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## Mind-body interventions during pregnancy for preventing or treating women's anxiety (Review)

Marc I, Toureche N, Ernst E, Hodnett ED, Blanchet C, Dodin S, Njoya MM

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[Intervention Review]

# Mind-body interventions during pregnancy for preventing or treating women's anxiety

Isabelle Marc<sup>1</sup>, Narimane Toureche<sup>2</sup>, Edzard Ernst<sup>3</sup>, Ellen D Hodnett<sup>4</sup>, Claudine Blanchet<sup>5</sup>, Sylvie Dodin<sup>6</sup>, Merlin M Njoya<sup>7</sup>

<sup>1</sup>Département de pédiatrie, Université Laval, Centre Hospitalier Universitaire de Québec, Québec, Canada. <sup>2</sup>Department of Pediatrics, Centre de Recherche Centre Hospitalier Universitaire Québec, Quebec, Canada. <sup>3</sup>Complementary Medicine, Peninsula Medical School, University of Exeter, Exeter, UK. <sup>4</sup>Lawrence S. Bloomberg Faculty of Nursing, University of Toronto, Toronto, Canada. <sup>5</sup>Université Laval, Quebec, Canada. <sup>6</sup>Department of Obstetrics and Gynecology, Université Laval, Quebec, Canada. <sup>7</sup>Centre de recherche du Centre hospitalier universitaire de Québec (CHUQ), St-François d'Assise Hôpital, Québec, Canada

**Contact:** Isabelle Marc, Département de pédiatrie, Université Laval, Centre Hospitalier Universitaire de Québec, 2705 boulevard Laurier, Québec, Québec, G1V 4G2, Canada. [isabelle.marc@crchul.ulaval.ca](mailto:isabelle.marc@crchul.ulaval.ca).

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## ABSTRACT

### Background

Anxiety during pregnancy is a common problem. Anxiety and stress could have consequences on the course of the pregnancy and the later development of the child. Anxiety responds well to treatments such as cognitive behavioral therapy and/or medication. Non-pharmacological interventions such as mind-body interventions, known to decrease anxiety in several clinical situations, might be offered for treating and preventing anxiety during pregnancy.

### Objectives

To assess the benefits of mind-body interventions during pregnancy in preventing or treating women's anxiety and in influencing perinatal outcomes.

### Search methods

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (30 November 2010), MEDLINE (1950 to 30 November 2010), EMBASE (1974 to 30 November 2010), the National Center for Complementary and Alternative Medicine (NCCAM) (1 December 2010), ClinicalTrials.gov (December 2010) and Current Controlled Trials (1 December 2010), searched the reference lists of selected studies and contacted professionals and authors in the field.

### Selection criteria

Randomized controlled trials, involving pregnant women of any age at any time from conception to one month after birth, comparing mind-body interventions with a control group. Mind-body interventions include: autogenic training, biofeedback, hypnotherapy, imagery, meditation, prayer, auto-suggestion, tai-chi and yoga. Control group includes: standard care, other pharmacological or non-pharmacological interventions, other types of mind-body interventions or no treatment at all.

### Data collection and analysis

Three review authors independently assessed trials for inclusion all assessed risk of bias for each included study. We extracted data independently using an agreed form and checked it for accuracy.

## Main results

We included eight trials (556 participants), evaluating hypnotherapy (one trial), imagery (five trials), autogenic training (one trial) and yoga (one trial). Due to the small number of studies per intervention and to the diversity of outcome measurements, we performed no meta-analysis, and have reported results individually for each study. Compared with usual care, in one study (133 women), imagery may have a positive effect on anxiety during labor decreasing anxiety at the early and middle stages of labor (MD -1.46; 95% CI -2.43 to -0.49; one study, 133 women) and (MD -1.24; 95% CI -2.18 to -0.30). Another study showed that imagery had a positive effect on anxiety and depression in the immediate postpartum period. Autogenic training might be effective for decreasing women's anxiety before delivering.

## Authors' conclusions

Mind-body interventions might benefit women's anxiety during pregnancy. Based on individual studies, there is some but no strong evidence for the effectiveness of mind-body interventions for the management of anxiety during pregnancy. The main limitations of the studies were the lack of blinding and insufficient details on the methods used for randomization.

## PLAIN LANGUAGE SUMMARY

### Mind-body interventions during pregnancy for preventing or treating women's anxiety

Mind-body interventions like yoga or hypnotherapy may be effective for reducing anxiety. These can be learned to induce mental relaxation and alter negative thinking related to anxiety to change the perception of a stressful event, leading to better adapted behaviour and coping skills. Their effectiveness for treatment or prevention of women's anxiety during pregnancy needs to be confirmed in clinical trials, as anxiety during the different stages of pregnancy can affect women's health and have consequences for the child. This review identified few studies that examined this. We included eight randomized controlled studies with 556 women in this review. Based on these studies, there is some not strong evidence for the effectiveness of mind-body interventions in the management of anxiety during pregnancy, labor, or in the first four weeks after giving birth. Compared with usual care, imagery may have a positive effect on anxiety during labor. Another study showed that imagery had a positive effect on anxiety and depression in the immediate postpartum period. Autogenic training might be effective for decreasing women's anxiety before delivering. No harmful effects were reported for any mind-body interventions in the studies included in the review. The studies used different mind-body interventions, sometimes as part of a complex intervention, that they compared with usual care or other potentially active interventions using diverse outcome measures. Several studies were at high risk of bias, had small sample sizes and high dropout rates.

## BACKGROUND

### Description of the condition

Being pregnant may cause anxiety (Huizink 2004), which can affect a woman's health. Anxiety during the antenatal period often remains undetected (Alder 2007; Coleman 2008) and is under-researched. Subclinical anxiety is prevalent and more frequent than depression at all stages of pregnancy (Lee 2007). Around 54% of women experience anxiety at some point of their pregnancy (versus 37% for depression). Anxiety and depression are more prevalent and severe in the first and third trimesters of pregnancy. Thus, new cases of anxiety emerge at different stages of pregnancy, making it difficult to diagnose such cases from only one antenatal visit (Lee 2007). In an observational study, higher anxiety rates were found in the first (15%) and third pregnancy trimesters (18%), whereas lower rates were reported at the second trimester (12.3%) (Teixeira 2009). In a longitudinal study (N = 8323), around 16% of pregnant women were diagnosed with anxiety at week 32 of gestation and 8.5% at week eight of the postpartum period (Heron 2004).

Anxiety symptoms during pregnancy are reported to be associated with depression and low social support (Gee 2008; Milgrom 2008b). However, internal resources, like low self-esteem, must also be considered. The relationship between psychosocial determinant factors (e.g. socioeconomic or age considerations) and anxiety during pregnancy is controversial (Littleton 2007). High anxiety levels during pregnancy have also been related to invasive procedures such as in vitro fertilization (IVF), pregnancy termination, amniocentesis, ultrasound scans, genetic counselling and hospitalization (Brisch 2003; Cwikel 2004; Sosa 2004). High-risk pregnancies (preterm labor, hypertension, diabetes, breech version or fetal abnormality), generate further anxiety (Vendittelli 2002). Several studies suggest that labelling a pregnancy as a risk may intensify women's feelings of loss of control and helplessness (Stahl 2003) and could potentially raise anxiety levels (Hatmaker 1998; Kowalcek 2003).

Anxiety has a negative influence on obstetric, fetal and perinatal outcomes, but conclusions are often limited due to low sample size in these studies, and to methodological weakness (Alder 2007; Littleton 2007). As a result, there is a lack of consensus among researchers on the role of anxiety in perinatal outcomes (Glover 2002; Johnson 2003; Littleton 2007). Women experiencing higher levels of anxiety during pregnancy seem to report more symptoms (nausea and vomiting) and make more medical visits (Andersson 2004; Swallow 2004). In addition, anxiety during pregnancy can influence particular behaviors, such as increase in alcohol or tobacco consumption (Alvik 2006; Goodwin 2007) or unhealthy eating habits (Hurley 2005). Finally, anxious pregnant women are at a greater risk of postpartum depression and mood disorders (Britton 2008; Lee 2007).

Anxiety and stress during pregnancy also affect the course of pregnancy and the health of the child. Conflicting results have been reported on the role of enhanced levels of anxiety in the development of pre-eclampsia (Andersson 2004; Kurki 2000; Sikkema 2001). Mothers experiencing high levels of psychological or social stress might be at increased risk of preterm birth (Anonymous 2008), but little is known about the mechanism underlying the association between stress (both psychological and social) and prematurity (Gennaro 2003; Goldenberg 2008; Moutquin 2003). Furthermore, maternal anxiety at birth is a

prognostic factor in neonatology (Zelkowitz 2005). Anxiety could influence the mother's immediate attitude towards the infant (e.g. she will be less apt to touch him/her, to speak to him/her) and neonatal care (infant's appearance, neonatal medical procedure) (Zelkowitz 2000). Anxiety should be considered when developing a program in the early neonatal period to improve mother-child interactions (massage, touch, skin-to-skin care) (DiPietro 2006; Melnyk 2006; O'Connor 2002a; O'Connor 2002b). Besides increasing research on the shared roles of stress, anxiety and depression on adverse pregnancy and neonatal outcomes, there is a need to assess these maternal factors, to document the nature of the anxiety and to develop randomized controlled trials testing interventions aimed at reducing anxiety. Anxiety responds well to treatments such as cognitive behavioral therapy (CBT) or medication. The use of psychotropic medications during pregnancy is controversial (Costei 2002). Given the risk of adverse effects associated with pharmacological treatments, non-pharmacological interventions like mind-body interventions might be preferable.

### Description of the intervention

Mind-body interventions are used in different clinical situations such as managing pain (Smith 2006; Uman 2006), depression (Shiha 2009), smoking cessation (Carmodi 2008) and in paediatric care (Galantino 2008). According to the definition of the National Center for Complementary and Alternative Medicine (NCCAM 2008): "mind-body medicine focuses on the interactions among the brain, mind, body, and behavior, and the powerful ways in which emotional, mental, social, spiritual, and behavioral factors can directly affect health". Mind-body interventions are intended to enhance the capacity for self-knowledge and self-care and provide the opportunity for increasing resilience, personal growth and self-esteem. They provide tools to improve mood, quality of life and coping. Cerebral activities during mind-body interventions are complex, but different techniques for such interventions seem to share a common specific modulation of cerebral activity (Grant 2005). Mind-body interventions constitute a major portion of the overall use of complementary and alternative medicine by the public (Eisenberg 1998). In the adult US population in 2002, almost one in five adults reported having used one or more mind-body therapies during the previous 12 months (Wolsko 2004). Meditation, imagery, hypnosis and yoga were used by more than 17% of those surveyed, to treat a specific medical condition or to prevent illness. Among the 40% of US women who had used any complementary and alternative medicine, 21% reported the use of mind-body therapies (Upchurch 2006).

### Why it is important to do this review

Anxiety is prevalent during pregnancy and affects both mother and child health. There is increasing evidence for positive effects of mind-body interventions. Such interventions might be particularly helpful for patients for increasing confidence to develop self-knowledge, self-care and ability to cope with chronic conditions (Montgomery 2000; Patterson 2003). These interventions are used in pregnant women to manage anxiety.

To our knowledge, there has been no comprehensive systematic review of mind-body interventions for managing anxiety during the perinatal period. In this review, we will evaluate the effects of mind-body interventions during pregnancy.

## OBJECTIVES

To assess the benefits of mind-body interventions during pregnancy in preventing or treating women's anxiety and in influencing perinatal outcomes.

## METHODS

### Criteria for considering studies for this review

#### Types of studies

We have included randomized controlled trials in the review if they took place in any of the following clinical settings: hospital, community, complementary and alternative medicine practice, primary care, family practice or extended care facility. Quasi-randomised controlled trials are not eligible for inclusion in this review or future updates of the review.

#### Types of participants

Pregnant women of any age at any time of the antenatal period from conception until one month after birth.

#### Types of interventions

##### *Mind body interventions*

Studies testing mind-body interventions that, with or without the help of a professional or a supportive relative, can be taught/learned by pregnant women to induce mental relaxation, in order to:

- alter negative thinking related to anxiety;
- modify the perception of the stressful event;
- lead to a better adapted behavior and coping.

CBT and support groups classified as psychological or psychosocial interventions that involve ongoing interactions between people will be the focus of another, Cochrane review ('Psychosocial, psychological and pharmacological interventions for treating antenatal anxiety' - protocol in progress) and we have excluded these interventions from this review.

We divide mind-body interventions into 10 subcategories. To choose and define each of the subcategories, we based our method on: 1 - The National Center Complementary Alternative Medicine (NCCAM 2008); 2 - The Desktop Guide to Complementary and Alternative Medicine (Ernst 2006); 3 - The National Library of Medicine MeSH definitions (NLM 2008); 4 - Natural Standard (Natural Standard 2008); and 5 - other Cochrane reviews.

#### Mind-body interventions sub-categories and definitions

##### Autogenic training

Refers to a particular technique of mental exercises involving relaxation and autosuggestion practised regularly, which aims to teach relaxation and body awareness techniques. This approach can then be used lifelong to promote a healthier lifestyle, allowing people to call on their own capacity for self-healing and stress reduction (Ernst 2006; Natural Standard 2008).

##### Biofeedback

Biofeedback encompasses a therapeutic technique by which individuals receive training to improve their health and well-being

through signals coming from their own body. The underlying principle is that changes in thoughts and emotions may result in changes in body functioning (Barragan Loayza 2006).

##### Hypnotherapy

The induction of a trance-like state to facilitate relaxation and make use of enhanced suggestibility to treat psychological and medical conditions and affect behavioral changes (Ernst 2006).

##### Imagery

A cognitive technique used to encourage the person to cope with the pain and distress of a given procedure by having him/her imagine a pleasant object or experience (Uman 2006).

##### Meditation

A diverse range of techniques based on focusing on a physical sensation (such as breathing), repeating a mantra, detaching oneself from the thought process or other self-directed mental practices which focus the attention and bring about a state of self-awareness and inner calm (Ernst 2006; Natural Standard 2008).

##### Prayer

Prayer may be practiced by individuals within the framework of an organized religion, or without ascribing to a particular faith or belief system. Prayers can focus on a specific desired outcome, or be undirected and without a definite objective in mind (Natural Standard 2008).

##### Relaxation therapy

Numerous relaxation therapies exist. We decided to include this type of intervention only if there was evidence that the therapeutic goal is to facilitate mental relaxation. If the relaxation is part of a pre-described subcategory (e.g. yoga, autogenic training, meditation, etc.) we have classified the intervention under the respective subcategory. (We have not included Jacobson's relaxation technique.)

##### Auto-suggestion

A form of verbal therapy where the patient repeats affirmations or suggestions until he/she body and mind begin to act accordingly (Natural Standard 2008).

##### Tai chi

A meditative exercise using slow circular stretching movements and positions of body balance (NLM 2008).

##### Yoga

A practice of gentle exercises for breathing and mental control. It includes a system of exercises for attaining bodily or mental control and well-being with liberation of the self and union with a universal spirit (Ernst 2006; NLM 2008).

##### Control conditions

Any form of standard care, other pharmacological or non-pharmacological interventions, other types of mind-body interventions or no treatment at all.



## Types of outcome measures

### Primary outcomes

- Maternal anxiety

Maternal anxiety could be self-reported or observed and assessed using a range of scales, questionnaires, interviews or physiological measurements. If no measures of anxiety were reported, we sent a request to the original authors to ask whether unpublished data on women's anxiety are available. After a first contact and one reminder, we classified a "no answer" as "no data available" and excluded the study.

### Secondary outcomes

#### Maternal

- Self-esteem
- Depression
- Perceived stress
- Pain experience
- Sleep
- Blood pressure
- Quality of life
- Mode of delivery
- Use of medication (for anxiety or depression, preterm labor)
- Hospitalization days
- Use of analgesia during labor
- Length of labor
- Breastfeeding
- Biochemical assessment of stress hormones
- Treatment discontinuation

#### Neonatal

- Apgar score
- Fetal heart rate
- Gestational age
- Admission to neonatal intensive care unit
- Birthweight
- Intrauterine growth retardation

#### Other

- Cost effectiveness
- Father's anxiety

## Search methods for identification of studies

### Electronic searches

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register by contacting the Trials Search Co-ordinator (30 November 2010).

The Cochrane Pregnancy and Childbirth Group's Trials Register is maintained by the Trials Search Co-ordinator and contains trials identified from:

1. quarterly searches of the Cochrane Central Register of Controlled Trials (CENTRAL);
2. weekly searches of MEDLINE;

3. weekly searches of EMBASE;
4. handsearches of 30 journals and the proceedings of major conferences;
5. weekly current awareness alerts for a further 44 journals plus monthly BioMed Central email alerts.

Details of the search strategies for CENTRAL, MEDLINE and EMBASE, the list of handsearched journals and conference proceedings, and the list of journals reviewed via the current awareness service can be found in the 'Specialized Register' section within the editorial information about the [Cochrane Pregnancy and Childbirth Group](#).

Trials identified through the searching activities described above are each assigned to a review topic (or topics). The Trials Search Co-ordinator searches the register for each review using the topic list rather than keywords.

In addition, we searched MEDLINE (1950 to 30 November 2010), EMBASE (1974 to 30 November 2010), the National Center for Complementary and Alternative Medicine (NCCAM) (1 December 2010), ClinicalTrials.gov (1 December 2010) and Current Controlled Trials (1 December 2010). See [Appendix 1](#) for details.

We also initially searched CINAHL (1982 to November 2008), PsycINFO (1840 to November 2008), AMED (The Allied and Complementary Medicine Database) (1985 to November 2008) and British Nursing Index (1994 to November 2008). We were not able to update these searches. See [Appendix 2](#) for details.

### Searching other resources

We searched the reference lists of selected studies and contacted professionals and authors in the field.

We did not apply any restrictions of language or date.

## Data collection and analysis

### Selection of studies

Three review authors - Isabelle Marc (IM), Narimane Toureche (NT) and Claudine Blanchet (CB) - independently assessed for inclusion all the potential studies we identified as a result of our search strategy. We resolved disagreements by discussion or, if required, we consulted another author Sylvie Dodin (SD).

### Data extraction and management

We designed a form to extract data. For eligible studies, two review authors (NT and IM) extracted the data using the agreed form. We resolved discrepancies through discussion or, if required, we consulted CB. For each included trial, we collected information regarding the location of the study, methodology of the study (randomization, allocation concealment, blinding, loss to follow-up, etc.), the participants characteristics (age range, eligibility criteria, etc.), the nature of the interventions, and data related to the outcomes specified above. We entered data into the Review Manager software ([RevMan 2011](#)) and checked it for accuracy. When information regarding any of the above was unclear, we attempted to contact authors of the original reports to provide further details.

### Assessment of risk of bias in included studies

Two review authors (NT and IM) independently assessed risk of bias for each study using the criteria outlined in the *Cochrane Handbook for Systematic Reviews of Interventions* ([Higgins 2011](#)). We resolved



any disagreement by discussion or by involving a third assessor (CB).

### **(1) Sequence generation (checking for possible selection bias)**

We described for each included study the method used to generate the allocation sequence in sufficient detail to allow an assessment of whether it should produce comparable groups.

We assessed the method as:

- low risk of bias (any truly random process, e.g. random number table; computer random number generator);
- high risk of bias (any non-random process, e.g. odd or even date of birth;
- hospital or clinic record number) or, unclear risk of bias.

### **(2) Allocation concealment (checking for possible selection bias)**

We described for each included study the method used to conceal the allocation sequence and determined whether intervention allocation could have been foreseen in advance of, or during recruitment, or changed after assignment.

We assessed the methods as:

- low risk of bias (e.g. telephone or central randomisation; consecutively numbered sealed opaque envelopes);
- high risk of bias (open random allocation;
- unsealed or non-opaque envelopes, alternation; date of birth); unclear risk of bias.

### **(3) Blinding (checking for possible performance bias)**

We described for each included study, the methods used, if any, to blind study participants and personnel from knowledge of which intervention a participant received. We considered that studies were at low risk of bias if they were blinded, or if we judged that the lack of blinding could not have affected the results. Blinding was assessed separately for each different outcome or classes of outcomes.

We assessed the methods as:

- low, high or unclear risk of bias for participants;
- low, high or unclear risk of bias for personnel;
- low, high or unclear risk of bias for outcome assessors.

### **(4) Incomplete outcome data (checking for possible attrition bias through withdrawals, dropouts, protocol deviations)**

We described for each included study, and for each outcome or class of outcomes, the completeness of data, including attrition and exclusions from the analysis. We stated whether attrition and exclusion were reported, the numbers included in the analysis at each stage (compared with the total randomized participants), reasons for attrition or exclusion where reported, and whether missing data were balanced across groups or were related to outcomes. Where sufficient information was reported, or was supplied by the trial authors, we re-included missing data in the analyses which we undertook. We assessed methods as:

- low risk of bias (e.g. 20% or less missing outcome data; missing outcome data balanced across groups);

- high risk of bias (e.g. numbers or reasons for missing data imbalanced across groups; 'as treated' analysis done with substantial departure of intervention received from that assigned at randomization);
- unclear risk of bias.

### **(5) Selective reporting bias**

We described for each included study how we investigated the possibility of selective outcome reporting bias and what we found.

We assessed the methods as:

- low risk of bias (where it is clear that all of the study's pre-specified outcomes and all expected outcomes of interest to the review have been reported);
- high risk of bias (where not all the study's pre-specified outcomes have been reported; one or more reported primary outcomes were not pre-specified; outcomes of interest are reported incompletely and so cannot be used; study fails to include results of a key outcome that would have been expected to have been reported);
- unclear risk of bias.

### **(6) Other sources of bias**

We described for each included study any important concerns we had about other possible sources of bias.

We assessed whether each study was free of other problems that could put it at risk of bias:

- low risk of other bias;
- high risk of other bias;
- unclear whether there is risk of other bias.

### **(7) Overall risk of bias**

We made explicit judgements about whether studies are at a high risk of bias, according to the criteria given in the Handbook (Higgins 2011). With reference to (1) to (6) above, we assessed the likely magnitude and direction of the bias and whether we considered that it was likely to impact on the findings. We explored the impact of the level of bias through undertaking sensitivity analyses - see [Sensitivity analysis](#).

## **Measures of treatment effect**

### **Dichotomous data**

For dichotomous data, we presented results as summary risk ratio (RR) with 95% confidence intervals (CI).

### **Continuous data**

For continuous data, we used the mean difference (MD) if outcomes were measured in the same way between trials. We used the standardized mean difference (SMD) to combine trials that measured the same outcome, but used different methods.

## **Unit of analysis issues**

### **Cluster-randomized trials**

We did not identify any cluster-randomized trials for inclusion in this review. However, if we identify cluster-randomized trials for inclusion in a subsequent update of this review, we will include

them in the analyses along with individually randomized trials. We will adjust their sample sizes using the methods described in the Handbook using an estimate of the intracluster correlation coefficient (ICC) derived from the trial (if possible), from a similar trial or from a study of a similar population. If we use ICCs from other sources, we will report this and conduct sensitivity analyses to investigate the effect of variation in the ICC. If we identify both cluster-randomised trials and individually-randomised trials, we plan to synthesise the relevant information. We will consider it reasonable to combine the results from both if there is little heterogeneity between the study designs and the interaction between the effect of intervention and the choice of randomisation unit is considered to be unlikely.

We will also acknowledge heterogeneity in the randomisation unit and perform a sensitivity analysis to investigate the effects of the randomisation unit.

### Crossover trials

We have not included crossover trials in this review because no washout is possible after a practice of a mind-body intervention.

### Other unit of analysis issues

In cases of repeated measures of anxiety during pregnancy, we have selected the clinically most relevant time point according to other studies in this area. In the event that we would be confronted with cases where such a choice would be difficult, we would calculate an adjusted mean of time-repeated measures.

For trials with more than two intervention groups, we combined results in meta-analysis with trials comparing only two interventions. For this, we combined groups to create a single pairwise comparison (Section 16.5.4 of the *Handbook* (Higgins 2011)). That means we combine all relevant experimental intervention groups of the study into a single group, and combined all relevant control intervention groups into a single control group. For dichotomous outcomes, both the sample sizes and the numbers of people with events will be summed across groups. For continuous outcomes, means and standard deviations were combined using methods described in Section 7.7.3.8 of the *Handbook* (Higgins 2011).

### Dealing with missing data

For included studies, we noted levels of attrition. In future updates of this review, if a meta-analysis is performed, we will explore the impact of including studies with high levels of missing data in the overall assessment of treatment effect by using [Sensitivity analysis](#).

For all outcomes, we carried out analyses, as far as possible, on an intention-to-treat basis, i.e. we attempted to include all participants randomized to each group in the analyses, and all participants were analysed in the group to which they were allocated, regardless of whether or not they received the allocated intervention. The denominator for each outcome in each trial was the number randomized minus any participants whose outcomes are known to be missing.

### Assessment of heterogeneity

In future updates of this review, if we perform meta-analysis, we will assess statistical heterogeneity in each meta-analysis using the  $T^2$ ,  $I^2$  and  $\text{Chi}^2$  statistics. We will regard heterogeneity as substantial if

$I^2$  is greater than 30% and either  $T^2$  is greater than zero, or there is a low P value (less than 0.10) in the  $\text{Chi}^2$  test for heterogeneity.

### Assessment of reporting biases

If, in future, there are 10 or more studies in the meta-analysis we will investigate reporting biases (such as publication bias) using funnel plots. We will assess funnel plot asymmetry visually, and use formal tests for funnel plot asymmetry. For continuous outcomes we will use the test proposed by [Egger 1997](#) and for dichotomous outcomes we will use the test proposed by [Harbord 2006](#). If we detect asymmetry in any of these tests or is by a visual assessment, we will perform exploratory analyses to investigate it.

### Data synthesis

We carried out statistical analysis according to the type of mind-body interventions using the Review Manager software ([RevMan 2011](#)). Because of the small number of trials per intervention, the clinical heterogeneity, the diversity of outcome measurements and control group interventions, we performed no meta-analysis and have presented results individually for each study.

If, in future updates of this review it becomes possible to pool data, we will use fixed-effect meta-analysis for combining data where it is reasonable to assume that studies are estimating the same underlying treatment effect: i.e. where trials are examining the same intervention, and the trials' populations and methods are judged sufficiently similar. If there is clinical heterogeneity sufficient to expect that the underlying treatment effects differ between trials, or if we detect substantial statistical heterogeneity, we will use random-effects meta-analysis to produce an overall summary if an average treatment effect across trials is considered clinically meaningful. We will treat the random-effects summary as the average range of possible treatment effects and we will discuss the clinical implications of treatment effects differing between trials.

If we use random-effects analyses, we will present the results as the average treatment effect with its 95% confidence interval, and the estimates of  $T^2$  and  $I^2$ .

### Subgroup analysis and investigation of heterogeneity

In future updates of this review, if we identify substantial heterogeneity, we will investigate it using subgroup analyses and sensitivity analyses. We will consider whether an overall summary is meaningful, and if it is, use random-effects analysis to produce it.

For the primary outcome (anxiety), we plan to carry out the following subgroup analyses.

1. Timing of the intervention during pregnancy (first, second or third trimester)
2. Duration and frequency of the interventions
3. Type of intervention for preventing or treating anxiety
4. Population of pregnant women (low versus high risk of anxiety)

For fixed-effect inverse variance meta-analyses, we will assess differences between subgroups by interaction tests. For random-effects and fixed-effect meta-analyses using methods other than inverse variance, we will assess differences between subgroups by inspection of the subgroups' confidence intervals; non-overlapping

confidence intervals indicate a statistically significant difference in treatment effect between the subgroups.

### Sensitivity analysis

In future updates of the review, if data are available, we will carry out sensitivity analysis to explore the effect of trial quality based on the risk of bias item such as sequence generation and allocation concealment. We will exclude studies of poor quality from the analysis (those rated as being at high or unclear risk of bias) in order to assess for any substantive difference to the overall result in their absence.

We will carry out sensitivity analysis to explore the effects of fixed-effect or random-effects analyses for outcomes with statistical heterogeneity.

## RESULTS

### Description of studies

#### Results of the search

Using our search strategy, we identified 1468 articles. Six studies were published in languages other than English (Mandarin, German, Italian, Farsi and Portuguese) and were evaluated by native speakers. We identified 26 studies reporting a randomized controlled trial and evaluating a mind-body intervention in the population of interest. After further evaluation, we included six. We undertook an update in collaboration with the Pregnancy and Childbirth Group Trials Search Co-ordinator that identified eight new relevant studies. Among them, six are either ongoing studies or awaiting classification. We have included a total of eight studies (N = 556) in this review (see [Criteria for considering studies for this review](#)).

#### Included studies

We included eight randomized controlled trials (involving 556 women) in this review ([Ip 2009](#); [Korol 1992](#); [Rees 1993](#); [Rees 1995](#); [Teixeira 2005](#); [Urech 2010](#); [Vieten 2008](#); [Zimmermann 1979](#)); see [Characteristics of included studies](#).

All the included studies were published in English between 1979 and 2009 and were carried out in six different countries (USA, Canada, United Kingdom, China, Switzerland and Italy).

These studies compared the effects of mind-body interventions with various control interventions. Mind-body interventions under evaluation were hypnotherapy ([Teixeira 2005](#)), imagery ([Ip 2009](#); [Korol 1992](#); [Rees 1993](#); [Rees 1995](#); [Urech 2010](#)), yoga ([Vieten 2008](#)) and respiratory autogenic training ([Zimmermann 1979](#)). Control group interventions were: no intervention ([Vieten 2008](#)), attention control ([Korol 1992](#)), music therapy ([Rees 1993](#); [Rees 1995](#)), passive relaxation ([Teixeira 2005](#)), usual care ([Ip 2009](#)) and a derivation of Lamaze technique ([Zimmermann 1979](#)). The [Urech 2010](#) study used two control groups (progressive relaxation and passive relaxation) and for the purposes of this review, we combined the data into a single control group.

Interventions were performed during pregnancy ([Ip 2009](#); [Korol 1992](#); [Teixeira 2005](#); [Urech 2010](#); [Vieten 2008](#); [Zimmermann 1979](#)) or during the first four weeks of the postpartum period ([Rees 1993](#); [Rees 1995](#)). The number of intervention sessions ranged from one single session ([Teixeira 2005](#); [Urech 2010](#)) to multiple sessions ([Ip](#)

[2009](#); [Korol 1992](#); [Rees 1993](#); [Rees 1995](#); [Vieten 2008](#); [Zimmermann 1979](#)).

The mind-body interventions focused on the management of maternal anxiety in pregnancy or in the postpartum period ([Ip 2009](#); [Korol 1992](#); [Rees 1993](#); [Rees 1995](#); [Teixeira 2005](#); [Urech 2010](#); [Vieten 2008](#); [Zimmermann 1979](#)). Two studies selected participants on their anxiety levels before inclusion ([Teixeira 2005](#); [Vieten 2008](#)).

### Interventions used in the included studies

See [Characteristics of included studies](#).

#### 1. Hypnotherapy

In one study ([Teixeira 2005](#)), one single session of hypnotherapy was compared to passive relaxation for reducing maternal self-rating anxiety, heart rate, plasma catecholamines, plasma cortisol levels, and uterine artery Doppler resistance index.

#### 2. Imagery

Five studies (N = 352 participants) compared imagery to a control group.

- [Korol 1992](#): instructors of antenatal classes were randomly assigned to teach an antenatal course that included or not guided imagery for improving the pregnant women's knowledge and attitude toward pain coping techniques during labor.
- [Rees 1993](#): the effectiveness of guided imagery was compared to listening to music for reducing anxiety and depression and increasing self-esteem in women during the first four postpartum weeks.
- [Rees 1995](#): in a subsequent study, [Rees 1993](#) used a similar protocol with the same objectives but outcomes (women's anxiety, depression and self-esteem) were measured by reliable and validated scales.
- [Ip 2009](#): in this trial, the effectiveness of an efficacy-enhancing educational intervention including imagery to promote women's self-efficacy for childbirth and coping ability in reducing anxiety and pain during labor was compared to usual care.
- [Urech 2010](#): women were randomized into three groups. The aim of this study was to compare the immediate effects of two active and one passive 10-minute relaxation techniques on perceived and physiological parameters.

#### 3. Yoga

Thirty-four participants were randomized to receive a complex intervention (mindfulness training that included yoga) or to be on a wait-list intervention in order to explore the effects of such intervention on the positive affect and anxiety in pregnant women ([Vieten 2008](#)).

#### 4. Autogenic training

With a total of 53 primiparous women ([Zimmermann 1979](#)), the efficacy of respiratory autogenic training was compared to traditional psychoprophylactic course for reducing muscle tension, anxiety and pain during labor and delivery.

### Excluded studies

We excluded 42 studies. We have described reasons for exclusion in the [Characteristics of excluded studies](#) tables. We excluded studies

because they were not randomized, they did not evaluate a mind-body intervention or data on the primary outcome (anxiety) were not available, even after contact with the authors.

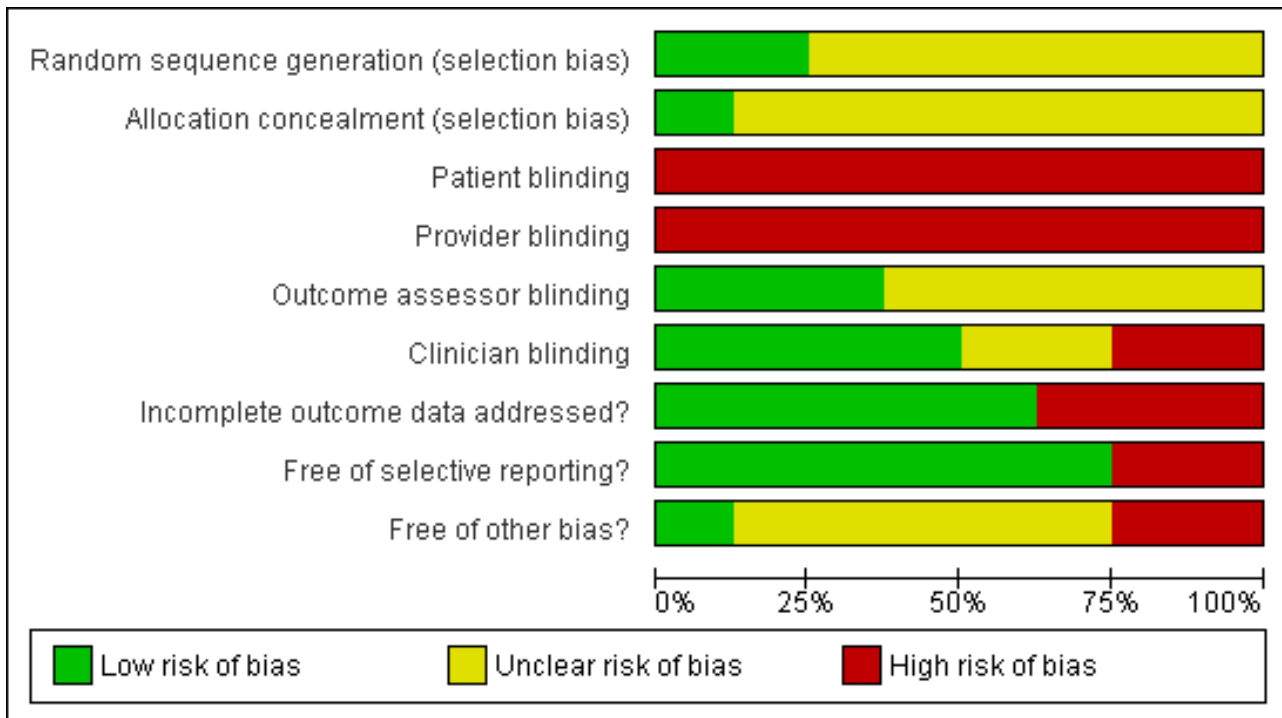
**Risk of bias in included studies**

We described the risk of bias of included studies in the 'Risk of bias tables' attached to the [Characteristics of included studies](#) tables and the judgements that we made are summarised in [Figure 1](#) and [Figure 2](#).

**Figure 1. Methodological quality summary: review authors' judgements about each methodological quality item for each included study.**

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Patient blinding	Provider blinding	Outcome assessor blinding	Clinician blinding	Incomplete outcome data addressed?	Free of selective reporting?	Free of other bias?
Ip 2009	+	?	-	-	+	+	-	+	?
Korol 1992	?	?	-	-	+	?	-	-	?
Rees 1993	?	?	-	-	?	-	+	+	?
Rees 1995	?	?	-	-	?	-	+	+	?
Teixeira 2005	?	+	-	-	+	+	+	+	-
Urech 2010	+	?	-	-	?	+	+	+	+
Vieten 2008	?	?	-	-	?	?	+	+	-
Zimmermann 1979	?	?	-	-	?	+	-	-	?

**Figure 2. Methodological quality graph: review authors' judgements about each methodological quality item presented as percentages across all included studies.**



**Allocation**

We judged [Teixeira 2005](#) to have 'adequate' allocation concealment, and although the methods used to generate the allocation sequence were not reported, women were assigned to their groups using closed envelopes. The remaining seven studies had 'unclear' allocation concealment. In five of those studies ([Korol 1992](#); [Rees 1993](#); [Rees 1995](#); [Vieten 2008](#); [Zimmermann 1979](#)), the methods used for sequence generate and allocation concealment were not described. Two studies ([Ip 2009](#); [Urech 2010](#)) described an adequate method of sequence generation but had 'unclear' allocation concealment. In one study ([Korol 1992](#)), instructors but not participants were randomized and allocated to the intervention or control groups; however methods used for allocation generation and/or allocation concealment were not reported.

**Blinding**

As is often the case in studies evaluating non-pharmacological interventions, blinding of participant and intervention provider was not feasible. Information on blinding of the clinician and the outcome assessor are included in the 'Risk of bias' tables. The outcome assessor was reported to be blinded in four studies ([Ip 2009](#); [Korol 1992](#); [Teixeira 2005](#); [Zimmermann 1979](#)). Nevertheless, three studies reported objective outcomes ([Teixeira 2005](#); [Urech 2010](#); [Zimmermann 1979](#)). When the main outcome was self-reported, we have classified the risk as unclear.

**Incomplete outcome data**

Four studies were devoid of dropouts ([Rees 1993](#); [Rees 1995](#); [Teixeira 2005](#); [Urech 2010](#)). Four studies ([Ip 2009](#); [Korol 1992](#); [Vieten 2008](#); [Zimmermann 1979](#)) reported adequate information about how many participants had withdrawn from the studies after having consented to participate. Among them, [Zimmermann 1979](#),

[Vieten 2008](#) and [Ip 2009](#) provided details about the reasons for such withdrawals. In all included studies, we have performed analyses on the final number of participants after attrition.

We evaluated each study for the possible risk of incomplete outcome data. [Korol 1992](#) did not report the sample size of each group, but the authors privately provided us the information. [Urech 2010](#) provided us with unpublished data on the primary outcome (anxiety) and physiological data. [Rees 1993](#) did not report a dispersion index for the outcomes measured (e.g. standard deviation). In three studies ([Ip 2009](#); [Rees 1993](#); [Rees 1995](#)), data on anxiety at baseline were not reported.

**Selective reporting**

We evaluated each study for the possible risk of selective reporting bias. Most of the studies ([Ip 2009](#); [Rees 1993](#); [Rees 1995](#); [Teixeira 2005](#); [Urech 2010](#); [Vieten 2008](#)) seemed to have a low risk of selective bias. For two studies, the risk of selective reporting bias was apparently high, since some of the outcomes described as to be measured in the study were ultimately not reported in the results ([Korol 1992](#); [Zimmermann 1979](#)).

**Other potential sources of bias**

We assessed other sources of bias frequently reported in non-pharmacological trials. Details on the care provider experience were not frequently reported: only [Vieten 2008](#) described care provider's competence but not their degree of experience. None of the studies measured women's expectations toward treatment efficacy before randomization. Six studies used a standardized intervention protocol ([Ip 2009](#); [Rees 1993](#); [Rees 1995](#); [Urech 2010](#); [Teixeira 2005](#); [Vieten 2008](#)). None of the studies measured adherence to the protocol.



## Effects of interventions

### Hypnotherapy

#### *Hypnotherapy versus passive relaxation*

##### Anxiety

Compared to passive relaxation, only one study ([Teixeira 2005](#)) reported no significant effect after one session of hypnotherapy on anxiety ([Table 1](#)) and on maternal plasma noradrenaline ([Table 2](#)), adrenaline ([Table 3](#)), cortisol levels ([Table 4](#)) and maternal heart rate ([Table 5](#)). These data were reported as medians in the article (it was not a normal distribution) and that is why we have presented the data in an additional table.

### Imagery

#### *Imagery versus usual care*

##### Anxiety

One of the two studies that used imagery during prenatal classes, suggests a borderline significant ( $P .06$ ) difference in anxiety state during pregnancy (mean difference (MD) -3.90; 95% confidence intervals (CI) -7.94 to 0.14; [Analysis 1.1](#)) as compared to non-imagery ([Korol 1992](#))

However, in [Ip 2009](#), anxiety levels were significantly decreased with imagery at the early and middle stages of labor (MD -1.46; 95% CI -2.43 to -0.49; one study, 133 women; [Analysis 2.1](#)); and MD -1.24; 95% CI -2.18 to -0.30; one study, 133 women; [Analysis 2.2](#)), but not at the last stage of labor (MD 0.63; 95% CI -0.57 to 1.83; one study, 133 women; [Analysis 2.3](#)).

##### Secondary outcomes

In the [Korol 1992](#) study, women's knowledge on labor and delivery after the last prenatal class changed significantly in favor of the imagery group (MD 3.35; 95% CI 1.06 to 5.64; one study, 60 women; [Analysis 1.2](#)).

Pain levels in [Ip 2009](#) were significantly decreased with imagery at the early and middle stages of labor ((MD -1.49; 95% CI -2.28 to -0.70; one study, 133 women; [Analysis 2.4](#)); and MD -0.97; 95% CI -1.69 to -0.25; one study, 133 women; [Analysis 2.5](#))), but not at the last stage of labor (MD 0.00; 95% CI -0.94 to 0.94; one study, 133 women; [Analysis 2.6](#)). Furthermore, women in the imagery group reported higher levels of coping (MD 3.95; 95% CI 1.40 to 6.50; one study, 133 women; [Analysis 2.7](#)); higher levels of outcomes expectancy (MD 16.77; 95% CI 9.43 to 24.11; one study, 133 women; [Analysis 2.8](#)) and efficacy expectancy (MD 20.76; 95% CI 12.73 to 28.79; one study, 133 women; [Analysis 2.9](#)).

#### *Imagery versus music*

##### Anxiety

Compared with music therapy, a four-week imagery intervention in women immediately post-delivery ([Rees 1995](#)) was effective in significantly reducing state anxiety (MD -0.45; 95% CI -0.72 to -0.18; [Analysis 4.1](#) - [Figure 12](#)).

In the study by [Rees 1993](#), data on anxiety and depression were incomplete (no standard deviations reported); therefore, this study was not contributive to this review and no further analyses were performed.

### Secondary outcomes

In the [Rees 1995](#) study, a four-week imagery intervention in women immediately post-delivery was associated with reduced depression (MD -0.27; 95% CI -0.49 to 0.05; one study, 60 women; [Analysis 4.2](#)) and improved self-esteem (MD 0.39; 95% CI 0.15 to 0.63; one study, 60 women; [Analysis 4.3](#)), compared with a music therapy control.

#### *Imagery versus combined group of progressive relaxation and passive relaxation*

##### Anxiety

In one study, involving 39 women, [Urech 2010](#) found that imagery failed to significantly reduce the anxiety immediately after the interventions, compared with a combined control group of progressive relaxation and passive relaxation (MD -0.12; 95% CI -0.29 to 0.05; [Analysis 5.1](#)).

##### Secondary outcomes

Most of the physiological outcomes reported in [Urech 2010](#) were not significantly changed by imagery: serum cortisol (MD 0.73; 95% CI -8.10 to 9.56; [Analysis 5.2](#)); serum ACTH (MD -4.96; 95% CI -13.91 to 3.99; [Analysis 5.3](#)); serum norepinephrine (MD -25.58; 95% CI -66.06 to 14.90; [Analysis 5.4](#)); heart rate (MD -2.84; 95% CI -8.00 to 2.32; [Analysis 5.6](#)); systolic blood pressure (MD 1.37; 95% CI -9.21 to 11.95; [Analysis 5.7](#)) and diastolic blood pressure (MD -1.79; 95% CI -7.89 to 4.31; [Analysis 5.8](#)). However, a significant effect was observed on the level of relaxation as reported by the women (MD 0.78; 95% CI 0.10 to 1.46; [Analysis 5.9](#)) and serum epinephrine (MD -9.60; 95% CI -17.19 to -2.01; [Analysis 5.5](#)).

#### *Yoga versus wait list*

##### Anxiety

In the [Vieten 2008](#) study, 31 women followed an eight-week intervention including yoga. There was no significant reduction in anxiety state (MD -0.20; 95% CI -6.49 to 6.09; [Analysis 6.1](#)); however, taking into account pregnant women's anxiety levels at baseline, the authors reported a positive effect of yoga on anxiety.

##### Secondary outcomes

There were no significant differences observed for the following outcomes reported in the [Vieten 2008](#) study: depression (MD 2.00; 95% CI -2.69 to 6.69; [Analysis 6.2](#)); perceived stress (MD -1.00; 95% CI -4.76 to 2.76; [Analysis 6.3](#)); negative affect (MD -1.70; 95% CI -5.22 to 1.82; [Analysis 6.4](#)); positive affect (MD 2.90; 95% CI -1.88 to 7.68; [Analysis 6.5](#)) and affect regulation (MD 9.20; 95% CI -7.39 to 25.79; [Analysis 6.6](#)).

### Autogenic training

#### *Autogenic training versus traditional psychoprophylaxis*

##### Anxiety

Compared to traditional psychoprophylaxis, participants receiving autogenic training reported less anxiety before entering the labor room, but this difference was not statistically significant (MD -13.90; 95% CI -27.84 to 0.04; [Analysis 7.1](#)) ([Zimmermann 1979](#)).

##### Secondary outcomes

Autogenic training failed to reduce medication use: spasmolytic (RR 1.14; 95% CI 0.37 to 3.51; [Analysis 7.2](#)) or oxytocin (RR 1.14; 95% CI 0.82 to 1.59; [Analysis 7.3](#)).

## DISCUSSION

Mind-body interventions have been showed to be effective for decreasing anxiety levels in several clinical situations (Smith 2006; Uman 2006). Although anxiety may exert adverse perinatal outcomes, few studies have examined the effects of mind-body interventions on women's anxiety during pregnancy. The primary objective of this review was to evaluate the effectiveness of mind-body interventions for the management of women's anxiety during pregnancy. To date, eight randomized controlled trials with 556 participants are available for evaluation.

Considering the often poor quality of the included studies, there is some evidence for the effectiveness of mind-body interventions on anxiety during pregnancy. Compared with usual care, imagery may have a positive effect on anxiety during labor (Ip 2009). Another study showed that imagery had a positive effect on anxiety and depression in the immediate postpartum period (Rees 1995). Autogenic training might be effective for decreasing women's anxiety before delivering (Zimmermann 1979). No harmful effects were reported for any mind-body interventions in the studies included in the review. None of the included studies reported any of the neonatal secondary outcomes.

Studies that evaluated different forms of mind-body interventions cannot be combined. Interventions were often well-described but the adherence to a standardized protocol during the interventions was rarely measured, limiting the applicability. Due to the small number of studies per intervention and to the diversity of outcome measurements, we have performed no meta-analysis, and reported results individually for each study. Some of the included mind-body interventions were part of a complex intervention that made it difficult to isolate and evaluate their own specific effects on anxiety.

Several studies were at a high risk of bias. Assessment of randomization quality was difficult in the majority of studies, as the quality of reporting was frequently poor. Providers' and participants' blinding is not an option for mind-body interventions. This could have introduced bias in favour of these interventions. Blinding of the clinicians in charge of co-interventions and the outcome assessors are recommended, but was often not implemented or not reported. In addition, only few studies reported objective outcomes that might have compensated for

the positive expectations of patients and providers. Moreover, small sample sizes and high dropout rates reduced the chances of detecting small effects.

In contrast to other clinical situations, there is insufficient evidence to assess the effectiveness of mind-body interventions on anxiety and related outcomes in pregnant women. This is surprising since interventions such as hypnobirth and prenatal yoga are popular. There is an urgent need for more research in this area.

## AUTHORS' CONCLUSIONS

### Implications for practice

Based on a small number of RCTs (with small sample sizes), mind-body interventions might be useful for preventing anxiety during pregnancy. No evidence is available to draw conclusions about the value of mind-body interventions for chronic anxiety. When delivered by certified providers, no adverse events are expected.

### Implications for research

Women's anxiety during pregnancy might adversely impact both mother and child health. Women at risk of anxiety might be targeted with specific interventions. Further high-quality research is required to investigate whether mind-body interventions are effective tools in managing or preventing women's anxiety during pregnancy and to measure its impact on perinatal outcomes. RCTs with standardized protocols, validated measurements and adequate sample sizes are required.

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\* Indicates the major publication for the study

## CHARACTERISTICS OF STUDIES

### Characteristics of included studies [author-defined order]

**Teixeira 2005**

Methods	Randomized controlled trial.
Participants	<p>N = 58 women (30 women scoring high and 28 women scoring low on the state index of the STAI at baseline).</p> <p><b>Inclusion criteria:</b> non-smoking women between 28 and 32 weeks of gestation, with singleton pregnancies and without medical complications.</p> <p><b>Exclusion criteria:</b> not reported.</p> <p>Setting: participants were recruited in the antenatal clinic at the Chelsea and Westminster Hospital, London, UK.</p>
Interventions	<p><b>Intervention group:</b> 1 session of active relaxation based on <b>hypnotherapy</b> induced by a stress management expert.</p> <p><b>Control group:</b> 1 session of passive relaxation (seating quietly for 45 min, reading a magazine).</p>
Outcomes	<p>Anxiety (STAI) <a href="#">Spielberger 1983</a>); uterine resistance index (by Doppler); maternal heart rate; maternal plasma noradrenaline; maternal plasma adrenaline; maternal plasma cortisol.</p> <p><b>Times of assessment of the main outcomes:</b> at baseline and after the relaxation period.</p>

**Teixeira 2005** (Continued)

Notes At baseline, groups were similar regarding anxiety levels and other outcomes of interest.

**Risk of bias**

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Not reported.
Allocation concealment (selection bias)	Low risk	Subjects were randomly assigned using closed envelopes.
Patient blinding	High risk	Not feasible.
Provider blinding	High risk	Not feasible.
Outcome assessor blinding	Low risk	Outcomes were objective. Doppler studies were performed by assessor blinding to subject group.
Clinician blinding	Low risk	Co-interventions are the same in both groups.
Incomplete outcome data addressed?	Low risk	No attrition.
Free of selective reporting?	Low risk	All prespecified outcomes seem to be reported.
Free of other bias?	High risk	Interventions were standardized.

**Korol 1992**

Methods	Randomized controlled trial.
Participants	<p>N = 60 women participating to antenatal classes, 30 participants per group.</p> <p><b>Inclusion criteria:</b> not reported.</p> <p><b>Exclusion criteria:</b> not reported.</p> <p>Setting: patients were recruited from the community in antenatal classes in a western Canadian city, at the University of Ottawa, ON, Canada.</p>
Interventions	<p>6 imagery classes and 8 non-imagery classes.</p> <p><b>Intervention group:</b> imagery visualization (birth visualization, information on labor and delivery) and relaxation.</p> <p><b>Control group:</b> a non-imagery lesson (information on labor and delivery) and relaxation.</p>
Outcomes	<p><b>For participants:</b> anxiety (STAI); absorption level (Tellegen absorption scale); knowledge about labor and delivery and the accompanying emotions and physical sensations (Childbirth Education Review); satisfaction with the relaxation techniques and imagery; expectation of pain and perceived ability to control pain during childbirth (VAS).</p> <p><b>For instructors:</b> attitudes toward the use of imagery in childbirth education by interview.</p>



**Korol 1992** (Continued)

**Times of assessment of the main outcomes:** at baseline, after the final prenatal class, and at follow-up in the 2 weeks before the expected delivery date.

## Notes

At baseline, no statistically significant difference was found between groups regarding anxiety level and the other outcomes of interest.

Before randomization, all instructors attended a workshop on the use of imagery.

A significant effect on "knowledge about labor and delivery" was observed when data post-intervention were not adjusted for baseline data.

**Risk of bias**

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Not reported.
Allocation concealment (selection bias)	Unclear risk	Instructors were randomly assigned to the imagery or the non-imagery group.
Patient blinding	High risk	Not feasible.
Provider blinding	High risk	Not feasible.
Outcome assessor blinding	Low risk	Measures were scored by a nurse who was blind to group assignment. Questionnaires were completed at home and sent back to the center. No objectives outcomes.
Clinician blinding	Unclear risk	No data collected by a clinician.
Incomplete outcome data addressed?	High risk	Data collected after the final prenatal class were available for all participants. At follow-up, data are reported for only 37 of the 60 participants. No details given on the attrition rate per group.
Free of selective reporting?	High risk	Many prespecified outcomes were not reported in results.
Free of other bias?	Unclear risk	Risk of contamination. Instructors were the same to give the intervention to both groups.

**Ip 2009**

Methods	Randomized controlled trial.
Participants	<b>Inclusion criteria:</b> a Hong Kong Chinese resident; aged 18 or above; at the 32nd and 34th weeks' gestation; planning to have a singleton by vaginal delivery; able to read and understand Chinese. <b>Exclusion criteria:</b> would not stay in Hong Kong after discharge; had a planned caesarean section.
Interventions	N = 192 participants were recruited, 96 in each group. However, only 133 participants were analysed (60 in the intervention group and 73 in the control group).

**Ip 2009** (Continued)

**Intervention group:** self-efficacy enhancing educational programme (SEEEP): complex educational and motivational intervention including **imagery** by groups of 6 people or fewer for an optimal interaction and discussion.

**Control group:** usual care which included regular physical check-up and attending childbirth classes on a voluntary basis.

Outcomes	Self-reported anxiety (VAS); self-reported pain (VAS); coping behaviours during labor (Childbirth coping behaviour scale); women's coping ability for childbirth including Outcome expectancy and Efficacy expectancy measured by the short form of the Chinese Childbirth Self-Efficacy Inventory.  <b>Time of assessment of the main outcomes:</b> at baseline, 37th of gestation and 48 h post delivery.
Notes	Based on description of the intervention in the manuscript, it was difficult for us to classify this intervention. More details were provided from the authors and allowed us to consider the intervention as a complex intervention which included some imagery.

**Risk of bias**

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Women were randomly assigned to either the experimental or the control group by a computer-generated random-number table.
Allocation concealment (selection bias)	Unclear risk	Not specified.
Patient blinding	High risk	Not feasible.
Provider blinding	High risk	Not feasible.
Outcome assessor blinding	Low risk	The outcome assessor was blind for the following outcomes: anxiety, pain and coping behaviours during labor.
Clinician blinding	Low risk	Co-interventions seemed to be the same in both groups.
Incomplete outcome data addressed?	High risk	High dropout level. Above 20% in each group. Reasons for were reported and were different in both groups.
Free of selective reporting?	Low risk	All prespecified outcomes seemed to be included.
Free of other bias?	Unclear risk	Anxiety at baseline were not specified or measured.

**Rees 1995**

Methods	Randomized controlled trial.
Participants	N = 60 women, 30 in each group.  <b>Inclusion criteria:</b> postpartum primiparous without major complication during antenatal, intra-natal and postpartum periods, with full-term infant.  <b>Exclusion criteria:</b> not reported.

**Rees 1995** (Continued)

Setting: postpartum units of hospitals in southwestern USA communities, University of New Mexico, NM, USA.

**Interventions**

**Intervention group:** relaxation with guided imagery by listening to an audiotape for 15 min each morning for 4 weeks. The protocol included physical relaxation and focused on the formation of mental images.

**Control group:** listening to music for 15 min each morning for 4 weeks.

**Outcomes**

Anxiety (STAI-form Y); depression (Center of Epidemiologic Studies Depression Scale (CES-D)) and self-esteem (Rosenberg Self-esteem Scale).

**Times of assessment of the main outcomes:** at baseline and 4 weeks later (end of the study).

**Notes**

Scores on the STAI reported seems to be lower than the published range of STAI scores (20 to 80).

No numerical data were reported on anxiety, depression and self-esteem for the experimental and control groups at baseline. Authors reported that groups were similar.

**Risk of bias**

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Not reported.
Allocation concealment (selection bias)	Unclear risk	Participants were randomly assigned to one of the 2 groups.
Patient blinding	High risk	Not feasible.
Provider blinding	High risk	Not feasible.
Outcome assessor blinding	Unclear risk	Outcomes were self-reported. No objective outcomes.
Clinician blinding	High risk	Not applicable.
Incomplete outcome data addressed?	Low risk	No attrition.
Free of selective reporting?	Low risk	All prespecified outcomes were included.
Free of other bias?	Unclear risk	No numerical data were reported on anxiety, depression and self-esteem for the experimental and control groups at baseline.

**Rees 1993**

**Methods**

Randomized controlled trial.

**Participants**

N = 60 women, 30 per group.

**Inclusion criteria:** healthy primiparous postpartum women.

**Exclusion criteria:** not reported.

**Rees 1993** (Continued)

Setting: participants were recruited in postpartum units in 2 hospitals, University of New Mexico, NM, USA.

Interventions	<p><b>Intervention group:</b> relaxation with <b>guided imagery</b> by listening to an audiotape for 15 min each morning for 4 weeks. The protocol included physical relaxation and focused on the formation of mental images.</p> <p><b>Control group:</b> listening to music tape ("The Planets" by Gustav Holst), 15 min each morning for 4 weeks.</p>
Outcomes	<p>Anxiety (self-rated on a scale of 1 to 7); depression (self-rated on a scale of 1 to 7); self-esteem (self-rated on a scale of 1 to 7) in a daily log each evening.</p> <p><b>Times of assessment of the main outcomes:</b> at baseline and every day, from day 1 of the study to day 28 (end of the study).</p>
Notes	No numerical data were reported on anxiety, depression and self-esteem for the experimental and control groups at baseline.

**Risk of bias**

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Not reported.
Allocation concealment (selection bias)	Unclear risk	Participants were randomly assigned to one of the 2 groups.
Patient blinding	High risk	Not feasible.
Provider blinding	High risk	Not feasible.
Outcome assessor blinding	Unclear risk	Self-reported outcome.
Clinician blinding	High risk	Not applicable.
Incomplete outcome data addressed?	Low risk	No attrition, all participants recruited were analyzed. Did not report SDs for the outcome means.
Free of selective reporting?	Low risk	All prespecified outcomes were included. No reported data on anxiety, depression and self-esteem at baseline.
Free of other bias?	Unclear risk	Unknown reliability and validity of scales.

**Urech 2010**

Methods	Randomized controlled trial.
Participants	<p>N = 39 participants were recruited, 13 in each group.</p> <p><b>Inclusion criteria:</b> pregnant women aged &gt; 18 years with a single, healthy fetus; between the 32<sup>nd</sup> and 34<sup>th</sup> week of gestation;</p>

**Urech 2010** (Continued)

German-speaking.

**Exclusion criteria:** intake of glucocorticoids; preexisting cardiovascular, nephrological, neurological or metabolic diseases; bad obstetric history as well as intra uterine growth restricted (IUGR) fetuses; fetal malformations; preterm uterine contractions; pregnancy-induced hypertension and/or pre-eclampsia.

**Interventions**

One intervention group and 2 control groups were evaluated in this study.

**Group guided imagery (GI):** the exercise was delivered by headphones. Participants were instructed to imagine a safe place and invite a person to accompany them who could promote their feeling of security and wellbeing. After the procedure, participants were encouraged to practice at home.

**Progressive muscle relaxation (PMR):** the relaxation exercise was also delivered by headphones. The PMR exercise was adapted from Jacobson and adjusted to pregnancy by leaving out the abdominal musculature in the exercise. After the procedure, participants were encouraged to practice at home.

**Group passive relaxation control condition:** participants were instructed to sit quietly in a semi-recumbent position for a time equivalent to the intervention in the other groups.

**Outcomes**

Anxiety (STAI-S); level of relaxation (VAS); cortisol; ACTH; norepinephrine (NE); epinephrine (E); women satisfaction (score of 5-point); blood pressure (systolic and diastolic); heart rate; compliance.

**Time of assessment of the main outcomes:** at 4 time points before and after the relaxation exercise.

**Notes**

Author was contacted and provided us with detailed numerical data on all outcomes.

**Risk of bias**

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Participants were randomly assigned using a randomized number table.
Allocation concealment (selection bias)	Unclear risk	Participants were not told about group allocation until 1 min prior to the relaxation intervention.
Patient blinding	High risk	Not feasible.
Provider blinding	High risk	Not feasible.
Outcome assessor blinding	Unclear risk	Not reported. Anxiety was self-reported. Physiological measurements are objective outcomes.
Clinician blinding	Low risk	No co-intervention.
Incomplete outcome data addressed?	Low risk	No dropout.
Free of selective reporting?	Low risk	Data were presented on graphs in the publication but numerical were provided by the authors.
Free of other bias?	Low risk	Reporting was clear

**Vieten 2008**

Methods	Randomized controlled trial.
Participants	<p>N = 34 women. 14 in intervention group and 20 in control group.</p> <p><b>Inclusion criteria:</b> pregnant women between 12 and 30 weeks of gestation, who reported to have a history of mood concerns for which they sought some form of treatment, such as psychotherapy, counseling, or medication and were English-speaking.</p> <p><b>Exclusion criteria:</b> history of mental disorder, inability to attend each of the classes or participate in the assessments or unable to speak English.</p> <p>Setting: participants were recruited through physicians' offices, childbirth education classes, and in the community. The study took place at a large private non-profit hospital in San Francisco, CA, USA.</p>
Interventions	<p><b>Intervention group:</b> 8 sessions (120 min per session) of mindfulness intervention including approximately equal parts of education, discussion and experiential exercises. It is a complex intervention which includes awareness of the developing fetus and belly during the body scan meditation; explanatory examples and exercises relating to pregnancy and early parenting regarding pain or sleep issues during pregnancy, anxiety about labor, or dealing with a difficult-to-console infant; walking and moving mindfulness practices such as prenatal <b>yoga</b>. Daily home practice using a compact disc and reading was encouraged.</p> <p><b>Group control:</b> wait-list intervention (standard care). This group received the intervention at the end of the study after the post-natal follow-up.</p>
Outcomes	<p>Perceived stress (The Perceived Stress Scale); depression (Center for Epidemiologic Studies Depression Scale); anxiety (STAI); positive and negative affect (The Positive and Negative Affect Schedule - Extended); affect regulation (the Affect Regulation Measure); mindfulness (The Mindful Attention Awareness Scale); adherence to the intervention.</p> <p><b>Times of assessment of the main outcomes:</b> a baseline (during the two weeks prior to the start of the intervention). Second assessment occurred in the week following the end of the experimental group intervention (8 to 10 weeks after baseline assessment) and postnatal follow-up occurred 3 months after the second assessment.</p>
Notes	<p>At baseline, groups were similar regarding anxiety level and other outcomes of interest.</p> <p>Providers were trained and certified psychologists and prenatal yoga instructors.</p>

**Risk of bias**

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Not reported.
Allocation concealment (selection bias)	Unclear risk	Women were randomized to the experimental group or to the wait-list control group.
Patient blinding	High risk	Not feasible.
Provider blinding	High risk	Not feasible.
Outcome assessor blinding	Unclear risk	<p>Not reported.</p> <p>Primary outcome and most of other outcomes were self-reported.</p> <p>No objective outcome.</p>
Clinician blinding	Unclear risk	No information on the co-interventions.

**Vieten 2008** (Continued)

Incomplete outcome data addressed?	Low risk	Attrition: 13% (2/15) in experimental group; 5% (1/19) in control group. Reasons for drop out were reported.
Free of selective reporting?	Low risk	All prespecified outcomes seemed to be included.
Free of other bias?	High risk	No control for time and attention in control group. Participants' expectations toward intervention were not assessed at baseline. No monitoring of the adherence to the protocol of the intervention.

**Zimmermann 1979**

Methods	Randomized controlled trial.	
Participants	N = 53 participants were recruited. Only 34 were analyzed, 14 in the respiratory autogenic training group and 20 in the traditional psychoprophylactic course group.  <b>Inclusion criteria:</b> married primipara (20 and 35 years), in the 7th month of pregnancy, no physical abnormalities, who had already participated in no less than five preparation courses for childbirth.  <b>Exclusion criteria:</b> not reported.  <b>Setting:</b> participants were recruited through childbirth course at the Obstetrics Clinic of the University of Verona (Verona, Italy).	
Interventions	9 weekly sessions in each group.  <b>Intervention group:</b> respiratory autogenic training, derives from the autogenous training in the Schultz and Jacobson's progressive relaxation method. 7 exercises in which the woman, by concentrating on her body, learns sensations in order to diminish her muscle tonus by deep relaxation. Every session includes theoretical lectures about the physiology of pregnancy and delivery and group discussions about the medical and psychological problems connected with them.  <b>Control group:</b> traditional psychoprophylactic course, derived from Lamaze and consisting in the combination of lectures and group discussions regarding the problems of pregnancy and delivery with specific gymnastics exercises.	
Outcomes	Anxiety (Morbid Anxiety Inventory); anxiety self-rating; relaxation self-rating; use of medication during labor; pain assessment; length of the dilatation period; expulsion time; baby weight; Apgar score; women's views on their delivery and attendance to the course.  <b>Times of assessment of the main outcomes:</b> at baseline, after admission for delivery, during labor and after delivery.	
Notes	At baseline, groups were similar regarding anxiety level and other outcomes of interest.  Theoretical lectures were performed by the same lecturers in both groups and courses were conducted by the same obstetrical team of physiotherapists, midwives, doctors and psychologists.	

**Risk of bias**

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Not described.



**Zimmermann 1979** (Continued)

Allocation concealment (selection bias)	Unclear risk	Participants were randomly assigned to their groups.
Patient blinding	High risk	Not feasible.
Provider blinding	High risk	Not feasible.
Outcome assessor blinding	Unclear risk	Some outcomes were self-reported.
Clinician blinding	Low risk	Doctors who made the clinical evaluations were unaware of which training course the subject had attended.  Some of the co-interventions (medication use) were considered as outcomes.
Incomplete outcome data addressed?	High risk	High dropout rate.  N = 53 participants were recruited. Only 34 out of 53 eligible participants were analyzed; details about the drop out are given.
Free of selective reporting?	High risk	Outcomes defined in the methods were not all reported in the results.
Free of other bias?	Unclear risk	Risk of contamination between groups

min: minutes

SD: standard deviation

STAI: State Trait Anxiety Inventory

VAS: visual analogue scale

**Characteristics of excluded studies** [ordered by study ID]

Study	Reason for exclusion
<a href="#">Almeida 2005</a>	Not a RCT. This study aimed to evaluate the effect of respiration and relaxation techniques on pain and anxiety during labor.  Does not evaluate a mind-body intervention.
<a href="#">Astbury 1980</a>	RCT, N = 90 investigated the effectiveness of childbirth education intervention in pregnancy and during labor in reducing maternal anxiety.  This study was excluded because it does not evaluate a mind-body intervention.
<a href="#">Bastani 2006</a>	RCT, N = 110. Does relaxation education in anxious primigravid Iranian women influence adverse pregnancy outcomes?  The aim of the study was to evaluate the effect of relaxation in anxious pregnant Iranian women on anxiety, perceived stress and neonatal outcomes. It does not evaluate a mind-body intervention.
<a href="#">Bauer 2010</a>	A randomized controlled trial of music and recreation therapy to alleviate distress during antepartum hospitalization. It does not evaluate a mind-body intervention.
<a href="#">Beck 1980</a>	This study evaluated a standard Lamaze training in pregnant women on maternal preparation and anxiety. It was excluded because it does not evaluate a mind-body intervention.

Study	Reason for exclusion
Bosco 2007	<p>Acupuncture for mild to moderate emotional complaints in pregnancy--a prospective, quasi-randomized, controlled study.</p> <p>Does not evaluate a mind-body intervention.</p>
Brown 1999	<p>RCT (pilot study), N = 4. The objectives of the study were to assess the feasibility of a RCT evaluating effectiveness of medical hypnosis in prolonging pregnancy for patients in preterm labor. Control group was usual care. No data on anxiety are available.</p>
Casko 2002	<p>Thesis. Theses are excluded unless they are published.</p>
Cha 2001	<p>RCT, N = 199. The aim of the study was to assess the potential effect of intercessory prayer on pregnancy rates in women being treated with IVF-ET. Control group was no intervention.</p> <p>No published data on anxiety. Information was asked to authors without a response.</p>
Chambers 2007	<p>Thesis. Theses are excluded unless they are published.</p>
Chang 2008	<p>RCT, N = 236. Effects of music therapy on psychological health of women during pregnancy.</p> <p>Not a mind-body intervention (music).</p>
Chuntharapat 2008	<p>RCT, N = 74. The aim of the study was to examine the effects of a yoga program during pregnancy on maternal comfort, labor pain, and birth outcomes. Control group was routine care, discussion sessions and weekly telephone calls.</p> <p>Maternal trait anxiety was assessed at baseline but anxiety was not an outcome. Author was contacted for additional information on anxiety (no response).</p>
Dasari 2007	<p>RCT, N = 50. The aims of the study were to compare the effect of tocolysis along with a psychotherapeutic intervention including relaxation and meditation on the prolongation of pregnancy and on neonatal outcomes in pregnant women with preterm labor. Control group was tocolysis alone.</p> <p>No anxiety data. Authors were contacted for any unpublished data on anxiety (no response).</p>
Duchene 1989	<p>RCT, N = 55. The aim of the study was to evaluate the effects of biofeedback on childbirth pain. Control group intervention was a Lamaze technique.</p> <p>No data on anxiety were available. Originals authors contacted without response.</p>
Feher 1989	<p>RCT, N = 71. The objective of the study was to evaluate an intervention for increasing breast milk production in mothers of premature infants admitted at the neonatal unit. Guided imagery techniques were compared with routine supportive care. This study was excluded because anxiety was not reported as an outcome. We contacted author for additional data but without a response.</p>
Field 1997	<p>RCT, N = 28. 28 women were recruited from prenatal classes and randomly assigned to receive massage in addition to coaching in breathing from their partners during labor, or to receive coaching in breathing alone.</p> <p>We excluded the study because it does not evaluate a mind-body intervention.</p>
Field 1999	<p>RCT, N = 26 pregnant women were assigned to a massage therapy or a relaxation therapy group for 5 weeks.</p> <p>We excluded the study because it does not evaluate a mind-body intervention.</p>
Field 2004	<p>RCT, N = 84. Depressed pregnant women were recruited during the second trimester of pregnancy and randomly assigned to a massage therapy group, a progressive muscle relaxation group or a control group that received standard prenatal care alone.</p>

Study	Reason for exclusion
	Does not evaluate a mind-body intervention.
Field 2009	<p>RCT, N = 113. Depressed women were randomly assigned to a group of Interpersonal psychotherapy or interpersonal psychotherapy plus massage therapy.</p> <p>Not a mind-body intervention.</p>
Freeman 1986	<p>RCT, N = 82. The aim of the study was to evaluate the effectiveness of self-hypnosis on pain relief, satisfaction, and analgesic requirements in pregnant primigravidas willing to avoid epidural anesthesia. Control group was not specified.</p> <p>No published data on anxiety. Authors contacted but without response.</p>
Gatelli 2000	Excluded because it does not evaluate a mind-body intervention. In the aim to evaluate the experience in labor and delivery, participants were assigned to an obstetric psychoprophylaxis course (OPP) plus individual guided relaxation sessions, to OPP plus individual psychological counselling sessions, or only to OPP.
Guse 2006	<p>RCT, N = 46. The aim of the study was to evaluate the effect of a prenatal hypnotherapy program on the postnatal psychological well-being of first-time mothers.</p> <p>No data on anxiety (as confirmed by the author).</p>
Harmon 1990	<p>RCT, N = 45. The aim of the study was to assess the effectiveness of a bio-behavioral intervention (relaxation and biofeedback, bed rest and compliance enhancement training) in addition to the treatment of mild pregnancy-induced hypertension in hypertensive women between 30-36 weeks of gestation. Control condition was bed rest alone and bed rest with compliance enhancement training.</p> <p>No data on anxiety as an outcome (as confirmed by authors).</p>
Holt 2008	<p>RCT, intervention group is allocated to a CBT group program. The trial is still open to recruitment.</p> <p>Does not evaluate a mind-body intervention.</p>
Janke 1999	<p>RCT, N = 107. To examine the effect of relaxation on preterm labor outcomes. 2 groups, daily relaxation exercise or control group. A third group was added to the study: women who were originally assigned to the relaxation group but were unable to adhere to the daily practice.</p> <p>We excluded the study because it does not evaluate a mind-body intervention.</p>
Larden 2004	<p>RCT, N = 54. Participants were randomly assigned to receive either therapeutic touch, shared activity with a registered nurse or standard ward care.</p> <p>Does not evaluate a mind-body intervention.</p>
Lee 2006	<p>Not a RCT: effects of a Qigong prenatal education program on anxiety, depression and physical symptoms in pregnant women.</p> <p>Not a mind-body intervention.</p>
Liebman 1989	Thesis. Theses are excluded unless they are published.
Little 1984	<p>RCT, N = 60. The aim of the study was to determine whether relaxation therapy alone or combined with biofeedback training reduces blood pressure and prevents hospital admissions in hypertensive pregnant women. Control group was usual care.</p> <p>Women's anxiety was measured at baseline but was not an outcome.</p>

Study	Reason for exclusion
Lukesch 1980	<p>2 groups of primiparae were subjected to 2 different forms of basically behavior therapeutic treatments which aimed to reduce birth anxiety. In comparison with an untreated control group a significant reduction of birth anxieties was found.</p> <p>Not a RCT.</p>
Marcus 1995	<p>RCT, N = 31. The aim of the study was to compare the efficacy of a combined non-pharmacological treatment (relaxation, skin-warming biofeedback, and physical therapy) with attention (headache education and skin-cooling biofeedback) on the management of headache during pregnancy. Control group received headache education and skin-cooling biofeedback.</p> <p>This study was excluded because anxiety was not reported as an outcome. The author was contacted and confirmed that no anxiety data were available.</p>
Martin 2001	<p>RCT, N = 47. The aim of the study was to evaluate how childbirth preparation incorporating hypnotic techniques affect the labor processes and birth outcomes in pregnant adolescents. Control group was supportive counseling.</p> <p>Women's anxiety was not an outcome (as confirmed by the author).</p>
Mehl-Madrona 2004	<p>RCT, N = 720. The aim of the study was to determine if a program of prenatal hypnosis could reduce birth complications. Comparison group was supportive psychotherapy and a reference group without any intervention. Anxiety was measured at baseline but was not an outcome.</p> <p>Author was contacted for data on anxiety (no response).</p>
Rock 1969	<p>RCT, N = 40. The aims of the study were to evaluate hypnotic techniques as an aid to labor management. Control group was standard care.</p> <p>No anxiety data were reported as an outcome. No contact with the author was possible to retrieve unpublished data on anxiety.</p>
Satyapriya 2009	<p>RCT, N = 122 patients. The aim of the study was to evaluate the effect of integrated yoga practice and guided yogic relaxation on both perceived stress and measured autonomic response in healthy pregnant women.</p> <p>No data on anxiety. Authors have been contacted (no response).</p>
Schorn 2009	<p>RCT, N = 60. The aim of this RCT was to test the effects of guided imagery on blood loss during third stage of labor. No anxiety data.</p>
Shaw 1993	<p>Thesis. Theses are excluded unless they are published.</p>
Somers 1989	<p>RCT, N = 45. The aim of the study was to assess the effectiveness of a bio-behavioral intervention (relaxation and biofeedback, bed rest and compliance enhancement training) in adjunct to treatment of mild pregnancy-induced hypertension in women between 30-36 weeks of gestation. Control condition was bed rest alone and bed rest with compliance enhancement training.</p> <p>No data on anxiety were collected (as confirmed by the authors).</p>
St-James Robert 1982	<p>RCT, N = 39. The aim of this study was to evaluate the adjunct of biofeedback relaxation procedures to conventional antenatal training and childbirth. Aims were to compare autonomic (skin conductance level) and voluntary-muscle (electro-myographic) relaxation training procedures, and to determine whether either or both procedures facilitated the labor and delivery of women receiving the training. Control group received relaxation and education classes.</p> <p>We excluded this study after the author was contacted and confirmed that no anxiety data were available.</p>

Study	Reason for exclusion
Valbo 1996	RCT, N = 130. The aim of the study was to evaluate a hypnotic intervention for smoking cessation and smoking reduction among women who were smoking in pregnancy. Control group intervention was routine care. We excluded the study because the author was contacted and confirmed that no anxiety data were available.
Yang 2009	Music therapy to relieve anxiety in pregnant women on bedrest. RCT but does not evaluate a mind-body intervention.
Yim 2005	Thesis. Theses are excluded unless they are published.

RCT: randomized controlled trial

### Characteristics of studies awaiting assessment [ordered by study ID]

#### Ahmadian 2009

Methods	Randomized controlled trial.
Participants	280 uncomplicated pregnant women (140 experimental group and 140 control group).
Interventions	Antenatal educational interventions.
Outcomes	Anxiety measured by the Spielberger state-trait anxiety inventory during latent and active phase of labor.
Notes	Abstract published in International Journal of Gynecology & Obstetrics. No details on the intervention used in this trial are given in the abstract. Further details on the publication and data were requested from the authors (waiting for response).

#### Fisher 2009

Methods	Randomized controlled trial.
Participants	38 women were randomized and completed the study.
Interventions	Hypnobirthing versus standard childbirth preparation course.
Outcomes	Patient attitudes toward coping mechanisms; role of her partner and nurse; anxiety level.
Notes	Abstract published in the American Journal of Obstetrics and Gynecology 2009. Further details on the publication and data were requested from the authors (waiting for response).

#### Jallo 2008

Methods	Prospective, longitudinal study using controlled randomized experimental design.
Participants	N = 59 women.
Interventions	The intervention was a set of 3 R-GI (imagery) CDs developed and sequenced to influence study outcomes.

**Jallo 2008** (Continued)

Outcomes	Perceived Stress Scale (PSS), anxiety (STAI-state) and plasma CRH levels were collected at 3 times.
Notes	We are waiting for the full version of the paper (not available) to complete the evaluation of this study.

**Taghavi 2009**

Methods	Randomized controlled trial.
Participants	280 pregnant women (140 experimental and 140 control).
Interventions	Antenatal education intervention.
Outcomes	Pain; delivery process.
Notes	This study seems to be the same as <a href="#">Ahmadian 2009</a> reporting different outcomes. Abstract published in International Journal of Gynecology & Obstetrics. No details on the intervention used in this trial are given in the abstract. Further details on the publication and data were requested from the authors (waiting for response).

STAI: State Trait Anxiety Inventory

**Characteristics of ongoing studies** [ordered by study ID]

**Cyna 2006**

Trial name or title	Hypnosis Antenatal Training for Childbirth (HATCh): a randomized controlled trial.
Methods	A single centre, randomized controlled trial using a 3-arm parallel group design in the largest tertiary maternity unit in South Australia.
Participants	Women > 34 and < 39 weeks' gestation, planning a vaginal birth, not in active labor, with a singleton, viable fetus of vertex presentation, are eligible to participate.
Interventions	<p><b>Group 1:</b> participants receive antenatal hypnosis training in preparation for childbirth administered by a qualified hypnotherapist with the use of an audio compact disc on hypnosis for re-enforcement.</p> <p><b>Group 2:</b> consists of antenatal hypnosis training in preparation for childbirth using an audio compact disc on hypnosis administered by a nurse with no training in hypnotherapy;</p> <p><b>Group 3:</b> participants continue with their usual preparation for childbirth with no additional intervention.</p>
Outcomes	<p>The use of pharmacological analgesia during labor and childbirth; use of oxytocics, the mode of delivery, neonatal Apgar score at 5 minutes &lt; 7 and maternal admission to the high dependency unit or the ICU.</p> <p>Maternal side effects such as: postpartum hemorrhage =&gt; 600 ml; blood transfusion; death; ICU admission, meconium-stained liquor; babies admitted to neonatal unit.</p>
Starting date	December 2005.
Contact information	Cyna A: allan.cyna@cywhs.sa.gov.au

**Cyna 2006** (Continued)

Notes The recruitment is completed, confirmed by authors.

**Milgrom 2008a**

Trial name or title	Toward parenthood: delivering an antenatal self-help intervention with telephone support for depression, anxiety and parenting difficulties - facilitating the perinatal health journey.
Methods	Randomized controlled trial.
Participants	Women, 20 to 30 weeks of gestation.
Interventions	Intervention group receives self-help guidebooks (for participants and their partners), 8 weekly telephone support sessions from therapists until 6 weeks postpartum and networking with health professionals.
Outcomes	Depression Anxiety Stress Scales; Information about birth and services used.
Starting date	30/06/2006.
Contact information	jeannette.milgrom@austin.org.au
Notes	<p>Trial is closed: follow-up continuing (based on "Australian New Zealand Clinical Trials Registry" on December 2010).</p> <p>To classify this study, more details on intervention are needed.</p> <p>Authors have been contacted about date of publication (no response).</p>

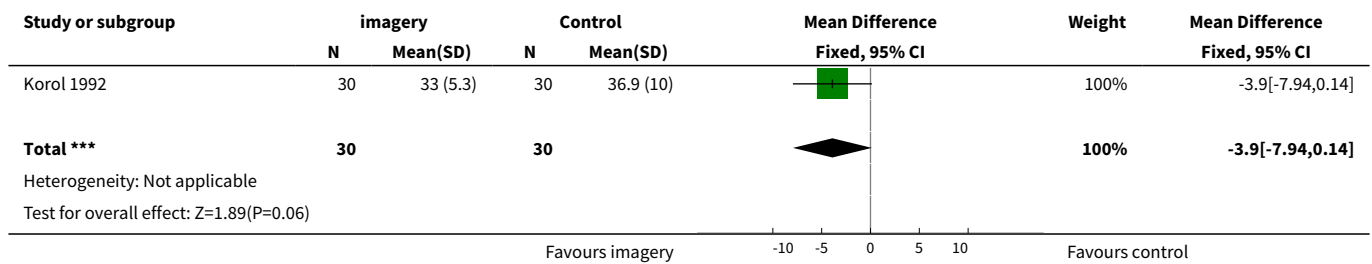
ICU: intensive care unit

**DATA AND ANALYSES**
**Comparison 1. Imagery versus non imagery lesson: Korol 1992**

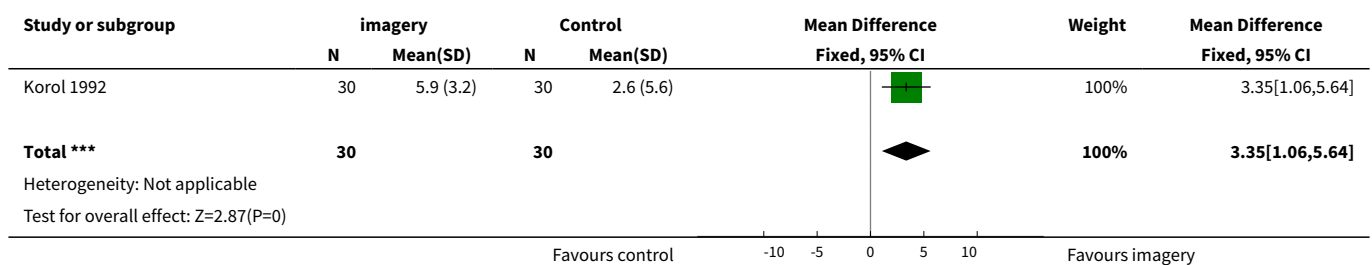
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Anxiety state (STAI-S) after the last prenatal class	1	60	Mean Difference (IV, Fixed, 95% CI)	-3.90 [-7.94, 0.14]
2 Knowledge of labor and delivery after the last prenatal class	1	60	Mean Difference (IV, Fixed, 95% CI)	3.35 [1.06, 5.64]



**Analysis 1.1. Comparison 1 Imagery versus non imagery lesson: Korol 1992, Outcome 1 Anxiety state (STAI-S) after the last prenatal class.**



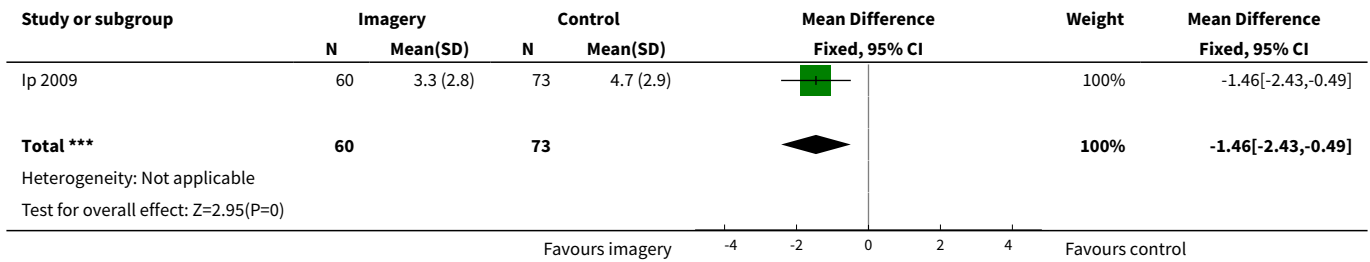
**Analysis 1.2. Comparison 1 Imagery versus non imagery lesson: Korol 1992, Outcome 2 Knowledge of labor and delivery after the last prenatal class.**



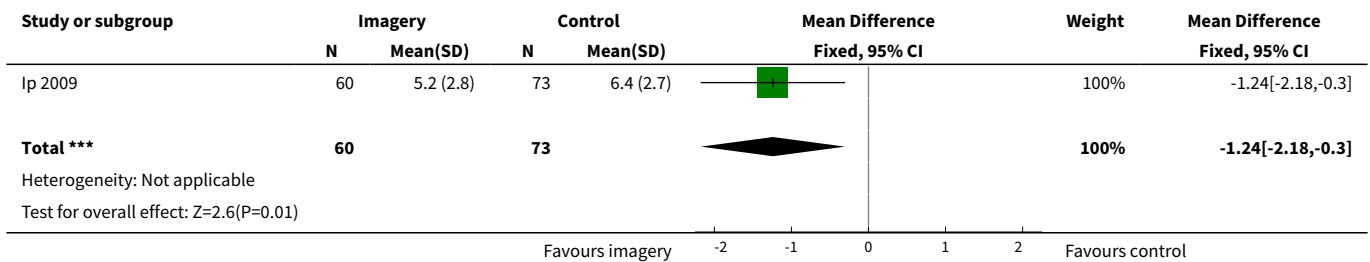
**Comparison 2. Imagery versus usual care: Ip 2009**

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Anxiety at early stages of labor	1	133	Mean Difference (IV, Fixed, 95% CI)	-1.46 [-2.43, -0.49]
2 Anxiety at middle stages of labor	1	133	Mean Difference (IV, Fixed, 95% CI)	-1.24 [-2.18, -0.30]
3 Anxiety at late stages of labor	1	133	Mean Difference (IV, Fixed, 95% CI)	0.63 [-0.57, 1.83]
4 Pain at early stage of labor	1	133	Mean Difference (IV, Fixed, 95% CI)	-1.49 [-2.28, -0.70]
5 Pain at middle stages of labor	1	133	Mean Difference (IV, Fixed, 95% CI)	-0.97 [-1.69, -0.25]
6 Pain at late stages of labor	1	133	Mean Difference (IV, Fixed, 95% CI)	0.0 [-0.94, 0.94]
7 Coping behaviours during labor	1	133	Mean Difference (IV, Fixed, 95% CI)	3.95 [1.40, 6.50]
8 Outcome expectancy on OE-16	1	133	Mean Difference (IV, Fixed, 95% CI)	16.77 [9.43, 24.11]
9 Efficacy expectancy on EE-16	1	133	Mean Difference (IV, Fixed, 95% CI)	20.76 [12.73, 28.79]

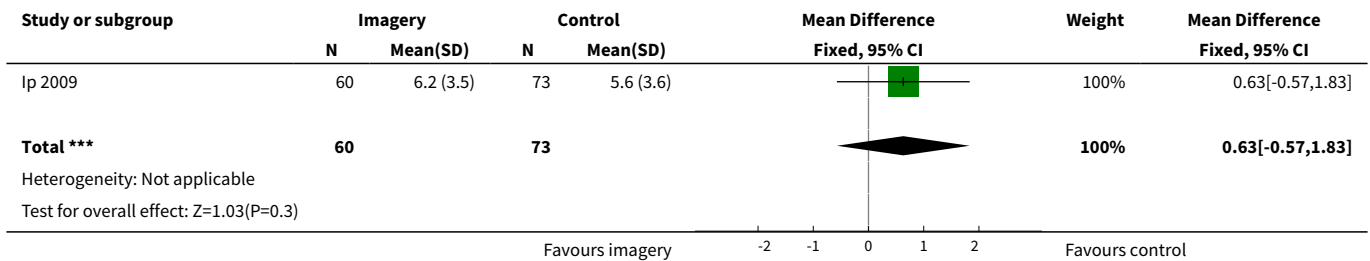
**Analysis 2.1. Comparison 2 Imagery versus usual care: Ip 2009, Outcome 1 Anxiety at early stages of labor.**



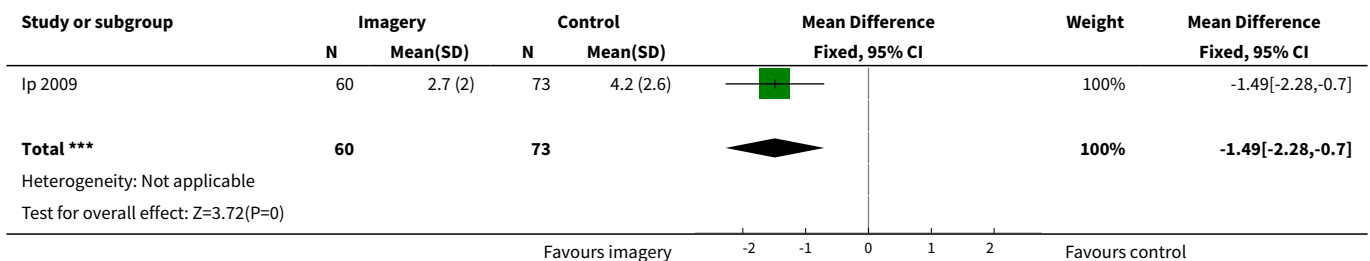
**Analysis 2.2. Comparison 2 Imagery versus usual care: Ip 2009, Outcome 2 Anxiety at middle stages of labor.**



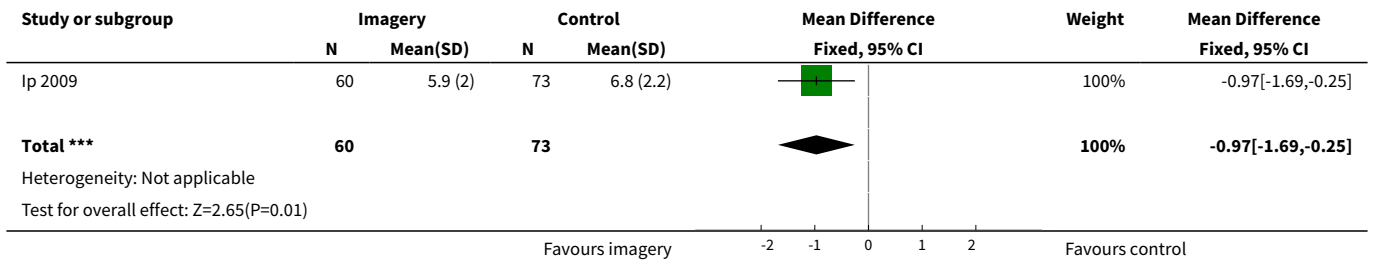
**Analysis 2.3. Comparison 2 Imagery versus usual care: Ip 2009, Outcome 3 Anxiety at late stages of labor.**



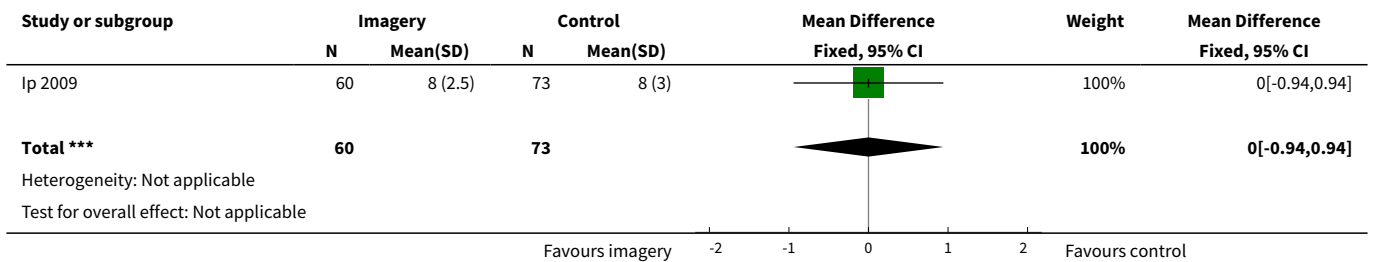
**Analysis 2.4. Comparison 2 Imagery versus usual care: Ip 2009, Outcome 4 Pain at early stage of labor.**



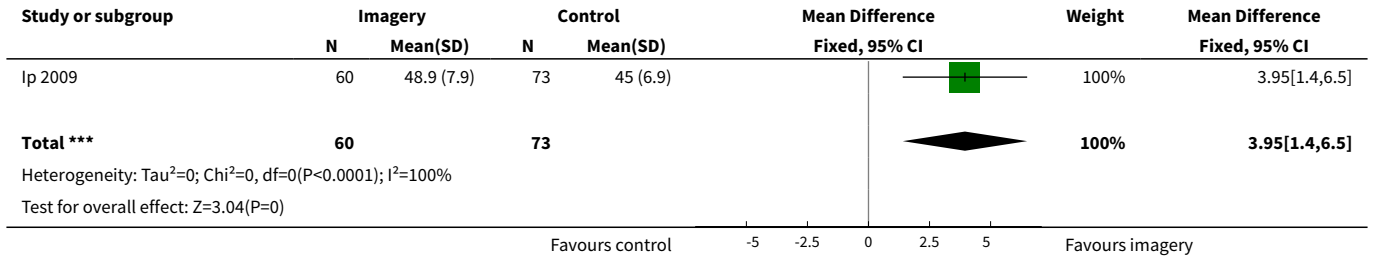
**Analysis 2.5. Comparison 2 Imagery versus usual care: Ip 2009, Outcome 5 Pain at middle stages of labor.**



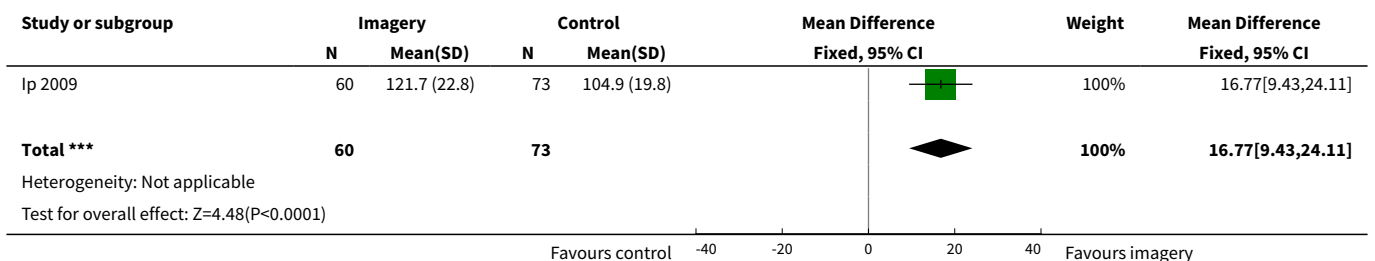
**Analysis 2.6. Comparison 2 Imagery versus usual care: Ip 2009, Outcome 6 Pain at late stages of labor.**



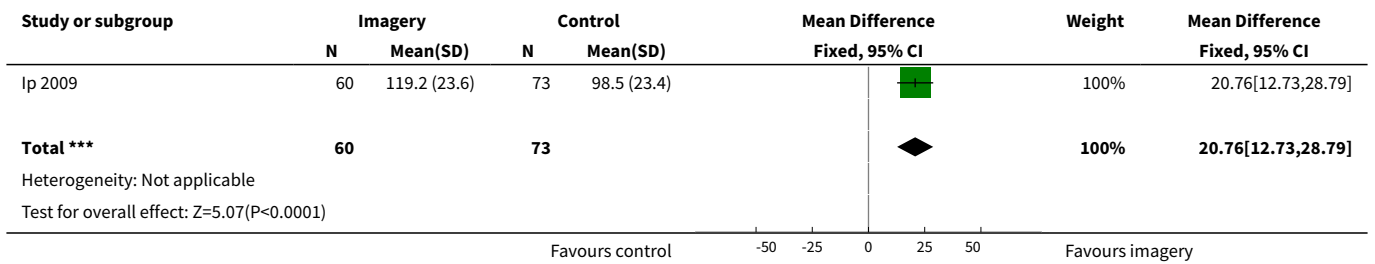
**Analysis 2.7. Comparison 2 Imagery versus usual care: Ip 2009, Outcome 7 Coping behaviours during labor.**



**Analysis 2.8. Comparison 2 Imagery versus usual care: Ip 2009, Outcome 8 Outcome expectancy on OE-16.**



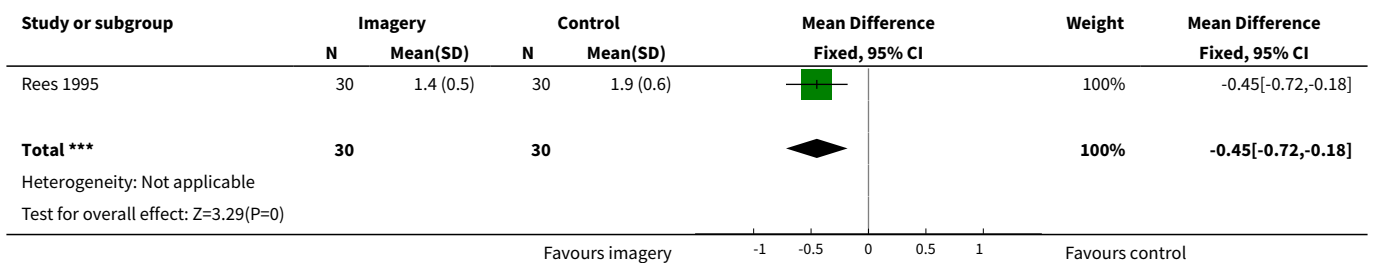
**Analysis 2.9. Comparison 2 Imagery versus usual care: Ip 2009, Outcome 9 Efficacy expectancy on EE-16.**



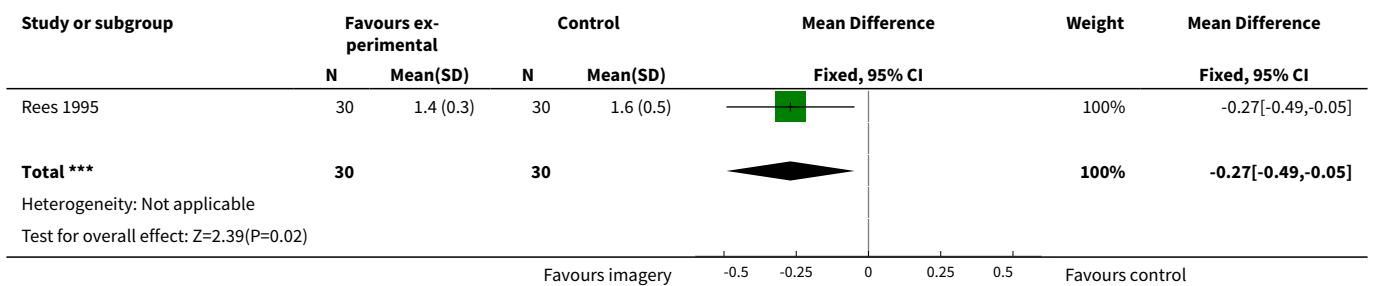
**Comparison 4. Imagery versus music: Rees 1995**

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Anxiety state (STAI-S) 28 days postpartum	1	60	Mean Difference (IV, Fixed, 95% CI)	-0.45 [-0.72, -0.18]
2 Depression 28 days postpartum	1	60	Mean Difference (IV, Fixed, 95% CI)	-0.27 [-0.49, -0.05]
3 Self-esteem score	1	60	Mean Difference (IV, Fixed, 95% CI)	0.39 [0.15, 0.63]

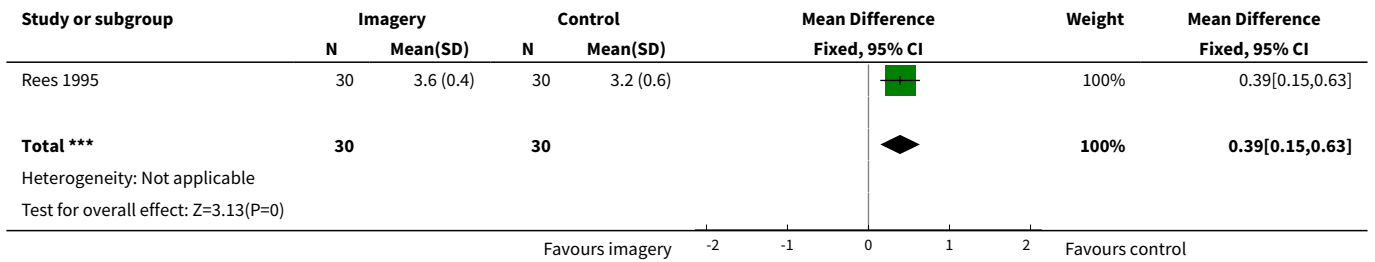
**Analysis 4.1. Comparison 4 Imagery versus music: Rees 1995, Outcome 1 Anxiety state (STAI-S) 28 days postpartum.**



**Analysis 4.2. Comparison 4 Imagery versus music: Rees 1995, Outcome 2 Depression 28 days postpartum.**



**Analysis 4.3. Comparison 4 Imagery versus music: Rees 1995, Outcome 3 Self-esteem score.**



**Comparison 5. Imagery versus passive relaxation plus progressive relaxation: Uresh 2009**

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Anxiety level	1	39	Mean Difference (IV, Fixed, 95% CI)	-0.12 [-0.29, 0.05]
2 Serum cortisol	1	39	Mean Difference (IV, Fixed, 95% CI)	0.73 [-8.10, 9.56]
3 Serum ACTH	1	39	Mean Difference (IV, Fixed, 95% CI)	-4.96 [-13.91, 3.99]
4 Serum norepinephrine (NE)	1	39	Mean Difference (IV, Fixed, 95% CI)	-25.58 [-66.06, 14.90]
5 Serum epinephrine	1	39	Mean Difference (IV, Fixed, 95% CI)	-9.60 [-17.19, -2.01]
6 Heart rate	1	39	Mean Difference (IV, Fixed, 95% CI)	-2.84 [-6.00, 2.32]
7 Systolic blood pressure	1	39	Mean Difference (IV, Fixed, 95% CI)	1.37 [-9.21, 11.95]
8 Diasystolic blood pressure	1	39	Mean Difference (IV, Fixed, 95% CI)	-1.79 [-7.89, 4.31]
9 Level of relaxation	1	39	Mean Difference (IV, Fixed, 95% CI)	0.78 [0.10, 1.46]

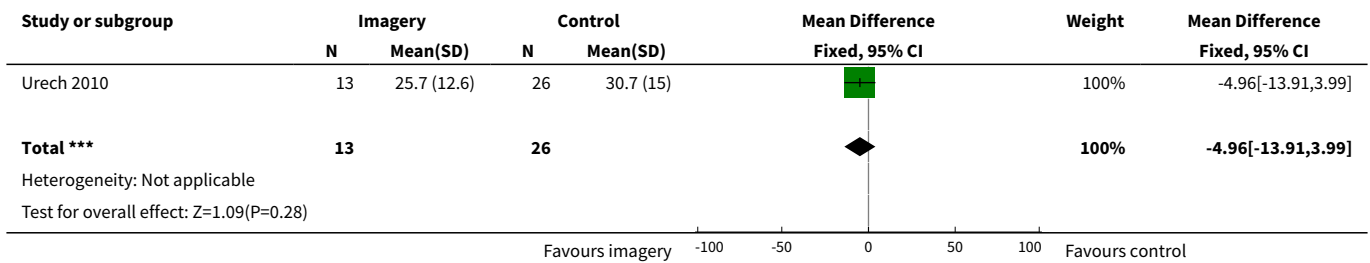
**Analysis 5.1. Comparison 5 Imagery versus passive relaxation plus progressive relaxation: Uresh 2009, Outcome 1 Anxiety level.**



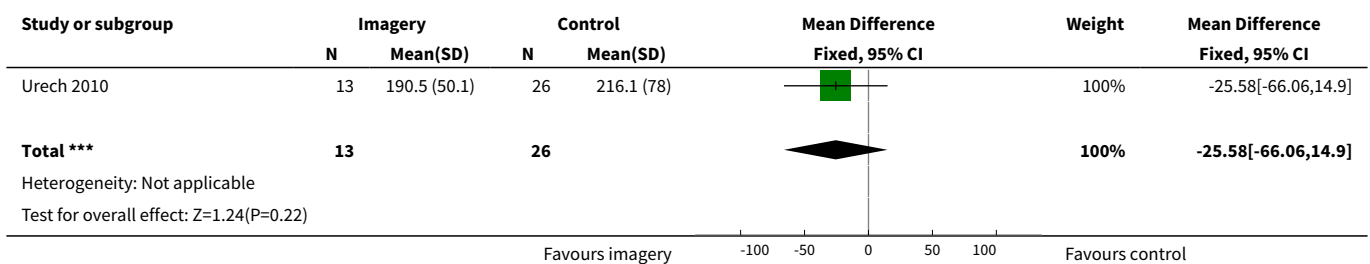
**Analysis 5.2. Comparison 5 Imagery versus passive relaxation plus progressive relaxation: Uresh 2009, Outcome 2 Serum cortisol.**



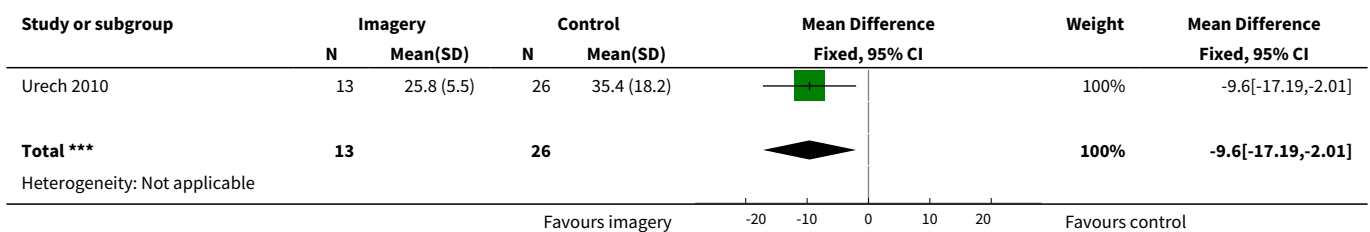
**Analysis 5.3. Comparison 5 Imagery versus passive relaxation plus progressive relaxation: Uresh 2009, Outcome 3 Serum ACTH.**



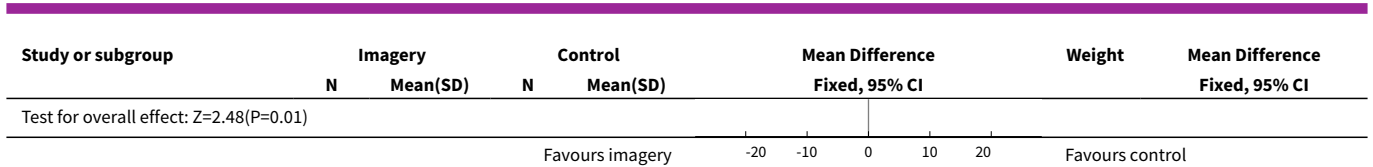
**Analysis 5.4. Comparison 5 Imagery versus passive relaxation plus progressive relaxation: Uresh 2009, Outcome 4 Serum norepinephrine (NE).**



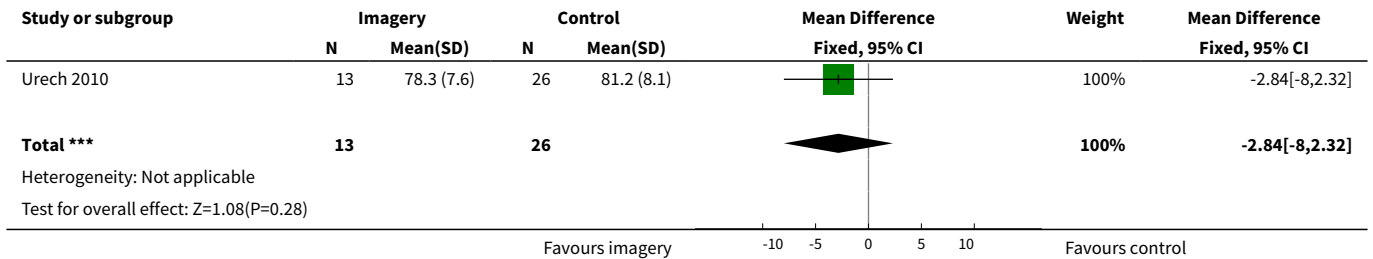
**Analysis 5.5. Comparison 5 Imagery versus passive relaxation plus progressive relaxation: Uresh 2009, Outcome 5 Serum epinephrine.**



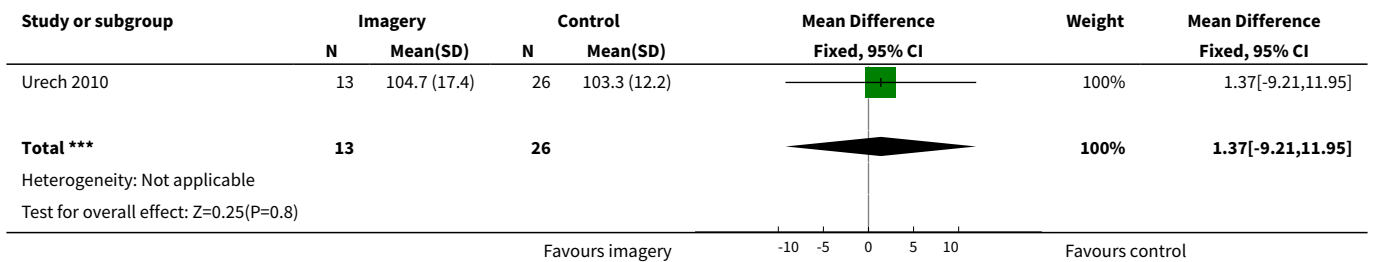




**Analysis 5.6. Comparison 5 Imagery versus passive relaxation plus progressive relaxation: Uresh 2009, Outcome 6 Heart rate.**



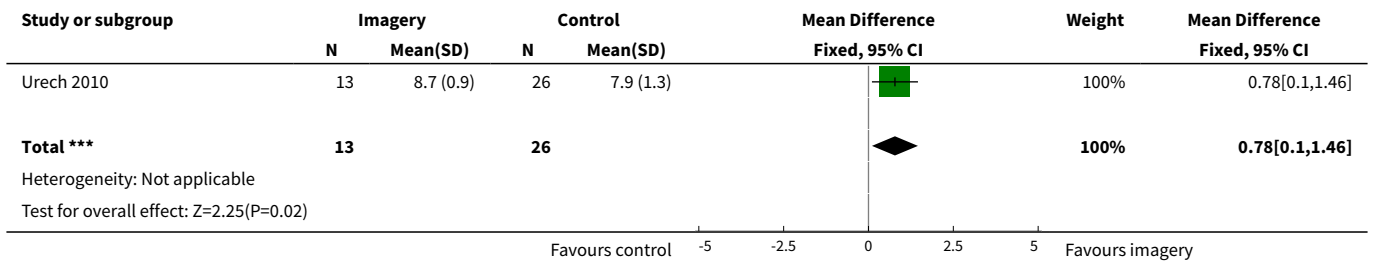
**Analysis 5.7. Comparison 5 Imagery versus passive relaxation plus progressive relaxation: Uresh 2009, Outcome 7 Systolic blood pressure.**



**Analysis 5.8. Comparison 5 Imagery versus passive relaxation plus progressive relaxation: Uresh 2009, Outcome 8 Diasystolic blood pressure.**



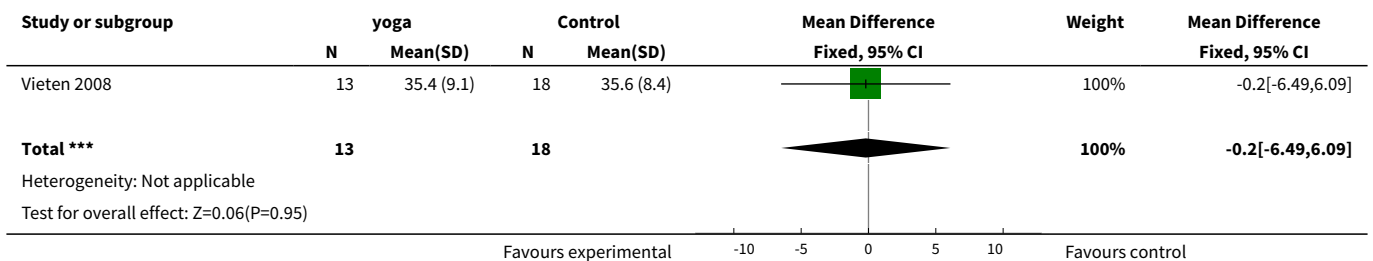
**Analysis 5.9. Comparison 5 Imagery versus passive relaxation plus progressive relaxation: Uresh 2009, Outcome 9 Level of relaxation.**



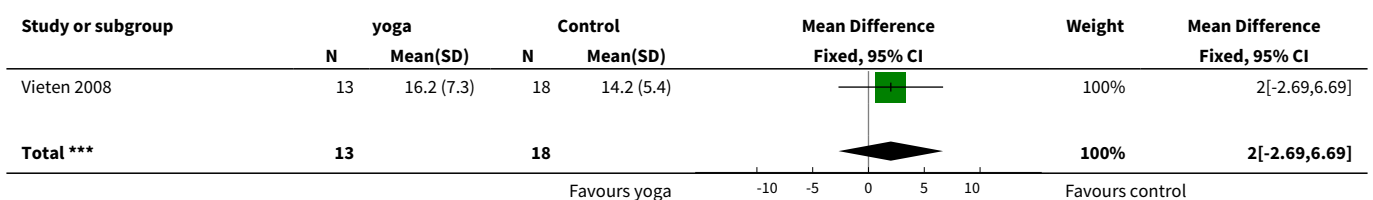
**Comparison 6. Yoga versus wait-list intervention: Vieten 2008**

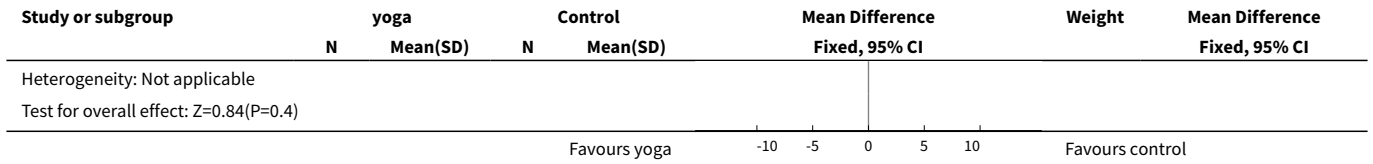
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Anxiety state	1	31	Mean Difference (IV, Fixed, 95% CI)	-0.20 [-6.49, 6.09]
2 Depression	1	31	Mean Difference (IV, Fixed, 95% CI)	2.0 [-2.69, 6.69]
3 Perceived stress	1	31	Mean Difference (IV, Fixed, 95% CI)	1.00 [-4.76, 2.76]
4 Negative affect	1	31	Mean Difference (IV, Fixed, 95% CI)	-1.70 [-5.22, 1.82]
5 Positive affect	1	31	Mean Difference (IV, Fixed, 95% CI)	2.90 [-1.88, 7.68]
6 Affect regulation	1	31	Mean Difference (IV, Fixed, 95% CI)	9.20 [-7.39, 25.79]

**Analysis 6.1. Comparison 6 Yoga versus wait-list intervention: Vieten 2008, Outcome 1 Anxiety state.**

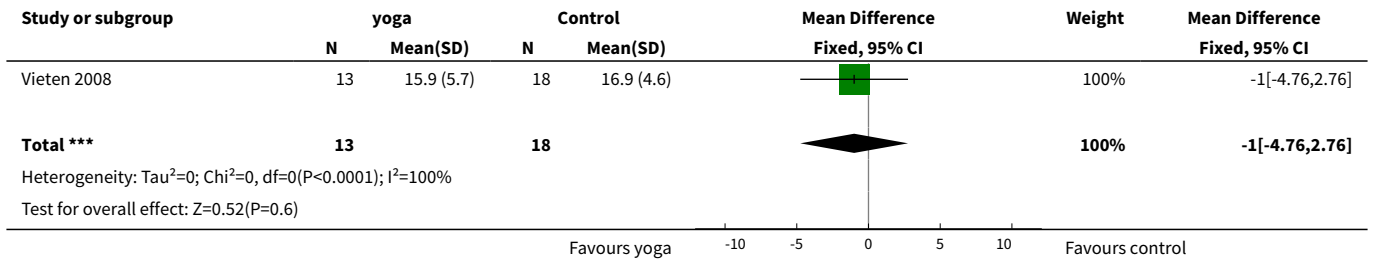


**Analysis 6.2. Comparison 6 Yoga versus wait-list intervention: Vieten 2008, Outcome 2 Depression.**

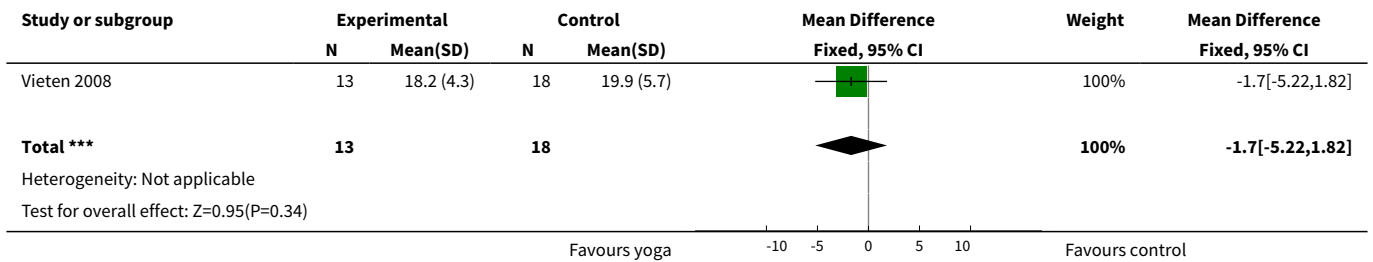




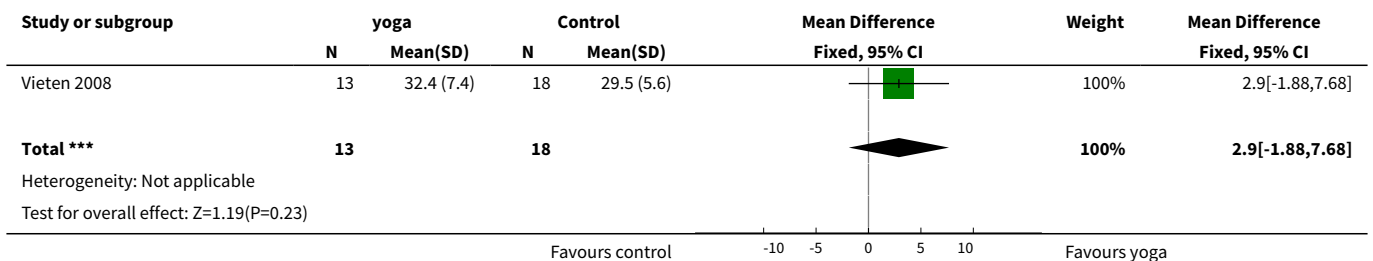
**Analysis 6.3. Comparison 6 Yoga versus wait-list intervention: Vieten 2008, Outcome 3 Perceived stress.**



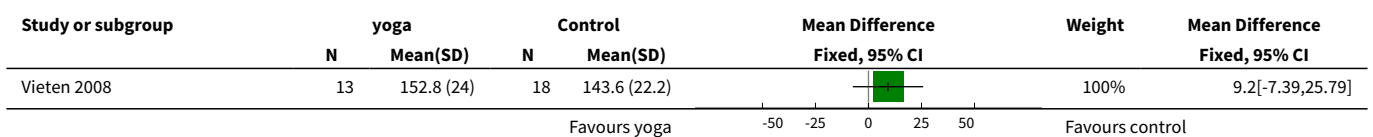
**Analysis 6.4. Comparison 6 Yoga versus wait-list intervention: Vieten 2008, Outcome 4 Negative affect.**

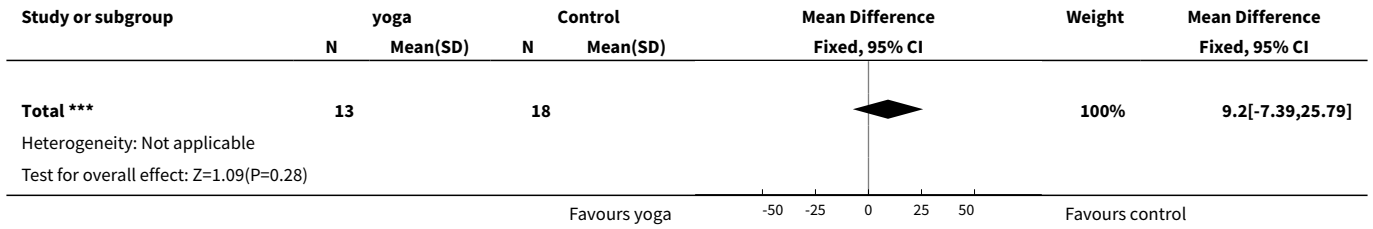


**Analysis 6.5. Comparison 6 Yoga versus wait-list intervention: Vieten 2008, Outcome 5 Positive affect.**



**Analysis 6.6. Comparison 6 Yoga versus wait-list intervention: Vieten 2008, Outcome 6 Affect regulation.**

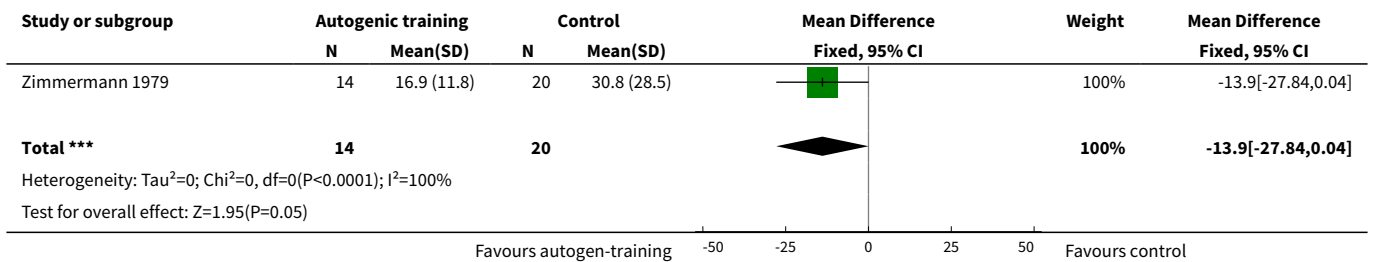




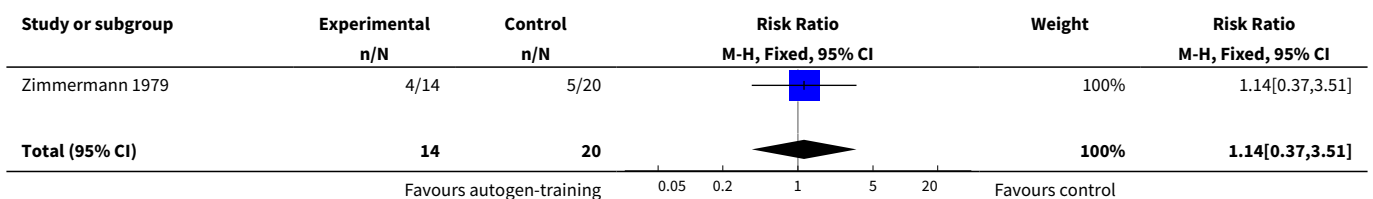
**Comparison 7. Autogenic training versus traditional psycho-prophylaxis: Zimmermann 1979**

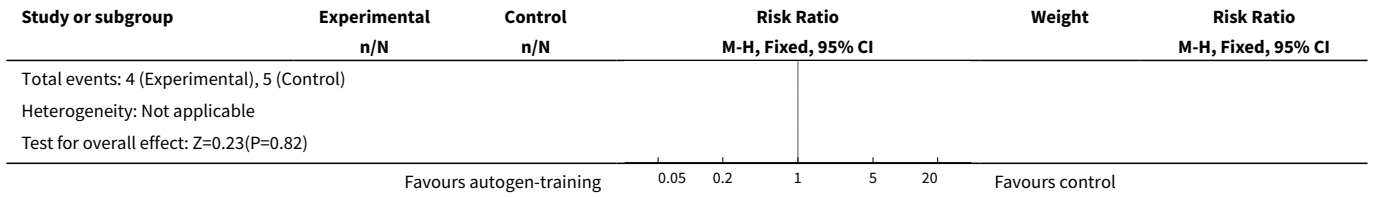
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Anxiety self reported before entering labor room	1	34	Mean Difference (IV, Fixed, 95% CI)	-13.90 [-27.84, 0.04]
2 Use of a spasmolytic medication	1	34	Risk Ratio (M-H, Fixed, 95% CI)	1.14 [0.37, 3.51]
3 Use of oxytocin in early stage of labor	1	34	Risk Ratio (M-H, Fixed, 95% CI)	1.14 [0.82, 1.59]
4 Length of dilatation period	1	34	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
5 Expulsion time	1	34	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]

**Analysis 7.1. Comparison 7 Autogenic training versus traditional psycho-prophylaxis: Zimmermann 1979, Outcome 1 Anxiety self reported before entering labor room.**

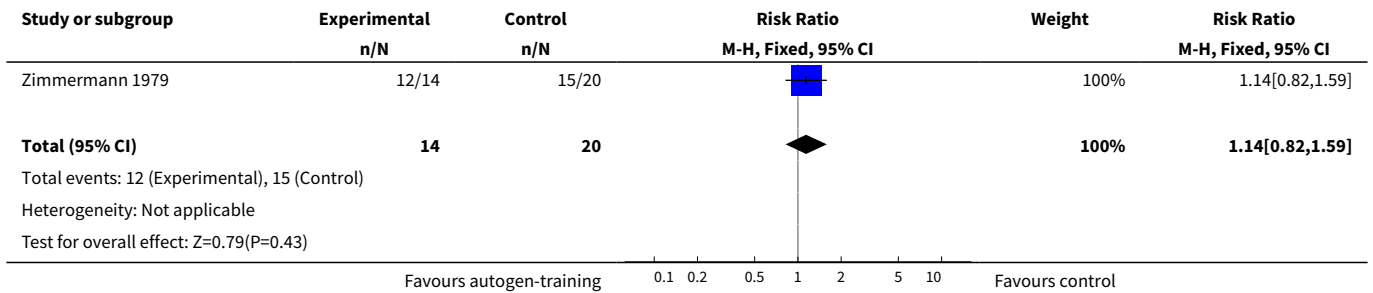


**Analysis 7.2. Comparison 7 Autogenic training versus traditional psycho-prophylaxis: Zimmermann 1979, Outcome 2 Use of a spasmolytic medication.**

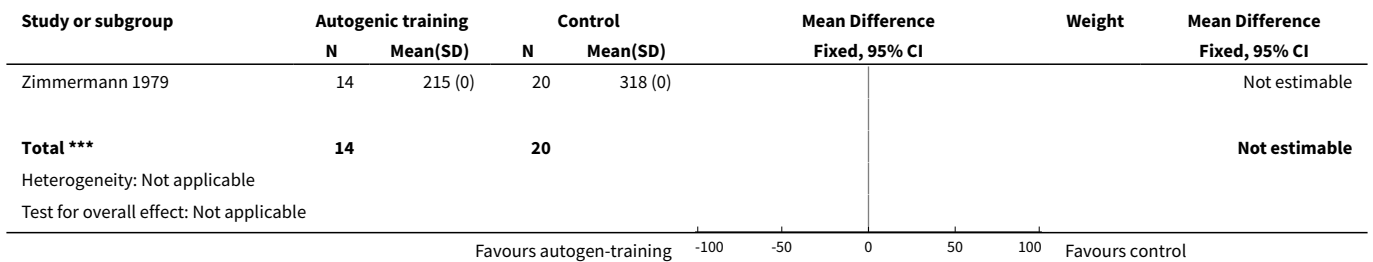




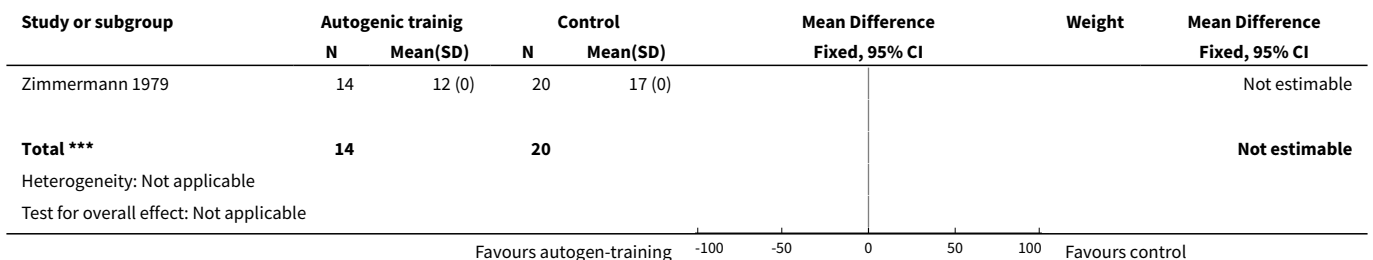
**Analysis 7.3. Comparison 7 Autogenic training versus traditional psycho-prophylaxis: Zimmermann 1979, Outcome 3 Use of oxytocin in early stage of labor.**



**Analysis 7.4. Comparison 7 Autogenic training versus traditional psycho-prophylaxis: Zimmermann 1979, Outcome 4 Length of dilatation period.**



**Analysis 7.5. Comparison 7 Autogenic training versus traditional psycho-prophylaxis: Zimmermann 1979, Outcome 5 Expulsion time.**



## ADDITIONAL TABLES

**Table 1. Hypnotherapy versus passive relaxation: Teixeira 2005: post-treatment anxiety state**

Study ID	Median: hypnotherapy group	CI 95%	Median: control group	CI 95%
Teixeira 2005	24.5	23 to 27.5	27.5	25 to 30.5

**Table 2. Hypnotherapy versus passive relaxation: Teixeira 2005: maternal plasma noradrenaline**

Study ID	Median: hypnotherapy-group	CI 95%	Median: control-group	CI 95%
Teixeira 2005	1.7	1.35 to 2.00	1.2	1.04 to 1.43

**Table 3. Hypnotherapy versus passive relaxation: Teixeira 2005: maternal plasma adrenaline**

Study ID	Median: hypnotherapy-group	CI 95%	Median: control-group	CI 95%
Teixeira 2005	0.76	0.61 to 0.98	0.72	0.56 to 1.00

**Table 4. Hypnotherapy versus passive relaxation: Teixeira 2005: maternal plasma cortisol**

Study ID	Median:hypnotherapy-group	CI 95%	Median:control-group	CI 95%
Teixeira 2005	620	492 to 707	555	494 to 608

**Table 5. Hypnotherapy versus passive relaxation: Teixeira 2005: maternal heart rate**

Study ID	Median:hypnotherapy group	CI 95%	Median:control group	CI 95%
Teixeira 2005	78.5	73.5 to 82.5	81.5	75 to 88.5

## APPENDICES

### Appendix 1. Search strategies

#### MEDLINE

1. prenatal AND development
2. pregnancy
3. #1 OR #2
4. "autogenic training"[MeSH Terms]
5. Tai Chi
6. "suggestion"[MeSH Terms]



7. suggestion AND auto
8. "yoga"[MeSH Terms]
9. "hypnosis"[MeSH Terms]
10. hypnotherapy
11. "meditation"[MeSH Terms]
12. "biofeedback, psychology"[MeSH Terms]
13. mind-body
14. "relaxation"[MeSH Terms]
15. #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14
16. #15 AND #3
17. #16 AND "humans"[MeSH Terms]

**EMBASE**

1. Prenatal-Development#.DE.
2. Pregnancy#.W..DE.
3. 1 OR 2
4. Autogenic-Training.DE.
5. Guided-Imagery.DE.
6. Relaxation-Training.DE.
7. Tai-Chi.DE.
8. Suggestion.W..DE.
9. Yoga.W..DE.
- 10.Hypnosis.W..DE.
- 11.Meditation.W..DE.
- 12.auto ADJ suggestion
- 13.guided ADJ imagery
- 14.prayer\$.TI,AB.
- 15.hypnosis.TI,AB.
- 16.hypnotherapy.TI,AB.
- 17.(mind ADJ body) .TI,AB.
- 18.( tai chi OR yoga).TI,AB.
- 19.(relax OR relaxation) AND (therapy OR training OR technique\$)
- 20.(meditat\$ or autosuggestion).TI,AB.
- 21.4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18 OR 19 OR 20
- 22.3 AND 21
- 23.HUMAN=YES

[ClinicalTrials.gov](http://ClinicalTrials.gov) (December 2010) and [Current Controlled Trials](http://CurrentControlledTrials) (December 2010)

We searched by combining terms for each of the therapies with the term pregnan\*

National Center for Complementary and Alternative Medicine ([NCCAM](http://NCCAM)) (December 2010)

We browsed the alphabetical list of clinical trials for any relevant trials.

**Appendix 2. Searches carried out up to November 2008****Authors searched the following:**

CINAHL (1982 to November 2008), PsycINFO (1840 to November 2008), AMED (The Allied and Complementary Medicine Database) (1985 to November 2008), and the British Nursing Index (1994 to November 2008) using the following search strategies:

**CINAHL (EBSCO)**

**Mind-body interventions during pregnancy for preventing or treating women's anxiety (Review)**

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1. "Mind-Body-Techniques#.DE.
2. autosuggestion
3. auto ADJ suggestion
4. (autogenic AND (training OR therapy))
5. mind ADJ body
6. ( hypnosis OR hypnotherapy).TI,AB.
7. ( guided ADJ imagery ).TI,AB.
8. prayer\$.TI,AB.
9. meditat\$.TI,AB.
- 10.tai chi OR yoga).TI,AB.
- 11.((relax OR relaxation) .TI,AB. AND ( therapy OR training OR techniques\$ ) .TI,AB.
- 12.1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11
- 13.Pregnancy#.W..DE.
- 14.Pregnan\$.TI,AB.
- 15.Obstetric-Care#.DE.
- 16.13 or 14 or 15
- 17.16 and 12

#### **PsycINFO (OVID)**

1. exp Autogenic Training/
2. exp RELAXATION THERAPY/
3. exp Guided Imagery/
4. exp HYPNOTHERAPY
5. exp MEDITATION/
6. exp YOGA/
7. autosuggestion.mp.
8. auto-suggestion.mp.
9. exp HYPNOSIS/
- 10.exp PRAYER/
- 11.(Tai adj chi).mp.
- 12.(mind adj body).mp.
- 13.(hypnosis or hypnotherapy).ti,ab.
- 14.(guided adj imagery).mp.
- 15.((relax\$ or relaxation) and (training or therapy or technique\$)).ti,ab.
- 16.exp pregnancy/
- 17.exp prenatal care/
- 18.exp Prenatal Development/
- 19.1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 14 or 15
- 20.16 or 17 or 18
- 21.19 and 20

#### **AMED (Allied and Complementary Medicine) (OVID)**

1. exp YOGA/
2. autosuggestion.mp.
3. auto-suggestion.mp.
4. (Tai adj chi).mp.
5. (mind adj body).mp.
6. (hypnosis or hypnotherapy).ti,ab.
7. (guided adj imagery).mp.
8. ((relax\$ or relaxation) and (training or therapy or technique\$)).ti,ab.
9. mind body relations/
- 10.exp Psychosomatic therapies/

- 11.pregnancy/
- 12.pregnan\$.mp.
- 13.exp obstetrical care/
- 14.exp pregnancy complications/
- 15.yoga.mp.
- 16.1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 15
- 17.11 or 12 or 13 or 14
- 18.16 and 17

#### **BNI (British Nursing Index) (OVID)**

- 1. exp YOGA/
- 2. autosuggestion.mp.
- 3. auto-suggestion.mp.
- 4. (Tai adj chi).mp.
- 5. (mind adj body).mp.
- 6. (hypnosis or hypnotherapy).ti,ab.
- 7. (guided adj imagery).mp.
- 8. ((relax\$ or relaxation) and (training or therapy or technique\$)).ti,ab.
- 9. yoga.mp.
- 10.meditation.mp.
- 11.autogenic.mp.
- 12.suggestion.mp.
- 13.exp HYPNOSIS/
- 14.prayer.mp.
- 15.pregnancy/
- 16.pregnan\$.mp.
- 17.exp pregnancy complications/
- 18.1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14
- 19.15 or 16 or 17
- 20.18 and 19

#### **WHAT'S NEW**

Date	Event	Description
3 October 2011	Amended	Added citation of full paper for <a href="#">Urech 2010</a> .

#### **CONTRIBUTIONS OF AUTHORS**

Isabelle Marc (IM) wrote the first draft of the protocol. IM and Narimane Toureche (NT) selected and classified the studies to be included with Claudine Blanchet (CB) and Sylvie Dodin (SD) if a consensus is needed. IM and NT extracted the data. NT entered relevant data, carried out the risk of bias assessment and discussed it with IM. M Njoya statistician is the resource person at CHUQ if a meta-analysis is eventually necessary. NT (as part of her MSc in epidemiology) wrote the first draft of the review under IM supervision. Ellen Hodnett, Edzart Ernst, Claudine Blanchet and Sylvie Dodin commented on the review.

#### **DECLARATIONS OF INTEREST**

Isabelle Marc and Sylvie Dodin received a grant from the Canadian Institute of Health Research and conducted a clinical trial to investigate the benefits of hypnosis for pain and anxiety management in pregnancy termination.

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## SOURCES OF SUPPORT

### Internal sources

- No sources of support supplied

### External sources

- Canadian Institutes of Health Research, Canada.

Scholarship (RCT mentoring program) awarded to Isabelle Marc : grant number MTP85228

## DIFFERENCES BETWEEN PROTOCOL AND REVIEW

We have performed additional searching of the following resources up to November 2008 using the strategy described in Appendix 2 (see [Appendix 2](#) for details): CINAHL; PsycINFO; AMED (The Allied and Complementary Medicine Database); and the British Nursing Index. However, we were not able to run these searches after November 2008.

We will analyze the secondary neonatal outcomes in subgroup analyses depending on the presence or absence of an effect of the interventions on anxiety.

## INDEX TERMS

### Medical Subject Headings (MeSH)

Anxiety [\*prevention & control]; Autogenic Training; Hypnosis [methods]; Imagery, Psychotherapy [methods]; Mind-Body Therapies [\*methods]; Pregnancy Complications [prevention & control] [psychology] [\*therapy]; Randomized Controlled Trials as Topic; Yoga

### MeSH check words

Female; Humans; Pregnancy