

1 **POSITION STATEMENT PROPOSAL ON MASSAGE AND HEALTH**

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POSITION STATEMENT PROPOSAL ON MASSAGE AND HEALTH

BACKGROUND INFORMATION

According to the World Health Organization (WHO), "Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity."¹ With this in mind, it would be appropriate to state that anything that positively impacts the physical, mental and social well-being of an individual as well as possibly decreasing incidence of disease, would improve health.

We are now starting to understand how greatly stress negatively impacts our lives, health, well-being and quality of life.^{2, 3, 4} Research has shown that massage therapy can have a positive influence with the issue of stress^{4, 5, 7, 8, 12, 13, 17, 18, 19, 21, 23, 25, 26, 27, 37} and with improving quality of life.^{5, 6, 8, 9, 11, 13, 14, 17, 20, 22, 25, 26, 27, 28, 29}

Research is showing us that massage therapy can help in varying populations with: anxiety,^{4, 5, 6, 7, 8, 9, 10, 11, 12, 15, 23, 25, 26, 27, 30, 31, 33} depression,^{4, 7, 15, 24, 25, 26, 27, 33} boosting immune function,^{15, 21, 23, 28, 38} lowering blood pressure,^{5, 7, 15, 18, 36, 37, 38} and pain issues.^{5, 6, 7, 8, 9, 11, 12, 15, 16, 19, 22, 25, 27, 28, 29, 30, 31, 32, 33} There are also some smaller studies that indicate that massage therapy can help those with dementia,^{35, 39} and may improve body image.³⁶

It is clear that massage is good for health and wellness. Massage addresses the issues in the WHO's definition of health; it can aid an individual's physical, mental, and social well-being; and it may help prevent disease by improving immune function and reducing stress.

RATIONALE

Individuals' health and wellness would benefit from utilizing and incorporating massage therapy given by professional massage therapists working within their scope of practice.

The position statement specifically supports all of AMTA's Core Values:

- We are a diverse and nurturing community working with integrity, respect and dignity.
- We believe in the benefits of massage.

The position statement supports portions of Vision Statements of the AMTA, as follows:

- AMTA members are devoted to professionalism and excellence in massage therapy practice.
- Quality research is the foundation for evidence-informed massage therapy education and practice.
- AMTA promotes its members as the highest quality professionals in massage therapy.
- Massage therapy is easily accessible.
- Massage therapy is a vital component of health care and wellness.

The position statement supports the portions of Goals and Objectives of the AMTA, as follows:

ADVOCACY AND INFLUENCE

Goal: The health care and wellness industry accepts the value of massage therapy.

Objective: Increase understanding of the benefits of massage therapy through education of the health care and wellness industry.

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INDUSTRY RELATIONSHIPS

Goal: AMTA is a respected leader within the health care and wellness industry.
Objective: Increase collaboration between AMTA, its members and other health care and wellness industry leaders.

RESEARCH

Goal: AMTA members are aware of the importance of scientific research to the massage therapy industry.
Objective: Increase the opportunities for members to access massage therapy scientific research through AMTA sources.

POSITION STATEMENT

It is the position of AMTA that massage therapy can improve health through its effects on the physical, mental and social wellbeing of an individual.

REFERENCES

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3. *Health and Stress*. (n.d.). Retrieved January 3, 2012 from American Psychological Association website: <http://www.apa.org/news/press/releases/stress/health-stress.aspx>.
4. Garner, B., Phillips, L.J., Schmidt, H.M., Markulev, C., O'Connor, J., Wood, S.J., Berger, G.E., Burnett, P., McGorry, P.D. (2008). Pilot study evaluating the effect of massage therapy on stress, anxiety and aggression in a young adult psychiatric inpatient unit. *Aust N Z J Psychiatry*, 42(5):414-22.

OBJECTIVE: The aim of the present pilot study was to examine the effectiveness of a relaxation massage therapy programme in reducing stress, anxiety and aggression on a young adult psychiatric inpatient unit.

METHOD: This was a prospective, non-randomized intervention study comparing treatment as usual (TAU) with TAU plus massage therapy intervention (MT) over consecutive 7 week blocks (May-August 2006). MT consisted of a 20 min massage therapy session offered daily to patients during their period of hospitalization. The Kennedy Nurses' Observational Scale for Inpatient Evaluation (NOSIE), the Symptom Checklist-90-Revised (SCL-90-R), the State-Trait Anxiety Inventory (STAI) and stress hormone (saliva cortisol) levels were used to measure patient outcomes at admission and discharge from the unit. The Staff Observation Aggression Scale-Revised (SOAS-R) was used to monitor the frequency and severity of aggressive incidents on the unit.

115 RESULTS: There was a significant reduction in self-reported anxiety ($p < 0.001$), resting
116 heart rate ($p < 0.05$) and cortisol levels ($p < 0.05$) immediately following the initial and
117 final massage therapy sessions. Significant improvements in hostility ($p = 0.007$) and
118 depression scores ($p < 0.001$) on the SCL-90-R were observed in both treatment groups.
119 There was no group x time interaction on any of the measures. Poor reliability of staff-
120 reported incidents on the SOAS-R limited the validity of results in this domain.

121 CONCLUSIONS: Massage therapy had immediate beneficial effects on anxiety-related
122 measures and may be a useful de-escalating tool for reducing stress and anxiety in acutely
123 hospitalized psychiatric patients. Study limitations preclude any definite conclusions on
124 the effect of massage therapy on aggressive incidents in an acute psychiatric setting.
125 Randomized controlled trials are warranted.

- 126 5. Jane, S.W., Wilkie, D.J., Gallucci, B.B., Beaton, R.D., Huang, H.Y. (2008). Effects of a Full-
127 Body Massage on Pain Intensity, Anxiety, and Physiological Relaxation in Taiwanese Patients
128 with Metastatic Bone Pain: A Pilot Study. *J Pain Symptom Manage*: 37(4). 754-63.
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130 Bone involvement, a hallmark of advanced cancer, results in intolerable pain, substantial
131 morbidity, and impaired quality of life in 34%-45% of cancer patients. Despite the
132 publication of 15 studies on massage therapy (MT) in cancer patients, little is known about
133 the longitudinal effects of MT and safety in cancer patients with bone metastasis. The
134 purpose of this study was to describe the feasibility of MT and to examine the effects of
135 MT on present pain intensity (PPI), anxiety, and physiological relaxation over a 16- to 18-
136 hour period in 30 Taiwanese cancer patients with bone metastases. A quasi-experimental,
137 one-group, pretest-posttest design with repeated measures was used to examine the time
138 effects of MT using single-item scales for pain (PPI-visual analog scale [VAS]) and
139 anxiety (anxiety-VAS), the modified Short-Form McGill Pain Questionnaire (MSF-MPQ),
140 heart rate (HR), and mean arterial pressure (MAP). MT was shown to have effective
141 immediate [$t(29)=16.5, P=0.000$; $t(29)=8.9, P=0.000$], short-term (20-30 minutes)
142 [$t(29)=9.3, P=0.000$; $t(29)=10.1, P=0.000$], intermediate (1-2.5 hours) [$t(29)=7.9,$
143 $P=0.000$; $t(29)=8.9, P=0.000$], and long-term benefits (16-18 hours) [$t(29)=4.0, P=0.000$;
144 $t(29)=5.7, P=0.000$] on PPI and anxiety. The most significant impact occurred 15
145 [$F=11.5(1,29), P<0.002$] or 20 [$F=20.4(1,29), P<0.000$] minutes after the intervention.
146 There were no significant time effects in decreasing or increasing HR and MAP. No
147 patient reported any adverse effects as a result of MT. Clinically, the time effects of MT
148 can assist health care providers in implementing MT along with pharmacological
149 treatment, thereby enhancing cancer pain management. Randomized clinical trials are
150 needed to validate the effectiveness of MT in this cancer population.
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154 Shiatsu, a specific type of massage, was used as an intervention in this study of 66
155 individuals complaining of lower back pain. Each individual was measured on state/trait
156 anxiety and pain level before and after four shiatsu treatments. Each subject was then
157 called 2 days following each treatment and asked to quantify the level of pain. Both pain
158 and anxiety decreased significantly over time. Extraneous variables such as gender, age,
159 gender of therapist, length of history with lower back pain, and medications taken for
160 lower back pain did not alter the significant results. These subjects would recommend

161 shiatsu massage for others suffering from lower back pain and indicated the treatments
162 decreased the major inconveniences they experienced with their lower back pain.

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164 7. Moyer, C.A., Rounds, J., , J.W. (2004). A Meta-Analysis of Massage Therapy Research. APA
165 Psychological Bulletin. 130(1): 3–18.

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167 Massage therapy (MT) is an ancient form of treatment that is now gaining popularity as
168 part of the complementary and alternative medical therapy movement. A meta-analysis
169 was conducted of studies that used random assignment to test the effectiveness of MT.
170 Mean effect sizes were calculated from 37 studies for 9 dependent variables. Single
171 applications of MT reduced state anxiety, blood pressure, and heart rate but not negative
172 mood, immediate assessment of pain, and cortisol level. Multiple applications reduced
173 delayed assessment of pain. Reductions of trait anxiety and depression were MT's largest
174 effects, with a course of treatment providing benefits similar in magnitude to those of
175 psychotherapy. No moderators were statistically significant, though continued testing is
176 needed. The limitations of a medical model of MT are discussed, and it is proposed that
177 new MT theories and research use a psychotherapy perspective.

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179 8. Buttagat, V., Eungpinichpong, W., Chatchawan, U., Kharmwan, S. (2011). The immediate effects
180 of traditional Thai massage on heart rate variability and stress-related parameters in patients with
181 back pain associated with myofascial trigger points. *J Bodyw Mov Ther.* 15(1):15-23.

182 The purpose of this study was to investigate the immediate effects of traditional Thai
183 massage (TTM) on stress-related parameters including heart rate variability (HRV),
184 anxiety, muscle tension, pain intensity, pressure pain threshold, and body flexibility in
185 patients with back pain associated with myofascial trigger points. Thirty-six patients were
186 randomly allocated to receive a 30-min session of either TTM or control (rest on bed) for
187 one session. Results indicated that TTM was associated with significant increases in HRV
188 (increased total power frequency (TPF) and high frequency (HF)), pressure pain threshold
189 (PPT) and body flexibility ($p < 0.05$) and significant decreases in self-reported pain
190 intensity, anxiety and muscle tension ($p < 0.001$). For all outcomes, similar changes were
191 not observed in the control group. The adjusted post-test mean values for TPF, HF, PPT
192 and body flexibility were significantly higher in the TTM group when compared with the
193 control group ($p < 0.01$) and the values for pain intensity, anxiety and muscle tension were
194 significantly lower. We conclude that TTM can increase HRV and improve stress-related
195 parameters in this patient population.

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197 Quesada-Rubio, J.M., Moreno-Lorenzo, C. (2011). Benefits of massage-myofascial release therapy
198 on pain, anxiety, quality of sleep, depression, and quality of life in patients with fibromyalgia. *Evid
199 Based Complement Alternat Med.* 2011:561753

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201 Fibromyalgia is a chronic syndrome characterized by generalized pain, joint rigidity,
202 intense fatigue, sleep alterations, headache, spastic colon, craniomandibular dysfunction,
203 anxiety, and depression. The purpose of the present study was to determine whether
204 massage-myofascial release therapy can improve pain, anxiety, quality of sleep,
205 depression, and quality of life in patients with fibromyalgia. A randomized controlled

206 clinical trial was performed. Seventy-four fibromyalgia patients were randomly assigned to
207 experimental (massage-myofascial release therapy) and placebo (sham treatment with
208 disconnected magnotherapy device) groups. The intervention period was 20 weeks. Pain,
209 anxiety, quality of sleep, depression, and quality of life were determined at baseline, after
210 the last treatment session, and at 1 month and 6 months. Immediately after treatment and
211 at 1 month, anxiety levels, quality of sleep, pain, and quality of life were improved in the
212 experimental group over the placebo group. However, at 6 months postintervention, there
213 were only significant differences in the quality of sleep index. Myofascial release
214 techniques improved pain and quality of life in patients with fibromyalgia.
215

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217 massage for treating anxiety in patients withdrawing from psychoactive drugs. *J Altern*
218 *Complement Med.* Sep;16(9):979-87.

219 Therapeutic massage has been proven to be an effective, nonpharmacologic, alternative for
220 managing state and trait anxiety in a variety of clinical situations. However, no controlled
221 study has investigated this effect in an addiction treatment setting.

222 AIM: The aim of this study was to investigate the effectiveness of chair massage for
223 reducing anxiety in persons participating in an inpatient withdrawal management program
224 for psychoactive drugs.

225 DESIGN: The design was a randomized, controlled clinical trial conducted from June
226 2008 to January 2009.

227 SUBJECTS: Eighty-two (82) adult patients received inpatient treatment for psychoactive
228 drug withdrawal (alcohol, cocaine, and opiates).

229 SETTING: This study was conducted at the Withdrawal Management Services at the
230 Capital District Health Authority, Halifax, Nova Scotia.

231 INTERVENTIONS: Subjects were randomly assigned to receive chair massage (n = 40) or
232 a relaxation control condition (n = 42). Treatments were offered for 3 consecutive days.
233 Standard counseling and pharmacologic management were also offered concurrently to
234 patients in all conditions.

235 MEASUREMENTS: The primary outcome measure was anxiety assessed using the
236 Spielberger State-Trait Anxiety Inventory (STAI). State and trait anxiety scores were
237 determined immediately prior to and following each treatment intervention.

238 RESULTS: Analysis of STAI scores showed a significant reduction in state and trait
239 anxiety for both interventions ($p < 0.001$). The magnitude in the reduction in state
240 ($p = 0.001$) and trait ($p = 0.045$) anxiety was significantly greater in the chair massage
241 group where the effect on state anxiety was sustained, at least in part, for 24 hours.

242 CONCLUSIONS: Within the clinical context of this study, chair massage was more
243 effective than relaxation control in reducing anxiety. Further investigation of chair massage
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245 is warranted.

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248

249 Burn can be among the most severe physical and psychologic traumas a person may face.
250 Patients with burns commonly have severe itching and pain. Severe itching has also been
251 associated with anxiety, sleep disturbance, and disruption of daily living activities. The
252 addition of complementary treatments to standard care may lead to improved pain
253 management and may offer a safer approach for reducing pain and procedural anxiety for
254 patients with burns. The authors conducted an experimental study to examine whether the
255 effects of massage therapy reduced burned adolescents' pain, itching, and anxiety levels.
256 Sixty-three adolescents were enrolled in this study shortly after admission (mean days = 3
257 +/- 0.48) at a burn unit in a large university hospital from February 2008 to June 2009.
258 The measures including the pain, itching, and state anxiety were collected on the first and
259 last days of the 5-week study period. The participants had an average age of 14.07 +/- 1.78
260 years and came usually from the lower socioeconomic strata. The authors observed that
261 massage therapy reduced all these measures from the first to the last day of this study ($P <$
262 $.001$). In most cultures, massage treatments are used to alleviate a wide range of
263 symptoms. Although health professionals agree on the use of nonpharmacologic method
264 for patients with burns, these applications are not yet common.
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267 K.M., Kelly, R.F., Sundt, T.M. 3rd. (2010). Effect of massage therapy on pain, anxiety, and
268 tension after cardiac surgery: a randomized study. *Complement Ther Clin Pract.* May;16(2):70-5.
269

270 Integrative therapies such as massage have gained support as interventions that improve
271 the overall patient experience during hospitalization. Cardiac surgery patients undergo
272 long procedures and commonly have postoperative back and shoulder pain, anxiety, and
273 tension. Given the promising effects of massage therapy for alleviation of pain, tension,
274 and anxiety, we studied the efficacy and feasibility of massage therapy delivered in the
275 postoperative cardiovascular surgery setting. Patients were randomized to receive a
276 massage or to have quiet relaxation time (control). In total, 113 patients completed the
277 study (massage, $n=62$; control, $n=51$). Patients receiving massage therapy had significantly
278 decreased pain, anxiety, and tension. Patients were highly satisfied with the intervention,
279 and no major barriers to implementing massage therapy were identified. Massage therapy
280 may be an important component of the healing experience for patients after cardiovascular
281 surgery.

282 13. Keir, S.T. (2011). Effect of massage therapy on stress levels and quality of life in brain tumor
283 patients--observations from a pilot study. *Support Care Cancer.* 19(5):711-5

284 **BACKGROUND:** Patients with brain tumors report experiencing elevated levels of stress
285 across the disease continuum. Massage therapy is a commonly used complementary therapy
286 and is employed in cancer care to reduce psychological stress and to improve quality of life
287 (QoL). The purpose of this pilot study was to obtain a preliminary assessment of the efficacy
288 of massage therapy on patient reported psychological outcomes and QoL.

289 **MATERIALS AND METHODS:** The design of the study was a prospective, single-arm
290 intervention. Participants were newly diagnosed primary brain tumor patients who reported

291 experiencing stress and who received a total of eight massages over a period of 4 weeks.
292 Participants completed the Perceived Stress Scale (PSS-10) and the Functional Assessment
293 of Cancer Therapy-Brain to assess their stress level and QoL.

294 RESULTS: As a group, levels of stress dropped significantly between weeks 2 and 3 ($M =$
295 12.3 , $SD = 3.09$, $P \leq 0.010$). A trend for the reduction in stress continued through week 4 (P
296 ≤ 0.063). At the end of week 4, PSS-10 scores of all participants were below the threshold
297 for being considered stressed. By the end of the intervention, participants reported significant
298 improvements in three test domains, emotional well-being, additional brain tumor concerns,
299 and social/family well-being.

300 CONCLUSION: This study indicates that participation in a massage therapy program is both
301 feasible and acceptable to newly diagnosed brain tumor patients experiencing stress.
302 Furthermore, participants in this study reported improvements in stress and their QoL while
303 receiving massage therapy.

304 14. Lämås, K., Lindholm, L., Engström, B., Jacobsson, C. (2010). Abdominal massage for people with
305 constipation: a cost utility analysis. *J Adv Nurs*. 66(8):1719-29.

306 AIM: This paper is a report of a study conducted to evaluate change in health-related quality
307 of life for people with constipation receiving abdominal massage and to estimate the cost-
308 effectiveness of two alternative scenarios developed from the original trial.

309 BACKGROUND: Constipation is a common problem and is associated with decrease in
310 quality of life. Abdominal massage appears to decrease the severity of gastrointestinal
311 symptoms, but its impact on health-related quality of life has not been assessed.

312 METHODS: A randomized controlled trial including 60 participants was conducted in
313 Sweden between 2005 and 2007. The control group continued using laxatives as before and
314 the intervention group received additional abdominal massage. Health-related quality of life
315 was assessed using the EQ-5D and analyzed with linear regression. Two scenarios were
316 outlined to conduct a cost utility analysis. In the self-massage scenario patients learned to
317 give self-massage, and in the professional massage scenario patients in hospital received
318 abdominal massage from an Enrolled Nurse.

319 RESULTS: Linear regression analysis showed that health-related quality of life was
320 statistically significantly increased after 8 weeks of abdominal massage. About 40% were
321 estimated to receive good effect. For 'self-massage', the cost per quality adjusted life year was
322 euro75,000 for the first 16 weeks. For every additional week of abdominal massage, the
323 average dropped and eventually approached euro8300. For 'professional massage', the cost
324 per quality adjusted life year was euro60,000 and eventually dropped to euro28,000.

325 CONCLUSION: Abdominal massage may be cost-effective in the long-term and it is relevant
326 to consider it when managing constipation. A crucial aspect will be to identify those who will
327 benefit.

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329 15. Hughes, D., Ladas, E., Rooney, D., Kelly, K. (2008). Massage therapy as a supportive care
330 intervention for children with cancer. *Oncol Nurs Forum*, 35(3):431-42.

331 PURPOSE/OBJECTIVES: To review relevant literature about massage therapy to assess
332 the feasibility of integrating the body-based complementary and alternative medicine
333 (CAM) practice as a supportive care intervention for children with cancer.
334 DATA SOURCES: PubMed, online references, published government reports, and the
335 bibliographies of retrieved articles, reviews, and books on massage and massage and
336 cancer. More than 70 citations were reviewed.
337 DATA SYNTHESIS: Massage therapy may help mitigate pain, anxiety, depression,
338 constipation, and high blood pressure and may be beneficial during periods of profound
339 immune suppression. Massage techniques light to medium in pressure are appropriate in
340 the pediatric oncology setting.
341 CONCLUSIONS: Massage is an applicable, noninvasive, therapeutic modality that can be
342 integrated safely as an adjunct intervention for managing side effects and psychological
343 conditions associated with anticancer treatment in children. Massage may support immune
344 function during periods of immunosuppression.
345 IMPLICATIONS FOR NURSING: Pediatric oncology nurses are vital in helping patients
346 safely integrate CAM into conventional treatment. Pediatric oncology nurses can help
347 maximize patient outcomes by assessing, advocating, and coordinating massage therapy
348 services as a supportive care intervention.
349

- 350 16. Cherkin, D.C., Sherman, K.J., Kahn, J., Wellman, R., Cook, A.J., Johnson, E., Erro, J., Delaney,
351 K., Deyo, R.A. (2011). A comparison of the effects of 2 types of massage and usual care on
352 chronic low back pain: a randomized, controlled trial. *Ann Intern Med*,155(1):1-9.
353

354 Background: Few studies have evaluated the effectiveness of massage for chronic low
355 back pain.
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357 Objective: To compare the effectiveness of 2 types of massage and usual care for chronic
358 back pain.
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360 Design: Parallel-group randomized, controlled trial. Randomization was computer-
361 generated, with centralized allocation concealment. Participants were blinded to massage
362 type but not to assignment to massage versus usual care. Massage therapists were
363 unblinded. The study personnel who assessed outcomes were blinded to treatment
364 assignment. (ClinicalTrials.gov registration number: NCT00371384)
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366 Setting: An integrated health care delivery system in the Seattle area. Patients: 401 persons
367 20 to 65 years of age with nonspecific chronic low back pain.
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369 Intervention: Structural massage (n = 132), relaxation massage (n = 136), or usual care
370 (n = 133).
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372 Measurements: Roland Disability Questionnaire (RDQ) and symptom bothersomeness
373 scores at 10 weeks (primary outcome) and at 26 and 52 weeks (secondary outcomes).
374 Mean group differences of at least 2 points on the RDQ and at least 1.5 points on the
375 symptom bothersomeness scale were considered clinically meaningful. Results: The
376 massage groups had similar functional outcomes at 10 weeks. The adjusted mean RDQ
377 score was 2.9 points (95% CI, 1.8 to 4.0 points) lower in the relaxation group and 2.5
378 points (CI, 1.4 to 3.5 points) lower in the structural massage group than in the usual care

379 group, and adjusted mean symptom bothersomeness scores were 1.7 points (CI, 1.2 to 2.2
380 points) lower with relaxation massage and 1.4 points (CI, 0.8 to 1.9 points) lower with
381 structural massage. The beneficial effects of relaxation massage on function (but not on
382 symptom reduction) persisted at 52 weeks but were small.

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384 Limitation: Participants were not blinded to treatment.

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386 Conclusion: Massage therapy may be effective for treatment of chronic back pain, with
387 benefits lasting at least 6 months. No clinically meaningful difference between relaxation
388 and structural massage was observed in terms of relieving disability or symptoms. Primary
389 Funding Source: National Center for Complementary and Alternative Medicine

390
391 17. Munk, N., Zanjani, F. (2011). Relationship between massage therapy usage and health outcomes
392 in older adults. *J Bodyw Mov Ther*, 15(2):177-85.

393 Physical and emotional decline in older adults is a serious issue affecting not only quality
394 of life but also susceptibility to injury. Non-pharmacological interventions addressing the
395 needs of older adults are important for reducing medication burden and possible drug
396 interactions. This study (N=144) examines the potential of massage therapy as such an
397 intervention for older adults by comparing self-reported health outcome scores among
398 adults 60 and older who have and have not utilized massage therapy in the past year.
399 When controlling for age and cumulative morbidities, older adults who reported massage
400 therapy usage in the past year had significantly better health outcome scores in the
401 following domains: 1) emotional well-being, 2) limitations due to physical issues, and 3)
402 limitations due to emotional issues. Because previous massage therapy research has not
403 included or focused on older adults, studies examining massage therapy and emotional
404 health, specifically among this population, are warranted

405 18. Cady, S. H., Jones, G. E. (1997). Massage therapy as a workplace intervention for reduction of
406 stress. *Perceptual & Motor Skills*, 84, 157-158.

407 METHODS: The effectiveness of a 15-min. on-site massage while seated in a chair was
408 evaluated for reducing stress as indicated by blood pressure. 52 employed participants' blood
409 pressures were measured before and after a 15-min. massage at work.

410 RESULTS: Analyses showed a significant reduction in participants' systolic and diastolic
411 blood pressure after receiving the massage.

412
413 19. Katz, J., Wowk, A., Culp, D., & Wakeling, H. (1999). Pain and tension are reduced among hospital
414 nurses after on-site massage treatments: a pilot study. *Journal of Perianesthesia Nursing*, 14, 128-133.

415 METHODS: The aims of this pilot study were (1) to evaluate the feasibility of carrying out a
416 series of eight 15-minute workplace-based massage treatments, and (2) to determine whether
417 massage therapy reduced pain and stress experienced by nursing staff at a large teaching
418 hospital. Twelve hospital staff (10 registered nurses and 2 nonmedical ward staff) working in
419 a large tertiary care center volunteered to participate. Participants received up to eight,
420 workplace-based, 15-minute Swedish massage treatments provided by registered massage
421 therapists. Pain, tension, relaxation, and the Profile of Mood States were measured before and
422 after each massage session.

423 RESULTS: Pain intensity and tension levels were significantly lower after massage. In
424 addition, relaxation levels and overall mood state improved significantly after treatments.

425 20. Glew, G.M., Fan, M.Y., Hagland, S., Bjornson, K., Beider, S., McLaughlin, J.F. (2010). Survey of
426 the use of massage for children with cerebral palsy. *Int J Ther Massage Bodywork*.3(4):10-5.

427 BACKGROUND: Conventional medicine and complementary and alternative medicine
428 (CAM) are merging into the broader field of "integrative medicine." Massage is no longer
429 considered complementary or alternative in some conventional medical circles today.

430 PURPOSE: We aimed to determine the prevalence of massage use among children with
431 cerebral palsy (CP) in the Pacific Northwest in the United States, the reasons that massage is
432 being used, and the limits of recruitment for a future randomized controlled trial.

433 METHODS: This study, the first step in a three-stage research plan, was conducted at the
434 Neurodevelopmental and Neurology clinics at Seattle Children's Hospital, a tertiary pediatric
435 hospital that provides service to patients primarily from Washington, Alaska, Montana, and
436 Idaho. As a feasibility study (stage one), it precedes a planned pilot study (stage two), and
437 subsequently, a full-scale randomized controlled trial (stage three) of whether massage can
438 improve the health of children with CP. The study subjects-104 families with a child with CP
439 ranging in age from 17 months to 21 years-were surveyed by the principal investigator and a
440 research assistant in exam rooms at the hospital.

441 RESULTS: In the families surveyed, 80% of the children had received massage at some
442 point. Massage was currently being used in 51%, and trained professionals were providing
443 the massage in 23%. Most families use massage for musculoskeletal relaxation, to improve
444 quality of life, and to help their children sleep. Lower maternal income was associated with
445 relatives as compared with professional massage therapists providing the massage. Massage
446 therapy use by the mother and more severe CP were significantly associated with current use
447 of massage for the child.

448 CONCLUSIONS: Most children with CP in the Pacific Northwest have used massage. Most
449 parents surveyed believe that massage is helpful to their child. Additional research is needed
450 to determine whether massage should be routinely recommended for children with CP.

451 21. Rapaport M.H., Schettler, P., Bresee, C. (2010). A Preliminary Study of the Effects of a Single
452 Session of Swedish Massage on Hypothalamic-Pituitary-Adrenal and Immune Function in Normal
453 Individuals. *Journal of Alternative and Complementary Medicine*,16(10), 1079-1088.

454 Abstract Objectives: Massage therapy is a multi-billion dollar industry in the United States
455 with 8.7% of adults receiving at least one massage within the last year; yet, little is known
456 about the physiologic effects of a single session of massage in healthy individuals. The
457 purpose of this study was to determine effects of a single session of Swedish massage on
458 neuroendocrine and immune function. It was hypothesized that Swedish Massage Therapy
459 would increase oxytocin (OT) levels, which would lead to a decrease in hypothalamic-
460 pituitary-adrenal (HPA) activity and enhanced immune function.

461 Design: The study design was a head-to-head, single-session comparison of Swedish
462 Massage Therapy with a light touch control condition. Serial measurements were
463 performed to determine OT, arginine-vasopressin (AVP), adrenal corticotropin hormone

464 (ACTH), cortisol (CORT), circulating phenotypic lymphocytes markers, and mitogen-
465 stimulated cytokine production.

466 Setting: This research was conducted in an outpatient research unit in an academic
467 medical center.

468 Subjects: Medically and psychiatrically healthy adults, 18-45 years old, participated in this
469 study.

470 Intervention: The intervention tested was 45 minutes of Swedish Massage Therapy versus
471 a light touch control condition, using highly specified and identical protocols.

472 Outcome measures: The standardized mean difference was calculated between Swedish
473 Massage Therapy versus light touch on pre- to postintervention change in levels of OT,
474 AVP, ACTH, CORT, lymphocyte markers, and cytokine levels.

475 Results: Compared to light touch, Swedish Massage Therapy caused a large effect size
476 decrease in AVP, and a small effect size decrease in CORT, but these findings were not
477 mediated by OT. Massage increased the number of circulating lymphocytes, CD 25+
478 lymphocytes, CD 56+ lymphocytes, CD4 + lymphocytes, and CD8+ lymphocytes (effect
479 sizes from 0.14 to 0.43). Mitogen-stimulated levels of interleukin (IL)-1ss, IL-2, IL-4, IL-
480 5, IL-6, IL-10, IL-13, and IFN-gamma decreased for subjects receiving Swedish Massage
481 Therapy versus light touch (effect sizes from -0.22 to -0.63). Swedish Massage Therapy
482 decreased IL-4, IL-5, IL-10, and IL-13 levels relative to baseline measures.

483 Conclusions: Preliminary data suggest that a single session of Swedish Massage Therapy
484 produces measurable biologic effects. If replicated, these findings may have implications
485 for managing inflammatory and autoimmune conditions.

486 22. Nerbass, F.B., Feltrim, M I. Z., Souza, S.A., Ykeda, D.S., Lorenzi-Filho, F. (2010). Effects of
487 massage therapy on sleep quality after coronary artery bypass graft surgery. *Clinics* 65(11), 1105-
488 1110.

489 INTRODUCTION: Having poor sleep quality is common among patients following
490 cardiopulmonary artery bypass graft surgery. Pain, stress, anxiety and poor sleep quality
491 may be improved by massage therapy.

492 OBJECTIVE: This study evaluated whether massage therapy is an effective technique for
493 improving sleep quality in patients following cardiopulmonary artery bypass graft surgery.

494 METHOD: Participants included cardiopulmonary artery bypass graft surgery patients
495 who were randomized into a control group and a massage therapy group following
496 discharge from the intensive care unit (Day 0), during the postoperative period. The
497 control group and the massage therapy group comprised participants who were subjected
498 to three nights without massage and three nights with massage therapy, respectively. The
499 patients were evaluated on the following mornings (i.e., Day 1 to Day 3) using a visual
500 analogue scale for pain in the chest, back and shoulders, in addition to fatigue and sleep.
501 Participants kept a sleep diary during the study period.

502 RESULTS: Fifty-seven cardiopulmonary artery bypass graft surgery patients were enrolled

503 in the study during the preoperative period, 17 of whom were excluded due to
504 postoperative complications. The remaining 40 participants (male: 67.5%, age: 61.9 years
505 \pm 8.9 years, body mass index: 27.2 kg/m² \pm 3.7 kg/m²) were randomized into control (n =
506 20) and massage therapy (n = 20) groups. Pain in the chest, shoulders, and back decreased
507 significantly in both groups from Day 1 to Day 3. The participants in the massage therapy
508 group had fewer complaints of fatigue on Day 1 (p=0.006) and Day 2 (p=0.028) in
509 addition, they reported a more effective sleep during all three days (p=0.019) when
510 compared with the participants in the control group.

511 CONCLUSION: Massage therapy is an effective technique for improving patient recovery
512 from cardiopulmonary artery bypass graft surgery because it reduces fatigue and improves
513 sleep.

514 23. Noto, Y., Kitajima, M., Kudo, M., Okudera, K., Hirota, K. (2010). Leg massage therapy promotes
515 psychological relaxation and reinforces the first-line host defense in cancer patients. *J Anesth.*
516 24(6):827-31.

517 PURPOSE: Patients with cancer suffer a wide range of physical symptoms coupled with
518 psychological stress. Moreover, cancer chemotherapy induces immunosuppression and
519 consequently causes respiratory infections. Massage therapy has been reported to reduce
520 symptoms in cancer patients via an increase in psychosocial relaxation and to enhance and/or
521 improve immune function.

522 METHODS: In the present study, we determined whether leg massage could induce
523 psychosocial relaxation and activate the first line of the host defense system. To assess effects
524 of rest and leg massage, 15 healthy volunteers rested on a bed for 20 min on the first day, and
525 3 days later the subjects received a standardized massage of the legs for 20 min with
526 nonaromatic oil. Twenty-nine cancer patients also received the same standardized massage of
527 the legs. Anxiety/stress was assessed before and just after the rest or the massage using the
528 State-Trait Anxiety Inventory (STAI-s) and visual analogue scale (VAS). To evaluate oral
529 immune function, salivary chromogranin A (CgA) and secretory immunoglobulin A (sIgA)
530 levels were measured.

531 RESULTS: In healthy volunteers, rest significantly reduced VAS by 34% and increased sIgA
532 by 61%. In contrast, leg massage significantly reduced both STAI-s and VAS by 24% and
533 63%, and increased both sIgA and CgA by 104% and 90%, respectively. In cancer patients,
534 leg massage significantly decreased both STAI-s and VAS by 16% and 38%, and increased
535 both salivary CgA and sIgA by 33% and 35%, respectively.

536 CONCLUSION: Leg massage may promote psychosocial relaxation and reinforce a first-line
537 host defense with an increase in secretion of antimicrobial peptides.

538 24. Hou, W.H., Chiang, P.T., Hsu, T.Y., Chiu, S.Y., Yen, Y.C. (2010). Treatment effects of massage
539 therapy in depressed people: a meta-analysis. *J Clin Psychiatry.* 71(7):894-901.

540 OBJECTIVE: To systematically investigate the treatment effects of massage therapy in
541 depressed people by incorporating data from recent studies.

542 DATA SOURCES: A meta-analysis of randomized controlled trials (RCTs) of massage
543 therapy in depressed people was conducted using published studies from PubMed,
544

545 EMBASE, PsycINFO, and CINAHL electronic database from inception until July 2008.
546 The terms used for the search were derived from medical subheading term (MeSH)
547 massage combined with MeSH depression. Hand searching was also checked for
548 bibliographies of relevant articles. Retrieval articles were constrained to RCTs/clinical
549 trials and human subjects. No language restrictions were imposed.

550 STUDY SELECTION: We included 17 studies containing 786 persons from 246 retrieved
551 references. Trials with other intervention, combined therapy, and massage on infants or
552 pregnant women were excluded.

553 DATA EXTRACTION: Two reviewers independently performed initial screen and
554 assessed quality indicators by Jadad scale. Data were extracted on publication year,
555 participant characteristics, and outcomes by another single reviewer.

556 DATA SYNTHESIS: All trials showed positive effect of massage therapy on depressed
557 people. Seventeen RCTs were of moderate quality, with a mean quality score of 6.4 (SD =
558 0.85). The pooled standardized mean difference in fixed- and random-effects models were
559 0.76 (95% CI, 0.61-0.91) and 0.73 (95% CI, 0.52-0.93), respectively. Both indicated
560 significant effectiveness in the treatment group compared with the control group. The
561 variance between these studies revealed possible heterogeneity ($\tau^2 = 0.06$, Cochran
562 $\chi^2(16) = 25.77$, $P = .06$).

563 CONCLUSIONS: Massage therapy is significantly associated with alleviated depressive
564 symptoms. However, standardized protocols of massage therapy, various depression rating
565 scales, and target populations in further studies are suggested.

566 25. Walach, H., G thlin, C., K nig, M. (2003). Efficacy of massage therapy in chronic pain: a
567 pragmatic randomized trial. *J Altern Complement Med*, 9(6):837-46.

568 BACKGROUND: Although classic massage is used widely in Germany and elsewhere for
569 treating chronic pain conditions, there are no randomized controlled trials (RCT).

570
571 DESIGN: Pragmatic RCT of classic massage compared to standard medical care (SMC) in
572 chronic pain conditions of back, neck, shoulders, head and limbs.

573
574 OUTCOME MEASURE: Pain rating (nine-point Likert-scale; predefined main outcome
575 criterion) at pretreatment, post-treatment, and 3 month follow-up, as well as pain adjective
576 list, depression, anxiety, mood, and body concept.

577
578 RESULTS: Because of political and organizational problems, only 29 patients were
579 randomized, 19 to receive massage, 10 to SMC. Pain improved significantly in both
580 groups, but only in the massage group was it still significantly improved at follow-up.
581 Depression and anxiety were improved significantly by both treatments, yet only in the
582 massage group maintained at follow-up.

583
584 CONCLUSION: Despite its limitation resulting from problems with numbers and
585 randomization this study shows that massage can be at least as effective as SMC in
586 chronic pain syndromes. Relative changes are equal, but tend to last longer and to
587 generalize more into psychologic domains. Because this is a pilot study, the results need
588 replication, but our experiences might be useful for other researchers.

589 26. Hernandez-Reif, M., Shor-Posner, G., Baez, J., Soto, S., Mendoza, R., Castillo, R., Quintero, N.,
590 Perez, E., Zhang, G. (2008). Dominican Children with HIV not Receiving Antiretrovirals:
591 Massage Therapy Influences their Behavior and Development. *Evid Based Complement Alternat*
592 *Med*, 5(3):345-354
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594 Forty-eight children (M age = 4.8 years) infected with HIV/AIDS and living in the Dominican
595 Republic were randomly assigned to a massage therapy or a play session control group. The
596 children in the massage therapy group received two weekly 20-min massages for 12 weeks;
597 the children in the control group participated in a play session (coloring, playing with blocks)
598 for the same duration and length as the massage therapy group. Overall, the children in the
599 massage therapy group improved in self-help abilities and communication, suggesting that
600 massage therapy may enhance daily functioning for children with HIV/AIDS. Moreover, the
601 HIV infected children who were six or older also showed a decrease in internalizing
602 behaviors; specifically depressive/anxious behaviors and negative thoughts were reduced.
603 Additionally, baseline assessments revealed IQ equivalence below normal functioning for
604 70% of the HIV infected children and very high incidences of mood problems (depression,
605 withdrawn) for 40% of the children and anxiety problems for 20% of the children, suggesting
606 the need for better monitoring and alternative interventions in countries with limited resources
607 to improve cognition and the mental health status of children infected with HIV/AIDS.

608 27. Moraska, A., Chandler, C. (2009). Changes in Psychological Parameters in Patients with Tension-
609 type Headache Following Massage Therapy: A Pilot Study. *J Man Manip Ther*. 17(2):86-94.

610 Investigations into complementary and alternative medicine (CAM) approaches to address
611 stress, depression, and anxiety of those experiencing chronic pain are rare. The objective
612 of this pilot study was to assess the value of a structured massage therapy program, with a
613 focus on myofascial trigger points, on psychological measures associated with tension-type
614 headache. Participants were enrolled in an open-label trial using a baseline control with
615 four 3-week phases: baseline, massage (two 3-week periods) and a follow-up phase.
616 Eighteen subjects with episodic or chronic tension-type headache were enrolled and
617 evaluated at 3-week intervals using the State-Trait Anxiety Inventory, Beck Depression
618 Inventory, and the Perceived Stress Scale. The Daily Stress Inventory was administered
619 over 7-day periods during baseline and the final week of massage. Twice weekly, 45-
620 minute massage therapy sessions commenced following the baseline phase and continued
621 for 6 weeks. A significant improvement in all psychological measures was detected over
622 the timeframe of the study. Post hoc evaluation indicated improvement over baseline for
623 depression and trait anxiety following 6 weeks of massage, but not 3 weeks. A reduction
624 in the number of events deemed stressful as well as their respective impact was detected.
625 This pilot study provides evidence for reduction of affective distress in a chronic pain
626 population, suggesting the need for more rigorously controlled studies using massage
627 therapy to address psychological measures associated with TTH.

628 28. Hamre, H.J., Witt, C.M., Glockmann, A., Ziegler, R., Willich, S.N., Kiene, H. (2007). Rhythmical
629 massage therapy in chronic disease: a 4-year prospective cohort study. *J Altern Complement Med*.
630 13(6):635-42.

631 OBJECTIVE: Rhythmical massage therapy is used in 24 countries but has not yet been
632 studied in outpatient settings. The objective was to study clinical outcomes in patients
633 receiving rhythmical massage therapy for chronic diseases.

634 DESIGN: Prospective 4-year cohort study.
635 SETTING: Thirty-six (36) medical practices in Germany.
636 PARTICIPANTS: Eighty-five (85) outpatients referred to rhythmical massage therapy.
637 OUTCOME MEASURES: Disease and Symptom Scores (physicians' and patients'
638 assessment, respectively, 0-10) and SF-36. Disease Score was measured after 6 and 12
639 months, and other outcomes after 3, 6, 12, 18, 24, and 48 months.
640 RESULTS: Most common indications were musculoskeletal diseases (45% of patients;
641 primarily back and neck pain) and mental disorders (18%, primarily depression and fatigue).
642 Median disease duration at baseline was 2.0 years (interquartile range 0.5-6.0). Median
643 number of rhythmical massage therapy sessions was 12 (interquartile range 9-12), and median
644 therapy duration was 84 (49-119) days. All outcomes improved significantly between baseline
645 and all subsequent follow-ups. From baseline to 12 months, Disease Score improved from
646 (mean +/- standard deviation) 6.30 +/- 2.01 to 2.77 +/- 1.97 ($p < 0.001$), Symptom Score
647 improved from 5.76 +/- 1.81 to 3.13 +/- 2.20 ($p < 0.001$), SF-36 Physical Component score
648 improved from 39.55 +/- 9.91 to 45.17 +/- 9.88 ($p < 0.001$), and SF-36 Mental Component
649 score improved from 39.27 +/- 13.61 to 43.78 +/- 12.32 ($p = 0.028$). All these improvements
650 were maintained until the last follow-up. Adverse reactions to rhythmical massage therapy
651 occurred in 4 (5%) patients; 2 patients stopped therapy because of adverse reactions.
652 CONCLUSIONS: Patients receiving rhythmical massage therapy had long-term reduction of
653 chronic disease symptoms and improvement of quality of life.

654 29. Quinn, C., Chandler, C., Moraska, A. (2002). Massage therapy and frequency of chronic tension
655 headaches. *Am J Public Health*, 92(10):1657-61.

656 OBJECTIVES: The effect of massage therapy on chronic nonmigraine headache was
657 investigated.

658 METHODS: Chronic tension headache sufferers received structured massage therapy
659 treatment directed toward neck and shoulder muscles. Headache frequency, duration, and
660 intensity were recorded and compared with baseline measures.

661 RESULTS: Compared with baseline values, headache frequency was significantly
662 reduced within the first week of the massage protocol. The reduction of headache
663 frequency continued for the remainder of the study ($P = .009$). The duration of headaches
664 tended to decrease during the massage treatment period ($P = .058$). Headache intensity was
665 unaffected by massage ($P = .19$).

666 CONCLUSIONS: The muscle-specific massage therapy technique used in this study has
667 the potential to be a functional, nonpharmacological intervention for reducing the
668 incidence of chronic tension headache.

669 30. Mitchinson, A.R., Kim, H.M., Rosenberg, J.M., Geisser, M., Kirsh, M., Cikrit, D., Hinshaw, D.B.
670 (2007). Acute postoperative pain management using massage as an adjuvant therapy: a
671 randomized trial. *Arch Surg*. 142(12):1158-67; discussion 1167.

672 HYPOTHESIS: Adjuvant massage therapy improves pain management and postoperative

673 anxiety among many patients who experience unrelieved postoperative pain.
674 Pharmacologic interventions alone may not address all of the factors involved in the
675 experience of pain.

676 DESIGN: Randomized controlled trial.

677 SETTING: Department of Veterans Affairs hospitals in Ann Arbor, Michigan, and
678 Indianapolis, Indiana.

679 PATIENTS: Six hundred five veterans (mean age, 64 years) undergoing major surgery
680 from February 1, 2003, through January 31, 2005.

681 INTERVENTIONS: Patients were assigned to the following 3 groups: (1) control (routine
682 care), (2) individualized attention from a massage therapist (20 minutes), or (3) back
683 massage by a massage therapist each evening for up to 5 postoperative days. Main
684 Outcome Measure Short- and long-term (> 4 days) pain intensity, pain unpleasantness,
685 and anxiety measured by visual analog scales.

686 RESULTS: Compared with the control group, patients in the massage group experienced
687 short-term (preintervention vs postintervention) decreases in pain intensity ($P = .001$), pain
688 unpleasantness ($P < .001$), and anxiety ($P = .007$). In addition, patients in the massage
689 group experienced a faster rate of decrease in pain intensity ($P = .02$) and unpleasantness
690 ($P = .01$) during the first 4 postoperative days compared with the control group. There
691 were no differences in the rates of decrease in long-term anxiety, length of stay, opiate use,
692 or complications across the 3 groups.

693 CONCLUSION: Massage is an effective and safe adjuvant therapy for the relief of acute
694 postoperative pain in patients undergoing major operations.

- 695 31. Chen, H.M., Chang, F.Y., Hsu, C.T. (2005). Effect of acupressure on nausea, vomiting, anxiety
696 and pain among post-cesarean section women in Taiwan. *Kaohsiung J Med Sci.* 21(8):341-50.

697 The purpose of this study was to examine the effectiveness of acupressure for controlling
698 post-cesarean section (CS) symptoms, such as nausea and vomiting, anxiety perception
699 and pain perception. A total of 104 eligible participants were recruited by convenience
700 sampling of operating schedules at two hospitals. Participants assigned to the experimental
701 group received acupressure, and those assigned to the control group received only
702 postoperative nursing instruction. The experimental group received three acupressure
703 treatments before CS and within the first 24 hours after CS. The first treatment was
704 performed the night before CS, the second was performed 2-4 hours after CS, and the
705 third was performed 8-10 hours after CS. The measures included the Rhodes Index of
706 Nausea and Vomiting, Visual Analog Scale for Anxiety, State-Trait Anxiety Inventory,
707 Visual Analog Scale for Pain, and physiologic indices. Statistical methods included
708 percentages, mean value with standard deviation, t test and repeated measure ANOVA.
709 The use of acupressure reduced the incidence of nausea, vomiting or retching from 69.3%
710 to 53.9%, compared with control group (95% confidence interval = 1.65-0.11; $p = 0.040$)
711 2-4 hours after CS and from 36.2% to 15.4% compared with control group (95%
712 confidence interval = 0.59-0.02; $p = 0.024$) 8-10 hours after CS. Results indicated that the
713 experimental group had significantly lower anxiety and pain perception of cesarean
714 experiences than the control group. Significant differences were found in all physiologic

715 indices between the two groups. In conclusion, the utilization of acupressure treatment to
716 promote the comfort of women during cesarean delivery is strongly recommended.

717 32. Piotrowski, M.M., Paterson, C., Mitchinson, A., Kim, H.M., Kirsh, M., Hinshaw, D.B. (2003).
718 Massage as adjuvant therapy in the management of acute postoperative pain: a preliminary study
719 in men. *J Am Coll Surg.* 197(6):1037-46.

720 BACKGROUND: Opioid analgesia alone may not fully relieve all aspects of acute
721 postoperative pain. Complementary medicine techniques used as adjuvant therapies have
722 the potential to improve pain management and palliate postoperative distress.

723 STUDY DESIGN: This prospective randomized clinical trial compared pain relief after
724 major operations in 202 patients who received one of three nursing interventions:
725 massage, focused attention, or routine care. Interventions were performed twice daily
726 starting 24 hours after the operation through postoperative day 7. Perceived pain was
727 measured each morning.

728 RESULTS: The rate of decline in the unpleasantness of postoperative pain was
729 accelerated by massage ($p = 0.05$). Massage also accelerated the rate of decline in the
730 intensity of postoperative pain but this effect was not statistically significant. Use of opioid
731 analgesics was not altered significantly by the interventions.

732 CONCLUSIONS: Massage may be a useful adjuvant therapy for the management of acute
733 postoperative pain. Its greatest effect appears to be on the affective component (ie,
734 unpleasantness) of the pain.

735 33. Seers, K., Crichton, N., Martin, J., Coulson, K., Carroll, D. (2008). A randomised controlled trial
736 to assess the effectiveness of a single session of nurse administered massage for short term relief of
737 chronic non-malignant pain., *BMC Nurs.* 4;7:10.

738 BACKGROUND: Massage is increasingly used to manage chronic pain but its benefit has
739 not been clearly established. The aim of the study is to determine the effectiveness of a
740 single session of nurse-administered massage for the short term relief of chronic non-
741 malignant pain and anxiety.

742 METHODS: A randomised controlled trial design was used, in which the patients were
743 assigned to a massage or control group. The massage group received a 15 minute manual
744 massage and the control group a 15 minute visit to talk about their pain. Adult patients
745 attending a pain relief unit with a diagnosis of chronic pain whose pain was described as
746 moderate or severe were eligible for the study. An observer blind to the patients' treatment
747 group carried out assessments immediately before (baseline), after treatment and 1, 2, 3
748 and 4 hours later. Pain was assessed using 100 mm visual analogue scale and the McGill
749 Pain Questionnaire. Pain Relief was assessed using a five point verbal rating scale.

750 Anxiety was assessed with the Spielberger short form State-Trait Anxiety Inventory.

751 RESULTS: 101 patients were randomised and evaluated, 50 in the massage and 51 in the
752 control group. There were no statistically significant differences between the groups at
753 baseline interview. Patients in the massage but not the control group had significantly less
754 pain compared to baseline immediately after and one hour post treatment. 95% confidence
755 interval for the difference in mean pain reduction at one hour post treatment between the
756 massage and control groups is 5.47 mm to 24.70 mm. Patients in the massage but not the
757 control group had a statistically significant reduction in anxiety compared to baseline

758 immediately after and at 1 hour post treatment.
759 CONCLUSION: Massage is effective in the short term for chronic pain of moderate to
760 severe intensity.

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763 34. Moeini, M., Givi, M., Ghasempour, Z., Sadeghi, M. (2011). The effect of massage therapy on
764 blood pressure of women with pre-hypertension. *Iran J Nurs Midwifery Res.* 16(1):61-70.

765 BACKGROUND: Prehypertension is considered as a cardiovascular disease predictor.
766 Management of prehypertension is an appropriate objective for clinicians in a wide range
767 of medical centers. Treatment of prehypertension is primarily non-pharmacological, one of
768 which is massage therapy that is used to control the blood pressure. This study aimed to
769 evaluate the effect of Swedish massage (face, neck, shoulders and chest) on blood pressure
770 (BP) of the women with prehypertension.

771 METHODS: This was a single-blind clinical trial study. Fifty prehypertensive women
772 selected by simple random sampling which divided into control and test groups. The test
773 group (25 patients) received Swedish massage 10-15 min, three times a week for 10
774 sessions and the control groups (25 patients) also were relaxed at the same environment
775 with receiving no massage. Their BP was measured before and after each session.
776 Analyzing the data was done using descriptive and inferential statistical methods (chi
777 square, Mann-Whitney, paired t-test and student t-test) through SPSS software.

778 RESULTS: The results indicated that mean systolic and diastolic blood pressure in the
779 massage group was significantly lower in comparison with the control group ($p < 0.001$).

780 CONCLUSIONS: Findings of the study indicated that massage therapy was a safe,
781 effective, applicable and cost-effective intervention in controlling BP of the
782 prehypertension women and it can be used in the health care centers and even at home.

783 35. Moyle, W., Johnston, A.N., O'Dwyer, S.T. (2011). Exploring the effect of foot massage on
784 agitated behaviours in older people with dementia: a pilot study. *Australas J Ageing.* 30(3):159-61.

785 AIM: To explore the effects of foot massage on agitated behaviours in older people with
786 dementia living in long-term care.

787 METHODS: Seventeen men and 5 women (mean age 84.7 years), with a diagnosis of
788 dementia and a history of clinically significant agitation, received a 10-minute foot
789 massage each day for 14 days. The short form of the Cohen-Mansfield Agitation Inventory
790 (CMAI-SF) and the Revised Memory and Behavior Problems Checklist (RMBPC) were
791 completed at baseline, post-test and 2-weeks follow up.

792 RESULTS: CMAI-SF and RMBPC scores were significantly reduced at post-test and
793 remained significantly lower than baseline at follow up.

794 CONCLUSION: This study provides preliminary evidence suggesting that limited short-
795 duration foot massage reduces agitation and related behavioural problems in people with
796 dementia, and that these behaviour changes are maintained after the massage ceases. A
797 randomised controlled trial is required to confirm these findings.

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36. Dunigan, B.J., King, T.K., Morse, B.J. (2011). A preliminary examination of the effect of massage on state body image. *Body Image*. 8(4):411-4.

Evidence suggests positive effects of massage on psychological health; however, little is known about the effects of massage on body image. This research examined the effect of massage on state body image as well as relations between trait body image and attitudes toward massage. Forty-nine female university students were randomly assigned to either a massage condition or a control condition. It was hypothesized that participants in the massage condition would report improved state body image following the intervention when compared to participants in the control condition. As predicted, participants in the massage condition reported a more favorable state body image than participants in the control condition post-manipulation. Certain body image evaluations were moderately associated with views that massage is pleasurable, with the link between Body Areas Satisfaction and viewing massage as pleasurable reaching significance. Research is needed to determine the mechanism/s through which massage improves body image.

37. Day, A.L., Gillan, L., Francis, L., Kelloway, E.K., Natarajan, M. (2009). Massage therapy in the workplace: reducing employee strain and blood pressure. *G Ital Med Lav Ergon*. 31(3 Suppl B):B25-30

AIM: Assess the effects of workplace-based massage therapy on physiological and psychological outcomes.

METHODS: We used a field experiment in which 28 participants were randomly assigned into either an experimental (n = 14) or control (n = 14) group. The experimental group received weekly massage treatments at work for a four week period while the control group did not.

RESULTS: Both strain and blood pressure were significantly reduced during treatment for the experimental group but not for the control group.

CONCLUSIONS: This study provides initial support for the effectiveness of workplace-based massage therapy as part of a comprehensive workplace health strategy.

38. Billhult, A., Lindholm, C., Gunnarsson, R., Stener-Victorin, E. (2009). The effect of massage on immune function and stress in women with breast cancer--a randomized controlled trial. *Auton Neurosci*. 150(1-2):111-5.

OBJECTIVES: To examine the short-term effects of light pressure effleurage on circulating lymphocytes by studying the number and activity of peripheral blood natural killer (NK) cells in patients with breast cancer compared to a control group. Furthermore, the effect of light pressure effleurage on salivary cortisol levels, heart rate and blood pressure was studied.

DESIGN: Single centre, prospective, randomized and controlled study.

837 METHODS: Thirty women, aged 50 to 75 years (mean 61 sd=7.2) with breast cancer
838 undergoing radiation therapy in a hospital in southwestern Sweden were enrolled in the
839 study. They were allocated to either receive massage in the form of a full-body light
840 pressure effleurage treatment, or a control visit where they were given an equal amount of
841 attention. Blood samples, saliva, notation of heart rate and blood pressure were collected
842 before and after massage/control visit. Differences in change over time between groups
843 were analyzed by Student's t-test.

844 RESULTS: Light pressure effleurage massage decreased the deterioration of NK cell
845 activity occurring during radiation therapy. Furthermore it lowered heart rate and systolic
846 blood pressure. No effects were demonstrated on cortisol and diastolic pressure.

847 CONCLUSIONS: A single full-body light pressure effleurage massage has a short-term
848 effect on NK cell activity, systolic blood pressure and heart rate in patients with breast
849 cancer. However, the long-term clinical importance of these findings needs to be further
850 investigated.

- 851 40. Skovdahl, K., Sörlie, V., Kihlgren, M. (2007). Tactile stimulation associated with nursing care to
852 individuals with dementia showing aggressive or restless tendencies: an intervention study in
853 dementia care. *Int J Older People Nurs.* 2(3):162-70.

854
855 Aim. This study aimed to describe from documentation both the caregivers' experiences
856 of giving tactile stimulation to five people with moderate-to-severe dementia and who
857 showed aggressive or restless tendencies, and the changes seen in them.

858
859 Background. Clinical experiences indicate that tactile stimulation can contribute to a
860 feeling of trust and confirmation as well as to improving communication, promoting
861 relaxation and easing pain. There is, however, very little scientific documentation of the
862 effects of touch massage for people with dementia.

863
864 Design. From caregivers' documentation (28 weeks) of experiences, the giving of tactile
865 stimulation to five randomly selected people with dementia showing aggressive or restless
866 tendencies and the subsequent changes noticed.

867
868 Method. The documentation was analysed by using qualitative content analysis.

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870 Results. All residents displayed signs of positive feelings and relaxation. The caregivers
871 stated that they felt able to interact with the residents in a more positive way and that they
872 felt they had a warmer relationship with them.

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874 Conclusion. Tactile stimulation can be seen as a valuable way to communicating non-
875 verbally, of giving feedback, confirmation, consolation or a feeling of being valuable and
876 taken care of. Relevance to clinical practice. Tactile stimulation has to be administered
877 with respect and care, and given from a relational ethics perspective. Otherwise, there is a
878 risk that tactile stimulation will be used merely as a technique instead of as a part of an
879 effort to achieve optimal good, warm nursing care.
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