

Summary Tables for Human Studies of Massage

Return to [Summary of Research](#)

Table I. Effects of Massage upon Edema

Ref #	Sites	Patients	Stage	Patient Characteristics	Treatment	Results
Randomized Controlled Trials						
²⁹ single-blind	Breast	50	Unknown	Post-mastectomy edema of the arm	Compression bandaging, with or without Manual Lymphatic Drainage (MLD) massage	No significant differences between groups. Significant reduction in MLD group for subjects with mild lymphedema compared to all other subgroups.
¹¹	Breast	42	Unknown	Post-mastectomy edema of the arm	Compression bandages, exercises and skin care, with or without specific MLD massage.	Both groups had significant edema reduction with no significant differences between groups.
³⁰	Breast	60	Unknown	Post-mastectomy edema of the arm; subjects had spouse or significant other.	Medication with or without massage by the significant other upon request by patient	Overall positive feedback given by massage group, although longer massages were wanted. <i>Pain control:</i> Significantly greater in massage group one day post operation. <i>Shoulder function:</i> Significantly improved at second follow-up. No significant differences found between groups by third follow-up.
³⁴ cross-over design	Breast	29	Unknown	One year post cancer treatment with breast cancer related lymphedema	<i>Group A:</i> <ul style="list-style-type: none"> • Three weeks MLD • Six weeks no treatment • Three weeks SLD <i>Group B:</i> <ul style="list-style-type: none"> • Three weeks SLD • Six weeks no treatment • Three weeks MLD All subjects received skin and nail care, and were fitted for an elastic sleeve.	Significant differences following MLD: Reduction in limb volume (P=.013), reduced dermal thickness (P=.03), improved emotional function (P=.006), and reduced sleep disturbance (P=.03). MLD was significantly more likely than SLD to improve altered sensations. See Annotated Bibliography for specific sensations and p-values.
Prospective Controlled Trials						
³¹	Breast	60 (20 in each of three groups)	Unknown	Post-mastectomy edema of the arm	<ol style="list-style-type: none"> 1. Pneumatic massage with uniform pressure 2. Pneumatic massage with differentiated pressure 3. Manual lymph massage 	Significant edema reduction in uniform pressure group (21%, t=3.23) and MLD group (25%, t=2.77).
³²	Breast	38	Unknown	Post-mastectomy edema of the arm	<i>Part I:</i> Compression bandage alone for two weeks <i>Part II:</i> Another week of compression bandage alone or bandaging plus MLD massage	<i>Part I:</i> Mean edema reduction 188 ml (26%) (p<0.001) <i>Part II:</i> No significant differences in edema reduction volume (p<0.07), but MLD percent reduction significantly greater (11% vs 4%, p=0.04). Only massage group had significantly less pain (p<0.03).

→ More...

Table I. Effects of Massage upon Edema – continued

Ref #	Sites	Patients	Stage	Patient Characteristics	Treatment	Results
Uncontrolled Prospective Trial						
New 23	Breast	44	I or II	Post-mastectomy, radiation at least 1.5 yrs	MLD plus compression bandaging	<i>Breast edema:</i> Twenty-one of 23 patients had “only minor persistent swelling”. <i>Arm edema:</i> “Significant responses in all cases” Long term hard to quantify because of variance in use of compression.
New 25	Breast	10	Not reported	Post mastectomy with edema and severe shoulder pain Average interval between surgery and edema was 9.8 years	MLD and use of a compression device every two weeks for an average of 4.9 months.	Differences in arm volume decreased from 88 to 342 ml (mean 170 ml), pain scores dropped from 0 to 5 ml (average 2.7) and functional improvement occurred for all patients.
New 24	Breast	4 women (8 arms)	Not reported	Post mastectomy with edema two with decreased arm function	MLD and variable use of compression bandaging (one arm treated and compared with the other arm)	Fluid volumes in the affected arm reduced at four weeks for all, but subsequently recurred or worsened for three.
27	Breast	20	Unknown	Post-mastectomy edema of the arm	<i>Treatment:</i> MLD, skin and nail care, compression bandaging and therapeutic exercise <i>Maintenance:</i> Skin and nail care, therapeutic exercise and compression sleeve	Significant decrease in girth and volume by grade of lymphedema; no other variables were significant predictors.
Retrospective, No Controls						
New 26		260 women, 3 men (74 had complete data)	Not reported	Post axillary surgery or radiotherapy	<i>Treatments:</i> MLD plus compression or self-care with exercise, compression and skin care	<i>Mild-uncomplicated lymphedema:</i> <ul style="list-style-type: none"> Seven of 20 with MLD and self-care had mean reduction of 20% Thirteen patients with self-care only had mean reduction of 30% <i>Trunk edema:</i> <ul style="list-style-type: none"> Complete resolution for 14 of 20 with MLD <i>Moderate to severe or complicated edema:</i> Edema reduced an average of – <ul style="list-style-type: none"> 40% in 16 patients with intensive MLD plus self-care 25% in 15 with basic MLD plus self-care 20% in three patients with self-care only

→ More...

Table I. Effects of Massage upon Edema – continued

Ref #	Sites	Patients	Stage	Patient Characteristics	Treatment	Results
Retrospective, No Controls - continued						
³³	Various	6	Unknown	Cancer-related lymphedema, had completed a three-week course of MLD	Interviewed by the author	Common themes were revealed involving hopes and expectations about treatment and response of MLD, relaxation during treatment, the therapist as an educator, high costs of MLD and coping mechanisms.
³³	Breast	4	Unknown	Breast edema following wide local excision or lumpectomy and axillary lymph node sampling	<i>Treatment:</i> MLD, self MLD and compression bra <i>Maintenance:</i> Skin and nail care, compression bra	All subjects had reduced breast edema following treatment. Three of four subjects had no visible edema at 40 months (one patient lost to follow-up).
Case Reports						
³²	Prostate	1	Unknown	Post-prostatectomy edema of the genitals	MLD and compressive wrappings	Edema and pain resolved after two weeks. Three months postoperation, subject had no residual edema.
³⁵	Breast	1	Unknown	Post-mastectomy recurrent edema	Prospectively designed with cross-over. <i>Treatment A:</i> MLD, compression wraps, remedial exercise and skin and nail care <i>Treatment B:</i> All of Treatment A except MLD Each treatment lasted four weeks.	Significantly different responses between treatments, with Treatment A (MLD) observing a larger reduction in edema (p=.046) and an increase in functional ability (p=.002). Subject reported changes in activity level and salt consumption during Treatment B (no MLD).
⁶⁶	Breast	3	Unknown	Post-mastectomy, little or no present edema	Massage of affected limb	All three had increased swelling and/or recurrence of edema after massage (i.e., an adverse effect).

References for Table I: Effects of Massage Upon Edema

11. Andersen L, Hojris I, Erlandsen M, Andersen J. Treatment of breast-cancer-related lymphedema with or without manual lymphatic drainage -- a randomized study. *Acta Oncologica* 2000;39(3):399-405.
23. Goffman T, Laronga C, Wilson L, Elkins D. Lymphedema of the arm and breast in irradiated breast cancer patients: risks in an era of dramatically changing axillary surgery. *The Breast Journal* 2004;10(5):405-11.
24. Howell D, Watson M. Evaluation of a pilot nurse-led, community-based treatment programme for lymphoedema. *Int J of Palliative Nursing* 2005;11(2):62-9.
25. Avrahami R, Gabbay E, Bsharah B, Haddad M, Koren A, Dahn J, *et al.* Severe lymphedema of the arm as a potential cause of shoulder trauma. *Lymphology* 2004;37:202-5.
26. Jeffs E. Treating breast cancer-related lymphoedema at the London Haven: Clinical audit results. *European Journal of Oncology Nursing* 2006;10(1):71-9.32. Katz EE, Lyon MB, Davis D, Gottlieb LJ, Brendler CB. Manual lymphatic drainage for the treatment of acute genital lymphedema. *J Urol* 2004 Jul; 172(1):157-8.

33. Mondry TE, Johnstone PA. Manual lymphatic drainage for lymphedema limited to the breast. *J Surg Oncol* 2002 Oct; 81(2):101-4.
27. Mondry TE, Riffenburgh RH, Johnstone PA. Prospective trial of complete decongestive therapy for upper extremity lymphedema after breast cancer therapy. *Cancer J* 2004 Jan-2004 Feb;10(1):42-8.
29. McNeely ML, Magee DJ, Lees AW, Bagnall KM, Haykowsky M, Hanson J. The addition of manual lymph drainage to compression therapy for breast cancer related lymphedema: a randomized controlled trial. *Breast Cancer Res Treat* 2004 Jul; 86(2):95-106.
30. Forchuk C, Baruth P, Prendergast M, Holliday R, Bareham R, Brimner S, *et al.* Postoperative arm massage: a support for women with lymph node dissection. *Cancer Nurs* 2004 Jan-2004 Feb; 27(1):25-33.
31. Zanolli R, Monzeglio R, Balzarini A, Martino G. Evaluation of the results of three different methods of postmastectomy lymphedema treatment. *Journal of Surgical Oncology - Supplement* 1984 Jul;26(3):210-3.
32. Johansson K, Albertsson M, Ingvar C, Ekdahl C. Effects of compression bandaging with or without manual lymph drainage treatment in patients with postoperative arm lymphedema. *Lymphology* 1999 Sep;32(3):103-10.
33. Woods M. The experience of manual lymph drainage as an aspect of treatment for lymphoedema. *Int J Palliat Nurs* 2003 Aug; 9(8):336-42.
34. Williams AF, Vadgama A, Franks PJ, Mortimer PS. A randomized controlled crossover study of manual lymphatic drainage therapy in women with breast cancer-related lymphoedema. *European Journal of Cancer Care*. 2002 Dec;11(4):254-61.
35. Aldridge RL Jr, Clift J. Effect of manual lymphatic drainage on edema and function in a patient with postmastectomy lymphedema. *Journal of the Section on Women's Health*. 2002 Mar;26(1):25-9, 33.
66. MacDonald G. *Cancer, radiation and massage*. 2001:17, 20-32.

Table II. Effects of Massage Upon Nausea, Pain and Other Quality of Life

Ref #	Sites	Patients	Stage	Patient Characteristics	Treatment	Results
Randomized Controlled Trials, Blinded						
⁴⁶ single blind	Lung, breast, prostate, colorectal and other	14 massage 15 controls	End	Hospice patients aged 30 - 87 (average 64) – None had received previous massage.	Usual hospice care or hospice care plus 30-45 minutes of “hands-on” massage with standard protocol twice weekly for two weeks	<i>Short-term:</i> Significant ($P<0.05$) reductions in pulse, respiratory rates and pain intensity some sessions. <i>Long-term:</i> No differences in reduction from constant to intermittent pain. Escalation to constant pain in 7% with massage and none without. <i>Analgesic doses of IM morphine:</i> No differences. <i>Numbers of hospital admissions:</i> Too small to compare. <i>Global Well Being scores:</i> Positive trend ($p<0.09$) with massage. <i>Median longevity:</i> 41 days massage, 91 days controls. Longevity negatively correlated with Global Well Being scores at start/end of study. Massage not one of significant predictors of Global Well Being per multiple regression analysis.
⁴⁵ single blind	Breast, lung, other	42	Unknown	Adult patients in palliative care unit	1. Massage with essential lavender oil and inert oil 2. Massage with inert oil only 3. No massage (control)	<i>Immediate effects:</i> Significant post-session improvements in sleep quality ($p=.02$) and depression ($p<.05$) for massage only group, pain ($p<.05$) for aromatherapy group and pain ($p<.05$) and sleep quality ($p=.03$) for both massage groups. <i>Long-term effects:</i> None
⁴⁷ single blind	Various	26	End	Adult patients in palliative care unit	1. Reflexology 2. Basic foot massage Received session once weekly for six weeks.	Approximately equal numbers of negative responses in symptom relief, and general expressions of pleasure between groups. Few possible adverse effects noted such as foot discomfort, nausea, shaking or sleep disturbance.
Randomized Controlled Trials, Not Blinded						
⁴¹	Bone marrow	88 total: 27 MT, 31 TT, 30 FV	Unknown	Adult patients at a bone marrow transplant unit	Massage therapy (MT), therapeutic touch (TT) and friendly visit/control (FV). Thirty-minute sessions administered every third day.	Significant differences found in “comfort” for TT ($p=.07$) and MT ($p=0.00$), and in CNS/neurological complications for MT ($p=.031$), when compared to FV. Significant difference in Perceived Benefits score for MT ($p=.003$). No significant differences for engraftment time or gastrointestinal complications.

→ More...

Table II. Effects of Massage Upon Nausea, Pain and Other Quality of Life – continued

Ref #	Sites	Patients	Stage	Patient Characteristics	Treatment	Results
Randomized Controlled Trials, Not Blinded - continued						
⁴⁹	Lung, lymphoma, colorectal, other	36	Unknown	Patients in an oncology unit	Stratified by low and high pain scores into foot reflexology or control group	Significant reduction in pain scores immediately following foot reflexology (p<.01) using baseline adjusted measurements
⁵¹	Ovarian	105	Unknown	Female adult patients scheduled to undergo an abdominal laparotomy for the removal of suspected cancerous lesions	1. Usual postoperative care (UC) 2. UC plus therapeutic massage 3. UC plus vibration therapy Forty-five-minute massage and 20-minute vibration therapy sessions. Administered following surgery and next two postoperative days.	Massage was significantly better than UC (p=.0244) and vibration therapy (p=.0015) for affective pain and UC for sensory pain (p=.0428) on the day of surgery. Massage was significantly better than UC for distress (p=.0085) and vibration therapy for sensory pain (p=.0085) on postoperative day 2. After controlling for multiple outcomes (p=.05/4), no significant differences were found between groups.
⁵⁰	N/A	42	N/A	Spouses of patients undergoing chemotherapy or radiation	Therapeutic back massage (TBM) or reading a book (control). Sessions lasted 20 minutes. An IV was inserted into their antecubital veins that remained there during and 20 minutes after massage and control session to obtain measurements.	At baseline, no significant differences were found between groups, except that women overall had higher mean scores of depression and stress. TBM had a significant positive change in mood (p=.0005) and decrease in perceived stress (p=.001) from pre-intervention to 20 minutes following intervention. Significant inverse relationships were found between mood and natural killer cell activity (NKCA) (p=.009) and perceived stress and NKCA (females only, p=.03).
⁴⁸	Various	28 –14 treated, 14 controls paired per frequency of pain, antiemetic or tranquilizing meds	Unknown	Subjects in massage group had higher mean levels of initial pain and males in this group had the highest mean level of pain.	Ten-minute back massage or visit with a nurse	Pain levels significantly decreased immediately after massage for males (F(5,13) = 8.24, p=0.01). Meds only significantly associated with decrease in pain two hours after intervention and only for females (F(3,7) = 29.37, 29.37, p=0.002).
⁵³	Acute Leukemia	Unclear; either 20 in treatment group or 20 randomized between groups	N/A	Children (median age 6.9), half female	Massage by parent at bedtime every day for 30 days or standard care/wait-list	Significant decreases in anxiety and depression for parents and children massaged compared with controls. Massage group WBC and neutrophil counts increased significantly; however, possible confounding factors were not considered in study.

→ More...

Table II. Effects of Massage Upon Nausea, Pain and Other Quality of Life – continued

Ref #	Sites	Patients	Stage	Patient Characteristics	Treatment	Results
Randomized Controlled Trials, Not Blinded - continued						
⁵² pilot	Leukemia	50	Unknown	Children undergoing bone marrow transplant	Randomized: 1. Professional massage (n=20) 2. Parent administered massage (n=20) 3. Standard care (n=10)	Immediate effects in reducing anxiety (child report p=.004, parent report p<.0001) and discomfort (parent report p=.004) were observed in the professional massage group. Significant differences were observed for days to engraftment for parent administered massage (p=.01) and both massage groups combined (p=.02). Positive trends found in quality of life, days in the hospital and use of narcotics, though not significant.
³⁸	Various	33	Unknown	Adult patients undergoing autologous bone marrow transplant (BMT)	Approximately nine 20-minute massages or uninterrupted time alone as in standard medical care	Significantly lower anxiety levels in massage group at mid-treatment (p=.02). Immediate significant differences observed for diastolic blood pressure (p=.01), distress (p=.02), nausea (p=.01) and anxiety (p=.0001).
⁴⁰ cross-over	Breast, gynecological, genitourinary, gastrointestinal, other	230 total: 63 MT, 56 HT, 45 CP	Unknown	Adult patients receiving chemotherapy with identical repeating cycles; Pain, nausea or fatigue were 3+ on a scale of 10.	Therapeutic massage (MT), healing touch (HT) and caring presence with calming music (CP). Received four weekly 45-minute sessions of intervention and four weekly sessions of standard care (chemotherapy).	Some significant effects were found for various symptoms. See Annotated Bibliography for specific information.

→ More...

Table II. Effects of Massage Upon Nausea, Pain and Other Quality of Life – continued

Ref #	Sites	Patients	Stage	Patient Characteristics	Treatment	Results
Randomized Controlled Trials, Not Blinded - continued						
^{39a} cross-over	Various	87	End	Nausea and pain	<p>Massage* and quiet control sessions of reading/TV</p> <p><i>Patterns:</i></p> <p>A. Control, massage, massage</p> <p>B. Massage, control, massage</p> <p>C. Massage, massage, control</p> <p>*Ten-minute foot massage</p>	<p><i>Nausea:</i> Significant decrease in mean scores after first (17.5 + 24.4 mm to 11.1 + 19.1 mm; t=3.1; p = 0.001) and second massage (17.7 + 23.6 mm to 12.8 + 18.6 mm ; t=3.19; p = 0.001). Control sessions showed no significant change (t=0.94; p=0.17).</p> <p><i>Pain:</i> Significant decrease in mean pain scores after first (9.8 mm; t=5.979; p=0.0001) and second massage (9.4 mm (t=5.7; p=0.0001). Control sessions showed no significant change (t=0.867; p=0.19).</p> <p><i>Relaxation:</i> Significant decrease in mean relaxation scores after first (22.2 mm; t=11.3; p=0.0001) and second massage (16.5 mm; t=7.55; p=0.0001). Control sessions showed no significant change (2.7 mm; t=1.5; p=0.07).</p>
Prospective Controlled Trials						
⁵⁴	Lung, breast	23 eligible	End	All had anxiety on VAS scale. Eleven patients with breast cancer and two patients with lung cancer had chronic pain on Short-Form McGill Pain Questionnaire (SF-MPQ).	Two 30-minute sessions of foot reflexology followed by regular rest and activity or the reverse order.	Anxiety VAS scale. Pain on SF-MPQ. Medications not significantly different on control and intervention days. Average anxiety scores significantly lower after foot reflexology in both groups of patients (Sample mean 21.83 lower, p=0.000). Patients with breast cancer who initially reported pain had a significant mean decrease after foot reflexology (SF-MPQ mean score decrease 0.41, p=<0.05). Only two patients with lung cancer initially reported pain, so appropriate differences in results could not be calculated.

→ More...

Table II. Effects of Massage Upon Nausea, Pain and Other Quality of Life – continued

Ref #	Sites	Patients	Stage	Patient Characteristics	Treatment	Results
Prospective Controlled Trials - continued						
⁴²	Various	1290	Unknown	Inpatients and outpatients at comprehensive cancer center	Standard Swedish massage, light touch massage or foot massage. Sessions averaged 20 minutes for inpatients and 60 minutes for outpatients.	After baseline adjustment, outpatients reported lower symptom scores (p=.0002). Patients receiving Swedish or light touch massage had superior outcomes to foot massage (p=.03). Mean symptom reductions and standard deviations between baseline and post-treatment for all massages combined: <i>Pain: 2.9(2.2)</i> <i>Fatigue: 2.8(2.4)</i> <i>Anxiety: 4(2.4)</i> <i>Nausea: 3.1(2.4)</i> <i>Depression: 3(2.3)</i>
⁵⁵	Various	41	Unknown	Undergoing chemotherapy or radiation at a VA hospital – length of stay seven days or greater	Standard care with either therapeutic massage (TM) or nurse interaction/control (NI). TM patients recruited during first eight months of study; NI recruited during last eight months.	Significant changes in pain (p<1.0) and symptom distress (p<1.0) for TM group, and sleep (p<1.0) for NI group. (Authors define significance at a p<1.0 level.)
Uncontrolled Prospective Clinical Series						
^{New 67}	N/A	Hospital (n=68), nursery school (n=20)	N/A	Mothers of hospitalized or normal children	Massage for both groups for 20 minutes with an essential oil	<i>Moods:</i> Significant results in both groups. <i>Vital signs, temperature:</i> No significant changes. Further details in Annotated Bibliography
^{New 22}	N/A	34 'carers' of patients	N/A	Persons caring for patients with cancer	Chair massages during a "typical" week	<i>After massage:</i> 91% had significant improvement in general well-being scale, 8% no change, no one felt worse. <i>Next day:</i> 68% responding indicated changes remained.
⁵⁶ RCT design for reflexology	Various	12 (6 in each group)	Palliative		Three 40-minute sessions of either reflexology or placebo reflexology (gentle foot massage) on days one, three and five.	Both groups relaxed. All six in reflexology group had increase in quality of life compared with two in placebo group. <i>VAS scales:</i> Sixteen quality of life components improved with reflexology group and four with placebo.
⁶⁰	Various	7	Metastatic	Inpatients aged 52-82	Massage offered daily during hospital stay.	All said massage helpful with no adverse effects. Changes in means levels for pain, alertness and anxiety described in Annotated Bibliography .

→ More...

Table II. Effects of Massage upon Nausea, Pain and Other Quality of Life – continued

Ref #	Sites	Patients	Stage	Patient Characteristics	Treatment	Results
Uncontrolled Prospective Clinical Series - continued						
⁵⁷	Various	46 aromatherapy, 57 massage	Palliative care	Referred for anxiety, tension, pain or depression.	Three full-body massages	<i>Physical and psychological symptoms, quality of life:</i> Mean scores significantly improved after massage plus aromatherapy. <i>Number with severe physical or psychological symptoms and/or decreased activities:</i> Fewer after massage plus aromatherapy. <i>Anxiety:</i> Decreased in both groups.
⁵⁹	Various	72 from ⁵⁷	Palliative		Survey mailed asking reactions to the set of three massage sessions.	All reported benefits in relaxation, pain relief or other physical, emotional or spiritual well-being.
⁴³	Breast	3	No evidence of disease	Women after mastectomy with significant problems with loss of breasts, aged 25 - 65, and not later than one year after diagnosis.	Six sessions of therapeutic massage with a choice of where to be massaged: foot, arm, face or back.	Help in relaxation and sleep plus an ability to look at or touch themselves again. One person experienced a couple of weeks of feeling "low" that may have followed the opening up of feelings during the massage sessions, but she continued the sessions.
Uncontrolled Clinical Series						
⁴	Various	7	Pain and anxiety		Thirty-minute massage on each of two evenings	<i>Pain:</i> Average VAS score significantly decreased 29.5 mm (p<0.01) first day and 22.6 mm (t=3.0; p = 0.025) second day. <i>Anxiety:</i> Average STAI-Y-1 score significant decrease 13.3 mm (t=3.1; p=0.02) first day and 12.9 mm (t=4.6; p=0.004) second day. <i>Relaxation:</i> Average VAS scores significantly decreased 32 mm (t=6.9; p=0.0001) first day and 35.5 mm (t=7.2; p=0.0004) second day. <i>Heart rate:</i> Average rate significantly decreased 10 minutes after massage first day. <i>Respiratory rate:</i> Significantly decreased after massage both days (p<0.05). <i>Blood pressure:</i> Significantly decreased after massage first day (p<0.05) and 10 minutes after massage second day (p<0.05).

→ More...

Table II. Effects of Massage upon Nausea, Pain and Other Quality of Life – continued

Ref #	Sites	Patients	Stage	Patient Characteristics	Treatment	Results
Uncontrolled Clinical Series - continued						
⁵⁸	Breast (7), rectum (1)	8		Ages 54 – 80	Light 20-minute massage of hand/arm or foot/leg for 10 consecutive days. Interviews on last day.	<i>Positive comments:</i> “Meaningful relief from suffering”, “being special”, development of a positive relationship with staff, sense of being strong, balance of autonomy and dependence and “feeling good”. No negative reactions reported.
Retrospective, No Controls						
<i>New</i> ^{22*}	N/A	182	N/A	‘Carers’ of patients with cancer	Chair massage received in past 12 months. <i>(*Second study of article²² in section for prospective uncontrolled studies)</i>	Significant general improvement in well-being for 97%. Details of scale changes and significance testing not clear.
⁶¹	Breast, other	47	Unknown	Adult patients who had received reflexology at a cancer support center.	Examined patients’ charts for qualitative comments on benefits of reflexology.	Benefits reported in relaxation, tension, enhanced sense of self, sleep patterns, energy levels and pain relief; however, patient selection and measurement methods were not clear.
⁶²	Various	20	Various	Patients attending a support group who had received reflexology	Completed a questionnaire with open-ended questions on aspects of reflexology.	100% response rate. Respondents had received three to five sessions of reflexology. Physical, psychological, spiritual and other benefits reported.
Case Reports						
<i>New</i> ⁷⁸	Lymphoma, breast	2	Various symptoms	One man, one woman	Reflexology	Hearing returned, sinuses cleared and other relief.
⁴⁴	Breast and other	2	Loss of sexuality and control with cancer	One man, one woman	Massage and dialogue	Dialogues with clients indicate that they are less confident about sexuality and/or control after cancer.
⁶⁸	Various	4	End	Three males, one female	Massage and dialogue	Massage seemed beneficial in promoting and supporting professional communication.

References for Table II: Effects of Massage upon Pain, Fatigue and Quality of Life

4. Ferrell-Torrey AT, Glick OJ. The use of therapeutic massage as a nursing intervention to modify anxiety and the perception of cancer pain. *Cancer Nursing* 1993;16(2):93-101.
22. Mackereth P, Sylt P, Weinberg A, Campbell G. Chair massage from carers in an acute cancer hospital. *Euro J of Oncol Nurs* 2005;9:167-79. (*Note: Two studies reported.*)
38. Ahles TA, Tope DM, Pinkson B, Walch S, Hann D, Whedon M, *et al.* Massage therapy for patients undergoing autologous bone marrow transplantation. *Journal of Pain and Symptom Management* 1999;18(3):157-63.

39. Grealish L, Lomasney A, Whiteman B. Foot massage. A nursing intervention to modify the distressing symptoms of pain and nausea in patients hospitalized with cancer. *Cancer Nursing* 2000 Jun;23(3):237-43.
40. Post-White J, Kinney ME, Savik K, Gau JB, Wilcox C, Lerner I. Therapeutic massage and healing touch improve symptoms in cancer. *Integr Cancer Ther* 2003 Dec; 2(4):332-44.
41. Smith MC, Reeder F, Daniel L, Baramée J, Hagman J. Outcomes of touch therapies during bone marrow transplant. *Altern Ther Health Med* 2003 Jan-2003 Feb;9(1):40-9.
42. Cassileth BRVAJ. Massage therapy for symptom control: outcome study at a major cancer center. *J Pain Symptom Manage* 2004 Sep;28(3):244-9.
43. Bredin M. Mastectomy, body image and therapeutic massage: a qualitative study of women's experience. *Journal of Advanced Nursing* 1999 May;29(5):1113-20.
44. van der Riet P. The sexual embodiment of the cancer patient. *Nursing Inquiry* 1998 Dec;5(4):248-57.
45. Soden K, Vincent K, Craske S, Lucas C, Ashley S. A randomized controlled trial of aromatherapy massage in a hospice setting. *Palliat Med* 2004 Mar; 18(2):87-92.
46. Wilkie DJ, Kampbell J, Cutshall S, Halabisky H, Harmon H, Johnson LP, *et al*. Effects of massage on pain intensity, analgesics and quality of life in patients with cancer pain: a pilot study of a randomized clinical trial conducted within hospice care delivery. *Hospice Journal - Physical, Psychosocial, & Pastoral Care of the Dying*. 2000;15(3):31-53.
47. Ross C, Hamilton J, Macrae G, Docherty C, Gould A, Cornbleet M. A pilot study to evaluate the effect of reflexology on mood and symptom rating of advanced cancer patients. 16. 2002;16(6):544-5.
48. Weinrich SP, Weinrich MC. The effect of massage on pain in cancer patients. *Applied Nursing Research* 1990 Nov;3(4):140-5.
49. Stephenson N, Dalton JA, Carlson J. The effect of foot reflexology on pain in patients with metastatic cancer. *Appl Nurs Res* 2003 Nov; 16(4):284-6.
50. Goodfellow LM. The effects of therapeutic back massage on psychophysiological variables and immune function in spouses of patients with cancer. *Nurs Res* 2003 Sep-2003 Oct; 52(5):318-28.
51. Taylor AG, Galper DI, Taylor P, Rice LW, Andersen W, Irvin W, *et al*. Effects of adjunctive Swedish massage and vibration therapy on short-term postoperative outcomes: a randomized, controlled trial. *J Altern Complement Med* 2003 Feb; 9(1):77-89.
52. Phipps S, Dunavant M, Rai SN, Deng X, Lensing S. The effects of massage in children undergoing bone marrow transplant. *Massage Therapy Journal*. 2004;43((3)):62-71.
53. Field T, Cullen C, Diego M, Hernandez-Reif M, Sprinz P, Kissell B, *et al*. Leukemia immune changes following massage therapy. *Massage Therapy Journal*. 2003 Winter;41(4):58-9, 60-7.
54. Stephenson NL, Weinrich SP, Tavakoli AS. The effects of foot reflexology on anxiety and pain in patients with breast and lung cancer. *Oncology Nursing Forum* 2000 Jan-2000 Feb;27(1):67-72.
55. Smith MC, Kemp J, Hemphill L, Vojir CP. Outcomes of therapeutic massage for hospitalized cancer patients. *J Nurs Scholarsh* 2002; 34(3):257-62.
56. Hodgson H. Does reflexology impact on cancer patients' quality of life? *Nursing Standard* 2000 Apr;14(31):33-8.
57. Wilkinson S, Aldridge J, Salmon I, Cain E, Wilson B. An evaluation of aromatherapy massage in palliative care. *Palliative Medicine* 1999 Sep;13(5):409-17.

58. Billhult A, Dahlberg K. A meaningful relief from suffering experiences of massage in cancer care. *Cancer Nursing* 2001 Jun;24(3):180-4.
59. Wilkinson S. Palliative care. Get the massage. *Nursing Times* 1996 Aug;92(34):61-4.
60. Toth M, Kahn J, Walton T, Hrbek A, Eisenberg DM, Phillips RS. Therapeutic massage intervention for hospitalized patients with cancer: a pilot study. *Alternative & Complementary Therapies*. 2003 Jun;9(3):117-24.
61. Wright S, Courtney U, Donnelly C, Kenny T, Lavin C. Clients' perceptions of the benefits of reflexology on their quality of life. *Complement Ther Nurs Midwifery* 2002 May;8(2):69-76.
62. Milligan M, Fanning M, Hunter S, Tadjali M, Stevens E. Reflexology audit: patient satisfaction, impact on quality of life and availability in Scottish hospices. *Int J Palliat Nurs* 2002 Oct; 8(10):489-96.
67. Iwasaki M. Interventional study on fatigue relief in mothers caring for hospitalized children - effect of massage incorporating techniques from oriental medicine. *Kurume Medical Journal* 2005;52:19-27.
68. Buckley J. Massage and aromatherapy massage: nursing art and science. *Int J Palliat Nurs* 2002 Jun; 8(6):276-80.
78. Martin M. The art and science of reflexology. *Positive Health* 2004 Jun;20.

Table III. Effects of Massage upon Stress and Immune Response Systems

Ref #	Sites	Patients	Stage	Patient Characteristics	Treatment	Results
Randomized and Blinded Controlled Trials						
None						
Randomized and Non-Blinded Controlled Trials						
New ⁵¹	Breast	15 MT, 12 control	I and II	Women within three years of diagnosis of breast cancer and at least three months after surgery, radiation or chemotherapy	Three 30-minute massages a week for five weeks by trained massage therapist. Controls received standard care and were offered massage at end of study.	<p><i>Massage:</i> Anxiety, depression, anger – Significant reductions (p<0.05, p<0.01) Hostility – Significant reductions (p<0.05) Natural killer cells – Number significantly increased (p<0.05) (Group comparison not done due to small number of subjects.) NK cells cytotoxicity – No significant changes. Norepinephrine and epinephrine – No significant changes <i>Controls:</i> NK cells decreased.</p>
Prospective Controlled Studies						
⁵²	Breast	Massage (n=22 + 15 from previous study ⁵¹), relaxation (n=20), standard treatment (n=16)	I - III	Breast cancer diagnosis within past three years	<p><i>Massage:</i> Three 30-minute sessions / week for five weeks <i>Progressive muscle relaxation:</i> Three sessions per week for five weeks <i>Standard care:</i> Just measurements on first and last days of study, but massage offered at end of study.</p>	<p>Significant (p<0.05):</p> <p><i>Massage –</i></p> <ul style="list-style-type: none"> • Depression reduced • Vigor increased <p><i>Massage or relaxation –</i></p> <ul style="list-style-type: none"> • Anxiety reduced • Pain reduced <p>Neuroendocrine:</p> <p><i>Massage –</i></p> <ul style="list-style-type: none"> • Transmitter levels increased • Natural killer cells and lymphocytes increased <p><i>Relaxation –</i></p> <ul style="list-style-type: none"> • Natural killer cell toxicity increased

References for Table III: Effects of Massage upon Stress and Immune Response Systems

- Hernandez-Reif M, Ironson G, Field T, Hurley J, Katz G, Diego M, *et al.* Breast cancer patients have improved immune and neuroendocrine functions following massage therapy. *Journal of Psychosomatic Research* 2004;57:45-52.
- Hernandez-Reif M, Field T, Ironson G, Beutler J, Vera Y, Hurley J, *et al.* Natural killer cells and lymphocytes increase in women with breast cancer following massage therapy. *International Journal of Neuroscience* 2005;115(4):495-510.

Table IV. Adverse or Cautionary Effects of Massage

Ref #	Sites	Patients	Stage	Patient Characteristics	Treatment	Results
Prospective Control						
⁶³	Breast	594 – Groups: A. 230 B. 134 C. 230	Staging in process	In surgery for identification of cancer in axillary lymph node	A. No massage B. Five minute breast massage after injection of dye C. Five minute breast massages after injection of dye and radiocolloid	Significantly greater proportions of single lymph nodes (SLNs) were identified in Group B (massage and dye) compared with controls (p=0.001), and in group C (massage after dye and after radiocolloid) compared with controls (p<0.001). Difference between Group A and Group B was not significant. <i>Proportions identified in each group:</i> A (Controls) – 215 patients (93.5%, CI 89.5-96.0) B (Massage after dye) – 129 patients (96.3%, CI 91.6-98.4) C (Massage after dye and radiocolloid) – 225 patients (97.8%, CI 95.0-99.1)
Case Reports						
⁶⁴	Bone	1	Multiple benign tumors in bone	Artery adjacent to a bony tumor	Repeated massage of the swelling	Popliteal artery stretched and hole rubbed in it that created aneurysm (leakage of blood into tissue).
¹⁶	Head/neck	7	Any		Massage of carotid sinus	Fainting induced in a few cases.
⁶⁵	Cervix	1	Recurrent	Recently received short course of radiotherapy for residual cancer cells.	Cautious, light touch massage	Initially reported positive effects, but the following day experienced pain in the groin and chest. Author concluded that the massage led to an inflammatory response and possibly damaged regional lymph nodes.
⁶⁶						See this case report in Table I for Edema .

References for Table IV: Adverse or Cautionary Effects of Massage

65. Macdonald DR, Strong E, Nielsen S, Posner JB. Syncope from head and neck cancer. J of Neuro-Oncol 1983;1(3):257-67.

65. Bass SS, Cox CE, Salud CJ, Lyman GH, McCann C, Dupont E, *et al*. The effects of postinjection massage on the sensitivity of lymphatic mapping in breast cancer. Journal of the American College of Surgeons. 2001 Jan;192(1):9-16.

65. Kalinga MJ, Lo NN, Tam SK. Popliteal arter pseudoaneurysm caused by an osteochondroma—a traditional medicine massage sequelae. Singapore Medical Journal 1996 Aug;37(4):443-5.

65. Roy L. Massage therapy for people with cancer: a practitioner’s experience. Positive Health. 2004 Feb;(96):48-50.

End of Tables and References for Tables

- Please note that reference numbers for each table are independent of those in other tables and of those in the main body of the [Summary of Research](#).
- Further details of human studies are provided in [Annotated Bibliography](#).