# Table des matières

***1. Systematic Reviews and Meta-Analysis*** ..... 1
1.1. Generic Acupuncture ..... 1
1.1.1. Bousema 2023 ..... 1
1.1.2. Wu 2023 ..... 1
1.1.3. Li 2022 ☆ ..... 2
1.1.4. Huang 2021 ∅ ..... 3
1.1.5. Song 2018 ★ ..... 3
1.1.6. Zhang 2018 ☆ ..... 4
1.1.7. Liu 2016 ☆ ..... 5
1.1.8. Meng 2016 ☆ ..... 5
1.1.9. Ma 2014 ☆ ..... 5
1.1.10. Savage 2014 Ø ..... 6
1.1.11. Savage 2012 Ø ..... 6
1.1.12. Kim 2012 Ø ..... 7
1.1.13. Savage 2009 Ø ..... 8
1.1.14. Savage 2007 Ø ..... 8
1.1.15. Park 2000 Ø ..... 9
1.1.16. Dobie 1999 Ø ..... 9
1.2. Special Acupuncture Techniques ..... 10
1.2.1. Electroacupuncture ..... 10
1.2.1.1. He 2016 Ø ..... 10
1.2.2. Scalp Acupuncture ..... 10
1.2.2.1. Chen 2025 ..... 10
1.2.3. Comparison of Acupuncture techniques ..... 11
1.2.3.1. Ji 2023 ..... 11
1.2.3.2. Pang 2019 ..... 11
***2. Overview of systematic reviews*** ..... 12
2.1. Chen 2026 ..... 12
2.2. Xu 2022 ..... 13
***3. Clinical Practice Guidelines*** ..... 13
3.1. Department of Veterans Affairs and the Department of Defense (VA/DoD, USA) 2024 Ø ..... 13
3.2. German Society for Otorhinolaryngology, Head and Neck Surgery e. V. (DGHNO-KHC, Germany) 2022 Ø ..... 14
3.3. Multidisciplinary European Guideline for Tinnitus (Europe) 2019 Ø ..... 14
3.4. Japan Audiological Society (JAS, Japan) 2019 Ø ..... 14
3.5. National Institute for Health and Clinical Excellence (NICE, UK) 2017 Ø ..... 14
3.6. The Association of the scientific Medical Societies (AWMF, Germany) 2015 Ø ..... 15
3.7. American Academy of Otolaryngology-Head and Neck Surgery Foundation (AAO-HNSF, USA) 2014 Ø ..... 15
3.8. Agency for Healthcare Research and Quality (ARQ, USA) 2013 Ø ..... 15
***4. Overviews of Clinical Practice Guidelines*** ..... 15
4.1. Meijers 2023 ..... 15

# Tinnitus

# Acouphènes

*Articles connexes*: - conduites thérapeutiques - pathologie - acupuncture expérimentale - qigong -

## 1. Systematic Reviews and Meta-Analysis

### 1.1. Generic Acupuncture

#### 1.1.1. Bousema 2023

Bousema EJ, Koops EA, van Dijk P, Dijkstra PU. Effects of Physical Interventions on Subjective Tinnitus, a Systematic Review and Meta-Analysis. Brain Sci. 2023 Jan 29;13(2):226. https://doi.org/10.3390/brainsci13020226

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| **Background** | Increasingly, patients suffering from subjective tinnitus seek help from physical therapists. Numerous randomised controlled trials (RCTs) have investigated the effect of physical interventions commonly used in physical therapy practice on subjective tinnitus. This systematic review and meta-analysis aimed to analyse the effects of physical interventions on tinnitus loudness, tinnitus annoyance, and scores on the Tinnitus Handicap Index (THI). |
| **Methods** | Four databases were searched from inception up to March 2022. A total of 39 RCTs were included in the systematic review, and 23 studies were appropriate for meta-analyses. Risk of bias assessments were also performed. Interventions analysed in at least five studies were summarised, including transcutaneous electrical nerve stimulation (TENS), laser therapy, and acupuncture. Random-effects meta-analysis models were used, and effect sizes were expressed as Hedge's standardised mean differences (SMD) with 95%CI's. |
| **Results** | The quality of three-quarters of the studies was limited due to insufficient allocation concealment, lack of adequate blinding, and small sample sizes. Large, pooled effects sizes were found for acupuncture (SMD: 1.34; 95%CI: 0.79, 1.88) and TENS (SMD: 1.17; 95%CI: 0.48, 1.87) on THI as well as for acupuncture on tinnitus loudness (VAS Loudness (SMD: 0.84; 95%CI: 0.33, 1.36) and tinnitus annoyance (SMD: 1.18; 95%CI: 0.00, 2.35). |
| **Conclusions** | There is some evidence that physical interventions (TENS and acupuncture, but not laser therapy) may be effective for tinnitus. However, the lack of high-quality studies and the risk of bias in many studies prohibits stronger conclusions. |

#### 1.1.2. Wu 2023

Wu Q, Wang J, Han D, Hu H, Gao H. Efficacy and safety of acupuncture and moxibustion for primary tinnitus: A systematic review and meta-analysis. Am J Otolaryngol. 2023 May-Jun;44(3):103821. https://doi.org/10.1016/j.amjoto.2023.103821

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| **Background** | Tinnitus is a common otological symptom that can seriously affect a patient's quality of life, and effective therapies are still lacking. A large number of studies have found that compared with traditional therapy, acupuncture and moxibustion treatment are beneficial for the treatment of primary tinnitus, although current evidence remains inconclusive. This systematic review and meta-analysis of randomized controlled trials (RCTs) aimed to evaluate the efficacy and safety of acupuncture and moxibustion for primary tinnitus. |
| **Methods** | We conducted a comprehensive literature review in multiple databases from inception through December 2021, including PubMed, Medline, Ovid, Embase, Science Direct, Chinese National Knowledge Infrastructure (CNKI), Wanfang Data, Chinese Biomedical Literature (CBM) and VIP Database. The database search was supplemented by subsequent periodic scrutiny of unpublished and ongoing RCTs from the Cochrane Central Register of Controlled Trials (CENTRAL) and the WHO International Clinical Trials Registry (ICTRP). We included RCTs that compared acupuncture and moxibustion with pharmacological therapies, oxygen or physical therapies, or no treatment, for treating primary tinnitus. The main outcome measures were Tinnitus Handicap Inventory (THI) and efficacy rate; the secondary outcome measures were Tinnitus Evaluation Questionnaire (TEQ), Pure Tone Average (PTA), Visual Analogue Scale (VAS), Hamilton Anxiety Scale (HAMA), Hamilton Depression Scale (HAMD) and adverse events. Data accumulation and synthesis included meta-analysis, subgroup analysis, publication bias, risk-of-bias assessment, sensitivity analysis, and adverse events. The Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) system was used to grade the evidence quality. |
| **Results** | We included **34 RCTs involving 3086 patients**. Results indicated that compared with the controls, acupuncture and moxibustion resulted in significantly lower scores on the THI, achieved a significantly higher efficacy rate, reduced scores on TEQ, PTA, VAS, HAMA and HAMD. The meta-analysis revealed that acupuncture and moxibustion have a good safety profile in the treatment of primary tinnitus. |
| **Conclusion** | The results showed that acupuncture and moxibustion for primary tinnitus yielded the greatest decrease in tinnitus severity and improvement in quality of life. Due to the low quality of GRADE evidence grade, the considerable heterogeneity among trials for several data syntheses, more high-quality studies with large sample sizes and longer follow-up periods are urgently needed. |

### 1.1.3. Li 2022 ☆

**RETRACTED.** Li Y, Sang D, Wu Z, Cao X. Systematic Evaluation of the Efficacy of Acupuncture Associated with Physical and Mental Intervention when Treating Idiopathic Tinnitus and the Improvement of Tinnitus Symptoms. Comput Math Methods Med. 2022 Aug 30;2022:6764909. https://doi.org/10.1155/2022/6764909.

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| **Objective** | To systematically evaluate the efficacy of acupuncture associated with physical and mental intervention when treating idiopathic tinnitus and the improvement of tinnitus symptoms, so as to supply evidence-based medicine for its popularization and adoption. |
| **Methods** | PubMed, EMBASE, ScienceDirect, Cochrane Library, China knowledge Network Database (CNKI), China VIP Database, Wanfang Database, and China Biomedical Literature Database (CBM) online database were searched for the controlled trial of acupuncture associated with physical and mental intervention when treating idiopathic tinnitus. The retrieval time limit is from January 2010 to March 2022. Separately, two researchers extracted the data, and according to the Cochrane Handbook 5.3, the bias risk of each piece of literature was assessed. The collected data were measured using RevMan5.3 statistical software. |

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| **Results** | Finally, 5 CT articles were included in this study, with a total sample size of 282. Meta-analysis showed that the effective rate of the study group was significantly higher than that of the control group (P < 0.05). The scores of tinnitus disorder scale (THI) after treatment were analyzed by Meta. The THI scores of the study group after treatment were significantly lower than those before treatment. Meta-analysis of the severity of tinnitus after treatment showed that the severity of tinnitus in the observation group after treatment was significantly lower than that before treatment. There is a certain publication deviation in the literature, which may be related to the heterogeneity of the research and the small number of literatures. |
| **Conclusion** | On the basis of acupuncture treatment, associated with physical and mental intervention is helpful to the recovery of patients with idiopathic tinnitus, can effectively improve their clinical symptoms, and is suitable for clinical application. A popularization of this concept in clinical practice is worth considering, but further research and follow-up with a higher methodological quality and longer intervention time are needed to confirm its efficacy. |

### 1.1.4. Huang 2021 ∅

Huang K, Liang S, Chen L, Grellet A. Acupuncture for tinnitus: a systematic review and meta-analysis of randomized controlled trials. Acupuncture in Medicine. 2021;39(4):264-271. [221972]. https://doi.org/10.1177/0964528420938380

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| **Objective** | To evaluate the efficacy/effectiveness of acupuncture for the treatment of tinnitus. |
| **Methods** | Four English and four Chinese databases were searched for randomized controlled trials (RCTs) of acupuncture for tinnitus published before 30 September 2018. RCTs applying acupuncture alone compared with conventional treatments, sham acupuncture, or no treatment, as well as acupuncture plus conventional treatments compared with conventional treatments alone, were included. The primary outcome was the visual analogue scale (VAS). Secondary outcomes included tinnitus handicap inventory (THI) and tinnitus severity index (TSI) scores. Meta-analysis was conducted using RevMan V5.3 software. The protocol was registered in the PROSPERO database (ref. CRD42018108692). |
| **Results** | **Eight studies involving 504 participants** were included. Meta-analysis showed no significant differences in the VAS score (mean difference (MD) = -1.81, 95% confidence interval (CI) = -3.69 to 0.07; p = 0.06) between the acupuncture and control groups. However, favorable effects of acupuncture on changes in THI score (MD = -10.11, 95% CI = -12.74 to -7.48; p < 0.001) and TSI score (MD = -8.36, 95% CI = -8.87 to -7.86; p < 0.001) were found. |
| **Conclusion** | Acupuncture had no significant effect on the primary outcome of VAS score compared with control treatment; however, positive effects on secondary outcomes (THI and TSI score) were observed in acupuncture versus control groups. Due to the low quality and small sample size of the included trials, the level of evidence was insufficient to draw any definitive conclusions. Further rigorous and high-quality studies with larger sample sizes should be conducted to confirm the efficacy/effectiveness of acupuncture for tinnitus. |

### 1.1.5. Song 2018 ★

Song Hualong, Wang Jingui. [Systematic review and Meta analysis of acupuncture for the treatment of neuropathic tinnitus]. Journal of Tianjin University of Traditional Chinese Medicine. 2018;4:305-309. [201767].

[目的]对针刺相比于药物治疗神经性耳鸣的优效性进行系统评价和Meta分析.[方法]对相关数据库进行检索,收集近5年内针刺治疗神经性耳鸣的随机对照试验,根据纳入和排除标准,选择符合研究标准的文献,根据Cochrane系统评价手册5.0版推荐的方法进行文献质量分析,并采用RevMan5.3进行Meta分析,并采用漏斗图进行偏倚分析.[结果]以受试者数量为计数单位的7篇文献中,针刺组330例,对照组284例,合并效应量OR=3.26,95%CI(2.09,5.08),Z=5.23,P<0.00001,提示针刺治疗神经性耳鸣总有效率优于常规药物治疗,差异有统计学意义.以患耳数量为计数单位的2篇文献中,针刺组280例,对照组280例,合并效应量OR=1.39,95%CI(0.93,2.08),Z=1.62,P=0.11,提示针刺治疗神经性耳鸣相比于常规药物治疗的差异不具有统计学意义,但这两篇文献的数据很可能存在重叠.[结论]对于神经性耳鸣的治疗,针刺的总有效率优于常规药物治疗,且具有统计学意义.但由于文献质量的限制,该结果尚有待进一步论证.

| [Automatic translation | |
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| **Purpose** | Systematic evaluation and meta-analysis of the superiority of drug-induced neurological tinnitus. |
| **Method** | Search the relevant database, collect randomized controlled trials of acupuncture for neurological tinnitus in the past 5 years, and select according to the inclusion and exclusion criteria. The literature of the study standard was analyzed according to the method recommended in the Cochrane System Evaluation Manual, version 5.0, and Meta-analysis was performed using RevMan 5.3, and the funnel plot was used for bias analysis. |
| **Results** | 7 in terms of number of subjects. In the literature, 330 patients in the acupuncture group and 284 patients in the control group, the combined effect volume OR=3.26, 95% CI (2.09, 5.08), Z=5.23, P<0.00001, suggesting that the total effective rate of acupuncture treatment of neurological tinnitus is excellent. In the conventional drug treatment, the difference was statistically significant. Among the two articles with the number of ears, the 280 patients in the acupuncture group and the 280 patients in the control group had a combined effect rate of OR=1.39, 95% CI (0.93, 2.08). , Z=1.62, P =0.11, suggesting that acupuncture treatment of neurological tinnitus is not statistically significant compared to conventional drug therapy, but the data in these two literatures are likely to overlap. |
| **Conclusion** | For the treatment of neurological tinnitus, the total of acupuncture Efficacy is superior to conventional drug therapy and is statistically significant. However, due to the limitations of literature quality, the results need to be further demonstrated. |

### 1.1.6. Zhang 2018 ☆

Zhang Zeyu, Fan Weiwei, Hu Luman. [Effects of Acupuncture on Tinnitus Treating: A Systematic Review and Meta-analysis]. Journal of Zhejiang Chinese Medical University. 2018;(9). [182516].

| **Objective** | This study aimed to evaluate the effectiveness of acupuncture in patients of tinnitus. |
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| **Methods** | Randomized controlled trials(RCT)and controlled clinical trials(CCT) of treating tinnitus with acupuncture were gathered from database inception to January 2017: Embase, PubMed, Cochrane Central, CBM disc, WangFang, VIP database and China national knowledge infrastructure(CNKI). The software Stata12.0 was used for the Meta-analysis. The systematic review was performed for the included studies. |
| **Results** | **Seventeen studies involving 1138 patients** met the inclusion criteria. The results of the Meta-analysis basing on overall effective rate showed a significant difference of acupuncture on treating tinnitus compared with control groups [RR=1.21, 95%CI:1.12~1.32, P<0.01, I2=0%], Begger's test was performed and Pr> z=0.152>0.05, which indicated no obvious publication bias. The result of the subgroup analysis basing on Tinnitus Handicap Inventory(THI) indicated a remarkable difference of acupuncture on treating tinnitus compared with drug control groups [SMD=-0.76, 95%CI:-1.07 ~-0.45, P<0.01, I2=0.0%]. |

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| **Conclusion** | The effect of acupuncture therapy on tinnitus is better than that of the drug control group, acupuncture treatment for the degree of tinnitus handicap is better than the drug control group. However, due to the low quality of the included studies, more high-quality multi-center, randomized, double-blind, controlled clinical trials are needed for further proving. |

### 1.1.7. Liu 2016 ☆

Liu F, Han X, Li Y, Yu S. Acupuncture in the treatment of tinnitus: a systematic review and meta-analysis. Eur Arch Otorhinolaryngol. 2016;273(2):285-94. [188228].

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| **Objectives** | This study aimed at a systematic review and meta-analysis of all available randomized controlled trials (RCTs) using acupuncture to treat tinnitus. |
| **Methods** | Five electronic databases, in both English and Chinese, were searched. All studies in our review and meta-analysis included parallel RCTs of tinnitus patients which compared subjects receiving acupuncture (or its other forms, such as electroacupuncture) to subjects receiving no treatment, sham treatment, drugs or basic medical therapy. Data from the articles were validated and extracted using a predefined data extraction form. |
| **Results** | Nearly all of Chinese studies reported positive results, while most of English studies reported negative results. Analysis of the combined data found that the acupuncture treatments seemed to provide some advantages over conventional therapies for tinnitus. It had difference in acupuncture points and sessions between Chinese studies and English studies. Methodological flaws were also found in many of the RCTs, especially in Chinese studies. |
| **Conclusions** | The results of this review suggest that acupuncture therapy may offer subjective benefit to some tinnitus patients. Acupuncture points and sessions used in Chinese studies may be more appropriate, whereas these studies have many methodological flaws and risk bias, which prevents us making a definitive conclusion. |

### 1.1.8. Meng 2016 ☆

Meng Dan, Tang Jiqin. [The Meta-analysis of tinnitus on randomized controlled clinical trials of acupuncture treatment]. Asia-Pacific Traditional Medicine 2016;9:80-85. [186903].

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| **Objectives** | Purpose Evidence-based evaluation of individual acupuncture in the treatment of tinnitus. |
| **Methods** | Collecting clinical RCT and CCT literatures about acupuncture treatment to this disease, from CNKI database and the library, from 2000 to 2015. |
| **Results** | Collected **25 in all**. Taking advantage of Cochrane systematic review methods by using RevMen5. 3 Meta-analysis software to analyze the original statistics. |
| **Conclusions** | **Acupuncture is effective to treat this desease**. Both the total effective percentage and the recovery rate are higher than medicine. Some special acupuncture methods and acupuncture combined with medicine are better than the two alone. But our research is not concludded enoughhigh-qualitited, big-sampled, Much-centralited literatures, so our research needs more proved. |

### 1.1.9. Ma 2014 ☆

Ma Wen-Han, Zhang Ding-Qi, Wang Zhao-Jun, Mei Zhi-Gang. [Meta Analysis on domestic and overseas acupuncture treatment for nervous tinnitus]. Chinese Journal of Information on Traditional Chinese

Medicine 2014;2:17-22. [186952].

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| **Objectives** | To conduct a systematic review with evidence collected from randomized controlled trials (RCTs) of domestic and overseas acupuncture for nervous tinnitus. |
| **Methods** | RCTs were searched in several databases i. e. CNKI, VIP, CBM and PubMed, using the keywords of acupuncture and tinnitus. The efficacy and methodologies were evaluated using meta-analysis by RevMan5. 0. Efficacy indexes i. e. recovery rate, significant efficiency rate, total effective rate of acupuncture in treating nervous tinnitus were assessed using odds ratio (OR). Funnel plot was drawn to analyze publication bias. Begg's rank test and Egger's linear regression test were conducted to measure symmetry in funnel plot by using Stata 11. 0. |
| **Results** | **Fifteen RCTs involving 1082 patients** met the inclusive criteria. The results of meta-analyses showed that recovery rate (OR=2. 82, 95%CI 1. 89 to 4. 20), significant efficiency rate (OR=1. 75, 95%CI 1. 26 to 2. 44), total effective rate (OR=3. 68, 95%CI 2. 62 to 5. 16) were significantly higher in acupuncture group than control group. Begg's rank test (P=0. 350) and Egger's linear regression test (P=0. 887) showed partly symmetry in funnel plot with unfilled corner, which indicated that some degree of bias existed in the included studies. |
| **Conclusions** | According to the analysis results, **acupuncture or acupuncture combining other therapies were superior to pure medication or non-acupuncture treatments**. However, high-quality, large-sample, randomized, controlled trials seem to be needed to further confirm the efficacy of acupuncture, owing to the different standards and research methods, limited qualities of the included studies. |

### 1.1.10. Savage 2014 Ø

Savage J, Waddell A. Tinnitus. Bmj Clin Evid. 2014. [159695].

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| **Introduction** | Up to 18% of people in industrialised societies are mildly affected by chronic tinnitus, and 0.5% report tinnitus having a severe effect on their daily life. Tinnitus can be associated with hearing loss, acoustic neuromas, drug toxicity, ear diseases, and depression. Tinnitus can last for many years, and can interfere with sleep and concentration. |
| **Methods and outcomes** | We conducted a systematic review and aimed to answer the following clinical question: What are the effects of treatments for chronic tinnitus? We searched: Medline, Embase, The Cochrane Library, and other important databases up to July 2011 (Clinical Evidence reviews are updated periodically; please check our website for the most up-to-date version of this review). We included harms alerts from relevant organisations such as the US Food and Drug Administration (FDA) and the UK Medicines and Healthcare products Regulatory Agency (MHRA). |
| **Results** | We found 29 systematic reviews, RCTs, or observational studies that met our inclusion criteria. We performed a GRADE evaluation of the quality of evidence for interventions. |
| **Conclusions** | In this systematic review, we present information relating to the effectiveness and safety of the following interventions: acamprosate, **acupuncture**, antidepressant drugs, benzodiazepines, carbamazepine, cinnarizine, electromagnetic stimulation, ginkgo biloba, hearing aids, hypnosis, psychotherapy, tinnitus-masking devices, and tinnitus retraining therapy. |
| Acupuncture | We don't know whether acupuncture is effective in people with tinnitus. |

### 1.1.11. Savage 2012 Ø

Savage J, Waddell A. Tinnitus. Clin Evid (Online).2012.[166089].

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|---|---|
| **Objectives** | Up to 18% of people in industrialised societies are mildly affected by chronic tinnitus, and 0.5% report tinnitus having a severe effect on their daily life. Tinnitus can be associated with hearing loss, acoustic neuromas, drug toxicity, ear diseases, and depression. Tinnitus can last for many years, and can interfere with sleep and concentration. |
| **Methods** | We conducted a systematic review and aimed to answer the following clinical question: What are the effects of treatments for chronic tinnitus? We searched: Medline, Embase, The Cochrane Library, and other important databases up to July 2011 (Clinical Evidence reviews are updated periodically; please check our website for the most up-to-date version of this review). We included harms alerts from relevant organisations such as the US Food and Drug Administration (FDA) and the UK Medicines and Healthcare products Regulatory Agency (MHRA). |
| **Results** | We found 29 systematic reviews, RCTs, or observational studies that met our inclusion criteria. We performed a GRADE evaluation of the quality of evidence for interventions. |
| **Conclusions** | In this systematic review, we present information relating to the effectiveness and safety of the following interventions: acamprosate, **acupuncture**, antidepressant drugs, benzodiazepines, carbamazepine, cinnarizine, electromagnetic stimulation, ginkgo biloba, hearing aids, hypnosis, psychotherapy, tinnitus-masking devices, and tinnitus retraining therapy. |
| Acupuncture | We don't know whether acupuncture is effective in people with tinnitus, as we found few studies. |

### 1.1.12. Kim 2012 Ø

Kim Ji, Choi Jy, Lee Dh, Choi Ty, Lee Ms, Ernst E. Acupuncture for the treatment of tinnitus: a systematic review of randomized clinical trials. BMC Complement Altern Med. 2012;:12-97. [166535] .

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|---|---|
| **Background** | Complementary and alternative medicine (CAM) has frequently been used to treat tinnitus, and acupuncture is a particularly popular option. The objective of this review was to assess the evidence concerning the effectiveness of acupuncture as a treatment for tinnitus. |
| **Methods** | Fourteen databases were searched from the dates of their creation to July 4th, 2012. Randomized clinical trials (RCTs) were included if acupuncture was used as the sole treatment. The Cochrane risk of bias tool was used to assess the risk of bias. |
| **ResultS** | A total of **9 RCTs** met all the inclusion criteria. Their methodological quality was mostly poor. Five RCTs compared the effectiveness of acupuncture or electroacupuncture with sham acupuncture for treating tinnitus. The results failed to show statistically significant improvements. Two RCTs compared a short one-time scalp acupuncture treatment with the use of penetrating sham acupuncture at non-acupoints in achieving subjective symptom relief on a visual analog scale; these RCTs demonstrated significant positive effects with scalp acupuncture. Two RCTs compared acupuncture with conventional drug treatments. One of these RCTs demonstrated that acupuncture had statistically significant effects on the response rate in patients with nervous tinnitus, but the other RCT did not demonstrate significant effects in patients with senile tinnitus. |
| **Conclusions** | The number, size and quality of the RCTs on the effectiveness of acupuncture for the treatment of tinnitus are not sufficient for drawing definitive conclusions. Further rigorous RCTs that overcome the many limitations of the current evidence are warranted. |

### 1.1.13. Savage 2009 Ø

Savage J, Cook S, Waddell A. Tinnitus.. BMJ Clin Evid. 2009. [187953].

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|---|---|
| **Background** | Up to 18% of people in industrialised societies are mildly affected by chronic tinnitus, and 0.5% report tinnitus having a severe effect on their daily life. Tinnitus can be associated with hearing loss, acoustic neuromas, drug toxicity, ear diseases, and depression. Tinnitus can last for many years, and can interfere with sleep and concentration. |
| **Methods** | We conducted a systematic review and aimed to answer the following clinical question: What are the effects of treatments for chronic tinnitus? We searched: Medline, Embase, The Cochrane Library, and other important databases up to May 2009 (Clinical Evidence reviews are updated periodically; please check our website for the most up-to-date version of this review). We included harms alerts from relevant organisations such as the US Food and Drug Administration (FDA) and the UK Medicines and Healthcare products Regulatory Agency (MHRA). |
| **Results** | We found 27 systematic reviews, RCTs, or observational studies that met our inclusion criteria. We performed a GRADE evaluation of the quality of evidence for interventions. |
| **Conclusions** | In this systematic review, we present information relating to the effectiveness and safety of the following interventions: acamprosate; **acupuncture**; antidepressant drugs; benzodiazepines; carbamazepine; cinnarizine; electromagnetic stimulation; ginkgo biloba; hearing aids; hypnosis; psychotherapy; tinnitus-masking devices; and tinnitus retraining therapy. |
| Acupuncture | We don't know whether acupuncture is effective in people with tinnitus, because very few studies have been carried out. |

### 1.1.14. Savage 2007 Ø

Savage J, Cook S, Wadell A. Tinnitus. BMJ Clin Evid. 2007. [187954].

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|---|---|
| **Background** | Up to 18% of people in industrialised societies have mild tinnitus, which severely affects daily life in 0.5% of people. Tinnitus can be associated with hearing loss, acoustic neuromas, drug toxicity, ear diseases, and depression. Tinnitus can last for many years, and can interfere with sleep and concentration. |
| **Methods** | We conducted a systematic review and aimed to answer the following clinical question: What are the effects of treatments for chronic tinnitus? We searched: Medline, Embase, The Cochrane Library and other important databases up to December 2006. (BMJ Clinical evidence reviews are updated periodically, please check our website for the most up-to-date version of this review). We included harms alerts from relevant organisations such as the US Food and Drug Administration (FDA) and the UK Medicines and Healthcare products Regulatory Agency (MHRA). |
| **Results** | We found 37 systematic reviews, RCTs, or observational studies that met our inclusion criteria. We performed a GRADE evaluation of the quality of evidence for interventions. |
| **Conclusions** | In this systematic review we present information relating to the effectiveness and safety of the following interventions: acamprosate, **acupuncture**, antidepressant drugs, baclofen, benzodiazepines, carbamazepine, cinnarizine, ear-canal magnets, electromagnetic stimulation, ginkgo biloba, hearing aids, hyperbaric oxygen, hypnosis, lamotrigine, nicotinamide, psychotherapy, tinnitus-masking devices, tinnitus retraining therapy, zinc. |

### 1.1.15. Park 2000 Ø

Park J et al. Efficacy of acupuncture as a treatment for tinnitus: a systematic review. Arch Otolaryngol Head Neck Surg. 2000;126(4):489-92. [86318].

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| **Background** | Tinnitus is a prevalent condition for which patients may seek treatment with acupuncture since no conventional treatment has been shown to be effective. |
| **Objective** | To summarize and critically review all randomized controlled trials on the efficacy of acupuncture as a treatment for tinnitus. |
| **Method** | Data sources: Four independent computerized literature searches (MEDLINE, Cochrane Controlled Trials Register, Embase, and CISCOM) were conducted in December 1998 using the key words acupuncture and tinnitus. Study selection: All randomized controlled trials that compared any form of acupuncture with any control intervention in the treatment of tinnitus were included. Data extraction: Data were extracted by 2 authors independently. The methodological quality of the included randomized controlled trials was assessed using the Jadad score. Data synthesis: **Six randomized controlled trials were included in the review**, 4 of which used crossover design. Four studies used manual acupuncture and 2 used electroacupuncture. Five of 6 studies used inconsistent acupoints. Three studies scored 3 points or more on the Jadad scale. Main outcome measures: Outcome measurements were visual analog scale scores for loudness, annoyance, and awareness of tinnitus; subjective severity scale scores for tinnitus; or Nottingham Health Profile scores. |
| **Results** | Two unblinded studies showed a positive result, whereas 4 blinded studies showed no significant effect of acupuncture. |
| **Conclusion** | Acupuncture has not been demonstrated to be efficacious as a treatment for tinnitus on the evidence of rigorous randomized controlled trials. |

### 1.1.16. Dobie 1999 Ø

Dobie RA. A review of randomized clinical trials in tinnitus. Laryngoscope. 1999;109(8):1202-11. (eng). [59862]

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| **Objectives** | Review reports of randomized clinical trials (RCTs) in tinnitus to identify well-established treatments, promising developments, and opportunities for improvement in this area of clinical research. |
| **Methods** | Study DESIGN: Literature review of RCTs (1964-1998) identified by MEDLINE and OLD MEDLINE searches and personal files. Studies were compared with the RCT criteria of Guyatt et al. for quality of design, performance, and analysis; “positive” results were critically examined for potential clinical relevance. |
| **Results** | Sixty-nine RCTs evaluated tocainide and related drugs, carbamazepine, benzodiazepines, tricyclic antidepressants, 16 miscellaneous drugs, psychotherapy, electrical/magnetic stimulation, **acupuncture**, masking, biofeedback, hypnosis, and miscellaneous other nondrug treatments. No treatment can yet be considered well established in terms of providing replicable long-term reduction of tinnitus impact, in excess of placebo effects. |
| **Conclusions** | Nonspecific support and counseling are probably helpful, as are tricyclic antidepressants in severe cases. Benzodiazepines, newer antidepressants, and electrical stimulation deserve further study. Future tinnitus therapeutic research should emphasize adequate sample size, open trials before RCTs, careful choice of outcome measures, and long-term follow-up. |

## 1.2. Special Acupuncture Techniques

### 1.2.1. Electroacupuncture

#### 1.2.1.1. He 2016 Ø

He M, Li X, Liu Y, Zhong J, Jiang L, Liu Y et al. Electroacupuncture for Tinnitus: A Systematic Review. PLoS One 2016;11(3). [176551].

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| **Objectives** | Treatment effects of electroacupuncture for patients with subjective tinnitus has yet to be clarified. To assess the effect of electroacupuncutre for alleviating the symptoms of subjective tinnitus. |
| **Methods** | Extensive literature searches were carried out in three English and four Chinese databases (PubMed, EMBASE, Cochrane Library, CNKI, Wanfang Chinese Digital Periodical and Conference Database, VIP, and ChiCTR).The date of the most recent search was 1 June 2014. Randomized controlled trials (RCTs) or quasi-RCTs were included. The titles, abstracts, and keywords of all records were reviewed by two authors independently. The data were collected and extracted by three authors. The risk of bias in the trials was assessed in accordance with the Cochrane Handbook, version 5.1.0. (http://www.handbook.cochrane.org). |
| **Results** | Eighty-nine studies were retrieved. After discarding 84 articles, five studies with 322 participants were identified. Assessment of the methodological quality of the studies identified weaknesses in all five studies. All studies were judged as having a high risk of selection and performance bias. The attrition bias was high in four studies. Incompleteness bias was low in all studies. Reporting bias was unclear in all studies. Because of the limited number of trials included and the various types of interventions and outcomes, we were unable to conduct pooled analyses. |
| **Conclusions** | Due to the poor methodological quality of the primary studies and the small sample sizes, no convincing evidence that electroacupuncture is beneficial for treating tinnitus could be found. There is an urgent need for more high-quality trials with large sample sizes for the investigation of electroacupuncture treatment for tinnitus. |

### 1.2.2. Scalp Acupuncture

#### 1.2.2.1. Chen 2025

Chen J, Jing R. The clinical efficacy of Scalp acupuncture for Tinnitus:A Systematic Review and Meta-Analysis. Complement Ther Med. 2025 Jan 17:103129. https://doi.org/10.1016/j.ctim.2025.103129. Epub ahead of print. PMID: 39828220.

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| **Backgound** | No single treatment is considered to be universally effective for tinnitus.Scalp acupuncture has been explored as a potential treatment. |
| **Objective** | This systematic review and meta-analysis aim to evaluate the clinical efficacy of scalp acupuncture in treating tinnitus. |
| **Methods** | A comprehensive search of relevant databases was conducted to identify randomized controlled trials comparing scalp acupuncture with a control treatment for tinnitus.The clinical efficacy rate and reduction in tinnitus severity were assessed using relative risk (RR) and standardized mean difference (SMD), respectively. Sensitivity analyses was performed to investigate sources of heterogeneity. |

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| **Results** | A total of **20 research studies,with 1430 participants**,were included.The systematic review and meta-analysis revealed that the scalp acupuncture groups had a significantly higher clinical effective rate compared to the control groups (RR=1.25, 95% CI 1.16 to 1.35, p<0.00001),with low heterogeneity(p=0.27,I2=20%).The scalp acupuncture groups and scalp acupuncture plus auxiliary acupoints groups had greater reduction in tinnitus severity compared to the control groups(SMD=-0.76,95%CI:-1.02,-0.51,p<0.00001;SMD:-0.93,95%CI:-1.52,-0.33,p=0.002, respectively),with a moderate heterogeneity(p=0.005,I2=62%) and a significant heterogeneity (p<0.00001,I2=86%) observed due to differences in study design, sample characteristics, and intervention protocols.Sensitivity analysis confirmed the stability of the results.The summary table generated through GRADEpro indicated that the certainty of evidence ranged from moderate to low. |
| **Conclusions** | Scalp acupuncture has demonstrated promising efficacy in the treatment of tinnitus compared to traditional acupuncture or pharmacotherapy. However, the current evidence is limited due to potential biases and heterogeneity across studies.Future studies should standardize protocols, ensure higher methodological rigor, and explore long-term effects to validate the findings further. |

### 1.2.3. Comparison of Acupuncture techniques

#### 1.2.3.1. Ji 2023

Ji L, Zhang H, Wang L, Yin Z, Cen J, Guo Y. Network meta-analysis of acupuncture for tinnitus. Medicine (Baltimore). 2023 Sep 29;102(39):e35019. https://doi.org/10.1097/MD.0000000000035019

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| **Objective** | To provide evidence for medical management of tinnitus based on an assessment of the evidence concerning the effectiveness of acupuncture as a treatment for tinnitus using network meta-analysis (NMA). |
| **Methods** | We conducted a systematic literature review by searching 8 national and international databases (inception to February 2023) for randomized controlled trials (RCTs) for tinnitus. Only RCTs that recruited participants aged over 18 and diagnosed with tinnitus, and that evaluated acupuncture or acupuncture in combination with conventional western medical therapy were included. We used response rate and tinnitus handicap inventory (THI) to examine efficacy. We conducted NMA with random effects, and the rate ratio or mean difference with its 95% credible interval was calculated. In addition, we ranked all treatments via their SUCRA and assessed the quality of evidence according to the GRADE criteria. |
| **Results** | A total of 2575 patients were included in the study. The main findings of the current NMA were that acupoint injection combined with warm acupuncture was the most effective for response rate, followed by warm acupuncture and acupoint injection combined with western medical treatment. Acupuncture combined with western medical treatment was the most effective for THI, followed by electroacupuncture combined with warm acupuncture and acupuncture combined with moxibustion. |
| **Conclusion** | Acupuncture seems to be a better trend treatment for tinnitus. Further rigorous RCT studies that include direct comparisons for different acupuncture-related treatments are encouraged to provide the most promising evidence for patients with tinnitus. |

#### 1.2.3.2. Pang 2019

Pang P, Shi Y, Xu H, Deng L, Wu S, Chen X. Acupuncture methods put to the test for a tinnitus study: A Bayesian analysis. Complement Ther Med. 2019 Feb;42:205-213. https://doi.org/10.1016/j.ctim.2018.11.017

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| **Backgound** | This study evaluated the effectiveness of different methods of acupuncture in the treatment of tinnitus due to neurological causes. In total, eight treatment methods were selected for this study: traditional acupuncture, electroacupuncture, moxibustion acupuncture, medicine only without acupuncture, traditional acupuncture with supplementary medicine, electroacupuncture with supplementary medicine, moxibustion acupuncture with supplementary medicine, and an electroacupuncture and moxibustion acupuncture combination. All sample data come from the results of clinical treatment studies. |
| **Methods** | Both Chinese- and English-language online databases were searched. The Chinese language databases included the Wanfang database, the China National Knowledge Infrastructure (CNKI) database, and the VIP Chinese Science and Technique Journals database. The English language databases included PubMed, Web of Science, Embase and Cochrane Library. After the previously mentioned eight interventions for the treatment of neurological tinnitus were tested in a randomized controlled trial (RCT), the data were extracted, and the effectiveness of each intervention was evaluated. A meta-analysis was performed using Stata14.0 and GeMTC 0.14.3 statistical software. |
| **Results** | A total of **40 studies** were included, which contained a total of **3657 patients** and 8 intervention methods. There was a trend of greater effectiveness of moxibustion acupuncture, followed by moxibustion acupuncture combined with electroacupuncture, moxibustion acupuncture combined with supplementary medicine, acupuncture combined with drugs, electroacupuncture with supplementary medicine, electroacupuncture, traditional acupuncture, and medicine only without acupuncture. There was no significant difference between the results of indirect comparisons and direct comparisons. |
| **Conclusions** | Eight interventions are all effective in the treatment of neurological tinnitus, but moxibustion acupuncture seems to be a better trend treatment for tinnitus. |

# 2. Overview of systematic reviews

## 2.1. Chen 2026

Chen K, Monaghan NP, Nguyen SA, Chun WB, Mills JF, Brennan E, Meyer TA. Outcomes of Tinnitus Interventions: An Umbrella Review of Systematic Reviews with Meta-Analysis. Ann Otol Rhinol Laryngol. 2026;135(5):342-355. https://doi.org/10.1177/00034894251394754

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| **Background** | Tinnitus is a highly prevalent and challenging neurotologic condition affecting over 740 million individuals worldwide. Despite the growing number of studies, treatment approaches remain fragmented and inconsistent. This umbrella review aims to aggregate results from systematic review to comprehensively synthesize the available evidence. |
| **Methods** | Following PRISMA guidelines, we systematically searched CINAHL, COCHRANE Library, PubMed, and Scopus through April 2025. Systematic reviews with meta-analyses of primary tinnitus interventions were included. Outcomes focused on validated measures of tinnitus severity, distress, loudness, and quality of life. Study quality was assessed using AMSTAR-2. |
| **Results** | A total of 44 systematic reviews were included, covering 7 intervention domains. Cognitive behavioral therapy (CBT), hearing aids, tinnitus retraining therapy (TRT), and sound/music therapy consistently improved tinnitus-related outcomes (eg, THI reductions up to -14.50, $P < .001$). Cochlear implantation yielded the largest effects (eg, THI -29.97) but is reserved for patients with moderate-to-profound sensorineural hearing loss who are not adequately helped by hearing aids. Neuromodulation and **acupuncture** showed modest or inconsistent benefits with high heterogeneity. |

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| **Conclusion** | This umbrella review provides the current and comprehensive analysis of tinnitus treatments. CBT, hearing aids, TRT, and sound/music therapy show consistent benefit. Cochlear implantation offers the greatest effect in patients with moderate-to-profound hearing loss unresponsive to hearing aids. Other therapies show mixed evidence. These findings offer a much-needed evidence framework to guide treatment decisions and future research. |

### 2.2. Xu 2022

Xu X, Xie H, Liu Z, Guo T, Zhang Y. Effects of acupuncture on the outcome of tinnitus: An overview of systematic reviews. Front Neurol. 2022 Nov 18;13:1061431.
https://doi.org/10.3389/fneur.2022.1061431

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| **Background** | eatment, we assessed the methodological quality, reporting quality, and evidence quality of systematic reviews/meta-analyses (SRs/MAs) of acupuncture in the treatment of tinnitus. |
| **Methods** | From inception to March 2022, we conducted a detailed and comprehensive search of eight electronic databases in Chinese and English. The Assessing the Methodological Quality of Systematic Reviews 2 (AMSTAR-2), the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist, and the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) were used to assess methodological quality, reporting quality and evidence quality for inclusion in SRs/MAs, respectively. |
| **Results** | **Fourteen published SRs/Mas** met the inclusion criteria and were included in the study. Eleven studies reported that acupuncture was effective in treating tinnitus, and three studies reported that no firm conclusions could be drawn about the effectiveness of acupuncture in treating tinnitus. The results of the AMSTAR-2 assessment showed that the methodological quality of the included studies was relatively low in general, with one being moderate quality and the rest being very low quality. The PRISMA checklist evaluation results showed that no studies fully report checklists, with protocol registration and search strategies being the main reporting weaknesses. The GRADE assessment showed that no results were high-quality evidence, 17 results were moderate-quality evidence, 25 results were low-quality evidence, and 12 results were very low-quality evidence. |
| **Conclusion** | Acupuncture seems to be a positive and effective treatment for tinnitus. However, the methodological quality and quality of evidence for SRs/MAs in the included studies were generally low, and this result must be viewed with caution. Therefore, more high-quality, large-scale, multi-center randomized controlled trials are needed in the future to verify the effectiveness of acupuncture in the treatment of tinnitus. |

## 3. Clinical Practice Guidelines

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| ⊕ positive recommendation (regardless of the level of evidence reported)<br>Ø negative recommendation (or lack of evidence) |

### 3.1. Department of Veterans Affairs and the Department of Defense (VA/DoD, USA) 2024 Ø

VA/DoD Clinical Practice Guideline. Tinnitus. 2024. Washington, DC: U.S. Government Printing Office.
https://www.healthquality.va.gov/guidelines/CD/tinnitus/VADoD-CPG-Tinnitus-Full-CPG-2024_Final_508.pdf

There is insufficient evidence to recommend for or against acupuncture for tinnitus management. Strength : Neither for nor against. Category : Reviewed, New-added

## 3.2. German Society for Otorhinolaryngology, Head and Neck Surgery e. V. (DGHNO-KHC, Germany) 2022 Ø

Mazurek B, Hesse G, Sattel H, Kratzsch V, Lahmann C, Dobel C. S3 Guideline: Chronic Tinnitus : German Society for Otorhinolaryngology, Head and Neck Surgery e. V. (DGHNO-KHC). HNO. 2022 Nov;70(11):795-827. https://doi.org/10.1007/s00106-022-01207-4

4.1.11 Acupuncture Evidence-based recommendation (Electro)acupuncture should not be practiced for chronic tinnitus. Strength of evidence: 1c(no proof of efficacy); level of recommendation: recommendation Classification of consensus strength: strong consensus (100%) Based on RCTs, there is no evidence that acupuncture or electroacupuncture have proven efficacy on tinnitus. There is moderate evidence that they can improve comorbidities such as tension or pain with a possible positive effect on tinnitus.

## 3.3. Multidisciplinary European Guideline for Tinnitus (Europe) 2019 Ø

Cima RFF, Mazurek B, Haider H, Kikidis D, Lapira A, Noreña A, Hoare DJ. A multidisciplinary European guideline for tinnitus: diagnostics, assessment, and treatment. HNO. 2019 Mar;67(Suppl 1):10-42. https://doi.org/10.1007/s00106-019-0633-7

NO RECOMMENDATION. There is evidence for safety but little high-level evidence for the effectiveness of acupuncture. Recommendation is based on systematic review.

## 3.4. Japan Audiological Society (JAS, Japan) 2019 Ø

- Japan Audiological Society. [Clinical Practice Guidelines For the Diagnosis and Management of Tinnitus 2019] . Tokyo: Kanehara Co. Ltd.; 2019 [in Japanese] .

*Cited by* Okawa Y, Yamashita H, Masuyama S, Fukazawa Y, Wakayama I. Quality assessment of Japanese clinical practice guidelines including recommendations for acupuncture. Integr Med Res. 2022 Sep;11(3):100838. https://doi.org/10.1016/j.imr.2022.100838

- Ogawa K, Sato H, Takahashi M, et al. Clinical practice guidelines for diagnosis and treatment of chronic tinnitus in Japan. Auris Nasus Larynx 2020;47:1–6. https://doi.org/10.1016/j.anl.2019.09.007

Tinnitus. Grade 2D: weak recommendation (NOT to use)

## 3.5. National Institute for Health and Clinical Excellence (NICE, UK) 2017 Ø

Nice CKS Clinical knowledge summaries).. Tinnitus. London (UK): National Institute for Health and Clinical Excellence (NICE). 2017:27p. [196019].

Medication and complementary and alternative therapies (such as dietary supplements, herbal medicines, acupuncture) are generally not recommended for the treatment of tinnitus.

### 3.6. The Association of the scientific Medical Societies (AWMF, Germany) 2015 Ø

Zenner HP, Delb W, Kröner-Herwig B, Jäger B, Peroz I, Hesse G, Mazurek B, Goebel G, Gerloff C, Trollmann R, Biesinger E, Seidler H, Langguth B. Zur interdisziplinären S3-Leitlinie für die Therapie des chronisch-idiopathischen Tinnitus [On the interdisciplinary S3 guidelines for the treatment of chronic idiopathic tinnitus]. HNO. 2015 Jun;63(6):419-27. German. https://doi.org/10.1007/s00106-015-0011-z The Association of the scientific Medical Societies (AWMF). German S3 Guideline: 017/064: Chronic tinnitus. 2015;(017/064 S3).

Acupuncture. There are no studies proving the effectiveness of acupuncture.

### 3.7. American Academy of Otolaryngology-Head and Neck Surgery Foundation (AAO-HNSF, USA) 2014 Ø

Tunkel DE, Bauer CA, Sun GH, Rosenfeld RM, Chandrasekhar SS, Cunningham ER Jr, Archer SM, Blakley BW, Carter JM, Granieri EC, Henry JA, Hollingsworth D, Khan FA, Mitchell S, Monfared A, Newman CW, Omole FS, Phillips CD, Robinson SK, Taw MB, Tyler RS, Waguespack R, Whamond EJ. Clinical practice guideline: tinnitus. Otolaryngol Head Neck Surg. 2014 Oct;151(2 Suppl):S1-40. [177432].

*Statement 12. Acupuncture*. No recommendation can be made regarding the effect of acupuncture in patients with persistent bothersome tinnitus (No recommendation based on poor quality trials, no benefit, and minimal harm).

### 3.8. Agency for Healthcare Research and Quality (ARQ, USA) 2013 Ø

Evaluation and Treatment of Tinnitus: Comparative Effectiveness Agency for Healthcare Research and Quality (ARQ, USA). 2013;:294P. [192679].

Only single studies evaluated high-frequency electromagnetic energy, ACRN, and **acupuncture**. Based on single studies for each of these interventions, there is insufficient evidence to conclude whether these findings represent true effects.

## 4. Overviews of Clinical Practice Guidelines

### 4.1. Meijers 2023

Meijers S, Stegeman I, van der Leun JA, Assegaf SA, Smit AL. Analysis and comparison of clinical practice guidelines regarding treatment recommendations for chronic tinnitus in adults: a systematic review. BMJ Open. 2023 Sep 15;13(9):e072754. https://doi.org/10.1136/bmjopen-2023-072754

**Acupuncture** (6 out of 10 guidelines), dietary supplements (4 out of 10 guidelines), drug therapy (7 out of 10 guidelines),acoustic CR neuromodulation (4 out of 10 guidelines), rTMS (7 out of 10 guidelines),TDCS (5 out of 10) and NVS (3 out of 10 guidelines) were consistently not recommended by any guideline, with minimal differences in level of recommendation.

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