Thermotherapy for treating rheumatoid arthritis (Review)

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A B S T R A C T

Background

Thermotherapy is often used as adjunct in the treatment of rheumatoid arthritis (RA) by rehabilitation specialists.

Objectives

To evaluate the effectiveness of different thermotherapy applications on objective and subjective measures of disease activity in patients with RA.

Search strategy

We searched MEDLINE, EMBASE, Pedro, Current Contents, Sports Discus and CINAHL up to and including September 2001. The Cochrane Field of Rehabilitation and Related Therapies and the Cochrane Musculoskeletal Review Group were also contacted for a search of their specialized registers. Hand searching was conducted on all retrieved articles for additional articles.

Selection criteria

Comparative controlled studies, such as randomized controlled trials, controlled clinical trials, cohort studies or case/control studies, of thermotherapy compared to control or active interventions in patients with RA were eligible. No language restrictions were applied. Abstracts were accepted.

Data collection and analysis

Two independent reviewers identified potential articles from the literature search (VR, LB). These reviewers extracted data using pre-defined extraction forms. Consensus was reached on all data extraction. Quality was assessed by two reviewers using a 5 point scale that measured the quality of randomization, double-blinding and description of withdrawals.

Main results

Seven studies (n=328 participants) met the inclusion criteria. The results of this systematic review of thermotherapy for RA found that there was no significant effect of hot and ice packs applications (Ivey 1994), cryotherapy (Rembe 1970) and faradic baths (Hawkes 1986) on objective measures of disease activity including joint swelling, pain, medication intake, range of motion (ROM), grip strength, hand function compared to a control (no treatment) or active therapy.

There is no significant difference between wax and therapeutic ultrasound as well as between wax and faradic bath combined to ultrasound for all the outcomes measured after one, two or three week(s) of treatment (Hawkes 1986). There was no difference in patient preference for all types of thermotherapy. No harmful effects of thermotherapy were reported.

Authors' conclusions

Superficial moist heat and cryotherapy can be used as palliative therapy. Paraffin wax baths combined with exercises can be recommended for beneficial short-term effects for arthritic hands. These conclusions are limited by methodological considerations such as the poor quality of trials.

PLAIN LANGUAGE SUMMARY

Thermotherapy is a commonly used modality in treating rheumatoid arthritis (RA). Thermotherapy modalities include superficial moist heat fomentations (hot packs) at different temperatures, cryotherapy (ice packs), paraffin wax baths and faradic baths. All studies included in this review (n=7) are randomized controlled trials (RCT).

This review found there were no significant effects for hot and ice packs applications and faradic baths on objective measures of disease activity including joint swelling, pain, medication intake, range of motion (ROM), grip strength, hand function or patient preference compared to control (no treatment) or active therapy. However, there were positive results for paraffin wax baths alone for arthritic hands on objective measures of ROM, pinch function, grip strength, pain on non-resisted motion, stiffness compared to control (no treatment) after four consecutive weeks of treatment.

There is no significant difference between wax and therapeutic ultrasound or between wax and faradic bath combined with ultrasound for any of the outcomes measures. The reviewers concluded that thermotherapy can be used as a palliative therapy or as an adjunct therapy combined with exercises for RA patients. Wax baths appear especially helpful in the treatment of arthritic hands. These conclusions are limited by methodological considerations such as the poor quality of trials.

BACKGROUND

Superficial moist heat and cryotherapy are commonly used in physical rehabilitation for patients with rheumatoid arthritis (RA) to relieve pain (Oosterveld 1992c). Both can be easily applied at home by the patient but may also be combined with other rehabilitation interventions.

Thermotherapy is suggested as a potential intervention for the treatment of musculoskeletal conditions in the American Physical Therapy Association guidelines (APTA 2001). These guidelines are not based on evidence from comparative controlled trials. The Philadelphia Panel (Philadelphia 2001) developed Evidence Based Clinical Practice Guidelines for several musculoskeletal conditions (Philadelphia 2001). However, rheumatoid arthritis was not included in these guidelines. Clinicians require good evidence in order to make an informed decision regarding effective and appropriate treatment options.

There are several potentially beneficial physiological and clinical effects of thermotherapy for RA patients. Thermotherapy has effects on pain, muscle spasms, circulation and inflammation (Knight 1995). Furthermore, it can be applied by patients in their own home as needed. Despite the widespread use of heat and cold by patients with RA for the control of pain, this clinical application is solely based on empiric evidence. In fact, the effectiveness of heat or cold (i.e. cryotherapy) application relative to a placebo, to alternate therapies or even its role as an adjunct remains unclear.

OBJECTIVES

To evaluate the effectiveness of thermotherapy compared to placebo and to other alternate interventions on pain relief for treating patients with RA.

CRITERIA FOR CONSIDERING STUDIES FOR THIS REVIEW

Types of studies

According to an a priori protocol, all comparative controlled trials, including randomized controlled trials (RCT), controlled clinical trials(CCT), and case-control and cohort studies were included. Trials which used the same patients as their own control were not accepted. The results were graded according to the strength of the study design.

No language limitations were imposed. Abstracts were accepted.

Types of participants

Adult patients with classic or definite rheumatoid arthritis (Arnett 1988) treated with heat or/and cryotherapy or other alternate thermotherapy modalities. All peripheral joints were considered while axial joints of the spine were excluded from the results of this review.

Types of intervention

Acceptable interventions included any form of heat (e.g. hot packs, paraffin wax bath) or cryotherapy (e.g. ice packs, cold gel packs). Balneotherapy was excluded as it has been evaluated in another Cochrane review (Verhagen 2000). Acceptable control groups were placebo, untreated, or alternate interventions such as paraffin wax baths, faradic baths and other forms of rehabilitation interventions.
Concurrent interventions (e.g. NSAIDs, exercises) were accepted if they were given to both comparative groups.

Types of outcome measures

The primary outcome considered was pain. Secondary outcomes were selected from the potential core set identified by the Outcome Measures in Rheumatology Clinical Trials (OMERACT)

conference on RA outcomes (OMERACT 1993). Our final set of secondary outcomes included:

Tender joint count
Swollen joint count
Physician global assessment
Patient global assessment
Functional status

In addition, two outcomes often used as measures of clinical effects in the practice of rehabilitation were included:
Range of Motion (ROM)
Strength

Physiological outcomes such as skin and joint temperature were not included in the analysis.

SEARCH METHODS FOR IDENTIFICATION OF STUDIES

See: Cochrane Musculoskeletal Group methods used in reviews.

The literature search was conducted up to September 2001 according to the sensitive search strategy for RCTs designed for the Cochrane Collaboration (Dickersin 1994), with modifications proposed by Haynes et al (Haynes 1994). Additional terms for study design were used to identify observational studies including: case-control, cohort, comparative study and clinical trial. MEDLINE, EMBASE, HealthSTAR, Sports Discus, CINAHL, the Cochrane Controlled Trials Register, Pedro, the specialized registry of the Cochrane Musculoskeletal Group and the Cochrane Field of Rehabilitation and Related Therapies were searched using a keyword and text word search strategy (shown below). In addition, the reference lists of included trials were searched and content experts were contacted for additional studies.

1 exp osteoarthritis/
2 osteoarthritis.tw.
3 osteoarthrosis.tw.
4 degenerative arthritis.tw.
5 exp arthritis, rheumatoid/
6 rheumatoid arthritis.tw.
7 rheumatism.tw.
8 arthritis, juvenile rheumatoid/
9 caplan's syndrome.tw.
10 felty's syndrome.tw.
11 rheumatoid.tw.
12 ankylosing spondylitis.tw.
13 arthrosis.tw.
14 sjogren$.tw.
15 or/1-14
16 heat/tu
17 (heat or hot or ice).tw.

18 cryotherapy.sh,tw.
19 (vapocoolant or phonophoresis).tw.
20 exp hyperthermia, induced/
21 (hypertherm$ or thermotherapy).tw.
22 (fluidotherapy or compression).tw.
23 15 and 22
24 clinical trial.pt.
25 randomized controlled trial.pt.
26 tu.fs.
27 dt.fs.
28 random$.tw.
29 placebo$.tw.
30 ((sing$ or doubl$ or tripl$) adj (masked or blind$)).tw
31 sham.tw.
32 or/24-31
33 23 and 32

METHODS OF THE REVIEW

Two independent reviewers (VR, LB) examined the titles and abstracts of the trials identified by the search strategy to select trials that met the inclusion criteria. All trials classified as relevant by at least one of the reviewers were retrieved. The retrieved articles were re-examined to ensure they met the inclusion criteria.

The results of the individual trials were extracted from each of the included trials using pre-determined extraction forms by two independent reviewers (LB, VR). The data was cross-checked by a third reviewer (BS). The extraction forms were developed and pilot-tested, based on other forms used by the Cochrane Musculoskeletal Review Group. The extraction form documented specific information about the heat or cold therapy including 1) method (hot pack, paraffin wax, cold water); 2) therapeutic application (duration, frequency, temperature, total number of sessions and any specific skin preparation). The final data values were based on consensus of the two reviewers.

Statistical Analysis
Most outcomes were continuous in nature (functional status, pain and strength). Where pooling of data from different trials was possible, these outcomes were analyzed using a weighted mean difference (WMD) a fixed effects model. For dichotomous data, relative risks were used. The effect measured in an individual trial is weighted by the amount of variability about the mean (measured by the standard deviation) in that study for that outcome. Graphical data was used in cases where table data was not available.

When applicable, heterogeneity was assessed with a Chi square test on N degrees of freedom where N is the number of studies. Where statistically significant heterogeneity existed, the results were analyzed by a random effects model. Furthermore, the contributions of pre-determined hypotheses regarding different

populations and interventions were examined as possible sources of heterogeneity.

DESCRIPTION OF STUDIES

The literature search and handsearching identified 306 potential articles. Of these, seven RCTs were included involving 328 RA patients (Bulstrode 1986, Dellhag 1992, Hawkes 1986, Ivey 1994, Kirk 1968, Rembe 1970, Williams 1986).

Fifteen trials were excluded for several reasons: 1) Abramson 1964: no clinical outcomes; 2) Amundson 1979: not a clinical trial; 3) Bromley 1994: sample of healthy people; 3) Curkovic 1993: no sufficient statistical data; 4) Devereaux 1985: no control group; 5) DonTigny 1962: no participants with RA; 6) Feibel 1976: not a clinical trial; 7) Haines 1970: no RA patients; 8) Halliday Pegg 1969: no control group; 9) Harris 1955: No description of the statistical procedure used, no p values or standard deviations available; 10) Hoyrup 1986: sample of participants with trauma; 11) Mainardi 1979: no control group, patients were their own controls; 12) Oosterveld 1992c: sample of healthy people; 13) Oosterveld 1994a): sample of healthy people; 14) Oosterveld 1994b: mixed population with RA in minority; 15) Weinberger 1989: no clinical outcome; 16) Whipple 1992: sample of healthy people.

Two RCTs examined the effects of ice therapy versus control for the reduction of oedema and inflammation (Bulstrode 1986, Rembe 1970). One RCT compared the combination of parafin bath and exercise, to exercise only and control for pain relief on non-resisted motion, morning stiffness and joint ROM , pinch function and grip strength (Dellhag 1992). Another RCT compared the relative efficacy of three different thermotherapy modalities: paraffin wax bath, faradic bath and ultrasound for their effects on hand strength, ROM, joint circumference and functional status (Hawkes 1986). One RCT investigated the effect of different temperatures of heat on medication intake (Ivey 1994). One RCT compared heat versus cryotherapy for the pain relief in patients with RA (Kirk 1968). Lastly, another RCT compared heat therapy to cryotherapy for pain relief and ROM (Williams 1986).

Strengthening exercises (Dellhag 1992, Williams 1986), ultrasound (Hawkes 1986) or medication (Rembe 1970) was prescribed concurrently in combination with various applications of thermotherapy.

METHODOLOGICAL QUALITY

Methodological quality was assessed using a validated checklist (Jadad 1996). The components of quality focus on randomization, double-blinding and description of withdrawals. Two independent reviewers (LB, VR) assessed quality and differences were resolved by consensus with a third reviewer (BS). Quality was used in subgroup analyses to test the hypothesis that poorly conducted trials demonstrate greater efficacy of the intervention under evaluation. Each item (i.e. randomization, blinding and withdrawals) was examined separately for its effect.

The mean methodological quality of the seven RCTs was two, with a range from one to three. Only one trial scored full points for randomization, none scored full points for double blinding, and five did not report withdrawals and dropouts. None of the included studies were double-blind.

RESULTS

The results of this systematic review on thermotherapy in the treatment of RA found that there was no significant effect of hot or ice pack applications (Bulstrode 1986, Ivey 1994, Kirk 1968, Rembe 1970, Williams 1986) or faradic baths (Hawkes 1986) on objective measures of disease activity including joint swelling, pain, medication intake, ROM, grip strength or hand function when compared to a control (no active treatment) or alternate treatment.

There was an exception with the case of faradic baths when compared to control. For one outcome, an invalidated checklist of ability to perform daily activities, the results were conflicting since we observed significant borderline values favouring faradic baths at two weeks (0.30, 95%CI: 0.02 to 0.58) then favouring control group at three weeks (-1.30, 95%CI: -2.51 to -0.09) (Hawkes 1986). There was also a tendency favouring cryotherapy versus no active treatment in the reduction of hand swelling after two days (-5.80 % from baseline, 95%CI: -11.78 to 0.18) and three days (-9.80 % from baseline, 95%CI: -19.91 to -0.31) post-surgery of the hand (Rembe 1970).

One trial of paraffin wax alone or combined with exercise (Dellhag 1992) did not report sufficient detail to analyze the results using review manager: standard deviation was not reported. However, this trial reported statistically significant results for some outcomes: the wax + exercise group showed significantly greater improvement than the control group for flexion deficit (21% relative to control), pain on non-resisted motion (44% relative to control), grip function (8% relative to control) and pinch function (5% relative to control) of the hand (p<.05). There was no significant effect of wax+exercise on stiffness or grip strength. This trial found no significant improvement from baseline with paraffin wax only versus control for any outcomes (pinch and grip function, pain, stiffness and range of motion deficits).

There was no statistically significant difference when comparing wax and therapeutic ultrasound or wax and faradic bath to ultrasound for outcomes measured after one, two or three week(s) of treatment (Hawkes 1986). In addition, there was no patient preference for the various thermotherapy modalities offered (Kirk 1968).

No subgroup analysis on high versus low quality applications were undertaken as none of the studies examined the same type of thermotherapy, used similar outcomes or studied the same joints. Due to the small number of trials, the remaining pre-planned subgroup analyses (treatment duration, type of thermotherapy application, patient characteristics, disease characteristics, specific joint and design considerations) were not conducted. Publication bias was not assessed due to the small number of trials.

DISCUSSION

Statistically significant results favouring paraffin wax combined with exercise to a control group were found in patients with RA of the hand after four weeks of treatment. Improvements were reported in objective measures of ROM in fingers flexion, pinch function, grip strength. These improvements ranged from 5 to 44% relative to the control group (Dellhag 1992).

No significant effect of hot pack or ice pack applications (Ivey 1994), cryotherapy (Rembe 1970) and faradic baths (Hawkes 1986) were reported for objective measures of disease activity including joint swelling, pain, medication intake, range of motion (ROM), grip strength, hand function when compared to a control group (no active treatment) or alternate therapy. No significant differences were detected between wax and therapeutic ultrasound or between wax and faradic bath combined to ultrasound for all the outcomes measured after one, two or three week(s) of treatment. There was no statistically significant difference in patient preference for any type of thermotherapy (Kirk 1968). These interventions can be used by the patient interchangeably.

Physiological studies have shown significant effects of cryotherapy on circulatory and temperature responses, muscle spasm and inflammation (Chapman 1991, Knight 1995), however, the mechanism of action is not yet fully understood (Knight 1995). Despite these identified physiologic effects, there appears to be no effect in human patients on objective measures of disease activity in controlled trials. Perhaps, the clinical outcome measures used in the included studies are not sensitive enough to capture the expected physiological effects.

Recent guidelines by the Philadelphia Panel (Philadelphia Panel 2001) did not include rheumatoid arthritis. Another systematic review (Puett 1994) for OA of the knee was unable to draw conclusions regarding thermotherapy, due to a lack of evidence. The American College of Rheumatology (ACR) (ACR 1996), The British Medical Journal (BMJ) (BMJ 1999) and the Manal & Snyder-Mackler (Manal 1996) guidelines do not make recommendations regarding thermotherapy for RA.

Confounding variables, such as characteristics of the therapeutic application, characteristics of the population, characteristics of the disease and methodological considerations may have contributed to the lack of effect of thermotherapy (Morin 1996) in the studies

reviewed. Some of the characteristics of the thermotherapy application that can affect efficacy are: type of thermotherapy, temperature of the application, duration of the application (Behnke 1973) and schedule of treatment (e.g. only four consecutive treatment sessions). Population characteristics of importance are: age, gender, disease duration (acute or chronic) and post-surgery. It is crucial that details on these previously mentioned characteristics should be addressed in studies of thermotherapy and need to be reported consistently in published studies.

Methodological considerations that may have contributed to the lack of effect are the randomization method, quality of double-blinding, sample size, study duration and selection of outcome measures. A good number of seven RCTs were retrieved from the literature. However, the low quality of the included RCTs may have caused an overestimation of effect. In particular, patients could not be blinded to thermotherapy. This is a common problem in trials of rehabilitation interventions (Deyo 1990). There are also issues in including crossover design (Kirk 1968) into systematic reviews (Altman 2001). Some outcome measures used in studies included in this review such as activity score (Hawkes 1986) or not recognized by OMERACT (OMERACT, 1993) such as stiffness (Dellhag 1992). Standardized outcomes measures (OMERACT 1993) and measurement periods should be used to facilitate the pooling of data of several studies.

Reporting data should also be standardized among the included RCTs. Mean and standard deviation of every outcome should be provided systematically. The use of statistical approximation derived from the p-value to estimate the standard deviation and the borderline significant values of the upper and lower limits of the confidence interval could affect the conclusion on efficacy of wax therapy (Dellhag 1992), cryotherapy (Rembe 1970) and faradic bath (Hawkes 1986). Furthermore, some significant borderline results were also contradictory for the activity score at two different measurement periods (Hawkes 1986). Indeed, the results favoured the treatment group at two weeks and then the control group one week later (Hawkes 1986). Some studies expressed their results using the difference between baseline values and end of treatment values (Dellhag 1992). We had to recalculate the difference between groups at end of treatment.

Another confounding variable was concurrent therapy, such as combined exercises (Dellhag 1992, Williams 1986), ultrasound (Hawkes 1986) or medication (Rembe 1970). These could have influenced the efficacy of the thermotherapy. Even though it reflects common clinical practice in physiotherapy, these combined interventions introduce biases and the specific efficacy of an intervention for RA cannot be isolated. For example, endorphin and enkephalin production is stimulated by exercises (Coutts 1994) and may reduce arthritic pain in a combined thermotherapy modality. Combined thermotherapy modality, such as wax, may enhance the action of exercises in the treatment of RA for certain outcomes such as ROM and pain during non-resisted movement.

The reviewers conclude that thermotherapy, especially wax baths, can be used as a palliative therapy and an adjunct therapy combined with exercises for the treatment of RA patients arthritic hands.

AUTHORS' CONCLUSIONS

Implications for practice

This review has shown neither positive nor detrimental effects of heat therapy on important outcomes or on joint destruction in RA patients. The reviewers conclude that thermotherapy can be used as needed by patients with RA, as a palliative therapy and an adjunct therapy combined with exercises. However, these conclusions are limited by the poor methodological quality of the trials available and the large number of borderline values. This review has shown that thermotherapy can be used as an adjunct and palliative therapy. No harmful side effects were reported.

Implications for research

More sensitive and valid clinical outcomes should be used in studies on thermotherapy to reflect the physiological effects found in the scientific literature. Detailed information regarding the temperature, duration of application and mode of application is needed in order to determine the optimal characteristics of the therapeutic application of thermotherapy for RA at different human joints.

POTENTIAL CONFLICT OF INTEREST

None known.

ACKNOWLEDGEMENTS

SOURCES OF SUPPORT

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*Indicates the major publication for the study

TABLES

Characteristics of included studies

Study	Bulstrode 1986
Methods	Randomized, single-blind (assessor) controlled trial Sample size at entry: 24
Participants	Inpatients confined to bed rest with classical or definite RA according to ARA criteria and clinically obvious effusion of 1 or both knee joints Men: 17 Seropositive: 19
Interventions	1-Experimental group: Ice therapy (2 kg of crushed ice wrapped in damp towels applied to one of knee joints for 10 minutes daily for 5 days) 2-Control group: No ice therapy Contralateral control: patients with both knees affected, only one knee was assigned to ice therapy and the other served as a contralateral control Concurrent therapy: no intra-articular injections, joint aspiration, no changes in drug therapy, no other forms of physical therapy
Outcomes	1-Inflammation measured by infrared thermography (Thermographic Index), derived from mean temperature of anterior knee

Characteristics of included studies (*Continued*)

	2-Circumference (cm)
Notes	R=1
	B=0
	W=1
Allocation concealment	B – Unclear

Study	**Dellhag 1992**
Methods	Randomized, Controlled with matching, parallel group, Sample size at entry for
	group 1: 13
	group 2: 11
	group 3: 15
	group 4: 13
Participants	Resident in the city of Gothenburg, age equal or younger than 70 yrs, disease duration:6-10 yrs, functional class. I or II, hand problems defined as a decrease in the ROM and/or grip strength, Mean age for females: 51.8 yrs (n=33), Mean age for males: 56.3 yrs (n=19), Stage of disease: chronic.
Interventions	Group 1: Wax bath & Exercises
	Group 2: Exercises only
	Group 3: Wax bath only
	Group 4: control (no treatment)
Outcomes	1-ROM deficit (mm) :
	- flexion of dom. hand.
	- flexion of non-dom. hand.
	- extension of dom. hand.
	- extension of non-dom. hand.
	2-Grip strength Test (0-80 pts)
	3-Pinch function Test (0-32 pts)
	4- Grip strength (N) :
	- max. dom. hand.
	- max. non-dom. hand.
	- average of dom. hand
	- average of non-dom. hand.
	5-Pain:
	- resisted motion of dom. hand (0-9 pts)
	- non-resisted motion, both hands (0-100mm)
	6-Stiffness both hands (0-100mm)
Notes	R=1
	B=0
	W=0
Allocation concealment	B – Unclear

Study	**Hawkes 1986**
Methods	Randomized, placebo-controlled study. Sample size at entry for group 1: 10; for group 2: 10
Participants	Patients with classical/definite RA disease involved in both hands, pain swelling and limitation of movement
Interventions	1- Wax + exercises;

Characteristics of included studies (*Continued*)

2-Ultrasound + exercises;
2-Ultrasound + faradic exercises

3-Ultrasound +Faradic bath

Outcomes	1- Hand grip (mmHg) 2- PIP circumference (mm) 3- Articular Index (0-3) 4- Pain score (mm) 5-ROM (mm) 6- Timed task (sec) 7- Activity score (checklist)
Notes	R=1 B=0 W=0
Allocation concealment	D – Not used

Study	Ivey 1994
Methods	Randomized, parallel group, Placebo controlled, Sample size at entry for Group 1: 30 Group 2: 30 Group 3: 30
Participants	Patients undergoing primary knee arthroplasty, Mean age or the following groups: Group 1: 64.5 yrs SD: 8.1 yrs Group 2: 64.2 yrs SD: 10.3 yrs Group 3: 66.9 yrs SD: 11.6 yrs
Interventions	1-Thermal-pad of 50°F 2-Thermal-pad of 60°F 3-Thermal-pad of 70°F
Outcomes	1-Amount of morphine injected (pain measurement) (mg/h) 2-No. of PCA (Patient controlled analgesia attempts)
Notes	R=2 B=0 W=1
Allocation concealment	A – Adequate

Study	Kirk 1968
Methods	Randomized, cross-over trial Washout: 9 days with no therapy Sample size at entry: 14 patients, 20 knees Treatment duration: 5 days Trial duration: 19 days
Participants	Chronic rheumatoid arthritis, admitted to hospital with "definite or classic" RA Mean age: not reported Mean symptom duration: 14 years SD=12.5
Interventions	1-Ice packs in damp towels for 20 minutes, 1/day for 5 days 2-Hot packs: wrapped in Turkish towel and wrapped around the knee for 20 minutes, 1/day for 5 days

Outcomes	1-Preference for cold
	2-Preference for heat
	3-Improved by 1 pain grade (heat and ice)
	4-Stiffness improved (heat and ice)
	Pain, stiffness, range of movement, knee circumference, joint temperature, treatment preference
Notes	R=1
	B=0
	W=0
Allocation concealment	B – Unclear

Study	**Rembe 1970**
Methods	Randomized, parallel group, Placebo controlled, Sample size at entry for
	Group 1: 15
	Group 2: 15
Participants	Patients hospitalized for surgical procedures to the hand
Interventions	at 10 degrees 1-cryotherapy, submerging involved hand, covered in glove in water at 10 degrees Celsius for 4 mins., 2/day, after 48 hrs post-op until 72 hours post-op.
	2- no therapy
	2-Hot packs: wrapped in Turkish towel and wrapped around the knee for 20 minutes, 1/day for 5 days
Outcomes	1-% of increase oedema over preoperative volume
Notes	R=1
	B=0
	W=1
Allocation concealment	B – Unclear

Study	**Williams 1986**
Methods	Randomized, parallel group, Sample size at entry for group 1: 9, for group 2: 9
Participants	Onset of rheumatoid arthrtis within the proceeding 5 yrs, painful shoulder, normal sensations (hot&cold), stage of disease: early & advanced, Group 1 mean age: 59 yrs, Group 2 mean age: 55 yrs, Mean disease duration for group 1: 31 mths, Mean disease duration for group 2: 36 mths.
Interventions	1-Heat (hot packs) for 20 min. + 20 min.of exercise program
	2-Ice (20 min.) + exercises program
Outcomes	1-Pain (McGill Pain Questionnaire)
	2-Flexion (degrees)
	3-Abduction ROM (degrees)
Notes	R=1
	B=0
	W=0
Allocation concealment	B – Unclear

Characteristics of excluded studies

Study	Reason for exclusion
Abramson 1964	No clinical outcome
Amundson 1979	Not a clinical trial

Characteristics of excluded studies (*Continued*)

Bromley 1994	Healthy subjects
Curkovic 1993	No sufficient statistical data
Devereaux 1985	No control group
DonTigny 1962	No subjects with rheumatoid arthritis
Feibel 1976	Not a clinical trial
Haines 1970	No RA patients. Survey to estimate the number of hospitals who find it worth while to use cold therapy.
Halliday Pegg 1969	No control group
Harris 1955	No description of the statistical procedure used, no p values and no standard deviations available
Hoyrup 1986	Subjects with traumas
Mainardi 1979	No control group. Patient was his own control.
Oosterveld 1992c	Healthy subjects
Oosterveld 1994	Mixed population with rheumatoid arthritis in minority
Oosterveld 1994b	Literature review
Weinberger 1989	No clinical outcome
Whipple 1992	Healthy subjects

A N A L Y S E S

Comparison 01. 50°F Thermal-pad vs 60°F Thermal-pad (knee)(End of treatment - 72 hrs)

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Pain measurement (amount of morphine injected - mg/h)	1	58	Weighted Mean Difference (Fixed) 95% CI	0.20 [-0.19, 0.59]
02 # of attempts per hour as monitored by a PCA machine (patient controlled analgesia machine)	1	58	Weighted Mean Difference (Fixed) 95% CI	0.20 [-1.14, 1.54]

Comparison 02. 50°F Thermal-pad vs 70°F Thermal-pad (knee)(End of treatment - 72 hrs)

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Pain measurement (amount of morphine injected - mg/h)	1	58	Weighted Mean Difference (Fixed) 95% CI	-0.30 [-1.69, 1.09]
02 # of attempts per hour as monitored by a PCA machine (patient controlled analgesia machine)	1	58	Weighted Mean Difference (Fixed) 95% CI	0.30 [-0.07, 0.67]

Comparison 03. 60°F Thermal-pad vs 70°F Thermal-pad (knee)(End of treatment - 72 hrs)

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Pain measurement (amount of morphine injected - mg/h)	1	60	Weighted Mean Difference (Fixed) 95% CI	0.10 [-0.23, 0.43]
02 # of attempts per hour as monitored by a PCA machine (patient controlled analgesia machine)	1	60	Weighted Mean Difference (Fixed) 95% CI	-0.50 [-1.97, 0.97]

Comparison 04. Ice packs vs Control (knee)(End of therapy - 5 days)

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Thermographic Index (derived from mean temperature, a decrease is good))	1	30	Weighted Mean Difference (Fixed) 95% CI	-0.60 [-1.31, 0.11]
02 Joint circumference (cm)	1	30	Weighted Mean Difference (Fixed) 95% CI	0.70 [-1.46, 2.86]

Comparison 05. Ice packs vs Hot packs (knee)(End of treatment - 5 days)

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 # of patients preferring ice	1	28	Peto Odds Ratio 95% CI	1.76 [0.40, 7.63]
02 # of patients with improved pain grading	1	28	Peto Odds Ratio 95% CI	1.32 [0.31, 5.67]
03 # of patients with improved stiffness grading	1	28	Peto Odds Ratio 95% CI	3.86 [0.77, 19.30]

Comparison 06. Hot packs vs Ice packs (shoulder)(End of treatment - 3 wks)

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Pain (McGill Pain Questionnaire)	1	18	Weighted Mean Difference (Fixed) 95% CI	-1.20 [-7.59, 5.19]
02 Flexion (degrees)	1	18	Weighted Mean Difference (Fixed) 95% CI	7.20 [-15.32, 29.72]
03 Abduction ROM (degrees)	1	18	Weighted Mean Difference (Fixed) 95% CI	3.30 [-24.65, 31.25]

Comparison 07. Wax bath vs Control (hand)(End of treatment - 4 wks)*

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Flexion of the dominant hand (ROM deficit in mm, lower score is better)*	1	28	Weighted Mean Difference (Fixed) 95% CI	-19.10 [-37.36, -0.84]
02 Extension of the dominant hand (ROM deficit in mm, lower score is better)*	1	28	Weighted Mean Difference (Fixed) 95% CI	-11.90 [-23.50, -0.30]
03 Grip Function Test (0-80 pts, 0=worst)*	1	28	Weighted Mean Difference (Fixed) 95% CI	Not estimable
04 Pinch Function Test (0-32 pts, 0=worst)*	1	28	Weighted Mean Difference (Fixed) 95% CI	-0.90 [-1.78, -0.02]

05 Grip strength (N) (average of dominant hand)*	1	28	Weighted Mean Difference (Fixed) 95% CI	-9.50 [-18.76, -0.24]
06 Pain on resisted motion (0-9 pts, 0=no pain)*	1	28	Weighted Mean Difference (Fixed) 95% CI	0.10 [0.00, 0.20]
07 Pain, non-resisted motion with both hands (VAS: 0-100mm)*	1	28	Weighted Mean Difference (Fixed) 95% CI	-7.20 [-14.08, -0.32]
08 Stiffness, both hands (VAS: 0-100mm)*	1	28	Weighted Mean Difference (Fixed) 95% CI	-3.20 [-6.32, -0.08]

Comparison 08. Wax bath + exercises vs exercises (hand) (End of treatment - 4 wks)*

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Flexion of the dominant hand (ROM deficit in mm, lower score is better) *	1	24	Weighted Mean Difference (Fixed) 95% CI	8.30 [0.44, 16.16]
02 Extension of the dominant hand (ROM deficit in mm, lower score is better)*	1	24	Weighted Mean Difference (Fixed) 95% CI	-0.60 [-1.18, -0.02]
03 Grip Function Test (0-80pts, 0=worst)*	1	24	Weighted Mean Difference (Fixed) 95% CI	-1.30 [-2.55, -0.05]
04 Pinch Function Test (0-32 pts, 0=worst)*	1	24	Weighted Mean Difference (Fixed) 95% CI	Not estimable
05 Grip strength (N) (average dominant hand)*	1	24	Weighted Mean Difference (Fixed) 95% CI	-47.00 [-92.38, -1.62]
06 Pain on resisted motion (0-9pts, 0=no pain)*	1	24	Weighted Mean Difference (Fixed) 95% CI	-0.50 [-0.98, -0.02]
07 Pain on non-resisted motion with both hands (VAS:0-100mm)	1	24	Weighted Mean Difference (Fixed) 95% CI	5.10 [0.27, 9.93]
08 Stiffness both hands (VAS: 0-100mm)*	1	24	Weighted Mean Difference (Fixed) 95% CI	-6.20 [-12.19, -0.21]

Comparison 09. Wax bath vs exercises (hand) (End of treatment - 4 wks)*

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Flexion of the dominant hand (ROM deficit in mm, lower score is better)*	1	26	Weighted Mean Difference (Fixed) 95% CI	-0.90 [-1.76, -0.04]
02 Extension of the dominant hand (ROM deficit in mm, lower score is better)*	1	26	Weighted Mean Difference (Fixed) 95% CI	-11.90 [-23.45, -0.35]
03 Grip Function Test (0-80 pts, 0=worst)*	1	26	Weighted Mean Difference (Fixed) 95% CI	-1.10 [-2.17, -0.03]
04 Pinch Function Test (0-32 pts, 0=worst)*	1	26	Weighted Mean Difference (Fixed) 95% CI	-1.00 [-1.97, -0.03]
05 Grip strength (N) (average dominant hand)*	1	26	Weighted Mean Difference (Fixed) 95% CI	-50.30 [-87.53, -13.07]
06 Pain on resisted motion (0-9pts, 0=no pain)*	1	26	Weighted Mean Difference (Fixed) 95% CI	0.30 [0.01, 0.59]

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
07 Pain on non-resisted motion with both hands (VAS: 0-100mm)*	1	26	Weighted Mean Difference (Fixed) 95% CI	8.90 [0.44, 17.36]
08 Stiffness, both hands (VAS: 0-100mm)*	1	26	Weighted Mean Difference (Fixed) 95% CI	-4.10 [-8.08, -0.12]

Comparison 10. Exercises vs control (Hand) (End of treatment - 4 wks)*

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Flexion of dominant hand (ROM deficit in mm, lower score is better)*	1	24	Weighted Mean Difference (Fixed) 95% CI	-18.20 [-28.20, -8.20]
02 Extension of dominant hand (ROM deficit in mm, lower score is better)*	1	24	Weighted Mean Difference (Fixed) 95% CI	-9.40 [-18.47, -0.33]
03 Grip Function Test (0-80 pts, 0=worst)*	1	24	Weighted Mean Difference (Fixed) 95% CI	1.10 [0.04, 2.16]
04 Pinch Function Test (0-32 pts, 0=worst)*	1	24	Weighted Mean Difference (Fixed) 95% CI	0.10 [0.00, 0.20]
05 Grip strength (N) (average of dominant hand)*	1	24	Weighted Mean Difference (Fixed) 95% CI	24.30 [0.84, 47.76]
06 Pain on resisted motion (0-9 pts, 0=no pain)*	1	24	Weighted Mean Difference (Fixed) 95% CI	-0.20 [-0.39, -0.01]
07 Pain on non resisted motion with both hands (VAS: 0-100mm)*	1	24	Weighted Mean Difference (Fixed) 95% CI	-16.10 [-31.35, -0.85]
08 Stiffness, both hands (VAS: 0-100mm)*	1	24	Weighted Mean Difference (Fixed) 95% CI	0.90 [0.03, 1.77]

Comparison 11. Wax vs Ultrasound (Hand) (End of treatment - 1 wk)*

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Hand Grip (mmHg)*	1	20	Weighted Mean Difference (Fixed) 95% CI	18.00 [-253.38, 289.38]
02 PIP circumference (mm)*	1	20	Weighted Mean Difference (Fixed) 95% CI	6.00 [-24.15, 36.15]
03 Articular Index (0-3 scale, 0=no pain)*	1	20	Weighted Mean Difference (Fixed) 95% CI	1.00 [-4.02, 6.02]
04 Timed Task (sec.)*	1	20	Weighted Mean Difference (Fixed) 95% CI	-6.00 [-51.23, 39.23]
05 Activity score (checklist, higher score=better)*	1	20	Weighted Mean Difference (Fixed) 95% CI	0.10 [-0.40, 0.60]

Comparison 12. Wax vs Ultrasound (Hand) (End of treatment - 2 wks)*

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Hand Grip (mmHg)*	1	20	Weighted Mean Difference (Fixed) 95% CI	23.00 [-323.23, 369.23]
02 PIP circumference (mm)*	1	20	Weighted Mean Difference (Fixed) 95% CI	5.00 [-20.13, 30.13]
03 Articular Index (0-3 scale, 0=no pain)*	1	20	Weighted Mean Difference (Fixed) 95% CI	1.00 [-4.02, 6.02]

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
04 Timed Task (sec)*	1	20	Weighted Mean Difference (Fixed) 95% CI	-7.00 [-59.77, 45.77]
05 Activity score (checklist, higher score=better)*	1	20	Weighted Mean Difference (Fixed) 95% CI	0.30 [-1.21, 1.81]

Comparison 13. Wax vs Ultrasound (Hand) (End of treatment -3 wks)*

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Hand Grip (mmHg)*	1	20	Weighted Mean Difference (Fixed) 95% CI	22.00 [-309.68, 353.68]
02 PIP circumference (mm)	1	20	Weighted Mean Difference (Fixed) 95% CI	6.00 [-24.15, 36.15]
03 Articular Index (0-3 scale, 0=no pain)*	1	20	Weighted Mean Difference (Fixed) 95% CI	1.00 [-4.02, 6.02]
04 ROM (mm)*	1	20	Weighted Mean Difference (Fixed) 95% CI	21.00 [-2.79, 44.79]
05 Timed Task (sec)*	1	20	Weighted Mean Difference (Fixed) 95% CI	-7.00 [-59.77, 45.77]
06 Activity score (checklist, higher score=better)*	1	20	Weighted Mean Difference (Fixed) 95% CI	0.20 [-0.81, 1.21]

Comparison 14. Faradic bath vs Control (Hand) (End of treatment - 1 wk)*

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Hand grip (mmHg)*	1	20	Weighted Mean Difference (Fixed) 95% CI	11.00 [-154.85, 176.85]
02 PIP circumference (mm)*	1	20	Weighted Mean Difference (Fixed) 95% CI	27.00 [-108.69, 162.69]
03 Articular Index (0-3 scale, 0=no pain)*	1	22	Weighted Mean Difference (Fixed) 95% CI	2.00 [-7.63, 11.63]
04 Time Task (sec)*	1	20	Weighted Mean Difference (Fixed) 95% CI	-8.00 [-68.30, 52.30]
05 Activity score (checklist, higher score=better)*	1	20	Weighted Mean Difference (Fixed) 95% CI	0.50 [-6.69, 7.69]

Comparison 15. Faradic bath vs Control (Hand) (End of treatment - 2 wks)*

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Hand Grip (mmHg)*	1	20	Weighted Mean Difference (Fixed) 95% CI	7.00 [-98.53, 112.53]
02 PIP circumference (mm)*	1	20	Weighted Mean Difference (Fixed) 95% CI	26.00 [-104.66, 156.66]
03 Articular Index (0-3 scale, 0=pain)*	1	20	Weighted Mean Difference (Fixed) 95% CI	3.00 [-12.08, 18.08]
04 Timed Task (sec)*	1	20	Weighted Mean Difference (Fixed) 95% CI	-7.00 [-59.77, 45.77]
05 Activity score (checklist, higher score=better)*	1	20	Weighted Mean Difference (Fixed) 95% CI	0.30 [0.02, 0.58]

Comparison 16. Faradic bath vs Control (Hand) (End of treatment - 3 wks)*

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Hand Grip (mmHg)*	1	20	Weighted Mean Difference (Fixed) 95% CI	10.00 [-140.77, 160.77]
02 PIP circumference (mm)*	1	20	Weighted Mean Difference (Fixed) 95% CI	25.00 [-100.64, 150.64]
03 Articular Index (0-3) scale, 0=no pain)*	1	20	Weighted Mean Difference (Fixed) 95% CI	5.00 [-20.13, 30.13]
04 ROM (mm)*	1	20	Weighted Mean Difference (Fixed) 95% CI	8.00 [-1.06, 17.06]
05 Timed Task (sec)*	1	20	Weighted Mean Difference (Fixed) 95% CI	-5.00 [-42.69, 32.69]
06 Activity score (checklist, higher score=better)*	1	20	Weighted Mean Difference (Fixed) 95% CI	-1.30 [-2.51, -0.09]

Comparison 17. Wax vs Faradic bath +Ultrasound (Hand) (End of treatment - 1 week)*

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Hand grip (mmHg)*	1	20	Weighted Mean Difference (Fixed) 95% CI	7.00 [-98.53, 112.53]
02 PIP circumference (mm)*	1	20	Weighted Mean Difference (Fixed) 95% CI	-21.00 [-126.53, 84.53]
03 Articular index (0-3 scale, 0=no pain)*	1	20	Weighted Mean Difference (Fixed) 95% CI	-1.00 [-6.02, 4.02]
04 Timed task (sec)*	1	20	Weighted Mean Difference (Fixed) 95% CI	2.00 [-13.08, 17.08]
05 Activity score (checklist, higher is better)*	1	20	Weighted Mean Difference (Fixed) 95% CI	-0.40 [-0.78, -0.02]

Comparison 18. Wax vs Faradic bath + Ultrasound (Hand) (End of treatment - 2 weeks)*

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Hand grip (mmHg)*	1	20	Weighted Mean Difference (Fixed) 95% CI	16.00 [-225.23, 257.23]
02 PIP circumference (mm)*	1	20	Weighted Mean Difference (Fixed) 95% CI	-21.00 [-126.53, 84.53]
03 Articular index (0-3 scale, 0=no pain)*	1	20	Weighted Mean Difference (Fixed) 95% CI	-2.00 [-12.05, 8.05]
04 Timed task (sec)*	1	20	Weighted Mean Difference (Fixed) 95% CI	Not estimable
05 Activity score (checklist, higher is better)*	1	20	Weighted Mean Difference (Fixed) 95% CI	Not estimable

Comparison 19. Wax vs Faradic bath + Ultrasound (Hand) (End of treatment - 3 weeks)*

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Hand grip (mmHg)*	1	20	Weighted Mean Difference (Fixed) 95% CI	12.00 [-168.56, 192.56]
02 PIP circumference (mm)*	1	20	Weighted Mean Difference (Fixed) 95% CI	-19.00 [-114.49, 76.49]

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
03 Articular index (sec)*	1	20	Weighted Mean Difference (Fixed) 95% CI	-4.00 [-24.10, 16.10]
04 Timed task (sec)*	1	20	Weighted Mean Difference (Fixed) 95% CI	-2.00 [-17.08, 13.08]
05 Activity score (checklist, higher is better)*	1	20	Weighted Mean Difference (Fixed) 95% CI	1.50 [0.10, 2.90]
06 ROM (mm)*	1	20	Weighted Mean Difference (Fixed) 95% CI	13.00 [-1.73, 27.73]

Comparison 20. Cryotherapy vs Control (Hand) (End of treatment-2 days)*

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 % of change in post-surgery oedema increase (lower is better)*	1	30	Weighted Mean Difference (Fixed) 95% CI	-5.80 [-11.78, 0.18]

Comparison 21. Cryotherapy vs Control (Hand) (End of treatment-3 days)*

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 % of change in post-surgery oedema increase (lower % is better)*	1	30	Weighted Mean Difference (Fixed) 95% CI	-9.80 [-19.91, 0.31]

Comparison 22. Cryotherapy vs Control (Hand) (End of treatment-4 days)*

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 % of change in post-surgery oedema increase (lower % is better)*	1	30	Weighted Mean Difference (Fixed) 95% CI	-0.80 [-1.62, 0.02]

INDEX TERMS

Medical Subject Headings (MeSH)

Arthritis, Rheumatoid [*therapy]; Combined Modality Therapy; Controlled Clinical Trials as Topic; *Cryotherapy; *Hyperthermia, Induced; Randomized Controlled Trials as Topic

MeSH check words

Humans

COVER SHEET

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Contribution of author(s)	VR was responsible for writing the manuscript, extracting and analyzing data and selecting trials of the initial review.
	LB contributed data extraction, update of the selection of the reference list, update of the analyses and update of the interpretation of results.
	MJ developed the search strategy.
	BS, GW and PT contributed methodological expertise and commented on early drafts.

MJ provided feedback and editorial support for final drafts.
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Analysis 01.01. Comparison 01 50°F Thermal-pad vs 60°F Thermal-pad (knee)(End of treatment - 72 hrs), Outcome 01 Pain measurement (amount of morphine injected - mg/h)

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 01 50F Thermal-pad vs 60F Thermal-pad (knee)(End of treatment - 72 hrs)

Outcome: 01 Pain measurement (amount of morphine injected - mg/h)

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Ivey 1994	28	1.60 (0.80)	30	1.40 (0.70)		100.0	0.20 [-0.19, 0.59]
Total (95% CI)	**28**		**30**			**100.0**	**0.20 [-0.19, 0.59]**

Test for heterogeneity: not applicable

Test for overall effect z=1.01 p=0.3

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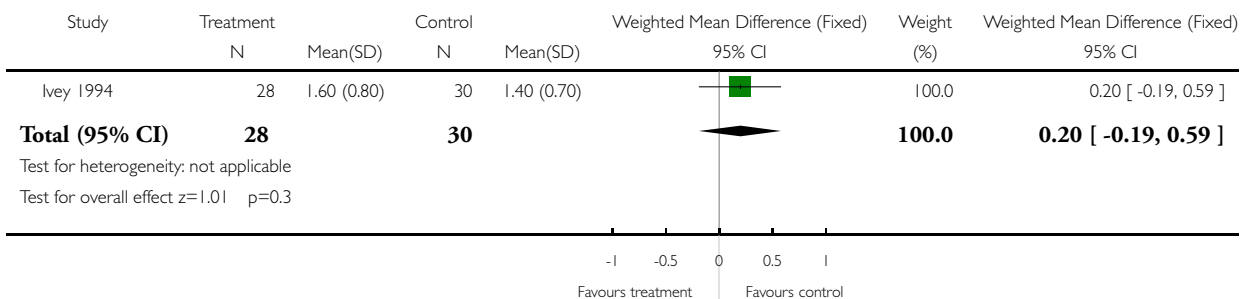
Analysis 01.02. Comparison 01 50°F Thermal-pad vs 60°F Thermal-pad (knee)(End of treatment - 72 hrs), Outcome 02 # of attempts per hour as monitored by a PCA machine (patient controlled analgesia machine)

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 01 50F Thermal-pad vs 60F Thermal-pad (knee)(End of treatment - 72 hrs)

Outcome: 02 # of attempts per hour as monitored by a PCA machine (patient controlled analgesia machine)

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Ivey 1994	28	3.60 (2.40)	30	3.40 (2.80)		100.0	0.20 [-1.14, 1.54]
Total (95% CI)	**28**		**30**			**100.0**	**0.20 [-1.14, 1.54]**

Test for heterogeneity: not applicable

Test for overall effect z=0.29 p=0.8

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      Favours treatment   Favours control
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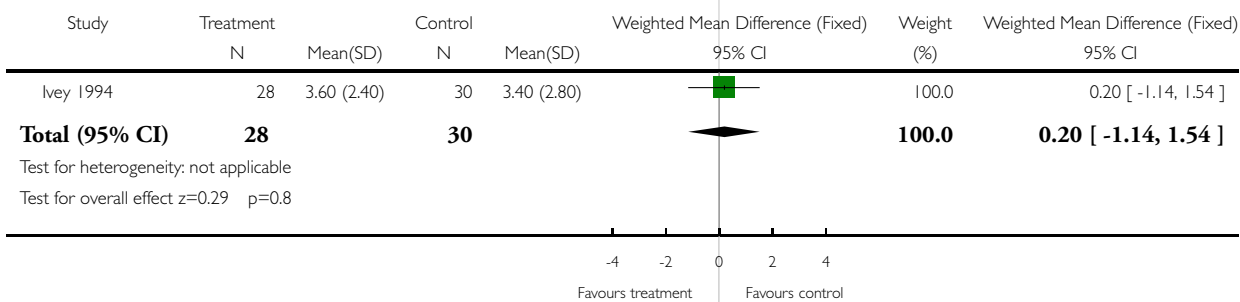
Analysis 02.01.   Comparison 02 50°F Thermal-pad vs 70°F Thermal-pad (knee)(End of treatment - 72 hrs), Outcome 01 Pain measurement (amount of morphine injected - mg/h)

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 02 50F Thermal-pad vs 70F Thermal-pad (knee)(End of treatment - 72 hrs)

Outcome: 01 Pain measurement (amount of morphine injected - mg/h)

Study	Treatment N	Mean(SD)	Control N	Mean(SD)	Weighted Mean Difference (Fixed) 95% CI	Weight (%)	Weighted Mean Difference (Fixed) 95% CI
Ivey 1994	28	3.60 (2.40)	30	3.90 (3.00)		100.0	-0.30 [-1.69, 1.09]
Total (95% CI)	**28**		**30**			**100.0**	**-0.30 [-1.69, 1.09]**

Test for heterogeneity: not applicable

Test for overall effect z=0.42   p=0.7

-10   -5   0   5   10

Favours treatment   Favours control
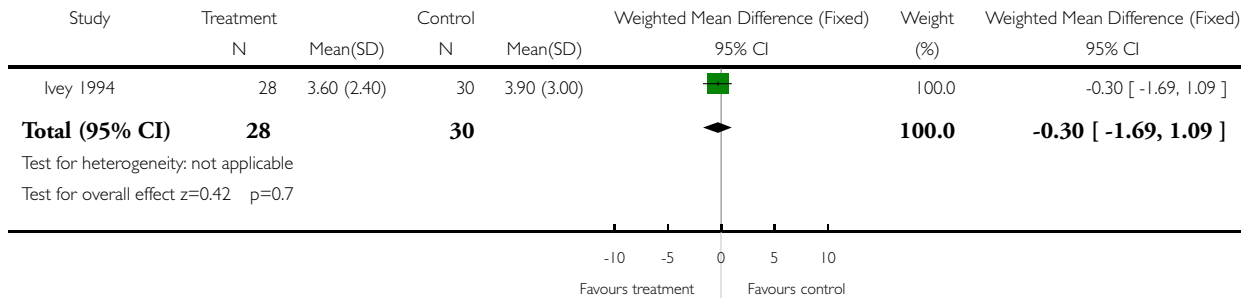
Analysis 02.02.   Comparison 02 50°F Thermal-pad vs 70°F Thermal-pad (knee)(End of treatment - 72 hrs), Outcome 02 # of attempts per hour as monitored by a PCA machine (patient controlled analgesia machine)

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 02 50F Thermal-pad vs 70F Thermal-pad (knee)(End of treatment - 72 hrs)

Outcome: 02 # of attempts per hour as monitored by a PCA machine (patient controlled analgesia machine)

Study	Treatment N	Mean(SD)	Control N	Mean(SD)	Weighted Mean Difference (Fixed) 95% CI	Weight (%)	Weighted Mean Difference (Fixed) 95% CI
Ivey 1994	28	1.60 (0.80)	30	1.30 (0.60)		100.0	0.30 [-0.07, 0.67]
Total (95% CI)	**28**		**30**			**100.0**	**0.30 [-0.07, 0.67]**

Test for heterogeneity: not applicable

Test for overall effect z=1.61   p=0.1

-4   -2   0   2   4

Favours treatment   Favours control
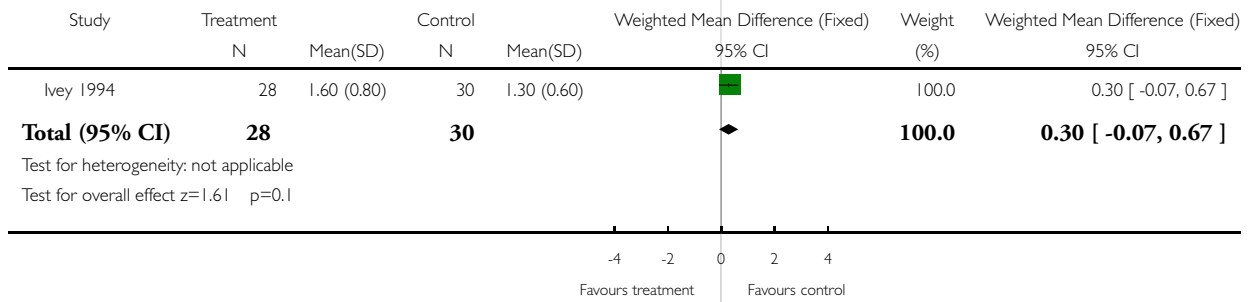
Analysis 03.01.   Comparison 03 60°F Thermal-pad vs 70°F Thermal-pad (knee)(End of treatment - 72 hrs), Outcome 01 Pain measurement (amount of morphine injected - mg/h)

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 03 60F Thermal-pad vs 70F Thermal-pad (knee)(End of treatment - 72 hrs)

Outcome: 01 Pain measurement (amount of morphine injected - mg/h)

Study	Treatment N	Mean(SD)	Control N	Mean(SD)	Weighted Mean Difference (Fixed) 95% CI	Weight (%)	Weighted Mean Difference (Fixed) 95% CI
Ivey 1994	30	1.40 (0.70)	30	1.30 (0.60)		100.0	0.10 [-0.23, 0.43]
Total (95% CI)	**30**		**30**			**100.0**	**0.10 [-0.23, 0.43]**

Test for heterogeneity: not applicable

Test for overall effect z=0.59   p=0.6

-10   -5   0   5   10

Favours treatment   Favours control
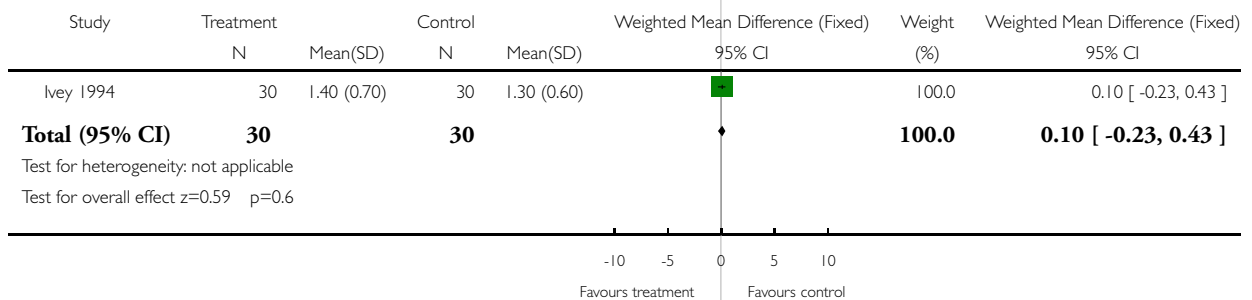
Analysis 03.02.   Comparison 03 60°F Thermal-pad vs 70°F Thermal-pad (knee)(End of treatment - 72 hrs), Outcome 02 # of attempts per hour as monitored by a PCA machine (patient controlled analgesia machine)

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 03 60F Thermal-pad vs 70F Thermal-pad (knee)(End of treatment - 72 hrs)

Outcome: 02 # of attempts per hour as monitored by a PCA machine (patient controlled analgesia machine)

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Ivey 1994	30	3.40 (2.80)	30	3.90 (3.00)		100.0	-0.50 [-1.97, 0.97]
Total (95% CI)	**30**		**30**			**100.0**	**-0.50 [-1.97, 0.97]**

Test for heterogeneity: not applicable

Test for overall effect z=0.67   p=0.5

```
        -10    -5     0     5    10
       Favours treatment   Favours control
```
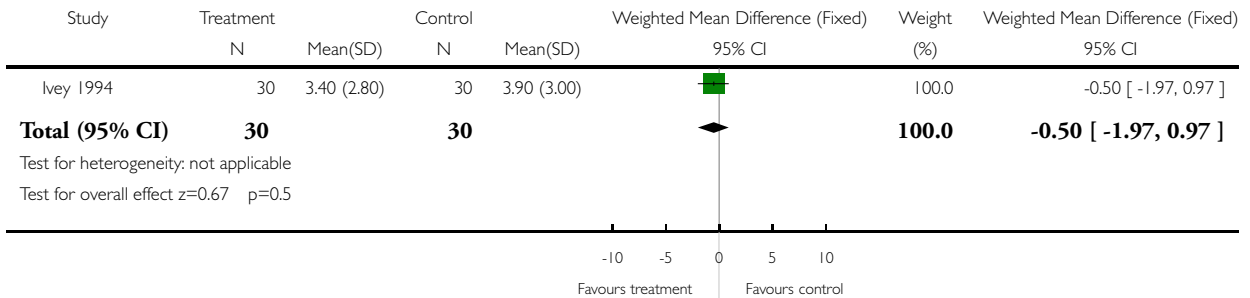
Analysis 04.01.   Comparison 04 Ice packs vs Control (knee)(End of therapy - 5 days), Outcome 01 Thermographic Index (derived from mean temperature, a decrease is good))

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 04 Ice packs vs Control (knee)(End of therapy - 5 days)

Outcome: 01 Thermographic Index (derived from mean temperature, a decrease is good))

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Bulstrode 1986	15	4.60 (1.12)	15	5.20 (0.86)		100.0	-0.60 [-1.31, 0.11]
Total (95% CI)	**15**		**15**			**100.0**	**-0.60 [-1.31, 0.11]**

Test for heterogeneity: not applicable

Test for overall effect z=1.65   p=0.1

```
        -4    -2     0     2     4
       Favours treatment   Favours control
```
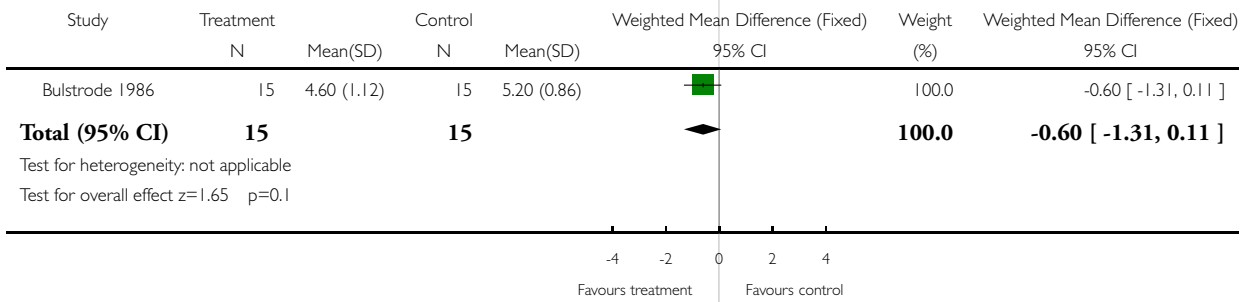
Analysis 04.02.   Comparison 04 Ice packs vs Control (knee)(End of therapy - 5 days), Outcome 02 Joint circumference (cm)

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 04 Ice packs vs Control (knee)(End of therapy - 5 days)

Outcome: 02 Joint circumference (cm)

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Bulstrode 1986	15	39.60 (2.46)	15	38.90 (3.48)		100.0	0.70 [-1.46, 2.86]
Total (95% CI)	**15**		**15**			**100.0**	**0.70 [-1.46, 2.86]**

Test for heterogeneity: not applicable

Test for overall effect z=0.64   p=0.5

```
        -10    -5     0     5    10
       Favours treatment   Favours control
```
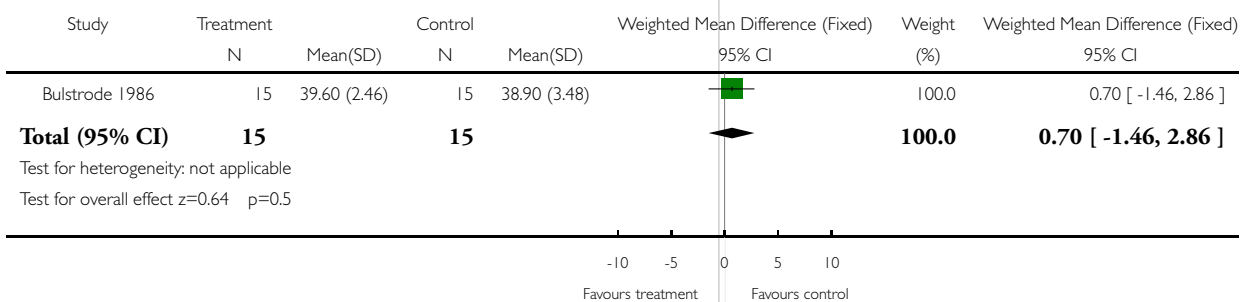
Analysis 05.01.   Comparison 05 Ice packs vs Hot packs (knee)(End of treatment - 5 days), Outcome 01 # of patients prefering ice

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 05 Ice packs vs Hot packs (knee)(End of treatment - 5 days)

Outcome: 01 # of patients prefering ice

Study	Treatment n/N	Control n/N	Peto Odds Ratio 95% CI	Weight (%)	Peto Odds Ratio 95% CI
Kirk 1968	7/14	5/14		100.0	1.76 [0.40, 7.63]
Total (95% CI)	**14**	**14**		**100.0**	**1.76 [0.40, 7.63]**

Total events: 7 (Treatment), 5 (Control)

Test for heterogeneity: not applicable

Test for overall effect z=0.75   p=0.5

0.1 0.2 0.5   1   2   5   10

Favours control   Favours treatment
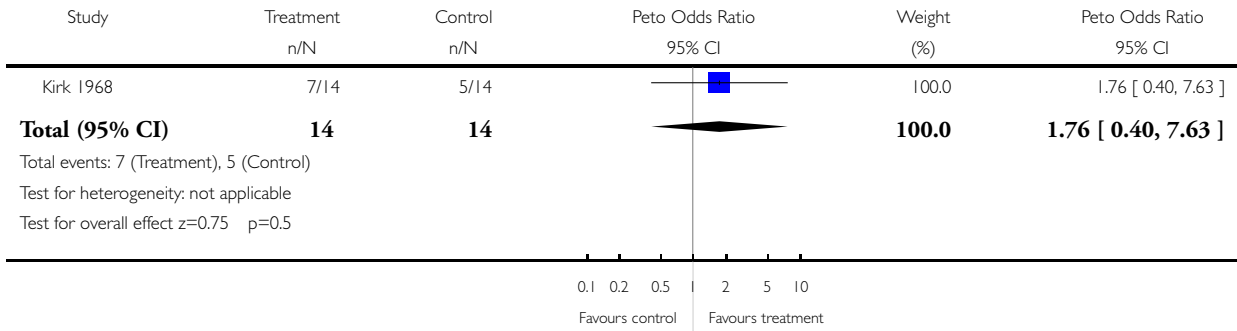
Analysis 05.02.   Comparison 05 Ice packs vs Hot packs (knee)(End of treatment - 5 days), Outcome 02 # of patients with improved pain grading

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 05 Ice packs vs Hot packs (knee)(End of treatment - 5 days)

Outcome: 02 # of patients with improved pain grading

Study	Treatment n/N	Control n/N	Peto Odds Ratio 95% CI	Weight (%)	Peto Odds Ratio 95% CI
Kirk 1968	7/14	6/14		100.0	1.32 [0.31, 5.67]
Total (95% CI)	**14**	**14**		**100.0**	**1.32 [0.31, 5.67]**

Total events: 7 (Treatment), 6 (Control)

Test for heterogeneity: not applicable

Test for overall effect z=0.37   p=0.7

0.1 0.2 0.5   1   2   5   10

Favours control   Favours treatment
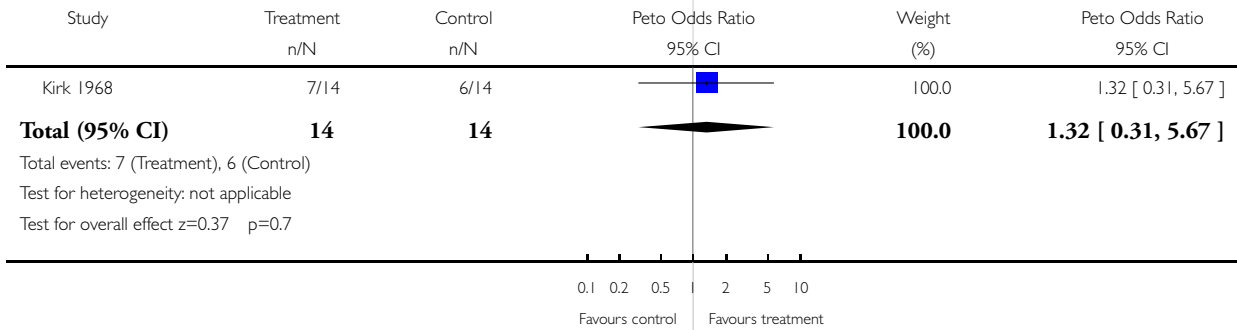
Analysis 05.03.   Comparison 05 Ice packs vs Hot packs (knee)(End of treatment - 5 days), Outcome 03 # of patients with improved stiffness grading

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 05 Ice packs vs Hot packs (knee)(End of treatment - 5 days)

Outcome: 03 # of patients with improved stiffness grading

Study	Treatment n/N	Control n/N	Peto Odds Ratio 95% CI	Weight (%)	Peto Odds Ratio 95% CI
Kirk 1968	6/14	2/14		100.0	3.86 [0.77, 19.30]
Total (95% CI)	**14**	**14**		**100.0**	**3.86 [0.77, 19.30]**

Total events: 6 (Treatment), 2 (Control)

Test for heterogeneity: not applicable

Test for overall effect z=1.64   p=0.1

```
        0.01   0.1    I    10   100
        Favours control   Favours treatment
```
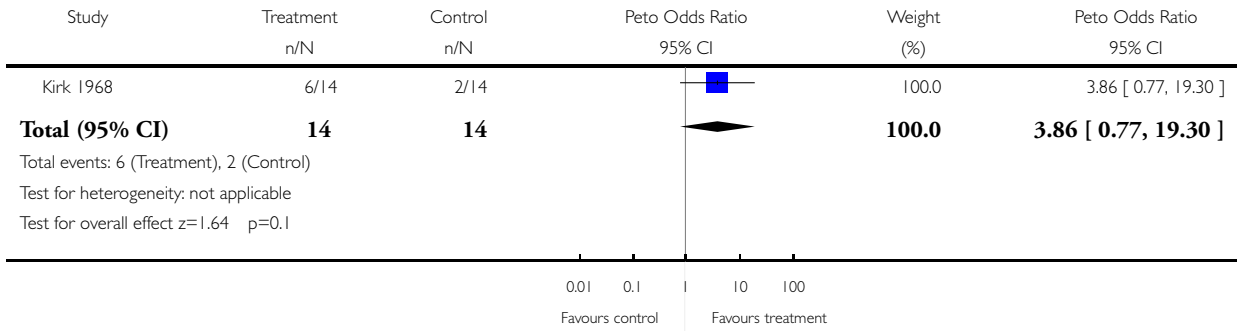
Analysis 06.01.   Comparison 06 Hot packs vs Ice packs (shoulder)(End of treatment - 3 wks), Outcome 01 Pain (McGill Pain Questionnaire)

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 06 Hot packs vs Ice packs (shoulder)(End of treatment - 3 wks)

Outcome: 01 Pain (McGill Pain Questionnaire)

Study	Treatment N	Mean(SD)	Control N	Mean(SD)	Weighted Mean Difference (Fixed) 95% CI	Weight (%)	Weighted Mean Difference (Fixed) 95% CI
Williams 1986	9	5.70 (8.40)	9	6.90 (5.00)		100.0	-1.20 [-7.59, 5.19]
Total (95% CI)	**9**		**9**			**100.0**	**-1.20 [-7.59, 5.19]**

Test for heterogeneity: not applicable

Test for overall effect z=0.37   p=0.7

```
       -10   -5    0    5    10
       Favours treatment   Favours control
```
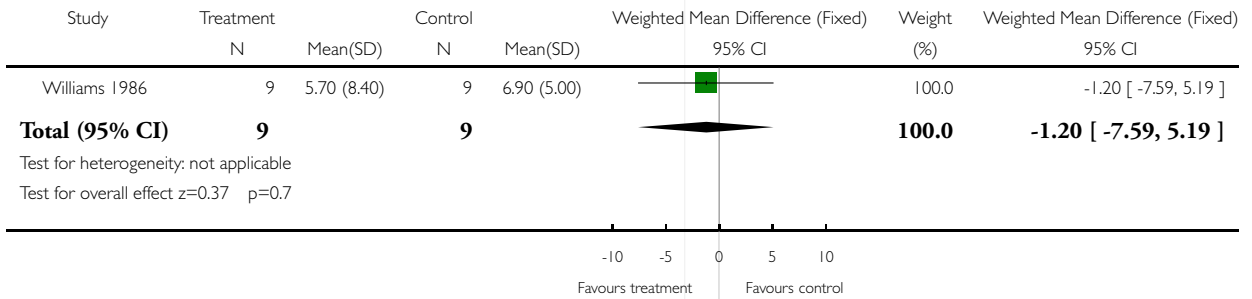
Analysis 06.02.   Comparison 06 Hot packs vs Ice packs (shoulder)(End of treatment - 3 wks), Outcome 02 Flexion (degrees)

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 06 Hot packs vs Ice packs (shoulder)(End of treatment - 3 wks)

Outcome: 02 Flexion (degrees)

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Williams 1986	9	12.20 (12.80)	9	5.00 (32.00)		100.0	7.20 [-15.32, 29.72]
Total (95% CI)	**9**		**9**			**100.0**	**7.20 [-15.32, 29.72]**

Test for heterogeneity: not applicable

Test for overall effect z=0.63   p=0.5

-100   -50   0   50   100

Favours control   Favours treatment
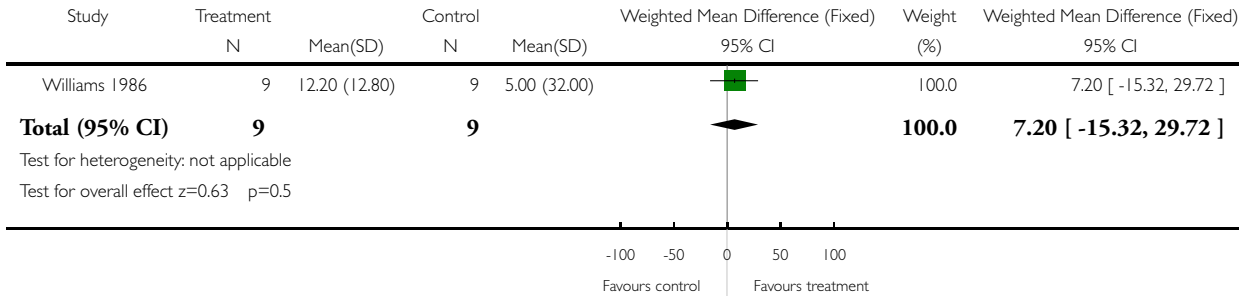
Analysis 06.03.   Comparison 06 Hot packs vs Ice packs (shoulder)(End of treatment - 3 wks), Outcome 03 Abduction ROM (degrees)

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 06 Hot packs vs Ice packs (shoulder)(End of treatment - 3 wks)

Outcome: 03 Abduction ROM (degrees)

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Williams 1986	9	26.10 (21.30)	9	22.80 (37.10)		100.0	3.30 [-24.65, 31.25]
Total (95% CI)	**9**		**9**			**100.0**	**3.30 [-24.65, 31.25]**

Test for heterogeneity: not applicable

Test for overall effect z=0.23   p=0.8

-100   -50   0   50   100

Favours control   Favours treatment
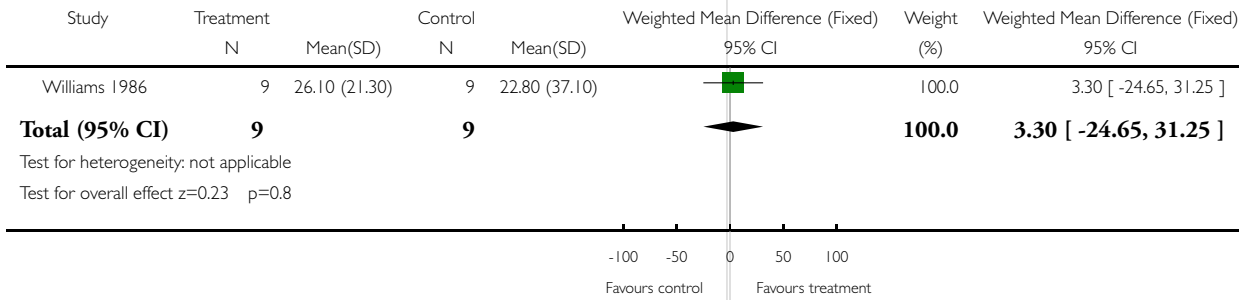
Analysis 07.01.   Comparison 07 Wax bath vs Control (hand)(End of treatment - 4 wks)*, Outcome 01 Flexion of the dominant hand (ROM deficit in mm, lower score is better)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 07 Wax bath vs Control (hand)(End of treatment - 4 wks)*

Outcome: 01 Flexion of the dominant hand (ROM deficit in mm, lower score is better)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Dellhag 1992	15	42.90 (24.59)	13	62.00 (24.59)		100.0	-19.10 [-37.36, -0.84]
Total (95% CI)	**15**		**13**			**100.0**	**-19.10 [-37.36, -0.84]**

Test for heterogeneity: not applicable

Test for overall effect z=2.05   p=0.04

-100   -50   0   50   100

Favours treatment   Favours control
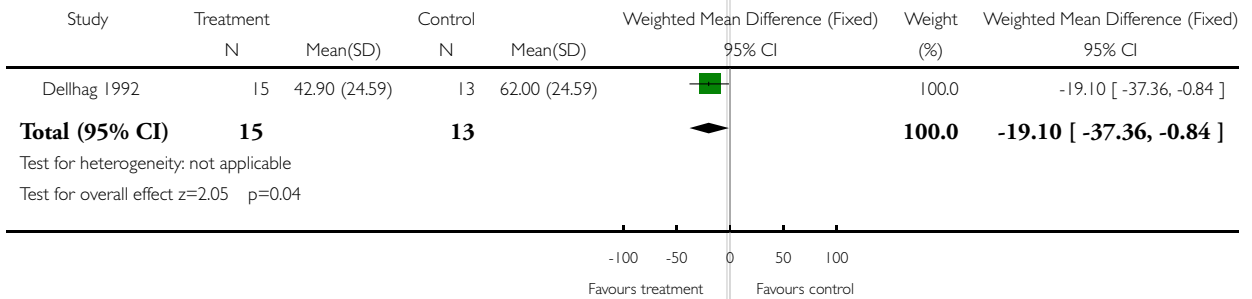
Analysis 07.02.   Comparison 07 Wax bath vs Control (hand)(End of treatment - 4 wks)*, Outcome 02 Extension of the dominant hand (ROM deficit in mm, lower score is better)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 07 Wax bath vs Control (hand)(End of treatment - 4 wks)*

Outcome: 02 Extension of the dominant hand (ROM deficit in mm, lower score is better)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Dellhag 1992	15	21.60 (15.62)	13	33.50 (15.62)		100.0	-11.90 [-23.50, -0.30]
Total (95% CI)	**15**		**13**			**100.0**	**-11.90 [-23.50, -0.30]**

Test for heterogeneity: not applicable

Test for overall effect z=2.01   p=0.04

```
        -100   -50    0    50   100
        Favours treatment   Favours control
```
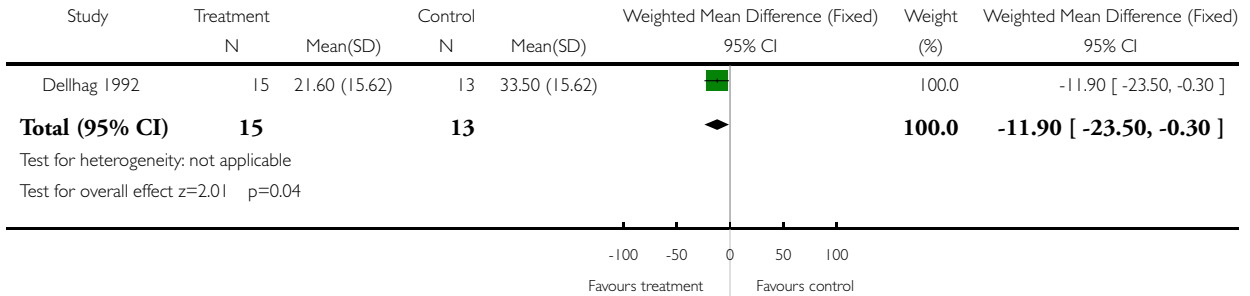
Analysis 07.03.   Comparison 07 Wax bath vs Control (hand)(End of treatment - 4 wks)*, Outcome 03 Grip Function Test (0-80 pts, 0=worst)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 07 Wax bath vs Control (hand)(End of treatment - 4 wks)*

Outcome: 03 Grip Function Test (0-80 pts, 0=worst)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Dellhag 1992	15	75.00 (0.0)	13	75.00 (0.0)		0.0	Not estimable
Total (95% CI)	**15**		**13**			**0.0**	**Not estimable**

Test for heterogeneity: not applicable

Test for overall effect: not applicable

```
        -10    -5    0    5    10
        Favours treatment   Favours control
```
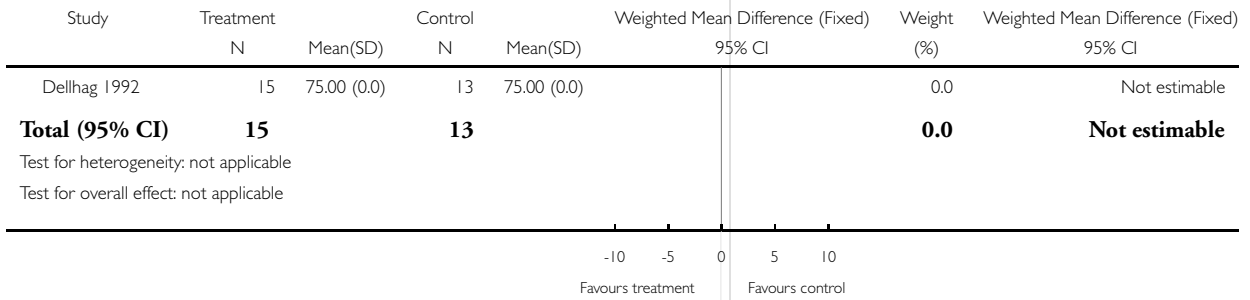
Analysis 07.04.   Comparison 07 Wax bath vs Control (hand)(End of treatment - 4 wks)*, Outcome 04 Pinch Function Test (0-32 pts, 0=worst)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 07 Wax bath vs Control (hand)(End of treatment - 4 wks)*

Outcome: 04 Pinch Function Test (0-32 pts, 0=worst)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Dellhag 1992	15	28.30 (1.18)	13	29.20 (1.18)		100.0	-0.90 [-1.78, -0.02]
Total (95% CI)	**15**		**13**			**100.0**	**-0.90 [-1.78, -0.02]**

Test for heterogeneity: not applicable

Test for overall effect z=2.01   p=0.04

```
        -4    -2    0    2    4
        Favours control   Favours treatment
```
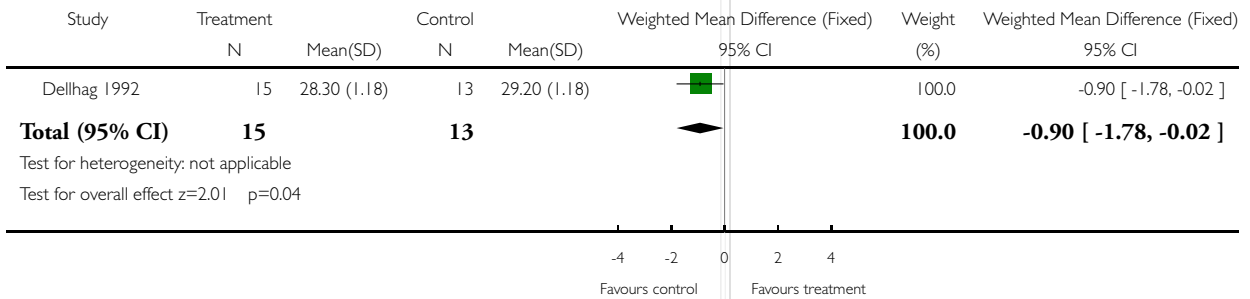
Analysis 07.05.   Comparison 07 Wax bath vs Control (hand)(End of treatment - 4 wks)*, Outcome 05 Grip strength (N) (average of dominant hand)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 07 Wax bath vs Control (hand)(End of treatment - 4 wks)*

Outcome: 05 Grip strength (N) (average of dominant hand)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Dellhag 1992	15	75.90 (12.47)	13	85.40 (12.47)		100.0	-9.50 [-18.76, -0.24]
Total (95% CI)	**15**		**13**			**100.0**	**-9.50 [-18.76, -0.24]**

Test for heterogeneity: not applicable

Test for overall effect z=2.01   p=0.04

```
        -100    -50     0      50    100
        Favours control      Favours treatment
```
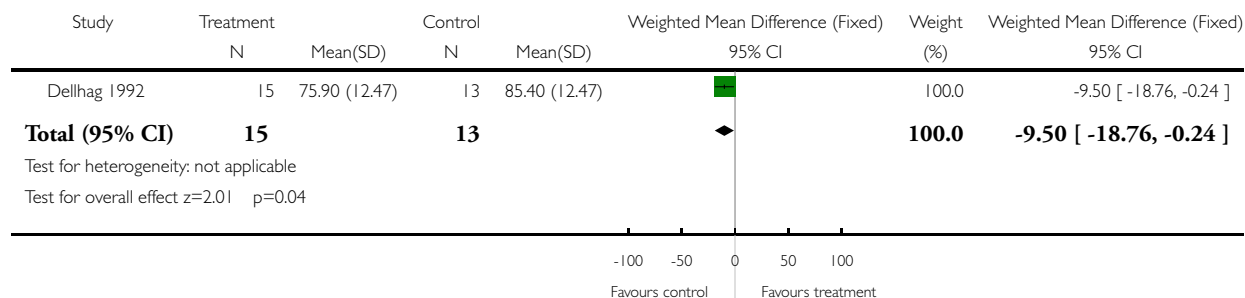
Analysis 07.06.   Comparison 07 Wax bath vs Control (hand)(End of treatment - 4 wks)*, Outcome 06 Pain on resisted motion (0-9 pts, 0=no pain)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 07 Wax bath vs Control (hand)(End of treatment - 4 wks)*

Outcome: 06 Pain on resisted motion (0-9 pts, 0=no pain)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Dellhag 1992	15	1.60 (0.13)	13	1.50 (0.13)		100.0	0.10 [0.00, 0.20]
Total (95% CI)	**15**		**13**			**100.0**	**0.10 [0.00, 0.20]**

Test for heterogeneity: not applicable

Test for overall effect z=2.03   p=0.04

```
       -0.5   -0.25    0     0.25   0.5
       Favours treatment     Favours control
```

Analysis 07.07.   Comparison 07 Wax bath vs Control (hand)(End of treatment - 4 wks)*, Outcome 07 Pain, non-resisted motion with both hands (VAS: 0-100mm)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 07 Wax bath vs Control (hand)(End of treatment - 4 wks)*

Outcome: 07 Pain, non-resisted motion with both hands (VAS: 0-100mm)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Dellhag 1992	15	25.90 (9.27)	13	33.10 (9.27)		100.0	-7.20 [-14.08, -0.32]
Total (95% CI)	**15**		**13**			**100.0**	**-7.20 [-14.08, -0.32]**

Test for heterogeneity: not applicable

Test for overall effect z=2.05   p=0.04

```
        -100    -50     0      50    100
        Favours treatment     Favours control
```
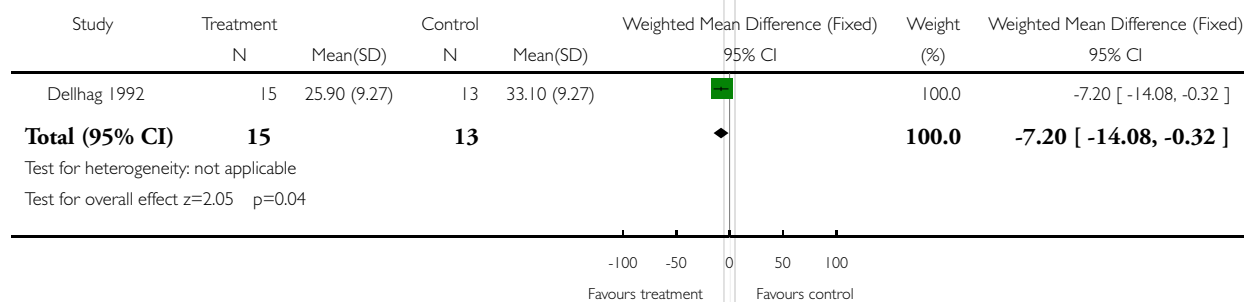
Analysis 07.08.   Comparison 07 Wax bath vs Control (hand)(End of treatment - 4 wks)*, Outcome 08 Stiffness, both hands (VAS: 0-100mm)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 07 Wax bath vs Control (hand)(End of treatment - 4 wks)*

Outcome: 08 Stiffness, both hands (VAS: 0-100mm)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Dellhag 1992	15	27.00 (4.20)	13	30.20 (4.20)		100.0	-3.20 [-6.32, -0.08]
Total (95% CI)	**15**		**13**			**100.0**	**-3.20 [-6.32, -0.08]**

Test for heterogeneity: not applicable

Test for overall effect z=2.01   p=0.04

```
        -10   -5    0    5    10
     Favours treatment   Favours control
```
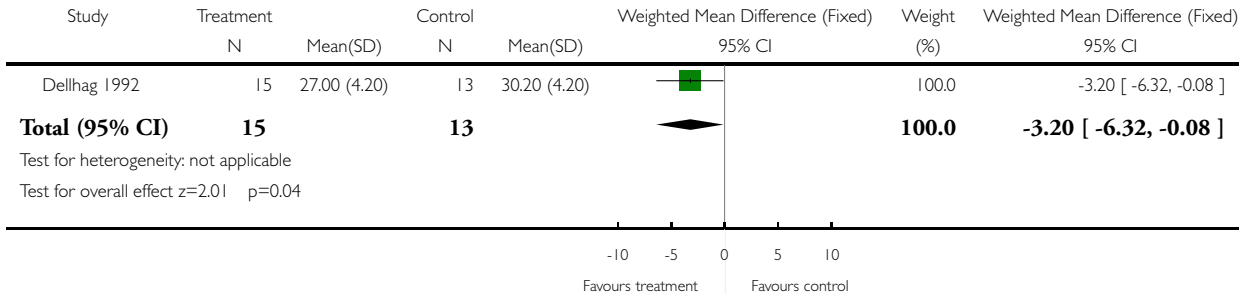
Analysis 08.01.   Comparison 08 Wax bath + exercises vs exercises (hand) (End of treatment - 4 wks)*, Outcome 01 Flexion of the dominant hand (ROM deficit in mm, lower score is better) *

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 08 Wax bath + exercises vs exercises (hand) (End of treatment - 4 wks)*

Outcome: 01 Flexion of the dominant hand (ROM deficit in mm, lower score is better) *

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Dellhag 1992	13	52.10 (9.79)	11	43.80 (9.79)		100.0	8.30 [0.44, 16.16]
Total (95% CI)	**13**		**11**			**100.0**	**8.30 [0.44, 16.16]**

Test for heterogeneity: not applicable

Test for overall effect z=2.07   p=0.04

```
        -10   -5    0    5    10
     Favours control   Favours
```

Analysis 08.02.   Comparison 08 Wax bath + exercises vs exercises (hand) (End of treatment - 4 wks)*, Outcome 02 Extension of the dominant hand (ROM deficit in mm, lower score is better)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 08 Wax bath + exercises vs exercises (hand) (End of treatment - 4 wks)*

Outcome: 02 Extension of the dominant hand (ROM deficit in mm, lower score is better)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Dellhag 1992	13	32.90 (0.72)	11	33.50 (0.72)		100.0	-0.60 [-1.18, -0.02]
Total (95% CI)	**13**		**11**			**100.0**	**-0.60 [-1.18, -0.02]**

Test for heterogeneity: not applicable

Test for overall effect z=2.03   p=0.04

```
        -10   -5    0    5    10
     Favours  control   Favours treatment
```

**Analysis 08.03.   Comparison 08 Wax bath + exercises vs exercises (hand) (End of treatment - 4 wks)*,
Outcome 03 Grip Function Test (0-80pts, 0=worst)***

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 08 Wax bath + exercises vs exercises (hand) (End of treatment - 4 wks)*

Outcome: 03 Grip Function Test (0-80pts, 0=worst)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Dellhag 1992	13	74.80 (1.56)	11	76.10 (1.56)	■	100.0	-1.30 [-2.55, -0.05]
Total (95% CI)	**13**		**11**		◆	**100.0**	**-1.30 [-2.55, -0.05]**
Test for heterogeneity: not applicable							
Test for overall effect z=2.03 p=0.04							

-10   -5   0   5   10

Favours control   Favours treatment
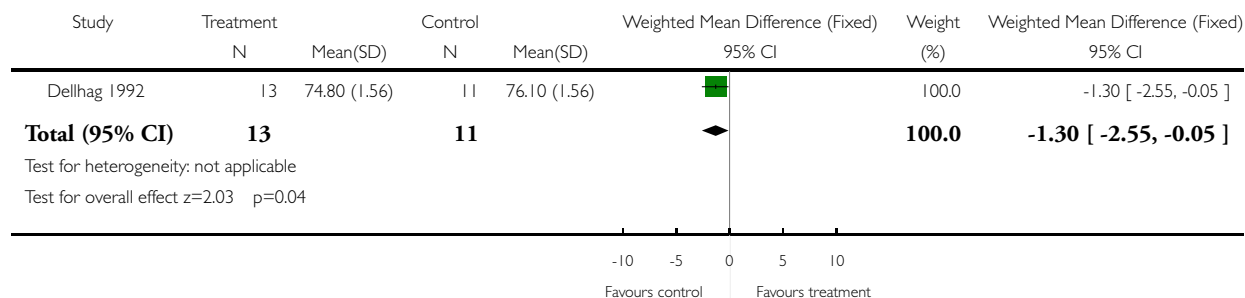
**Analysis 08.04.   Comparison 08 Wax bath + exercises vs exercises (hand) (End of treatment - 4 wks)*,
Outcome 04 Pinch Function Test (0-32 pts, 0=worst)***

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 08 Wax bath + exercises vs exercises (hand) (End of treatment - 4 wks)*

Outcome: 04 Pinch Function Test (0-32 pts, 0=worst)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Dellhag 1992	13	29.30 (0.0)	11	29.30 (0.0)		0.0	Not estimable
Total (95% CI)	**13**		**11**			**0.0**	**Not estimable**
Test for heterogeneity: not applicable							
Test for overall effect: not applicable							

-10   -5   0   5   10

Favours treatment   Favours control
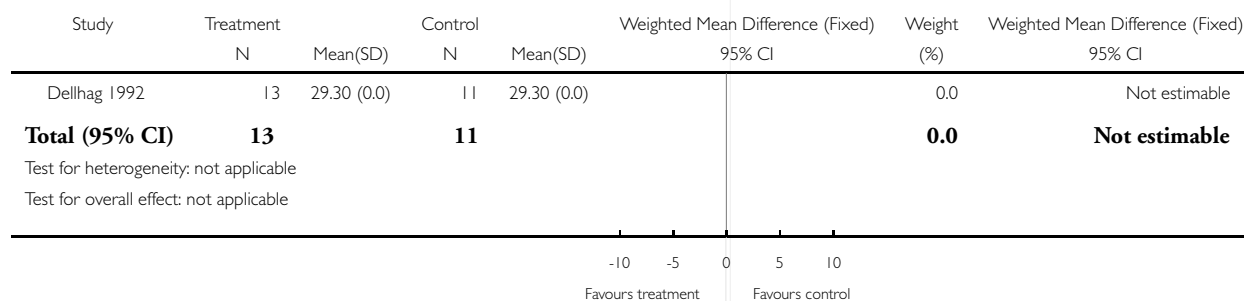
**Analysis 08.05.   Comparison 08 Wax bath + exercises vs exercises (hand) (End of treatment - 4 wks)*,
Outcome 05 Grip strength (N) (average dominant hand)***

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 08 Wax bath + exercises vs exercises (hand) (End of treatment - 4 wks)*

Outcome: 05 Grip strength (N) (average dominant hand)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Dellhag 1992	13	79.20 (56.52)	11	126.20 (56.52)	■	100.0	-47.00 [-92.38, -1.62]
Total (95% CI)	**13**		**11**		◆	**100.0**	**-47.00 [-92.38, -1.62]**
Test for heterogeneity: not applicable							
Test for overall effect z=2.03 p=0.04							

-100   -50   0   50   100

Favours control   Favours treatment
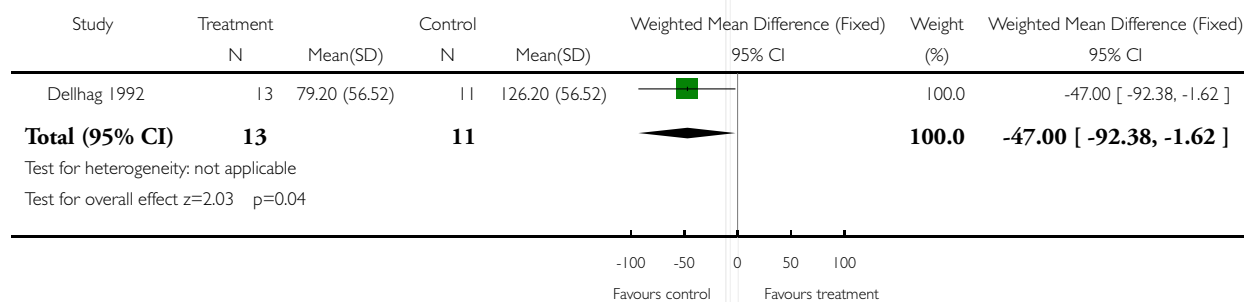
Analysis 08.06.   Comparison 08 Wax bath + exercises vs exercises (hand) (End of treatment - 4 wks)*, Outcome 06 Pain on resisted motion (0-9pts, 0=no pain)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 08 Wax bath + exercises vs exercises (hand) (End of treatment - 4 wks)*

Outcome: 06 Pain on resisted motion (0-9pts, 0=no pain)*

Study	Treatment N	Mean(SD)	Control N	Mean(SD)	Weighted Mean Difference (Fixed) 95% CI	Weight (%)	Weighted Mean Difference (Fixed) 95% CI
Dellhag 1992	13	0.80 (0.60)	11	1.30 (0.60)		100.0	-0.50 [-0.98, -0.02]
Total (95% CI)	**13**		**11**			**100.0**	**-0.50 [-0.98, -0.02]**

Test for heterogeneity: not applicable

Test for overall effect z=2.03   p=0.04

```
     -10    -5    0    5    10
   Favours treatment    Favours control
```
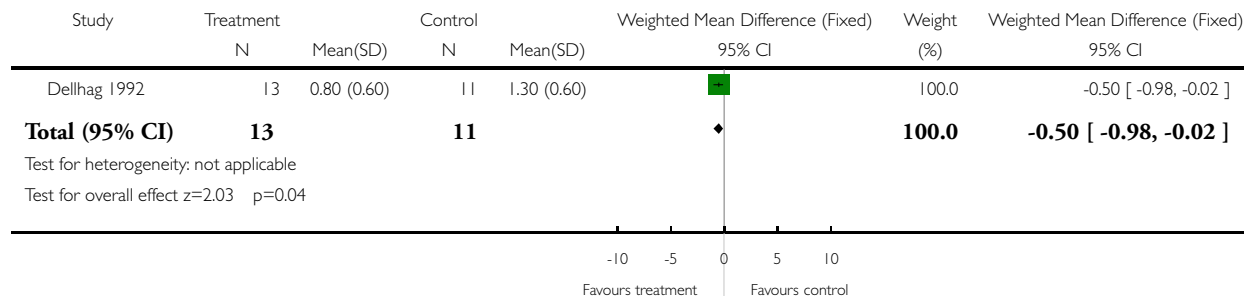
Analysis 08.07.   Comparison 08 Wax bath + exercises vs exercises (hand) (End of treatment - 4 wks)*, Outcome 07 Pain on non-resisted motion with both hands (VAS:0-100mm)

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 08 Wax bath + exercises vs exercises (hand) (End of treatment - 4 wks)*

Outcome: 07 Pain on non-resisted motion with both hands (VAS:0-100mm)

Study	Treatment N	Mean(SD)	Control N	Mean(SD)	Weighted Mean Difference (Fixed) 95% CI	Weight (%)	Weighted Mean Difference (Fixed) 95% CI
Dellhag 1992	13	22.10 (6.01)	11	17.00 (6.01)		100.0	5.10 [0.27, 9.93]
Total (95% CI)	**13**		**11**			**100.0**	**5.10 [0.27, 9.93]**

Test for heterogeneity: not applicable

Test for overall effect z=2.07   p=0.04

```
     -10    -5    0    5    10
   Favours treatment    Favours control
```
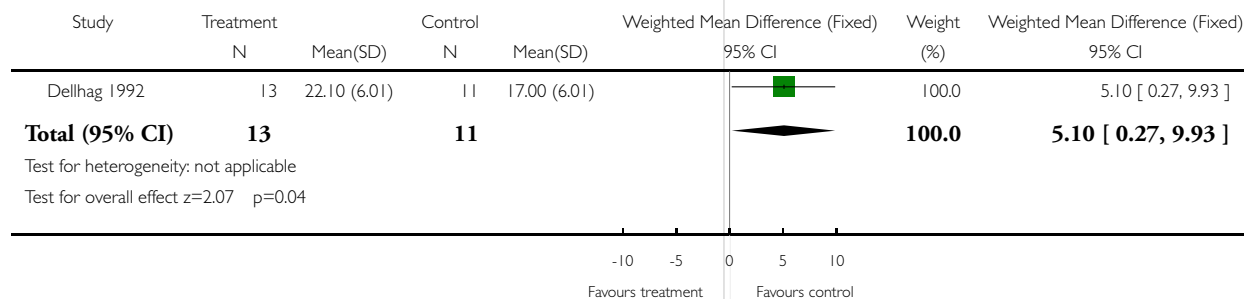
Analysis 08.08.   Comparison 08 Wax bath + exercises vs exercises (hand) (End of treatment - 4 wks)*, Outcome 08 Stiffness both hands (VAS: 0-100mm)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 08 Wax bath + exercises vs exercises (hand) (End of treatment - 4 wks)*

Outcome: 08 Stiffness both hands (VAS: 0-100mm)*

Study	Treatment N	Mean(SD)	Control N	Mean(SD)	Weighted Mean Difference (Fixed) 95% CI	Weight (%)	Weighted Mean Difference (Fixed) 95% CI
Dellhag 1992	13	24.90 (7.46)	11	31.10 (7.46)		100.0	-6.20 [-12.19, -0.21]
Total (95% CI)	**13**		**11**			**100.0**	**-6.20 [-12.19, -0.21]**

Test for heterogeneity: not applicable

Test for overall effect z=2.03   p=0.04

```
     -100    -50    0    50    100
   Favours treatment    Favours
```
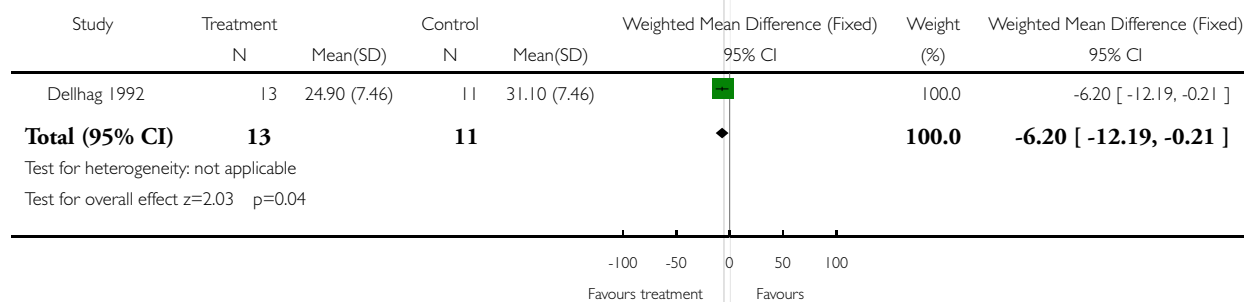
Analysis 09.01.   Comparison 09 Wax bath vs exercises (hand) (End of treatment - 4 wks)*, Outcome 01 Flexion of the dominant hand (ROM deficit in mm, lower score is better)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 09 Wax bath vs exercises (hand) (End of treatment - 4 wks)*

Outcome: 01 Flexion of the dominant hand (ROM deficit in mm, lower score is better)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Dellhag 1992	15	42.90 (1.10)	11	43.80 (1.10)		100.0	-0.90 [-1.76, -0.04]
Total (95% CI)	**15**		**11**			**100.0**	**-0.90 [-1.76, -0.04]**
Test for heterogeneity: not applicable							
Test for overall effect z=2.06 p=0.04							

```
        -10    -5    0    5    10
        Favours control    Favours treatment
```
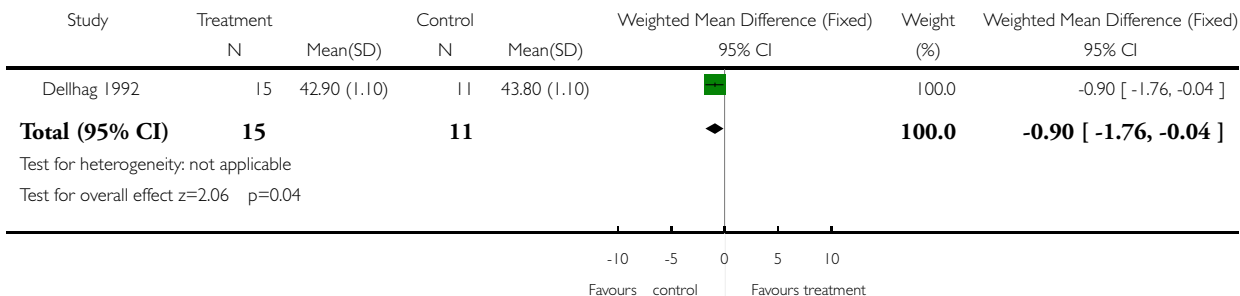
Analysis 09.02.   Comparison 09 Wax bath vs exercises (hand) (End of treatment - 4 wks)*, Outcome 02 Extension of the dominant hand (ROM deficit in mm, lower score is better)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 09 Wax bath vs exercises (hand) (End of treatment - 4 wks)*

Outcome: 02 Extension of the dominant hand (ROM deficit in mm, lower score is better)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Dellhag 1992	15	21.60 (14.84)	11	33.50 (14.84)		100.0	-11.90 [-23.45, -0.35]
Total (95% CI)	**15**		**11**			**100.0**	**-11.90 [-23.45, -0.35]**
Test for heterogeneity: not applicable							
Test for overall effect z=2.02 p=0.04							

```
        -100    -50    0    50    100
        Favours control    Favours treatment
```
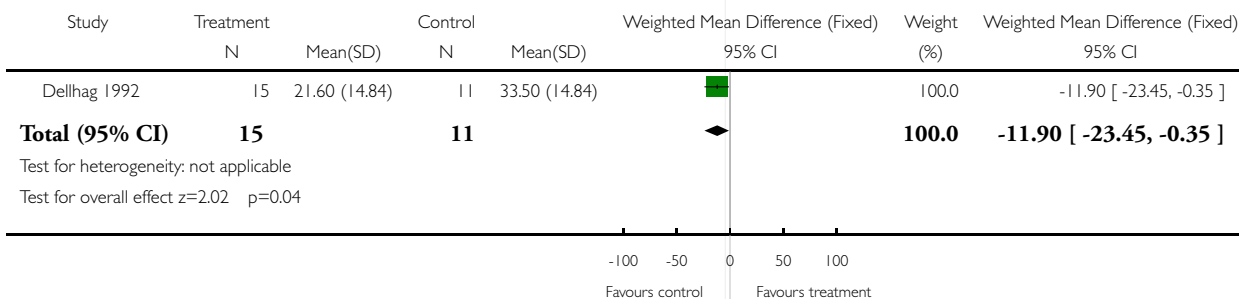
Analysis 09.03.   Comparison 09 Wax bath vs exercises (hand) (End of treatment - 4 wks)*, Outcome 03 Grip Function Test (0-80 pts, 0=worst)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 09 Wax bath vs exercises (hand) (End of treatment - 4 wks)*

Outcome: 03 Grip Function Test (0-80 pts,   0=worst)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Dellhag 1992	15	75.00 (1.37)	11	76.10 (1.37)		100.0	-1.10 [-2.17, -0.03]
Total (95% CI)	**15**		**11**			**100.0**	**-1.10 [-2.17, -0.03]**
Test for heterogeneity: not applicable							
Test for overall effect z=2.02 p=0.04							

```
        -10    -5    0    5    10
        Favours control    Favours treatment
```
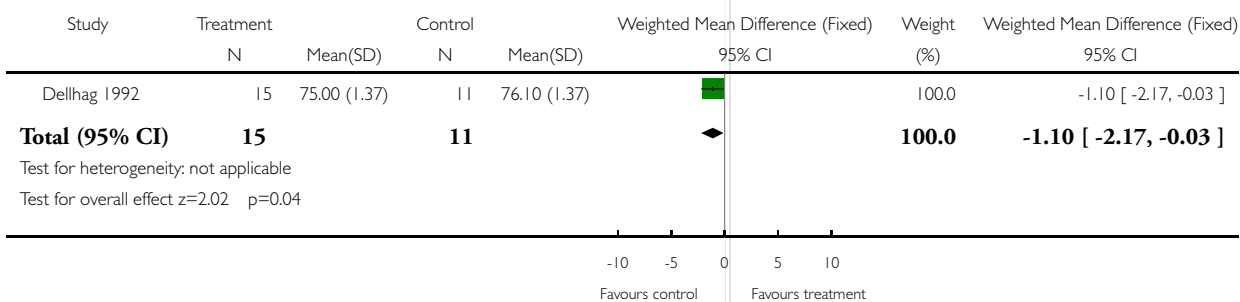
Analysis 09.04.   Comparison 09 Wax bath vs exercises (hand) (End of treatment - 4 wks)*, Outcome 04 Pinch Function Test (0-32 pts, 0=worst)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 09 Wax bath vs exercises (hand) (End of treatment - 4 wks)*

Outcome: 04 Pinch Function Test (0-32 pts, 0=worst)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Dellhag 1992	15	28.30 (1.25)	11	29.30 (1.25)		100.0	-1.00 [-1.97, -0.03]
Total (95% CI)	**15**		**11**			**100.0**	**-1.00 [-1.97, -0.03]**
Test for heterogeneity: not applicable							
Test for overall effect z=2.02 p=0.04							

-10   -5   0   5   10

Favours control   Favours treatment
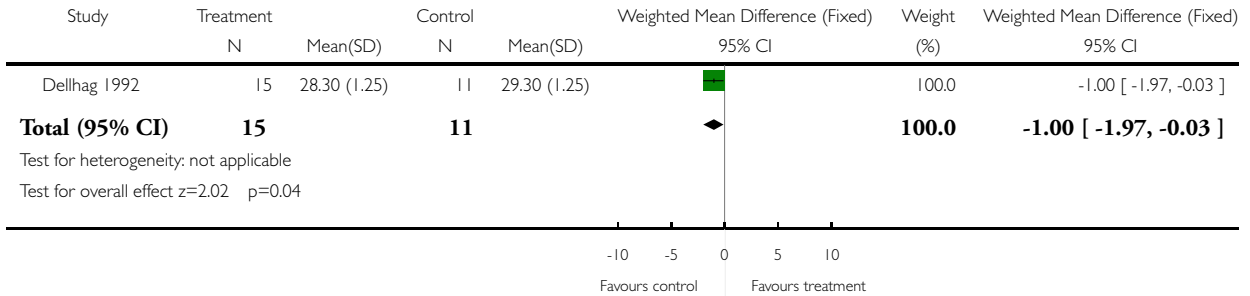
Analysis 09.05.   Comparison 09 Wax bath vs exercises (hand) (End of treatment - 4 wks)*, Outcome 05 Grip strength (N) (average dominant hand)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 09 Wax bath vs exercises (hand) (End of treatment - 4 wks)*

Outcome: 05 Grip strength (N) (average dominant hand)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Dellhag 1992	15	75.90 (6.73)	11	126.20 (62.73)		100.0	-50.30 [-87.53, -13.07]
Total (95% CI)	**15**		**11**			**100.0**	**-50.30 [-87.53, -13.07]**
Test for heterogeneity: not applicable							
Test for overall effect z=2.65 p=0.008							

-100   -50   0   50   100

Favours   control   Favours treatment
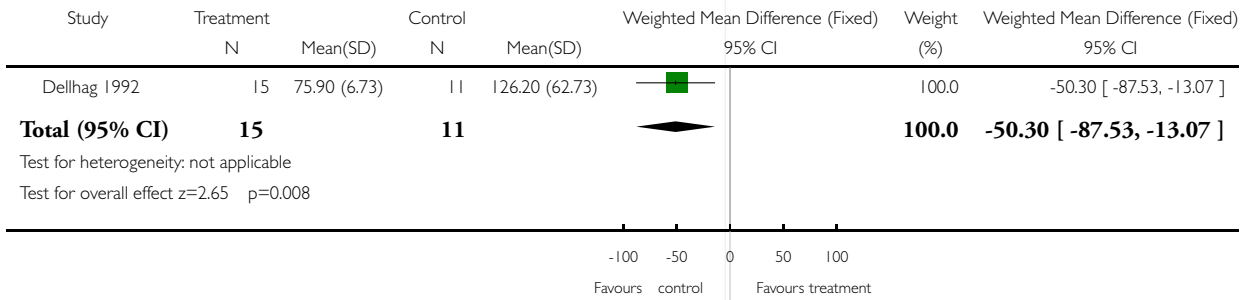
Analysis 09.06.   Comparison 09 Wax bath vs exercises (hand) (End of treatment - 4 wks)*, Outcome 06 Pain on resisted motion (0-9pts, 0=no pain)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 09 Wax bath vs exercises (hand) (End of treatment - 4 wks)*

Outcome: 06 Pain on resisted motion (0-9pts, 0=no pain)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Dellhag 1992	15	1.60 (0.37)	11	1.30 (0.37)		100.0	0.30 [0.01, 0.59]
Total (95% CI)	**15**		**11**			**100.0**	**0.30 [0.01, 0.59]**
Test for heterogeneity: not applicable							
Test for overall effect z=2.04 p=0.04							

-100   -50   0   50   100

Favours treatment   Favours control
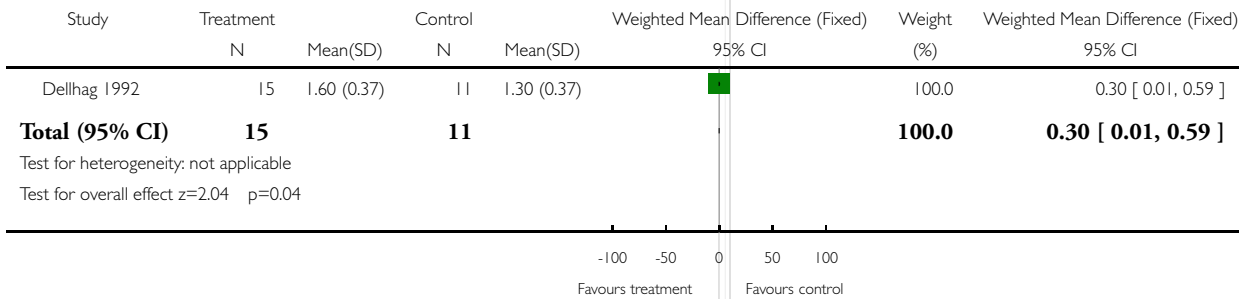
Analysis 09.07.   Comparison 09 Wax bath vs exercises (hand) (End of treatment - 4 wks)*, Outcome 07 Pain on non-resisted motion with both hands (VAS: 0-100mm)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 09 Wax bath vs exercises (hand) (End of treatment - 4 wks)*

Outcome: 07 Pain on non-resisted motion with both hands (VAS: 0-100mm)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Dellhag 1992	15	25.90 (10.88)	11	17.00 (10.88)		100.0	8.90 [0.44, 17.36]
Total (95% CI)	**15**		**11**			**100.0**	**8.90 [0.44, 17.36]**
Test for heterogeneity: not applicable							
Test for overall effect z=2.06 p=0.04							

```
                    -10    -5    0    5    10
                  Favours treatment   Favours control
```
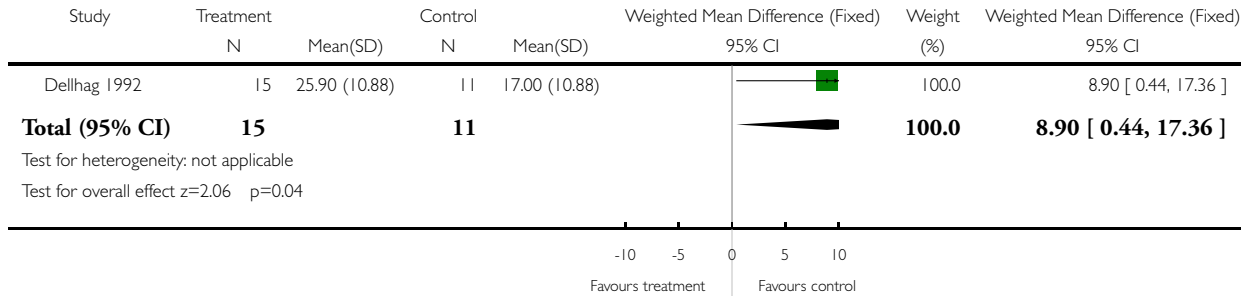
Analysis 09.08.   Comparison 09 Wax bath vs exercises (hand) (End of treatment - 4 wks)*, Outcome 08 Stiffness, both hands (VAS: 0-100mm)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 09 Wax bath vs exercises (hand) (End of treatment - 4 wks)*

Outcome: 08 Stiffness, both hands (VAS: 0-100mm)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Dellhag 1992	15	27.00 (5.11)	11	31.10 (5.11)		100.0	-4.10 [-8.08, -0.12]
Total (95% CI)	**15**		**11**			**100.0**	**-4.10 [-8.08, -0.12]**
Test for heterogeneity: not applicable							
Test for overall effect z=2.02 p=0.04							

```
                    -10    -5    0    5    10
                  Favours treatment   Favours control
```
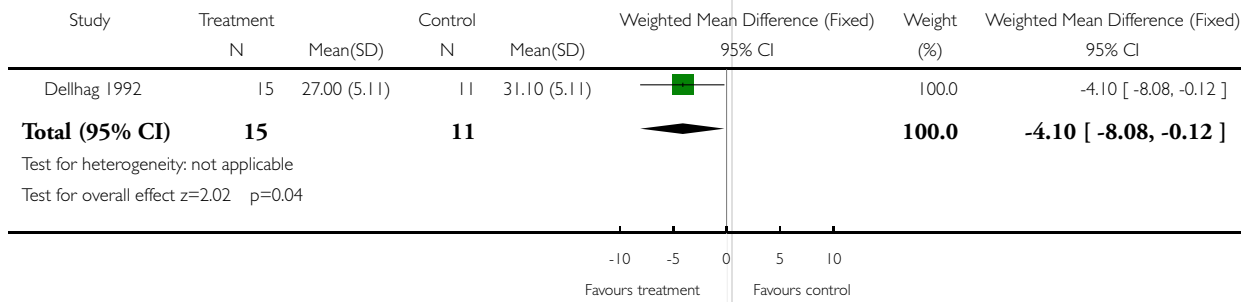
Analysis 10.01.   Comparison 10 Exercises vs control (Hand) (End of treatment - 4 wks)*, Outcome 01 Flexion of dominant hand (ROM deficit in mm, lower score is better)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 10 Exercises vs control (Hand) (End of treatment - 4 wks)*

Outcome: 01 Flexion of dominant hand (ROM deficit in mm, lower score is better)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Dellhag 1992	11	43.80 (12.46)	13	62.00 (12.46)		100.0	-18.20 [-28.20, -8.20]
Total (95% CI)	**11**		**13**			**100.0**	**-18.20 [-28.20, -8.20]**
Test for heterogeneity: not applicable							
Test for overall effect z=3.57 p=0.0004							

```
                   -100   -50    0    50    100
                  Favours control   Favours
```
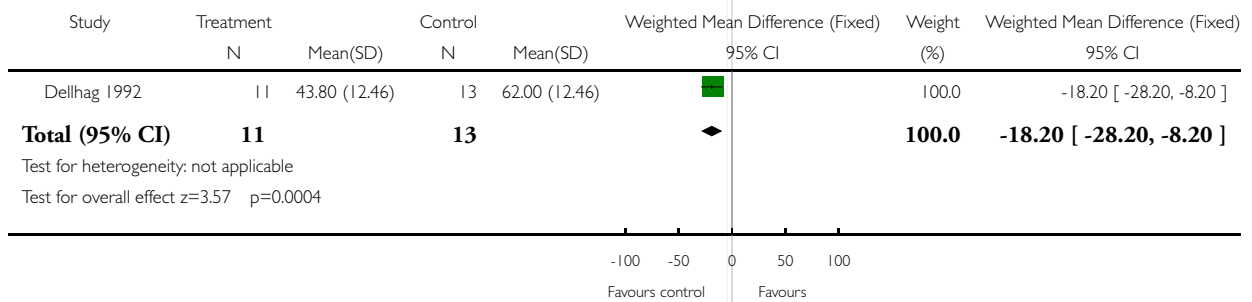
Analysis 10.02.   Comparison 10 Exercises vs control (Hand) (End of treatment - 4 wks)*, Outcome 02 Extension of dominant hand (ROM deficit in mm, lower score is better)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 10 Exercises vs control (Hand) (End of treatment - 4 wks)*

Outcome: 02 Extension of dominant hand (ROM deficit in mm, lower score is better)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Dellhag 1992	11	24.10 (11.30)	13	33.50 (11.30)		100.0	-9.40 [-18.47, -0.33]
Total (95% CI)	**11**		**13**			**100.0**	**-9.40 [-18.47, -0.33]**

Test for heterogeneity: not applicable

Test for overall effect z=2.03   p=0.04

```
      -100   -50    0    50   100
      Favours control   Favours control
```
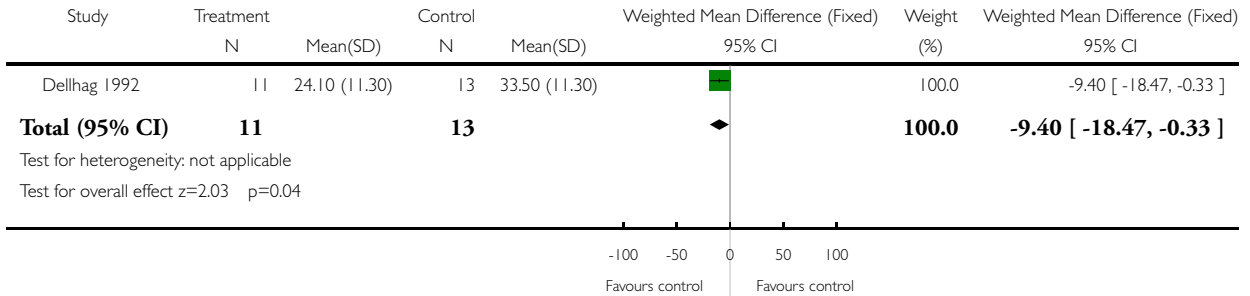
Analysis 10.03.   Comparison 10 Exercises vs control (Hand) (End of treatment - 4 wks)*, Outcome 03 Grip Function Test (0-80 pts, 0=worst)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 10 Exercises vs control (Hand) (End of treatment - 4 wks)*

Outcome: 03 Grip Function Test (0-80 pts, 0=worst)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Dellhag 1992	11	76.10 (1.32)	13	75.00 (1.32)		100.0	1.10 [0.04, 2.16]
Total (95% CI)	**11**		**13**			**100.0**	**1.10 [0.04, 2.16]**

Test for heterogeneity: not applicable

Test for overall effect z=2.03   p=0.04

```
      -10    -5    0    5    10
      Favours   control   Favours control
```
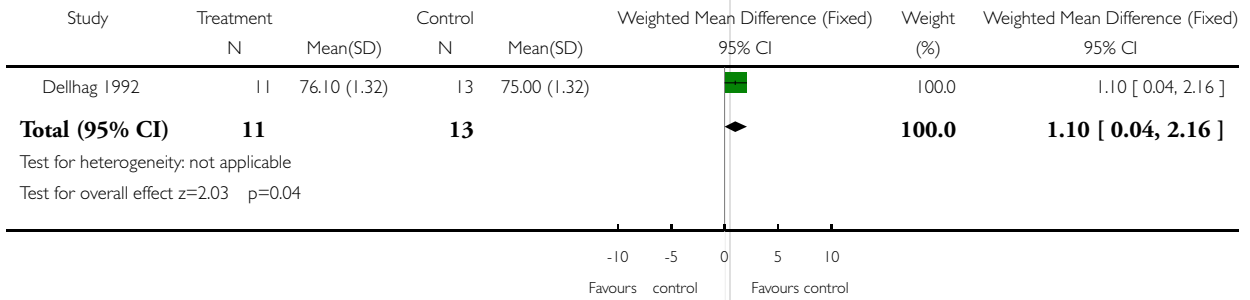
Analysis 10.04.   Comparison 10 Exercises vs control (Hand) (End of treatment - 4 wks)*, Outcome 04 Pinch Function Test (0-32 pts, 0=worst)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 10 Exercises vs control (Hand) (End of treatment - 4 wks)*

Outcome: 04 Pinch Function Test (0-32 pts, 0=worst)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Dellhag 1992	11	29.30 (0.12)	13	29.20 (0.12)		100.0	0.10 [0.00, 0.20]
Total (95% CI)	**11**		**13**			**100.0**	**0.10 [0.00, 0.20]**

Test for heterogeneity: not applicable

Test for overall effect z=2.03   p=0.04

```
      -10    -5    0    5    10
      Favours control   Favours treatment
```
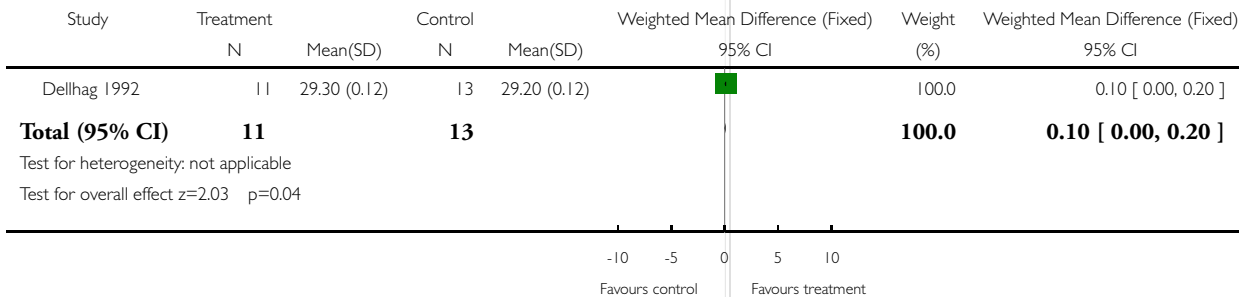
Analysis 10.05. Comparison 10 Exercises vs control (Hand) (End of treatment - 4 wks)*, Outcome 05 Grip strength (N) (average of dominant hand)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 10 Exercises vs control (Hand) (End of treatment - 4 wks)*

Outcome: 05 Grip strength (N) (average of dominant hand)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Dellhag 1992	11	109.70 (29.22)	13	85.40 (29.22)		100.0	24.30 [0.84, 47.76]
Total (95% CI)	**11**		**13**			**100.0**	**24.30 [0.84, 47.76]**

Test for heterogeneity: not applicable

Test for overall effect z=2.03   p=0.04

```
        -100   -50    0    50   100
      Favours control      Favours treatment
```
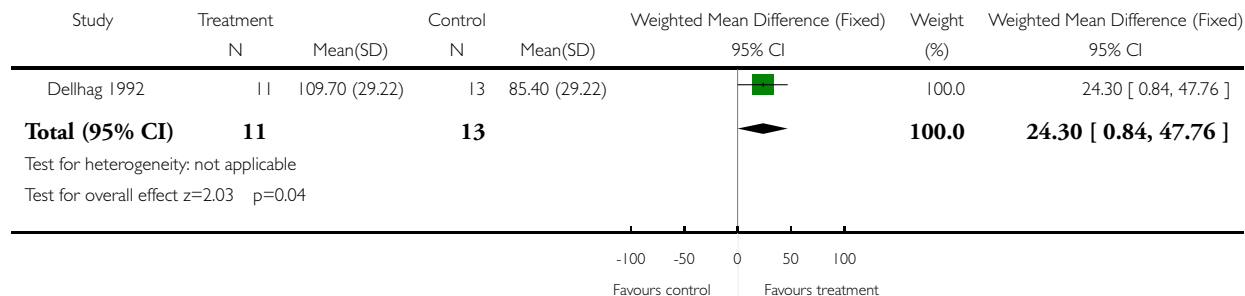
Analysis 10.06. Comparison 10 Exercises vs control (Hand) (End of treatment - 4 wks)*, Outcome 06 Pain on resisted motion (0-9 pts, 0=no pain)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 10 Exercises vs control (Hand) (End of treatment - 4 wks)*

Outcome: 06 Pain on resisted motion (0-9 pts, 0=no pain)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Dellhag 1992	11	1.30 (0.24)	13	1.50 (0.24)		100.0	-0.20 [-0.39, -0.01]
Total (95% CI)	**11**		**13**			**100.0**	**-0.20 [-0.39, -0.01]**

Test for heterogeneity: not applicable

Test for overall effect z=2.03   p=0.04

```
        -10    -5    0    5    10
      Favours control      Favours treatment
```
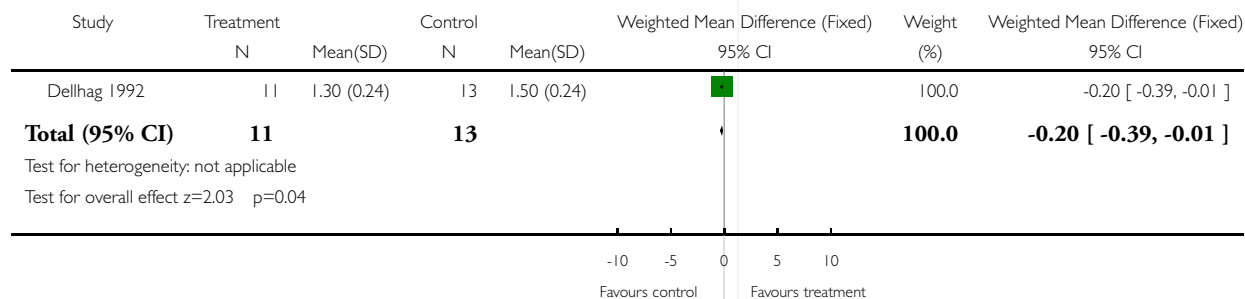
Analysis 10.07. Comparison 10 Exercises vs control (Hand) (End of treatment - 4 wks)*, Outcome 07 Pain on non resisted motion with both hands (VAS: 0-100mm)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 10 Exercises vs control (Hand) (End of treatment - 4 wks)*

Outcome: 07 Pain on non resisted motion with both hands (VAS: 0-100mm)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Dellhag 1992	11	17.00 (18.99)	13	33.10 (18.99)		100.0	-16.10 [-31.35, -0.85]
Total (95% CI)	**11**		**13**			**100.0**	**-16.10 [-31.35, -0.85]**

Test for heterogeneity: not applicable

Test for overall effect z=2.07   p=0.04

```
        -100   -50    0    50   100
      Favours treatment      Favours control
```
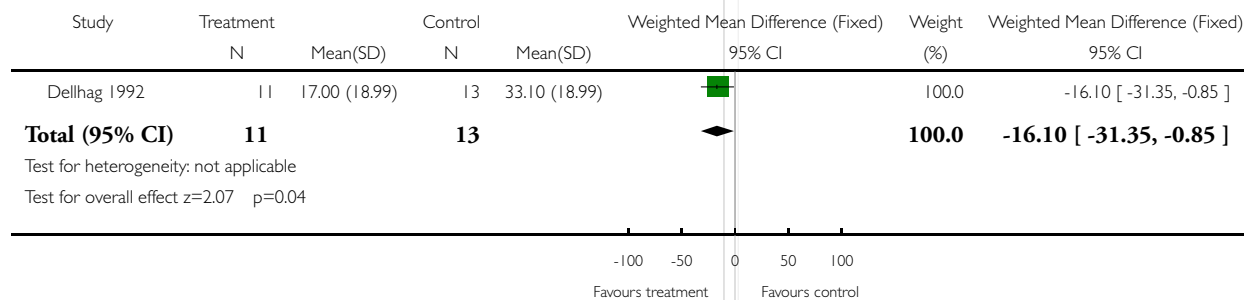
Analysis 10.08.   Comparison 10 Exercises vs control (Hand) (End of treatment - 4 wks)*, Outcome 08 Stiffness, both hands (VAS: 0-100mm)*

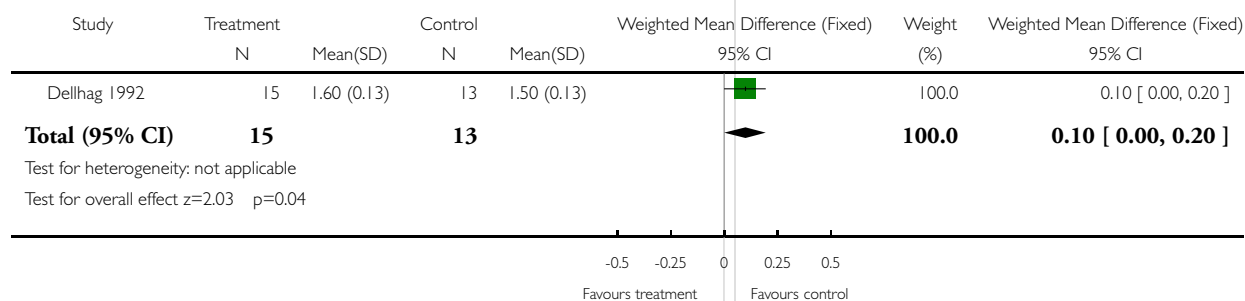Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 10 Exercises vs control (Hand) (End of treatment - 4 wks)*
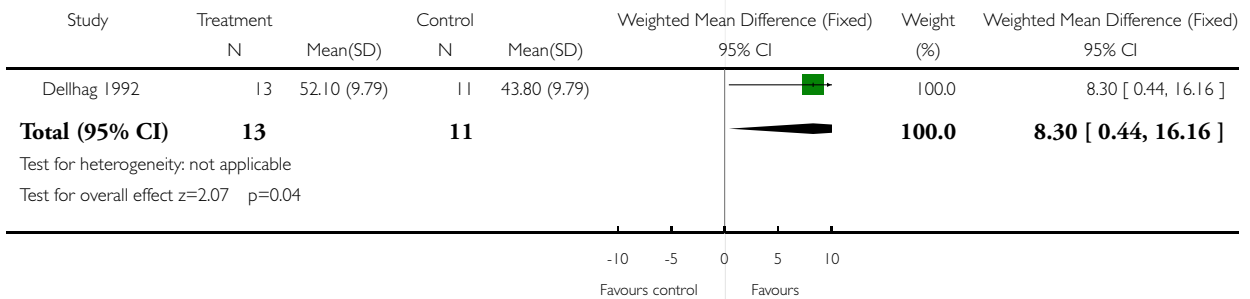
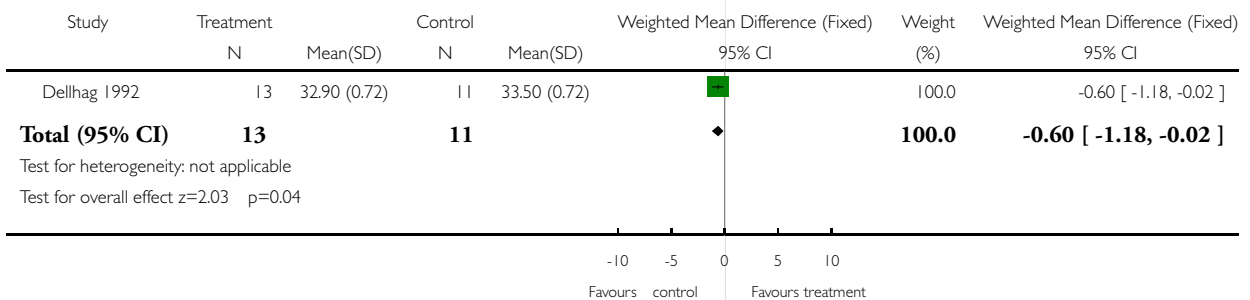Outcome: 08 Stiffness, both hands (VAS: 0-100mm)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Dellhag 1992	11	31.10 (1.08)	13	30.20 (1.08)		100.0	0.90 [0.03, 1.77]
Total (95% CI)	**11**		**13**			**100.0**	**0.90 [0.03, 1.77]**
Test for heterogeneity: not applicable							
Test for overall effect z=2.03 p=0.04							

```
        -10   -5     0     5    10
       Favours treatment   Favours control
```
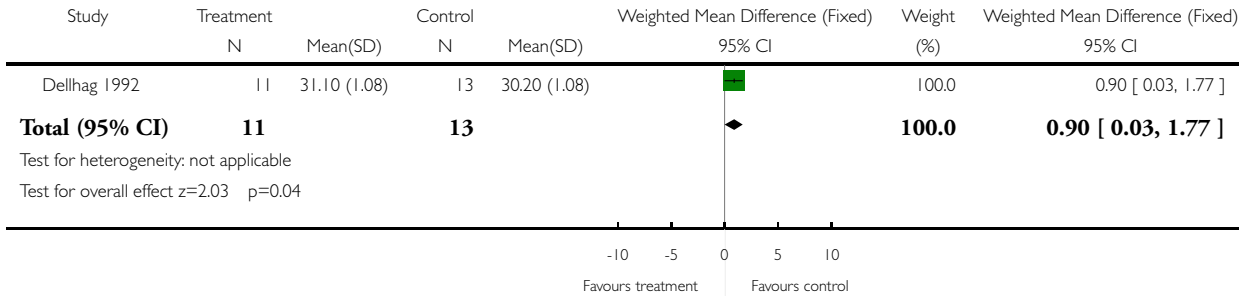
Analysis 11.01.   Comparison 11 Wax vs Ultrasound (Hand) (End of treatment - 1 wk)*, Outcome 01 Hand Grip (mmHg)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 11 Wax vs Ultrasound (Hand) (End of treatment - 1 wk)*

Outcome: 01 Hand Grip (mmHg)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	99.00 (309.61)	10	81.00 (309.61)		100.0	18.00 [-253.38, 289.38]
Total (95% CI)	**10**		**10**			**100.0**	**18.00 [-253.38, 289.38]**
Test for heterogeneity: not applicable							
Test for overall effect z=0.13 p=0.9							

```
      -1000  -500    0    500  1000
       Favours control    Favours treatment
```
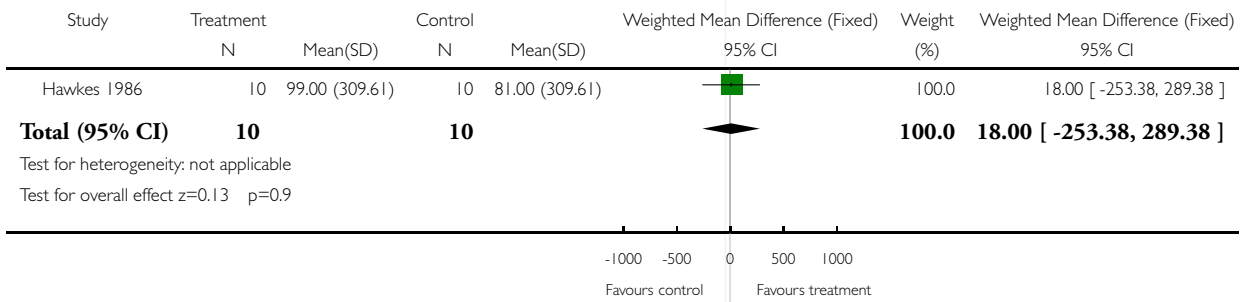
Analysis 11.02.   Comparison 11 Wax vs Ultrasound (Hand) (End of treatment - 1 wk)*, Outcome 02 PIP circumference (mm)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 11 Wax vs Ultrasound (Hand) (End of treatment - 1 wk)*

Outcome: 02 PIP circumference (mm)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	314.00 (34.40)	10	308.00 (34.40)		100.0	6.00 [-24.15, 36.15]
Total (95% CI)	**10**		**10**			**100.0**	**6.00 [-24.15, 36.15]**
Test for heterogeneity: not applicable							
Test for overall effect z=0.39 p=0.7							

```
       -100   -50    0     50   100
       Favours treatment   Favours control
```
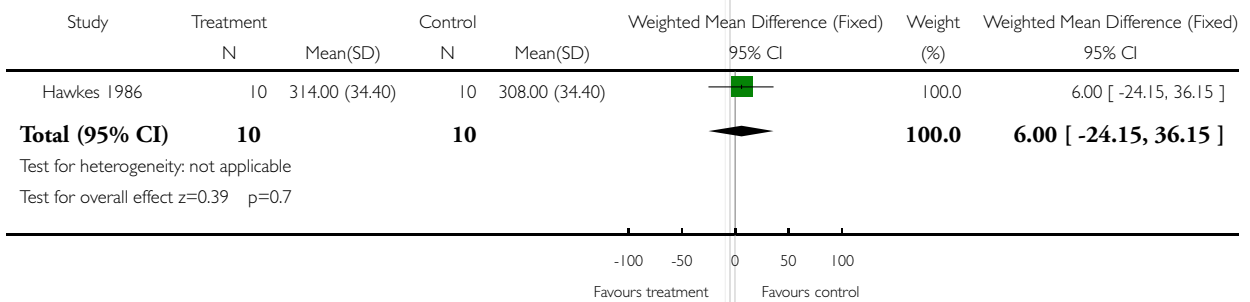
Analysis 11.03.   Comparison 11 Wax vs Ultrasound (Hand) (End of treatment - 1 wk)*, Outcome 03 Articular Index (0-3 scale, 0=no pain)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 11 Wax vs Ultrasound (Hand) (End of treatment - 1 wk)*

Outcome: 03 Articular Index (0-3 scale, 0=no pain)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	11.00 (5.73)	10	10.00 (5.73)		100.0	1.00 [-4.02, 6.02]
Total (95% CI)	**10**		**10**			**100.0**	**1.00 [-4.02, 6.02]**
Test for heterogeneity: not applicable							
Test for overall effect z=0.39 p=0.7							

-10   -5   0   5   10

Favours treatment   Favours control

Analysis 11.04.   Comparison 11 Wax vs Ultrasound (Hand) (End of treatment - 1 wk)*, Outcome 04 Timed Task (sec.)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 11 Wax vs Ultrasound (Hand) (End of treatment - 1 wk)*

Outcome: 04 Timed Task (sec.)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	23.00 (51.60)	10	29.00 (51.60)		100.0	-6.00 [-51.23, 39.23]
Total (95% CI)	**10**		**10**			**100.0**	**-6.00 [-51.23, 39.23]**
Test for heterogeneity: not applicable							
Test for overall effect z=0.26 p=0.8							

-100   -50   0   50   100

Favours treatment   Favours control

Analysis 11.05.   Comparison 11 Wax vs Ultrasound (Hand) (End of treatment - 1 wk)*, Outcome 05 Activity score (checklist, higher score=better)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 11 Wax vs Ultrasound (Hand) (End of treatment - 1 wk)*

Outcome: 05 Activity score (checklist, higher score=better)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	7.80 (0.57)	10	7.70 (0.57)		100.0	0.10 [-0.40, 0.60]
Total (95% CI)	**10**		**10**			**100.0**	**0.10 [-0.40, 0.60]**
Test for heterogeneity: not applicable							
Test for overall effect z=0.39 p=0.7							

-4   -2   0   2   4

Favours control   Favours treatment

Analysis 12.01. Comparison 12 Wax vs Ultrasound (Hand) (End of treatment - 2 wks)*, Outcome 01 Hand Grip (mmHg)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 12 Wax vs Ultrasound (Hand) (End of treatment - 2 wks)*

Outcome: 01 Hand Grip (mmHg)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	111.00 (395.00)	10	88.00 (395.00)		100.0	23.00 [-323.23, 369.23]
Total (95% CI)	**10**		**10**			**100.0**	**23.00 [-323.23, 369.23]**

Test for heterogeneity: not applicable

Test for overall effect z=0.13 p=0.9

-100 -50 0 50 100

Favours treatment   Favours control

Analysis 12.02. Comparison 12 Wax vs Ultrasound (Hand) (End of treatment - 2 wks)*, Outcome 02 PIP circumference (mm)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 12 Wax vs Ultrasound (Hand) (End of treatment - 2 wks)*

Outcome: 02 PIP circumference (mm)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	310.00 (28.67)	10	305.00 (28.67)		100.0	5.00 [-20.13, 30.13]
Total (95% CI)	**10**		**10**			**100.0**	**5.00 [-20.13, 30.13]**

Test for heterogeneity: not applicable

Test for overall effect z=0.39 p=0.7

-100 -50 0 50 100

Favours treatment   Favours control

Analysis 12.03. Comparison 12 Wax vs Ultrasound (Hand) (End of treatment - 2 wks)*, Outcome 03 Articular Index (0-3 scale, 0=no pain)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 12 Wax vs Ultrasound (Hand) (End of treatment - 2 wks)*

Outcome: 03 Articular Index (0-3 scale, 0=no pain)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	8.00 (5.73)	10	7.00 (5.73)		100.0	1.00 [-4.02, 6.02]
Total (95% CI)	**10**		**10**			**100.0**	**1.00 [-4.02, 6.02]**

Test for heterogeneity: not applicable

Test for overall effect z=0.39 p=0.7

-100 -50 0 50 100

Favours treatment   Favours control

Analysis 12.04.   Comparison 12 Wax vs Ultrasound (Hand) (End of treatment - 2 wks)*, Outcome 04 Timed Task (sec)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 12 Wax vs Ultrasound (Hand) (End of treatment - 2 wks)*

Outcome: 04 Timed Task (sec)*

Study	Treatment N	Mean(SD)	Control N	Mean(SD)	Weighted Mean Difference (Fixed) 95% CI	Weight (%)	Weighted Mean Difference (Fixed) 95% CI
Hawkes 1986	10	20.00 (60.20)	10	27.00 (60.20)		100.0	-7.00 [-59.77, 45.77]
Total (95% CI)	**10**		**10**			**100.0**	**-7.00 [-59.77, 45.77]**

Test for heterogeneity: not applicable

Test for overall effect z=0.26   p=0.8

```
     -100   -50    0    50   100
     Favours treatment   Favours control
```

Analysis 12.05.   Comparison 12 Wax vs Ultrasound (Hand) (End of treatment - 2 wks)*, Outcome 05 Activity score (checklist, higher score=better)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 12 Wax vs Ultrasound (Hand) (End of treatment - 2 wks)*

Outcome: 05 Activity score (checklist, higher score=better)*

Study	Treatment N	Mean(SD)	Control N	Mean(SD)	Weighted Mean Difference (Fixed) 95% CI	Weight (%)	Weighted Mean Difference (Fixed) 95% CI
Hawkes 1986	10	9.40 (1.72)	10	9.10 (1.72)		100.0	0.30 [-1.21, 1.81]
Total (95% CI)	**10**		**10**			**100.0**	**0.30 [-1.21, 1.81]**

Test for heterogeneity: not applicable

Test for overall effect z=0.39   p=0.7

```
     -10    -5    0    5    10
     Favours treatment   Favours control
```

Analysis 13.01.   Comparison 13 Wax vs Ultrasound (Hand) (End of treatment -3 wks)*, Outcome 01 Hand Grip (mmHg)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 13 Wax vs Ultrasound (Hand) (End of treatment -3 wks)*

Outcome: 01 Hand Grip (mmHg)*

Study	Treatment N	Mean(SD)	Control N	Mean(SD)	Weighted Mean Difference (Fixed) 95% CI	Weight (%)	Weighted Mean Difference (Fixed) 95% CI
Hawkes 1986	10	111.00 (378.41)	10	89.00 (378.41)		100.0	22.00 [-309.68, 353.68]
Total (95% CI)	**10**		**10**			**100.0**	**22.00 [-309.68, 353.68]**

Test for heterogeneity: not applicable

Test for overall effect z=0.13   p=0.9

```
     -10    -5    0    5    10
     Favours treatment   Favours control
```

Analysis 13.02.   Comparison 13 Wax vs Ultrasound (Hand) (End of treatment -3 wks)*, Outcome 02 PIP circumference (mm)

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 13 Wax vs Ultrasound (Hand) (End of treatment -3 wks)*

Outcome: 02 PIP circumference (mm)

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	310.00 (34.40)	10	304.00 (34.40)		100.0	6.00 [-24.15, 36.15]
Total (95% CI)	**10**		**10**			**100.0**	**6.00 [-24.15, 36.15]**

Test for heterogeneity: not applicable

Test for overall effect z=0.39 p=0.7

```
            -100   -50    0    50   100
          Favours treatment    Favours control
```

Analysis 13.03.   Comparison 13 Wax vs Ultrasound (Hand) (End of treatment -3 wks)*, Outcome 03 Articular Index (0-3 scale, 0=no pain)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 13 Wax vs Ultrasound (Hand) (End of treatment -3 wks)*

Outcome: 03 Articular Index (0-3 scale, 0=no pain)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	6.00 (5.73)	10	5.00 (5.73)		100.0	1.00 [-4.02, 6.02]
Total (95% CI)	**10**		**10**			**100.0**	**1.00 [-4.02, 6.02]**

Test for heterogeneity: not applicable

Test for overall effect z=0.39 p=0.7

```
            -10    -5    0    5    10
          Favours treatment    Favours control
```
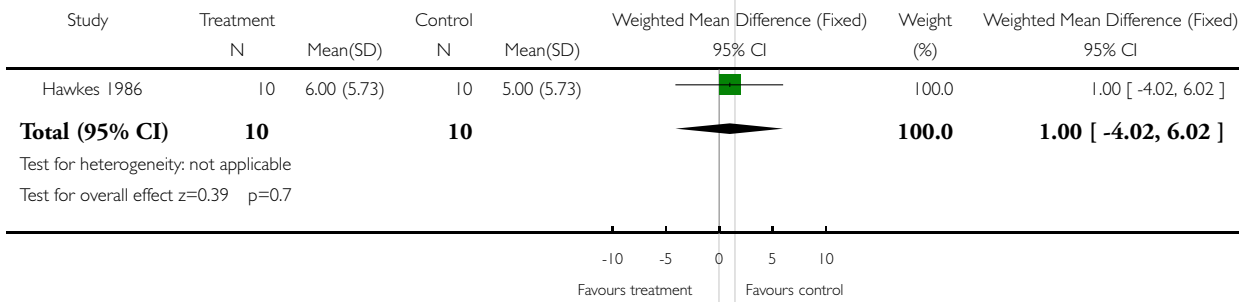
Analysis 13.04.   Comparison 13 Wax vs Ultrasound (Hand) (End of treatment -3 wks)*, Outcome 04 ROM (mm)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 13 Wax vs Ultrasound (Hand) (End of treatment -3 wks)*

Outcome: 04 ROM (mm)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	90.00 (27.14)	10	69.00 (27.14)		100.0	21.00 [-2.79, 44.79]
Total (95% CI)	**10**		**10**			**100.0**	**21.00 [-2.79, 44.79]**

Test for heterogeneity: not applicable

Test for overall effect z=1.73 p=0.08

```
            -100   -50    0    50   100
          Favours control    Favours treatment
```

Analysis 13.05.   Comparison 13 Wax vs Ultrasound (Hand) (End of treatment -3 wks)*, Outcome 05 Timed Task (sec)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 13 Wax vs Ultrasound (Hand) (End of treatment -3 wks)*

Outcome: 05 Timed Task (sec)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	18.00 (60.20)	10	25.00 (60.20)		100.0	-7.00 [-59.77, 45.77]
Total (95% CI)	**10**		**10**			**100.0**	**-7.00 [-59.77, 45.77]**
Test for heterogeneity: not applicable							
Test for overall effect z=0.26 p=0.8							

-100   -50   0   50   100

Favours control   Favours treatment

Analysis 13.06.   Comparison 13 Wax vs Ultrasound (Hand) (End of treatment -3 wks)*, Outcome 06 Activity score (checklist, higher score=better)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 13 Wax vs Ultrasound (Hand) (End of treatment -3 wks)*

Outcome: 06 Activity score (checklist, higher score=better)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	10.20 (1.15)	10	10.00 (1.15)		100.0	0.20 [-0.81, 1.21]
Total (95% CI)	**10**		**10**			**100.0**	**0.20 [-0.81, 1.21]**
Test for heterogeneity: not applicable							
Test for overall effect z=0.39 p=0.7							

-10   -5   0   5   10

Favours treatment   Favours control

Analysis 14.01.   Comparison 14 Faradic bath vs Control (Hand) (End of treatment - 1 wk)*, Outcome 01 Hand grip (mmHg)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 14 Faradic bath vs Control (Hand) (End of treatment - 1 wk)*

Outcome: 01 Hand grip (mmHg)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	92.00 (189.21)	10	81.00 (189.21)		100.0	11.00 [-154.85, 176.85]
Total (95% CI)	**10**		**10**			**100.0**	**11.00 [-154.85, 176.85]**
Test for heterogeneity: not applicable							
Test for overall effect z=0.13 p=0.9							

-100   -50   0   50   100

Favours control   Favours treatment
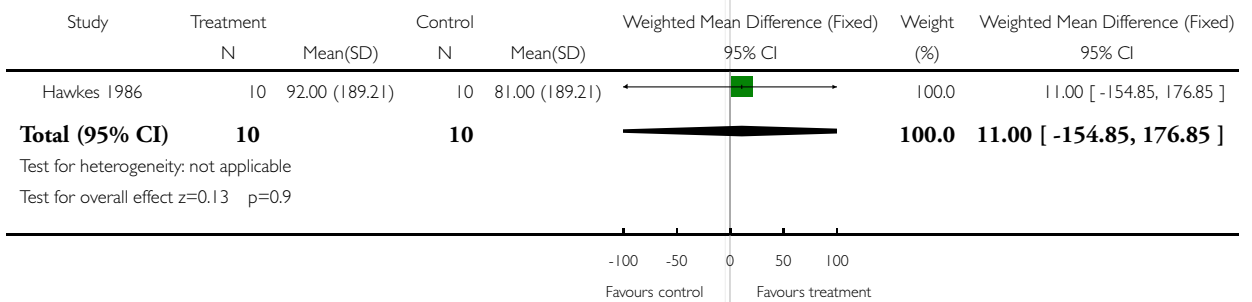
Analysis 14.02.   Comparison 14 Faradic bath vs Control (Hand) (End of treatment - 1 wk)*, Outcome 02 PIP circumference (mm)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 14 Faradic bath vs Control (Hand) (End of treatment - 1 wk)*

Outcome: 02 PIP circumference (mm)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	335.00 (154.80)	10	308.00 (154.80)		100.0	27.00 [-108.69, 162.69]
Total (95% CI)	**10**		**10**			**100.0**	**27.00 [-108.69, 162.69]**
Test for heterogeneity: not applicable							
Test for overall effect z=0.39 p=0.7							

```
              -100    -50    0     50    100
              Favours control        Favours treatment
```

Analysis 14.03.   Comparison 14 Faradic bath vs Control (Hand) (End of treatment - 1 wk)*, Outcome 03 Articular Index (0-3 scale, 0=no pain)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 14 Faradic bath vs Control (Hand) (End of treatment - 1 wk)*

Outcome: 03 Articular Index (0-3 scale,   0=no pain)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	12.00 (11.47)	12	10.00 (11.47)		100.0	2.00 [-7.63, 11.63]
Total (95% CI)	**10**		**12**			**100.0**	**2.00 [-7.63, 11.63]**
Test for heterogeneity: not applicable							
Test for overall effect z=0.41 p=0.7							

```
              -100    -50    0     50    100
              Favours control        Favours treatment
```

Analysis 14.04.   Comparison 14 Faradic bath vs Control (Hand) (End of treatment - 1 wk)*, Outcome 04 Time Task (sec)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 14 Faradic bath vs Control (Hand) (End of treatment - 1 wk)*
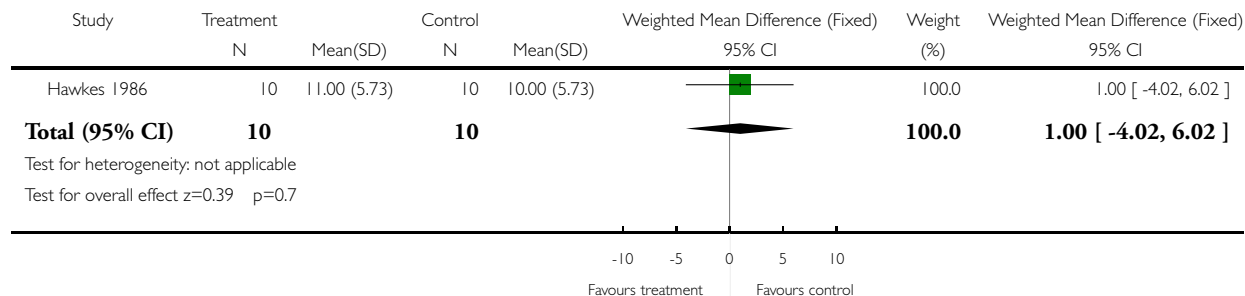
Outcome: 04 Time Task (sec)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	21.00 (68.80)	10	29.00 (68.80)		100.0	-8.00 [-68.30, 52.30]
Total (95% CI)	**10**		**10**			**100.0**	**-8.00 [-68.30, 52.30]**
Test for heterogeneity: not applicable							
Test for overall effect z=0.26 p=0.8							

```
              -100    -50    0     50    100
              Favours control        Favours treatment
```

Analysis 14.05.   Comparison 14 Faradic bath vs Control (Hand) (End of treatment - 1 wk)*, Outcome 05 Activity score (checklist, higher score=better)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 14 Faradic bath vs Control (Hand) (End of treatment - 1 wk)*

Outcome: 05 Activity score (checklist, higher score=better)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	8.20 (8.20)	10	7.70 (8.20)		100.0	0.50 [-6.69, 7.69]
Total (95% CI)	**10**		**10**			**100.0**	**0.50 [-6.69, 7.69]**
Test for heterogeneity: not applicable							
Test for overall effect z=0.14 p=0.9							

-10   -5   0   5   10

Favours treatment   Favours control

Analysis 15.01.   Comparison 15 Faradic bath vs Control (Hand) (End of treatment - 2 wks)*, Outcome 01 Hand Grip (mmHg)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 15 Faradic bath vs Control (Hand) (End of treatment - 2 wks)*

Outcome: 01 Hand Grip (mmHg)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	95.00 (120.40)	10	88.00 (120.40)		100.0	7.00 [-98.53, 112.53]
Total (95% CI)	**10**		**10**			**100.0**	**7.00 [-98.53, 112.53]**
Test for heterogeneity: not applicable							
Test for overall effect z=0.13 p=0.9							

-100   -50   0   50   100

Favours treatment   Favours control

Analysis 15.02.   Comparison 15 Faradic bath vs Control (Hand) (End of treatment - 2 wks)*, Outcome 02 PIP circumference (mm)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 15 Faradic bath vs Control (Hand) (End of treatment - 2 wks)*

Outcome: 02 PIP circumference (mm)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	331.00 (149.07)	10	305.00 (149.07)		100.0	26.00 [-104.66, 156.66]
Total (95% CI)	**10**		**10**			**100.0**	**26.00 [-104.66, 156.66]**
Test for heterogeneity: not applicable							
Test for overall effect z=0.39 p=0.7							

-100   -50   0   50   100

Favours treatment   Favours control

Analysis 15.03.   Comparison 15 Faradic bath vs Control (Hand) (End of treatment - 2 wks)*, Outcome 03 Articular Index (0-3 scale, 0=pain)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 15 Faradic bath vs Control (Hand) (End of treatment - 2 wks)*
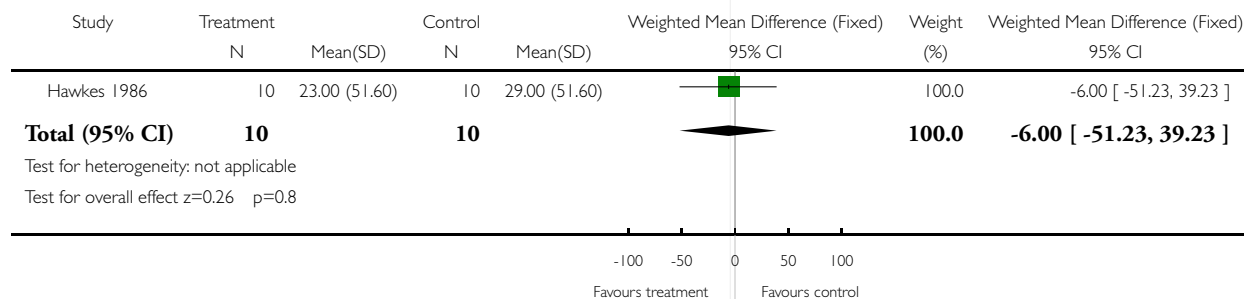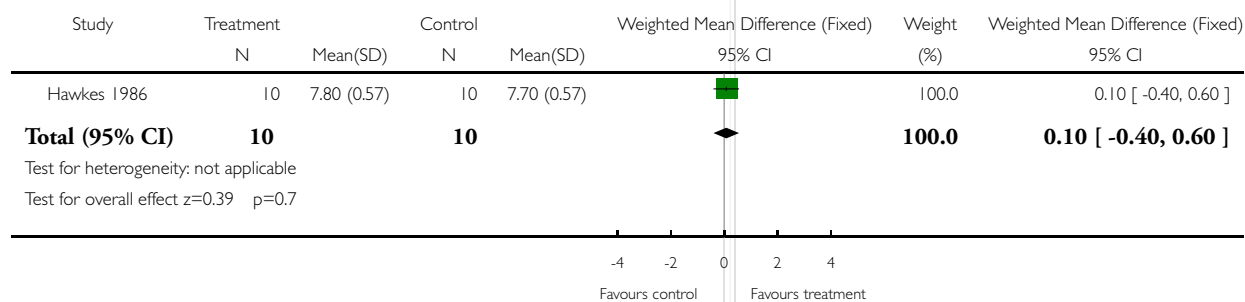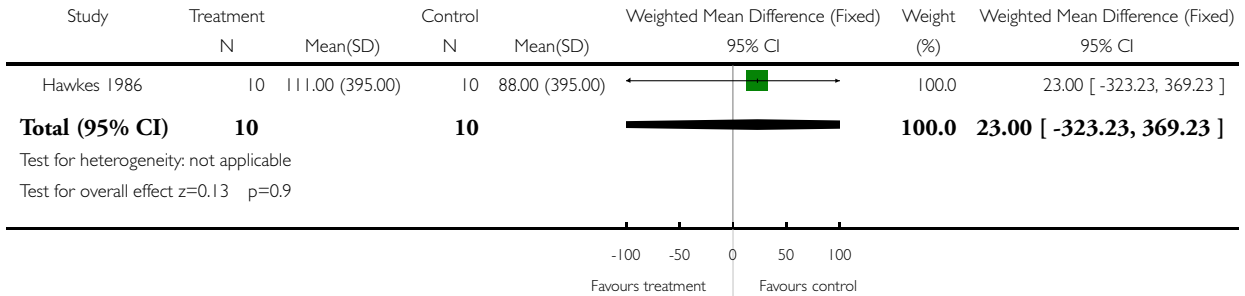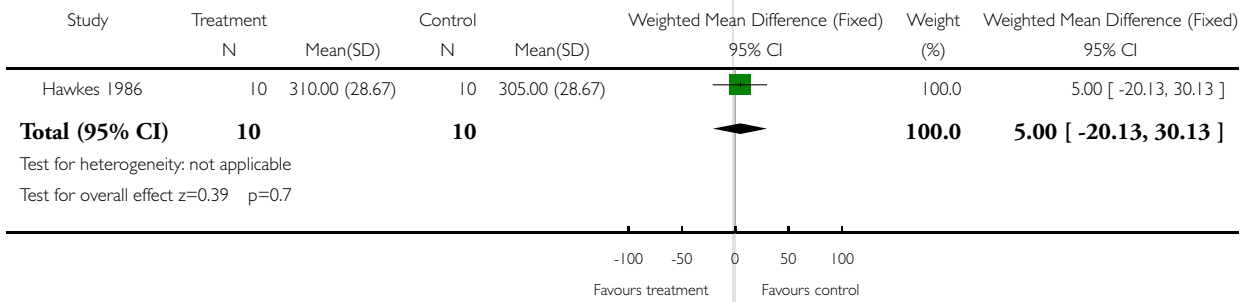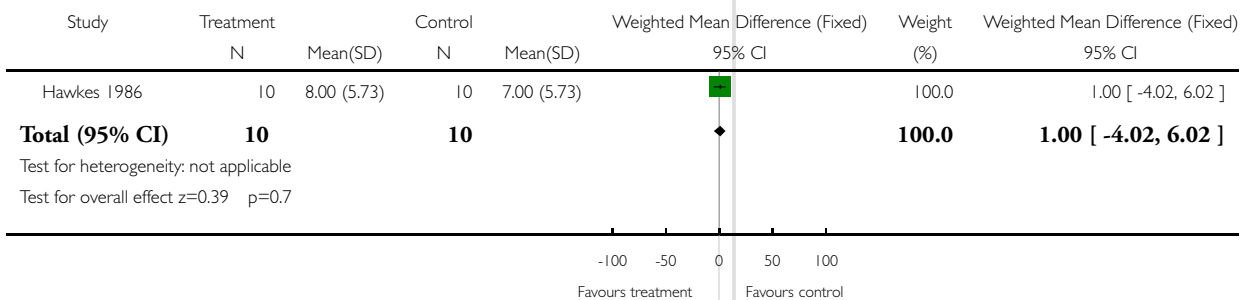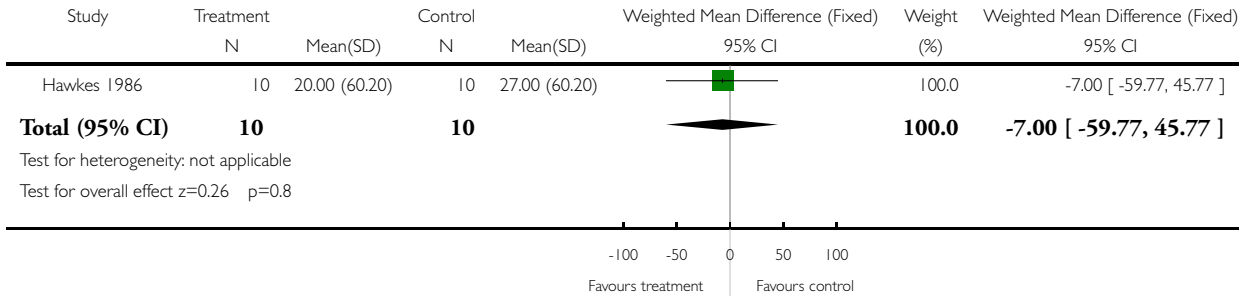
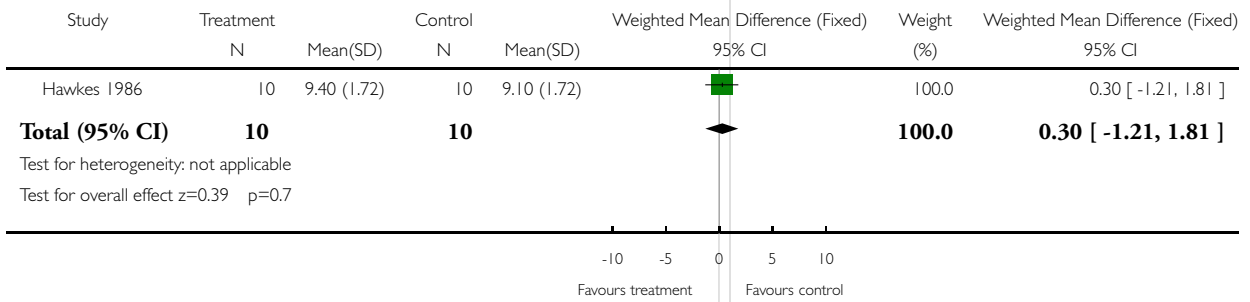Outcome: 03 Articular Index (0-3 scale, 0=pain)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	10.00 (17.20)	10	7.00 (17.20)		100.0	3.00 [-12.08, 18.08]
Total (95% CI)	**10**		**10**			**100.0**	**3.00 [-12.08, 18.08]**
Test for heterogeneity: not applicable							
Test for overall effect z=0.39 p=0.7							

```
            -100    -50      0      50    100
               Favours treatment   Favours control
```

Analysis 15.04.   Comparison 15 Faradic bath vs Control (Hand) (End of treatment - 2 wks)*, Outcome 04 Timed Task (sec)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 15 Faradic bath vs Control (Hand) (End of treatment - 2 wks)*
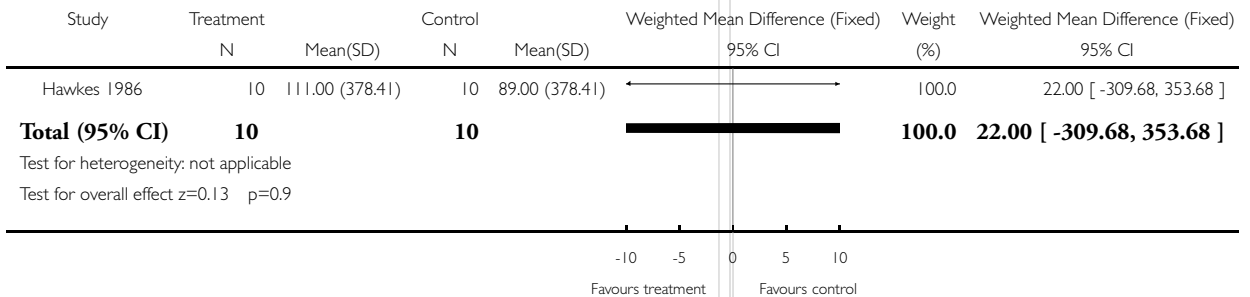
Outcome: 04 Timed Task (sec)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	20.00 (60.20)	10	27.00 (60.20)		100.0	-7.00 [-59.77, 45.77]
Total (95% CI)	**10**		**10**			**100.0**	**-7.00 [-59.77, 45.77]**
Test for heterogeneity: not applicable							
Test for overall effect z=0.26 p=0.8							

```
            -10     -5       0      5     10
               Favours treatment   Favours control
```

Analysis 15.05.   Comparison 15 Faradic bath vs Control (Hand) (End of treatment - 2 wks)*, Outcome 05 Activity score (checklist, higher score=better)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 15 Faradic bath vs Control (Hand) (End of treatment - 2 wks)*

Outcome: 05 Activity score (checklist, higher score=better)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	9.40 (0.32)	10	9.10 (0.32)		100.0	0.30 [0.02, 0.58]
Total (95% CI)	**10**		**10**			**100.0**	**0.30 [0.02, 0.58]**
Test for heterogeneity: not applicable							
Test for overall effect z=2.10 p=0.04							

```
            -10     -5       0      5     10
               Favours treatment   Favours control
```
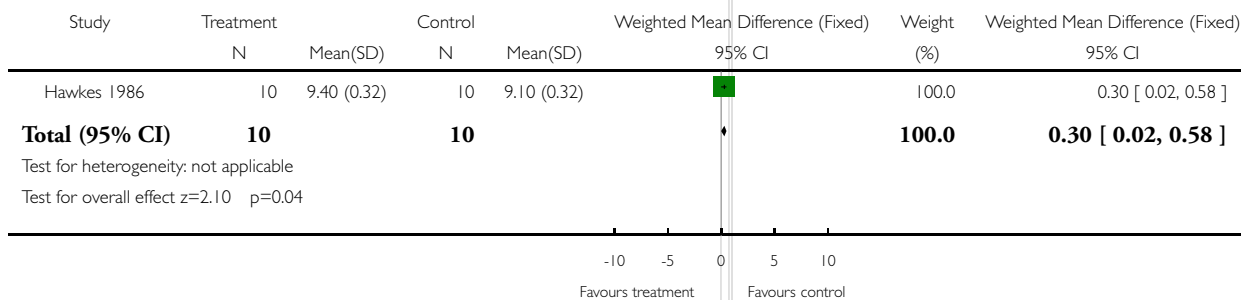
Analysis 16.01.   Comparison 16 Faradic bath vs Control (Hand) (End of treatment - 3 wks)*, Outcome 01 Hand Grip (mmHg)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 16 Faradic bath vs Control (Hand) (End of treatment - 3 wks)*
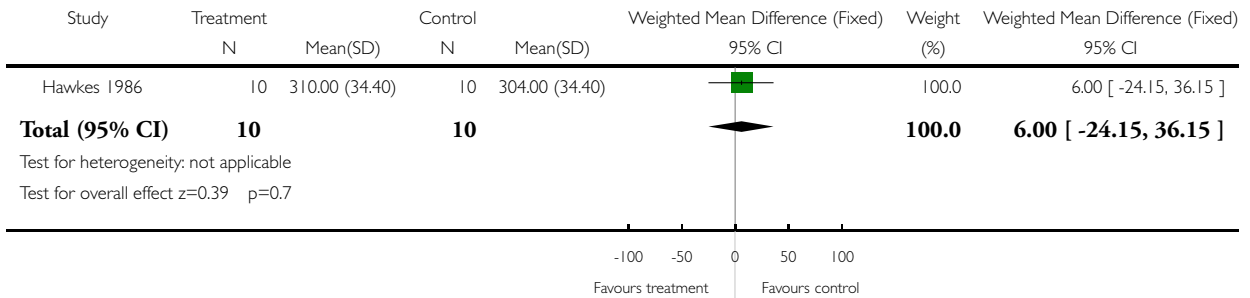
Outcome: 01 Hand Grip (mmHg)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	99.00 (172.01)	10	89.00 (172.01)		100.0	10.00 [-140.77, 160.77]
Total (95% CI)	**10**		**10**			**100.0**	**10.00 [-140.77, 160.77]**

Test for heterogeneity: not applicable

Test for overall effect z=0.13   p=0.9

```
        -100    -50    0    50    100
       Favours treatment    Favours control
```

Analysis 16.02.   Comparison 16 Faradic bath vs Control (Hand) (End of treatment - 3 wks)*, Outcome 02 PIP circumference (mm)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 16 Faradic bath vs Control (Hand) (End of treatment - 3 wks)*

Outcome: 02 PIP circumference (mm)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	329.00 (143.34)	10	304.00 (143.34)		100.0	25.00 [-100.64, 150.64]
Total (95% CI)	**10**		**10**			**100.0**	**25.00 [-100.64, 150.64]**

Test for heterogeneity: not applicable

Test for overall effect z=0.39   p=0.7

```
        -100    -50    0    50    100
       Favours treatment    Favours control
```

Analysis 16.03.   Comparison 16 Faradic bath vs Control (Hand) (End of treatment - 3 wks)*, Outcome 03 Articular Index (0-3) scale, 0=no pain)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 16 Faradic bath vs Control (Hand) (End of treatment - 3 wks)*

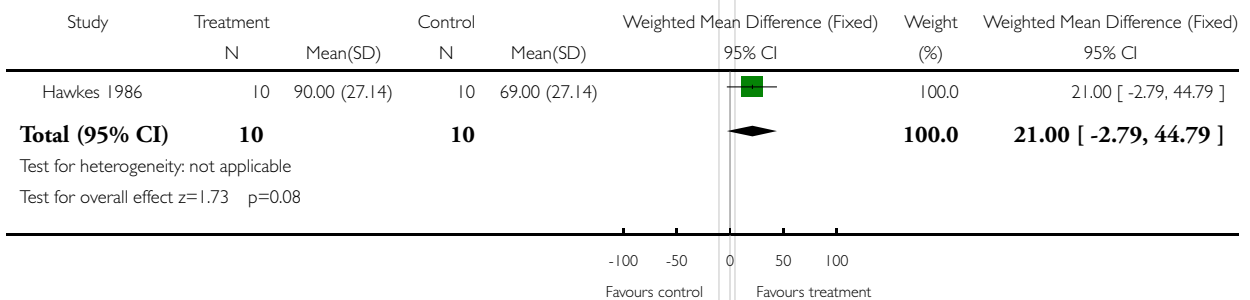Outcome: 03 Articular Index (0-3) scale, 0=no pain)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	10.00 (28.67)	10	5.00 (28.67)		100.0	5.00 [-20.13, 30.13]
Total (95% CI)	**10**		**10**			**100.0**	**5.00 [-20.13, 30.13]**

Test for heterogeneity: not applicable

Test for overall effect z=0.39   p=0.7

```
        -100    -50    0    50    100
       Favours treatment    Favours control
```

Analysis 16.04.   Comparison 16 Faradic bath vs Control (Hand) (End of treatment - 3 wks)*, Outcome 04 ROM (mm)*
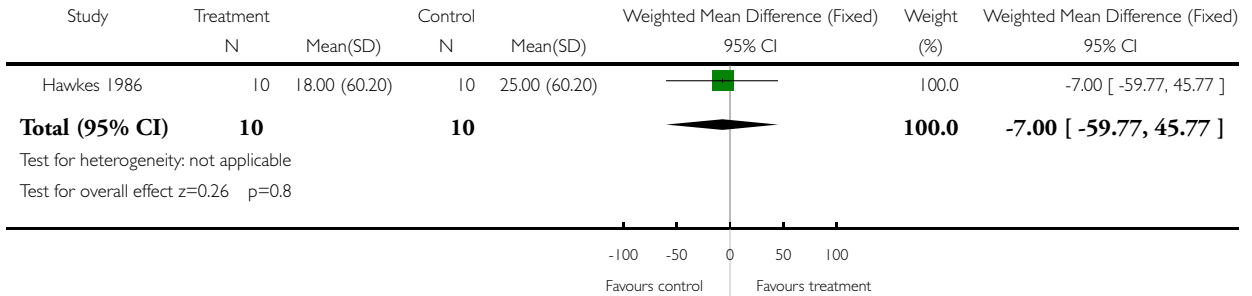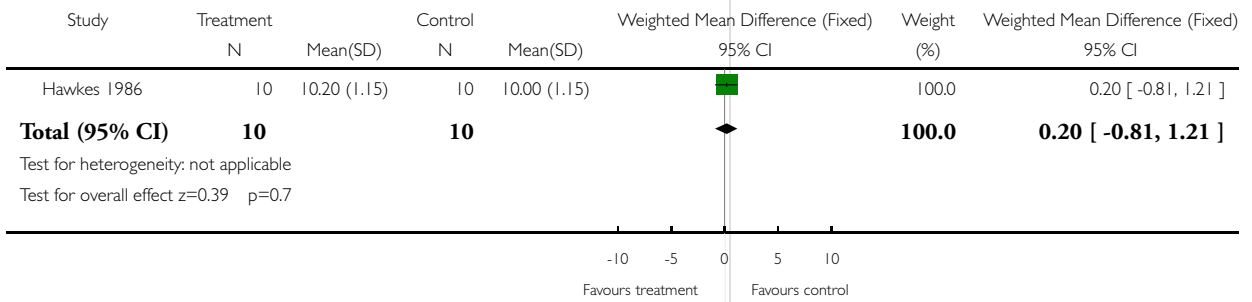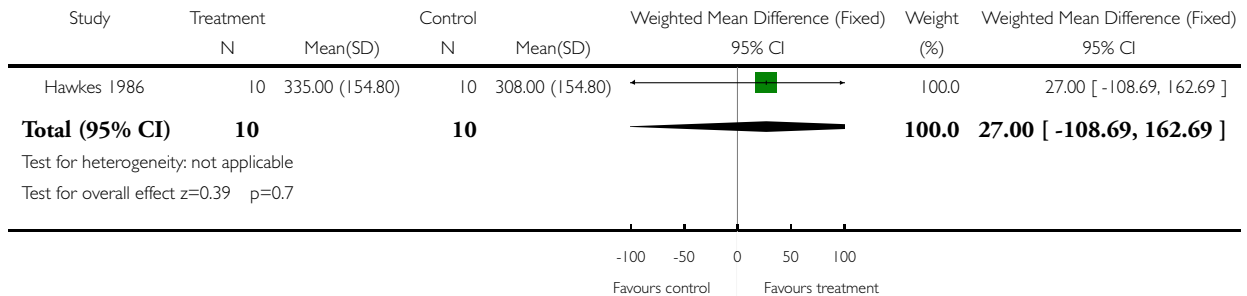
Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 16 Faradic bath vs Control (Hand) (End of treatment - 3 wks)*

Outcome: 04 ROM (mm)*

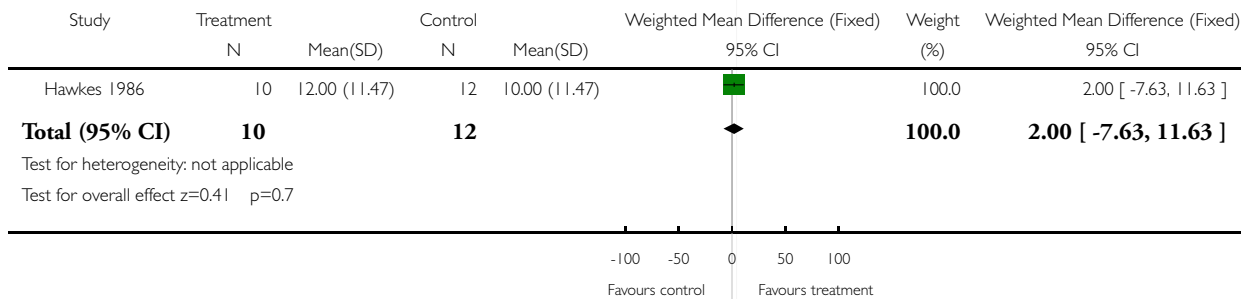| Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	77.00 (10.34)	10	69.00 (10.34)		100.0	8.00 [-1.06, 17.06]
Total (95% CI)	**10**		**10**			**100.0**	**8.00 [-1.06, 17.06]**
Test for heterogeneity: not applicable							
Test for overall effect z=1.73 p=0.08							

-100   -50   0   50   100

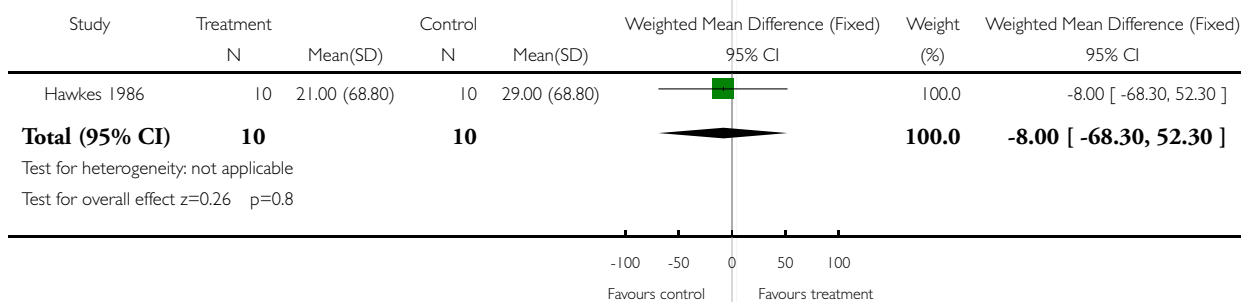Favours control   Favours control
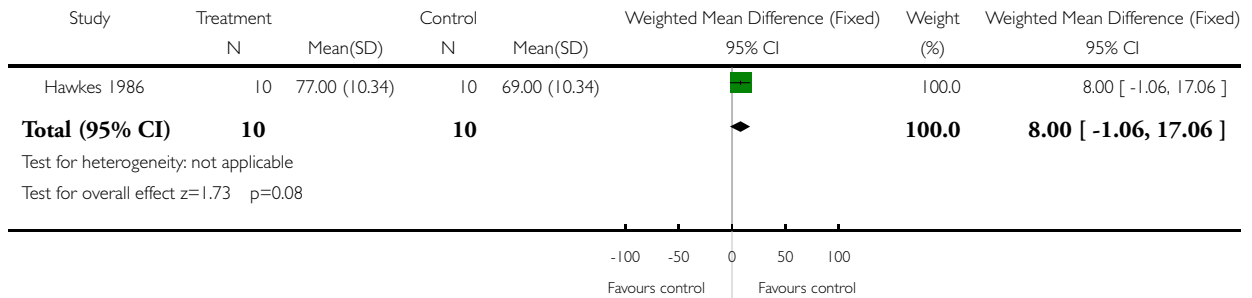
Analysis 16.05.   Comparison 16 Faradic bath vs Control (Hand) (End of treatment - 3 wks)*, Outcome 05 Timed Task (sec)*
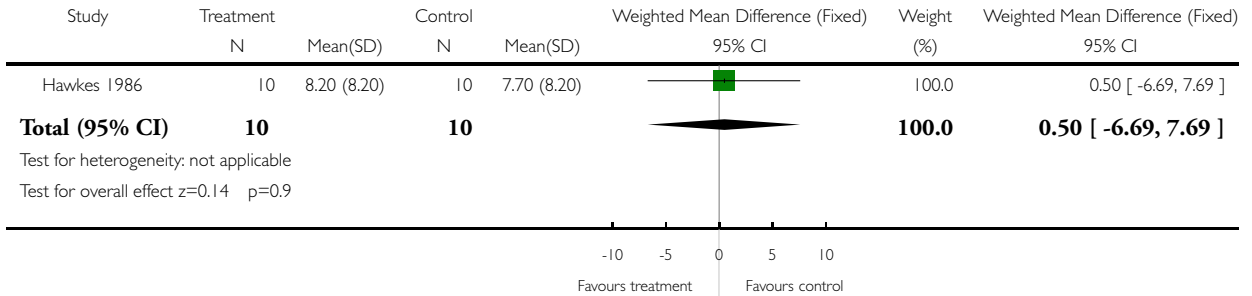
Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 16 Faradic bath vs Control (Hand) (End of treatment - 3 wks)*
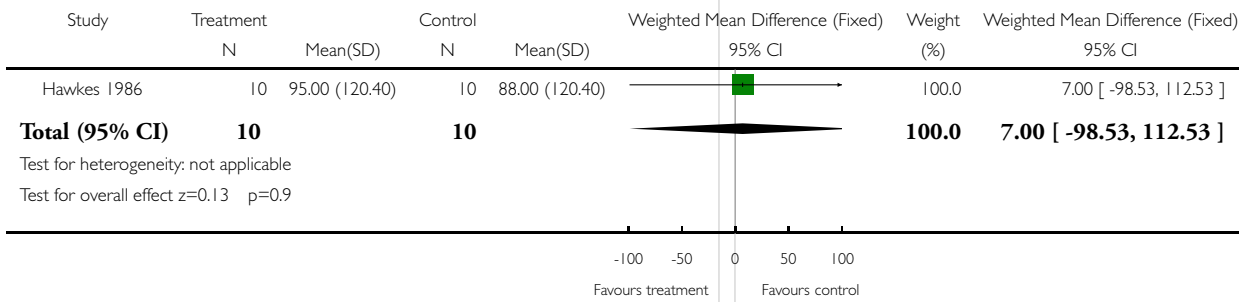
Outcome: 05 Timed Task (sec)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	20.00 (43.00)	10	25.00 (43.00)		100.0	-5.00 [-42.69, 32.69]
Total (95% CI)	**10**		**10**			**100.0**	**-5.00 [-42.69, 32.69]**
Test for heterogeneity: not applicable							
Test for overall effect z=0.26 p=0.8							

-100   -50   0   50   100

Favours control   Favours treatment

Analysis 16.06.   Comparison 16 Faradic bath vs Control (Hand) (End of treatment - 3 wks)*, Outcome 06 Activity score (checklist, higher score=better)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 16 Faradic bath vs Control (Hand) (End of treatment - 3 wks)*

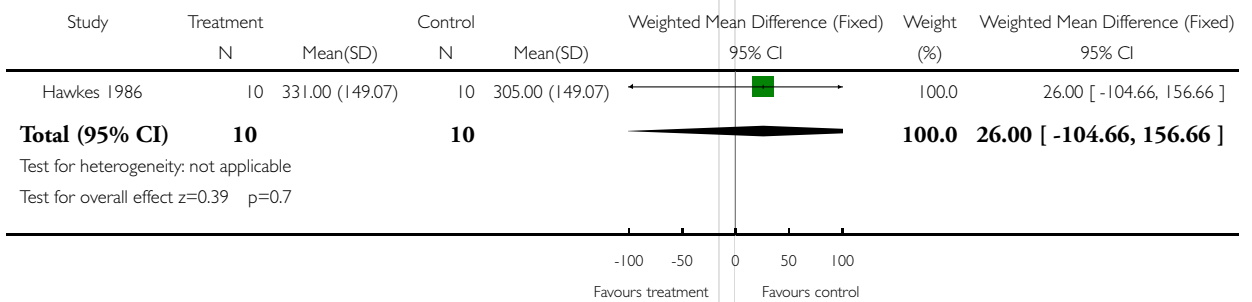Outcome: 06 Activity score (checklist, higher score=better)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	8.70 (1.38)	10	10.00 (1.38)		100.0	-1.30 [-2.51, -0.09]
Total (95% CI)	**10**		**10**			**100.0**	**-1.30 [-2.51, -0.09]**
Test for heterogeneity: not applicable							
Test for overall effect z=2.11 p=0.04							

-10   -5   0   5   10

Favours control   Favours treatment
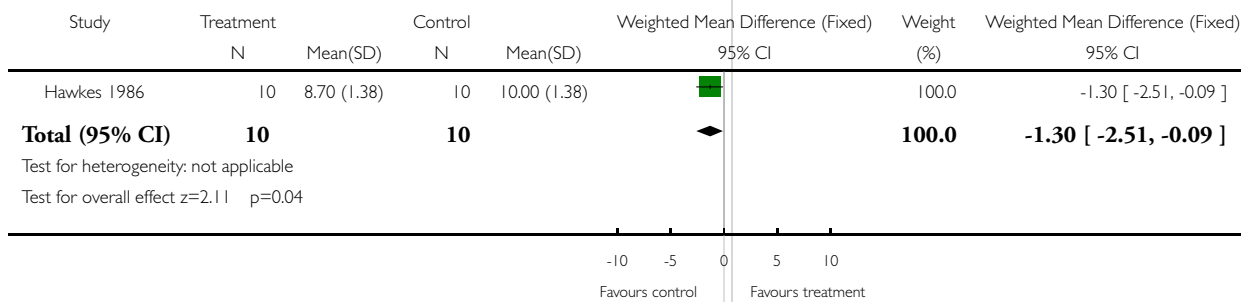
Analysis 17.01. Comparison 17 Wax vs Faradic bath +Ultrasound (Hand) (End of treatment - 1 week)*, Outcome 01 Hand grip (mmHg)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 17 Wax vs Faradic bath +Ultrasound (Hand) (End of treatment - 1 week)*

Outcome: 01 Hand grip (mmHg)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	99.00 (120.40)	10	92.00 (120.40)		100.0	7.00 [-98.53, 112.53]
Total (95% CI)	**10**		**10**			**100.0**	**7.00 [-98.53, 112.53]**
Test for heterogeneity: not applicable							
Test for overall effect z=0.13 p=0.9							

-100 -50 0 50 100

Favours treatment   Favours control

Analysis 17.02. Comparison 17 Wax vs Faradic bath +Ultrasound (Hand) (End of treatment - 1 week)*, Outcome 02 PIP circumference (mm)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 17 Wax vs Faradic bath +Ultrasound (Hand) (End of treatment - 1 week)*
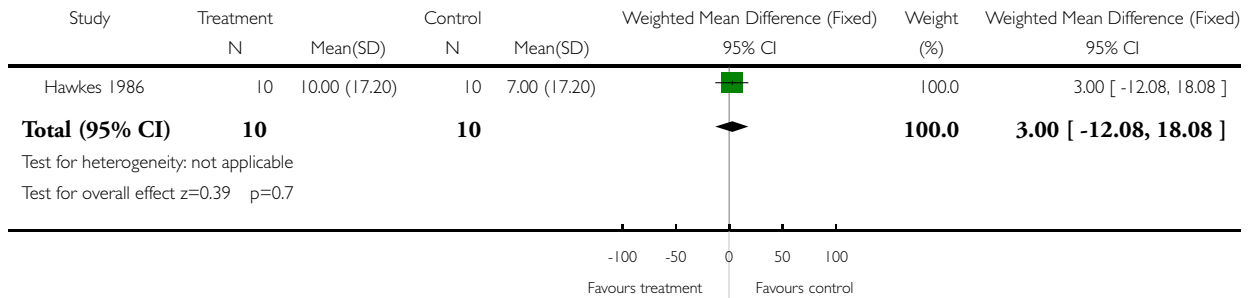
Outcome: 02 PIP circumference (mm)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	314.00 (120.40)	10	335.00 (120.40)		100.0	-21.00 [-126.53, 84.53]
Total (95% CI)	**10**		**10**			**100.0**	**-21.00 [-126.53, 84.53]**
Test for heterogeneity: not applicable							
Test for overall effect z=0.39 p=0.7							

-100 -50 0 50 100

Favours treatment   Favours control

Analysis 17.03. Comparison 17 Wax vs Faradic bath +Ultrasound (Hand) (End of treatment - 1 week)*, Outcome 03 Articular index (0-3 scale, 0=no pain)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 17 Wax vs Faradic bath +Ultrasound (Hand) (End of treatment - 1 week)*

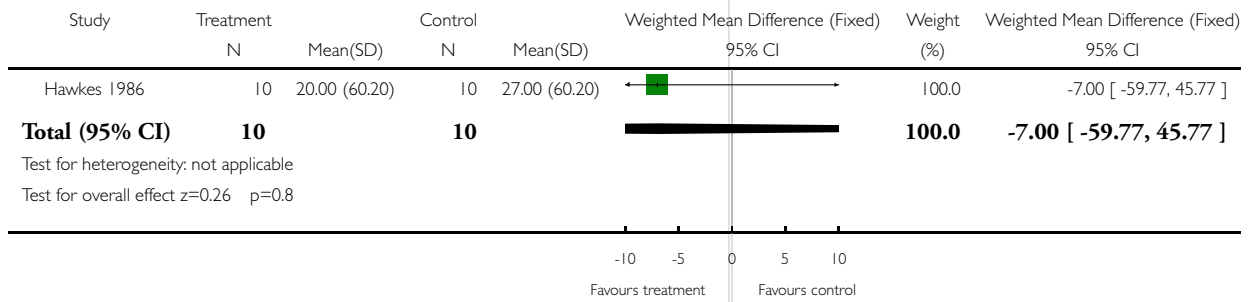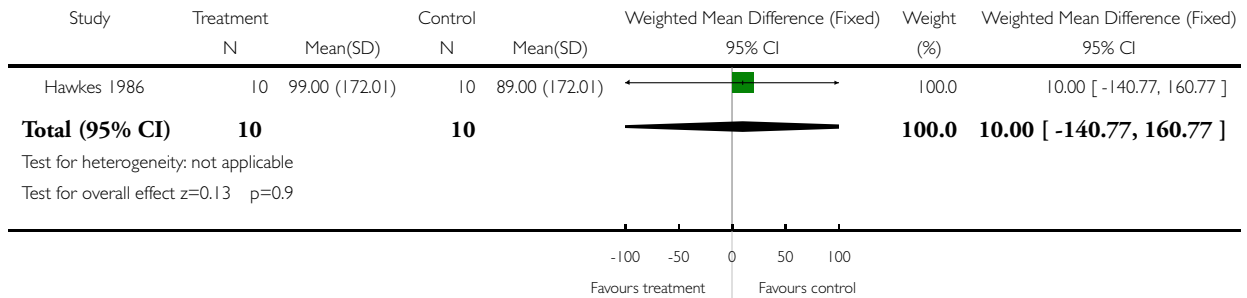Outcome: 03 Articular index (0-3 scale, 0=no pain)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	11.00 (5.73)	10	12.00 (5.73)		100.0	-1.00 [-6.02, 4.02]
Total (95% CI)	**10**		**10**			**100.0**	**-1.00 [-6.02, 4.02]**
Test for heterogeneity: not applicable							
Test for overall effect z=0.39 p=0.7							

-10 -5 0 5 10

Favours treatment   Favours control

Analysis 17.04. Comparison 17 Wax vs Faradic bath +Ultrasound (Hand) (End of treatment - 1 week)*,
Outcome 04 Timed task (sec)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 17 Wax vs Faradic bath +Ultrasound (Hand) (End of treatment - 1 week)*

Outcome: 04 Timed task (sec)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	23.00 (17.20)	10	21.00 (17.20)	■	100.0	2.00 [-13.08, 17.08]
Total (95% CI)	**10**		**10**		◆	**100.0**	**2.00 [-13.08, 17.08]**
Test for heterogeneity: not applicable							
Test for overall effect z=0.26 p=0.8							

```
        -100   -50    0    50   100
      Favours treatment   Favours control
```

Analysis 17.05. Comparison 17 Wax vs Faradic bath +Ultrasound (Hand) (End of treatment - 1 week)*,
Outcome 05 Activity score (checklist, higher is better)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 17 Wax vs Faradic bath +Ultrasound (Hand) (End of treatment - 1 week)*

Outcome: 05 Activity score (checklist, higher is better)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	7.80 (0.43)	10	8.20 (0.43)	■	100.0	-0.40 [-0.78, -0.02]
Total (95% CI)	**10**		**10**			**100.0**	**-0.40 [-0.78, -0.02]**
Test for heterogeneity: not applicable							
Test for overall effect z=2.08 p=0.04							

```
        -100   -50    0    50   100
      Favours treatment   Favours control
```

Analysis 18.01. Comparison 18 Wax vs Faradic bath + Ultrasound (Hand) (End of treatment - 2 weeks)*,
Outcome 01 Hand grip (mmHg)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 18 Wax vs Faradic bath + Ultrasound (Hand) (End of treatment - 2 weeks)*

Outcome: 01 Hand grip (mmHg)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	111.00 (275.21)	10	95.00 (275.21)	←■→	100.0	16.00 [-225.23, 257.23]
Total (95% CI)	**10**		**10**		◆	**100.0**	**16.00 [-225.23, 257.23]**
Test for heterogeneity: not applicable							
Test for overall effect z=0.13 p=0.9							

```
        -100   -50    0    50   100
      Favours treatment   Favours control
```
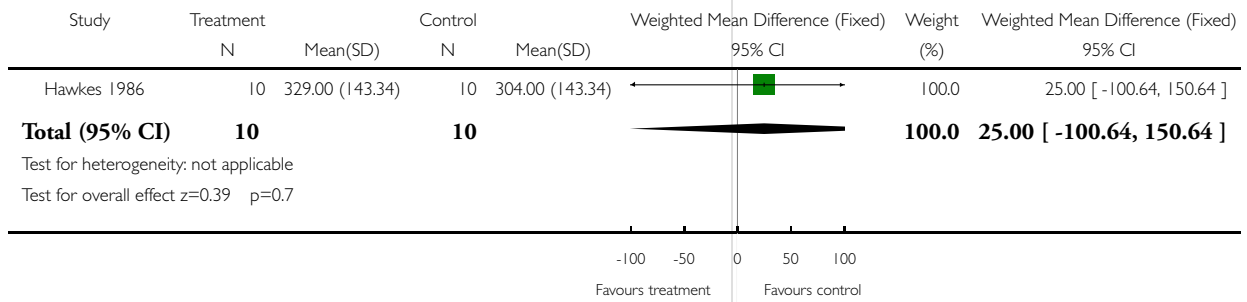
Analysis 18.02. Comparison 18 Wax vs Faradic bath + Ultrasound (Hand) (End of treatment - 2 weeks)*, Outcome 02 PIP circumference (mm)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 18 Wax vs Faradic bath + Ultrasound (Hand) (End of treatment - 2 weeks)*
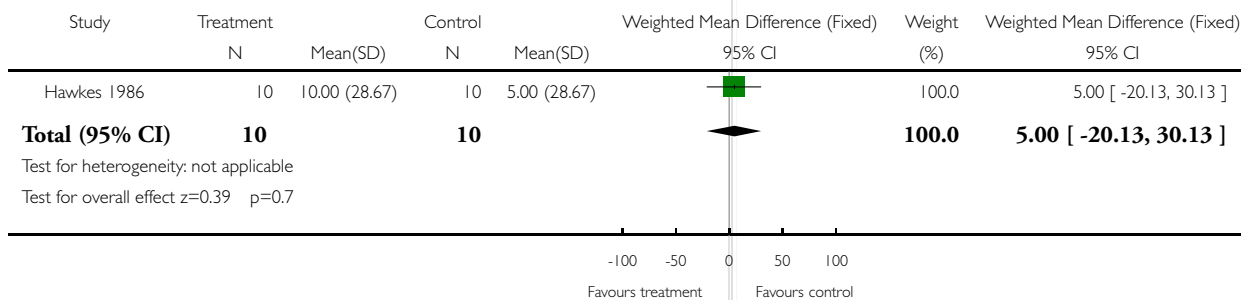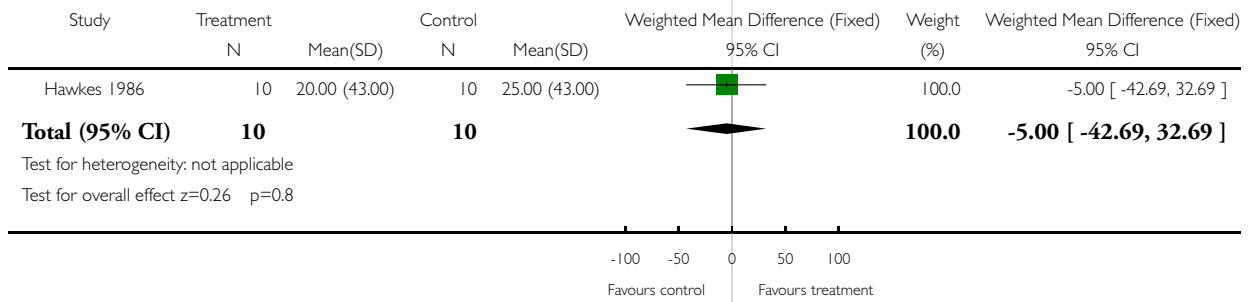
Outcome: 02 PIP circumference (mm)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	310.00 (120.40)	10	331.00 (120.40)		100.0	-21.00 [-126.53, 84.53]
Total (95% CI)	**10**		**10**			**100.0**	**-21.00 [-126.53, 84.53]**

Test for heterogeneity: not applicable

Test for overall effect z=0.39 p=0.7

```
   -100  -50   0    50   100
   Favours treatment   Favours control
```

Analysis 18.03. Comparison 18 Wax vs Faradic bath + Ultrasound (Hand) (End of treatment - 2 weeks)*, Outcome 03 Articular index (0-3 scale, 0=no pain)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 18 Wax vs Faradic bath + Ultrasound (Hand) (End of treatment - 2 weeks)*

Outcome: 03 Articular index (0-3 scale, 0=no pain)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	8.00 (11.47)	10	10.00 (11.47)		100.0	-2.00 [-12.05, 8.05]
Total (95% CI)	**10**		**10**			**100.0**	**-2.00 [-12.05, 8.05]**

Test for heterogeneity: not applicable

Test for overall effect z=0.39 p=0.7

```
   -100  -50   0    50   100
   Favours treatment   Favours control
```

Analysis 18.04. Comparison 18 Wax vs Faradic bath + Ultrasound (Hand) (End of treatment - 2 weeks)*, Outcome 04 Timed task (sec)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 18 Wax vs Faradic bath + Ultrasound (Hand) (End of treatment - 2 weeks)*

Outcome: 04 Timed task (sec)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	20.00 (0.0)	10	20.00 (0.0)		0.0	Not estimable
Total (95% CI)	**10**		**10**			**0.0**	**Not estimable**

Test for heterogeneity: not applicable

Test for overall effect: not applicable

```
   -100  -50   0    50   100
   Favours treatment   Favours control
```

Analysis 18.05. Comparison 18 Wax vs Faradic bath + Ultrasound (Hand) (End of treatment - 2 weeks)*, Outcome 05 Activity score (checklist, higher is better)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 18 Wax vs Faradic bath + Ultrasound (Hand) (End of treatment - 2 weeks)*

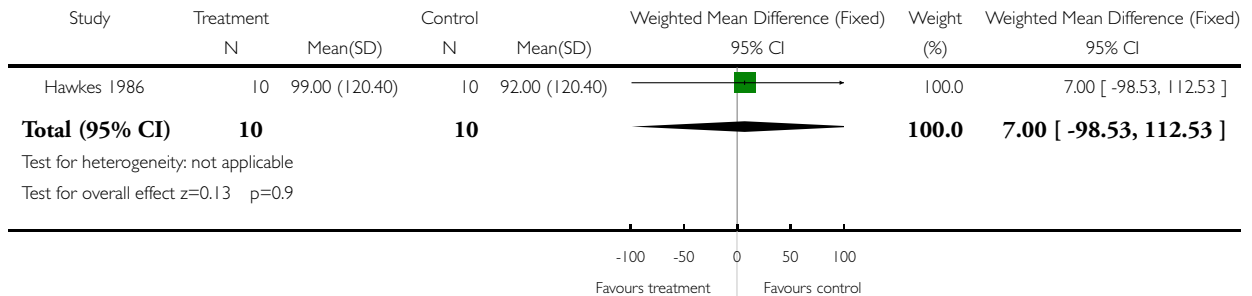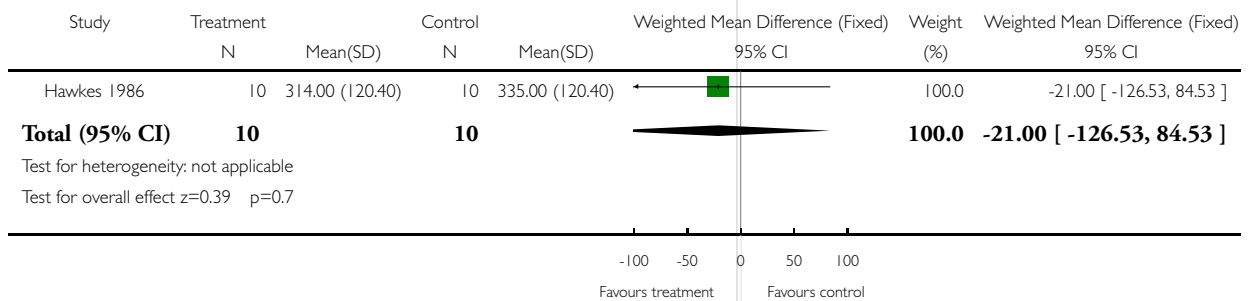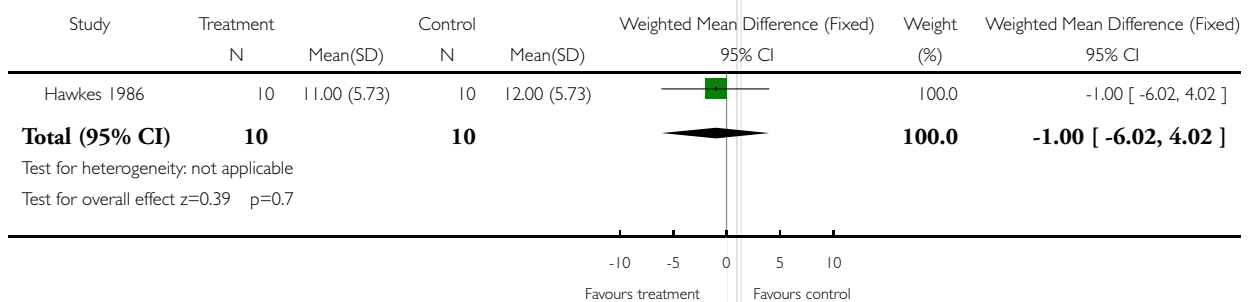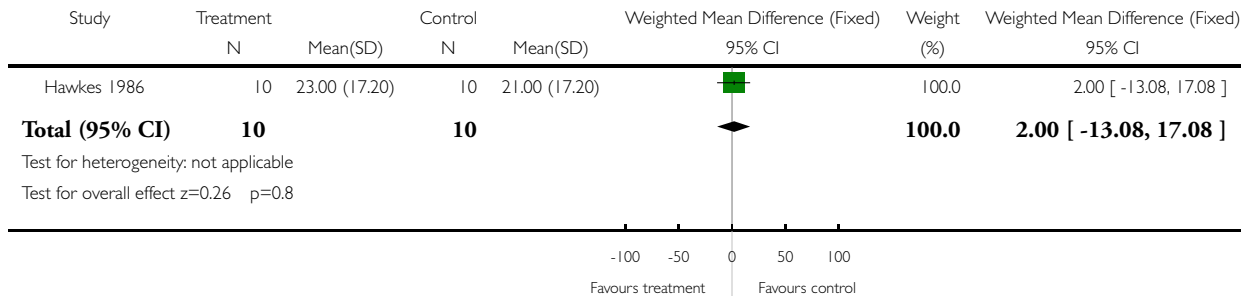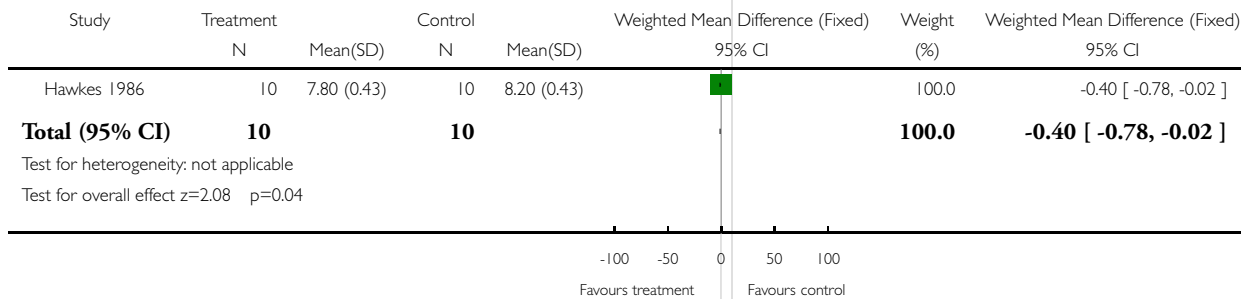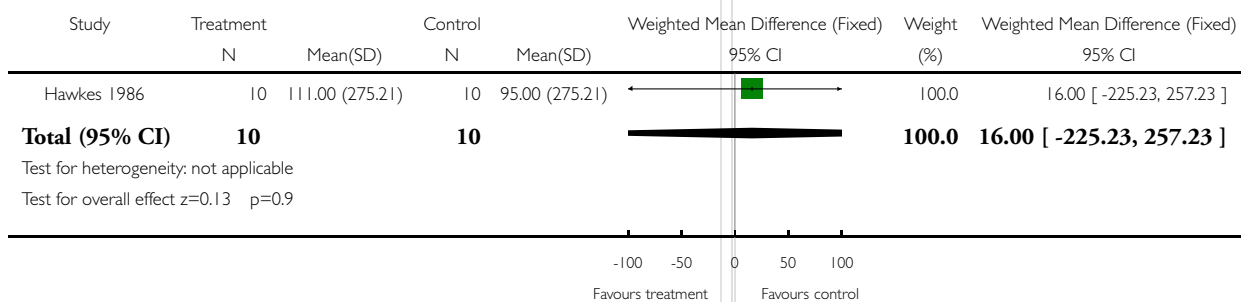Outcome: 05 Activity score (checklist, higher is better)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	9.40 (0.0)	10	9.40 (0.0)		0.0	Not estimable
Total (95% CI)	**10**		**10**			**0.0**	**Not estimable**

Test for heterogeneity: not applicable

Test for overall effect: not applicable

```
        -100    -50    0    50    100
        Favours treatment   Favours control
```

Analysis 19.01. Comparison 19 Wax vs Faradic bath + Ultrasound (Hand) (End of treatment - 3 weeks)*, Outcome 01 Hand grip (mmHg)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 19 Wax vs Faradic bath + Ultrasound (Hand) (End of treatment - 3 weeks)*
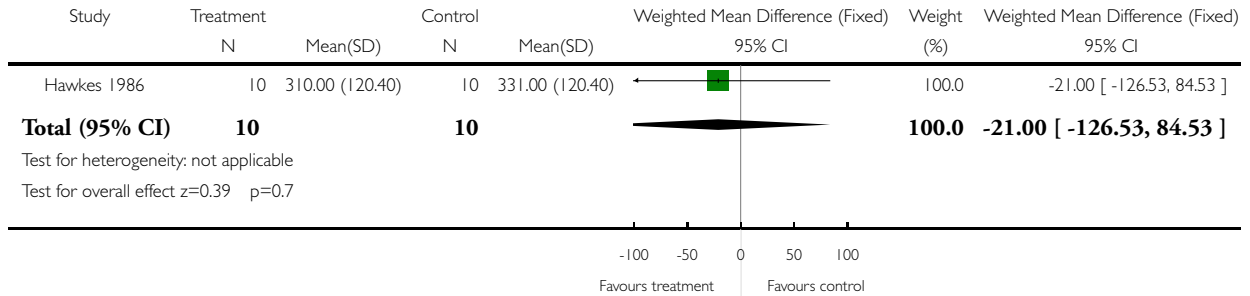
Outcome: 01 Hand grip (mmHg)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	111.00 (206.00)	10	99.00 (206.00)		100.0	12.00 [-168.56, 192.56]
Total (95% CI)	**10**		**10**			**100.0**	**12.00 [-168.56, 192.56]**

Test for heterogeneity: not applicable

Test for overall effect: z=0.13   p=0.9

```
        -100    -50    0    50    100
        Favours treatment   Favours control
```

Analysis 19.02. Comparison 19 Wax vs Faradic bath + Ultrasound (Hand) (End of treatment - 3 weeks)*, Outcome 02 PIP circumference (mm)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 19 Wax vs Faradic bath + Ultrasound (Hand) (End of treatment - 3 weeks)*
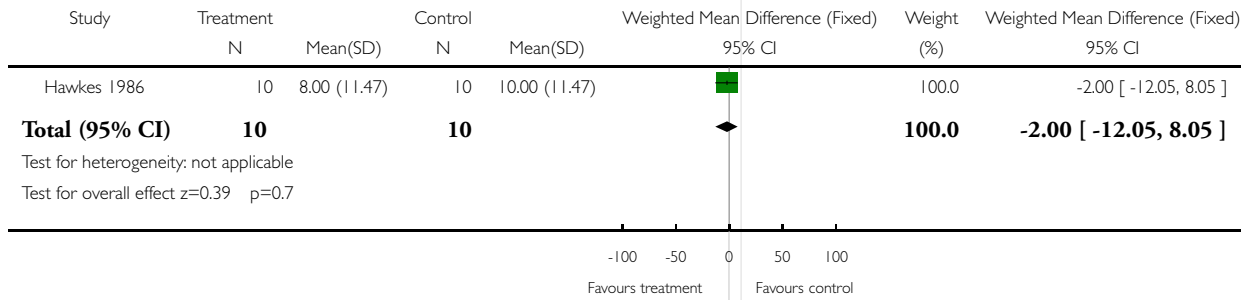
Outcome: 02 PIP circumference (mm)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	310.00 (108.94)	10	329.00 (108.94)		100.0	-19.00 [-114.49, 76.49]
Total (95% CI)	**10**		**10**			**100.0**	**-19.00 [-114.49, 76.49]**

Test for heterogeneity: not applicable

Test for overall effect: z=0.39   p=0.7

```
        -100    -50    0    50    100
        Favours treatment   Favours control
```

Analysis 19.03. Comparison 19 Wax vs Faradic bath + Ultrasound (Hand) (End of treatment - 3 weeks)*, Outcome 03 Articular index (sec)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 19 Wax vs Faradic bath + Ultrasound (Hand) (End of treatment - 3 weeks)*

Outcome: 03 Articular index (sec)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	6.00 (22.93)	10	10.00 (22.93)		100.0	-4.00 [-24.10, 16.10]
Total (95% CI)	**10**		**10**			**100.0**	**-4.00 [-24.10, 16.10]**

Test for heterogeneity: not applicable

Test for overall effect z=0.39   p=0.7

```
      -100    -50     0     50    100
      Favours treatment    Favours control
```
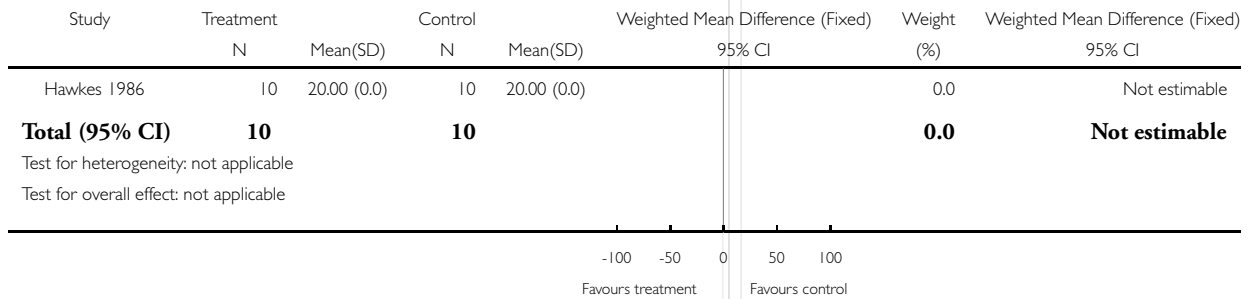
Analysis 19.04. Comparison 19 Wax vs Faradic bath + Ultrasound (Hand) (End of treatment - 3 weeks)*, Outcome 04 Timed task (sec)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 19 Wax vs Faradic bath + Ultrasound (Hand) (End of treatment - 3 weeks)*
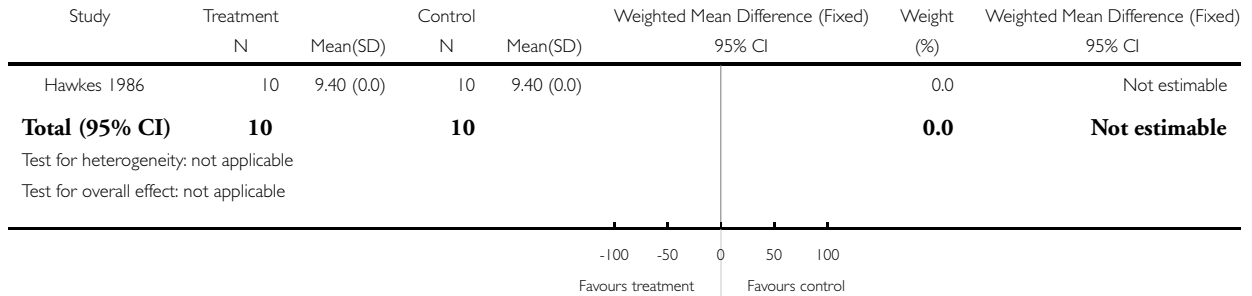
Outcome: 04 Timed task (sec)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	18.00 (17.20)	10	20.00 (17.20)		100.0	-2.00 [-17.08, 13.08]
Total (95% CI)	**10**		**10**			**100.0**	**-2.00 [-17.08, 13.08]**

Test for heterogeneity: not applicable

Test for overall effect z=0.26   p=0.8

```
      -100    -50     0     50    100
      Favours treatment    Favours control
```

Analysis 19.05. Comparison 19 Wax vs Faradic bath + Ultrasound (Hand) (End of treatment - 3 weeks)*, Outcome 05 Activity score (checklist, higher is better)*
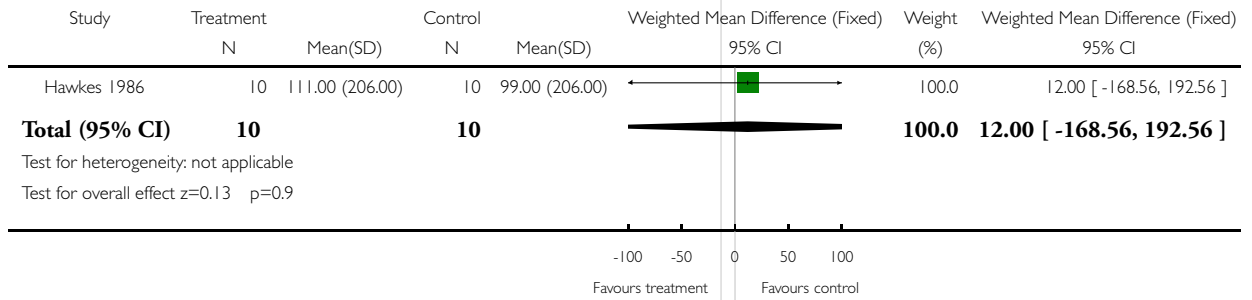
Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 19 Wax vs Faradic bath + Ultrasound (Hand) (End of treatment - 3 weeks)*
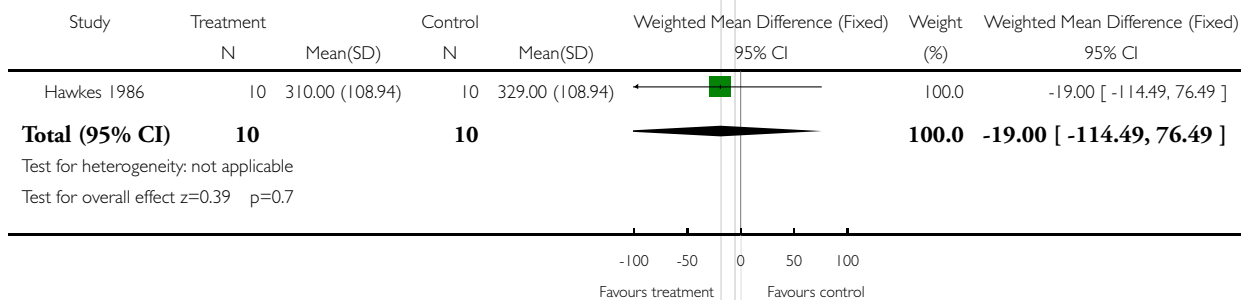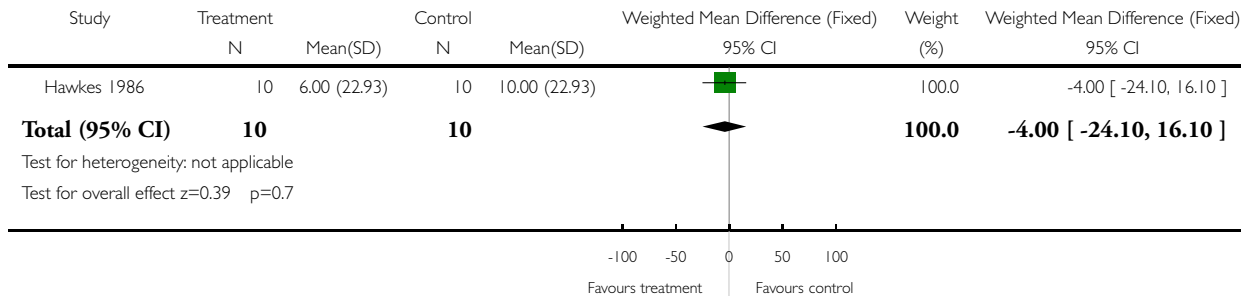
Outcome: 05 Activity score (checklist, higher is better)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	10.20 (1.60)	10	8.70 (1.60)		100.0	1.50 [0.10, 2.90]
Total (95% CI)	**10**		**10**			**100.0**	**1.50 [0.10, 2.90]**

Test for heterogeneity: not applicable

Test for overall effect z=2.10   p=0.04

```
      -100    -50     0     50    100
      Favours treatment    Favours control
```
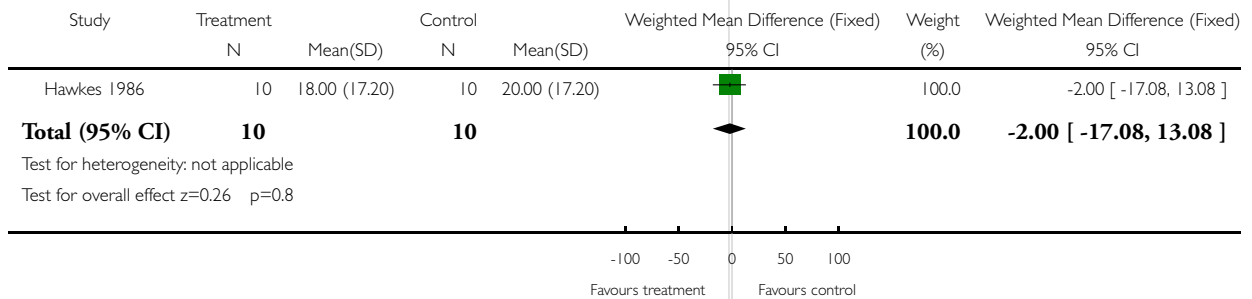
Analysis 19.06.   Comparison 19 Wax vs Faradic bath + Ultrasound (Hand) (End of treatment - 3 weeks)*, Outcome 06 ROM (mm)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 19 Wax vs Faradic bath + Ultrasound (Hand) (End of treatment - 3 weeks)*
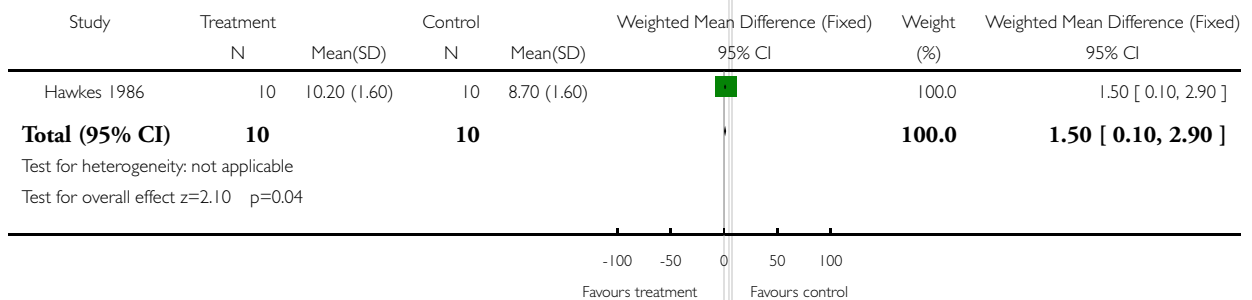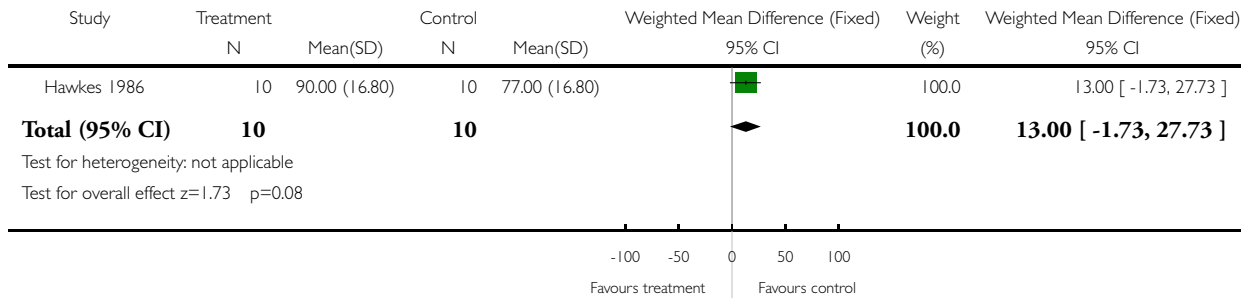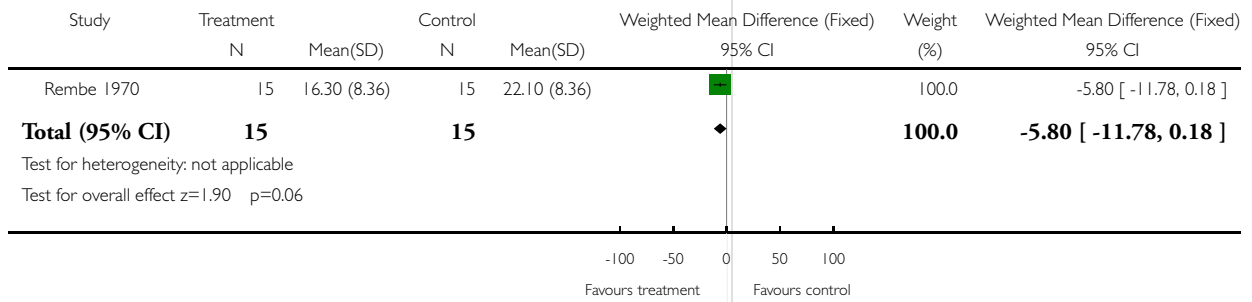
Outcome: 06 ROM (mm)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Hawkes 1986	10	90.00 (16.80)	10	77.00 (16.80)		100.0	13.00 [-1.73, 27.73]
Total (95% CI)	**10**		**10**			**100.0**	**13.00 [-1.73, 27.73]**
Test for heterogeneity: not applicable							
Test for overall effect z=1.73 p=0.08							

```
            -100    -50     0     50    100
            Favours treatment    Favours control
```

Analysis 20.01.   Comparison 20 Cryotherapy vs Control (Hand) (End of treatment-2 days)*, Outcome 01 % of change in post-surgery oedema increase (lower is better)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 20 Cryotherapy vs Control (Hand) (End of treatment-2 days)*

Outcome: 01 % of change in post-surgery oedema increase (lower is better)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Rembe 1970	15	16.30 (8.36)	15	22.10 (8.36)		100.0	-5.80 [-11.78, 0.18]
Total (95% CI)	**15**		**15**			**100.0**	**-5.80 [-11.78, 0.18]**
Test for heterogeneity: not applicable							
Test for overall effect z=1.90 p=0.06							

```
            -100    -50     0     50    100
            Favours treatment    Favours control
```

Analysis 21.01.   Comparison 21 Cryotherapy vs Control (Hand) (End of treatment-3 days)*, Outcome 01 % of change in post-surgery oedema increase (lower % is better)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 21 Cryotherapy   vs Control (Hand) (End of treatment-3 days)*

Outcome: 01 % of change in post-surgery oedema increase (lower % is better)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Rembe 1970	15	12.10 (14.13)	15	21.90 (14.13)		100.0	-9.80 [-19.91, 0.31]
Total (95% CI)	**15**		**15**			**100.0**	**-9.80 [-19.91, 0.31]**
Test for heterogeneity: not applicable							
Test for overall effect z=1.90 p=0.06							

```
            -100    -50     0     50    100
            Favours treatment    Favours control
```
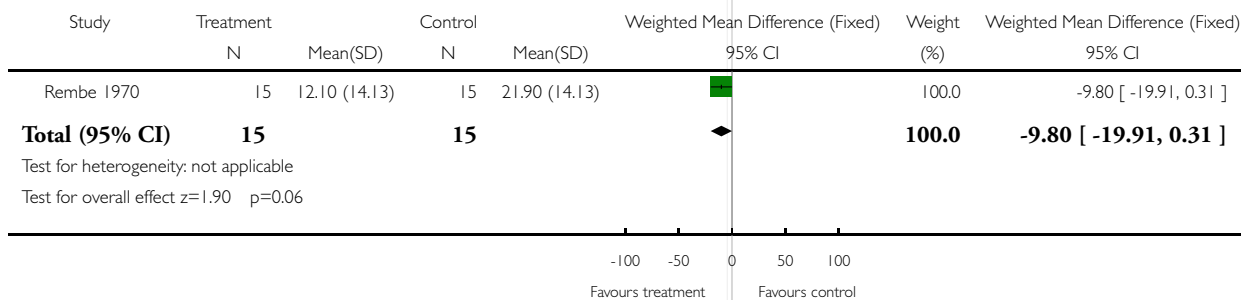
Analysis 22.01.   Comparison 22 Cryotherapy vs Control (Hand) (End of treatment-4 days)*, Outcome 01 % of change in post-surgery oedema increase (lower % is better)*

Review: Thermotherapy for treating rheumatoid arthritis

Comparison: 22 Cryotherapy vs Control (Hand) (End of treatment-4 days)*

Outcome: 01 % of change in post-surgery oedema increase (lower % is better)*

Study	Treatment		Control		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Rembe 1970	15	17.00 (1.15)	15	17.80 (1.15)		100.0	-0.80 [-1.62, 0.02]
Total (95% CI)	**15**		**15**			**100.0**	**-0.80 [-1.62, 0.02]**

Test for heterogeneity: not applicable

Test for overall effect z=1.91   p=0.06

```
        -100    -50     0     50    100
         Favours treatment    Favours control
```