Acupuncture for smoking cessation (Review)

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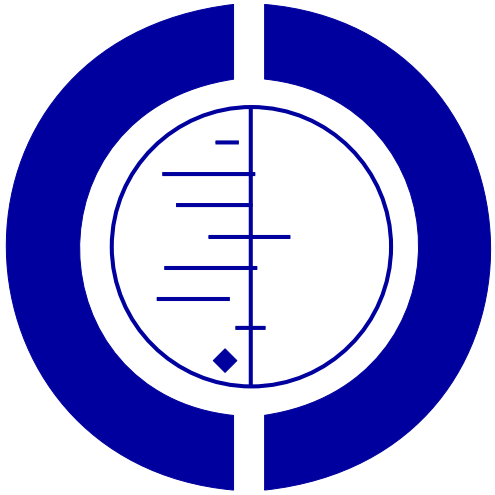

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ABSTRACT

Background
Acupuncture and related techniques are promoted as a treatment for smoking cessation in the belief that they may reduce nicotine withdrawal symptoms.

Objectives
The objective of this review is to determine the effectiveness of acupuncture and the allied therapies of acupressure, laser therapy and electrostimulation, in smoking cessation in comparison with: a) sham treatment, b) other interventions, or c) no intervention.

Search strategy
We searched the Cochrane Tobacco Addiction Group trials register, Cochrane Controlled Trials Register, Medline, Embase, BIOSIS Previews, PsycINFO, Science and Social Sciences Citation Index, AMED and CISCOM. Date of last search January 2002.

Selection criteria
Randomised trials comparing a form of acupuncture, acupressure, laser therapy or electrostimulation with either sham treatment, another intervention or no intervention for smoking cessation.

Data collection and analysis
We extracted data in duplicate on the type of smokers recruited, the nature of the acupuncture and control procedures, the outcome measures, method of randomisation, and completeness of follow-up.

We assessed abstinence from smoking at the earliest time-point (before 6 weeks), at six months and at one year or more follow-up in patients smoking at baseline. We used the most rigorous definition of abstinence for each trial, and biochemically validated rates if available. Those lost to follow-up were counted as continuing to smoke. Where appropriate, we performed meta-analysis using a fixed effects model.

Main results
We identified 22 studies. We failed to detect an effect of acupuncture on smoking cessation when compared to sham acupuncture at any time point. The odds ratio (OR) for early outcomes was 1.22 (95% confidence interval 0.99 to 1.49); the OR after 6 months was 1.50 (95% confidence interval 0.99 to 2.27) and after 12 months 1.08 (95% confidence interval 0.77 to 1.52).

Similarly, when acupuncture was compared with other anti-smoking interventions, we failed to find differences in outcome at any time point. Acupuncture appeared to be superior to no intervention in the early results, but this difference was not sustained.

The results with different acupuncture techniques do not show any one particular method (i.e. auricular acupuncture or non-auricular acupuncture) to be superior to control intervention.

Based on the results of single studies, acupressure was found to be superior to advice; laser therapy and electrostimulation were not superior to sham forms of these therapies.

Authors' conclusions
There is no clear evidence that acupuncture, acupressure, laser therapy or electrostimulation are effective for smoking cessation.

SYNOPSIS

Acupuncture does not appear to help smokers who are trying to quit

Acupuncture is a traditional Chinese therapy, generally using needles to stimulate particular energy points in the body. Acupuncture is used with the aim of reducing the withdrawal symptoms people experience when they try to quit smoking. The review looked at trials comparing active acupuncture with sham acupuncture (using needles at other places in the body not thought to be useful). However, there was no evidence that active acupuncture increased the number of people who could successfully quit smoking. Acupuncture may be better than doing nothing, at least in the short term, but this is likely to be a placebo effect.

BACKGROUND

Acupuncture has been used in the treatment of nicotine dependence in the West since an incidental observation in Hong Kong (Wen 1973). Opium smokers who had been given electrical stimulation to acupuncture needles (electroacupuncture) for pain relief claimed that their opiate withdrawal symptoms were less severe than they expected. Subsequently, various forms of needle or electrical stimulation have been used as a treatment for dependence on various addictive drugs, with the specific aim of reducing withdrawal symptoms and aiding cessation. For smoking cessation, needles are usually inserted for the duration of a treatment session (often lasting 15 - 20 minutes) at the time of cessation. The treatment may be repeated on the following days. Alternatively, or in addition, to this intervention, specially designed indwelling needles may be inserted, usually in ear points, and held in position with surgical tape for several days. Patients are instructed to press these indwelling needles when they become aware of withdrawal symptoms. As an alternative to indwelling needles, small seeds may be attached to the ear with adhesive tape and pressed intermittently (acupressure). Descriptions also exist of the use of a surgical suture which is inserted in the ear and knotted with a bead attached (Man 1975).

Acupuncture needles are generally stimulated manually during the treatment of most conditions. For smoking cessation, some acupuncturists stimulate the needles electrically with the intention of stimulating more precisely the release of neurotransmitters that may be involved in suppression of withdrawal symptoms (Clement-Jones 1979). Other clinicians have argued that the needles are unnecessary and it is sufficient to apply the electrical stimulation through surface electrodes attached to the mastoid process or the ear. This form of treatment is variously known as neuroelectrical therapy or transcranial electrotherapy. Its use overlaps, and has to a certain extent merged with, the therapy known as Cranial Electrostimulation (CES) which developed separately, mainly in the former Soviet Union and Eastern Europe, as a treatment for insomnia, anxiety and depression. CES has also been used for treatment of alcohol and drug dependence (Klawansky 1995). The electric current is usually sufficient to cause mild tingling sensation, though sometimes subthreshold currents are used. It seems likely that the precise details of the placement of electrodes and the parameters of electrical stimulation are critical for success (Boutros 1998, Patterson 1993).

As an alternative form of stimulation of acupuncture points, some practitioners use pressure (acupressure). Others use low level laser, which is sometimes known as 'laser acupuncture' even though it does not involve needles. Low level laser therapy produces no sensation, and there is still uncertainty whether it has a physiological effect on healthy tissue. From the researcher's point of view, laser therapy has the advantage that both patients and practitioners can remain masked to group allocation by using defunctioned laser apparatus. This also applies to subthreshold electrical stimulation therapy.

Uncontrolled studies have suggested that acupuncture might reduce the symptoms of nicotine withdrawal and some remarkably high rates of initial success have been claimed. For example Fuller claimed that 95% of 194 subjects were not smoking after three treatments in one week, falling to 34% after twelve months (Fuller 1982). Choy claimed 88% success in a large study of 514 subjects but did not state the long-term results (Choy 1983). Clearly, only randomised controlled studies can determine whether this is more than a placebo effect.

Several literature reviews of controlled trials of acupuncture for smoking cessation have been published yet the conclusions are not uniform. Vincent & Richardson found that acupuncture appeared to be as effective as other methods in the initial stages of nicotine withdrawal. However there was uncertainty as to what the actual stimulation contributed and whether acupuncture helped prevent relapse (Vincent 1987). Schwartz found no evidence of a specific effect (Schwartz 1988). Brewington et al (Brewington 1994) concluded that acupuncture might be of limited assistance in withdrawal.

Ter Riet (Ter Riet 1990) performed a criteria-based systematic review of randomised controlled trials and found that the better

the quality of the study the more likely it was to be negative. He concluded that on balance there was no evidence that acupuncture was efficacious in the treatment of nicotine addiction. Lewith criticised this review and argued that trials in which the controls received needling in inappropriate sites were likely to underestimate the effects of acupuncture: the control procedure was not inactive since needling random sites could trigger the release of endorphins (Lewith 1995). He concluded that acupuncture is as good as nicotine replacement therapy.

Law & Tang performed a limited meta-analysis of the Medline-listed trials, concluding that acupuncture had "little or no effect" (Law 1995). Ashenden & Silagy (Ashenden 1997) included 10 studies in a systematic review looking at the long-term success of acupuncture in smoking cessation: 9 of the studies could be combined in a meta-analysis which concluded that, while acupuncture appears to be promising, there was insufficient evidence to recommend it as an effective form of therapy.

We undertook a review and meta-analysis in order to evaluate the short and long-term effects of acupuncture, acupressure, laser therapy and electrical stimulation for smoking cessation.

OBJECTIVES

To evaluate whether acupuncture, acupressure, laser therapy and electrical stimulation

a) have a specific effect in smoking cessation beyond placebo effects

b) are more effective than other interventions for smoking cessation

c) are more effective than no treatment for smoking cessation

CRITERIA FOR CONSIDERING STUDIES FOR THIS REVIEW

Types of studies

All randomised controlled trials comparing acupuncture, acupressure, laser therapy or electrical stimulation with either a sham form of the intervention, or another intervention or no treatment, for smoking cessation.

Types of participants

Tobacco smokers who wished to stop smoking.

Types of intervention

Non-pharmacological stimulation interventions involving either needle puncture or finger pressure or laser therapy in areas of the body described by the study's author as acupuncture points, which includes points on the ear, face and body, or electrical stimulation to the head region, either through surface electrodes or through needles.

Types of outcome measures

Complete abstinence from smoking. The review has not been limited to studies where the outcome was confirmed biochemically (see 'Methodological quality').

SEARCH STRATEGY FOR IDENTIFICATION OF STUDIES

See: Tobacco Addiction Group search strategy

The Tobacco Addiction Group specialised register was searched in January 2002 for trials conducted on any form of acupuncture, acupressure or related laser or electrotherapy. Additional searches were conducted of the Cochrane Controlled Trials Register (Issue 4, 2001), Medline (Ovid & Pubmed 11/1/2002), Embase (Ovid update 2001/11) BIOSIS Previews (Ovid update 2002 week 2), PsycINFO (Silverplatter update 2001/10), Science and Social Sciences Citation Index (ISI Web of Science update 11/1/2002), and in June 2001 of AMED and CISCOM. The free text or keyword search strategy was (acupuncture OR acupressure OR transcranial OR transcutaneous OR electric stimulation OR electrostimulation OR electro?acupuncture OR neuro?electric therapy OR laser therapy) AND (tobacco OR smoking). Terms other than acupuncture were included for the first time in 2002 and searches for these terms were retrospective to the earliest date available on all databases. In addition to these searches, relevant references were obtained from published reviews, clinical trials and conference abstracts

METHODS OF THE REVIEW

Data for smoking cessation rates were extracted from the reports by the first two authors independently. Disagreements were resolved by discussion involving the third author. The reviewers were not blinded. Where possible, authors were contacted to provide missing data.

Data were extracted (where they are presented in the report) on early time point (i.e. first measure after the treatment, but in any case less than 6 weeks); after 6 months (up to 9 months) and 12 months or longer. The different time-points were selected in an attempt to identify separately the possible effects of acupuncture on a) cessation in the acute withdrawal period, and b) sustained abstinence.

Where necessary the published data were recalculated on an intention-to-treat basis i.e. counting all drop-outs and subjects lost to follow-up as continuing to smoke.

Sustained smoking cessation was chosen in preference to point prevalence where these figures were available.

When more than one control group was used, two comparisons were performed, one using the data most favorable to acupuncture and the other using the data least favorable. This situation occurred with Circo 1985 and Cottraux 1983. However, data from control

groups were combined in the subsequent comparison of different methods of acupuncture.

Assessment of withdrawal symptoms was also noted; data for reported cigarette consumption and concentrations of nicotine breakdown products (CO or cotinine) were not extracted.

Repeated comparisons were made between acupuncture, acupressure, laser therapy and electrostimulation and different control procedures (i.e. sham therapy, other active treatment control, and no intervention). In the case of acupuncture, the efficacy of different techniques was compared. In each case a weighted estimate of the OR (with a positive outcome shown as >1) was calculated using the fixed effects (Peto) model. Confidence intervals were set at 95%.

DESCRIPTION OF STUDIES

Twenty three reports were found of studies which qualified for inclusion in the review. In two cases, long-term results were reported separately (Clavel 1985, He 1997). Martin (1981) and Parker (1977) both reported two parallel studies, i.e. two groups with different treatment procedures, each with its own control group. Therefore, data from each of these groups have been entered separately. One report does not give data in a form that can be extracted for the quantitative assessment (Georgiou 1999), giving a total of 22 controlled studies for meta-analysis (see Table of Included Studies).

One new study (Cai 2000) recruited smokers aged between 12 and 18. In updating the review in 2002 we removed the criteria that only trials in adult smokers be included. Since the laser therapy technique used in this study has not been tested in any other studies in the review it is not compared directly with other trials. If future trials are added to this comparison we will consider the age range as a possible explanation for any heterogeneity in the results.

Initial group sizes for the study by Martin (Martin 1981a) were not available in the published report and were obtained from the authors. Results for the different arms of the study by Clavel (Clavel 1990) were obtained from the authors.

The studies varied considerably in methodology as well as the technique used.

METHODOLOGICAL QUALITY

We assessed four dimensions of study design which may lead to bias in studies of smoking cessation: a) reporting of method of randomisation and allocation concealment b) blinding of subjects to treatment status c) verification of cessation d) duration of outcome.

a) Randomisation and concealment

Only two reports included sufficient details to be certain whether correct method of randomisation with adequate concealment was used (Pickworth 1997 and White 1998). Martin (Martin 1981a) and Lagrue (Lagrue 1977) randomised subjects in groups in order to prevent individuals who were receiving different procedures from mixing together and attempting to guess their group allocation. Labadie (Labadie 1983) randomised subjects by alternation; and Steiner (Steiner 1982) used a matched pairs design. None of these methods is regarded as true randomisation.

In view of the lack of information on methods of randomisation in many studies, we did not assign a formal quality score to the studies.

b) Blinding

A study was adjudged to be single-blind if it involved some form of sham therapy that was designed to be indistinguishable to the participant, even if the word 'blind' was not specifically mentioned by the author. Single-blinded studies appear in the comparisons 'Acupuncture vs sham acupuncture'.

Achieving full double-blinding is problematic in acupuncture studies. One trial (Lagrue 1977) achieved blinding of the therapist by training a novice to use the two interventions without knowing which was genuine. Both subjects and therapists were blinded in one study that used subthreshold electrostimulation (Pickworth 1997). Another study was labelled 'double-blind' by the authors because subjects and assessors, though not therapists, were blinded (Cai 2000).

Even if subjects are blinded, they may be influenced by the interaction with the practitioner. To avoid this, minimal or standardised interaction between therapist and patient is a recognised method of reducing bias in acupuncture research. This procedure was mentioned in 4 reports of studies (Gilbey 1977, He 1997, Lamontagne 1980 and White 1998).

c) Outcome measure verification

Smoking cessation was verified by biochemical testing in seven of the trials: Cai 2000, Clavel 1985, Pickworth 1997, Tian 1996 and White 1998 used a carbon monoxide meter, He 1997 measured serum cotinine, and Waite 1998 measured urinary cotinine concentrations.

d) Duration of smoking cessation

Since sustained cessation is the prime object of anti-smoking programmes, cessation at 12 months is considered the most important outcome. However, only 6 of the studies measured outcomes at 12 months. Clavel 1990 followed subjects for 4 years, and He 1997 followed subjects for 5 years (reported in He 2001).

RESULTS

Acupuncture was not significantly superior to sham acupuncture for smoking cessation at any time point considered in this review. The odds ratio (OR) for early outcomes was 1.22 (95% CI 0.99 to 1.49); the OR after 6 months was 1.50 (95% CI 0.99 to 2.27) and after 12 months 1.08 (95% CI 0.77 to 1.52).

When acupuncture was compared with other anti-smoking interventions, there were no differences in outcome at any time point.

The respective ORs for early outcomes were 0.79 (95% CI 0.62 to 1.02) using the least favourable data, and 1.05 (95% CI 0.82 to 1.35) using the most favourable data. After 6 months the OR was 1.11 (95% CI 0.63 to 1.94) and after 12 months the OR was 0.87 (95% CI 0.61 to 1.24) or, with the least favourable data, 0.76 (95% CI 0.54 to 1.08).

Acupuncture was compared with no intervention in three studies. Acupuncture was significantly superior to no intervention in the early results (OR 5.88, 95% CI 2.66 to 13.01), but there was no difference at 6 months (OR 0.99, 95% CI 0.30 to 3.24). The one study with results at 12 months gave an OR of 2.44 (95% CI 1.15 to 5.20).

The results with different acupuncture techniques did not show any one particular method (i.e. auricular acupuncture or non-auricular acupuncture) to be superior to control intervention at any time-point.

The review found no placebo-controlled trials of acupressure for smoking cessation, though one study (Tian 1996) found acupressure superior to advice, yielding an OR of 9.18 (95% CI 3.95 to 21.33) at end of treatment and 10.2 (95% CI 4.17 to 24.10) at 12 months.

One study in adolescent smokers (Cai 2000) found genuine laser therapy to be no better than placebo laser, either at the end of treatment (OR 0.99, 95% CI 0.56 to 1.74) or after 6 months (OR 0.94, 95% CI 0.52 to 1.69). Another study (Pickworth 1997) found electrostimulation no different from placebo at the end of treatment (OR 1.19, 95% CI 0.50 to 2.82). The study by Georgiou (Georgiou 1999) also showed no evidence of an effect of electrostimulation compared with various control procedures.

The sensitivity of the results to study quality was not tested because of the problems in assigning formal quality scores to this set of studies.

DISCUSSION

Acupuncture was not shown to be superior to sham acupuncture or any other intervention for smoking cessation. There is no evidence that it has any effect on either withdrawal symptoms or long-term cessation. Many of the studies included in this review are subject to a number of biases. In particular, the majority of studies neither reported how randomisation was performed nor verified smoking cessation biochemically. However such biases might be expected to exaggerate the effects of acupuncture rather than underestimate them.

The comparisons of acupuncture and sham acupuncture reveal three studies with results that are strongly positive and clearly different from all other results (He 1997, Lacroix 1977, Waite 1998). No explanation for this difference can be identified in the study by Lacroix. The study by He however, involved a combination of acupuncture approaches, with body electroacupuncture, ear acupuncture and prolonged ear acupressure; the control group received the same amount of stimulation but at nearby acupuncture points that are appropriate for musculoskeletal disorders. The study by Waite 1998 involved ear acupuncture and (again) prolonged ear acupressure. It is possible that acupuncture stimulation that is followed by sustained ear acupressure may have an effect which is not seen with intermittent therapy, and this deserves further research. It should be noted, however, that these studies are all small, and the total number of smokers who succeeded in quitting in these two trials with sustained acupressure was only 10. Acupressure alone was clearly better than advice in one study (Tian 1996), which is consistent with a possible effect of prolonged acupressure but is also consistent with a placebo effect. The report of this study is unsatisfactory in providing lack of detail and containing a numerical error in presentation of the results table.

It appears that acupuncture, like some other interventions, may be better than doing nothing in order to aid smoking cessation. However, this conclusion is based on only three studies, and the effect appears not to be sustained.

The present evidence does not suggest that either laser therapy or electrostimulation have any effect on smoking cessation, although the latter study (Pickworth 1997) was criticised for using incorrect treatment parameters (Boutros 1998). There is clearly a need for pilot studies to determine what may be the most promising form of current, before undertaking further definitive studies of electrostimulation.

This negative conclusion limits rather than prohibits further investigation of the place of acupuncture in withdrawal from habituating substances. It should be emphasised that the initial observation of an effect of acupuncture in dependency was in patients who were in the acute stage of opiate withdrawal (Wen 1973). Changes in opioid peptides accompanied these observations (Clement-Jones 1979). Animal experiments have also suggested that acupuncture might have a place in the acute withdrawal syndrome (Cheng 1980, Choy 1978, Han 1993, Ng 1975). It would seem important to study the possible effect of acupuncture in the acute stages of nicotine withdrawal. Clavel 1990 made an attempt to measure withdrawal symptoms but less than a quarter of the subjects completed the questionnaires. White 1998 measured withdrawal symptoms in those who were successful in stopping smoking and found no effect of acupuncture compared with sham.

AUTHORS' CONCLUSIONS

Implications for practice

There is no evidence for the specific effectiveness of acupuncture, acupressure, laser therapy or electrostimulation for smoking cessation greater than a placebo effect.

Implications for research

Future studies should test whether acupuncture with adequate stimulation strength and combined with prolonged acupressure are superior to sham treatment. There is enough evidence to sug-

gest that such studies might be positive, and the question is relevant and important since acupuncture is a safe and popular therapy.

NOTES

Comments were received from Dr Nguyen and colleagues 5/8/2002; these, together with the authors' response, are included in the feedback section of the review. All consequent changes will be incorporated in the next update, scheduled for 2003 Issue 2.

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POTENTIAL CONFLICT OF INTEREST

AW and EE are authors of a trial included in this review.

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External sources of support

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Internal sources of support

- University of Exeter UK

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** Indicates the major publication for the study*

TABLES

Characteristics of included studies

Study	Cai 2000
Methods	Country: Singapore Recruitment: not stated
Participants	330 smokers aged 12 to 18 smoking 3 y and minimum 5 cigs/day
Interventions	a) laser or b) deactivated laser to points in left ear, 12 times in 4 weeks. Patients wore blindfold during treatment

Outcomes	Smoking cessation immediately after and 3 mo later. Validation: expired air CO concentration at 6th and 11th treatments
Notes	Added 2002 update Therapist not blinded: blinded assessor
Allocation concealment	B

Study	**Circo 1985**
Methods	Country: Italy Recruitment: from patients with cardiovascular disorders, method of recruitment unclear Randomisation method: not stated
Participants	90 adults, no inclusion or exclusion criteria reported
Interventions	All participants received counselling in addition to: a) illustration material b) medical treatment combining vitamins with herbal extract (Hawthorn), for 30 days c) acupuncture to 9 ear points ('Nogier' anti-smoking) given 6 hours after stopping smoking; repeated after 4 days and a further 7 days; combined with 3 indwelling needles for 15 days
Outcomes	Reported cessation, time-point unspecified (we assume end-of-treatment) Validation: none
Notes	Added 2001 update
Allocation concealment	D

Study	**Clavel 1985**
Methods	Country: France Recruitment: Community volunteers, per advertisement Randomisation method: not stated
Participants	651 adults smoking >5 cigs/day
Interventions	a) facial acupuncture, single session b) nicotine gum c) cigarette case with lock controlled by time-switch All groups also received 3 one-hour sessions of group therapy in first month
Outcomes	Sustained cessation at one and 13 months Validation: none at one month; at 13 months, expired air CO concentration was tested in half of those claiming success
Notes	
Allocation concealment	B

Characteristics of included studies (*Continued*)

Study	**Clavel 1990**
Methods	Country: France Recruitment: Community volunteers responding to circulated leaflet Randomisation method: not stated 2x2 factorial design
Participants	996 adults over 18, smoking >10 cigs/day
Interventions	a) facial acupuncture, with genuine or placebo nicotine gum b) sham acupuncture (wrong points), with genuine or placebo nicotine gum Both given on days 0, 7 and 28
Outcomes	Sustained abstinence at 1 and 13 months, and after 4 years 'Need for cigarette' estimated weekly for 1 month Validation: nil
Notes	Later results were reported as Clavel 1990; long-term follow-up as Clavel 1997 Analysis: for comparison of acupuncture vs sham acupuncture, arms with placebo gum entered in this study and arms with nicotine gum in Clavel 1990 +NG The comparison of acupuncture v nicotine gum was performed between 'genuine acupuncture and placebo gum' group and 'sham acupuncture and genuine gum' group
Allocation concealment	B

Study	**Clavel 1990 +NG**
Methods	See Clavel 1990 Used to enter results of Acupuncture plus nicotine gum vs Sham acupuncture plus nicotine gum
Participants	
Interventions	
Outcomes	
Notes	
Allocation concealment	D

Study	**Cottraux 1983**
Methods	Country: France Recruitment: Community volunteers responding to TV and radio adverts Randomisation method: not stated
Participants	558 French citizens, aged 18-50, smoking >10 cigs/day for 2 years
Interventions	a) behaviour therapy, weekly for 3 weeks b) facial acupuncture, 3 weekly sessions

	c) placebo capsules prescribed at 2 consultations d) waiting-list control (assessed at 12 months only)
Outcomes	Sustained abstinence at 2 weeks, and 3, 6, 9 and 12 months. Validation: none
Notes	
Allocation concealment	B

Study	**Georgiou 1999**
Methods	Country: England Recruitment: general public, nursing staff, government employees
Participants	265 adults smoking at least 10/day for 1 year
Interventions	a) electrical stimulation with modulated current to mastoid process b) stimulation to back c) continuous current stimulation to mastoid d) continuous stimulation to ear. All groups also performed with inactive apparatus. After initial stimulation, home use as required for 7 days
Outcomes	Smoking cessation, validated by expired air CO. Withdrawal symptoms by VAS
Notes	Added 2002 update Unclear which groups should be regarded as controls. 18% dropouts, groups unknown. Follow-up data given as aggregate only. No significant differences.
Allocation concealment	D

Study	**Gilbey 1977**
Methods	Country: Canada Recruitment: Community volunteers responding to newspaper adverts Randomisation method: not stated
Participants	92 subjects aged 30-39 who smoked >15 cigs/day for 3 years
Interventions	a) indwelling needle in active auricular point ('Lung') for 1 week b) indwelling needle in inactive auricular point ('Kidney') for 1 week
Outcomes	Sustained abstinence at 1 week, 1 month and 3 months Validation: none
Notes	Some authors regard 'Kidney' point (used as a control) as an effective treatment for dependency
Allocation concealment	B

Characteristics of included studies (*Continued*)

Study	**Gillams 1984**
Methods	Country: UK Recruitment: volunteers responding to poster in health centre Randomisation: sealed envelopes
Participants	81 adults smoking >50 cigs/week for 5 years
Interventions	a) indwelling needle in active auricular point ('Lung') for 4 weeks b) indwelling needle in inactive auricular point (as far from 'Lung' as possible) for 4 weeks c) group therapy sessions, one hour/ week for 4 weeks
Outcomes	Sustained abstinence at 4 weeks, 3 months, and 6 months Validation: none
Notes	
Allocation concealment	B

Study	**He 1997**
Methods	Country: Norway Recruitment: employees recruited through internal advertisement through occupational health service Randomisation: drawing lots with replacement
Participants	46 adults smoking for at least 5 years, daily average of 10-30 cigarettes in the last year; no other form of treatment for smoking cessation: no current acupuncture Exclusions: diabetes, coronary heart disease, pregnancy, breast-feeding
Interventions	Both groups received a combination of body electroacupuncture, ear acupuncture and ear acupressure: a) using genuine points described for smoking cessation b) using sham points described for treating musculoskeletal conditions 6 treatments over 3 weeks Manual and electrical stimulation were the same in the 2 groups In addition, 6 plant seeds were placed on either a) 'correct' or b) 'incorrect' points in the ear, according to group, and retained in place with adhesive tape: subjects were instructed to press on each seed 100 times on 4 occasions each day
Outcomes	Abstinence at 1 week, 8 months and 5 years after the last acupuncture treatment (sustained at each previous point) Validation: cessation confirmed by serum cotinine and thiocyanate concentrations. (Serum concentrations of fibrinogen and lipid peroxide were also measured) Daily cigarette consumption, taste for tobacco and desire to smoke were assessed by questionnaire
Notes	Standardised interaction 8 month data used in 6 month meta-analysis. 5 year data used in 1 year + comparison does not include participants lost to f-up due to change of address etc
Allocation concealment	A

Characteristics of included studies (*Continued*)

Study	**Labadie 1983**
Methods	Country: France Recruitment: Community volunteers attending anti-smoking clinic Randomisation: by alternation
Participants	130 smokers (criteria not specified)
Interventions	a) acupuncture to auricular and body points; not stated whether repeated b) medical treatment (advice plus benzodiazepine, lobeline and a 'detoxicant') Both groups followed up weekly for 1 month, fortnightly for 3 months, monthly for a year
Outcomes	Abstinence and reduction of smoking at 8 weeks and 1 year. Validation: none
Notes	
Allocation concealment	C

Study	**Lacroix 1977**
Methods	Country: France Recruitment: not stated Randomisation method: not stated
Participants	117 smokers (criteria not specified)
Interventions	a) facial acupuncture, bilateral, weekly for 3 weeks b) sham acupuncture, bilateral, weekly for 3 weeks
Outcomes	Abstinence at 3 weeks Validation: none
Notes	
Allocation concealment	B

Study	**Lagrue 1977**
Methods	Country: France Recruitment: not stated Randomisation: allocated by group
Participants	154 smokers (criteria not specified)
Interventions	a) facial acupuncture, repeated after 1 week b) sham acupuncture, repeated after 1 week
Outcomes	Abstinence and 80% reduction in consumption at 1 week Validation: none

Notes	Practitioner specially trained to give both treatments without knowing which was active (ie truly double-blind study)
Allocation concealment	C

Study	**Lamontagne 1980**
Methods	Country: Canada Recruitment: Community volunteers responding to newspaper advert Randomisation method: not stated
Participants	75 subjects aged 20-50, smoking between 15 and 50 cigs/day, not taking drugs, and in good health
Interventions	a) acupuncture to auricular points ('Zero' and 'Lung') b) acupuncture to body points used for 'relaxation' c) self-monitor and report back All subjects given 2 appointments 1 week apart
Outcomes	Abstinence at 2 weeks, 3 months, and 6 months; mean smoking rates for 14 day periods during study Validation: none
Notes	Poor choice of acupuncture control procedure, since anti-smoking effect of 'relaxation' treatment cannot be ruled out
Allocation concealment	B

Study	**Leung 1991**
Methods	Country: Hong Kong Recruitment: Community volunteers responding to newspaper and radio adverts Randomisation method: not stated
Participants	95 subjects who had smoked for at least 1 year and were motivated to stop
Interventions	a) 10 daily sessions of behaviour therapy lasting 1.5 hours b) Indwelling needles in auricular points ('Shenmen' and 'Lung') for 7 days or until they became uncomfortable; 10 attendances in total, for supervision of the needles c) waiting-list control
Outcomes	Abstinence and percentage reduction in consumption immediately after treatment and at 1, 3, and 6 months.
Notes	
Allocation concealment	B

Study	**Martin 1981a**
Methods	Country: New Zealand Recruitment: Community volunteers

	Randomisation: in groups, method not stated
Participants	132 smokers (criteria not specified)
Interventions	a) indwelling needles to effective auricular points ('Lung' and 'hunger') for 3 weeks, plus electroacupuncture for 20 minutes to points in the hand and the ear at the second attendance b) indwelling needles to ineffective auricular points ('elbow' and 'eye')
Outcomes	Abstinence and reduction in cigarette consumption at 3 weeks, 3 months and 6 months Validation: nil
Notes	Some authors would consider 'elbow' and 'eye' points (used as controls) as possibly effective, since innervated by the vagus nerve
Allocation concealment	C

Study	**Martin 1981b**
Methods	Country: New Zealand Recruitment: Community volunteers Randomisation: in groups, method not stated
Participants	128 smokers (unspecified)
Interventions	a) indwelling needles to effective auricular points ('Lung' and 'hunger') for 3 weeks b) indwelling needles to ineffective auricular points ('elbow' and 'eye') for 3 weeks
Outcomes	Abstinence and reduction in cigarette consumption at 3 weeks, 3 months and 6 months Validation: nil
Notes	Some authors would consider 'elbow' and 'eye' points (used as controls) as possibly effective, since innervated by the vagus nerve
Allocation concealment	B

Study	**Parker 1977a**
Methods	Country: USA Recruitment: Volunteers from hospital employees Randomisation method: not stated
Participants	20 smokers (unspecified)
Interventions	a) indwelling needles placed in effective auricular points ('Shenmen' and 'Lung') b) indwelling needles placed in points considered inactive ('Shoulder' and 'Eye') Needles replaced in both groups twice weekly for 3 weeks
Outcomes	Abstinence and reduction in consumption at 6 weeks Validation: none
Notes	Some authors would not agree that 'shoulder' and 'eye' points are 'inactive'

Allocation concealment	B

Study	**Parker 1977b**
Methods	Country: USA Recruitment: Volunteers from hospital employees Randomisation method: not stated
Participants	21 smokers (unspecified)
Interventions	a) electrical stimulation to effective auricular points ('Shenmen' and 'Lung') b) electrical stimulation to points considered inactive ('Shoulder' and 'Eye') Both groups treated for 20 minutes twice weekly for 3 weeks
Outcomes	Abstinence and reduction in consumption at 6 weeks Validation: none
Notes	Some authors would not agree that 'shoulder' and 'eye' points are 'inactive'
Allocation concealment	B

Study	**Pickworth 1997**
Methods	Country: USA Recruitment: 'from community'
Participants	121, aged over 21 y, smoking >20/day for at least 1 y, and meeting other criteria
Interventions	5 consecutive days of 60 min of a) electrostimulation, 10Hz 2 msec pulse, 30 uamp to mastoid or b) sham
Outcomes	Abstinence after 5 d and 1 m, verified by exhaled CO. Withdrawal symptoms.
Notes	Added 2002 update Stimulation parameters were criticised by Boutros 1998
Allocation concealment	A

Study	**Steiner 1982**
Methods	Country: USA Recruitment: Community volunteers responding to newspaper and radio adverts Randomisation: matched pairs, one of each pair randomly assigned, method not stated
Participants	32 subjects over 21, smoking over 20 cigs/day for 2 consecutive years, not pregnant and not on chronic pain medication or mood-altering drugs Selected from 82 volunteers, matched according to age, sex, and cigarette consumption

Characteristics of included studies (*Continued*)

Interventions	a) acupuncture to genuine body and ear points; needle sensation achieved. b) sham acupuncture to nearby areas without needling sensation Both interventions given twice weekly for 2 weeks
Outcomes	Abstinence and cigarette consumption at 4 weeks Validation: none
Notes	Subjects were not advised to stop smoking at any particular time, but to 'follow your motivation and appetite to the best of your ability'
Allocation concealment	C

Study	**Tian 1996**
Methods	Country: China Recruitment: not stated
Participants	120 smokers over 20 y old, regularly smoking >10 cigs/day, exhaled CO>10ppm, and likely to attend follow up for 1 year
Interventions	a) acupressure, Ear Point Pressing Seed method: seed fixed to 4 points in one ear, treatment changed to alternate ear twice/wk for course of 1 m, repeated for 2 or 3 m b) advice: no description given
Outcomes	Abstinence at 1 m and 1 y, confirmed by CO measurement
Notes	Added 2002 update Report lacks details (eg. randomisation, advice given, baseline characteristics)
Allocation concealment	D

Study	**Vandevenne 1985**
Methods	Country: France Recruitment: volunteers attending anti-smoking clinic Randomisation: random number table (not stated to be concealed)
Participants	200 self-referred smokers, no criteria stated
Interventions	a) acupuncture to 3 auricular and 2 body points b) sham acupuncture to nearby areas both interventions given on days 1, 4, 10 and 20
Outcomes	Abstinence (point-prevalence) at 6 weeks, 6 months and 1 year
Notes	
Allocation concealment	B

Characteristics of included studies (*Continued*)

Study	**Waite 1998**
Methods	Country: UK Recruitment: community volunteers recruited by advertisements in on-line news pages, posters in hospital and word of mouth. Randomisation method: not stated. Stratified by gender
Participants	78 adults over 18 years old who were smoking at least 10 cigarettes a day. Exclusions: cardiac pacemaker, previous acupuncture
Interventions	Both groups received one 20-minute session of acupuncture with electrical stimulation followed by placement of a seed on the needle site held in place with adhesive tape. Participants were instructed to keep the seed in place as long as they found it helpful and press it when they experienced the desire to smoke Points used were: a) active group, lung point in ear b) control group, medial aspect of the patella, not on recognised acupuncture point
Outcomes	Cessation at 6 months (point prevalence) Validation: urinary cotinine
Notes	
Allocation concealment	B

Study	**White 1998**
Methods	Country: UK Recruitment: community volunteers from media invitation Randomisation method: sealed opaque envelopes, opened immediately before intervention
Participants	76 adults over 21 years smoking at least 15 cigarettes daily Exclusions: previous acupuncture, pregnancy, breast-feeding, cardiac pacemaker, known bleeding tendency
Interventions	a) acupuncture with electrical stimulation to lung point in both ears b) sham acupuncture consisting of either needle or carbon pad placed over the mastoid bone attached to sham (inactivated) stimulator Interventions were given on day 1, 3 and 7 of the smoking cessation
Outcomes	Sustained cessation at 2 weeks Validation: expired air carbon monoxide concentration Withdrawal symptoms assessed by Visual Analogue Scale
Notes	Credibility of interventions tested by questionnaire Standardised, minimal interaction by acupuncturist All counselling by blinded nurse
Allocation concealment	A

Characteristics of excluded studies

Characteristics of excluded studies (*Continued*)

Boureau, 1978	This study compared 2 groups who both received identical acupuncture following an injection: one group were injected with saline, the other with naloxone. Therefore, 2 hypotheses are tested simultaneously: does acupuncture help smoking cessation by releasing endogenous opioid peptides?
Boutros 1998	This letter in response to the study of Pickworth commented on the stimulus parameters used in the study, but included no original data
Fang 1983	The report is incomplete: numbers of smokers allocated to control and intervention groups cannot be extracted, so the study cannot be interpreted
MacHovec 1978	This study does not specify that the subjects were randomised
Man 1975	Subjects were allocated by place of residence, not randomly
Tan 1987	Not described as randomised: complete abstinence not reported.

GRAPHS

Comparison 01 Acupuncture vs sham acupuncture

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Smoking cessation - Early	14	2069	Peto Odds Ratio 95% CI	1.22 [0.99, 1.49]
02 Smoking cessation - 6 months	8	765	Peto Odds Ratio 95% CI	1.50 [0.99, 2.27]
03 Smoking cessation - 12 months or longer	4	1234	Peto Odds Ratio 95% CI	1.07 [0.76, 1.50]

Comparison 02 Acupuncture vs other intervention

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Smoking cessation - Early	6	1370	Peto Odds Ratio 95% CI	0.79 [0.62, 1.02]
02 Smoking cessation - 6 months	3	396	Peto Odds Ratio 95% CI	1.11 [0.63, 1.94]
03 Smoking cessation - 12 months	4	1324	Peto Odds Ratio 95% CI	0.76 [0.54, 1.08]

Comparison 03 Acupuncture vs waiting list/no intervention

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Smoking cessation - Early	2	113	Peto Odds Ratio 95% CI	5.88 [2.66, 13.01]
02 Smoking cessation - 6 months	2	113	Peto Odds Ratio 95% CI	0.99 [0.30, 3.24]
03 Smoking cessation - 12 months	1	280	Peto Odds Ratio 95% CI	2.44 [1.15, 5.20]

Comparison 04 Acupressure vs sham acupressure

No outcomes currently reported

Comparison 05 Acupressure vs other treatment

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Smoking cessation - Early	1	120	Peto Odds Ratio 95% CI	9.18 [3.95, 21.33]
03 Smoking cessation - 12 months	1	120	Peto Odds Ratio 95% CI	10.02 [4.17, 24.10]

Comparison 06 Acupressure vs waiting list/no intervention
No outcomes currently reported

Comparison 07 Laser therapy vs sham laser

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Smoking cessation - Early	1	330	Peto Odds Ratio 95% CI	0.99 [0.56, 1.74]
02 Smoking cessation - 6 months	1	330	Peto Odds Ratio 95% CI	0.94 [0.52, 1.69]

Comparison 08 Electrostimulation vs sham stimulation

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Smoking cessation - Early	1	121	Peto Odds Ratio 95% CI	1.19 [0.50, 2.82]

Comparison 09 Electrostimulation vs other intervention
No outcomes currently reported

Comparison 10 Electrostimulation vs waiting list/no intervention
No outcomes currently reported

Comparison 11 Comparison of different acupuncture techniques

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Non-auricular points vs all controls (early)	6	2007	Peto Odds Ratio 95% CI	1.12 [0.91, 1.38]
02 Non-auricular acupuncture vs all controls (6 months)	1	279	Peto Odds Ratio 95% CI	1.56 [0.77, 3.17]
03 Non-auricular acupuncture vs all controls (12 months)	3	1705	Peto Odds Ratio 95% CI	0.82 [0.60, 1.12]
04 Auricular acupuncture vs all controls (early)	9	648	Peto Odds Ratio 95% CI	1.08 [0.75, 1.55]
05 Auricular acupuncture vs all controls (6 months)	6	533	Peto Odds Ratio 95% CI	1.00 [0.54, 1.84]
06 Auricular acupuncture vs all controls (12 months)	0	0	Peto Odds Ratio 95% CI	Not estimable

COVER SHEET

Title	Acupuncture for smoking cessation
Authors	White AR, Rampes H, Ernst E
Contribution of author(s)	AW & HR extracted data. AW drafted the review with assistance from HR. EE commented on the drafts.
Issue protocol first published	1997/1
Review first published	1997/1
Date of most recent amendment	21 October 2004

Date of most recent SUBSTANTIVE amendment	18 February 2002
What's New	Inclusion criteria for studies have been widened to cover acupressure, laser therapy, and cranial electrostimulation; which are stimulation therapies related to acupuncture and used for smoking cessation. The age limit for study participants has been removed to increase the relevance of the review.
Date new studies sought but none found	Information not supplied by author
Date new studies found but not yet included/excluded	Information not supplied by author
Date new studies found and included/excluded	18 February 2002
Date authors' conclusions section amended	Information not supplied by author
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Cochrane Library number	CD000009
Editorial group	Cochrane Tobacco Addiction Group
Editorial group code	HM-TOBACCO

COMMENTS AND CRITICISMS

Comment from Nguyen and colleagues

Summary

1. We wish to inform you of a randomized controlled trial (RCT) eligible in the review : Vibes J. Essai thérapeutique sur le r"le de l'acupuncture

dans la lutte contre le tabagisme. Acupunct 1977;51:13-20.

2. Three studies included in the comparison "acupuncture versus sham acupuncture" set methodological problems :

a.Gilbey 1977 should be excluded. Not only because "some authors regard kidney point (used as a control) as an effective treatment for

dependency", but above all because kidney ear point is used in several clinical studies for smoking cessation. For instance, in Cui review on

acupuncture for smoking abstinence [1], three studies used kidney ear point [2-4].

b.Lamontagne 1980 should also be excluded. "Acupuncture therapy for relaxation" as control cannot be considered as sham acupuncture. That

intervention uses point ST36, also used in one study of Cui review [5] and in one RCT [6] included in the meta-analysis. Vibes RCT tests ST36,

LV3, LI4 GB8, presented as "equilibrating and/or antitoxic general acting intervention". That acupuncture intervention revealed to be superior

to sham acupuncture.

c.In Martin 1981(a), there is discrepancy between the control group (and the total size) in the table "caracteristics of included studies" and the

data used in the graph : the selected control group is in fact the group "P + stimulation" of the original study. This group includes

electro-acupuncture at LI4 and "tongue" ear point. For the same motives as in the two previous studies, this control group cannot be chosen as

sham acupuncture. LI4 is used in two studies in Cui review [5,7], in two RCT included in the meta-analysis [8,9] and in Vibes study.

From a general point of view, it seems inadequate to select as sham acupuncture interventions using points employed in clinical studies dealing

with the same disease. This criterion (a practical and effective use of a point) is stronger than the theoretical expert opinion, and should lead to

exclude these studies in a comparison acupuncture versus sham acupuncture.

3. In the comparison "acupuncture versus sham acupuncture-early", Waite 1998 trial is omitted without explanation. This trial has data non

biochemically validated available at two weeks, that seem to meet the criteria of the review.

4. We also draw your attention to the problematic data following :

a. in Parker 1977(a) and (b), the data to be selected for the size of groups seem to be the concordant ones appearing in the text and figure I

(Parker (a) 18 patients: 9 for acupuncture, 9 for sham; Parker (b) 23 patients: 11 for acupuncture, 12 for sham) and not data in table 1.

b. In the comparison "01 -Acupuncture versus sham acupuncture, 01 -smoking cessation early": He 1997 8/26 in acupuncture group, not 7/26.

5. In references, Lagrue 1977 is in fact Lagrue 1980.

6. Pickworth 1997 trial uses "the application of electrical currents from surface electrode...placed on each mastoid process". The authors don't

identify any acupuncture points, never use the word "acupuncture" and don't mention any acupuncture study in bibliography. For that

motives, including this type of studies in a review "Acupuncture for smoking cessation" seems inadequate.

From remarks 1-4, comparison "acupuncture versus sham acupuncture" should be reconsidered.

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2- Cai ZM. [Ear points arousing propagated sensation for stopping smoking in Senegal]. Fujian J Trad Chin Med 1986;17(5):22-4.

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5- Sacks LL. Drug addiction, alcoholism, smoking, obesity treated by auricular staplepuncture. Am J Acupunct 1975;3(2):147-151.

6- Vandevenne A, Rempp M, Burghard G, Kuntzmann Y, Jung F. Etude de l'action spécifique de l'acupuncture dans la cure de sevrage

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8- Steiner RP, Hay DI, Davis AW. Acupuncture therapy for the treatment of tobacco smoking addiction. Am J Chin Med 1982;10(1-4):107-21.

9- Labadie JC, Dones JP, Gachie JP, Freour P, Perchoc S, Huynh-Van-Thao JP. Désintoxication tabagique : acupuncture et traitement

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I certify that I have no affiliations with or involvement in any organisation or entity with a direct financial interest in the subject matter of my

criticisms.

Author's reply

We are grateful to Dr Nguyen for his detailed comments.

1.Thank you for information about this trial of which we were unaware. We shall consider it for inclusion in the next review.

2.The question of appropriate and inappropriate controls runs through the whole of acupuncture research and will not be satisfactorily solved until 'Phase I & II' type studies are conducted. Without hard data, therefore, we took the pragmatic decision to accept each original author's view of what was an acceptable control. We feel it would be wrong to overturn the author's view of the sham, often very well considered and referenced, without strong reason to do so. We acknowledge that this might result in reducing the effect size for acupuncture. However, there are other biases affecting the same issue, such as the psychological equivalence of the sham control (e.g. do acupuncture studs placed in the knee have an equal psychological effect to those in the ear?). The question of whether 'acupuncture for relaxation' was an inactive control was problematic; however, there are many ways of producing 'relaxation' none of which is known to have any benefit in smoking cessation. On balance, then, we decided to keep this group in the analysis.

3.Thank you for pointing out the review omits some data reported in the Waite trial at 2 weeks. I have checked our extraction records and find that neither of the reviewers involved extracted these data, and I guess this is probably because they are only referred to very indirectly in the text, in comparison to the validated data. We therefore did not discuss whether these data are admissible. We note that they were obtained by telephone, and subsequently in the same trial, 2 out of 7 who claimed on the telephone to have stopped smoking actually were still smoking. It seems probably that all verbal reports of smoking are subject to error, but those made face-to-face may be more reliable than those made over the telephone; we shall discuss whether to include the latter in the next revision.

4.a) there is a clear discrepancy in group sizes in the report by Parker. We shall reconsider these extracted data at the next revision.

b) In the report by He, although 8 subjects reported smoking cessation, only 7 were confirmed biochemically (see 'Tobacco consumption versus cotinine concentration').

5.Thank you, we shall correct this in the next revision.

6.At the time of our 2nd revision conducted earlier this year, the Cochrane Group recommended including other stimulation techniques, on the basis that they should be reviewed and did not have any other natural home. We did not consider changing the review's title, but will consider this for the next revision. Thank you for the suggestion.

A R White, H Rampes, E Ernst

Contributors

Johan Nguyen (Marseilles France), Philippe Castera (Bordeaux, France), Jean-Luc Gerlier (Annecy, France)

GRAPHS AND OTHER TABLES

Fig. 1. Comparison 01 Acupuncture vs sham acupuncture

01.01 Smoking cessation - Early

Review: Acupuncture for smoking cessation

Comparison: 01 Acupuncture vs sham acupuncture

Outcome: 01 Smoking cessation - Early

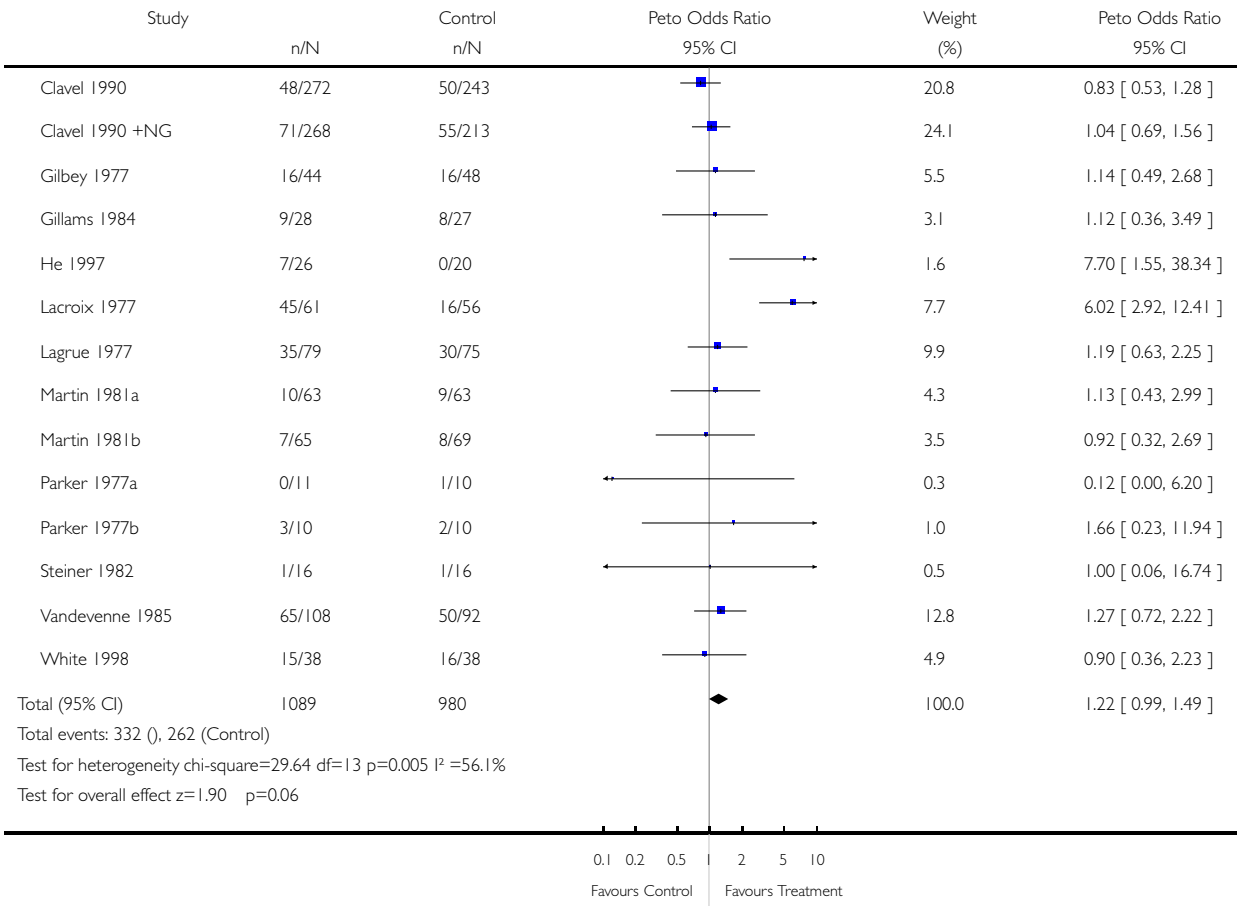

Fig. 2. Comparison 01 Acupuncture vs sham acupuncture

01.02 Smoking cessation - 6 months

Review: Acupuncture for smoking cessation

Comparison: 01 Acupuncture vs sham acupuncture

Outcome: 02 Smoking cessation - 6 months

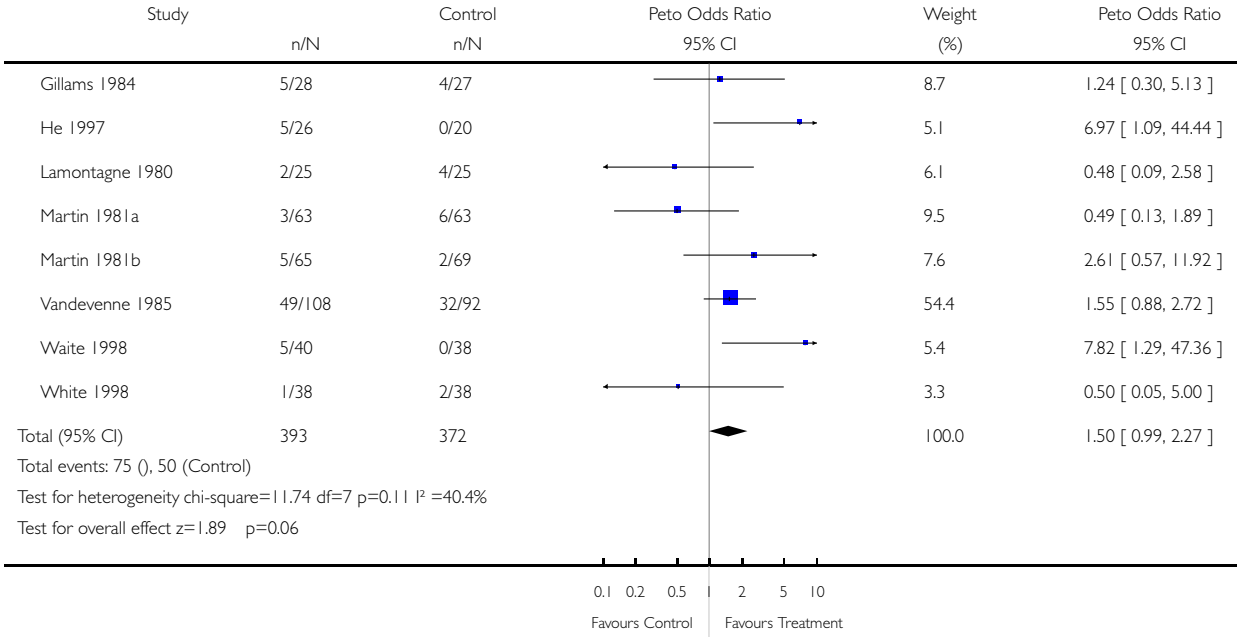

Fig. 3. Comparison 01 Acupuncture vs sham acupuncture

01.03 Smoking cessation - 12 months or longer

Review: Acupuncture for smoking cessation

Comparison: 01 Acupuncture vs sham acupuncture

Outcome: 03 Smoking cessation - 12 months or longer

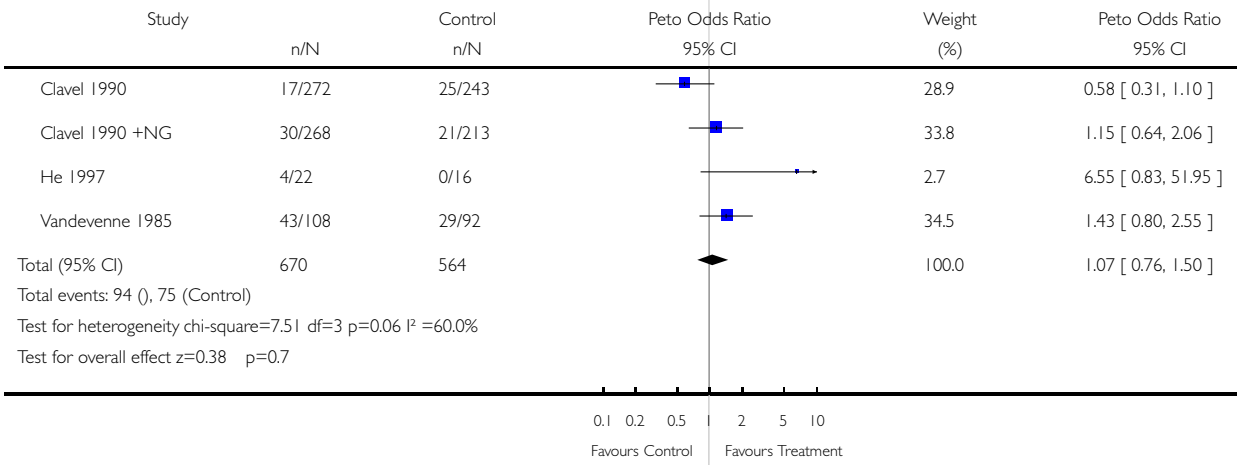

Fig. 4. Comparison 02 Acupuncture vs other intervention

02.01 Smoking cessation - Early

Review: Acupuncture for smoking cessation

Comparison: 02 Acupuncture vs other intervention

Outcome: 01 Smoking cessation - Early

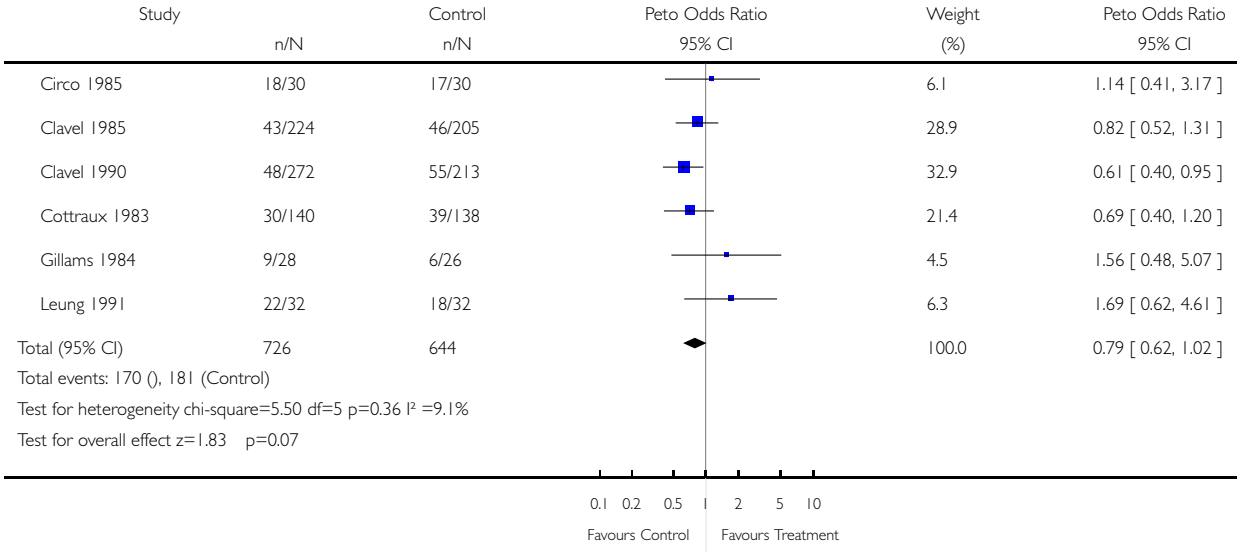

Fig. 5. Comparison 02 Acupuncture vs other intervention

02.02 Smoking cessation - 6 months

Review: Acupuncture for smoking cessation

Comparison: 02 Acupuncture vs other intervention

Outcome: 02 Smoking cessation - 6 months

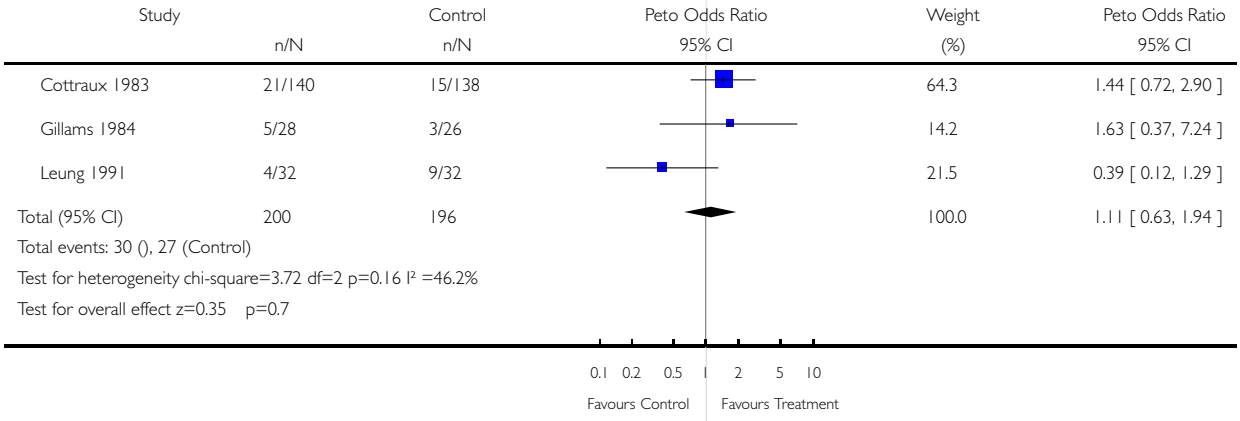

Fig. 6. Comparison 02 Acupuncture vs other intervention

02.03 Smoking cessation - 12 months

Review: Acupuncture for smoking cessation

Comparison: 02 Acupuncture vs other intervention

Outcome: 03 Smoking cessation - 12 months

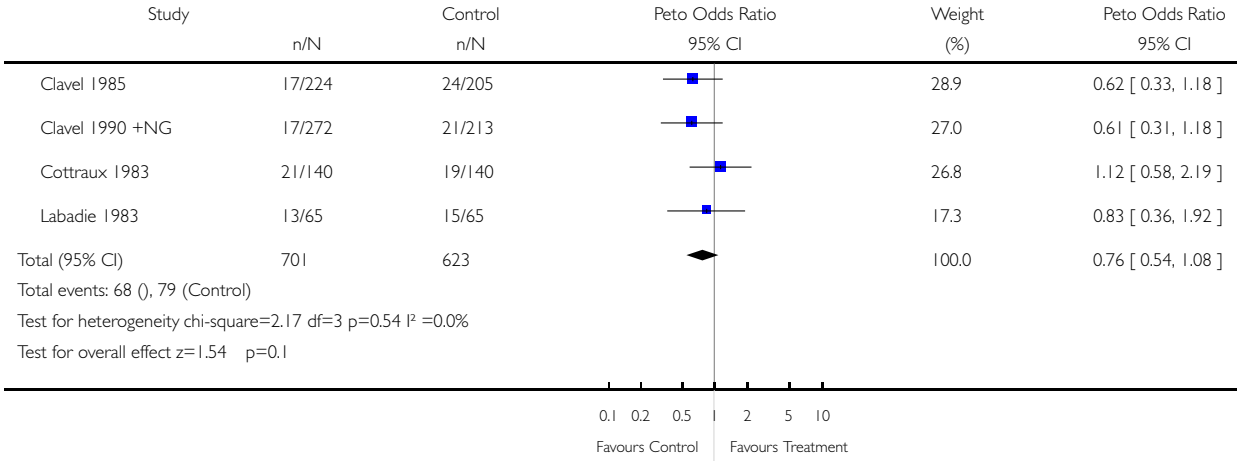

Fig. 7. Comparison 03 Acupuncture vs waiting list/no intervention

03.01 Smoking cessation - Early

Review: Acupuncture for smoking cessation

Comparison: 03 Acupuncture vs waiting list/no intervention

Outcome: 01 Smoking cessation - Early

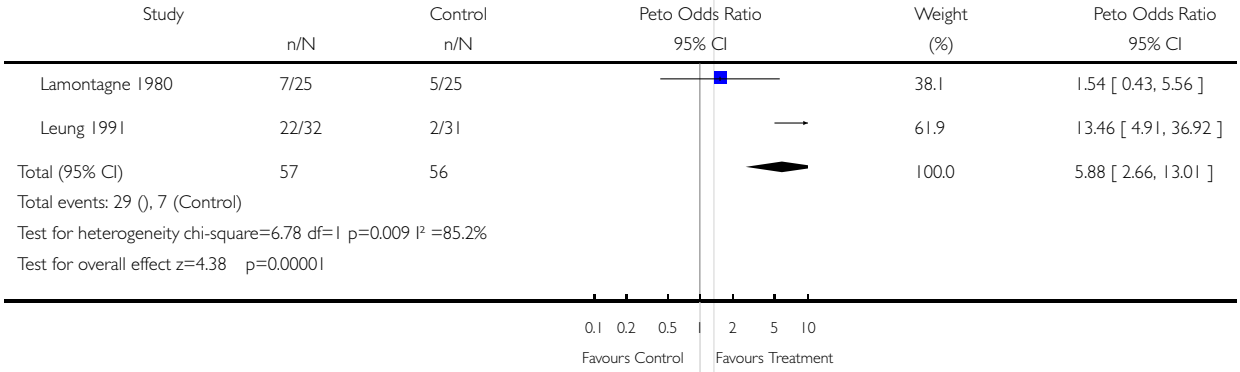

Fig. 8. Comparison 03 Acupuncture vs waiting list/no intervention

03.02 Smoking cessation - 6 months

Review: Acupuncture for smoking cessation

Comparison: 03 Acupuncture vs waiting list/no intervention

Outcome: 02 Smoking cessation - 6 months

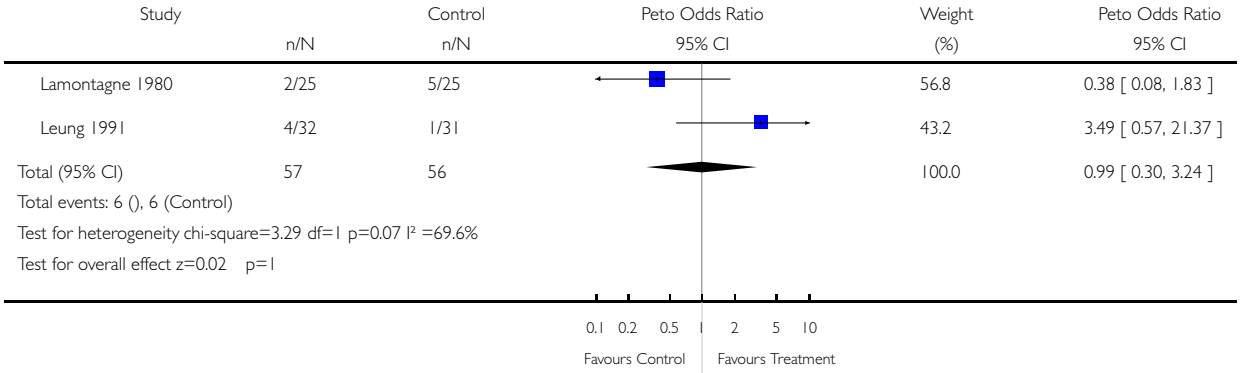

Fig. 9. Comparison 03 Acupuncture vs waiting list/no intervention

03.03 Smoking cessation - 12 months

Review: Acupuncture for smoking cessation

Comparison: 03 Acupuncture vs waiting list/no intervention

Outcome: 03 Smoking cessation - 12 months

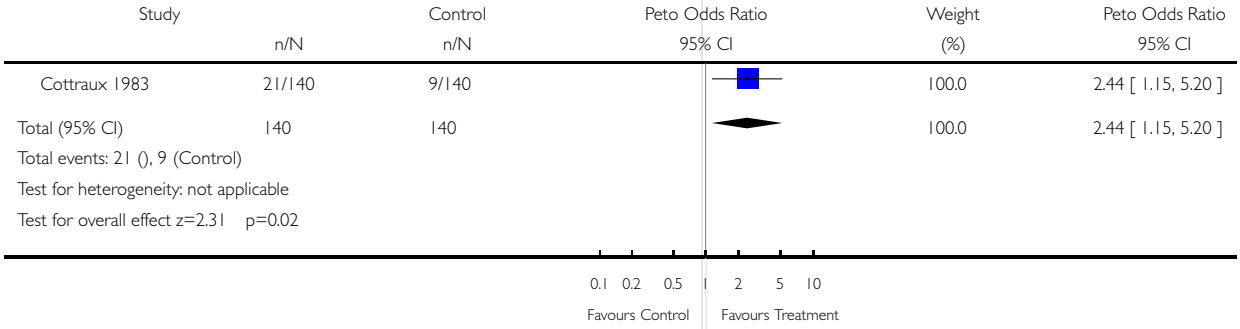

Fig. 10. Comparison 05 Acupressure vs other treatment

05.01 Smoking cessation - Early

Review: Acupuncture for smoking cessation
Comparison: 05 Acupressure vs other treatment
Outcome: 01 Smoking cessation - Early

Study	Treatment n/N	Control n/N	Peto Odds Ratio 95% CI	Weight (%)	Peto Odds Ratio 95% CI
Tian 1996	26/60	2/60		100.0	9.18 [3.95, 21.33]
Total (95% CI)	60	60		100.0	9.18 [3.95, 21.33]
Total events: 26 (Treatment), 2 (Control)					
Test for heterogeneity: not applicable					
Test for overall effect z=5.16 p<0.00001					

Fig. 11. Comparison 05 Acupressure vs other treatment

05.03 Smoking cessation - 12 months

Review: Acupuncture for smoking cessation
Comparison: 05 Acupressure vs other treatment
Outcome: 03 Smoking cessation - 12 months

Study	Treatment n/N	Control n/N	Peto Odds Ratio 95% CI	Weight (%)	Peto Odds Ratio 95% CI
Tian 1996	24/60	1/60		100.0	10.02 [4.17, 24.10]
Total (95% CI)	60	60		100.0	10.02 [4.17, 24.10]
Total events: 24 (Treatment), 1 (Control)					
Test for heterogeneity: not applicable					
Test for overall effect z=5.15 p<0.00001					

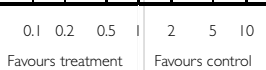

Fig. 12. Comparison 07 Laser therapy vs sham laser

07.01 Smoking cessation - Early

Review: Acupuncture for smoking cessation
Comparison: 07 Laser therapy vs sham laser
Outcome: 01 Smoking cessation - Early

Study	Treatment n/N	Control n/N	Peto Odds Ratio 95% CI	Weight (%)	Peto Odds Ratio 95% CI
Cai 2000	28/160	30/170		100.0	0.99 [0.56, 1.74]
Total (95% CI)	160	170		100.0	0.99 [0.56, 1.74]
Total events: 28 (Treatment), 30 (Control)					
Test for heterogeneity: not applicable					
Test for overall effect z=0.04 p=1					

Fig. 13. Comparison 07 Laser therapy vs sham laser

07.02 Smoking cessation - 6 months

Review: Acupuncture for smoking cessation
Comparison: 07 Laser therapy vs sham laser
Outcome: 02 Smoking cessation - 6 months

Study	Treatment n/N	Control n/N	Peto Odds Ratio 95% CI	Weight (%)	Peto Odds Ratio 95% CI
Cai 2000	25/160	28/170		100.0	0.94 [0.52, 1.69]
Total (95% CI)	160	170		100.0	0.94 [0.52, 1.69]
Total events: 25 (Treatment), 28 (Control)					
Test for heterogeneity: not applicable					
Test for overall effect z=0.21 p=0.8					

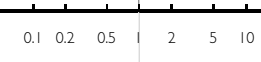

Fig. 14. Comparison 08 Electrostimulation vs sham stimulation

08.01 Smoking cessation - Early

Review: Acupuncture for smoking cessation

Comparison: 08 Electrostimulation vs sham stimulation

Outcome: 01 Smoking cessation - Early

Study	Treatment n/N	Control n/N	Peto Odds Ratio 95% CI	Weight (%)	Peto Odds Ratio 95% CI
Pickworth 1997	14/61	12/60		100.0	1.19 [0.50, 2.82]
Total (95% CI)	61	60		100.0	1.19 [0.50, 2.82]

Total events: 14 (Treatment), 12 (Control)

Test for heterogeneity: not applicable

Test for overall effect z=0.39 p=0.7

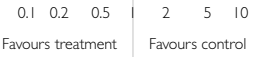

Fig. 15. Comparison 11 Comparison of different acupuncture techniques

11.01 Non-auricular points vs all controls (early)

Review: Acupuncture for smoking cessation

Comparison: 11 Comparison of different acupuncture techniques

Outcome: 01 Non-auricular points vs all controls (early)

Study	n/N	Control n/N	Peto Odds Ratio 95% CI	Weight (%)	Peto Odds Ratio 95% CI
Clavel 1985	43/224	46/205		19.7	0.82 [0.52, 1.31]
Clavel 1990	119/540	105/456		48.2	0.94 [0.70, 1.27]
Cottraux 1983	30/140	27/139		12.7	1.13 [0.63, 2.02]
Lacroix 1977	45/61	16/56		8.2	6.02 [2.92, 12.41]
Lagrue 1977	35/79	30/75		10.6	1.19 [0.63, 2.25]
Steiner 1982	1/16	1/16		0.5	1.00 [0.06, 16.74]
Total (95% CI)	1060	947		100.0	1.12 [0.91, 1.38]

Total events: 273 (), 225 (Control)

Test for heterogeneity chi-square=23.79 df=5 p=0.0002 I^2 =79.0%

Test for overall effect z=1.09 p=0.3

Fig. 16. Comparison 11 Comparison of different acupuncture techniques

11.02 Non-auricular acupuncture vs all controls (6 months)

Review: Acupuncture for smoking cessation

Comparison: 11 Comparison of different acupuncture techniques

Outcome: 02 Non-auricular acupuncture vs all controls (6 months)

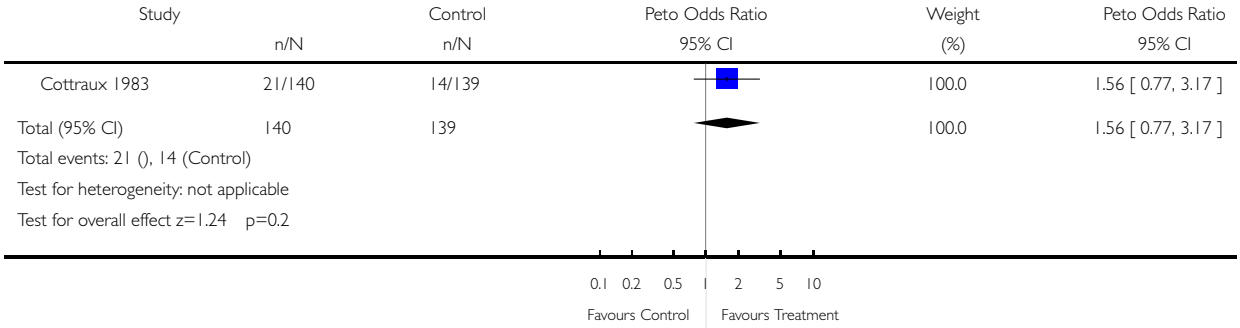

Fig. 17. Comparison 11 Comparison of different acupuncture techniques

11.03 Non-auricular acupuncture vs all controls (12 months)

Review: Acupuncture for smoking cessation

Comparison: 11 Comparison of different acupuncture techniques

Outcome: 03 Non-auricular acupuncture vs all controls (12 months)

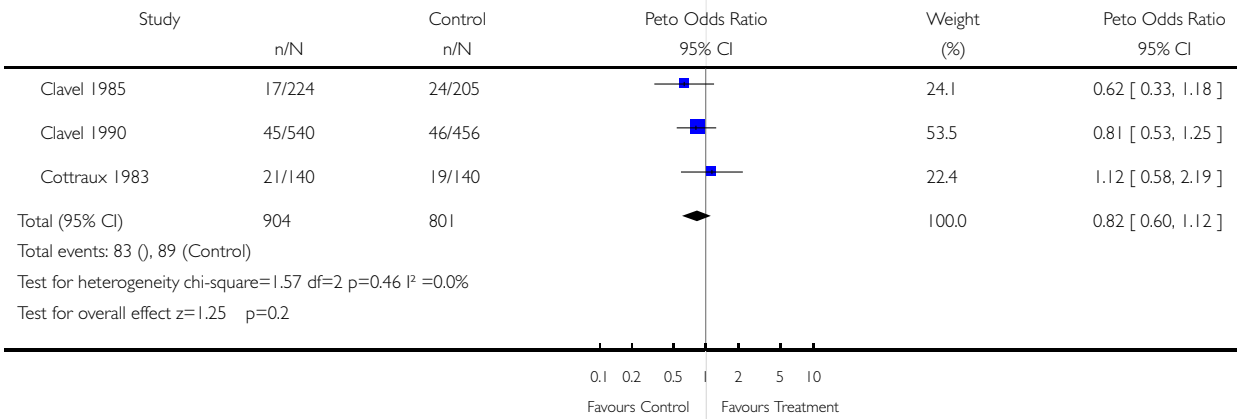

Fig. 18. Comparison 11 Comparison of different acupuncture techniques

11.04 Auricular acupuncture vs all controls (early)

Review: Acupuncture for smoking cessation

Comparison: 11 Comparison of different acupuncture techniques

Outcome: 04 Auricular acupuncture vs all controls (early)

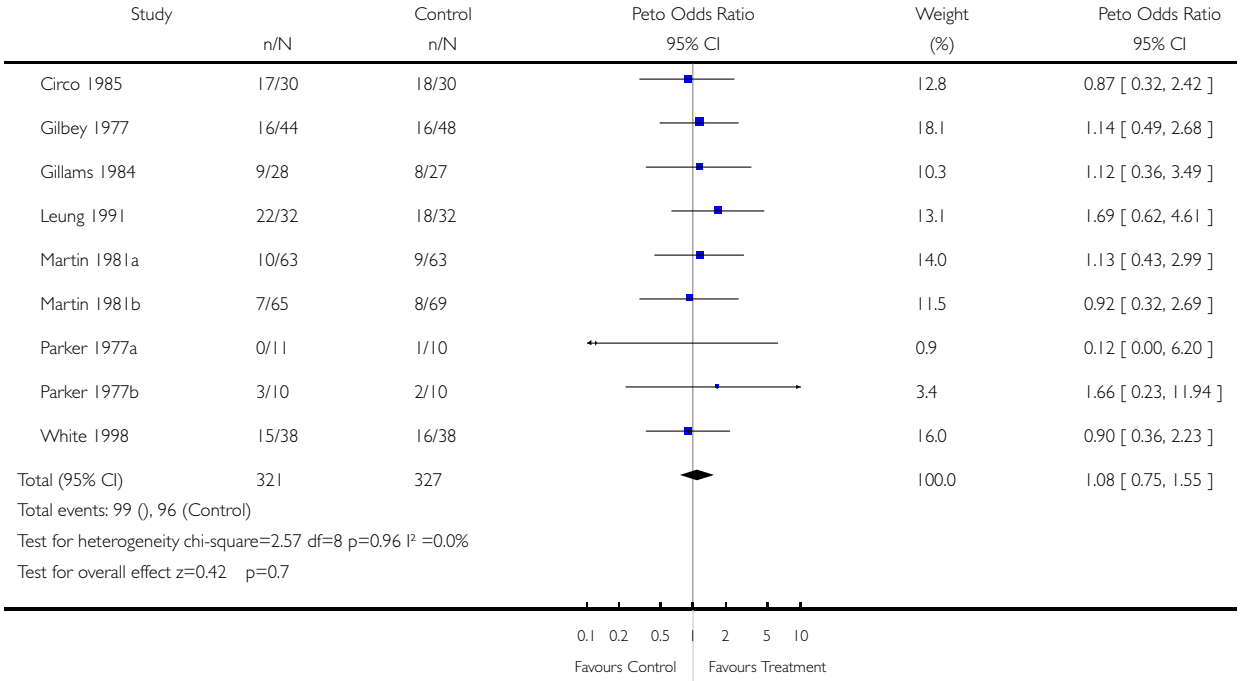

Fig. 19. Comparison 11 Comparison of different acupuncture techniques

11.05 Auricular acupuncture vs all controls (6 months)

Review: Acupuncture for smoking cessation

Comparison: 11 Comparison of different acupuncture techniques

Outcome: 05 Auricular acupuncture vs all controls (6 months)

Study		Control	Peto Odds Ratio	Weight	Peto Odds Ratio
	n/N	n/N	95% CI	(%)	95% CI
Gillams 1984	5/28	4/27		18.7	1.24 [0.30, 5.13]
Leung 1991	4/32	9/32		25.7	0.39 [0.12, 1.29]
Martin 1981a	3/63	6/63		20.6	0.49 [0.13, 1.89]
Martin 1981b	5/65	2/69		16.3	2.61 [0.57, 11.92]
Waite 1998	5/40	0/38		11.6	7.82 [1.29, 47.36]
White 1998	1/38	2/38		7.1	0.50 [0.05, 5.00]
Total (95% CI)	266	267		100.0	1.00 [0.54, 1.84]

Total events: 23 (), 23 (Control)

Test for heterogeneity chi-square=10.43 df=5 p=0.06 I^2 =52.1%

Test for overall effect z=0.01 p=1

Fig. 20. Comparison 11 Comparison of different acupuncture techniques

11.06 Auricular acupuncture vs all controls (12 months)

Review: Acupuncture for smoking cessation

Comparison: 11 Comparison of different acupuncture techniques

Outcome: 06 Auricular acupuncture vs all controls (12 months)

Study		Control	Peto Odds Ratio	Weight	Peto Odds Ratio
	n/N	n/N	95% CI	(%)	95% CI
Total (95% CI)	0	0		0.0	Not estimable

Total events: 0 (), 0 (Control)

Test for heterogeneity: not applicable

Test for overall effect: not applicable