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# Male Infertility

# Infertilité masculine : évaluation de l'acupuncture

Article connexe : - infertilité féminine - pathologies et zheng - conduites thérapeutiques -

## 1. Systematic Reviews and Meta-Analysis

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| ☆☆☆ | Evidence for effectiveness and a specific effect of acupuncture |
| ☆☆ | Evidence for effectiveness of acupuncture |
| ☆ | Limited evidence for effectiveness of acupuncture |
| Ø | No evidence or insufficient evidence |

### 1.1. Generic Acupuncture

#### 1.1.1. Wang 2023

Wang Z, Zhou Z, Zhang L, Li X, Li M, Pan Y, Jiao T, Shi X, Liu Q, Wang C, Wang Y. Efficacy and safety of nonpharmacological strategies for the treatment of oligoasthenospermia: a systematic review and Bayesian network meta-analysis. Eur J Med Res. 2023 Jan 4;28(1):6. https://doi.org/10.1186/s40001-022-00968-6

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| **Background** | Oligoasthenospermia (OAT) is the most common cause of male infertility, and the annual incidence of the disease continues to increase due to changing lifestyle habits, increased work pressure and increased environmental pollution. A variety of nonpharmacological therapies have been reported to be effective for treating OAT; however, there is a lack of direct evidence comparing these different nonpharmacological therapies. Therefore, the optimal strategy has yet to be identified. |
| **Objectives** | A network meta-analysis was performed to evaluate the efficacy and safety of nonpharmacological treatments for OAT, thus providing an evidence-based medical reference for the clinical treatment of oligoasthenospermia. |
| **Methods** | The Web of Science, Cochrane Library, Embase, PubMed, Weipu (VIP), Wan Fang Data, China National Knowledge Infrastructure (CNKI), and China Biomedical Literature (CBM) databases were searched from inception to April 2022 to identify randomized controlled trials (RCTs) that examined nonpharmacological treatments for oligozoospermia. Grey literature was also searched. Studies that met the quality criteria were analysed using Stata 16.0 and Review Manager 5.4 software. |

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| **Results** | A total of 4629 publications were initially retrieved; ultimately, 38 RCTs were analysed, including 8 nonpharmacological therapies and 3080 patients. Each intervention outperformed the sham intervention and no treatment approaches in terms of improved efficacy. In terms of improved total effective rate and sperm concentration, warming acupuncture may be the most effective treatment (SUCRA = 80.1% and 93.4%, respectively). Electroacupuncture perhaps resulted in the best improvement in sperm motility a% and a + b% (SUCRA = 96.6% and 82.0%, respectively). In terms of the incidence of adverse reactions, the three safest interventions probably were no treatment, warming acupuncture, and sham intervention (SUCRA = 88.0%, 68.8% and 62.9%, respectively). In terms of improving the reproductive hormones FSH, LH, and T, the best interventions perhaps were hyperbaric oxygen, 2 Hz TEAS, and electroacupuncture (SUCRA = 85.1%, 96.8% and 99.4%, respectively). |
| **Conclusions** | Nonpharmacological treatments for oligoasthenospermia have good clinical efficacy. **Warm acupuncture and electroacupuncture have better overall efficacy and safety**. These treatment approaches can be recommended based on the actual situation. If a patient is complicated with varicoceles, they should be removed before symptomatic treatment. Due to the limitations of the quality of the included studies, the findings need to be further validated. |

### 1.1.2. Jia 2021 Ø

Jia W, Wang C, Yin Y. Acupuncture for oligospermia and asthenozoospermia: A systematic review and meta-analysis. Medicine (Baltimore). 2021 Dec 3;100(48):e27816. https://doi.org/10.1097/MD.0000000000027816

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| **Background** | Acupuncture is widely used for oligospermia and asthenozoospermia in China, but its effect is unclear. We aimed to determine the effectiveness and safety of acupuncture in treating oligospermia and asthenozoospermia. |
| **Methods** | An electronic search for randomized controlled trials evaluating acupuncture treatment in patients with oligospermia and asthenozoospermia published from database inception to October 2018 was conducted in PubMed, EMBASE, the Chinese Biomedical Literature Database, the Chinese Scientific Journal Database (VIP Database), the Wan-Fang Database, the China National Knowledge Infrastructure and the Cochrane Library. We established search terms related to 3 areas (oligospermia, asthenozoospermia, and acupuncture). Two authors independently screened all identified citations and extracted the data. The methodological quality of the included trials was assessed using the Cochrane criteria. |
| **Results** | **Seven studies with a total of 527 subjects** were screened according to inclusion and exclusion standards, and most of the studies had significant methodological weaknesses. Seven randomized controlled trials tested the effects of acupuncture compared with placebo acupuncture and conventional medications in patients with oligospermia and asthenozoospermia. The results of this study suggest that acupuncture alone has no clear superiority in improving sperm motility (standard mean difference [SMD] = 1.13, 95% confidence interval [CI]: -0.64 to 2.89), the sperm concentration (SMD = 0.32, 95% CI: 0.27-0.92) or semen volume compared with placebo acupuncture. No significant difference was found between acupuncture alone and conventional medications in improving sperm motility (SMD = -0.53, 95% CI: -2.54 to 1.48), the sperm concentration (SMD = -1.10, 95% CI: -1.48 to -0.72) or semen volume. However, adjuvant acupuncture may enhance the effect of medications on improving sperm motility (SMD = 4.10, 95% CI: 1.09-7.12) and the sperm concentration (SMD = 1.07, 95% CI: 0.739-1.40), but the study heterogeneity was too high to establish robust conclusions. |

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| **Conclusion** | These results suggest that the current evidence does not support acupuncture as an effective treatment for oligospermia and asthenozoospermia; therefore, acupuncture is not currently recommended as a treatment for these conditions. However, owing to the high risk of bias among the included studies, the evidence is limited, and more large-scale, high-quality clinical trials are needed in the future. |

### 1.1.3. You 2020 Ø

You F, Ruan L, Zeng L, Zhang Y. Efficacy and safety of acupuncture for the treatment of oligoasthenozoospermia: A systematic review. Andrologia. 2020;52(1). [209948]. doi

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| **Objectives** | Oligoasthenozoospermia is a common factor leading to male infertility. Acupuncture has been applied for treating male infertility for several thousand years in China, but clinical evidence of its efficacy and safety in treating oligoasthenozoospermia is yet to be established. This review aimed to systematically assess the evidence on the effect of acupuncture in males with oligoasthenozoospermia. |
| **Methods** | Databases (PubMed, EMBASE, SINOMED, CNKI, Wanfang database and Cochrane Library) were searched to identify related studies published before 30th June 2019. The Cochrane risk of bias tool and Jadad score was adopted to assess the methodological quality of included studies. |
| **Results** | **Twelve randomised controlled trials (RCTs) with 1,088 participants** were included in this review. The aim of this study was to perform a meta-analysis, but it was not possible due to considerable clinical heterogeneity among the included studies. According to the narrative analysis, acupuncture or acupuncture combined with another intervention was effective in improving the semen quality based on the included studies. However, this result should be interpreted with caution due to high risk. The methodological quality of most included studies was low. |
| **Conclusions** | The current evidence on acupuncture for oligoasthenozoospermia is inadequate to draw a solid conclusion due to the poor methodological quality. Rigorous full-scale RCTs are needed to validate the therapeutic efficacy and safety of acupuncture in treating oligoasthenozoospermia. |

### 1.1.4. He 2015 ☆

He Y, Chen CT, Qian LH, Xia CL, Li J, Li SQ, Liu BP. [Acupuncture treatment of male infertility: a systematic review]. National Journal of Andrology [Zhonghua Nan Ke Xue]. 2015;21(7):637-45. [183414].

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| **Objective** | To systematically evaluate acupuncture as a treatment for male infertility. |
| **Methods** | We searched Chi na Biology Medical Database (CBM), Wan Fang Medical Information System, China National Knowledge Infrastructure (CNKI), VIP Information Resource System (VIP), and PubMed for published literature on acupuncture as a treatment for male infertility on May 1 2014. Based on the Standards for Reporting Interventions in Clinical Trials of Acupuncture (STRICTA), we evaluated the quality of the reports, conducted meta-analysis on the identified studies via RevMan5.2, and assessed the quality of the evidence in the literature by Grading of Recommendations Assessment, Development, and Evaluation (GRADE). |

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| **Results** | A total of 12 studies involving 2,177 patients were included, the quality of which was evaluated as mediocre. With regard to the cure rate, acupuncture was comparable to traditional Chinese medicine (TCM) (P > 0.05) but better than Western medicine (RR = 4.00, 95% CI 1.63 to 9.82, P < 0.01) while acupuncture + TCM was better than either TCM (RR = 1.77, 95% CI 1.20 to 2.60, P < 0.01) or Western medicine used alone (RR = 2.73, 95% CI 1.51 to 4.93, P < 0.01), and acupuncture + Western medicine was better than Western medicine alone (RR = 1.88, 95% CI 1.17 to 3.02, P = 0.01). The combined use of acupuncture, ear pressure, TCM, and Western medicine showed a higher cure rate than the combination of TCM and Western medicine (RR = 3.45, 95% CI 2.90 to 4.11, P < 0.01). In therapeutic effectiveness, acupuncture was comparable to TCM (P > 0.05) but superior to Western medicine (RR = 1.41, 95% CI 1.12 to 1.71, P < 0.01), acupuncture + TCM was superior to either TCM (RR = 1.14, 95% CI 1.05 to 1.23, P < 0.01) or Western medicine alone (RR = 1.43, 95% CI 1.22 to 1.67, P < 0.01), and acupuncture + Western medicine was superior to Western medicine alone (RR = 1.25, 95% CI 1.05 to 1.49, P = 0.01). In improving sperm concentration, acupuncture was as effective as TCM (P > 0.05) and sham acupuncture (P > 0.05) but outdid Western medicine (RR = 27.00, 95% CI 24.27 to 29.73, P < 0.01) and acupuncture + TCM outdid either TCM (RR = 14.65, 95% CI 7.58 to 21.72, P < 0.01) or Western medicine alone (RR = 1.04, 95% CI–1.43 to 3.51, P > 0.05). In improving grade a sperm, acupuncture exhibited a similar effect to TCM (P > 0.05) and sham acupuncture (P > 0.05), and acupuncture + TCM was more effective than TCM alone (RR = 7.78, 95% CI 3.51 to 12.23, P < 0.01) but equally effective as Western medicine (P > 0.05). In elevating the level of grade a + b sperm, acupuncture + TCM excelled either TCM (RR = 11.00, 95%, CI 3.17 to 18.82, P < 0.01) or Western medicine alone (RR = 12.22, 95% CI 6.87 to 17.57, P < 0. 01), while acupuncture produced a comparable effect with sham acupuncture (P > 0.05). As for the quality of the included studies, only 3 conclusions of the 23 meta-analyses were assessed to be of average quality, while the others of poor or extremely poor quality. Therefore, the recommendation grade of the conclusions was low. |
| **Conclusion** | **For the treatment of male infertility, acupuncture is reported to be equally effective as TMC and more effective than Western medicine, and its effectiveness is enhanced when applied in combination with either TCM or Western medicine**. Acupuncture is distinctively efficacious in improving sperm quality. Nevertheless, the overall quality of the included studies is low. |

### 1.1.5. Jerng 2014 Ø

Jerng UM, Jo JY, Lee S, Lee JM, Kwon OL. The effectiveness and safety of acupuncture for poor semen quality in infertile males: a systematic review and meta-analysis. Asian J Androl. 2014;16(6):884-91. [183487].

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| **Objective** | The aim of this review is to evaluate the effectiveness and safety of acupuncture for poor semen quality in infertile men. |
| **Methods** | We searched for relevant trials registered up to May 2013 in 14 databases. We selected randomized controlled trials (RCTs) that compared acupuncture, with or without additional treatment, against placebo, sham, no treatment, or the same additional treatment. Two reviewers independently performed the study selection, data extraction, risk of bias and reporting quality appraisal. Risk of bias and reporting quality were appraised by the Cochrane risk of bias tool, the consolidated standards of reporting trials and Standards for Reporting Interventions in Clinical Trials of Acupuncture. The outcomes were sperm motility, sperm concentration, pregnancy rate, and adverse events. Pregnancy was defined as a positive pregnancy test. |

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| **Results** | **Four RCTs met the eligibility criteria**. Acupuncture increased the percentage of sperm with rapid progression (mean difference - 6.35, 95% confidence interval (CI): 4.38-8.32, P< 0.00001) and sperm concentration (mean difference - 6.42, 95% CI: 4.91-7.92, P< 0.00001), but these two outcomes were substantially heterogeneous among the studies ($I^2$ = 72% and 58%, respectively). No differences in pregnancy rate were found between acupuncture and control groups (odds ratio 1.60, 95% CI: 0.70-3.69, P= 0.27, $I^2$ = 0%). No participants experienced adverse events. |
| **Conclusions** | **The current evidence showing that acupuncture might improve poor semen quality is insufficient** because of the small number of studies, inadequacy of procedures and/or insufficient information for semen analysis, high levels of heterogeneity, high risk of bias, and poor quality of reporting. Further large, well-designed RCTs are required. |

## 1.2. Special Acupuncture Techniques

### 1.2.1. Electroacupuncture

#### 1.2.1.1. Gong 2021 ∅

Gong Y, Li J, Wu XK. [Transcutaneous electrical acupoint stimulation for the treatment of idiopathic oligoasthenospermia: A meta-analysis]. Zhonghua Nan Ke Xue. 2021 Oct 20;27(10):917-926. https://pubmed.ncbi.nlm.nih.gov/34914271/

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| **Objective** | To evaluate the effects of transcutaneous electrical acupoint stimulation (TEAS) on the pregnancy outcome and sperm parameters in patients with idiopathic oligoasthenospermia. |
| **Methods** | We searched PubMed, EMBASE, Cochrane Library, CNKI, VIP and Wanfang from inception till January 2020 for randomized controlled trials (RCT) with the keywords male infertility, oligozoospermia, asthenozoospermia, acupuncture, transcutaneous electrical acupoint stimulation, etc. Using the Cochrane risk bias tool, we evaluated the quality of the identified RCTs, and analyzed the primary outcomes, including pregnancy and live birth, and secondary outcomes, such as sperm concentration, motility and morphology. |
| **Results** | **Four RCTs with 321 subjects** were included, of which none reported live birth and only one reported a pregnancy rate of 15% after treatment of 2 Hz TEAS. Neither 2 Hz (WMD: −3.01, 95% CI: −22.28 to 16.26) nor 100 Hz TEAS (WMD: −0.02, 95% CI: −5.29 to 5.56) had any significant effect on sperm concentration, while 100 Hz TEAS markedly improved the percentage of grade a sperm (WMD: 6.83, 95% CI: 2.10 to 11.57) compared with 2Hz TEAS (WMD: 2.31, 95% CI: 1.01 to 3.61). In comparison with the blank control, neither 2 Hz (WMD: 4.07, 95% CI: −5.15 to 13.29) nor 100 Hz TEAS (WMD: 6.59, 95% CI: −5.36 to 18.55) significantly affected the percentage of grade a + b sperm or total sperm motility. |
| **Conclusions** | The effect of TEAS on the pregnancy outcome is not yet clear. 100 Hz TEAS significantly improved the percentage of grade a sperm in idiopathic oligoasthenospermia patients, which, however, is to be further verified with more high-quality clinical studies. |

### 1.2.2. Combined with traditional Chinese medicine

#### 1.2.2.1. Yang 2020

Yang B, Meng QY, Chen H, Gao YL, Shen J, Mu YY, Xia YB. [Clinical effect of acupuncture combined with traditional Chinese medicine in treatment of oligozoospermia/asthenozoospermia: a meta-analysis]. Acupuncture Research. 2020;45(3):243-50 [207995].

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| **Objective** | To evaluate the clinical effect of acupuncture combined with Chinese medicine in the treatment of oligozoospermia/asthenozoospermia. |
| **Methods** | Randomized controlled trials (RCTs) of acupuncture combined with traditional Chinese medicine (TCM) in the treatment of oligozoospermia/asthenozoospermia published up to February 15, 2019 were searched from databases of CNKI, CBM, Wanfang Data, VIP, PubMed, Embase, and The Cochrane Library. Two reviewers independently performed quality assessment and data extraction of the studies, and RevMan5.3 was used to perform the meta-analysis. |
| **Results** | A total of 13 articles with **12 RCTs** were included, with a total of **1 183 patients**. The meta-analysis showed that acupuncture combined with TCM achieved a significantly higher pregnancy rate than TCM alone in the treatment of oligozoospermia/asthenozoospermia(risk ratio [RR] □1.46, 95% confidence interval [CI]: 1.13□1.90□P□0.004). The patients treated with acupuncture combined with TCM had a significantly higher effective rate than those treated with TCM alone (RR□1.17, 95% CI□1.10□1.24, P<0.000 01). Compared with TCM alone, acupuncture combined with TCM achieved significantly better improvements in sperm survival rate (mean difference [MD] □8.28, 95% CI: 6.48□10.08, P<0.000 01), sperm motility (MD□17.01, 95%CI□11.06 □22.96, P<0.000 01), sperm concentration (MD□8.71, 95%CI□5.92□11.50, P<0.000 01), and number of grade A sperms (MD□6.39, 95%CI□5.27□7.50, P<0.000 01). |
| **Conclusion** | Acupuncture combined with TCM has a better clinical effect than TCM alone in the treatment of oligozoospermia/asthenozoospermia. Due to the low methodological quality of the studies included in this analysis, acupuncture combined with TCM in the treatment of oligozoospermia/asthenozoospermia should be used based on patients' conditions in clinical practice. |

# 2. Overviews of systematic reviews

#### 2.1. Fasanghari 2024

Fasanghari M, Keramat A, Tansaz M, Moini A, Chaman R. Effect of alternative and complementary medicine on male infertility: An umbrella review. Health Sci Rep. 2024 Jun 24;7(6):e2118. https://doi.org/10.1002/hsr2.2118

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| **Background and aims** | There is increasing interest worldwide in using alternative and complementary approaches for treating male infertility. This interest has spawned a multitude of published systematic reviews and meta-analyses. The aim of this Umbrella review was to consolidate the available evidence regarding the effect of complementary and alternative medicine on male infertility to inform clinical decision-making processes. |

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| **Methods** | A comprehensive search was conducted to identify systematic reviews and meta-analyses pertaining to the effects of complementary and alternative medicine on male infertility. This search encompassed various databases including MEDLINE, CINAHL, PubMed, Scopus, Proquest, Google Scholar, SID, EMBASE, Magiran, Cochrane Library, Iranmedex, ScienceDirect, SAGE. Subsequently, two researchers independently extracted the data from the selected meta-analyses and systematic reviews, and evaluated their methodological quality using the assessment of multiple systematic reviews 2 (AMSTAR2). |
| **Results** | This analysis encompassed **11 studies**, with four originating from Iran, two from Korea and five from China. The results regarding the effectiveness of complementary and alternative medicine are controversial, indicating a need for further research. The methodological quality of the systematic reviews and meta-analyses appraised by AMSTAR 2 was rated as low or critically low. This assessment is attributed to inadequate examination of publication biases in the reviews and a lack of discussion regarding the effect of risk of bias. |
| **Conclusion** | The existing evidence regarding the effectiveness of alternative and complementary medicine in addressing male infertility is limited. Furthermore, the overall methodological quality of the published systematic reviews and meta-analyses may have been underestimated as the use of AMSTAR2 appears to be a more precise appraisal instrument compared to its predecessor. |
| Acupuncture | Given the variety of interventions and different types of **acupuncture** and herbal drugs, unfortunately there is no sufficient evidence for the effectiveness of complementary and alternative medicine. Further studies are required to determine whether complementary and alternative medicine has positive effects on semen analysis parameters |

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