



Research Findings on the Clinical Efficacy of Reproductive Acupuncture

Acupuncture and Embryo Transfer



Fertility and Sterility, the official publication of the American Society for Reproductive Medicine publishes juried original articles of scientific excellence in clinical and laboratory research relevant to reproductive endocrinology and physiology.

The studies below have all appeared in the journal Fertility and Sterility. Eleven of them found that acupuncture performed close to the time of embryo transfer improved chances of pregnancy. Four reported no effect, and one found a negative effect (which was put down to the fact that the patients had to drive across town after their embryo transfer to reach the acupuncture clinic). More studies are underway to investigate the mechanism behind the effect of acupuncture on implantation of the embryo.

If any provisional conclusions are to be drawn at this stage, it is that acupuncture appears to confer an advantage to clinical trial groups, which have an expected pregnancy rate of around 35% or less. Where chance of pregnancy is 50 - 60% then acupuncture applied at the time of embryo transfer may not offer so much benefit.

Acupuncture and Embryo Transfer Studies	
Authors and References	Effect of acupuncture on pregnancy rate
<u>Paulus W et al, Fertil Steril 2002 Vol 77, pg 721-724</u>	+ve
<u>Smith C et al, Fertil Steril 2006 Vol 85, pg 1352-1358</u>	+ve
<u>Westergaard L et al, Fertil Steril 2006 Vol 85, pg 1341-1346</u>	+ve
<u>Dieterle S et al, Fertil Steril 2006 Vol 85, pg 1347-1351</u>	+ve
<u>Benson M. R. et al, Fertil Steril 2006 Vol 86, Suppl 1, pg S135</u>	+ve
<u>Udoff L. C. et al, Fertil Steril 2007 Vol 86, Suppl 1, pg S145</u>	+ve
<u>Teshima D.R.K et al, Fertil Steril 2007 Vol 88, Suppl 1,pg S330</u>	+ve
<u>Magarelli P,Cridennda D,Fertil Steril 2004Vol 81,Suppl 3,pgS20</u>	+ve
<u>Quintero R et al, Fertil Steril 2004 Vol 81 Suppl 3, pg S11-12</u>	+ve
<u>Youran D et al, Fertil Steril 2008 Vol 90 Suppl 1, pg S240</u>	+ve
<u>Zhang R et al,Fertil Steril 2011 Vol 96 No 4, pg 912 - 916</u>	+ve
<u>Domar A et al, Fertil Steril 2006 Vol 86 Suppl 2, pg S379</u>	=
<u>Domar A et al Fertil Steril 2009 Vol 91 pg 723 - 6</u>	=
<u>Fratterelli JL et al Fertil Steril 2008 Vol 90 Suppl 1, pg S105</u>	=
<u>Moy I et al Fertil Steril 2011 Vol 95 pg 583-587</u>	=
<u>Craig L. B et al, Fertil Steril 2007 Vol 88, Suppl 1, pg S40</u>	-ve

Acupuncture and Embryo Transfer, Other Publications



Uses of Acupuncture Before and After Embryo Transfer

Dalton-Brewer N et al, *Hum Fert* 2010 Vol 12 No 4 212 – 255, *Human Fertility* (abstracts from UK Fertility Societies Conference 2009)

This report describes outcomes for all patients who attended the London Bridge Fertility, Gynecology and Genetics Centre in London over a 2-year period and who had acupuncture. In the acupuncture group positive pregnancy rates/ET were 44.6% comparing favorably with the non-acupuncture historic control group. When they analyzed outcomes in different age groups they discovered that acupuncture intervention was particularly effective in woman in the 35 - 39 and the over 40 group.



A randomized double blind comparison of real and placebo acupuncture in IVF treatment.

So et al, *Hum Reprod.* 2009 Feb;24(2):341-8., *Human Reproduction*

Researchers in Hong Kong found no significant difference between the effects of placebo and regular acupuncture in clinical or ongoing pregnancy rates however on initial hCG testing the placebo group had more positive tests.

Both placebo and regular acupuncture significantly reduced vascularity of the uterus, reduced stress hormones and anxiety levels. These findings lead the researchers to suggest that placebo acupuncture is in fact not inert. Placebo acupuncture needles prick the skin at the acupuncture point but do not penetrate the skin. Many Japanese acupuncturists (who routinely use minimal stimulation of acupuncture points) would argue strongly that this is not an inert placebo procedure but a therapeutic one.

Unfortunately there was no control group in this trial, which received no acupuncture.



The relationship between perceived stress, acupuncture, and pregnancy rates among IVF patients: A pilot study

Balk J et al, *Compl Therapies in Clinical Practice* 2010,16,154–157, *Complementary Therapies in Clinical Practice*

These researchers at a university IVF clinic in Pittsburgh were interested to investigate the relationship between acupuncture, stress and pregnancy rates. The patients who received acupuncture on the day of embryo of transfer had a pregnancy rate of 55.6% compared with the control group pregnancy rate of 35.5%.



Influence of Acupuncture on Infertility in Rats with Polycystic Ovarian Syndrome

Zhang Wei Yi et al, *Chinese Jnl Integrated Traditional and Western Med* 2009 Nov (8), 973

Chinese Journal of Integrated Traditional and Western Medicine

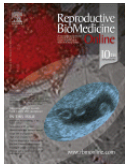
This research carried out in Wuhan, China examined the effect of acupuncture administered to rats on various fertility measures including the implantation rate of blastocysts. Acupuncture was used on the abdomen and limbs. This significantly increased ovarian and uterine development and the rate of implantation of embryos compared to the control group of rats, which did not have acupuncture.



Effect of acupuncture on assisted reproduction treatment outcomes

Madaschi C et al, Acupunct Med 2010;28:180-184, Acupuncture in Medicine (BMJ)

This trial conducted in Brazil looked at the effect of acupuncture administered before and after embryo transfer on a large group of women undergoing IVF (208 women in both the acupuncture and the control group). They found an increase in implantation rates, and a significant increase in pregnancy rates where there was no known issue with egg or sperm quality in the acupuncture group. However analysis of all cases together showed no impact of acupuncture on pregnancy rates.



Acupuncture on the day of embryo transfer: a randomized controlled trial of 635 patients

Andersen D et al, Reproductive BioMedicine Online, 2010, 21, 3, 366-372, Reproductive BioMedicine Online

This trial conducted in Denmark found no difference in pregnancy rates in IVF patients given acupuncture on the day of embryo transfer with a real acupuncture needle or a placebo one which just pricked the point rather than penetrated it. As with other trials mentioned above there is an understanding now that such a placebo is not inert, and trials such as this one need a control group of women who have no acupuncture.



Pilot study: acupuncture may improve results of IVF

Jancin B, 2010, Elsevier News, Elsevier Global Medical News

This trial was presented at the Annual Society for Reproductive Medicine meeting by Dr Omedei from Italy, and was reported by Elsevier and ObGyn News. It has not yet been published in a journal. They found that women who had acupuncture at the time of embryo transfer had a 45% pregnancy rate (determined by ultrasound) compared with women in the control group (no acupuncture) who had a pregnancy rate of 28%. The acupuncture-treated women reported a sense of well being while the controls generally reported feeling emotionally stressed and fatigued.

Acupuncture and Blood Flow to the Uterus and Ovaries

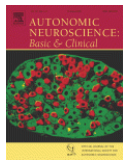
In addition to the acupuncture and embryo transfer studies there have been other clinical trials carried out which reveal information relevant to reproductive outcomes:



Reduction of blood flow impedance in the uterine arteries of infertile women with electro-acupuncture.

Stener-Victorin E, et al Hum Reprod 1996; 11:1314-1317., Human Reproduction

Previous studies have shown that reduced blood flow in the uterine arteries is associated with a decreased pregnancy rate following IVF-embryo transfer. This study reported in Human Reproduction (the official journal of the European Society of Human Reproduction and Embryology) shows that after 8 acupuncture treatments blood flow to the uterus was markedly increased. Research carried out by one group of IVF clinics in California has shown that using this protocol to increase blood flow to the uterus, combined with acupuncture on the day of transfer has resulted in a significant improvement in pregnancy rates.



Ovarian blood flow responses to electro-acupuncture stimulation at different frequencies and intensities in anaesthetized rats

Stener-Victorin E et al Autonomic Neuroscience 2003, Vol 108, Issues 1-2, Pg 50-55 Autonomic Neuroscience

The blood flow to the ovaries has also been shown to be enhanced by acupuncture by the same researchers. This study was done on anaesthetized rats, however we can assume a similar mechanism will operate in women.



A Pilot Study Evaluating the Combination of Acupuncture with Sildenafil on Endometrial Thickness

Yu W et.al. Presented at the Pacific Coast Reproductive Society Annual Conference 2007

This small pilot study examined the effect of Viagra and acupuncture on the uterine linings of women who had a history of thin linings (<8mm) in previous IVF cycles (including patients who had previously used Viagra alone). They used the above-mentioned protocols, which improve blood flow to the ovaries and uterus. The researchers found that after acupuncture treatment the thickness of the lining improved to 10 mm or more in all participating patients.



Acupuncture & IVF Poor Responders: A Cure?

Magarelli P, Cridennda D. Fertil Steril, 2004;81(Supplement 3):S20, Fertility and Sterility

This clinical trial combined the acupuncture protocol used on the day of embryo transfer with the acupuncture treatment protocol designed to increase blood flow to the uterus. The authors report "Significant increases in pregnancy outcomes were confirmed by this study which demonstrated that both acupuncture treatment protocols could be used together with a synergistic effect." They add, "This study is the first to demonstrate that the use of acupuncture in patients with poor prognoses (elevated Peak FSH, longer history of infertility, poor sperm morphology) can achieve similar pregnancy rates to normal prognosis patients."



A randomized, controlled, double blind, crossover study evaluating acupuncture as an adjunct to IVF.

Quintero R et al, Fertil Steril, 2004;81(Supplement 3):S11-12, Fertility and Sterility

This pilot study showed that a significantly lower amount of gonadotropins (IVF drugs) was used when IVF was combined with standard acupuncture, i.e. the acupuncture appeared to make the ovaries more responsive to the drugs possibly due to increased blood supply to the ovaries. Increased ovarian responsiveness could be a useful effect for women who produce small numbers of eggs. This trial needs to be repeated with larger numbers of patients.



Changes in serum cortisol and prolactin associated with acupuncture during controlled ovarian hyper stimulation in women undergoing in vitro fertilization-embryo transfer treatment

Magarelli, PC, D Cridennda, M Cohen. Fertil Steril. 2009 Dec;92(6):1870-9 Fertility and Sterility

A number of women going through IVF were given acupuncture to increase blood flow through the uterine arteries in the immediate weeks before egg collection. The researchers found that the women who had acupuncture showed beneficial changes in serum levels of stress hormones compared to the control group of women who did not have acupuncture. The acupuncture treatments appear to normalize levels of cortisol and prolactin which have been artificially depressed by the IVF drugs. This may have implications for both egg quality and implantation. In addition the pregnancy and live birth rate was significantly higher in the acupuncture group.



Acupuncture Treatment For Infertile Women Undergoing Intracytoplasmic Sperm injection

Emmons S and Patton P, Medical Acupuncture 2000, 12 (2) 18 – 20 Medical Acupuncture

This pilot studied is included here because it is the first of many studies, which followed, in subsequent years examining the effects of acupuncture on IVF patients. In this case several women were referred for acupuncture as a last resort after very poor response to high doses of FSH. More eggs were collected and more pregnancies were recorded in the acupuncture cycles compared to the non-acupuncture cycles, possibly due to increased blood supply to the ovaries.



A randomized double blind comparison of real and placebo acupuncture in IVF treatment.

So et al, Hum Reprod. 2009 Feb;24(2):341-8., Human Reproduction

While certain electroacupuncture protocols appear to increase blood flow to the uterus, the points (and no electroacupuncture) used at the time of embryo transfer have a different effect. This study showed that when these points were needled (either penetrating or pricking the acupuncture points) the vascularity of the lining of the uterus was reduced. The authors point out that a slightly hypoxic uterine environment may be beneficial for the embryo and its implantation.

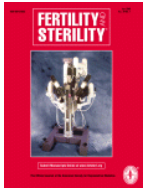


Electroacupuncture Reduces Uterine Artery Blood Flow Impedance in Infertile Women

Ming H et al, 2009 Vol 48, Issue 2, Pages 148-151, Taiwanese Journal of Obstetrics and Gynecology

A recent study of blood flow to the uterus examined the effect of electroacupuncture during the drug stimulation phase of an IVF cycle. The blood flow in the uterine artery was increased in the group of women who had acupuncture but not in the control group. More women in the acupuncture group responded to the IVF drugs than in the control group, however the pregnancy rates were not significantly different between the 2 groups.

Acupuncture and Sperm



Quantitative evaluation of spermatozoa ultrastructure after acupuncture treatment for idiopathic male infertility.

Pei J et al Fertil Steril. 2005 Jul;84(1):141-7, Fertility and Sterility

A group of infertile men, who had pathological semen analyses according to WHO criteria, were treated with acupuncture twice a week for 5 weeks. A statistically significant increase after acupuncture in the percentage and number of sperm with no structural defects was demonstrated compared to the control group of patients who received no treatment. They concluded that male infertility patients could benefit from having acupuncture. A general improvement of sperm quality, specifically in the ultrastructural integrity of spermatozoa, was seen after acupuncture.



Effect of acupuncture on sperm parameters of males suffering from subfertility related to low sperm quality.

Siterman S et al Arch Androl. 1997 Sep-Oct;39(2):155-61, Archives of Andrology

A group of infertile men with abnormal semen analysis were randomly divided into 2 groups; one group was given 10 acupuncture treatments over 5 weeks, and the other group, no treatment. Significant improvements ($p < 0.05$) were demonstrated in the acupuncture group compared to the control group, in particular improved motility and morphology.



Does acupuncture treatment affect sperm density in males with very low sperm count? A pilot study.

Siterman S et al Andrologia. 2000 Jan;32(1):31-9., Andrologia

This pilot study once again showed a positive effect of acupuncture on sperm count - but this time on men with such low sperm counts (or no sperm) that they would usually require a testicular biopsy to extract sperm for use in an IVF cycle. Seven of the 15 men with no sperm at all produced sperm detectable by the light microscope after a course of 10 acupuncture treatments ($p < 0.01$) i.e. enough sperm could be produced for ICSI to be performed without recourse to testicular biopsy. The control group with similar semen analysis had no treatment and showed no change after 3 months.



Effects of acupuncture and moxa treatment in patients with semen abnormalities.

Gurfinkel E et al Asian J Androl. 2003 Dec;5(4):345-8., Asian Journal of Andrology

In a prospective, controlled and blind study, a group of infertile men (married for 3 - 11 years without children) were randomized into two groups, the treatment group receiving 10 acupuncture treatments and the control group receiving sham acupuncture treatments. The patients in the acupuncture group demonstrated a significant increase in the percentage of normal forms compared to the control group.



Influence of acupuncture on idiopathic male infertility in assisted reproductive technology.

Zhang M et al *J Huazhong Univ Sci Tech Med Sci.*2002;22(3):228-30

Journal of Huazhong University (Abstract in Chinese)

This trial looks at sperm behaviour in an IVF setting. It was a “before and after” study involving 82 infertile men with pathological semen abnormalities and who’s sperm achieved a poor fertilization rate in at least 2 IVF/ICSI cycles. They were given acupuncture twice a week over 8 weeks and the IVF/ICSI cycles were repeated. The fertilization rates after acupuncture (66.2%) were significantly higher than that before treatment (40.2%) ($P < 0.01$).



A prospective randomized placebo-controlled study of the effect of acupuncture in infertile patients with severe oligoasthenozoospermia

Dieterle et al *Fertil Steril* 2009 Oct; 92 (4): 1340–3, *Fertility and Sterility*

This recent small clinical trial randomized 57 patients who had extremely low sperm counts, to acupuncture and placebo acupuncture groups. After receiving acupuncture twice weekly for 6 weeks motility of sperm (but not overall count) was found to increase significantly. The authors conclude that the results of the present study support the significance of acupuncture in male patients with severe oligoasthenozoospermia. More evidence with larger trials needs to be accumulated before the efficacy and effectiveness of acupuncture in male infertility can be evaluated.



Point- and frequency-specific response of the testicular artery to abdominal electroacupuncture in humans

Cakmak Y et al, *Fertil Steril* 2008;90:1732–8, *Fertility and Sterility*

Just as electroacupuncture can increase blood flow to the ovaries and uterus (see reports above) so it can to the testicles. These authors demonstrate that particular frequencies applied for just 5 minutes are effective in increasing blood flow in the testes, and suggest that such a stimulus may address the damaged microcirculation associated with varicoceles, and with aging. They note that decreased testicular arterial blood flow may result in impaired spermatogenesis from defective metabolism in the microcirculatory bed and suggest that further research is needed to discover if electroacupuncture can improve sperm manufacture in this instance.

Acupuncture, Stress and Fertility



The Impact of Acupuncture on in Vitro Fertilization Outcome.

Domar A et al Fertil Steril 2009 Vol 91 Issue 3 pg 723 – 6, Fertility and Sterility

One of the trials that investigated the effect of acupuncture on IVF pregnancy rates also collected data on the subjective experience of these women. The authors write "Acupuncture patients reported significantly less anxiety post-transfer and reported feeling more optimistic about their cycle and enjoyed their sessions more than the control subjects".

Nobody knows how exactly acupuncture might boost IVF success, Domar said, although she suggests that it has something to do with a woman's mental state at the time of embryo transfer.



Understanding Women's views towards the use of Acupuncture while undergoing IVF treatment.

Smith C and De Lacey S, 2008 In press, FSA conference 2008

This qualitative study found that most women who had acupuncture as an adjunct to IVF treatment reported increased well being, reduced anxiety and an increase in capacity to cope with the stresses of IVF and infertility treatments.



Building resilience: An exploration of women's perceptions of the use of acupuncture as an adjunct to IVF

De Lacey S, Smith C and Paterson C, BMC Complementary and Alternative Medicine 2009, 9:50 BioMed Central

Resilience is an interesting and important concept when applied to couples doing IVF. Studies of acupuncture involving women dealing with chronic health issues have shown that women experienced relief of presenting symptoms but also increases in energy, increase in relaxation and calmness, reduction in the reliance of prescription drugs (such as analgesics), quicker healing from surgery and increased self awareness and well being. Such effects indicate a reduction of stress that in turn may diminish the number of treatment cycles needed for pregnancy to occur. But further, reducing the number of cycles a woman must undertake to reach her goal of motherhood reduces the overall cost of IVF.



An assessment of the demand and importance of acupuncture to patients of a fertility clinic during investigations and treatment

Hinks J and Coulson C, Hum Fert 2010 Vol 13, S1 Pg 3-21, Human Fertility

These authors working in a fertility clinic in the UK surveyed 200 patients who attended the clinic in August 2009. They discovered that there was a clear demand for acupuncture and that acupuncture may be valuable to improve the general wellbeing of women during infertility investigations and treatments. They also felt that patient resilience may be increased by the use of acupuncture alongside their IVF treatment such that patients would persevere with increased numbers of ART (Assisted Reproductive Technologies) cycles, thereby increasing their ultimate chance of a successful pregnancy.



A randomized double blind comparison of real and placebo acupuncture in IVF treatment.

So et al, Hum Reprod. 2009 Feb;24(2):341-8., Human Reproduction

This paper which was included above amongst those describing the Embryo transfer trials, also investigated cortisol and anxiety levels before and after acupuncture was administered at precise points with either needles which penetrate the skin or "placebo" needles which prick the points but do not penetrate. No matter how the acupuncture was administered cortisol and perceived anxiety were significantly reduced after the treatment.



The relationship between perceived stress, acupuncture, and pregnancy rates among IVF patients: A pilot study

Balk J et al, Complement Ther Clin Pract. 2010 Aug;16(3):154-7. Complementary Therapies in Clinical Practice

These investigators aimed to determine if acupuncture affects the levels of perceived stress at the time of embryo transfer, and whether either acupuncture or changes in stress levels play a role in the success rate in IVF. The patients who received acupuncture in this study had both higher rates of pregnancy, and lower levels of stress both before and after embryo transfer. They postulated that reducing stress at the time of embryo transfer could result in less vasoconstriction and improved uterine receptivity.



Stress reduces conception probabilities across the fertile window: evidence in support of relaxation.

Buck Louis GM et al, Fertil Steril. 2011, 95, 7, pg 2184 – 2189, Fertility and Sterility

While this study did not involve IVF patients its conclusions nevertheless have relevance to women trying to fall pregnant with IVF. The study showed a clear relationship with higher stress levels and reduced conception rates. This may be one of the ways that acupuncture, which reduces stress hormones, can improve fertility.



Stressful Life Events are Associated with a Poor In-vitro Fertilization (IVF) Outcome: A Prospective Study

Ebbesen S.M.S. Hum Reprod 2009;24(9):2173-2182., Human Reproduction

This study examined the outcomes of IVF cycles for 800 women and found that the chance of success was related to chronic stress levels. They surmised that chronic stress levels may have a negative effect on follicle development in an IVF cycle. Since acupuncture has been shown to reduce stress hormones this may be the mechanism behind its benefit for IVF patients.



Effectiveness of psychosocial group intervention for reducing anxiety in women undergoing in vitro fertilization: a randomized controlled study.

Chan CH et al, Fertil Steril. 2006 Feb;85(2):339-46., Fertility and Sterility

A group of researchers from Hong Kong hypothesized that women who received certain interventions would experience a lower level of anxiety during the IVF treatment and therefore have better mental adjustment and psychosocial functioning during IVF. This programme includes instruction on principles of Chinese medicine emphasizing body-mind harmony and stress reduction techniques including Tai qi and meditation. However it did not include acupuncture. They found that anxiety was significantly reduced in the women who followed the programme.



The effect of medical clowning on pregnancy rates after in vitro fertilization and embryo transfer

Friedler S et al, Fertility and Sterility 2011, Vol 95, Issue 6 , Pg 2127, Fertility and Sterility

Dr. Friedler and colleagues tracked 219 women undergoing IVF treatment and, over a period of a year, treated half of them to a medical clown's 15-minute routine of jokes, magic tricks and other clowning immediately after their embryos were implanted. Those women who's stress was relieved with a good laugh after their transfer fell pregnant more often than did the control group.



The Relationship between Mental Work and Threatened Abortion

Huang Zhi Ying, 2002 Jnl Huaihai Medicine, Issue 1, Journal of Huaihai Medicine

Although some fine detail may have been lost in translation, this trial indicates that stress (mental work) increases the risk of miscarriage.



Immunological changes and stress are associated with different implantation rates in patients undergoing in vitro fertilization-embryo transfer

Gallinelli A et al, 2001 Fertil Steril 76, 1, 85, Fertility and Sterility

This study examines the effect of stress on embryo transfer and explores its impact via the immune system. The researchers conclude that stress is associated with high amounts of activated T cells in the peripheral blood, which is in turn associated with a reduced implantation rate in women undergoing IVF-ET. The subject of regulation of T cells by acupuncture is something we are examining currently and is one of the hypothesized mechanisms by which acupuncture may increase implantation in some women.

Meta Analyses and Recent Reviews



Have catalytic converters helped prevent suicide?

Effects of acupuncture on rates of pregnancy and live birth among women undergoing in vitro fertilization: systematic review and meta-analysis.

Manheimer E et al. BMJ 2008;336 pg 545-549, British Medical Journal

Early in 2008, the prestigious British Medical journal published its own analysis of the acupuncture in a meta analysis of 7 of these trials; i.e. they chose only those, which met strict research criteria.

The authors concluded: "The odds ratio of 1.65 suggests that acupuncture increased the odds of clinical pregnancy by 65% compared with the control groups... In absolute terms 10 patients would need to be treated with acupuncture to bring about one additional clinical pregnancy. These are clinically relevant benefits."

And when they analyzed the 4 trials that measured live births in addition to pregnancy rates, they found that acupuncture increased the odds by 91% and that the number of patients who would need to be treated to bring about an additional pregnancy dropped to 9.

Impressive as these results are they may still be an underestimate, since the authors included women who's IVF cycles were cancelled before transfer.

The accompanying editorial in the BMJ makes the comment that adding acupuncture to IVF improved pregnancy rates more than any other recent improvement or advance in IVF technology.



Acupuncture and Assisted Conception

*Cheong Y et al Cochrane Database of Systematic Reviews 2008 Issue4
Cochrane Review*

Another group of researchers have analyzed updated clinical trial data and have come to the same conclusion as those who published the BMJ Meta analysis, namely acupuncture is a useful addition to IVF. It has been published as a Cochrane Review. The Cochrane Collaboration is an international and independent organization dedicated to making up-to-date, accurate information about the effects of healthcare readily available worldwide.



A Systematic Review and Meta -analysis of the effect of Acupuncture on Outcome of in Vitro Fertilization Treatment

*El-Toukhy T et al BJOG 2008 115 (10); 1203 -13
British Journal of Obstetrics and Gynaecology*

Another meta analysis also reported at an annual fertility conference indicated that in the trials they chose to include they found no effect of acupuncture on IVF treatment. This meta analysis included a trial, which had been excluded from the previous analysis because it employed different methodology and therefore introduced a degree of heterogeneity, which reduces the validity of this meta analysis.



Traditional Chinese medicine and infertility.

Huang, S T and Chen, A P C, *Current Opinion in Obstetrics & Gynecology*. 2008, 2(3):211-215., *Current Opinion in Obstetrics & Gynecology*

A recent review of current medical literature carried out by researchers in Taiwan noted "traditional Chinese medicine could regulate the gonadotropin-releasing hormone to induce ovulation and improve the uterus blood flow and menstrual changes of endometrium. In addition, it also has impacts on patients with infertility resulting from polycystic ovarian syndrome, anxiety, stress and immunological disorders." Their review concludes "Integrating the principles and knowledge from well characterized approaches and quality control of both traditional Chinese medicine and Western medical approaches should become a trend in existing clinical practice and serve as a better methodology for treating infertility."



The Role of Acupuncture in the Management of Subfertility

Ng E H et al *Fertil Steril*. 2008 Jul;90(1):1-13., *Fertility and Sterility*

Another review of the literature from a group in Hong Kong concludes that the positive effect of acupuncture in the treatment of subfertility may be related to the central sympathetic inhibition by the endorphin system, the change in uterine blood flow and motility, and stress reduction.



Acupuncture and assisted conception

Cheong Y et al *Cochrane Database of Systematic Reviews* 2009 Issue 1
Cochrane Database

A newer version of this database by the same authors as the one listed above concluded that there is an increase in live birth rate when acupuncture is performed on day of embryo transfer.



Acupuncture and herbal medicine in in vitro fertilization: a review of the evidence for clinical practice

Cheong Y et al, *Hum Fert* 2010, Vol. 13, No. 1, Pg 3-12., *Human Fertility*

A further analysis by the authors of the previously published Cochrane databases included more trials in their analysis of the benefit of acupuncture at embryo transfer. They included a trial, which had previously been excluded due to the fact that its methodology introduced too much heterogeneity - this plus the inclusion of another trial, which controversially used placebo acupuncture, reduced the measurable benefits of acupuncture to IVF patients in this analysis.



Parachute use to prevent death and major trauma related to gravitational challenge: systematic review of randomized controlled trials

Smith, GCS and J Pell *BMJ* 2003; 327, 1459, *British Medical Journal*

Finally, a tongue in cheek analysis of meta-analyses, randomized, placebo controlled trials and evidence based medicine. These authors very cleverly make a strong case for the fact that some interventions do NOT lend themselves to randomized blinded trials. But can still have a place in medicine simply because they have been seen to work.

While not for a minute purporting to compare an acupuncture treatment to the life saving action of a parachute, we nevertheless would like to point out that there are some aspects of a discipline like acupuncture which will never be able to be squeezed into the confines of a double blind randomised trial, without losing something of its essence. Other aspects of acupuncture, like some of its known physiological effects, can be measured in a trial setting - however the results of these trials should never be taken to be telling the WHOLE story!

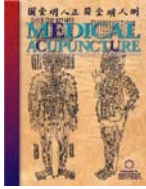


Efficacy of Traditional Chinese Herbal Medicine in the management of female infertility: A systematic review.

Ried K, Stuart K. *Complement Ther Med* (2011), article in press
Complementary Therapies in Medicine

This review, from researchers in Adelaide, Australia presents a meta analysis of trials and cohort studies, and compares pregnancy rates achieved with the Chinese medicine compared with assisted reproduction techniques including IVF. The researchers found that Chinese herbal medicine can improve pregnancy rates 2 fold within a 4 month period compared with fertility drug treatment or IVF.

Acupuncture and Pregnancy



Acupuncture For Pre-birth Treatment: An Observational Study Of Its Use In Midwifery Practice

Betts D and Lennox S, Med Acup 2006, 17, (3) 16 – 19, Medical Acupuncture

This survey conducted in New Zealand revealed that women who had acupuncture in the last 4 weeks of their pregnancy had a third less the number of medical inductions, epidurals and emergency caesarians compare to local population rates.



Acupuncture for Depression During Pregnancy: A Randomized Controlled Trial

Manber R et al, Obst and Gynec 2010, 115 (3) 511 – 520, Obstetrics and Gynecology

Since there is evidence that the use of antidepressants increases the risk of miscarriage there has been much interest in the use of acupuncture to treat depression, which occurs in pregnancy.

A number of trials and systematic reviews of the effectiveness of acupuncture in the treatment of depression have been published over the last 5 years and a meta-analysis of these trials concluded that acupuncture is an effective treatment for depression. This trial looked specifically at depression in pregnancy and found that acupuncture was as effective as other standard treatments and worked more quickly.



Effects of acupuncture and stabilizing exercises as adjunct to standard treatment in pregnant women with pelvic girdle pain: randomized single blind controlled trial.

Elden H et al 2005 Jul 30;331(7511):249-50., British Medical Journal

This 6 week trial indicated that acupuncture treatment of pelvic girdle pain in pregnancy was more effective than other treatment options.



Acupuncture for pelvic and back pain in pregnancy: a systematic review.

Ee CC et al, 2008 Am J Obstet Gynecol Mar;198(3):254-9.

American Jnl Obstetrics and Gynecology

This review of 3 trials examining treatment of back and pelvic pain in pregnancy concludes that acupuncture, as an adjunct to standard treatment, is superior to standard treatment alone and physiotherapy.



Cost-effectiveness of breech version by acupuncture-type interventions on BL 67, including moxibustion, for women with a breech fetus at 33 weeks gestation: a modeling approach

Van den Berg I et al, Complement Ther Med. 2010 Apr;18(2):67-77.

Complementary therapies in medicine

The use of acupuncture and moxibustion on women presenting with breech babies at week 33 was assessed in this large retrospective Dutch study. Acupuncture was shown to reduce the number of breech presentations at term, thus reducing the number of caesarean sections.



Effect of Gutai Decoction on the Abortion Rate of in vitro Fertilization and Embryo Transfer

Liu Ying and Wu Jing-zhi Chin J Integr Med 2006, 12(3) : 189-193
Chinese Journal of Integrated Medicine

A group of women undergoing IVF were given a well-known Chinese herb formula known to help prevent miscarriage and stabilise early pregnancy, from 2 days after their embryo transfer (combined with progesterone) up until 9 weeks of pregnancy if they conceived. The control group used progesterone support only. They found that 13% of the women who conceived while taking the Chinese herb formula miscarried, while 23% of the women in the control group miscarried.

There were no adverse effects on liver or kidney function in the treated group, and no birth defects in the treated group (one case of harelip in the untreated group).



Influence of acupuncture on Doppler ultrasound in pregnant women

Zeisler H et al, Ultrasound Obstet Gyn 2001 Volume 17, Issue 3, pages 229-232,
Ultrasound in Obstetrics & Gynecology

This study showed that acupuncture performed on pregnant women close to term had a beneficial effect on blood flow in the umbilical artery, leading some researchers to suggest that acupuncture provides an alternative method of preventing preeclampsia or intrauterine growth restriction in high-risk women.

Acupuncture and Endometriosis



Controlled study on Shu-Mu point combination for treatment of endometriosis

Sun YZ, Chen HL *Zhongguo Zhen Jiu*. 2006 Dec;26(12):863-5, *Zhongguo Zhen Jiu*

Acupuncture was used on back and front points in this trial, which compared different sorts of point prescriptions with treatment of endometriosis with Danazol. Acupuncture was superior in relieving pain and in reducing blood markers of the disease.



Acupuncture Combined with Medicine Effects on Outcomes of Patients with Endometriosis Who Accepted IVF-ET

Yu Xiao-Li et al, *Liaoning Journal of Traditional Chinese Medicine* 2010 Vol 4
Liaoning Journal of Traditional Chinese Medicine

This trial carried out in northeast China, looked at 180 women with endometriosis who were doing a long down regulated IVF protocol. The women who were given acupuncture alongside Chinese medicine achieved significantly higher pregnancy rates than those in the other groups who did not have acupuncture.



Effect of Quyu Jiedu Granule (祛瘀解毒颗粒) on Microenvironment of Ova in Patients with Endometriosis

Lian Fang et al, *Chin J Integr Med* 2009 Feb;15(1):42-46
Chinese Journal of Integrated Medicine

A Chinese herb formula for endometriosis was given to women with long-term infertility and endometriosis before and during an IVF cycle and various ovarian parameters were compared with a group of women with endometriosis who embarked on IVF directly without taking the herbs. The group who took the herbs produced more eggs and had a higher fertilization rate. Additionally the follicles of the women who took the herbs showed a reduced level of inflammatory cytokines compared to the women in the control group.



Clinical Observations on the Treatment of Endometriosis by Combined Acupuncture and Herbs

Fu Yu and Xia Tian, *Shanghai Jnl Acup Moxa*, 2005, Vol 3
Shanghai Journal of Acupuncture and Moxibustion

This is just one trial of many carried out in China which looks at the clinical effectiveness of treatment of endometriosis with acupuncture and Chinese herbs. Fertility and symptoms and signs of the disease are treated effectively without side effects.



Clinical Observation of Chinese Medicine Treatment on Secondary Dysmenorrhoea Associated with Endometriosis

*Lim CED et al, Aust J Acupunct Chin Med 2009;4(2):12-17.
Australian Journal Acupuncture and Chinese Medicine*

Those of us who have experience in treating endometriosis with Chinese medicine are familiar with the benefits it brings patients in terms of reduced pain and increased fertility. This pilot study, a collaboration between Guangzhou Medical University in China and RMIT university in Melbourne, is particularly interesting to us since it measured objective parameters such as immune factors (antigens and antibodies) shown to be abnormally raised in patients with endometriosis. A course of treatment with Chinese herbs not only improved pain but also significantly reduced the levels of these immune factors. This is one way that Chinese medicine may improve fertility in endometriosis.

Acupuncture and PCOS



Investigation on effect of electroacupuncture intervention on in vitro fertilization and embryo transfer of patients with polycystic ovarian syndrome

Chen Jun et al *Maternal and Child Health Care of China* 2009; 30 pg 28
Maternal and Child Health Care of China

A group of researchers in Shandong, China used electroacupuncture with PCOS patients doing IVF. They found that there was a significant reduction in the incidence of ovarian hyperstimulation syndrome (OHSS) if acupuncture was included. Since women with PCOS are at risk of OHSS then this finding is of great interest. Many other aspects of the IVF cycle improved however the pregnancy rate was not significantly increased by the acupuncture.



Effects of electro-acupuncture on anovulation in women with polycystic ovary syndrome

Stener Victorin E et al, *Acta Obstet Gynecol Scand* 2000; 79: 180–188
Acta Obstetrica et Gynecologica Scandinavica

This was one of the first trials to look at the effect of acupuncture on Polycystic ovarian syndrome. This and subsequent trials have shown that electroacupuncture can stimulate reluctant ovaries to ovulate more often in some women with PCOS.



Hypothalamic Neuroendocrine Functions in Rats with Dihydrotestosterone-Induced Polycystic Ovary Syndrome: Effects of Low-Frequency Electro-Acupuncture

Yi Feng et al, *PLoS One*. 2009; 4(8): e6638., *PLoS One*

Performing electroacupuncture 5 times a week on rats with PCOS restored ovulation and regular estrous cycles within a short period of time. The researchers measured hormone changes induced by electroacupuncture and postulate that these changes may help to explain the beneficial effects of acupuncture in women with PCOS.



Acupuncture in Polycystic Ovary Syndrome: Current Experimental and Clinical Evidence

Stener-Victorin E et al, *Journal of Neuroendocrinology* 2008, 20 (3) , 290–298
Journal of Neuroendocrinology

This review evaluates the place of acupuncture in the treatment of PCOS. It explains that many women with PCOS require prolonged treatment. Pharmacological approaches are effective but have adverse effects. Therefore, treatment strategies such as acupuncture need to be evaluated.

Acupuncture is reported to positively affect PCOS symptoms and markers via modulation of endogenous regulatory systems, including the sympathetic nervous system, the endocrine system and the neuroendocrine system. The changes are most likely mediated via the endogenous opioid system.



Low-frequency electroacupuncture and physical exercise decrease high muscle sympathetic nerve activity in polycystic ovary syndrome.

Stener Victorin E et al *Am J Physiol* 2009 Aug;297(2):R387-95.

American Journal of Physiology

This trial found that activity of the sympathetic nervous system (which is abnormally pronounced in PCOS) could be reduced with acupuncture or with exercise. Additionally they found that acupuncture significantly reduced the level of testosterone in PCOS patients. Those women in the study who were not ovulating reported more regular menstrual cycles after acupuncture treatment.

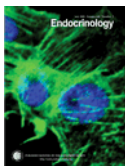


Influence of Acupuncture on Infertility in Rats with Polycystic Ovarian Syndrome

Zhang Wei Yi et al, *Chinese Jnl Int Traditional and Western Medicine* 2009 (11) 973

Chinese Journal of Integrated Traditional and Western Medicine

Studies of animal models with PCOS have elucidated some of the physiological effects of acupuncture on different aspects such as Insulin resistance, hormone levels and ovulation frequency. This study measured ovulation frequency after acupuncture by counting the number of blastocysts that had implanted after acupuncture treatment compared to a control group. Acupuncture proved to be an effective treatment to increase the number of blastocysts.

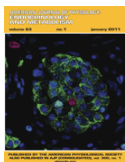


Low-Frequency EA and Physical Exercise Improve Metabolic Disturbances and Modulate Gene Expression in Adipose Tissue in Rats with Dihydrotestosterone-Induced PCOS

Manneras L et al 2008 *Endocrinology* vol. 149 (7) pg3559-3568

Endocrinology

Insulin resistance associated with PCOS was reduced by acupuncture in this animal study.

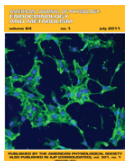


Impact of EA and physical exercise on hyperandrogenism and oligo/amenorrhea in women with PCOS.

Jedel E et al, *Am J Physiol Endocrinol Metab* 2011 300:(1) E37-E45

American Journal of Physiology

This trial found that 4 months of acupuncture effectively reduced testosterone and improved ovulation frequency in PCOS patients, and was superior to exercise in achieving these aims.



The physiological basis of complementary and alternative medicines for polycystic ovary syndrome

Raja Khan N et al, 2011 *Am J Physiol Endocrinol Metab*, 301, E1

American Journal of Physiology

This review summarises research findings in traditional Chinese medicine, acupuncture and dietary supplementation treatment of PCOS.



True and Sham Acupuncture Produced Similar Frequency of Ovulation and Improved LH to FSH Ratios in Women with Polycystic Ovary Syndrome

*Pastore L et al, 2011 Jnl Clin Endocrinol Metab Aug online jc.2011-1126
The Journal of Clinical Endocrinology & Metabolism*

A reduction in LH levels and an increase in ovulation frequency was found in PCOS women having acupuncture using either real needling or sham needling (which pricks rather than penetrates the acupuncture points in a manner similar to Japanese acupuncture). As we have seen in a couple of other studies reported on these pages, mild stimulation of acupuncture points without penetration is not an inert control. True acupuncture but not sham acupuncture reduced levels of testosterone and insulin in the women who ovulated.