Evidence Reports of
Anma-Massage-Shiatsu 2011:
18 Randomized Controlled Trials of Japan
(EAMS 2011)

31 March 2012
Project for Systematic Review of the Efficacy, Safety and Efficiency of Traditional East Asian Medicine

Task Force for Evidence Reports of Anma-Massage-Shiatsu

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CONTENTS

Members of the Task Force i

Contents iii

1. Background for preparing Anma-Massage-Shiatsu structured abstracts .......... 1
2. Purpose .................................................................................................................. 2
3. Steps for the development of structured abstracts ................................................. 2
   (1) Search for target references ................................................................. 2
   (2) Screening unrelated references .............................................................. 4
   (3) Screening excluded references (criteria for selection of references compiled as
        Structured abstracts) .............................................................................. 5
   (4) Preparation of structured abstracts .......................................................... 6
4. Conflicts of interest ............................................................................................... 10
5. Acknowledgements ............................................................................................... 10
6. Contact point ........................................................................................................ 10
7. Lists of structured abstracts and included references (18 references) .............. 11
8. Lists of excluded references (20 references) ..................................................... 15
9. Structured abstracts (18 abstracts describing RCTs) ........................................... 19
1. **Background for preparing Anma-Massage-Shiatsu structured abstracts**

As a result of an aging population, medical and long-term care costs have increased rapidly jeopardizing the financial bases of insurance plans in Japan. In 2006, this led to the structural reform of the healthcare system (i.e., the shift from treatment-oriented medicine to prevention-oriented medicine). In the field of long-term care, the whole nation began to address the issue of long-term care and preventive care services. It is ironic that, after the reform, the percentage of the elderly with certified need of care or support increased more rapidly than the percentage of the elderly itself. As of August 2011, the percentage of the elderly with certified need of long-term care or support was greater than 17% of all the elderly.

This fact suggests that the current reform implemented within the framework of existing medical and preventive care services has its limitations, and that medical and long-term care services may stop functioning in a super-aging society unless various medical resources including traditional therapies are fully utilized. These are urgent issues to be solved.

From this standpoint, Anma-Massage-Shiatsu can be regarded as public medical and long-term care resources, because a medical licensing system and official educational system have been established for it, and it has been practiced nationwide since the Edo era. Hopefully, Anma-Massage-Shiatsu will be systematized soon so that it can be integrated into the public health care system.

Anma-Massage-Shiatsu, however, has not been evaluated seriously in the context of evidence-based medicine (EBM), and as a result its value as a medical and long-term care resource may be underestimated and its systematization as a therapy made difficult.

Under the circumstances, comprehensive review of a wide variety of information on Anma-Massage-Shiatsu, compilation of a database that contains reliable references to this information, and establishment of a system that helps users search the database will be of benefit to those clinicians seeking information about useful treatments and of great help in increasing people’s confidence in Anma-Massage-Shiatsu therapy.

As part of the Project entitled “Systematic Review of the Efficacy, Safety and Efficiency of Traditional East Asian Medicine” (Principal investigator: Kiichiro TSUTANI) using the Health and Labour Sciences Research Grants beginning in 2010, the Task Force for Anma-Massage-Shiatsu therapy was established and made systematic review of the evidence in this field.
2. **Purpose**

The aims are to collect papers on Anma-Massage-Shiatsu therapy, review the evidence presented by these papers comprehensively, grade the evidence of each paper, summarize the evidence from high-quality studies, and prepare structured abstracts of these studies.

3. **Steps for the development of structured abstracts**

The structured abstracts were prepared using the following steps: (1) Search for target journals, (2) screen unrelated references, (3) screen excluded references, and (4) prepare structured abstracts.

(1) **Search for target references**

To prepare a report of evidence on Anma-Massage-Shiatsu therapy, only results of relevant studies reported by Japanese to journals published in Japan were collected. For this purpose, only the database Ichushi Web Ver.4 (in Japanese) was used to search for target references. Ichushi is the abbreviation of *Igaku Chuo Zasshi* (*Japana Centra Revuo Medicina*: JCRM) and covers the period of 1983–2010.

For the selection of target references, keywords (controlled terms) were determined before the search formula were created. The search criteria for target references were as follows: 1) Papers with titles or abstracts about techniques or therapies similar to or related to Anma-Massage-Shiatsu and 2) papers describing controlled trials (meta-analysis/RD or randomized controlled trial/RD or quasi-randomized controlled trial/RD).

The search term were selected from terms used to describe Anma-Massage-Shiatsu and related techniques/therapies in the following literatures:


Search formula and the results of the search appeared in Table 1.

None of the procedures of Anma, Massage, or Shiatsu have been defined by legal acts or precedents in Japan. In this report, Anma-Massage-Shiatsu therapy is the general term for a group of manual therapies involving squeezing, pressing, and stroking. They have been handed down from generation to generation in Japan for the purpose of treatment, healthcare, prevention, or health promotion. Manual therapies (such as reduction, arthrokinematic approach [AKA], chiropractic, and Seitai) and massage with the aid of instruments or apparatus are excluded.

The levels of evidence selected are basically RCTs and quasi-randomized controlled trials, as their quality is higher than that from other types of trials, but non-randomized controlled trials are not excluded provided that they are controlled clinical trials. References are classified into the following five types: a) clinical practice guidelines (CPGs), b) meta-analyses, c) randomized controlled trials (RCT), d) quasi-randomized controlled trials (quasi-RCT, and e) clinical trials (CT).

(2) Screening unrelated references

Target references selected by the above search method may contain references about medical interventions other than Anma-Massage-Shiatsu therapy. Therefore, certain criteria were established to exclude unrelated references. For this screening, four reviewers independently determined whether or not 105 references met these criteria by evaluating their titles or abstracts in accordance with the following procedures:

For research purposes, we excluded references that met any of the primary exclusion criteria listed below (primary screening) and then those about interventions that met any of the secondary exclusion criteria (secondary screening). References excluded by these two screenings were regarded as unrelated references.

As described above, references written only by non-Japanese authors were excluded, because the focus of this evidence report was on Anma-Massage-Shiatsu clinical trials by Japanese.
Table 1  Search formula for Anma-Massage-Shiatsu study and identified number in Ichushi Web Ver.4

Date of search: 21 May 2010

<table>
<thead>
<tr>
<th>No.</th>
<th>Search formula</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>あんま (Anma) / AL or 按摩 (Anma) / AL or あん摩/AL or 指压 (Shiatsu) / TH or 指圧/AL or pointillage/AL or Shiatsu/AL or shiatsu/AL or &quot;finger pressure&quot;/AL or Acupressure/AL or acupressurist/AL or &quot;Zhi Ya&quot;/AL or &quot;Chih Ya&quot;/AL or manipulation/AL or manipulative/AL or マニピュレーション or マニピュレイション (manipulation)</td>
<td>4,424</td>
</tr>
<tr>
<td>#2</td>
<td>マッサージ (massage) / TH or マッサージ/AL or 揉み治療 (kneading) / AL or 揉み療治/AL or もみ治療/AL or もみ療治/AL or massage/AL or masseur/AL or masseuse/AL or massagist/AL or massotherap/AL</td>
<td>6,304</td>
</tr>
<tr>
<td>#3</td>
<td>#1 or #2</td>
<td>9,907</td>
</tr>
<tr>
<td>#4</td>
<td>リフレクソロジー (reflexology) / AL or reflexolog/AL or ゾーンセラピー (zone therapy) / AL or &quot;Zone Therap&quot;/AL or ナプラパシー (naprapathy) / AL or naprapath/AL or カイロプラク (chiropractic) / AL or chiropractic/AL or整体 (seitai) / AL</td>
<td>1,412</td>
</tr>
<tr>
<td>#5</td>
<td>#1 or #2 or #4</td>
<td>10,669</td>
</tr>
<tr>
<td>#6</td>
<td>#5 and RD=診療ガイドライン (Clinical practice guideline)</td>
<td>3</td>
</tr>
<tr>
<td>#7</td>
<td>#5 and RD=メタアナリシス (Meta-analysis) not #6</td>
<td>3</td>
</tr>
<tr>
<td>#8</td>
<td>#5 and RD=ランダム化比較試験 (Randomized controlled trial) not #6 not #7</td>
<td>45</td>
</tr>
<tr>
<td>#9</td>
<td>#5 and RD=準ランダム化比較試験 (Quasi-randomized controlled trial) not #6 not #7 not #9</td>
<td>19</td>
</tr>
<tr>
<td>#10</td>
<td>#5 and 臨床試験 (Clinical trial) / TH not #6 not #7 not #8 not #9</td>
<td>35</td>
</tr>
<tr>
<td>#11</td>
<td>#5 and RD=比較研究 (Controlled trial) not #6 not #7 not #8 not #9 not #10</td>
<td>354</td>
</tr>
<tr>
<td>#12</td>
<td>#6 or #7 or #8 or #9 or #10 or #11</td>
<td>459</td>
</tr>
</tbody>
</table>

* RD: research design

1) Primary exclusion criteria

Studies that are conducted not for the purpose of evaluating the efficacy, usefulness, or safety of Anma-Massage-Shiatsu therapy and meet any of the items “a” to “d” listed below:
a. Studies to evaluate the effects of surgery, drugs, chemotherapy, or other medical interventions provided by doctors
b. Studies to evaluate the effects of hygienic measures such as bed bathing and shampooing
c. Studies to evaluate the effects of physical therapies (e.g., thermotherapy such as hand bath, phototherapy, and electrotherapy)
d. Studies to evaluate the effects of nursing or long-term care education

2) Secondary exclusion criteria

Methods of intervention that meet any of the items “a” to “f” listed below, excluding Anma, Massage, and Shiatsu. These include studies to evaluate the effects of:

a. Exercise (including stretching)
b. Manual therapies such as the arthrokinematic approach (AKA-Hakata method) performed by physical therapists
c. Manual therapies (e.g., reduction) performed by judo healing practitioners
d. Manual therapies (e.g., chiropractic, spinal manipulation) performed by quasi-medical practitioners
e. Resuscitation
f. Medical devices (e.g., massage chair, air massager, and elastic stockings)

(3) Screening excluded references (criteria for selection of references compiled as structured abstracts)

To select references to be compiled as structured abstracts, it is necessary to thoroughly evaluate all references shown by the search results and screen unrelated references to be excluded.

While a reference evaluation checklist (Table 2) was prepared, references to be evaluated were ordered and divided equally into two groups. Two reviewers were assigned to each of the groups so that the references would be independently reviewed.

References to be summarized as structured abstracts were required to meet two inclusion criteria and not to meet either of the two exclusion criteria shown below. References that did not fulfill these requirements were classified as excluded references. When two reviewers disagreed about whether or not a certain reference should be excluded, their disagreement was resolved by discussion.
Table 2  Reference evaluation checklist

Prepared by: 
Reference No.: 

- **Inclusion criteria:** Both of the following two criteria are met
  1. Intervention includes Anma, Massage, or Shiatsu (title, purpose, method). ○ or ×
  2. The trial has control group(s) (e.g., parallel group, crossover). ○ or ×

- **Exclusion criteria:** Either of the following two criteria is met
  1. The purpose of the trial is not evaluation of the efficacy, usefulness, safety, etc. of Anma, Massage, or Shiatsu. ○ or ×
  2. The purpose of the trial is not evaluation of Anma, Massage, or Shiatsu (manual therapy), but evaluation of a device or machine (e.g., massage chair, air massager, elastic stockings).

The second inclusion criterion, “The trial has control group(s),” means that the trial is a randomized controlled trial (RCT), quasi-randomized controlled trial (quasi-RCT), crossover trial, clinical practice guidelines (CPGs), or trials included in meta-analyses. Trials without clear-cut randomization and crossover trials were regarded as RCTs.

(4) Preparation of structured abstracts
1) Target references

A search of the database of Ichushi Web for target references found 105 references, 72 (71.4%) of which had abstracts. Table 3 shows 94 references arranged by time period but not those references without information on the year of publication. Most (96.8%) of the references were published after 2000. When the 105 references were grouped by level of evidence, 3, 3, 45, 19, and 35, respectively, contained clinical practice guidelines (CPGs), trials included in meta-analyses (MA), randomized controlled trials (RCTs), quasi-randomized controlled trials (quasi RCTs), and clinical trials (CTs) (Table 1 #6–9).

2) Unrelated references

As a result of screening the 105 target references for unrelated references, 40 references met the primary exclusion criteria, 25 met the secondary exclusion criteria, and 1 was found to be written by non-Japanese authors. That is, 66 references (62.9% of the target references) were excluded.
Table 3  References related to Anma-Massage-Shiatsu grouped by study design and year of publication

<table>
<thead>
<tr>
<th>Year</th>
<th>Randomized Comparison</th>
<th>Non-Randomized Comparison</th>
<th>Clinical Trials</th>
<th>Total</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980-1989</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1.1%</td>
</tr>
<tr>
<td>1990-1999</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2.1%</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3</td>
<td>36</td>
<td>34</td>
<td>96.8%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3</td>
<td>38</td>
<td>35</td>
<td>94%</td>
</tr>
<tr>
<td></td>
<td>2.1%</td>
<td>3.2%</td>
<td>40.4%</td>
<td>37.2%</td>
<td>100%</td>
</tr>
</tbody>
</table>

3) Excluded references

Excluding the 66 unrelated references from the 105 target references, 39 references were evaluated using the reference evaluation checklist and 19 of them met the criteria for preparation of structured abstracts. Excluding one reference with contents similar to those of other references (No. 12 on the list of references for preparation of structured abstracts), structured abstracts were prepared for 18 references.

All of these references were about the evaluation of efficacy and none of them were about safety or cost effectiveness. For the remaining 20 references (excluded references), their bibliographic items and reasons for exclusion were described on the excluded reference list (see below).

The process of selecting references for preparation of structured abstracts is shown in Fig. 1.
Fig. 1  Flowchart showing the process of reference selection for structured abstract (SA) preparation

Ichushi Web:
Target references: 105
(Date of search: 2010.05.21)

Primary screening

Related references: 65

Secondary screening

Related references: 39
(References ordered for evaluation)

References for which SA should be prepared: 19
(Date of interim briefing session: 2011.03.01)

Excluded references: 20

Related references: 18

References for which SA was prepared: 18
Completion of preparation of SA in Japanese
Completion of preparation of SA in English

Unrelated references: 40
(Research purposes unrelated to Anma-Massage-Shiatsu)

Unrelated references: 25
(Interventions without Anma-Massage-Shiatsu)

Reference written only by non-Japanese: 1

Reference with contents similar to those of other references: 1

Unrelated references: 39
(References ordered for evaluation)

Excluded references: 20

References for which SA should be prepared: 19
(Date of interim briefing session: 2011.03.01)

Reference with contents similar to those of other references: 1

Unrelated references: 40
(Research purposes unrelated to Anma-Massage-Shiatsu)

Unrelated references: 25
(Interventions without Anma-Massage-Shiatsu)

Reference written only by non-Japanese: 1

Related references: 39
(References ordered for evaluation)
4) ICD-10 and disease classification of structured abstracts

The 18 studies included in the reports were compared against the ICD 10 disease names and were found to correspond to only three of those: “Diseases of the Musculoskeletal and Connective Tissue” “Symptoms and Signs” and “Others” (Table 5). “Disease classification names” used in EKAT 2010 by JSOM were used in EAMS 2011.

Table 4 ICD-10 and disease classification of structured abstracts

<table>
<thead>
<tr>
<th>Chapter no.</th>
<th>ICD-10 code</th>
<th>Chapter title</th>
<th>Disease classification names in EKAT and EAMS 2011</th>
<th>EAMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A00-B99</td>
<td>Certain infectious and parasitic diseases</td>
<td>Infections (including viral hepatitis)</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>C00-D48</td>
<td>Neoplasms</td>
<td>Cancer (condition after cancer surgery and unspecified adverse drug reactions of anti-cancer drugs)</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>D50-D89</td>
<td>Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism</td>
<td>Blood diseases including anaemia</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>E00-E90</td>
<td>Endocrine, nutritional and metabolic diseases</td>
<td>Metabolism and endocrine diseases</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>F00-F99</td>
<td>Mental and behavioural disorders</td>
<td>Psychiatric/behavioral disorders</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>G00-G99</td>
<td>Diseases of the nervous system</td>
<td>Nervous system diseases (including Alzheimer's disease)</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>H00-H59</td>
<td>Diseases of the eye and adnexa</td>
<td>Eye diseases</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>H60-H95</td>
<td>Diseases of the ear and mastoid process</td>
<td>Ear diseases</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>I00-I99</td>
<td>Diseases of the circulatory system</td>
<td>Cardiovascular diseases</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>J00-J99</td>
<td>Diseases of the respiratory system</td>
<td>Respiratory diseases (including influenza and rhinitis)</td>
<td>0</td>
</tr>
<tr>
<td>11</td>
<td>K00-K93</td>
<td>Diseases of the digestive system</td>
<td>Gastrointestinal, hepato-biliary-pancreatic diseases</td>
<td>0</td>
</tr>
<tr>
<td>12</td>
<td>L00-L99</td>
<td>Diseases of the skin and subcutaneous tissue</td>
<td>Skin diseases</td>
<td>0</td>
</tr>
<tr>
<td>13</td>
<td>M00-M99</td>
<td>Diseases of the musculoskeletal system and connective tissue</td>
<td>Diseases of the musculoskeletal and connective tissue</td>
<td>2</td>
</tr>
<tr>
<td>14</td>
<td>N00-N99</td>
<td>Diseases of the genitourinary system</td>
<td>Genitourinary tract disorders (including climacteric disorders)</td>
<td>0</td>
</tr>
<tr>
<td>15</td>
<td>O00-O99</td>
<td>Pregnancy, childbirth and the puerperium</td>
<td>Ante/Post-partum Diseases</td>
<td>0</td>
</tr>
<tr>
<td>16</td>
<td>P00-P96</td>
<td>Certain conditions originating in the perinatal period</td>
<td>Certain conditions originating in the perinatal period</td>
<td>0</td>
</tr>
<tr>
<td>17</td>
<td>Q00-Q99</td>
<td>Congenital malformations, deformations and chromosomal abnormalities</td>
<td>Congenital malformations, deformations and chromosomal abnormalities</td>
<td>0</td>
</tr>
<tr>
<td>18</td>
<td>R00-R99</td>
<td>Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified</td>
<td>Symptoms and signs</td>
<td>12</td>
</tr>
<tr>
<td>19</td>
<td>S00-T98</td>
<td>Injury, poisoning and certain other consequences of external causes</td>
<td>Post-anesthesia and postoperative pain</td>
<td>0</td>
</tr>
<tr>
<td>20</td>
<td>V00-Y98</td>
<td>External causes of morbidity and mortality</td>
<td>External causes of morbidity and mortality</td>
<td>0</td>
</tr>
<tr>
<td>21</td>
<td>Z00-Z99</td>
<td>Factors influencing health status and contact with health services</td>
<td>Others</td>
<td>4</td>
</tr>
<tr>
<td>22</td>
<td>U00-U99</td>
<td>Codes for special purposes</td>
<td>Codes for special purposes</td>
<td>0</td>
</tr>
</tbody>
</table>
A structured abstract basically contains 11 of the 12 elements utilized by the “Evidence Reports of Kampo Treatment 2010” (EKAM 2010) All of the following headings except “From Kampo medicine perspective” in EKAT are present: 1) Objectives, 2) design, 3) setting, 4) participants, 5) intervention, 6) main outcome measures, 7) main results, 8) conclusions, 9) safety assessment in the article, 10) abstractor’s comments, and 11) abstractor and date.

“From Anma-Massage-Shiatsu perspective” was not added in EAMS because even if the item was added under the conditions in which the evidence of the efficacy of each technique of Anma-Massage-Shiatsu or theory of its therapeutic effect had not been well established, it would be difficult to standardize the criteria for evaluating contents to be described. It remains to be seen whether adding the heading is appropriate and the format should be uniform with that used in other evidence reports series.

5. Conflicts of interest

None of the members of the Task Force for Anma-Massage-Shiatsu have COI during the project (June 2010 – March 2012).

6. Acknowledgements

Special thanks to Kiichiro Tsutani (Department of Drug Policy and Management, Graduate School of Pharmaceutical Sciences, The University of Tokyo), Koki Tsuruoka (Division of Community and Family Medicine, Center for Community Medicine, Jichi Medical University), and Ichiro Arai (Department of Pharmacognosy, School of Pharmaceutical Sciences, Toho University) for showing us how to gather references and select RCTss, ASCA Corporation for translating the evidence reports, and Sunmedia Co., Ltd., for helping us gather references.

This study was supported by Health and Labour Sciences Research Grants (fiscal year2010-11).

7. Contact point

We would appreciate your comments on this report. Please send your comments to the address below. Comments from the authors of the included references would also be welcome. If you find references that you think should be included but are not included, please inform us. We will include your comments in the final report.

fujii@k.tsukuba-tech
7. Lists of Structured Abstracts

The list below indicates the 18 studies (structured abstracts) with 1) ICD-10 code, 2) Research question, 3) References, 4) Study design, 5) Sources, and 6) Page. As shown in the Table 4, Page 8, regarding the ICD-10 disease classification with no RCTs found, we decided not to indicate the corresponding chapter numbers of ICD-10 and disease classification names in the list below.

**Note:** Original English titles assigned by authors were used in this list and the structured abstracts. When references had no English titles, the Task Force translated the original Japanese titles into English ones (*).

**Abbreviations:** “I” indicates Ichushi Web Ver. 4

### Structured Abstracts describing RCTs and the References Reporting Them
(18 abstracts, 19 references)

#### 13. Diseases of the Musculoskeletal and Connective Tissue (2 abstracts, 3 references)

<table>
<thead>
<tr>
<th>ICD-10</th>
<th>Research Question</th>
<th>References</th>
<th>Study Design</th>
<th>Sources</th>
<th>Page</th>
</tr>
</thead>
</table>

#### 18. Symptoms and Signs (12 abstracts, 12 references)

<table>
<thead>
<tr>
<th>ICD-10</th>
<th>Research Question</th>
<th>References</th>
<th>Study Design</th>
<th>Sources</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICD-10</td>
<td>Research Question</td>
<td>References</td>
<td>Study Design</td>
<td>Sources</td>
<td>Page</td>
</tr>
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<td>--------</td>
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<td>---------</td>
<td>------</td>
</tr>
<tr>
<td>ICD-10</td>
<td>Research Question</td>
<td>References</td>
<td>Study Design</td>
<td>Sources</td>
<td>Page</td>
</tr>
<tr>
<td>--------</td>
<td>-------------------</td>
<td>------------</td>
<td>--------------</td>
<td>---------</td>
<td>------</td>
</tr>
</tbody>
</table>

21. Others (4 abstracts, 4 references)

<table>
<thead>
<tr>
<th>ICD-10</th>
<th>Research Question</th>
<th>References</th>
<th>Study Design</th>
<th>Sources</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z51.5</td>
<td>To evaluate the efficacy of aromatherapy for Ueda N, Maruta T, Uno I. Trial of aromatherapy for dialysis patients – A strategy for discomfort*. <em>Yodogawa Christian Byoin</em></td>
<td></td>
<td>RCT</td>
<td>I</td>
<td>38</td>
</tr>
<tr>
<td>ICD-10</td>
<td>Research Question</td>
<td>References</td>
<td>Study Design</td>
<td>Sources</td>
<td>Page</td>
</tr>
<tr>
<td>--------</td>
<td>-----------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
<td>--------------</td>
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</table>
8. Lists of Excluded References (20 references)

Note: Original English titles assigned by authors were used in this list and the structured abstracts. When references had no English titles, the Task Force translated the original Japanese titles into English ones (*).

Abbreviation: “I” indicates the Ichushi Web Ver.4.

Reasons for exclusion were classified as follows:

(1) Interventions other than Anma, Massage, or Shiatsu are included.
(2) The trial is not controlled (e.g., it is not an RCT).
(3) The purpose of the trial is not to evaluate the efficacy or safety of Anma, Massage, or Shiatsu.
(4) The purpose of the trial is not to evaluate manual therapy but rather therapy involving the use of devices or machines.
(5) A structured abstract cannot be prepared because details in the reference are not well described or missing.

5. Psychiatric/behavioral disorders (1 reference)

<table>
<thead>
<tr>
<th>No.</th>
<th>Research Question</th>
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<th>Reason for Exclusion</th>
<th>Source</th>
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</table>

6. Nervous system diseases (including Alzheimer's disease) (3 references)

<table>
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<th>References</th>
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<tr>
<td>G90.9</td>
<td>Evaluation of changes in skin temperature induced by acupressure</td>
<td>Wada T, Usuda Y, Terada K. Changes in skin temperature induced by acupressure - Evaluation of subjective and objective changes in temperature -. Toyo Igaku to Pain Clinic (Oriental Medicine and the Pain Clinic) 2007; 17: 368–72 (in Japanese).</td>
<td>(2)</td>
<td>I</td>
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</table>
8. Ear diseases (1 reference)

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<tr>
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<th>Research Question</th>
<th>Reference</th>
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13. Diseases of the Musculoskeletal and Connective tissue (5 references)

<table>
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<tr>
<th>No.</th>
<th>Research Question</th>
<th>References</th>
<th>Reason for Exclusion</th>
<th>Source</th>
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</table>

18. Symptoms and Signs (10 references)

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<th>References</th>
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<tbody>
<tr>
<td>R53.6</td>
<td>Comparison of the effect of stroking the skin on the low back and both forearms</td>
<td>Ito Y, Motohashi M, Kudo M. A comparison: Relaxation effect of stroking to the trunk back and to the fore-arms. Igaku to Seibutsugaku (Medicine and Biology) 2009; 153: 363–8 (in Japanese).</td>
<td>(1)</td>
<td>I</td>
</tr>
</tbody>
</table>
9. Structured Abstracts

(18 abstracts describing RCTs)

• Note: Original English titles assigned by authors were used in this list and the structured abstracts. When references had no English titles, the Task Force translated the original Japanese titles into English ones (°).

• Each bibliographic item is followed by its ID No. from a particular searched database (Ichushi web ID).
13. Diseases of the Musculoskeletal and Connective Tissue

**Reference**

1. **Objectives**
To evaluate the effect of manual therapy on quality of life (QOL) in chronic rheumatoid arthritis (RA) patients.

2. **Design**
Quasi-randomized controlled trial (quasi-RCT).

3. **Setting**
Outpatients clinics (the University of Tokyo Hospital), Japan.

4. **Participants**
Twenty adult patients with RA (at least two years since onset, treated with steroids [10 mg/day [prednisolone equivalent] or less]).

5. **Intervention**
Arm 1: Combined group: Drug therapy and manual therapy (once a week, n=10).
Arm 2: Control group: Drug therapy (n=10).

6. **Main outcome measures**
American College of Rheumatology (ACR) Core Set (RA activity score).
The study observation period was one year.

7. **Main results**
Of the ACR Core Set measures, the tender and swollen joint counts improved by 20% or more in both groups, and the improvement in patient-assessed pain and physician-assessed pain scores was significantly different between groups. QOL tended to improve in both groups. The improvement in QOL measures including hand and finger function, pain, and tension was similar in both groups.

8. **Conclusions**
Combining manual therapy with standard treatment limits reduction of physical functioning, improves activities of daily living, and contributes to improved QOL in RA patients.

9. **Safety assessment in the article**
Not mentioned.

10. **Abstractor’s comments**
The author has designed the study well: the observation period spans the relatively long period of one year, and standard measures are used for the outcomes. The author’s institution demonstrates its potential as a research institute. Regrettably, the study has flaws, including its use of the odd-even ID number method of randomization. Such problems could be rectified by using the university’s clinical trial center.

11. **Abstractor and date**
Tsukayama H, 17 December 2011.
13. Diseases of the Musculoskeletal and Connective Tissue

**References**

1. **Objectives**
To evaluate the effectiveness of manual therapy for delayed onset muscle soreness (DOMS).

2. **Design**
Randomized controlled trial (RCT).

3. **Setting**
Not described, Japan.

4. **Participants**
Twelve healthy male students (mean age ± SE: 18.8±1.3 years).

5. **Intervention**
Participants repeated 3 sets (30-second intervals) of 10 eccentric elbow flexor contractions (angular velocity: 60 deg/sec) at a maximum force of 100%.
Arm 1: Manual therapy group: One-minute effleurage of the elbow flexors, then 10-minute petrissage and one-minute effleurage (n=6).
Arm 2: Control group: No treatment (n=6).

6. **Main outcome measures**
Visual Analogue Scale (VAS) pain score, tenderness (algometer), muscle rigidity (Venustron).

7. **Main results**
VAS pain scores from day 3 to day 6 were 19.5, 13.7, 8.2, and 2.8 in Arm 2 and high (54.2, 44.8, 27.3, and 12.5) in Arm 1. Mean tenderness threshold scores were lower in Arm 1 than Arm 2 from day 3, and muscle rigidity scores were slightly higher in Arm 1.

8. **Conclusions**
Manual therapy for DOMS after exercise intensifies pain.

9. **Safety assessment in the article**
Not mentioned.

10. **Abstractor’s comments**
This very interesting study suggests the possibility that manual therapy (effleurage and petrissage) for DOMS after exercise intensifies pain. The study was well designed, particularly the outcome measures, which included subjective (VAS) and objective (tenderness threshold score, etc.) measures over a long enough period to detect changes over time. Yet, the sample size was small, and the authors did not indicate the intensity of DOMS, the methods or extent of the manual treatment, or any significant differences in tenderness thresholds. Although the abstract form may limits the amount of detail that can be presented, the authors should have described the manual therapy methods because the effects on intramuscular circulation and the amount of stimulation depend on whether the thumb or grasping is used in the petrissage, and whether the petrissage movements are linear or circular. Possibly, pain was intensified in this trial because excessive force was used in the effleurage and petrissage. The authors do not discuss these parameters, so it is difficult to find adequate evidence for their thesis that manual therapy for DOMS is harmful (i.e., causes microscopic tissue damage and increases inflammation). On the other hand, given the current lack of articles presenting a high level of evidence that manual therapies for DOMS are effective or harmful, the findings suggested in this study are highly significant. Hopefully researchers will investigate this topic and follow-up this study to provide better treatment and better protection of people who participate in sports.

11. **Abstractor and date**
Fujii R, 8 December 2010.
18. Symptoms and Signs

Reference

1. Objectives
To evaluate the efficacy of aromatherapeutic hand and foot massage (AM) using two kinds of essential oils.

2. Design
Crossover randomized controlled trial (RCT - cross over).

3. Setting
Not described, Japan.

4. Participants
Sixteen healthy women.

5. Intervention
Arm 1: massage with lavender and geranium (LA/GE) oils (n=16).
Arm 2: massage with peppermint and lemongrass (PE/LE) oils (n=16).
Arm 3: massage with carrier oil only (control) (n=16).

6. Main outcome measures
Heart rate variation, electroencephalogram (EEG), salivary cortisol (CS) level, salivary IgA level, scores on psychological questionnaire (Profile of Mood States [POMS]/Mini Mental State [MMS] Examination).

7. Main results
The heart rate variation high frequency (HF) value increased after AM with LA/GE, while the LF/HF values increased after AM with PE/LE. The EEG power percentage increased the most after AM with PE/LE. CS concentration decreased greatly after AM with LA/GE and after AM with PE/LE. Salivary IgA increased the most after AM with PE/LE. Although the scores for negative emotions in the psychological questionnaire increased after AM with LA/GE, scores for positive emotions increased after AM with PE/LE. Fatigue decreased the most after AM with PE/LE, while relaxation increased.

8. Conclusions
A short period of aromatherapeutic hand and foot massage not only has psychological effects, it changes physiological indicators and, depending on the type of essential oil used, achieves various psychosomatic effects.

9. Safety assessment in the article
Not mentioned.

10. Abstractor’s comments
Previous research has indicated that massage using essential oils has certain psychological and physiological effects: the significance of this study is that it used RCT methods and various stress markers to investigate the distinctive effects of particular oils. However, the design of this study employs the cross over method, and considering salivary indicator stimulus-response time, it would appear that setting the interval between AM applications to 10 minutes was too short for an assessment of the differences between the effects of LA/GE and PE/LE. In addition to the lack of safety evaluation of the oils, neither the number of subjects in the control group nor the trial procedure was specified. The psychological and physiological effects of the AM massage itself, not just the essential oils, are considerable. Further evaluation using a design that takes those points into account would increase its scientific value.


11. Abstractor and date
18. Symptoms and Signs

Reference

1. Objectives
To evaluate the effectiveness of effleurage for muscle fatigue and muscle endurance recovery.

2. Design
Crossover randomized controlled trial (RCT-cross over).

3. Setting
Acupuncture and Physical Therapy Teacher Training School, University of Tsukuba, Ibaraki, Japan.

4. Participants
Twelve healthy adults.

5. Intervention
The laboratory temperature and humidity were 26°C and 60%. Participants were instructed to repeatedly squeeze a hand dynamometer at 50% of their maximum handgrip strength until exhausted. Fatigued muscles received 5 minutes of effleurage before measurement. This process constituted one phase, which was repeated five times.
Arm 1: Efferent effleurage group (n=12).
Arm 2: Afferent effleurage group (n=12).
Arm 3: Control group (no treatment, n=12).

6. Main outcome measures
Muscle fatigue graded on a visual analogue scale (VAS), muscle endurance, heart rate, finger-tip plethysmogram.

7. Main results
VAS score was significantly lower in Arm 1 (P=0.022) and Arm 2 (P=0.020) than in Arm 3, but not significantly different between Arm 1 and Arm 2. No significant difference was observed between the effleurage groups and the control group for muscle endurance (squeeze repetitions), heart rate, or finger-tip plethysmogram peak values (treatment side and non-treatment side), which reflect blood flow. Also, no significant correlation was observed between change in muscle fatigue and change in peak pulse wave values on the treatment side.

8. Conclusions
Both efferent and afferent effleurage promotes recovery from muscle fatigue, but not recovery of muscle endurance. Increased blood flow does not correlate with recovery from muscle fatigue.

9. Safety assessment in the article
Not mentioned.

10. Abstractor’s comments
This study elucidates the effectiveness of massage (effleurage) as treatment for muscle fatigue and loss of muscle endurance. Irie et al. demonstrate ingenuity in basing this study on their previous study, which indicated that afferent effleurage promotes blood flow. The sophistication of the fatigue inducement, treatment, and measurement methods strengthens the reliability of the evidence showing that effleurage promotes recovery from muscle fatigue. However, unlike their previous study, the study did not find that effleurage promotes blood flow. The authors will need to verify whether or not the degree of mechanical stimulation provided by the effleurage employed in this trial affected blood vessels in deep muscle. As the manual treatment to investigate the relation between massage and muscle endurance, given that this study found no such change, it might have been better to use the grasp and squeeze technique or the grasp and knead technique, which have a stronger muscle pump action than effleurage. The knowledge base related to manual therapy for recovery from muscle fatigue has many gaps, so hopefully the authors will continue their research, building on the outcomes and issues raised by this study, for the sake of improving occupational health and sports medicine.

11. Abstractor and date
Fujii R, 8 December 2011.
**18. Symptoms and Signs**

**Reference**

1. **Objectives**
   To evaluate the physiological and subjective effects of back rub massage and their dependence on massage duration.

2. **Design**
   Quasi-randomized controlled trial (quasi-RCT).

3. **Setting**
   Not described (the authors belong to the Hirosaki University), Japan.

4. **Participants**
   Sixty-seven healthy adults (gender ratio and ages not described).

5. **Intervention**
   Participants’ backs were massaged while seated and leaning forward.
   - Arm 1: Ten-minute oil massage group (n=13).
   - Arm 2: Three-minute oil massage group (n=16).
   - Arm 3: Control group (rest) (n=13).
   Additional experiment: Same as control group (rest) (n=25).

6. **Main outcome measures**
   Blood pressure, heart rate, respiration rate, saturation of peripheral oxygen (SpO₂) level, body temperature, back skin temperature, State-Trait Anxiety Inventory (STAI) score (Japanese edition), stress and relaxation visual analogue scale (VAS) score.

7. **Main results**
   Back skin temperature increased significantly immediately after the 10-minute massage compared to Arm3 (\(P<0.001\)). STAI, Stress VAS, and relaxation VAS scores decreased significantly after both the 3- and 10-minute massage (\(P<0.001\)). There were no significant changes in blood pressure, heart rate, respiration rate, SpO₂, or body temperature.

8. **Conclusions**
   Back massage (rub) increases back skin temperature. Massage duration affects the magnitude of the temperature increase. Back massage has a relaxation effect but no effect on vital signs.

9. **Safety assessment in the article**
   Not mentioned.

10. **Abstractor’s comments**
    Efficient use of time in the nursing workplace is an important matter. For the sake of patients, it is important to know the duration to produce favorable results in a timely manner. The authors do not fully understand the method of measuring back skin temperature, which was the only parameter to change in this study. The authors used a thermography device, but their room temperature setting differed from the one specified by the Japanese Society of Thermology, and they did not describe how they use the oil. Skin temperatures in the control group did not remain stable because the room temperature and humidity fluctuated.

11. **Abstractor and date**
    Tokutake T, 9 December 2011.
18. Symptoms and Signs

Reference

1. Objectives
To verify the effects of aromatherapeutic massage using citrus fruit essential oil for deepening relaxation and increasing refreshment.

2. Design
Crossover randomized controlled trial (RCT – cross over).

3. Setting
Gunma University, Japan.

4. Participants
Thirty-five healthy female students, excluding students who dislike citrus fruit aroma.

5. Intervention
Arm 1: Aromatherapy group (essential oil; n=20, average age 20.6 years).
Arm 2: Control group (no essential oil; n=15, average age 21.2 years).

6. Main outcome measures
Skin conductance (SC); abbreviated Japanese UWIST Mood Adjective Check List (JUMACL) questionnaire: tense arousal (TA) and energetic arousal (EA) scores.

7. Main results
1) There was no between-group difference in SC.
2) There was a significantly smaller decrease in EA in Arm 1 than in Arm 2 ($P<0.05$).

8. Conclusions
Massage decreases SC and TA and has a relaxing effect whether or not the massage oil contains essential oil.

9. Safety assessment in the article
Not mentioned.

10. Abstractor’s comments
There are many difficulties in evaluating the effects of essential oils and in identifying their effects in an experimental study. However, this trial deserves credit for investigating the question and for maintaining conditions as rigorously as possible. The authors need to verify the effects of essential oils more objectively by including brain waves and electrocardiogram (frequency analysis) as indicators because there was only one objective outcome measure (skin conductance), no safety assessment, and a sample consisting exclusively of female students.

11. Abstractor and date
18. Symptoms and Signs

Reference

1. Objectives
To verify that physiological and psychological change occurs with stepping massage.

2. Design
Crossover randomized controlled trial (RCT–cross over).

3. Setting
Miyuki Hospital, Japan.

4. Participants
Fifty-nine healthy adults (18 males, 41 females, mean age 40±12 years).

5. Intervention
Arm 1: Massager group (participants doing the massage, n=15, mean age not specified).
Arm 2: Massaged group (participants receiving massage, n=15, mean age not specified).
Arm 3: Control group (n=29, no treatment).

6. Main outcome measures
Psychological (anxiety level) testing; salivary Na, K, IgA, and cortisol concentration; urinary catecholamine, serotonin, and creatinine concentration; mood (massage questionnaire).

7. Main results
1) Anxiety decreased in both Arm1 and Arm 2. There was no change in Arm 3. (No statistical analysis.)
2) Salivary cortisol decreased, and urinary catecholamine decreased significantly in Arm 2. (No statistical analysis.)

8. Conclusions
Giving or receiving massages decreases anxiety. Decrease in salivary cortisol and urinary catecholamine suggests a relaxation effect. More widespread use of methods described as “touch communication” techniques for families may have value.

9. Safety assessment in the article
Not mentioned.

10. Abstractor’s comments
This study evaluated the before-after effects of stepping massage, which family members can readily give each other without the need for training. Massage was effective even though administered by different massagers, indicating that stepping massage is a simple and effective technique and that the authors achieved the goal of their study. The study (abstract) includes only limited information. The results of between-group comparison with the control group are not described, meaning the reliability of the results is not robust.

11. Abstractor and date
Ogata A, 17 December 2011.
18. Symptoms and Signs

Reference

1. Objectives
To evaluate the effects of back massage for relaxation in postpartum mothers.

2. Design
Quasi-randomized controlled trial (quasi-RCT).

3. Setting
Obstetrics and gynecology clinics (number of clinics not indicated), Japan.

4. Participants
Forty-five puerperants at the third day after normal delivery.

5. Intervention
Arm 1: a 20-minute massage using back oil (odorless) (n=22).
Arm 2: control (20-minute supine rest) (n=23).
No significant between-group differences in patient background including age, childbirth delivery time, blood loss, multiparous condition, episiotomy history, and baby’s birth weight. Perineal tears were frequent in the control group with statistical significance.

6. Main outcome measures
Heart rate and its frequency components analyzed as relaxation indicators.

7. Main results
Treatment significantly decreased heart rate in both groups. Variability in frequency varied but did not change significantly.

8. Conclusions
Considering heart rate and frequency components as relaxation indicators, back massage had no effect on postpartum mothers.

9. Safety assessment in the article
Not mentioned.

10. Abstractor’s comments
Maintaining good physical and mental health in postpartum mothers is necessary for building good maternal bonds with the child, so evaluation of health maintenance strategies is extremely important. The relaxation indicator used in this study (heart rate or autonomic nervous function) can be affected by a range of factors, so the trial environment must be carefully managed. In future evaluations, it would be preferable to use subjective sensations, brain waves, and other outcome measures as relaxation indicators.

11. Abstractor and date
18. Symptoms and Signs

Reference

1. **Objectives**
   To evaluate the efficacy of aromatherapeutic hand and foot massage (AM) using two kinds of essential oils.

2. **Design**
   Crossover randomized controlled trial (RCT - cross over).

3. **Setting**
   Not described, Japan.

4. **Participants**
   Sixteen healthy women.

5. **Intervention**
   Arm 1: massage with lavender and geranium (LA/GE) oils (n=16).
   Arm 2: massage with peppermint and lemongrass (PE/LE) oils (n=16).
   Arm 3: massage with carrier oil only (control) (n=16).

6. **Main outcome measures**
   Heart rate variation, electroencephalogram (EEG), salivary cortisol (CS) level, salivary IgA level, scores on psychological questionnaire (Profile of Mood States [POMS]/Mini Mental State [MMS] Examination).

7. **Main results**
   The heart rate variation high frequency (HF) value increased after AM with LA/GE, while the LF/HF values increased after AM with PE/LE. The EEG power percentage increased the most after AM with PE/LE. CS concentration decreased greatly after AM with LA/GE and after AM with PE/LE. Salivary IgA increased the most after AM with PE/LE. Although the scores for negative emotions in the psychological questionnaire increased after AM with LA/GE, scores for positive emotions increased after AM with PE/LE. Fatigue decreased the most after AM with PE/LE, while relaxation increased.

8. **Conclusions**
   A short period of aromatherapeutic hand and foot massage not only has psychological effects, it changes physiological indicators and, depending on the type of essential oil used, achieves various psychosomatic effects.

9. **Safety assessment in the article**
   Not mentioned.

10. **Abstractor’s comments**
    Previous research has indicated that massage using essential oils has certain psychological and physiological effects: the significance of this study is that it used RCT methods and various stress markers to investigate the distinctive effects of particular oils. However, the design of this study employs the cross over method, and considering salivary indicator stimulus-response time, it would appear that setting the interval between AM applications to 10 minutes was too short for an assessment of the differences between the effects of LA/GE and PE/LE. In addition to the lack of safety evaluation of the oils, neither the number of subjects in the control group nor the trial procedure was specified. The psychological and physiological effects of the AM massage itself, not just the essential oils, are considerable. Further evaluation using a design that takes those points into account would increase its scientific value.


11. **Abstractor and date**
18. Symptoms and Signs

Reference

1. Objectives
To evaluate the effects of back massage on relaxation in puerperant women.

2. Design
Quasi-randomized controlled trial (Quasi-RCT).

3. Setting
Obstetrics clinic, Japan.

4. Participants
Fifty puerperant women on the first postpartum day (n=50, ages not described).

5. Intervention
Arm 1: Jojoba oil massage group (10 minutes, n=25).
Arm 2: Control group (10 minutes of rest lying down, n=25).

6. Main outcome measures
Blood pressure, pulse, salivary amylase activity, State-Trait Anxiety Inventory (STAI).

7. Main results
1) There was a significant between-group difference in STAI state anxiety score but not in blood pressure, pulse, salivary amylase activity, or STAI trait anxiety score.
2) Salivary amylase activity decreased in both groups.

8. Conclusions
Back oil massage decreases STAI state anxiety in puerperant women one day after delivery.

9. Safety assessment in the article
Not mentioned.

10. Abstractor’s comments
The subject of this study is extraordinarily important. Yet, given that the authors indicate why puerperant women one day after delivery need relaxation and what relaxation methods are commonly used, they should have compared the target therapy to the commonly used methods and a control. Since the recruitment of 50 participants is a positive aspect of the study, this sample size could have been utilized in the study design. Since the study is an RCT, data from both groups should have been presented. The back oil massage techniques used in the study should be described. Furthermore, while the authors conclude that massage decreased state anxiety, the premises underlying the relation between relaxation and anxiety should be stated.

11. Abstractor and date
Tokutake T, 9 December 2011.
18. Symptoms and Signs

Reference

1. Objectives
To evaluate the efficacy of press tack needle treatment and massage on elbow flexor low-load isotonic repetitions.

2. Design
Crossover randomized controlled trial (RCT-cross over).

3. Setting
Not described, Japan.

4. Participants
Fifty healthy adult males.

5. Intervention
Arm 1: press tack needle treatment (number of subjects not indicated).
Arm 2: sham treatment group (number of subjects not indicated).
Arm 3: massage treatment (number of subjects not indicated).
Arm 4: control (number of subjects not indicated).

6. Main outcome measures
Maximal strength, number of repetitions, Visual Analog Scale (VAS) score for pain intensity.

7. Main results
There was no significant difference in maximal strength among groups. The number of exercise 2 elbow flexion and extension repetitions was significantly higher in arm 1 than arm 2 (103.2±48.2 vs 80.9±34.9; \( P < 0.01 \)). The numbers were similar in arm 3 (75.5±31.0) and arm 4 (71.8±41.6). There was no significant difference in VAS score between arm 1 and arm 2. It was significantly decreased (\( P < 0.01 \)) in arm 1 compared to arm 4.

8. Conclusions
Press tack needle treatment facilitates performance of higher numbers of exercise repetitions, suggesting its potential in muscle training and rehabilitation.

9. Safety assessment in the article
Not mentioned.

10. Abstractor’s comments
This study is interesting as it suggests that the use of neck and shoulder press tack needles increase exercise endurance and that brachial biceps massage reduces pain during elbow flexion and extension. This trial appears to have compared and verified the effectiveness of press tack needles in Arms 1 and 2, and the effectiveness of massage in Arms 3 and 4 by cross-over experiments; however, a clear description of the study design including the numbers of subjects in the intervention groups and the control group is needed. This may, however, be a limitation of structured abstracts. The effect of massage on endurance capacity was not ascertained in this trial, and thus remains an issue for future studies. More specifically, employing petrissage with gripping—which should have a greater effect on muscle circulation—as an intervention rather than minimal pressure effleurage, may have allowed for more accurate verification of the effects of massage. I hope that a future study focuses on massage, including the ideal interventions and stimuli.

11. Abstractor and date
18. Symptoms and Signs

Reference

1. **Objectives**
To compare petrissage massage applied immediately after the first exercise bout and immediately before the second bout as a means of recovering from fatigue between two successive bouts of exercise.

2. **Design**
Crossover randomized controlled trial (RCTcross over).

3. **Setting**
Females from a university physical education department, who exercise regularly, Japan.

4. **Participants**
Eleven healthy females.

5. **Intervention**
Arm 1: massage group (immediately after exercise, n=11).
Arm 2: massage group (immediately before exercise, n=11).
Arm 3: control group (resting seated, n=11).

6. **Main outcome measures**
Mechanical power output, lower-limb fatigue, muscle stiffness.

7. **Main results**
Mechanical power output increased significantly under Arm 1 and Arm 2 conditions ($P<0.05$). VAS scores increased for lower-limb fatigue with the first exercise bout, but at 15 minutes after massage in Arm 1, it decreased significantly in comparison to other conditions. Muscle stiffness increased after the first exercise bout, but 15 minutes after exercise it decreased significantly in Arm 1 only ($P<0.05$), and at 30 minutes after exercise, it decreased significantly with Arm 1 and Arm 2 in comparison to the control group ($P<0.05$).

8. **Conclusions**
Petrissage massage improved exercise performance, muscle stiffness, and lower-limb fatigue, but its timing does not affect subsequent exercise performance.

9. **Safety assessment in the article**
Not mentioned.

10. **Abstractor’s comments**
The material on petrissage massage is detailed and describes the involvement of expert practitioners. Use of a control group (rest) helped confirm that the effects were due to petrissage massage. While objective outcome indicators including blood lactate and muscle stiffness were measured, it appears that changes in muscle stiffness are linked to lower-limb fatigue, yet the changes in blood lactate level are difficult to explain. Some consideration has been given to psychological factors, but there is no data, so no conclusions can be made. If psychological factors are included in a future study, the protocols would need to incorporate objective data, and markers such as psychological parameters (subjective) and stress.

11. **Abstractor and date**
18. Symptoms and Signs

Reference


1. **Objectives**

To evaluate the effectiveness of massage for mid and low back pain caused by prolonged lying in the prone position.

2. **Design**

Crossover randomized controlled trial (RCT–cross over).

3. **Setting**

Nursing laboratory at a university (university name not specified), Japan.

4. **Participants**

Nine average adult females during the low temperature phase of the menstrual cycle (age range: 21~23 years).

5. **Intervention**

The trial was run in a laboratory with the temperature at 27.2±0.9°C and humidity at 58.2±5.6%. After lying in the prone position for 20 minutes, participants received massage of the low back, mid back, neck, and shoulders for 5 minutes, and were then instructed to stay in the prone position for a further 60 minutes. Participants in the control group stayed in the prone position for 85 minutes.

Arm 1: Massage group (number of participants not specified).

Arm 2: Control group (no treatment, number of participants not specified).

6. **Main outcome measures**

Electrocardiogram (heart rate variability), brain waves, and visual analogue scale (VAS) scores for comfort, pain intensity, and low/mid back pain intensity.

7. **Main results**

1) Brain waves: the amount of α₁ and α₂ waves, which increase with relaxation, was significantly greater at the time of massage and 30 minutes after massage compared to the control group. However, no significant difference was found in the amount of δ or θ waves, which increase with drowsiness, or β₁ or β₂ waves, which increase when alert.

2) Heart rate variability: low frequency (LF), high frequency (HF), and LF/HF, which reflect sympathetic and parasympathetic activity, showed no significant difference.

3) Subjective evaluation: Comparing scores before and after lying in the prone position, comfort showed a significant increase in the massage group compared to the control group, while low/mid back pain intensity decreased significantly in the massage group.

8. **Conclusions**

Low/mid back massage is an effective intervention for relieving pain and for relaxing patients who lie in the prone position for prolonged periods.

9. **Safety assessment in the article**

Not mentioned.

10. **Abstractor’s comments**

The study objectively demonstrates that massage effectively reduces pain intensity and relieves low/mid back pain caused by prolonged lying in the prone position. Hopefully it will be integrated into the care of patients forced to lie in the prone position for long periods, for example, after retinal detachment surgery. The study is of great interest to those seeking to improve the quality of nursing care. The integrity of the design is high: the low/mid back pain model, the massage treatment, and the outcome evaluation methods are well devised. The study cannot, however, be rated as a high quality randomized controlled trial, because of the small sample size, the failure to specify the numbers of subjects in the massage or control groups and failure to specify the method of allocation. In addition, no change was observed in heart rate variability, which correlates with brain wave findings (α wave increase), suggesting that issues remain around the parameter settings for capturing parasympathetic activity. Yet, the study has great significance in that its support of the effectiveness of massage is based on brain wave findings as well as subjective evaluation. Hopefully the authors will verify their results through clinical practice and will further deepen and develop their study into research which can build up qualitative evidence of patient satisfaction.

11. **Abstractor and date**

Fujii R, 3 December 2011.
18. Symptoms and Signs

Reference

1. Objectives
To compare the effects of dorsolumbar and lower-limb massage on edema in postpartum women.

2. Design
Crossover randomized controlled trial (RCT-cross over).

3. Setting
Obstetrics clinics in Kumamoto City, Japan.

4. Participants
Women who had given birth 2–5 days previously.

5. Intervention
Arm 1: lower limb massage (n=9).
Arm 2: dorsolumbar massage (n=10).

6. Main outcome measures
Circumference (lower limb, big toe), cutaneous blood flow (tibialis anterior muscle), lower limb volume.

7. Main results
Both groups showed reduction in the lower limb volume as well as the circumference of the lower leg and big toe, and an increase in the cutaneous blood flow in the tibialis anterior muscle.

8. Conclusions
Lower limb and dorsolumbar massage with elevation of the lower limbs both reduce lower limb edema.

9. Safety assessment in the article
Not mentioned.

10. Abstractor’s comments
The evaluation used objective measures, which compensates for the weakness in the study design that the patients were not masked to the group or treatment assignment. Regrettably, the evaluator was also not masked to the group or treatment assignment, which would have given the data even greater reliability. In both groups, lower limb edema was effectively reduced. However, both groups also employed 30-minute lower limb elevation, so it is difficult to determine whether the improvement was due to the massage or the lower limb elevation. Overcoming these difficulties and masking the evaluator could be expected to achieve results of even higher reliability.

11. Abstractor and date
21. Others

Reference

1. Objectives
To evaluate heat retention effectiveness of massage immediately after foot bath.

2. Design
Randomized controlled trial (RCT).

3. Setting
Nagano Red Cross Hospital, Japan.

4. Participants
Six healthy adults (age range: 20 to 21 years, mean age not described).

5. Intervention
Arm 1: Massage group. Combination of massage and footbath (n=3, mean age not specified).
Arm 2: No-massage group. Footbath alone (n=3, mean age not specified).

6. Main outcome measures
Skin temperature measured by infrared thermography.

7. Main results
1) All skin temperature measurements (up to 5 hours after treatment) at the toes (third toe) and anterior surface of the leg were elevated by foot baths in both groups. Third-toe skin temperatures (°C) at rest and at 5 hours after treatment were 18.4 and 21.1, 18.1 and 24.3, and 19.7 and 28.3, respectively, in the three Arm 1 participants and 22.0 and 24.2, 20.3 and 24.1, and 20.8 and 22.6, respectively, in the three Arm 2 participants. Similarly, the anterior leg surface temperatures (°C) were 28.6 and 32.5, 27.2 and 30.7, and 28.6 and 32.2 in Arm 1 and 31.4 and 33.1, 30.8 and 32.8, and 31.0 and 32.1 in Arm 2. The sample size was too small for statistical analysis.
2) A stronger heat-retention tendency was found in Arm 1 than Arm 2.

8. Conclusions
Massaging the feet for 10 minutes after a foot bath tends to improve heat retention.

9. Safety assessment in the article
Not mentioned.

10. Abstractor’s comments
This study investigates the heat retention effects of combining foot bath with massage, and is commendable for having investigated the effects up to 5 hours after a foot bath. However, sample size (only three participants per group) is insufficient for definite outcomes. In addition, the authors should have had the no-massage group keep their legs horizontal for 10 minutes, to control for the effect of treatment in the horizontal in the massage group. Furthermore, simultaneous measurement of skin blood flow and temperature at nearby sites would have increased the reliability of the study.

11. Abstractor and date
Ogata A, 12 December 2011
21. Others

Reference

1. Objectives
To evaluate the effects of full-body massage and unilateral upper-limb Anma on peripheral circulation.

2. Design
Crossover randomized controlled trial (RCT – cross over).

3. Setting
Acupuncture and Physical Therapy Teacher Training School, University of Tsukuba, Ibaraki, Japan.

4. Participants
Thirteen healthy adult males (mean age: 29.4±5.7 years).

5. Intervention
Anma included effleurage, petrissage, and pressure in the prone position.
Arm 1: Full-body Anma group (20 minutes, excluding upper limb on one side, n=13).
Arm 2: Unilateral upper limb Anma group (20 minutes, n=13).
Arm 3: Control group (resting in the prone position, 20 minutes, n=13)

6. Main outcome measures
Hand skin temperature and deep temperature, blood pressure, heart rate.

7. Main results
Skin temperature increased in both hands with full-body Anma and in only the hand on the side treated with unilateral upper-limb Anma. There were no significant changes in hand deep temperature, blood pressure, or heart rate.

8. Conclusions
Full-body Anma increases skin temperature in both hands, but unilateral upper-limb Anma increases skin temperature in only the hand on the treated side.

9. Safety assessment in the article
Not mentioned.

10. Abstractor’s comments
This is an interesting trial that compared the effectiveness of full-body and local Anma. However, the study failed to pay sufficient attention to reproducibility: the Anma techniques are described only as effleurage, petrissage, and pressure. While temperature data are used as an indicator of peripheral circulation, room temperature settings or records are not mentioned. The authors attribute the change in skin temperature to an effect on sympathetic nerve function, but they also have good grounds for attributing the lack of any significant difference in blood pressure or heart rate to data collection timing, something that should also be considered in terms of design.

11. Abstractor and date
Fujii R, 9 December 2011.
21. Others

Reference

1. Objectives
To compare and verify low back skin temperature responses to pressure stimulation at the sole and low back.

2. Design
Crossover randomized controlled trial (RCT–cross over).

3. Setting
Not described, Japan.

4. Participants
Sixteen healthy adult males (mean age 29.9±5.4 years).

5. Intervention
Arm 1: Sole stimulation group (n=16, mean age not specified).
Arm 2: Low back stimulation group (n=16, mean age not specified).

6. Main outcome measures
Infrared thermography, thermocouple.

7. Main results
Right sole stimulation significantly increased skin temperatures of the low back (areas A, B, C; \( P<0.05, \) or \( P<0.01, \) or \( P<0.001, \)) buttocks, popliteal area, and sole (left/right) (\( P<0.01 \) or \( P<0.001, \) or \( P<0.001, \)). Low back (medial edges of L5 erector spinae muscles) stimulation significantly increased skin temperatures of the low back (areas A, B, C, D, E; \( P<0.05, \) or \( P<0.01, \) or \( P<0.001, \)) buttocks, popliteal area, and sole (left/right; \( P<0.01, \) or \( P<0.001, \)).

The effect of sole stimulation differed from that of low back stimulation in only two parts of the body: skin temperature in the low back (area E) was significantly increased by low back stimulation, while skin temperature of the left sole (treatment side) was significantly increased by sole stimulation. There was no significant difference in effects on skin temperatures of other parts of the body.

8. Conclusions
Pressure stimulation to the sole and low back increases skin temperature in the low back and leg, not only in the stimulated areas, suggesting that another factor besides the spine has that effect.

9. Safety assessment in the article
Not mentioned.

10. Abstractor’s comments
While this trial was conducted according to a systematic protocol, skin temperature increases were observed from the low back to the sole after pressure stimulation at the low back and sole, which suggests the possibility that a systemic response was triggered, and therefore there is a need to measure upper body skin temperature. In addition, outcome measures including autonomic indicators, such as blood flow should be added, if the authors are to observe the specific effects of low back and sole stimulation.

11. Abstractor and date
Ogata A, 17 December 2011.
21. Others

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1. Objectives
   To evaluate the efficacy of aromatherapy for treating discomfort due to dialysis.

2. Design
   Crossover randomized controlled trial (RCT–cross over).

3. Setting
   Kidney clinic (Yodogawa Christian Hospital), Japan.

4. Participants
   Forty-three patients undergoing dialysis three times per week at a kidney clinic.

5. Intervention
   Arm 1: Aromatherapy oil group (7 males, 8 females, mean age 62, dialysis 21 months, n=15).
   Arm 2: Olive oil group (8 males, 5 females, mean age 64, dialysis 16 months, n=13).
   Arm 3: Control (no treatment) group (no oil; 9 males, 6 females, mean age 65, dialysis 17 months, n=15).
   Approximately eight minutes of massage, mainly of the lower limbs, three times per week for one week.

6. Main outcome measures
   Questionnaire, 4-point scale discomfort assessment.

7. Main results
   (1) Limb itchiness ($P=0.001$), puncture site itchiness ($P=0.012$), and soreness due to restricted movement during dialysis ($P=0.000$) improved in Arm 1 after massage. Lower limb coldness ($P=0.041$) and soreness due to restricted movement during dialysis ($P=0.002$) decreased in Arm 2.
   (2) There was no significant change in any measure in Arm 3.
   (3) Total score for discomfort in Arm 1 was significantly different ($P<0.05$) after treatment from that in Arm 2 and Arm 3.

8. Conclusions
   Aromatherapy oil massage relieves discomfort in dialysis patients.

9. Safety assessment in the article
   Not mentioned.

10. Abstractor’s comments
    Assessment of discomfort in dialysis patients has important clinical implications. There is a need to evaluate the efficacy of aromatherapy massage for relief of discomfort. The trial is commendable for systematically comparing the aromatherapy oil group, the oil group to an olive oil group and control group. However, the authors do not mention whether the same masseur was used, so that point is unclear. The authors need to investigate the influence of communication during massage and the use of aromatherapy oil alone.

11. Abstractor and date