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Therapeutic touch for healing acute wounds

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Background

Therapeutic Touch (TT) is an alternative therapy that has gained popularity over the past two decades for helping wounds to heal. Practitioners enter a meditative state and pass their hands above the patient’s body to find and correct any imbalances in the patient’s ‘life energy’ or chi. Scientific instruments have been unable to detect this energy. The effect of TT on wound healing has been expounded in anecdotal publications.

Objectives

To identify and review all relevant data to determine the effects of TT on healing acute wounds.

Search methods

For this fourth update, we searched The Cochrane Wounds Group Specialised Register (searched 27 January 2012); The Cochrane Central Register of Controlled Trials (CENTRAL) (The Cochrane Library 2012, Issue 1); Ovid MEDLINE (2010 to January Week 2 2012); Ovid MEDLINE (In-Process & Other Non-Indexed Citations, January 26, 2012); Ovid EMBASE (2010 to 2012 Week 03); and EBSCO CINAHL (2010 to January 6 2012).

Selection criteria

All randomised or quasi-randomised controlled trials, which compared the effect of TT with a placebo, another treatment, or no treatment control were considered. Studies which used TT as a stand-alone treatment, or as an adjunct to other therapies, were eligible.

Data collection and analysis

One author (DO’M) determined the eligibility for inclusion of all trials in the review. Both authors conducted data extraction and evaluation of trial validity independently. Each trial was assessed using predetermined criteria.

Main results

No new trials were identified for this update. Four trials in people with experimental wounds were included. The effect of TT on wound healing in these studies was variable. Two trials (n = 44 & 24) demonstrated a significant increase in healing associated with TT, while one trial found significantly worse healing after TT and the other found no significant difference. All trials are at high risk of bias.
Authors’ conclusions

There is no robust evidence that TT promotes healing of acute wounds.

Plain Language Summary

Therapeutic touch therapy for healing acute wounds.

Therapeutic touch is an alternative therapy that is gaining popularity as a wound treatment. Practitioners enter a meditative state and pass their hands above the patient’s body to find and correct any imbalances in the patient’s ‘life energy’ or chi. Scientific instruments have been unable to detect this energy. The review found contradictory evidence about the effects of therapeutic touch. Some trials showed a benefit while others suggested that the process slowed the rate of healing. The review concluded that trials do not show therapeutic touch to be beneficial in healing wounds from minor surgery and that the trials are at high risk of bias.

Background

Therapeutic Touch (TT) is an alternative nursing intervention first developed in the 1970s by Dora Kunz, a lay healer, and Dolores Krieger, RN, PhD, then a nursing professor at New York University (Krieger 1997). Faster wound healing continues to be frequently cited as an effect of TT (Burr 2005; Engebretson 2007; Herdtner 2000; Smith 2003; Umbreit 2000), even when concerns are acknowledged about the validity of some studies (Leskowitz 2007). Interest in alternative methods of wound care is growing, but requires more well-designed research and systematic review to ensure only effective and safe therapies are promoted (Leach 2004; Papantonio 1998).

TT is a method of detecting and balancing nonphysical ‘life energy’, also called prana or chi. A balanced flow of life energy between the environment and the body is assumed to underlie good health (Krieger 1997). Imbalances and blockages in the energy field lead to illness and ill-health. Life energy has not been detected with scientific instruments. Practitioners state they sense the energy field after entering a meditative state called ‘being centered.’ One study found that TT practitioners could not reliably detect human energy fields with statistical reliability (Rosa 1998). This study has been replicated (Long 1999). The negative studies have been denounced by TT practitioners as flawed and biased (Blank 1998; Carpenter 1998; Collins 1998; Freinkel 1998; Howell 1998; Ireland 1998; Jarski 1998; Lee 1998; Manos 1998; Palmer 1998; Schmidt 1998; Strelitzer 1998).

When receiving TT, patients are encouraged to relax while sitting or lying, and remain clothed. When ‘centered’, practitioners pass their hands 2 to 4 inches above the patient’s body. For this reason, TT is also called Non-Contact Therapeutic Touch (NCTT). Physical contact is not necessary with TT, although it is sometimes incorporated into the practice. Practitioners assess the patient’s energy field, looking for imbalances. Congested areas of the energy field are removed by ‘unruffling’, in which practitioners move their hands gently down the length of the patient’s body. The treatment phase follows where practitioners consciously facilitate the direction of life energy from the universal energy field to the patient. When the field is balanced, or after approximately 10-20 minutes, the therapy is usually concluded (Krieger 1997).

TT has gained widespread support within nursing, especially in the US. It is one of a number of ‘energy healing’ therapies being provided in hospitals and other healthcare settings (DiNucci 2005). In North America, TT is reported to be taught at 75 schools and universities and practiced at 95 health care facilities (Krieger 1997). Training is available from practitioners, and through the Nurse Healers-Professional Associates, Inc. The American Nurses Association, American Holistic Nurses Association, and the National League for Nursing promote TT to various extents through accredited workshops and publications. In the United Kingdom, TT is gaining popularity through the work of the Didsbury Trust (Sayre-Adams 1995). Courses in TT are taught in over 70 countries. Professional standards or certification programs are not available for TT (Meehan 1998).

The North American Nursing Diagnosis Association has accepted ‘energy field disturbance’ as a nursing diagnosis, for which TT is the only treatment recommended (Carpenito 1995). Anecdotal reports claim that TT is effective for a wide variety of conditions (DiNucci 2005). A number of researchers have received US federal grants to study the effectiveness of TT in particular settings, such as with burn patients (Turner 1998). Its clinical efficacy is said to be supported by controlled trials in four main areas. These are the reduction of situationally induced anxiety (assumed to occur via
a relaxation response), relief of pain, hastening of wound healing, and boosting of the immune system (Engebretson 2007; Krieger 1997).

TT’s growing popularity is at least due in part to claims made regarding its efficacy. Krieger states that over 20 years of clinical research supports the claims made concerning TT (Krieger 1993). Others claim that TT ‘is among the most well-researched of the alternative touch healing techniques’ (Thorpe 1994). In contrast, two narrative reviews of the research found little evidence to support these claims (Claman 1994; Clark 1984). Two meta-analyses of TT research for any indication found much variability and methodological problems in the studies, though an overall effect was calculated (Peters 1999; Winstead-Fry 1999).

Krieger states that TT is most effective in reducing anxiety, relieving pain, and promoting healing. Most research has been conducted on the first two effects using a variety of conditions and measuring numerous outcomes. This particular review will focus on TT’s effect on acute wound healing. This will include recent surgical interventions as opposed to trauma wounds which have failed to heal and become chronic wounds. The studies already identified in this area are similar, quantitative, and may be amenable to meta-analysis. A number of narrative reviews of this research have been published, but no systematic review or meta-analysis (Daley 1997; Finch 1997; Kenosian 1995; Wirth 1995; Wirth 1996b).

OBJECTIVES

To identify and review RCT and quasi RCT evidence on the effects of Therapeutic Touch on acute wound healing.

METHODS

Criteria for considering studies for this review

Types of studies

All randomised or quasi-randomised controlled trials comparing Therapeutic Touch (TT) with sham TT, another treatment, or no treatment control. Studies which used TT as a stand-alone treatment, or as an adjunct to other therapies, were eligible:

- TT compared with sham TT
- TT compared with other treatment
- TT compared with no treatment
- TT plus wound care interventions compared with wound care interventions alone.

Types of participants

Any person with acute wounds after trauma, surgery, or who have a wound which has been experimentally induced. The latter are usually induced using biopsy instruments to give uniform wounds.

Types of interventions

All interventions in which Non-Contact Therapeutic Touch was administered were considered. Trials evaluating all forms of touch therapy that do not involve direct skin to skin contact were included.

Types of outcome measures

Any quantifiable means of measuring wound healing rates or degrees of healing, such as the changes in area, volume, depth or circumference of the wound, or time to heal.

Search methods for identification of studies

The search methods used in the previous update of this review can be found in Appendix 1. For this fourth update, searches were carried out in the following databases:

- The Cochrane Wounds Group Specialised Register (searched 27 January 2012);
- The Cochrane Central Register of Controlled Trials (CENTRAL) (The Cochrane Library 2012, Issue 1);
- Ovid MEDLINE (2010 to January Week 2 2012);
- Ovid MEDLINE (In-Process & Other Non-Indexed Citations, January 26, 2012);
- Ovid EMBASE (2010 to 2012 Week 03);
- EBSCO CINAHL (2010 to 6 January 2012).

The following search strategy was used in the Cochrane Central Register of Controlled Trials (CENTRAL):

#1 MeSH descriptor Acute Disease explode all trees
#2 MeSH descriptor Wounds and Injuries explode all trees
#3 (#1 AND #2)
#4 MeSH descriptor Surgical Wound Infection explode all trees
#5 MeSH descriptor Surgical Wound Dehiscence explode all trees
#6 MeSH descriptor Wounds, Penetrating explode all trees
#7 MeSH descriptor Lacerations explode all trees
#8 MeSH descriptor Burns explode all trees
#9 MeSH descriptor Skin Transplantation explode all trees
#10 MeSH descriptor Fractures, Open explode all trees
#11 ((traumatic NEXT wound*) or (acute NEXT wound*)): ti,ab,kw
Data collection and analysis

Selection of studies

Titles and abstracts of reports identified in the review were assessed by one author (DO’M). Their relevance and design were assessed according to the selection criteria. Complete copies of those articles and studies which appeared to satisfy these criteria were obtained. Full papers were checked to identify those eligible for inclusion, and these were checked independently by a second author (RA). A data extraction sheet was used to extract and summarize the details of the studies. If data were missing from any reports, attempts were made to contact the authors to obtain the missing information. Data from studies that were published in duplicate were included only once.

Assessment of risk of bias in included studies

For the previous update of this review, one review author assessed each included study using the Cochrane Collaboration tool for assessing risk of bias (Higgins 2011). This tool addresses six specific domains, namely sequence generation, allocation concealment, blinding, incomplete outcome data, selective outcome reporting and other issues (e.g. baseline comparability; fraud). Blinding and completeness of outcome data will be assessed for each outcome separately. We completed a risk of bias table for each eligible study. We presented the assessment of risk of bias using a
Risk of bias in included studies

Wirth 1990 - 44 healthy male subjects in two arms. Inclusion and exclusion criteria listed - no. Sample size calculation described - no. Method of sequence generation - unclear. Allocation concealment - unclear. Baseline comparability of groups - age only. Blinded outcome assessment - yes. Subjects, researchers, and physicians evaluating wounds were blinded. Appropriate outcome measures were reported, although wound sizes were small (5 mm) and measurement highly prone to error. Analysis by intention to treat - not applicable as there were no drop outs.

Wirth 1993 - 24 healthy subjects in two arms. Inclusion and exclusion criteria listed - no. Sample size calculation described - no. Method of sequence generation - unclear. Allocation concealment - unclear. Baseline comparability of groups - age only. Blinded outcome assessment - yes. Subjects, researchers, and physicians evaluating wounds were blinded. Selective reporting is suggested because the pre-specified outcomes were six criteria for the evaluation of wound healing. Few of these were reported due to lack of data and the main outcome reported was the number of wounds either fully healed or not, which was not a pre-specified primary outcome. Appropriate outcome measures were reported, although wound sizes were small (4 mm) and measurement highly prone to error. Analysis by intention to treat - not applicable as there were no drop outs.

Wirth 1994a - 15 healthy subjects in two arms who crossed over to different interventions (total of four different protocols). Data were only used to the point of cross over because wound healing in cross over trials is not a stable phenomenon. Inclusion and exclusion criteria listed - no. Sample size calculation described - no.
Method of sequence generation - unclear. Allocation concealment - unclear. Baseline comparability of groups - age only. Blinded outcome assessment - yes. Subjects and physicians evaluating wounds were blinded. Appropriate outcome measures were reported. Analysis by intention to treat - not applicable as there were no drop outs.

Wirth 1996a - 38 healthy subjects in two arms. Inclusion and exclusion criteria listed - no. Sample size calculation described - no. Method of sequence generation - unclear. Allocation concealment - unclear. Baseline comparability of groups - age only. Blinded outcome assessment - yes. Subjects, researchers, and physicians evaluating wounds were blinded. Appropriate outcome measures were reported. Analysis by intention to treat - not conducted as data for the six withdraws is not reported. Withdrawals - six reported but no reasons given.

The risk of bias in these four included studies by Wirth is moderate to high when considered solely from a methodological perspective (see Figure 1 and Figure 2 for the 'risk of bias summary figure and graph'). The trials are described in detail, with innovative (but complex) methodologies used to ensure blinding. The reports suffer from not describing the methods of randomisation or allocation concealment.

Figure 1. Risk of bias summary: review authors' judgements about each risk of bias item for each included study.
However, the value of this series of studies is overshadowed by allegations against the principal researcher (Wirth) and some of his co-researchers (Flamm 2005). One issue arises from concerns that participants in some of the studies may have been biased by prior involvement in earlier studies or by financial remuneration (see Characteristics of included studies). Wirth's former colleagues have specifically identified concerns about these wound healing studies (Solfvin 2005). They have appealed publicly to him to resolve the uncertainty around all his research, recommending that “Wirth's studies not be considered as scientifically valid until Wirth responds directly to these concerns” (Solfvin 2005). At the same time, the experimental protocols of these studies appear valid and the studies have not been withdrawn from publication. However, until the concerns about these four trials by Wirth are addressed, this uncertainty introduces additional, high risk of bias which must be considered when guiding practice based on their findings.

Effects of interventions

After screening the results of the search five citations to four trials were identified and included in this review. The following are the main results of these (see Characteristics of included studies for additional information).

Wirth 1990 compared TT with sham TT (both groups had film dressings). Treatment occurred daily for 16 days. In the intervention group 57% of the wounds healed completely (13/23), compared with 0/23 in the control group (RR 27.00, 95% CI: 1.70 to 428.90). This shows a statistically significant effect in favour of TT.

Wirth 1993 compared TT with sham TT (both groups had occlusive dressings). Treatment occurred daily for 10 days. In the intervention group 83% of the wounds healed completely (10/12), compared with 4/12 (33%) in the control group (RR 2.50, 95% CI: 1.08 to 5.79). This shows a statistically significant effect in favour of TT.

Wirth 1994a compared TT with sham TT (both groups had nonocclusive dressings). Treatment occurred daily for 10 days. Concurrent interventions for all subjects were guided imagery, biofeedback, and visualisation. Concurrent interventions for subjects in the two treatment protocols were Reiki, LeShan, and intercessory prayer. In the intervention group 7% of the wounds healed completely (1/15), compared with 7/15 (47%) in the control group (RR 0.14, 95% CI: 0.02 to 1.02). This indicates no significant difference, however the authors report a statistically significant effect using Fisher's exact test (Fisher's exact test A=4, df=1, 2 sided p = 0.035). The difference in results between the Fisher's Exact and the risk ratio used by RevMan indicates that the result is highly sensitive to choice of test and should be regarded as not significant.

Wirth 1996a compared TT with sham TT (both groups had occlusive dressings). Treatment occurred daily for 10 days. In the intervention group none of the wounds healed completely (0/16), compared with 4/16 (25%) in the control group (RR 0.11, 95%CI: 0.01 to 1.91). This result is not statistically significant. There was evidence of statistical heterogeneity between the studies (I² = 79%) and other minor differences in wound dressings used and duration of intervention. Pooling the studies using a random effects model showed no statistically significant difference in complete healing (RR 1.03, 95% CI 0.12 to 8.60)(Analysis 1.1). In general, the study quality was poor leading to concerns about the validity of the results. While all studies were reported as randomised, the method of sequence generation was not described.
nor was allocation concealment discussed. Inclusion and exclusion criteria were not described to explain how subjects were chosen from all those who volunteered (44 of 175 in Wirth 1990 and 38 of 54 in Wirth 1996a). No baseline comparison data were reported between the groups except that the groups did not differ significantly by age distribution. In all studies, the subjects and wound assessors were blinded, although in Wirth 1996a it is not explicitly stated that the assessor was blinded. Intention to treat was not mentioned in any study, but was not applicable in the three studies with no withdrawals. Of the 38 subjects in Wirth 1996a, 4 withdrew from the treatment group and 2 from the control (16 percent loss). No reasons were given for the withdrawals.

**DISCUSSION**

The pooled results of the four included trials do not provide evidence of a benefit of therapeutic touch in the healing of biopsy wounds. The concerns about the conduct of these trials do reflect on any potential value these studies may have. Taken as published, however, a variety of interventions were used for comparison in the trials which made generalising the results difficult. Although statistically significant benefit was demonstrated for therapeutic touch in the first two studies, the two later studies showed no statistically significant benefit and all studies were at high risk of bias.

TT was studied as part of a portfolio of complementary therapies in Wirth 1994a, while it was the sole intervention in the three other trials. The very complicated design of Wirth 1994a, where several different interventions were used in different combinations, makes attribution of any effect to TT impossible. Subjects crossed over between different groups, as a result data was only included up to the point of crossover. All of these factors led to complicated protocols with few subjects experiencing any one set of conditions.

The creative design of these studies, done in an attempt to reduce biases, led to important differences between the study intervention and that administered in practice. In the studies, treatment was administered for 5 minutes, which is shorter than the more usual 15 to 20 minutes (Krieger 1997). Practitioners usually assess the patient’s whole body (or energy field) while in the studies the wound area was isolated. Treatment through one-way mirrors and using video cameras is not usual practice. Different physical materials were placed between the practitioners of therapeutic touch and the subjects. Whether or not this influences the effectiveness of the procedure is controversial among therapeutic touch practitioners. The researchers did not carry out tests to validate the assumptions they made about the impact of these materials.

There were several other methodological problems with the studies. Participants in two studies (Wirth 1993; Wirth 1994a) were selected from a group meeting to practice progressive relaxation and visualisation techniques. These subjects may have responded differently to the study intervention due to their interest in complementary therapies, making the results less generalizable. It should also be noted that all the studies were conducted by the same principal researcher.

Although the early studies supported the efficacy of TT for wound healing, in later studies the control group did better, though the differences were not significant. The authors of the most recent study (Wirth 1996a) concluded that their study was the first randomised double-blind trial to demonstrate an inhibitory response because the healer was in a ’highly stressed or physically or emotionally unbalanced state’. The greater healing found in the control group of an earlier study was explained as possibly due to a cancellation effect between TT and the other complementary therapies (Wirth 1994a). Rather than generating such new hypotheses, the data point to the role of chance in producing different results from four small studies.

Some ethically questionable approaches were used in some of these studies. Potential subjects in all the studies were not informed that they would be receiving one or more therapies. Instead, the researchers told the subjects that the study would measure the biological energy released from the site of the biopsy. They were told that the study was double-blinded and that all the details would be revealed upon conclusion of the study. This approach was taken to minimise placebo and suggestion effects. However, such an approach is questionable given the controversial nature of therapeutic touch (and the Reiki, LeShan and prayer therapies used in Wirth 1994a). In a study of therapeutic touch with bone marrow transplant recipients, one third of the subjects withdrew from the study (Smith 2003). One reason given was conflict between people’s religious beliefs and TT, leading those researchers to conclude that TT “is a more controversial therapy that probably requires greater preparation and explanation.” Failure to reveal that the therapy will be given, or to explain anything about its nature, does not meet the usual standards for informed consent (O’Mathuna 1998).

A second concern with these wound studies involves the inducements subjects received to become involved. Wirth 1994b offered free training in biofeedback and visualisation for stress reduction, a medical examination, and nutritional counselling. The researchers noted that the subjects enrolled primarily to obtain these free services. The most recent study in this series (Wirth 1996a) was conducted in Mexico and the subjects enrolled primarily for the monetary compensation (amount not reported). The compensation may have encouraged subjects to overcome their apprehension of the clinical setting and biopsy procedure, and to risk the potential adverse effects of TT (O’Mathuna 1998). Such inducements are controversial, especially when the procedure being tested will not be readily available to the population in which the study is conducted (O’Mathuna 2002). The risk of bias inherent in these studies makes any findings questionable.
AUTHORS’ CONCLUSIONS

Implications for practice

There is insufficient evidence for the effectiveness of TT for healing acute wounds. Two trials reported a significant benefit with TT and two found a non-significant trend to reduced healing with TT, when all trials were pooled there was no significant difference in complete healing. All trials used patients undergoing a biopsy from healthy skin and the findings may not be generalisable to other wound types.

Implications for research

Further research into the effects of TT on acute wound healing is unlikely to be a good use of resources.

ACKNOWLEDGEMENTS

The authors would like to thank the Cochrane Wounds Group referees (Sandra King, Trudie Young), Editors (Gillian Cranny, Nicky Cullum & Andrea Nelson) and Managing Editor (Sally Bell-Syer) for their comments to improve the review. The updated searches were carried out by Ruth Foxlee, Trial Search Coordinator. The authors would like to thank the editorial base of the Wounds Group for assisting with all updates of this review.

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References to studies included in this review

Wirth 1990 [published data only]
Wirth DP. The effect of non-contact Therapeutic Touch on the healing rate of full thickness dermal wounds. Cooperative Connection 1992;13(3):1, 4-8.

Wirth 1993 [published data only]

Wirth 1994a [published data only]

Wirth 1996a [published data only]

References to studies excluded from this review

Savieto 2004a [published data only]

Savieto 2004b [published data only]

Turner 1998 [published data only]

Wirth 1994b [published data only]

Additional references

Blank 1998
Blank AJ. An even closer look at therapeutic touch. JAMA 1998;280(22):1907; author reply 1908.

Burr 2005

Carpenito 1995

Carpenter 1998

Claman 1994

Clark 1984
Clark PE, Clark MJ. Therapeutic Touch: is there a scientific basis for the practice?. Nursing Research 1984;33(1):37–41.

Collins 1998

Daley 1997
DiNucci 2005

Engelbreton 2007

Finch 1997

Flamm 2005

Freinkel 1998

Herdtner 2000

Higgins 2011

Howell 1998

Ireland 1998

Jarski 1998

Kenosian 1995

Krieger 1993

Krieger 1997

Leach 2004

Lee 1998

Lefebvre 2011

Leskowitz 2007

Long 1999

Manos 1998
Manos PJ. An even closer look at therapeutic touch. *JAMA* 1998;280(22):1907-8; author reply 1908.

Meehan 1998

O’Mathuna 1998

O’Mathuna 2002

O’Mathuna 2007

Palmer 1998

Papantonio 1998

Peters 1999

Rosa 1998

Sayre-Adams 1995

Schmidt 1998
Therapeutic touch for healing acute wounds (Review)

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## Characteristics of included studies 有序 by study ID

### Wirth 1990

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Details</th>
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</thead>
<tbody>
<tr>
<td><strong>Methods</strong></td>
<td>Randomised, double-blind, placebo-controlled study.</td>
</tr>
<tr>
<td><strong>Participants</strong></td>
<td>44 healthy male students, 21 to 32 years old (mean 26 years)</td>
</tr>
<tr>
<td><strong>Interventions</strong></td>
<td>Group 1: 5 minutes TT daily for 16 days. Subject passed arm through a screen and could not see what happened to it. Group 2: 5 minutes sham TT - subject sitting in a room. All subjects received a full thickness 5 mm wound using a skin biopsy instrument. The wound was covered with a polyurethane dressing (Tegaderm) which was changed at day 8 and 16. In each group, half received the wound in their right arm and half in the left</td>
</tr>
<tr>
<td><strong>Outcomes</strong></td>
<td>After 8 days, 3 of 23 wounds treated in Group 1 were completely healed; 0 of 21 in Group 2 (p&lt;0.001). After 16 days, 13 of 23 (57%) wounds treated in Group 1 were completely healed; 0 of 21 in Group 2 (p&lt;0.001). Mean wound area in Group 1 was 3.9 mm² (SD 2.958); in Group 2 it was 19.34 mm² (SD 4.469)</td>
</tr>
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### Risk of bias

<table>
<thead>
<tr>
<th>Bias</th>
<th>Authors’ judgement</th>
<th>Support for judgement</th>
</tr>
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<tbody>
<tr>
<td>Random sequence generation (selection bias)</td>
<td>Unclear risk</td>
<td>Stated to be “randomized” but no details given</td>
</tr>
<tr>
<td>Allocation concealment (selection bias)</td>
<td>Unclear risk</td>
<td>No details given</td>
</tr>
<tr>
<td>Blinding (performance bias and detection bias participants)</td>
<td>Low risk</td>
<td>Participants, experimenter and outcome assessors blinded.</td>
</tr>
<tr>
<td>Incomplete outcome data (attrition bias)</td>
<td>Low risk</td>
<td>No drop-outs</td>
</tr>
<tr>
<td>Selective reporting (reporting bias)</td>
<td>Low risk</td>
<td>All primary outcomes reported</td>
</tr>
<tr>
<td>Other bias</td>
<td>High risk</td>
<td>Concerns have been raised that this trial (of a series) may be at risk of fraud</td>
</tr>
</tbody>
</table>
**Methods**
Randomised, double-blind, placebo-controlled study

**Participants**
24 healthy subjects drawn from people practicing progressive relaxation and visualization. Aged 35 to 63 years (mean 47 years). Gender not reported. All given 4 mm skin biopsy wound

**Interventions**
Group 1: 5 minutes TT daily for 10 days. Practitioners were behind a one-way mirror.
Group 2: Subject sat in the room with no therapist behind the one-way mirror. The 4 mm skin biopsy wound was covered with a polyurethane dressing which was changed at days five and 10

**Outcomes**
After five days, seven of 12 wounds treated with in Group 1 were completely healed; 0 of 12 in Group 2 (p<0.006).
After 10 days, 10 of 12 wounds treated in Group 1 were completely healed; 4 of 12 in Group 2 (p<0.041).
Mean wound area in Group 1 was 3.9 mm² (SD 2.958); in Group 2 it was 19.34 mm² (SD 4.469)

**Risk of bias**

<table>
<thead>
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<th>Support for judgement</th>
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<td>Unclear risk</td>
<td>Stated “randomly assigned,” but no details given.</td>
</tr>
<tr>
<td>Allocation concealment (selection bias)</td>
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<tr>
<td>Blinding (performance bias and detection bias) participants</td>
<td>Low risk</td>
<td>Participants, experimenter and outcome assessors blinded.</td>
</tr>
<tr>
<td>Incomplete outcome data (attrition bias) All outcomes</td>
<td>Low risk</td>
<td>No drop-outs</td>
</tr>
<tr>
<td>Selective reporting (reporting bias)</td>
<td>High risk</td>
<td>Six outcomes were examined as evidence of wound healing, but most were not reported due to a lack of data for each assessment. The results were based on whether the wounds were fully healed or not, which was not a pre-specified primary outcome</td>
</tr>
<tr>
<td>Other bias</td>
<td>High risk</td>
<td>Concerns have been raised that this trial (of a series) may be at risk of fraud</td>
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</table>
### Methods
Randomised, double-blind, within-subject cross-over study

### Participants
15 healthy subjects from Wirth et al 1993.

### Interventions
**Part A (10 days).**
- **Group 1:** Even-numbered days: subjects used biofeedback to increase hand temp. and send healing energy to wounds and told TT would be given through a one-way mirror, but no TT given. On odd-numbered days: 1 hour group guided imagery using audiotape and receiving LeShan and Intercessory Prayer. During this, each subject received TT for 6 min. TT practitioners received Reiki/massage also.
- **Group 2:** Control
  - Even-numbered days, subject used biofeedback to increase hand temp only. Odd-numbered days, listened to relaxation tape in presence of therapists with no experience of TT moving their hands over subjects.

**Part B.**
- 7 days after Part A finished, subjects cross-over with one exception: each subject used the same audiotape used in Part A
- All 4 mm skin biopsy wounds treated with antibacterial solution and covered with nonocclusive dressing (Band-Aid)

### Outcomes
After 10 days of treatment, one of 15 wounds was healed, compared to seven of 15 in control group (p < 0.01).
Comparing Part A treatment and Part B control (same subjects), one of eight were healed after treatment and five of eight after control (p < 0.04)

### Notes
Very large number of variables included.

### Risk of bias

<table>
<thead>
<tr>
<th>Bias</th>
<th>Authors' judgement</th>
<th>Support for judgement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Random sequence generation (selection bias)</td>
<td>Unclear risk</td>
<td>Stated “randomly assigned” but no details given.</td>
</tr>
<tr>
<td>Allocation concealment (selection bias)</td>
<td>Unclear risk</td>
<td>No details given</td>
</tr>
<tr>
<td>Blinding (performance bias and detection bias) participants</td>
<td>Unclear risk</td>
<td>Participants blinded but had participated in previous studies in this series. The physician outcome assessors were not blinded. The participants in this study had participated in Wirth 1993 and would have been familiar with the study design.</td>
</tr>
<tr>
<td>Incomplete outcome data (attrition bias) All outcomes</td>
<td>Low risk</td>
<td>No drop-outs</td>
</tr>
<tr>
<td>Selective reporting (reporting bias)</td>
<td>Low risk</td>
<td>All primary outcomes were reported</td>
</tr>
</tbody>
</table>
### Risk of bias

<table>
<thead>
<tr>
<th>Bias</th>
<th>Authors' judgement</th>
<th>Support for judgement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Random sequence generation (selection bias)</td>
<td>Unclear risk</td>
<td>Stated “randomly assigned,” but no details given.</td>
</tr>
<tr>
<td>Allocation concealment (selection bias)</td>
<td>Unclear risk</td>
<td>No details given</td>
</tr>
<tr>
<td>Blinding (performance bias and detection bias participants)</td>
<td>Unclear risk</td>
<td>The participants and experimenter were blinded but unclear if the outcome assessor was</td>
</tr>
<tr>
<td>Incomplete outcome data (attrition bias)</td>
<td>Unclear risk</td>
<td>Number of subjects randomly assigned to each group was not reported (n = 38 total). Four dropped out of the treatment group and 2 from the control group. Results were given for 16 people in each group. Suggests uneven distribution to groups initially or possible movement between groups after drop-outs</td>
</tr>
<tr>
<td>All outcomes</td>
<td>Unclear risk</td>
<td>Number of subjects randomly assigned to each group was not reported (n = 38 total). Four dropped out of the treatment group and 2 from the control group. Results were given for 16 people in each group. Suggests uneven distribution to groups initially or possible movement between groups after drop-outs</td>
</tr>
<tr>
<td>Selective reporting (reporting bias)</td>
<td>Low risk</td>
<td>All primary outcomes reported</td>
</tr>
<tr>
<td>Other bias</td>
<td>High risk</td>
<td>Concerns have been raised that this trial (of a series) may be at risk of fraud. In addition, the participants were given monetary compensation which the au-</td>
</tr>
</tbody>
</table>
Characteristics of excluded studies  [ordered by study ID]

<table>
<thead>
<tr>
<th>Study</th>
<th>Reason for exclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Savieto 2004a</td>
<td>Animal study.</td>
</tr>
<tr>
<td>Savieto 2004b</td>
<td>Animal study.</td>
</tr>
<tr>
<td>Turner 1998</td>
<td>Study was retrieved using search criteria, but did not include wound healing as an outcome. Outcomes were pain and anxiety</td>
</tr>
<tr>
<td>Wirth 1994b</td>
<td>After 10 days of daily treatment there were insufficient numbers of fully healed wounds to warrant statistical comparisons. The researchers reported no data</td>
</tr>
</tbody>
</table>
DATA AND ANALYSES

Comparison 1. Therapeutic Touch vs Control

<table>
<thead>
<tr>
<th>Outcome or subgroup title</th>
<th>No. of studies</th>
<th>No. of participants</th>
<th>Statistical method</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 wounds healed completely</td>
<td>4</td>
<td>132</td>
<td>Risk Ratio (M-H, Random, 95% CI)</td>
<td>1.03 [0.12, 8.60]</td>
</tr>
</tbody>
</table>

Analysis 1.1. Comparison 1 Therapeutic Touch vs Control, Outcome 1 wounds healed completely.

Review: Therapeutic touch for healing acute wounds
Comparison: 1 Therapeutic Touch vs Control
Outcome: 1 wounds healed completely

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Treatment</th>
<th>Control</th>
<th>Risk Ratio M-H, Random, 95% CI</th>
<th>Weight</th>
<th>Risk Ratio M-H, Random, 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wirth 1990</td>
<td>13/23</td>
<td>0/23</td>
<td>21.3 %</td>
<td>27.00  [1.70, 428.90]</td>
<td></td>
</tr>
<tr>
<td>Wirth 1993</td>
<td>10/12</td>
<td>4/12</td>
<td>31.8 %</td>
<td>2.50   [1.08, 5.79]</td>
<td></td>
</tr>
<tr>
<td>Wirth 1994a</td>
<td>1/15</td>
<td>7/15</td>
<td>26.0 %</td>
<td>0.14   [0.02, 1.02]</td>
<td></td>
</tr>
<tr>
<td>Wirth 1996a</td>
<td>0/16</td>
<td>4/16</td>
<td>20.9 %</td>
<td>0.11   [0.01, 1.91]</td>
<td></td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>66</td>
<td>66</td>
<td>100.0 %</td>
<td>1.03   [0.12, 8.60]</td>
<td></td>
</tr>
</tbody>
</table>

Total events: 24 (Treatment), 15 (Control)
Heterogeneity: $\tau^2 = 3.50$; $\chi^2 = 14.27$, df = 3 ($P = 0.003$); $I^2 = 79$
Test for overall effect: $Z = 0.03$ ($P = 0.98$)
Test for subgroup differences: Not applicable
Appendix 1. Search strategies for the third update - 2010

For this third update, searches were carried out in the following databases:
- Cochrane Wounds Group Specialised Register (Searched 31/3/10)
- The Cochrane Central Register of Controlled Trials (CENTRAL) - The Cochrane Library 2010 Issue 1
- Ovid MEDLINE - 2007 to March Week 3 2010
- Ovid MEDLINE - In-Process & Other Non-Indexed Citations (Searched 30/3/10)
- Ovid EMBASE - 2007 to 2010 Week 11
- EBSCO CINAHL - 2007 to March 26 2010

The following search strategy was used in the Cochrane Central Register of Controlled Trials (CENTRAL):

#1 MeSH descriptor Acute Disease explode all trees
#2 MeSH descriptor Wounds and Injuries explode all trees
#3 (#1 AND #2)
#4 MeSH descriptor Surgical Wound Infection explode all trees
#5 MeSH descriptor Surgical Wound Dehiscence explode all trees
#6 MeSH descriptor Wounds, Penetrating explode all trees
#7 MeSH descriptor Lacerations explode all trees
#8 MeSH descriptor Burns explode all trees
#9 MeSH descriptor Skin Transplantation explode all trees
#10 MeSH descriptor Fractures, Open explode all trees
#11 ((traumatic NEXT wound*) or (acute NEXT wound*)):ti,ab,kw
#12 ((surgical NEXT wound*) or (incised NEXT wound*)):ti,ab,kw
#13 acute NEXT ulcer*:ti,ab,kw
#14 (burn or burns or burned or scald*:ti,ab,kw
#15 (thermal or blast or crush or avulsion) NEXT injur*:ti,ab,kw
#16 laceration* or gunshot or (gun NEXT shot) or stab or stabbing or stabbed):ti,ab,kw
#17 ((donor NEXT site*) or (skin NEXT graft*)):ti,ab,kw
#18 experimental NEXT wound*:ti,ab,kw
#19 (mechanical NEXT trauma) or polytrauma):ti,ab,kw
#20 (open NEXT fracture*) or (compound NEXT fracture*):ti,ab,kw
#21 (#3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20)
#22 MeSH descriptor Therapeutic Touch explode all trees
#23 MeSH descriptor Relaxation Techniques explode all trees
#24 non-contact NEAR/5 therap*:ti,ab,kw
#25 non-contact NEAR/5 heal*:ti,ab,kw
#26 therapeutic NEXT touch*:ti,ab,kw
#27 (#22 OR #23 OR #24 OR #25 OR #26)
#28 (#21 AND #27)

The search strategies for Ovid MEDLINE, Ovid EMBASE and EBSCO CINAHL can be found in Appendix 2, Appendix 3 and Appendix 4 respectively. The Ovid MEDLINE search was combined with the Cochrane Highly Sensitive Search Strategy for identifying randomised trials in MEDLINE: sensitivity- and precision-maximizing version (2008 revision); Ovid format. The EMBASE and CINAHL searches were combined with the trial filters developed by the Scottish Intercollegiate Guidelines Network. There were no restrictions on the basis of language.
Appendix 2. Ovid MEDLINE search strategy

1 exp Acute Disease/
2 exp "Wounds and Injuries"/
3 and 1-2
4 exp Surgical Wound Infection/
5 exp Surgical Wound Dehiscence/
6 exp Wounds, Penetrating/
7 exp Lacerations/
8 exp Burns/
9 exp Skin Transplantation/
10 exp Fractures, Open/
11 (traumatic wound$ or acute wound$).ti,ab.
12 (surgical wound$ or incised wound$).ti,ab.
13 acute ulcer$.ti,ab.
14 (burn or burns or burned or scald$).ti,ab.
15 ((thermal or blast or crush or avulsion) adj injur$).ti,ab.
16 (laceration$ or gunshot or gun shot or stab or stabbing or stabbed).ti,ab.
17 (donor site$ or skin graft$).ti,ab.
18 experimental wound$.ti,ab.
19 (mechanical trauma or polytrauma).ti,ab.
20 (open fracture$ or compound fracture$).ti,ab.
21 or/3-20
22 exp Therapeutic Touch/
23 exp Relaxation Techniques/
24 therapeutic touch.ti,ab.
25 non-contact therap$.ti,ab.
26 non-contact heal$.ti,ab.
27 or/22-26
28 21 and 27

Appendix 3. Ovid EMBASE search strategy

1 exp Wound/
2 exp Acute Disease/
3 1 and 2
4 exp Surgical Infection/
5 exp Wound Dehiscence/
6 exp Penetrating Trauma/
7 exp Laceration/
8 exp Burn/
9 exp Skin Transplantation/
10 exp Open Fracture/
11 (traumatic wound$ or acute wound$).ti,ab.
12 (surgical wound$ or incised wound$).ti,ab.
13 acute ulcer$.ti,ab.
14 (burn or burns or burned or scald$).ti,ab.
15 ((thermal or blast or crush or avulsion) adj injur$).ti,ab.
16 (laceration$ or gunshot or gun shot or stab or stabbing or stabbed).ti,ab.
17 (donor site$ or skin graft$).ti,ab.
18 experimental wound$.ti,ab.
19 (mechanical trauma or polytrauma).ti,ab.
20 (open fracture$ or compound fracture$).ti,ab.
Appendix 4. EBSCO CINAHL search strategy

S29 S22 and S28
S28 S23 or S24 or S25 or S26 or S27
S27 TI non-contact heal* or AB non-contact heal*
S26 TI non-contact therap* or AB non-contact therap*
S25 TI therapeutic touch or AB therapeutic touch
S24 (MH “Relaxation Techniques++”)
S23 (MH “Therapeutic Touch”)
S22 S1 or S2 or S3 or S4 or S5 or S6 or S7 or S8 or S9 or S10 or S11 or S12 or S13 or S14 or S15 or S16 or S17 or S18 or S19 or S20 or S21
S21 TI (open fracture* or compound fracture*) or AB (open fracture* or compound fracture*)
S20 TI (mechanical trauma or polytrauma) or AB (mechanical trauma or polytrauma)
S19 TI experimental wound* or AB experimental wound*
S18 TI (donor site* or skin graft*) or AB (donor site* or skin graft*)
S17 TI (laceration* or gunshot or gun shot or stab or stabbing or stabbed) or AB (laceration* or gunshot or gun shot or stab or stabbing or stabbed)
S16 TI (thermal injur* or blast injur* or crush injur* or avulsion injur*) or AB (thermal injur* or blast injur* or crush injur* or avulsion injur*)
S15 TI (burn or burns or burned or scald*) or AB (burn or burns or burned or scald*)
S14 TI acute ulcer* or AB acute ulcer*
S13 TI (surgical wound* or incised wound*) or AB (surgical wound* or incised wound*)
S12 TI (traumatic wound* or acute wound*) or AB (traumatic wound* or acute wound*)
S11 (MH “Fractures, Open”)
S10 (MH “Graft Donor Site”)
S9 (MH “Skin Transplantation”)
S8 (MH “Burns++”)
S7 (MH “Tears and Lacerations”)
S6 (MH “Wounds, Penetrating++”)
S5 (MH “Surgical Wound Dehiscence”)
S4 (MH “Surgical Wound Infection”)
S3 S1 and S2
S2 (MH “Wounds and Injuries++”)
S1 (MH “Acute Disease”)
## WHAT'S NEW

Last assessed as up-to-date: 27 January 2012.

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 April 2012</td>
<td>New citation required but conclusions have not changed</td>
<td>Fourth update. The authors’ conclusions remain unchanged.</td>
</tr>
<tr>
<td>25 April 2012</td>
<td>New search has been performed</td>
<td>A new search was conducted and no new studies identified.</td>
</tr>
</tbody>
</table>

## HISTORY

Review first published: Issue 4, 2003

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 June 2010</td>
<td>New search has been performed</td>
<td>For this third update, a new search was conducted. No new studies were identified. Risk of bias tables were completed. The authors’ conclusions remain unchanged.</td>
</tr>
<tr>
<td>23 July 2008</td>
<td>Amended</td>
<td>Converted to new review format.</td>
</tr>
<tr>
<td>26 November 2007</td>
<td>New search has been performed</td>
<td>For this second update, a new search strategy was used and carried out in November 2007. No new studies were identified. The authors’ conclusions remain unchanged.</td>
</tr>
<tr>
<td>16 January 2006</td>
<td>New search has been performed</td>
<td>For the first update, new searches were carried out in January 2006. Two new studies were excluded from the review. The authors’ conclusions remain unchanged.</td>
</tr>
<tr>
<td>19 August 2003</td>
<td>New citation required and conclusions have changed</td>
<td>Substantive amendment. This review, with 4 included trials, was originally published in The Cochrane Library, Issue 4, 2003.</td>
</tr>
</tbody>
</table>
CONTRIBUTIONS OF AUTHORS

DO’M developed the protocol for this review and conducted the initial literature search. Relevant studies were determined by DO’M and data extracted. Data was extracted independently by RLA and compared. First draft of the review was written by DO’M followed by revision and additions by RLA. The updates were conducted by DO’M who is guarantor of the review.

DECLARATIONS OF INTEREST

None

SOURCES OF SUPPORT

Internal sources

• Mount Carmel College of Nursing, USA.
• Faculty of Health and Community Care, University of Central England, UK.
• School of Nursing, Dublin City University, Ireland.

External sources

• NIHR/Department of Health (England), (Cochrane Wounds Group), UK.

INDEX TERMS

Medical Subject Headings (MeSH)

*Therapeutic Touch; *Wound Healing; Acute Disease; Bandages; Biopsy; Randomized Controlled Trials as Topic

MeSH check words

Humans