study: 2: restricted trunk rotation in a golfer. <i>Sportex Dyn</i> 1:20.
19		2004	Sports massage case study: 1: decathlon athlete with tight hamstring. <i>Sportex Dyn</i> 1:19.

## Appendix III: Summary of systematic reviews

*SR = systematic review; RCT = randomized controlled trial; CCT = controlled clinical trial; NOS = not otherwise specified*

No.	Medical condition	Year	Author	Type of massage	Type (number) of included studies	Conclusion and/or recommendations
<b>Grade A Recommendations</b>						
1	Nausea & vomiting	2006	Helmreich et al <sup>20</sup>	Acupressure	RCT (8); CCT (6)	Significant reduction in nausea and vomiting, and greater effect than acupuncture
2	Nausea & vomiting	2006	Shiao and Dune <sup>23</sup>	Acupressure	RCT (33)	Korean hand acupressure most effective, as effective as 1st line antiemetics and acupuncture
3	Nausea & vomiting	2006	Shiao and Dibble <sup>22</sup>	Acupressure	SR (3)	Multiple acupoints shown as effective (adults > children) as medications/acupuncture and more feasible/convenient
4	Nausea & Vomiting	2000	Freels and Coggins <sup>19</sup>	Acupressure	Unspecified (8)	Proven effectiveness for nausea/vomiting over placebo in early pregnancy
5	Nausea & Vomiting	1999	Lee and Done <sup>21</sup>	Acupressure	RCT (24; 19 used for meta-analysis)	Deemed equivalent to 1st-line anti-emetics post-surgery
6	Nausea & Vomiting	1997	Harris <sup>10</sup>	Acupressure	Unspecified	Effective anti-emetic as compared to placebo
<b>Grade B Recommendations</b>						
7	Anxiety, nausea, pain and lymphoedema	2002	Weiger et al <sup>49</sup>	Massage (NOS); manual lymphatic drainage	Unspecified	Moderate evidence effectiveness/safety - recommended for anxiety and lymphoedema in conjunction with complex physical therapy. Positive findings for nausea; inconclusive (mixed) for pain - precaution described and recommended
8	Back pain (subacute/chronic)	2003	Cherkin et al <sup>24</sup>	Massage (NOS)	RCT (3)	Deem to be effective treatment; further data will assist recommendation. Safe (few adverse effects) and relatively cost-effective
9	Cancer	2008	Myers et al <sup>47</sup>	Swedish, aromatherapy, acupressure, reflexology	Unspecified (24)	Benefits in managing anxiety and pain in cancer patients observed

No.	Medical condition	Year	Author	Type of massage	Type (number) of included studies	Conclusion and/or recommendations
10	Cancer	2008	Hughes et al <sup>41</sup>	Massage (NOS) - paediatric massage / reflexology	RCT, CCT, observational studies	Recommended as supportive therapy for management pain, anxiety, depression, constipation and hypertension
11	Cancer	2008	Myers et al <sup>46</sup>	Swedish, aromatherapy, reflexology, acupressure	Unspecified (22)	Recommended for anxiety management for some cancer pts with less robust evidence for other symptoms i.e. pain, fatigue, depression - further research warranted
12	Cancer	2006	Joske et al <sup>12</sup>	Massage (NOS), aromatherapy, reflexology	SR, RCT	Moderate evidence in symptom management i.e. anxiety, pain, quality of life and potential for improved immunity
13	Cystic Fibrosis	2005	Huth et al <sup>36</sup>	Massage (NOS)	RCT/CCT (4) (inc chronic lung dx, asthma, CF)	Moderate evidence of fair to good quality trials - improved pulmonary function tests, anxiety and depression - recommended massage therapy for youths with cystic fibrosis
14	Low back pain (chronic)	2008	Imamura et al <sup>28</sup>	Massage / acupressure	RCT (5)	Moderate to strong evidence of effectiveness in symptoms and function both short and long term
15	Low back pain	2007	Chou and Huffman <sup>25</sup>	Massage (NOS)	2 SR containing 8 RCT	No evidence for acute low back pain; fair evidence for subacute/chronic low back pain reportedly as effective as spinal manipulative therapy
16	Low back pain	2005	van Tulder et al <sup>30</sup>	Massage (NOS)	Cochrane SR (1)	More effective (moderate) than placebo/sham for chronic low back pain and appears effective in acute on chronic low back pain - more research required
17	Low back pain (chronic/sub-acute)	2002	Furlan et al <sup>27</sup>	Massage (NOS), Swedish, acupressure	RCT(8); quasi-RCT (1)	Moderate evidence with potential for long-term benefits supports massage therapy in chronic/sub-acute low back pain
18	Lung cancer	2007	Cassileth et al <sup>37</sup>	Massage (NOS); reflexology; aromatherapy	Not specified - RCT included (9)	Clinical/statistical significant difference for anxiety, pain and other cancer symptoms i.e. fatigue/distress - recommended as part of multimodality treatment approach - avoid anatomical cancer lesions, post-operative and bleeding risks
19	Mood and anxiety	2000	Cooke and Ernst <sup>19</sup>	Aromatherapy	RCT (6)	Mild, transient alleviation of anxiety (not anxiety disorders) - caution due to poor quality studies
20	Non-specific low back pain	2004	Dryden et al <sup>26</sup>	Massage (NOS)	SR (2); RCT (4)	Positive findings but insufficient data - recommended for low back pain wt sig patient satisfaction and pain reduction
21	Pain (chronic, non-malignant)	2007	Tsao <sup>29</sup>	Massage (NOS)	SR/clinical trials unspecified	Fairly robust evidence for analgesia for non-specific low back pain, moderate support for shoulder pain and headache and modest preliminary support for fibromyalgia and mixed chronic pain, neck pain

No.	Medical condition	Year	Author	Type of massage	Type (number) of included studies	Conclusion and/or recommendations
22	Physiology	1997	Labyak and Metzger <sup>44</sup>	Swedish (back)	CCT (9)	Recommended as effective therapy to reduce heart rate and respiratory rate, and blood pressure (more drastic drop in male vs female) include patients wt cardiovascular disease - sustained effects unclear
23	Physiology, anxiety, depression	2004	Moyer et al <sup>11</sup>	Massage (NOS)	RCT (37)	Single application showed decrease state anxiety, heart rate and blood pressure whilst multiple applications also moderated pain. Largest effect in managing anxiety and depression.
24	Recovery / Delayed Onset Muscle Soreness (DOMS)	2008	Best et al <sup>35</sup>	Sports massage	RCT (10), Case-series (17)	Moderate beneficial evidence, further studies required
25	Relaxation	2000	Kerr <sup>43</sup>	Massage (NOS)	Various (13)	Effective in reducing physiological/ psychological stress response
26	Relaxation, comfort and sleep	2000	Richards et al <sup>48</sup>	Massage (NOS)	RCT, CCT, observational studies	Evidence exist for significant effects to reduced anxiety, physiologic markers of relaxation and pain reduction. Inconclusive for improving sleep due to methods of effect measure
27	Stress / anxiety	2005	Corbin <sup>39</sup>	Massage (NOS) excluding reflexology	Unspecified - Original research inc letters and case studies	Reportedly strong evidence for benefit in managing stress and reducing anxiety
28	Symptom management / quality of life	2006	Lafferty et al <sup>45</sup>	Massage (NOS)	RCT/CCT (11)	Significant benefits demonstrated in multiple trials with methodological flaws - anxiety, depression, pain, nausea, fatigue, insomnia, quality of life
29	Symptoms (anxiety, nausea and pain)	2008	Wilkinson et al <sup>140</sup>	Massage (NOS); Aromatherapy	CCT (10)	Short-term anxiolytic effect and potentially beneficial for management of pain and nausea - further research warranted due to lack of methodological rigour
30	Unspecified	1999	Gauthier <sup>40</sup>	Swedish massage (back)	Unspecified (22)	Deem effective to promote sleep and enhance sleep quality and reducing anxiety without haemodynamic compromise
<b>Grade C Recommendations</b>						
31	Alopecia areata	2000	Cooke and Ernst <sup>38</sup>	Aromatherapy	RCT (1)	Positive but insufficient data and poor methods for recommendation
32	Anxiety	2008	Parslow et al <sup>141</sup>	Massage (NOS)	RCT (1)	Promising findings that massage therapy may reduce anxiety in children/adolescent but further research to validate findings with larger trials required
33	Anxiety, depression, insomnia	2007	Meeks et al <sup>86</sup>	Massage (NOS)	RCT	Positive findings but insufficient data / poor quality studies - further research required

No.	Medical condition	Year	Author	Type of massage	Type (number) of included studies	Conclusion and/or recommendations
34	Anxiety, mood, other symptoms (mood, skin conditions, respiratory conditions)	2007	Beider et al <sup>6</sup>	Paediatric massage	Unspecified	Reduced state anxiety as single dose effect; reduced pain for juvenile rheumatoid arthritis - limited evidence-based recommendations
35	Anxiety, nausea, pain and lymphoedema	2002	Weiger et al <sup>49</sup>	Massage (NOS); manual lymphatic drainage	Unspecified	Moderate evidence effectiveness/safety - recommended for mx of anxiety and lymphoedema in conjunction with complex physical therapy. Positive findings for nausea; inconclusive (mixed) for pain - precaution described and recommended.
36	Arm, neck and shoulder complaints	2007	Verhagen et al <sup>75</sup>	Massage (NOS)	CCT (3)	Limited/positive outcome of massage therapy as add on in manual therapy treatment in single study of low quality - further research warranted
37	Arm, neck and shoulder complaints	2006	Verhagen et al <sup>74</sup>	Massage (NOS)	CCT (3)	Limited/positive outcome of massage therapy as add on in manual therapy treatment in single study of low quality - further research warranted
38	Attention deficit hyperactive disorder (ADHD)	2001	Arnold <sup>98</sup>	Massage (NOS)	Comparative (1)	Positive but insufficient data
39	Breast cancer - lymphoedema	2007	Moseley et al <sup>93</sup>	Manual lymphatic drainage	CCT (8)	Level B (moderate evidence) - Positive findings but more convincing when used in combination with compression therapy vs monotherapy - long term benefits unclear
40	Breast cancer - lymphoedema	2004	Kligman et al <sup>94</sup>	Manual lymphatic drainage	Clinical trial (2)	Positive but no significant difference - insufficient evidence as monotherapy - recommended in combination with compression therapy for management established lymphoedema
41	Cancer	2008	Myers et al <sup>46</sup>	Swedish, aromatherapy, reflexology, acupressure	Unspecified (22)	Recommended for anxiety management for some cancer patients with less robust evidence for other symptoms i.e. pain, fatigue, depression - further research warranted
42	Cancer pain	2008	Liu and Fawcett <sup>51</sup>	Massage (NOS)	Unspecified	Promising short term results - poor quality studies warrant more research
43	Cancer-related fatigue	2007	Sood et al <sup>55</sup>	Massage (NOS)	RCT (1)	Positive for fatigue, nausea, vomiting and anxiety but sustained effects unclear - further studies required
44	Delayed onset muscle soreness (DOMS)	2003	O'Connor and Hurley <sup>33</sup>	Sports massage	RCT (4)	Limited (mixed) evidence of fair quality showing benefit in reducing pain intensity
45	Dementia	2006	Viggo Hansen et al <sup>88</sup>	Massage (NOS)	RCT (2)	Limited evidence for hand massage for immediate short term reduction in agitation - single study - more research required

<b>No.</b>	<b>Medical condition</b>	<b>Year</b>	<b>Author</b>	<b>Type of massage</b>	<b>Type (number) of included studies</b>	<b>Conclusion and/or recommendations</b>
46	Dementia (behaviour disturbances)	1999	Opie et al <sup>87</sup>	Massage, aromatherapy	Unspecified (3)	Evidence of moderate quality with positive findings in heart rate reduction and objective ratings of relaxation but not of agitated behavior
47	Depression, anxiety, leg/back pain, prematurity, labor pain	2008	Field <sup>58</sup>	Pregnancy massage	Unspecified (2)	Positive findings, but insufficient data - no clinical recommendation provided
48	Depression	2006	Jorm et al <sup>91</sup>	Paediatric Massage	RCT (3)	Positive evidence but limited quality - immediate effect on mood but sustained effect to be investigated- further research warranted
49	Depression	1998	Ernst et al <sup>165</sup>	Massage (NOS)	RCT (1)	Positive but insufficient data and small sample size
50	Fibromyalgia	2007	Mannerkorpi and Henriksson <sup>79</sup>	Massage (NOS)	RCT (3)	May improve symptoms; positive but insufficient evidence to provide recommendations - further research warranted
51	Fibromyalgia	2007	Hardy-Pickering et al <sup>76</sup>	Massage (NOS)	Unspecified	Some evidence to support massage therapy, with recommendation for use as part of multimodality treatment
52	Fibromyalgia	2003	Holdcraft et al <sup>77</sup>	Swedish/Massage (NOS)	RCT(2)	Positive outcomes observed with pain, quality of life, perceived helplessness - better quality studies required
53	Fibromyalgia / musculoskeletal pain	1999	Karjalainen et al <sup>78</sup>	Massage (NOS) - multidisciplinary rehab	RCT/CCT	Limited evidence due to poor quality studies and lack of quantifiable benefits - further research required
54	General Wellbeing	2005	Anderson and Johnson <sup>57</sup>	Reflexology	RCT (1)	Positive but insufficient data
55	Growth and development	2007	Beider et al <sup>6</sup>	Infant massage	Unspecified	Improved weight gain and shorter hospital stays, improved mother-infant interaction, sleep and relaxation, reduced crying but based on single study and mixed evidence - safe by physiologic status and agitation/pain scores - also improved satisfaction and decreased post natal depression symptoms
56	Growth and development	2006	Underdown et al <sup>69</sup>	Infant Massage	RCT (23)	Some evidence of benefits on mother-infant interaction, sleeping and crying, and on hormones influencing stress levels without evidence for harm - recommended for community application. Single highly biased positive outcome of massage therapy for growth - further research
57	Growth and development	2004	Vickers et al <sup>70</sup>	Infant Massage	RCT (15)	Insufficient evidence due to poor methodological quality but suggestive of positive outcome



No.	Medical condition	Year	Author	Type of massage	Type (number) of included studies	Conclusion and/or recommendations
58	HIV / AIDS	2007	Uwimana and Louw <sup>56</sup>	Massage (NOS)	Peer reviewed scientific publications - RCT (2)	Improve health perception and decreased utilization of health resources and improved measures of quality of life i.e. anxiety, depression and improved immune function - may be effective and incorporated in palliative care - insufficient evidence however
59	HIV	2005	Mills et al <sup>52</sup>	Massage (NOS)	RCT (3)	Positive findings in anxiety, depression, quality of life and immunology but insufficient data - small studies
60	HIV / AIDS	1999	Ozsoy and Ernst <sup>68</sup>	Infant Massage	Unspecified ?CCT/RCT (1)	Benefits include reduced excitability, and improved weight gain as compared to placebo
61	Insomnia	2003	Richards et al <sup>101</sup>	Swedish	RCT (1), unspecified (1)	Limited evidence support use of relaxation massage to promote sleep
62	Knee osteoarthritis	2007	Zhang et al <sup>81</sup>	Massage (NOS)	RCT (1)	Significant benefit for pain in knee osteoarthritis - recommended as part of multimodality management
63	Labor pain	2007	Smith et al <sup>62</sup>	Acupressure	RCT (2)	Positive - decreased anxiety and reduced pain in treatment group of separate study but evidence is limited - further research warranted
64	Labor pain	2006	Smith et al <sup>63</sup>	Acupressure, massage (NOS)	RCT (3) - 2 acupressure, 1 massage	No recommendations for acupressure - positive in reducing anxiety and decreasing length of labour - massage appears to improve both anxiety and pain
65	Labor pain	2005	Anderson and Johnson <sup>57</sup>	Acupressure	RCT (1)	Time/pain reduction of 1st stage of labour but insufficient data
66	Labor pain	2004	Huntley et al <sup>59</sup>	Pregnancy massage	RCT (2)	Positive but poor quality trials - not presently recommended - further research
67	Labor pain	2004	Simkin and Bolding <sup>60</sup>	Massage (NOS), acupressure	RCT (3)	Compared to usual care in 2 RCTs, women who received massage therapy perceived reduced labor pain - promising results but small studies - further research required - no included trials of acupressure
68	Labor pain	2002	Simkin and O'hara <sup>61</sup>	Pregnancy massage	RCT/CCT (2)	Limited evidence and small studies for actually reducing pain but recommended as useful at any time in labor, these should be used to convey reassurance, empathy, and to enhance comfort, relaxation, and relief of back pain
69	Low back pain (acute)	2007	Louw et al <sup>73</sup>	Massage (NOS)	SR (21), RCT (4) and clinical guidelines (11)	May be beneficial - recommended in combination with exercise and education but not as monotherapy
70	Lung cancer (well-being and quality of life)	2004	Sola et al <sup>54</sup>	Reflexology	RCT/quasi-RCT (1)	Positive (potentially beneficial for anxiety) but small study - further research required

No.	Medical condition	Year	Author	Type of massage	Type (number) of included studies	Conclusion and/or recommendations
71	Mood disorders	2008	Andreescu et al <sup>89</sup>	Aromatherapy Reflexology Massage (NOS)	Case-series (2) Unspecified (6)	Positive but insufficient data
72	Mood enhancement	2005	Anderson and Johnson <sup>57</sup>	Massage (NOS)	RCT (1)	Positive but insufficient data
73	Mother-infant relationship	2005	Beal <sup>66</sup>	Infant massage	Qualitative studies (2)	Positive but insufficient data
74	Multiple	2000	Ireland and Olson <sup>67</sup>	Paediatric / Infant Massage	Unspecified	Recommends massage therapy for preterm neonates reduced length of hospitalization, benefit growth and development - symptom management in older children that is condition specific but further research warranted. Benefits include pain, anxiety, depression and respiratory function; other studies available - atopic dermatitis, autism
75	Multiple sclerosis	2008	Wang et al <sup>13</sup>	Reflexology	CCTs (5)	Single-blind RCT study demonstrating large effect in multiple sclerosis patients wt urinary symptoms, small effect on paraesthesia and spasticity
76	Multiple sclerosis	2000	Huntley and Ernst <sup>92</sup>	Massage (NOS); Reflexology	RCT (2)	Positive effect on anxiety, depression and self-esteem but significant methodological quality flaws - further research required
77	Muscular pain (low back pain/DOMS)	2004	Ernst <sup>32</sup>	Massage (NOS)	2 SR containing 13 (6; 7) RCT/CCT	Promising but poor quality of primary studies - warrants more research
78	Myofascial pain	2006	Rickards <sup>80</sup>	Deep transverse friction, digital ischaemic pressure, Swedish, Thai	RCT/quasiRCT (2)	All techniques showed reduced pain and disability measured - but no control group and difference between groups - appears benefit but limited evidence akin to case-studies
79	Nausea and vomiting - post-/intra-operative	2008	Allen and Habib <sup>166</sup>	Acupressure	RCT (6)	Some benefit but inconsistent findings
80	Nausea and vomiting - post-/intra-operative	2005	Anderson and Johnson <sup>57</sup>	Acupressure	RCT (2)	Positive but insufficient data
81	Nausea and vomiting - prenatal	2005	Anderson and Johnson <sup>57</sup>	Acupressure	RCT (7)	Mixed evidence
82	Nausea/ Vomitting	2004	Klein and Griffiths <sup>135</sup>	Acupressure	RCT (2)	Positive but mixed evidence - potential value and recommended as adjunct treatment

No.	Medical condition	Year	Author	Type of massage	Type (number) of included studies	Conclusion and/or recommendations
83	Pain (Chronic, non-malignant)	2007	Tsao <sup>29</sup>	Massage (NOS)	SR/clinical trials unspecified	Fairly robust evidence for analgesia for non-specific low back pain, moderate support for shoulder pain and headache and modest preliminary support for fibromyalgia and mixed chronic pain, neck pain
84	Pain (low back pain/DOMS)	2001	Wright and Sluka <sup>34</sup>	Massage (NOS)	SR (2)	2 reviews (low back pain/DOMS) Insufficient evidence - may be of limited benefit due to methodological flaws
85	Pain / other symptoms	2000	Cooke and Ernst <sup>38</sup>	Aromatherapy	RCT (1)	Positive but insufficient data and poor methods for recommendation
86	Physical distress	2005	Beal <sup>66</sup>	Infant massage	SR (1), Unspecified (1)	Positive but insufficient data
87	Physiology, anxiety, depression	2004	Moyer et al <sup>11</sup>	Massage (NOS)	RCT (37)	Single application showed decrease state anxiety, heart rate and blood pressure whilst multiple applications also moderated pain; largest effect in managing anxiety and depression
88	Postnatal depression, infant growth and development	2005	Zealey <sup>71</sup>	Infant massage	SR (2), RCT (2)	Rapid weight gain, reduced length of hospitalizations (based on systematic reviews), positive outcomes in post natal depression and mother-infant interaction (based on 1 RCT)
89	Post-natal depression	2004	Dennis <sup>65</sup>	Massage (NOS)	RCT (2)	Positive findings, but insufficient data and long term effects undetermined
90	Postpartum depression and mother-infant relationship	2008	Bamigboye and Smyth <sup>64</sup>	Reflexology	RCT (1)	Positive but insufficient data
91	Postpartum depression and mother-infant relationship	2005	Anderson and Johnson <sup>57</sup>	Infant massage	RCT (1)	Positive but insufficient data
92	Premenstrual syndrome	2001	Stevinson and Ernst <sup>72</sup>	Massage, reflexology	RCT (1 massage, 1 reflexology)	Positive outcomes but limited evidence - massage study had no comparison, whilst reflexology had small sample size - further research warranted
93	Pressure sores (prevention)	1997	Buss et al <sup>102</sup>	Massage (NOS)	Unspecified (10)	Positive but lacks statistical significance; lack evidence to recommend for high risk patients
94	Procedural pain	2008	Evans et al <sup>105</sup>	Massage (NOS)	Comparative study (1; unspecified)	Positive single study in burns patients otherwise limited evidence
95	Recovery / delayed onset muscle soreness (DOMS)	1998	Ernst <sup>31</sup>	Sports massage	RCT (1)	Positive but insufficient data and small sample size

No.	Medical condition	Year	Author	Type of massage	Type (number) of included studies	Conclusion and/or recommendations
96	Relaxation	2003	Smith and O'Driscoll <sup>137</sup>	Massage (NOS)	Unspecified	Inadequate reporting and apparent methodological flaws, but benefits appear positive towards cancer/mental health patients but conflicting in medical/intensive care patients
97	Symptoms inc anxiety, dyspnea, fatigue, pain	2008	Wilkinson et al <sup>50</sup>	Reflexology; foot massage	CCT (3)	Positive reduction of dyspnea, fatigue, anxiety and pain but heterogeneous studies - further studies with methodological rigour/sample size/long term effects/safety - lacks evidence for recommendation
98	Symptoms (anxiety, nausea and pain)	2008	Wilkinson et al <sup>140</sup>	Massage (NOS); aromatherapy	CCT (10)	Short-term anxiolytic effect and potentially beneficial for management of pain and nausea - further research warranted due to lack of methodological rigour
99	Symptom management and quality of life	2006	Lafferty et al <sup>45</sup>	Massage (NOS)	RCT/CCT (11)	Significant benefits demonstrated in multiple trials with methodological flaws - anxiety, depression, pain, nausea, fatigue, insomnia, quality of life
100	Symptom management (pain, dyspnea, nausea and vomiting)	2000	Pan et al <sup>53</sup>	Massage (NOS), aromatherapy	RCT (1), case-series (2)	Promising/positive results with significant benefit to reduce pain of short-term value but further research required - maybe beneficial for pain
101	Temporomandibular joint disorders	2007	Kalamir et al <sup>82</sup>	Massage (NOS)	Unspecified	Positive evidence as part of manual therapy / combined treatment approach - but lack of evidence as standalone treatment
102	Unspecific	1994	Ernst and Fialka <sup>7</sup>	Massage (NOS)	NOS	Promising but insufficient evidence for pain, anxiety, lymphoedema and depression requiring better quality CCTs
<b>Grade D Recommendations</b>						
103	Cancer pain	1998	Sellick and Zaza <sup>139</sup>	Massage (NOS)	RCT (1)	Mixed/Inconclusive findings with methodological limitations
104	Dementia / depression	2003	Snowden Met al <sup>167</sup>	Massage (NOS)	Case series (4)	Limited mixed evidence - 1 study showed reduced agitation during hand massage but not sustained
105	Cervical spondylosis	2008	Wang et al <sup>105</sup>	Tuina	Comparative studies (7)	Negligible pooled effects and mixed evidence - lacks evidence for clinical recommendation
106	Constipation	1999	Ernst <sup>106</sup>	Massage (NOS)	CCT (3)/RCT (1)	Inconclusive due to mixed evidence and poor quality studies
107	Ilio-tibial band (ITB) syndrome	2007	Ellis et al <sup>107</sup>	Deep transverse friction	RCT (4)	No significant benefit; insufficient data
108	Insomnia	2007	Cheuk et al <sup>99</sup>	Acupressure	RCT (7)	May improve sleep quality; however inconsistent and lack of evidence of good quality
109	Low back pain	1999	Ernst <sup>83</sup>	Massage (NOS)	CCT (4)	Inconclusive due to mixed evidence and poor quality studies

No.	Medical condition	Year	Author	Type of massage	Type (number) of included studies	Conclusion and/or recommendations
110	Lymphoedema	2007	Warren et al <sup>97</sup>	Manual lymphatic drainage	Unspecified	Manual lymphatic drainage may not contribute substantial reduction in edema volume over effects of compression. Commonly practised as complex physical therapy incorporating compression and exercise - generally positive up to 40-60% vol reduction reported but mixed evidence.
111	Nausea and vomiting - prenatal	2005	Anderson and Johnson <sup>57</sup>	Acupressure	RCT (7)	Mixed evidence
112	Neck pain (chronic)	2007	Vernon et al <sup>168</sup>	Massage (NOS)	RCT (2)	Lack of evidence (mixed) - further research
113	Pain	2006	Bardia et al <sup>138</sup>	Massage (NOS)	RCT (3)	Mixed evidence - 1 study short-term / immediate benefit, 2 studies showed no benefit
114	Pain	2006	Lewis and Johnson <sup>169</sup>	Massage (NOS) - therapeutic	Unspecified (20)	Mixed evidence - poor quality studies
115	Pain	2003	Stephenson and Dalton <sup>170</sup>	Reflexology	Unspecified (14)	Mixed evidence - inconclusive - further research required
116	Pressure sores (prevention)	2005	Duimel-Peeters et al <sup>103</sup>	Swedish	Unspecified (12)	Mixed evidence, insufficient data
117	Sports physiology, psychology and performance (DOMS included)	2001	Hemmings <sup>171</sup>	Sports massage	Unspecified	Equivocal results - inconclusive - further research warranted

#### Grade E Recommendations

118	Anxiety	2007	Robinson et al <sup>172</sup>	Massage (NOS)	RCT/quasi-RCT	No studies were included in this review
119	Arthritis	1994	Nicholas <sup>108</sup>			No included massage therapy studies
120	Asthma	2005	Hondras et al <sup>111</sup>	Massage (NOS)	RCT (1)	Insufficient evidence for recommendation - further research required
121	Asthma allergy	2004	Balon and Mior <sup>109</sup>	Massage (NOS)	RCT (2)	No significant difference compared with control
122	Atopic eczema	2001	Hoare et al <sup>110</sup>	Massage (NOS)		Insufficient evidence
123	Bell's Palsy	2008	Teixeira et al <sup>112</sup>	Massage (NOS)	RCT /quasi-RCT (3)	Lack of evidence (mainly assessed in combination ie physical therapy)
124	Breast cancer - lymphoedema (arm)	2001	Erickson et al <sup>95</sup>	Manual lymphatic drainage	Unspecified (6)	Manual lymphatic drainage, often prescribed as part of a multi-modality approach - recommended as effective therapy
125	Bronchial asthma	2008	Wang et al <sup>13</sup>	Reflexology	CCT (5)	No evidence

No.	Medical condition	Year	Author	Type of massage	Type (number) of included studies	Conclusion and/or recommendations
126	Carpal tunnel syndrome	2003	O'Connor et al <sup>113</sup>	No included massage therapy studies	RCT/quasi-RCT	No included massage therapy studies
127	Cervicogenic headache	2004	Bronfort et al <sup>117</sup>	Deep transverse friction; trigger point therapy	RCT (1)	Inferior to spinal manipulative therapy
128	Dementia	2003	Thorgrimsen et al <sup>173</sup>	Aromatherapy	RCT (1)	Lack of evidence - single study used topical application - not massage although results were positive to management agitation and neuropsychiatric symptoms
129	Diabetes mellitus	2001	Ezzo et al <sup>114</sup>	Swedish; acupressure	Unspecified	No data on increasing insulin sensitivity, insufficient/flawed evidence for improving blood sugar control, no evidence for symptom control of peripheral neuropathy; no adverse effects/contraindications observed
130	Headache	1999	Vernon et al <sup>119</sup>	Deep tissue massage	RCT (0); nil as stand-alone treatment	Lack of evidence - no included studies
131	Headache - tension type	2006	Fernandez-de-Las-Penas et al <sup>118</sup>	Massage (NOS / connective tissue massage)	RCT/CCT (3)	Limited evidence and of mixed quality
132	Headache (chronic / recurrent - tension, migraine, cervicogenic)	2004	Bronfort et al <sup>174</sup>	Massage (NOS)	Not applicable	Lack of evidence as stand-alone treatment
133	Insomnia / sleep	2004	Haesler <sup>100</sup>	Massage (NOS)	Quantitative / qualitative studies	No evidence of massage therapy reviewed
134	Intrapartum lymphoedema	2008	Wang et al <sup>13</sup>	Reflexology	CCT (5)	No evidence
135	Irritable bowel syndrome	2008	Wang et al <sup>13</sup>	Reflexology	CCT (5)	No evidence
136	Knee pain - tendinopathy	2001	Philadelphia panel <sup>121</sup>	Deep Transverse Friction	RCT (1)	Insufficient data
137	Labour - induction / augmentation and analgesia	2001	Allaire <sup>120</sup>	Acupressure	Nil	No data
138	Lateral epicondylagia (tennis elbow)	2005	Bisset et al <sup>122</sup>	Deep transverse friction; ,assage (NOS)	RCT (0); nil as stand-alone treatment	Lack of evidence

No.	Medical condition	Year	Author	Type of massage	Type (number) of included studies	Conclusion and/or recommendations
139	Low back pain (subacute)	2002	Pengel et al <sup>136</sup>	Massage (NOS)	RCT (2)	No recommendations of effectiveness of massage therapy due to lack of evidence/insufficient data
140	Low back pain - acute, subacute and chronic	2001	Philadelphia panel <sup>84</sup>	Therapeutic Massage	RCT (1) Comparative (1)	Insufficient data
141	Low back pain	1998	Ernst <sup>90</sup>	Massage (NOS)	Unspecified (7)	Overall negative/neutral - poor/lack of evidence
142	Lymphoedema	2004	Preston et al <sup>96</sup>	Manual lymphatic drainage	RCT (1)	Manual lymphatic drainage not shown to add benefit to compressive therapy - but has design limitation
143	Menopause	2005	Carpenter and Neal <sup>123</sup>	Reflexology	RCT (1)	No significant benefit; insufficient data
144	Menopause	2002	Kronenberg and Fugh-Berman <sup>124</sup>	Massage (NOS)	RCT	No reported evidence
145	Mood disorders / depression	2008	Coelho et al <sup>142</sup>	Swedish	RCT (4)	Lack of evidence in RCTs to support previous findings that suggest that massage therapy may be beneficial for mood disorders.
146	Multiple sclerosis	2008	Wang et al <sup>13</sup>	Reflexology	CCT (5)	Single-blind RCT study demonstrating large effect in multiple sclerosis patients wt urinary symptoms, small effect on paraesthesia and spasticity
147	Neck pain (chronic)	2008	Graham et al <sup>126</sup>	Traction	RCT (7)	Insufficient evidence due to poor quality studies
148	Neck pain	2007	Ezzo et al <sup>127</sup>	Massage (NOS)	RCT inc quasi-RCT(19)	Inconclusive evidence
149	Neck disorders	2006	Trinh et al <sup>175</sup>	Acupressure	RCT (1)	Lack of evidence - reportedly inferior to acupuncture in a single study for neck pain
150	Neck pain - acute/chronic	2005	Committee Guidelines Development <sup>128</sup>	Massage (NOS)	Not found	Insufficient/Lack of evidence to support recommendations (expert extrapolation) for management within scope of practice of practitioner
151	Neck and shoulder pain	2003	Karjalainen et al <sup>85</sup>	Massage (NOS) - multidisciplinary rehab	RCT/CCT	Poor evidence for multidisciplinary rehab
152	Neck disorders	2002	Gross et al <sup>127</sup>	Massage (NOS)	RCT/quasi-RCT	Equal effects to placebo, when combined with exercise may have positive effects on pain reduction/patient satisfaction
153	Neck pain - acute and chronic	2001	Philadelphia panel <sup>129</sup>	Therapeutic massage	Nil	No data
154	Oedema / varicose veins	2006	Bamigboye and Hofmeyr <sup>64</sup>	Reflexology	RCT (2)	Negative but insufficient data
155	Pelvic / back pain	2007	Pennick and Young <sup>143</sup>			No included massage therapy studies



No.	Medical condition	Year	Author	Type of massage	Type (number) of included studies	Conclusion and/or recommendations
156	Peri-natal depression / anxiety	2008	Coelho et al <sup>142</sup>	Swedish	RCT(7)	Lack of evidence for perinatal anxiety or depression
157	Primary headaches (tension, migraine, cervicogenic)	2005	Biondi <sup>116</sup>	Massage (NOS)	Not applicable	Lack of evidence; generally less effective compared with physical therapy (unspecified) or chiropractic (spinal manipulative therapy)
159	Quality of life (pain / function)	2008	Reid et al <sup>176</sup>	Massage (NOS)	RCT (7)	No evidence for older adults. Available (limited) finds benefit of massage for chronic pain in short term (?long term) - appears safe and studies are in young-mid age adults
160	Shoulder pain (non-specific)	2001	Philadelphia Panel <sup>145</sup>	Massage (NOS)	RCT (1)	Insufficient data to provide recommendations
161	Smoking cessation	2006	White et al <sup>132</sup>	Acupressure	RCTs (24 inc other acupressure / acupuncture type modalities)	No evidence
162	Stress (occupational) prevention	2006	Marine et al <sup>131</sup>	Massage (NOS)	RCT	Lack of evidence
163	Tendinopathy	2002	Brosseau <sup>133</sup>	Deep transverse friction	RCT (2)	Inconsistent findings; insufficient data
164	Weight loss/ appetite	1997	Ernst <sup>134</sup>	Acupressure	CCT (4)	Overall negative - poor/lack of evidence
165	Whiplash	2007	Verhagen et al <sup>130</sup>	Massage (NOS)	SR/RCT	Lack of evidence - combination treatments used but generally conflicting evidence for recommendations - no independent studies of massage therapy available to provide indication