

Table 2 Reference evaluation checklist

Prepared by: _____	
Reference No.: _____	
<p>● Inclusion criteria: Both of the following two criteria are met</p> <p>1. Intervention includes Anma, Massage, or Shiatsu (title, purpose, method).</p> <p>2. The trial has control group(s) (e.g., parallel group, crossover).</p>	<p><input type="checkbox"/> ○ or ×</p> <p><input type="checkbox"/> ○ or ×</p>
<p>● Exclusion criteria: Either of the following two criteria is met</p> <p>1. The purpose of the trial is not evaluation of the efficacy, usefulness, safety, etc. of Anma, Massage, or Shiatsu.</p> <p>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).</p>	<p><input type="checkbox"/> ○ or ×</p> <p><input type="checkbox"/> ○ or ×</p>

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

1983~1989	0	0	1	0	0	1	1.1%
1990~1999	0	0	1	0	1	2	2.1%
	2	3	36	16	34	91	96.8%
	2	3	38	16	35	94	
	2.1%	3.2%	40.4%	17.0%	37.2%	100%	

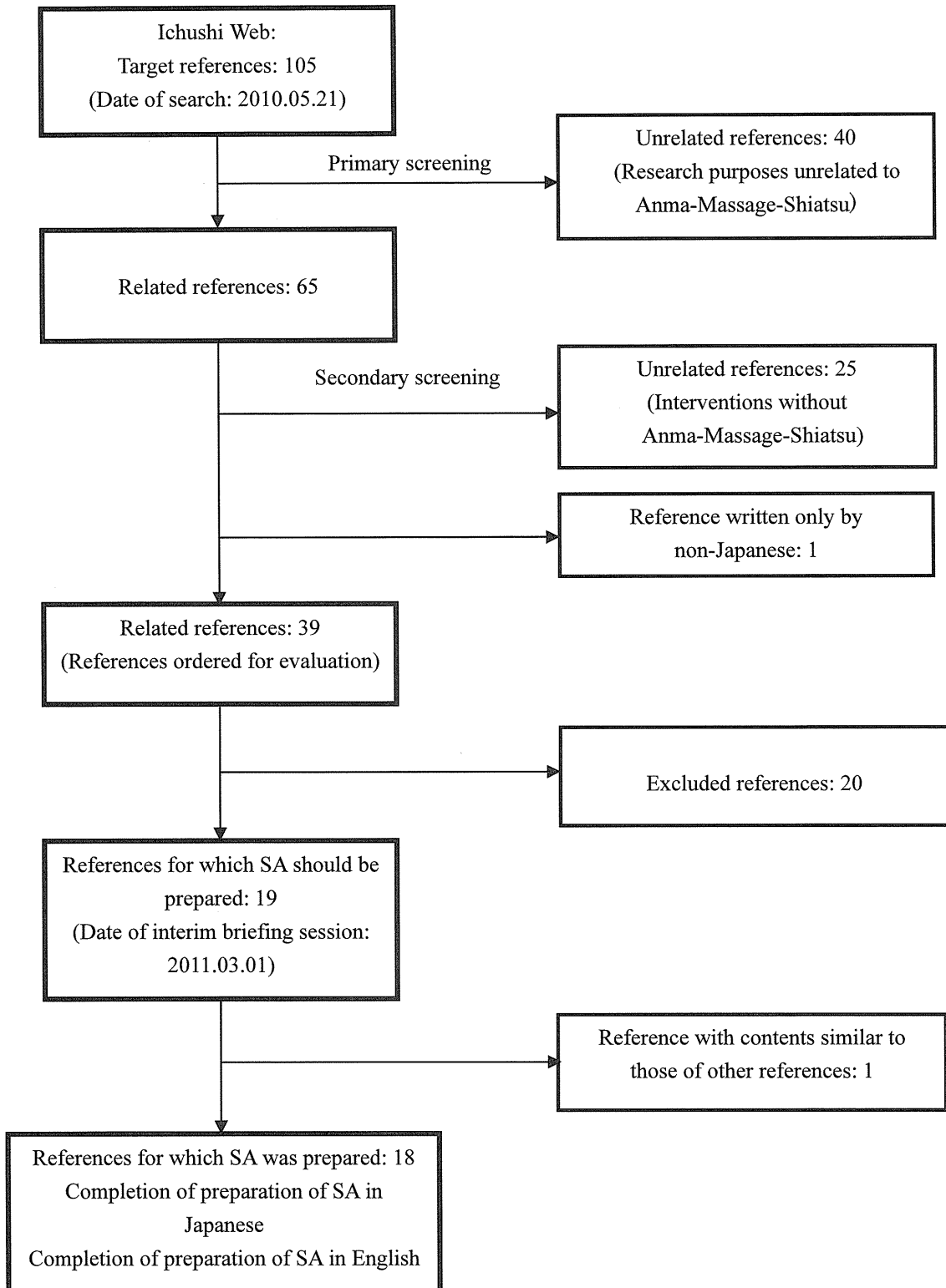
3) Excluded references

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



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

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

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 RCTs, 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 year 2010-11).

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.

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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)

ICD-10	Research Question	References	Study Design	Sources	Page
M06-9	To evaluate the effect of manual therapy on quality of life (QOL) in chronic rheumatoid arthritis (RA) patients.	Yamamoto K. A clinical study of manual therapy for chronic rheumatoid arthritis*. <i>Nihon Shugi Ryoho Gakkai Zasshi (The Journal of Japanese Association of Manual Therapy)</i> 2001; 12(1): 7–15 (in Japanese).	quasi-RCT	I	21
M79.1	To evaluate the effectiveness of manual therapy for delayed onset muscle soreness (DOMS)	Ikeuchi T, Sumiya K, Odahara Y, et al. Effect of manipulation therapy on delayed onset muscle soreness (DOMS). <i>Toho Igaku (Eastern Medicine)</i> 2009; 24(4): 11–18 (in Japanese with English abstract).	RCT	I	22
		Ikeuchi T, Kimura A, Sumiya K, et al. Effect of manipulation therapy on delayed onset muscle soreness (DOMS). <i>Nihon Toyo Igakkai Shorokushu (Proceedings of the Japan Society for Oriental Medicine)</i> . 2008; 25: 46 (in Japanese).			

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

ICD-10	Research Question	References	Study Design	Sources	Page
R19.4	To evaluate the effectiveness of sole massage for facilitation of defecation in post-partum constipated women.	Kimura S, Aso Y. An investigation into the effects of sole massage on facilitation of defecation in post-partum constipated women – Using bowel sounds as an indicator. <i>Bosei Eisei (Japanese Journal of Maternal Health)</i> . 2009; 50(2): 352–9 (in Japanese with English abstract).	RCT cross over	I	23

ICD-10	Research Question	References	Study Design	Sources	Page
R53.6	To evaluate the effectiveness of effleurage for muscle fatigue and muscle endurance recovery.	Irie T, Tokutake T, Yoshikawa K. The effects of effleurage on muscle fatigue and muscle endurance recovery*. <i>Nihon Shugi Ryoho Gakkai Zasshi (The Journal of Japanese Association of Manual Therapy)</i> 2001; 12(1): 29–33 (in Japanese).	RCT cross over	I	24
R53.6	To evaluate the physiological and subjective effects of back rub massage and their dependence on massage duration.	Noto Y, Sato T. The effect of back rub massage in healthy subjects. <i>Hirosaki Daigaku Igakubu Hokengakka Kiyo (Bulletin of Health Science Hirosaki)</i> . 2005; 15: 97–102 (in Japanese with English abstract).	quasi-RCT	I	25
R53.6	To verify the effects of aromatherapeutic massage using citrus fruit essential oil for deepening relaxation and increasing refreshment.	Ogasawara E, Shiihara Y, Koitabashi K, et al. The relaxing and refreshing effects of aromatherapeutic massage using citrus fruit essential oil — evaluation using skin conductance and a mood adjective check list. <i>Nihon Kango Kenkyu Gakkai Zasshi (Journal of Japanese Society of Nursing Research)</i> 2007; 30 (4): 1726 (in Japanese with English abstract).	RCT cross over	I	26
R53.6	To verify that physiological and psychological change occurs with stepping massage.	Uebaba K, Xu FH, Wang HB. Physiological and psychological change with stepping massage*. <i>Nihon Toho Igakkai Shorokushu (Japan Eastern Medical Association Abstracts)</i> . 2008; 25: 54 (in Japanese).	RCT	I	27
R53.6	To evaluate the effects of back massage for relaxation in postpartum mothers.	Nakakita M, Takenoue K. Relaxing effects of back massage on relaxation in normal postpartum mothers*. <i>Nihon Josan Gakkaishi (Journal of Japan Academy of Midwifery)</i> 2009; 22(3): 362 (in Japanese).	quasi-RCT	I	28
R53.6	To evaluate the efficacy of aromatherapeutic hand and foot massage (AM) using two kinds of essential oils.	Kimura M, Watanabe E, Watanabe S, et al. Psychosomatic effects of aromatherapeutic hand and foot massage on healthy women using two kinds of essential oils*. <i>Josei Shinshin Igaku (Journal of Japanese Society of Psychosomatic Obstetrics and Gynecology)</i> 2009; 14(1): 62.	RCT cross over	I	29
R53.6	To evaluate the effects of back massage on relaxation in puerperant women.	Sato K, Ebata Y, Sayama S. A study of the relaxation effect of back massage in puerperants. <i>Bosei Eisei (Japanese Journal of Maternal Health)</i> . 2008; 49(3): 169 (in Japanese).	quasi-RCT	I	30
R53.13	To evaluate the efficacy of press tack needle treatment and massage on elbow flexor low-load isotonic repetitions.	Furuya E, Kaneko Y, Uehara A, et al. The effects of press tack needle treatment and massage on elbow flexion and extension repetitions*. <i>Zen Nihon Shinkyu Gakkai Zasshi (Journal of the Japan Society of Acupuncture and Moxibustion)</i> 2008; 58(3): 487 (in Japanese).	RCT cross over	I	31

ICD-10	Research Question	References	Study Design	Sources	Page
R53.13	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.	Ogai R, Matsumoto T, Kosaka M. Petrissage massage applied during resting period between two successive bouts of intense leg exercise improves performance during second bout. <i>Nihon Undo Seirigaku Zasshi (Journal of Exercise and Sports Physiology)</i> 2009; 16(1): 1–7 (in Japanese with English abstract).	RCT cross over	I	32
R54.8	To evaluate the effectiveness of massage for mid and low back pain caused by prolonged lying in the prone position.	Nishida T, Tachiyama R, Ping PY, et al. Effects of back massage for pain caused by prolonged lying in prone position*. <i>Nihon Kango Gakkai Ronbunshu Kango Sogo (Japanese Nursing Association Articles – General Nursing)</i> . 2006; 37: 182–4 (in Japanese).	RCT	I	33
R60.0	Nagata H, Tanaka E, Takefu M, et al. Effects of Lower Limb and Dorsolumbar Massages on Edema in Postpartum Women, <i>Biomedical Soft Computing and Human Sciences</i> 2009; 14(1): 109–15.	Nagata H, Tanaka E, Takefu M, et al. Effects of Lower Limb and Dorsolumbar Massages on Edema in Postpartum Women. <i>Biomedical Soft Computing and Human Sciences</i> 2009; 14(1): 109-15.	RCT	I	34

21. Others (4 abstracts, 4 references)

ICD-10	Research Question	References	Study Design	Sources	Page
Z00.6	To evaluate heat retention effectiveness of massage immediately after foot bath.	Tonegawa Y, Uchizaka S, Takemura E, et al. Changes in leg skin temperature after foot bath — Comparison of the effects of massage and no massage*. <i>Nagano Sekijuji Byoin Ishi (Medical Journal of Nagano Red Cross Hospital)</i> . 2004; 17: 116–8 (in Japanese).	RCT	I	35
Z00.6	To evaluate the effects of full-body massage and unilateral upper-limb Anma on peripheral circulation.	Ichida K, Ye H, Ogura Y, et al. A comparison of full-body Anma and local Anma — Using skin temperature and deep temperature as indicators*. <i>Nihon Shugi Ryoho Gakkai Zasshi (The Journal of Japanese Association of Manual Therapy)</i> . 2004; 15(1): 13–7 (in Japanese).	RCT cross over	I	36
Z00.6	To compare and verify low back skin temperature responses to pressure stimulation at the sole and low back.	Wada T, Usuda Y, Fukushima M, et al. Does sole pressure stimulation increase low back skin temperature? Comparison of the effects of sole stimulation with low back stimulation on low back skin temperature*. <i>Nihon Shugi Ryoho Gakkai Zasshi (The Journal of Japanese Association of Manual Therapy)</i> . 2004; 15(1): 18–22 (in Japanese).	RCT	I	37
Z51.5	To evaluate the efficacy of aromatherapy for	Ueda N, Maruta T, Uno I. Trial of aromatherapy for dialysis patients – A strategy for discomfort*. <i>Yodogawa Christian Byoin</i>	RCT	I	38

ICD-10	Research Question	References	Study Design	Sources	Page
	treating discomfort due to dialysis.	<i>Gakujutsu Zasshi (Y.C.H. Medical Bulletin)</i> 2004; 17-19 (in Japanese).			

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 abstract, 1 reference)

No.	Research Question	Reference	Reason for Exclusion	Source
F06.9	Evaluation of the effects of aromatherapy on the psychology of the elderly	Ando M, Ogasawara E. Effects of aromatherapy on psychology of the institutionalized elderly*. <i>Nihon Aromaserapi Gakkaishi (Journal of Japanese Society of Aromatherapy)</i> 2004; 3(1): 52–7 (in Japanese).	(3)	I

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

No.	Research Question	References	Reason for Exclusion	Source
G90.9	Evaluation of changes in skin temperature induced by acupressure	Wada T, Usuda Y, Terada K. Changes in skin temperature induced by acupressure - Evaluation of subjective and objective changes in temperature –*. <i>Toyo Igaku to Pain Clinic (Oriental Medicine and the Pain Clinic)</i> 2007; 17: 368–72 (in Japanese).	(2)	I
G90.9	Evaluation of the effects of music and massage on emotional reactions and autonomic nervous system responses	Fukada M. Responses of feeling and the autonomic nervous system produced by music and massage. <i>Nihon Seiri Jinrui Gakkaishi (Japanese Journal of Physiological Anthropology)</i> 2007; 12(4): 177–82 (in Japanese).	(1)	I
G90.9	Evaluation of the effects of massage of the feet on autonomic nervous activity	Igusa R, Aoki K, Kameda M, et al. Assessment of autonomic nervous activity during and after foot massage for nursing care. <i>Nihon Kango Kenkyu Gakkai Zasshi (Journal of Japan Society of Nursing Research)</i> 2008; 31: 21–7 (in Japanese).	(5)	I

8. Ear diseases (1 abstracts, 1 reference)

No.	Research Question	Reference	Reason for Exclusion	Source
H81.9	Evaluation of the effects of acupuncture and acupressure on equilibrium	Nagura M, Miyamae K, Takaoka H, et al. Evaluation of effects of acupuncture and acupressure on equilibrium*. <i>Toyo Ryoho Gakko Kyokai Gakkaishi (The Journal of Japan College Association of Oriental Medicine)</i> 2009; 32: 127–9 (in Japanese).	(1)	I

13. Diseases of the Musculoskeletal and Connective tissue (5 abstracts, 5 references)

No.	Research Question	References	Reason for Exclusion	Source
R11.2	Evaluation of the effects of acupressure on nausea and vomiting after gynecologic surgery	Kawauchi Y, Hayashida M, Takeuchi C, et al. Efficacy of acupressure on prevention of postoperative nausea and vomiting*. <i>Rinsho Masui (Journal of Clinical Anesthesia [Japan])</i> 2000; 24(1): 21–4 (in Japanese).	(1)	I
M17.9	Effect of aromatherapy on knee osteoarthritis	Shiba N, Homma S. The effect of aromatherapy on knee osteoarthritis. <i>Nihon Aromatherapy Gakkaishi (Journal of Japanese Society of Aromatherapy)</i> 2008; 7(1): 28–35 (in Japanese).	(3)	I
M50.1	Application of aroma massage at pain clinics	Kaneko T. Application of aroma massage at pain clinics*. <i>Pain Clinic</i> 2008; 29: 1507–12 (in Japanese).	(3)	I
M62.4	Evaluation of the effects of tactile pressure on the small intestine meridian of hand-taiyang	Ejiri Y, Uchida N, Utsumi Y, et al. Effect of tactile pressure on sit-and-reach flexibility when applied to the small intestine meridian of hand-taiyang*. <i>Toyo Ryoho Gakko Kyokai Gakkaishi (The Journal of Japan College Association of Oriental Medicine)</i> 2004; 28: 33–6 (in Japanese).	(1)	I
M79.8	Evaluation of psychological and immunological effects of Anma therapy	Donoyama N, Munakata T. Psychological and immunological effects of traditional Japanese massage (Anma therapy)*. <i>Nihon Onsen Kikou Butsuri Igakukai Zasshi (The Journal of the Japanese Society of Balneology, Climatology and Physical Medicine)</i> 2005; 69: 36–7 (in Japanese).	(5)	I

18. Symptoms and Signs (10 abstracts, 10 references)

No.	Research Question	References	Reason for Exclusion	Source
R19.4	Evaluation of the effects of abdominal aromatherapy massage on constipation in terminally ill cancer patients	Miyauchi T, Yamase H, Kohara H, et al. Effect of abdominal aromatherapy massage for constipation in terminally ill cancer patients. <i>Kanwa Care (The Japanese Journal of Hospice and Palliative Care)</i> 2007; 17: 368–72 (in Japanese).	(1)	I
R52.9	Evaluation of the effects of massage on intramuscular injection pain	Morishita A, Nakata Y, Sakamoto C, et al. Effect of massage to reduce the pain of the intramuscular injection. <i>Kango Kenkyu (The Japanese Journal of Nursing Research)</i> 2002; 35(3): 205–12 (in Japanese).	(3)	I

No.	Research Question	References	Reason for Exclusion	Source
R53.5	Evaluation of the effects of foot bathing with aromatherapy on malaise	Miyauchi T, Ito T, Sasaki T, et al. Effect of aromatherapy on fatigue in terminally cancer patients. <i>Gan Kango (Japanese Journal of Cancer Care)</i> 2007; 12(7): 745–8.	(3)	I
R53.6	Evaluation of the effects of ice massage on muscle fatigue	Kondo H, Aoki H, Miyamoto T, et al. The effect of ice massage against fatigued muscle of former arm on skin temperature*. <i>Biomedical Thermology</i> 2001; 21(3): 102–7 (in Japanese).	(3)	I
R53.6	Evaluation of the effects of hand bath on the mind and body of adolescents	Ohba Y, Kudo S, Kitamiya C, et al. Effects of hand bath on the mind and body of adolescents*. <i>Kango Gijutsu (The Japanese Journal of Nursing Arts)</i> 2006; 52(11): 990–5 (in Japanese).	(1)	I
R53.6	Evaluation of the effects of backrubs in patients undergoing upper GI endoscopy	Tani A, Tsutsumi R, Kuniyasu N, et al. Effects of backrubs in patients undergoing upper GI endoscopy*. <i>Nihon Kango Gakkai Ronbunshu (Journal of Japanese Nursing Research)</i> 2007; 37: 165–7 (in Japanese).	(2)	I
R53.6	Physiological and psychological changes induced by foot massage (Rakken method or stepping massage)	Uebaba K, Xu FH, Bao YC, et al. Physiological and psychological changes induced by foot massage (Rakken method or stepping massage)*. <i>The Annual Journal of Ayurveda Society in Japan, Supplement</i> 2008; Proceedings: 32–3 (in Japanese).	(5)	I
R53.6	Comparison of the effect of stroking the skin on the low back and both forearms	Ito Y, Motohashi M, Kudo M. A comparison: Relaxation effect of stroking to the trunk back and to the fore-arms. <i>Igaku to Seibutsugaku (Medicine and Biology)</i> 2009; 153: 363–8 (in Japanese).	(1)	I
R53.13	Evaluation of the effects of Tuina stimulation on recovery from fatigue	Tsubouchi S, Matsuura Y, Li Q, et al. The effect of Tuina stimulation on fatigue recovery by physiological index. <i>Toho Igaku (Eastern Medicine)</i> 2006; 22(2): 53–60 (in Japanese).	(1)	I
R79.8	Evaluation of the effects of acupuncture and effleurage on blood lactate levels	Hayashi K, Fujinami T, Morita Y, et al. Effects of acupuncture and effleurage on blood lactate levels*. <i>Toyo Ryoho Gakkai Kyokai Gakkaishi (The Journal of Japan College Association of Oriental Medicine)</i> 2004; 28: 80–2 (in Japanese).	(1)	I

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

Yamamoto K. A clinical study of manual therapy for chronic rheumatoid arthritis*. *Nihon Shugi Ryoho Gakkai Zasshi (The Journal of Japanese Association of Manual Therapy)* 2001; 12(1): 7–15 (in Japanese). Ichushi Web ID 2003139616

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).

Arthritis Impact Measurement Scales 2 (AIMS-2) (disease-specific QOL scale).

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

Ikeuchi T, Kimura A, Sumiya K, et al. Effect of manipulation therapy on delayed onset muscle soreness (DOMS). *Nihon Toyo Igakkai Shorokushu (Proceedings of the Japan Society for Oriental Medicine)*. 2008; 25: 46 (in Japanese). Ichushi Web ID 2008255553

Ikeuchi T, Sumiya K, Odahara Y, et al. Effect of manipulation therapy on delayed onset muscle soreness (DOMS). *Toho Igaku (Eastern Medicine)* 2009; 24(4): 11–18 (in Japanese with English abstract).

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 \pm SE: 18.8 \pm 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 limit 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

Kimura M, Watanabe E, Watanabe S, et al. Psychosomatic effects of aromatherapeutic hand and foot massage on healthy women using two kinds of essential oils*. *Josei Shinshin Igaku (Journal of Japanese Society of Psychosomatic Obstetrics and Gynecology)* 2009; 14(1): 62. Ichushi Web ID 2009228467

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,¹ 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.

¹ Kirschbaum C, Hellhammer DH. Salivary cortisol in psychobiological research: an overview. *Neuropsychobiology* 1989; 22: 150–69.

11. Abstractor and date

Fujii R, 21 December 2010, 28 February 2011.

18. Symptoms and Signs

Reference

Irie T, Tokutake T, Yoshikawa K. The effects of effleurage on muscle fatigue and muscle endurance recovery*. *Nihon Shugi Ryoho Gakkai Zasshi (The Journal of Japanese Association of Manual Therapy)* 2001; 12(1): 29–33 (in Japanese). Ichushi Web ID 2003139621

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

Noto Y, Sato T. The effect of back rub massage in healthy subjects. *Hirosaki Daigaku Igakubu Hokengakka Kiyō (Bulletin of Health Science Hirosaki)*. 2005; 15: 97–102 (in Japanese with English abstract). Ichushi Web ID 2006303302

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

Ogasawara E, Shiihara Y, Koitabashi K, et al. The relaxing and refreshing effects of aromatherapeutic massage using citrus fruit essential oil — evaluation using skin conductance and a mood adjective check list. *Nihon Kango Kenkyu Gakkai Zasshi (Journal of Japanese Society of Nursing Research)* 2007; 30 (4): 1726 (in Japanese with English abstract). Ichushi Web ID 2007310111

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

Ogata A, 24 December 2010, 18 March 2011.

18. Symptoms and Signs

Reference

Uebaba K, Xu FH, Wang HB. Physiological and psychological change with stepping massage*. *Nihon Toho Igakkai Shorokushu (Japan Eastern Medical Association Abstracts)*. 2008; 25: 54 (in Japanese). Ichushi Web ID 2008255561

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.