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# spasticity after stroke

## Spasticité de l'hémiplégique : évaluation de l'acupuncture

Articles connexes: - [spasticité](#) - conduites thérapeutiques - pathologie - acupuncture expérimentale - qigong -

### 1. Systematic Reviews and Meta-Analysis

#### 1.1. Generic Acupuncture

##### 1.1.1. Tian 2025

Tian Y, Yan X, Wang H, Dang C, Sun Y. Efficacy of acupuncture therapy for spastic paralysis in post-stroke patients: a systematic review and meta-analysis. *Int J Neurosci.* 2025 Feb;135(2):180-187.

<https://doi.org/10.1080/00207454.2023.2292955>

<b>Background</b>	Despite the potentially good efficacy of acupuncture therapy in the management of post-stroke spastic paralysis demonstrated in previous studies, further verification through meta-analysis can be conducive to eliminating the inconclusive of treatment outcomes in prior findings. This systematic review and meta-analysis were thus performed to comprehensively investigate the effects of acupuncture on the daily living abilities, upper and lower limb motor function, and related functional indices of post-stroke patients with spastic paralysis.
<b>Methods</b>	We conducted a computer search to collect data from PubMed, PEDro, Clinical SportDiscus, and Scopus. The inclusion criteria followed the Population-Intervention-Comparison-Outcome (PICO) principle. Literature screening, data extraction, and quality assessment of the research articles were performed by two independent investigators. Standard mean difference and 95% confidence intervals of the data were analyzed using either a random-effects model or a fixed-effects model.
<b>Results</b>	Acupuncture therapy appeared to be effective in mitigating the limb pain of post-stroke patients with spastic paralysis (RR = -0.04, 95% CI: -0.26, 0.17), ameliorating their daily life ability (RR = 4.66, 95% CI: -0.74, 10.05), and improving their hand function (RR = 0.65, 95% CI: 0.40, 0.90) and lower limb function (RR = 0.35, 95% CI: 0.09, 0.62).
<b>Conclusion</b>	Acupuncture therapy provides more pronounced improvement in the daily life ability and limb motor function of post-stroke patients with spastic paralysis than conventional treatment regimens. Thus, acupuncture therapy can be a viable treatment option for the management of spastic paralysis following stroke.

##### 1.1.2. Javier-Ormazábal 2022

Javier-Ormazábal A, González-Platas M, González-Sierra E, González-Sierra M. Invasive Physiotherapy as a Treatment of Spasticity: A Systematic Review. *Degener Neurol Neuromuscul Dis.* 2022 Mar

3;12:23-29. <https://doi.org/10.2147/DNND.S350192>

<b>Introduction</b>	Nowadays, a set of novel physiotherapy techniques have emerged, in which the physical agent used to try to reduce spasticity is applied percutaneously, specifically, through the patient's skin. The aim of this work is to encompass all the invasive techniques used in spasticity in a single article, updating the existing bibliography.
<b>Methodology</b>	A systematic review was carried out between December 2020 and April 2021 in the Web of Science, Scopus and PubMed databases, selecting the clinical trials that used <b>acupuncture, electroacupuncture or dry needling</b> as a treatment for spasticity. Sixteen clinical trials were included, summarizing all the study characteristics and the outcome measures, at last the evidence was described for their results.
<b>Results</b>	Most of the studies find a difference of significant decrease in spasticity between the subjects of the experimental groups. Only four studies found no significant changes in spasticity. All the studies are carried out together with the conventional physiotherapy treatment in spasticity.
<b>Conclusion</b>	Treatment with invasive physiotherapy, combined with conventional physiotherapy, seems to have positive effects in reducing spasticity, although more studies are needed to improve the heterogeneity of the interventions and to assess their long-term effectiveness.

**1.1.3. Liao 2022 (Upper Limb) RETRACTED**

- **Retracted:** Analysis of the Efficacy of Acupuncture Combined with Rehabilitation Training in the Treatment of Upper Limb Spasm after Stroke: A Systematic Review and Meta-Analysis. Biomed Res Int. 2023 Dec 29;2023:9802958. <https://doi.org/10.1155/2023/9802958>
- Liao Y, Liu F, Yang J, Ma Q, Li J, Chen Y, Wu J. Analysis of the Efficacy of Acupuncture Combined with Rehabilitation Training in the Treatment of Upper Limb Spasm after Stroke: A Systematic Review and Meta-Analysis. Biomed Res Int. 2022 Aug 9;2022:8663356. <https://doi.org/10.1155/2022/8663356>.

<b>Objective</b>	Systematic evaluation of the efficacy of acupuncture combined with cognitive rehabilitation training in the treatment of upper limb spasm after cerebral apoplexy.
<b>Methods</b>	The data of CNKI, CBM, CQVIP, Wanfang, and the libraries of Pubmed and Cochrane were searched by computer, and the related literatures about acupuncture combined with cognitive rehabilitation training in the treatment of cognitive dysfunction after stroke were searched. The search time is from January 1, 1995 to January 1, 2022. All data segments were independently analyzed and extracted by two evaluators. After evaluating the quality of the methodology, meta-analysis was carried out by using the RevMan5.4 software.
<b>Results</b>	Finally, <b>11 studies</b> were included, with a total of <b>789 subjects</b> . The results of meta-analysis indicated that acupuncture combined with cognitive rehabilitation training was superior to simple cognitive rehabilitation training or drugs in the following aspects, the difference exhibited statistically significant, the total effective rate (RR = 1.58, 95% CI), latency of P300 (MD = -18.46, 95% CI), amplitude of P300 (MD = 1.23, 95% CI (0.82), P < 0.00001, 95% CI (0.31)), and activity of daily living (ADL), respectively, were significantly higher compared to the control group (P < 0.00001), and the difference was statistically significant (P < 0.05). Based on the results of systematic evaluation, the GRADE system recommendation classification method is used to evaluate the quality of evidence. The results show that the level of evidence is low and the intensity of recommendation is weak.
<b>Conclusion</b>	The results of this meta-analysis suggest that the curative effect of acupuncture combined with cognitive rehabilitation training is better compared to simple cognitive rehabilitation training or drugs. However, due to the low quality of the original literature, it needs to be confirmed by multicenter, high-quality, large-sample randomized blind controlled trials in the future.

**1.1.4. Xue 2022**

Xue C, Jiang C, Zhu Y, Liu X, Zhong D, Li Y, Zhang H, Tang W, She J, Xie C, Li J, Feng Y, Jin R. Effectiveness and safety of acupuncture for post-stroke spasticity: A systematic review and meta-analysis. *Front Neurol.* 2022 Aug 17;13:942597. <https://doi.org/10.3389/fneur.2022.942597>.

<b>Objective</b>	This systematic review and meta-analysis aimed to comprehensively evaluate the effectiveness and safety of acupuncture for post-stroke spasticity.
<b>Methods</b>	Nine electronic databases were searched from their inception to 6 June 2022, to identify randomized-controlled trials (RCTs) that investigated the effectiveness and safety of acupuncture for post-stroke spasticity. Two reviewers independently screened the studies, extracted the data, assessed the risk of bias. The reporting quality of interventions in controlled trials of acupuncture was evaluated using Revised Standards for Reporting Interventions in Clinical Trials of Acupuncture (STRICTA). The RevMan 5.4 and R 4.2.0 software were used for statistical analysis.
<b>Results</b>	A total of <b>88 eligible studies</b> were included, involving <b>6,431 individuals</b> . The pooled data demonstrated that acupuncture combined with conventional rehabilitation (CR) was superior to CR in reducing the Modified Ashworth Scale (MAS) score (standardized mean difference [SMD] = -0.73; 95% CI = -0.83 to -0.63; I <sup>2</sup> = 65%; low certainty of evidence). The favorable results were also observed in comparisons of acupuncture vs. CR (SMD = -0.22, 95% CI = -0.36 to -0.07; I <sup>2</sup> = 49%; moderate certainty of evidence). Subgroup analysis showed that acupuncture treatment with a frequency of once or twice a day was more effective than CR. In addition, the antispasmodic effect of acupuncture treatment increased with more sessions. Four studies explicitly reported slight acupuncture-related adverse events.
<b>Conclusion</b>	Acupuncture could be recommended as adjuvant therapy for spasticity after stroke. However, due to the high risk of bias and heterogeneity of the included studies, the effectiveness of acupuncture for post-stroke spasticity remains to be confirmed.

**1.1.5. Rodriguez-Mansilla 2016**

Rodriguez-Mansilla J, Espejo-Antúnez L, Bustamante-López AI. [Effectiveness of acupuncture in spasticity of the post-stroke patient. Systematic review]. *Aten Primaria.* 2016;48(4):226-34. [182168].

<b>Objective</b>	To determine the effectiveness of acupuncture for reducing spasticity in post-stroke patients.
<b>Methods</b>	DESIGN: Literature review. DATA SOURCE: The literature search was performed using scientific databases from January 2000 to January 2013. SELECTION OF STUDIES: Out of the 110 studies that were found, nine random and controlled trials were included. Inclusion criteria were based on clinical trials in which participants were over 18 years old, who were suffering with post-stroke spasticity, and one of the experimental groups was treated with acupuncture. DATA EXTRACTION: The variables were the passive resistance to stretching of the affected limb, and the degree of personal dependence. The variables were assessed by the Modified Ashworth Scale and Barthel Index.
<b>Methods</b>	The search was performed in the PUBMED, COCHRANE Library, PEDro, Dialnet, CSIC, CINAHL, databases. Search terms included the combination of keywords “acupuncture”; “muscle spasticity”; “stroke”.

<b>Results</b>	Passive resistance to stretching, the degree of personal dependence, and motor function of the affected limb showed statistically significant improvements in at least one study included; however, these improvements are not clinically relevant changes. Passive resistance improved in the elbow, ankle, knee, and wrist. An increased joint range was observed, except for the elbow, forearm, and thumb. Improved of the patient dependency was also observed.
<b>Conclusions</b>	Although improvements relative to the reduction of spasticity are shown, the results have failed to demonstrate the effectiveness of the technique for this ailment. It would take a greater number of studies to calculate the size of the reported effects with homogeneous procedures in the design as well as in the duration, frequency, and measurement tools.

**1.1.6. Li 2016** ☆

Li Hong-Liang, Xue Zhi-Hui, Chen Guo, Xiang Juan, Li Fei, Li Tie-Lang. [Systematic review of acupuncture plus rehabilitation for post-stroke spasm]. Shanghai Journal of Acupuncture and Moxibustion. 2016;5:612-617. [187055].

<b>Objectives</b>	To systematically review the therapeutic efficacy of acupuncture plus rehabilitation in treating post-stroke spasm and to summarize the commonly-used acupoints.
<b>Methods</b>	The randomized controlled trials and quasi-randomized trials of acupuncture plus rehabilitation for post-stroke spasm published from January 1 of 2005 to December 31 of 2014 in China were retrieved from CNKI, WanFang database, and VIP database, etc. by using computer. The eligible studies were recruited for review.
<b>Results</b>	Totally <b>15 studies</b> were enrolled. The Meta-analysis showed that the most commonly used acupoints in acupuncture treatment for post-stroke spasm were Quchi (LI 11), Jianyu (LI 15), Hegu (LI 4), Tianjing (TE 10), Waiguan (TE 5), Zusanli (ST 36), Sanyinjiao (SP 6), Chize (LU 5), and so on. Compared to the controls, acupuncture plus rehabilitation had significantly better effective rate [OR=3.13, 95%CI (2.00, 4.89), P<0.00001], recovery rate [OR=2.42, 95%CI (1.53, 3.83), P=0.0002], MAS score [MD=-0.48, 95%CI (-0.62, -0.35), P<0.00001], FMA score [MD=5.58, 95%CI (4.96, 6.20), P<0.00001], and NDS score [SMD=-0.68, 95%CI (-0.91, -0.44), P<0.00001].
<b>Conclusions</b>	<b>Acupuncture plus rehabilitation can effectively mitigate the post-stroke spasm</b> and is worth promoting in clinic; more high-quality researches are expected as the quality of the currently recruited trials is not so satisfactory.

**1.1.7. Lim 2015** ☆

Lim SM, Yoo J, Lee E, Kim HJ, Shin S, Han G, Ahn HS. Acupuncture for spasticity after stroke: a systematic review and meta-analysis of randomized controlled trials. Evid Based Complement Alternat Med. 2015. [177749].

<b>Objective</b>	The aim of this systematic review was to determine how effective acupuncture or electroacupuncture (acupuncture with electrical stimulation) is in treating poststroke patients with spasticity.
<b>Methods</b>	We searched publications in Medline, EMBASE, and the Cochrane Library in English, 19 accredited journals in Korean, and the China Integrated Knowledge Resources Database in Chinese through to July 30, 2013. We included randomized controlled trials (RCTs) with no language restrictions that compared the effects of acupuncture or electroacupuncture with usual care or placebo acupuncture. The two investigators assessed the risk of bias and statistical analyses were performed.

<b>Results</b>	<b>Three RCTs in English, 1 in Korean, and 1 in Chinese were included.</b> Assessments were performed primarily with the Modified Ashworth Scale (MAS). Meta-analysis showed that acupuncture or electroacupuncture significantly decreased spasticity after stroke. A subgroup analysis showed that acupuncture significantly decreased wrist, knee, and elbow spasticity in poststroke patients. Heterogeneity could be explained by the differences in control, acupoints, and the duration after stroke occurrence.
<b>Conclusion</b>	In conclusion, <b>acupuncture could be effective in decreasing spasticity after stroke</b> , but long-term studies are needed to determine the longevity of treatment effects.

**1.1.8. Park 2014 ~**

Park SW, Yi SH, Lee JA, Hwang PW, Yoo HC, Kang KS. Acupuncture for the treatment of spasticity after stroke: a meta-analysis of randomized controlled trials. J Altern Complement Med. 2014. 20(9):672-682. [174937]

<b>Objectives</b>	Acupuncture has been suggested as a treatment for spasticity in patients with stroke. The available literature was reviewed in an effort to assess its efficacy in this situation.
<b>Methods</b>	Randomized trials assessing the effects of acupuncture for the treatment of spasticity after stroke were identified by searching the Cochrane Library, PubMed, ProQuest, EBSCOhost, SCOPUS, CINAHL, EMBASE, Alternative Medicine Database, and Chinese and Korean medical literature databases. Two reviewers independently extracted data on study characteristics, patient characteristics, and spasticity outcomes.
<b>Results</b>	<b>Eight trials with 399 patients</b> met all the inclusion criteria. Compared with controls without acupuncture, acupuncture had no effect on improving clinical outcomes (as measured by validated instruments such as the Modified Ashworth Scale) or physiologic outcomes (assessed by measures such as the H-reflex/M-response [H/M] ratio at the end of the treatment period). H/M ratios did decrease significantly immediately after the first acupuncture treatment. Methodologic quality of all evaluated trials was considered inadequate.
<b>Conclusions</b>	<b>The effect of acupuncture for spasticity in patients with stroke remains uncertain</b> , primarily because of the poor quality of the available studies. Larger and more methodologically sound trials are needed to definitively confirm or refute any effect of acupuncture as a treatment for spasticity after stroke.

**1.1.9. Qi 2009 ~**

Qi YZ, Fu LX, Xiong J, Wang ZL, Mou J, Lu YM.. [Systematic Evaluation of Acupuncture for Treatment of Post-Stroke Spastic Paralysis]. Chinese Acupuncture and Moxibustion. 2009;29(8):683-8. [154652]

<b>Objectives</b>	To evaluate the effects of acupuncture on post-stroke spastic paralysis.
<b>Methods</b>	A systematic evaluation including all the relevant randomized controlled trials (RCTs) or quasi-RCTs of acupuncture and moxibustion for treatment of post-stroke spastic paralysis were carried out according to the method recommended by the Cochrane Collaboration.

<b>Results</b>	<b>Nine hundred and seventy-eight patients being included in fourteen papers</b> met the enrolled criteria. However, their methodological quality was relatively poor. Meta-analysis of nine trials indicated that there was no significant difference between the treatment groups and the control groups in Ashworth scores, Carr-Shepherd scores, nerve defect scores and hip adductor tension scores. Whereas the Fugel-Meyer scores in one trial and the Barthel scores in three trials were better in the treatment groups than those of the control group.
<b>Conclusions</b>	A reliable conclusion can not be drawn from the present data because of the defects in methodological quality and insufficient numbers of trials, especially lack the long-term terminal outcomes, although <b>it appears a tendency that acupuncture can improve the conditions of post-stroke spastic paralysis</b> . Therefore, it is necessary to perform more multi-central RCTs of high quality in future.

**1.1.10. Li Ning 2009**

Li Ning, Zhao Yu, Wang Cheng-Wei. [Meta -analysis of study on limb spasm after stroke treated by acupuncture and moxibustion from 2000 to 2008]. Journal of Clinical Acupuncture and Moxibustion. 2009. 25(12):4. [172500] 摘要：目的：了解针灸治疗中风后肢体痉挛研究现状和发展水平、推断研究热点、推测学科发展。方法：检索《中国期刊全文数据库[CJNKI]》2000~ 2008 年 月间的针灸治疗中风后肢体痉挛研究的全部文献，采用文献计量学方法对文献从发表时间分布、基金资助研究情况、文献研究类型、期刊分布、省份分布、大学单位分布和穴位处方、刺灸方案、随机对照研究的标准符合率等方面进行统计分析。结果：2000 - 2008年月间 数据库共收录针灸治疗中风后肢体痉挛研究文献’；107 篇，文献研究呈 逐年上升趋势，其中 篇文献报道受基金资助；临床研究篇，综述等其他研究篇，无实验基础研究；文献报道以《针灸临床杂志》等种主要针灸杂志为主；产文地区主要为广东省、黑龙江省及天津市；张针灸处方中，上月支穴位以“肩髃、合谷、曲池、手三里、尺泽”等为主，下月支穴位以“阳陵泉、三阴交、足三里、血海、委中”等为主；刺灸方法以传统毫针与电针为主，共计张处方提及；篇随机对照研究文献的标准符合率较低。结论：中风后肢体痉挛的针灸研究目前正在吸引着针灸界更多的关注。针灸穴位选取、规范化的刺灸方法实施、提高临床研究的报告质量是未来临床研究的重点。关键词：中风后肢体痉挛；文献计量学；针灸

**1.2. Special Acupuncture Techniques**

**1.2.1. Comparison of Acupuncture techniques**

**1.2.1.1. Zhu 2024**

Zhu GC, Chen KM, Belcastro F. Comparing the effects of different acupoint-stimulating therapies in mitigating post-stroke spasticity and motor dysfunction in older stroke survivors: A network meta-analysis of randomized trials. Maturitas. 2024 Sep;187:108040. <https://doi.org/10.1016/j.maturitas.2024.108040>

<b>Background</b>	Acupoint-stimulating therapies have often been used to manage stroke-related spasticity and motor dysfunction. However, the effects of different acupoint-stimulating therapies in older stroke survivors have been unclear.
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<b>Methods</b>	This systematic review and network meta-analysis compared the effects of different acupoint-stimulating therapies in managing spasticity and motor dysfunction in older stroke survivors. The study followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines. We searched 7 databases for studies published up to July 2023. Inclusion criteria were: (1) older adults with strokes; (2) treatments were acupoint-stimulating therapies; (3) a control group did not receive acupoint-stimulating therapy, or the study compared different acupoint-stimulating therapies; and (4) outcomes included spasticity and motor function. Methodological quality was assessed with Risk-of-bias tool for randomized trials version 2, while R and Metainsight were used to conduct the network meta-analysis
<b>Results</b>	We analyzed <b>27 studies</b> and the results showed that non-invasive electroacupuncture and warm acupuncture were more effective in reducing spasticity than conventional acupuncture (standardized mean difference and 95 % confidence intervals = 1.35/1.19 [0.57; 2.13/0.54; 1.83]) and invasive electroacupuncture (standardized mean difference and 95 % confidence intervals = 0.96/0.80 [0.12; 1.80/0.08; 1.51]). Conventional acupuncture and invasive electroacupuncture were effective in improving motor function (standardized mean difference and 95 % confidence intervals = 0.99/1.41 [0.42; 1.56/0.54; 2.28]). However, there was significant inconsistency for the effects of invasive electroacupuncture between studies.
<b>Conclusions</b>	Our findings suggest that for older stroke survivors with spasticity, non-invasive electroacupuncture and warm acupuncture are appropriate, whereas conventional acupuncture is more appropriate for patients aiming for motor recover.

**1.2.2. Fire needle**

**1.2.2.1. Qiu 2021**

Qiu X, Gao Y, Zhang Z, Cheng S, Zhang S. Fire Acupuncture versus conventional acupuncture to treat spasticity after stroke: A systematic review and meta-analysis. PLoS One. 2021;16(4). [218451]. doi

<b>Background</b>	Post-stroke spasm is currently a complex clinical problem that remains to be resolved. Due to its excellent efficacy and few side effects, clinicians have used fire acupuncture to treat post-stroke spasticity in China.
<b>Objectives</b>	The purpose of this study was to evaluate the clinical efficacy of fire acupuncture compared with conventional acupuncture to treat post-stroke spasms and provide a detailed summary of the commonly used acupoints.
<b>Methods</b>	Eight databases (MEDLINE/PubMed, Web of Science, the Cochrane database, EMBASE, CBM, CNKI, WanFang, and VIP) were searched for randomized controlled trials (RCTs) published from database inception through August 30, 2020. RCTs that compared fire acupuncture with conventional acupuncture as a treatment intervention for patients with spasticity after stroke were included. Revman 5.3 software was used to calculate risk ratios (RR) and standard mean differences (SMD) with 95% confidence intervals (CI). Methodological evaluation or critical appraisal of the included articles was assessed using RoB-2.



<p><b>Results</b></p>	<p><b>Sixteen studies with a total of 1,118 patients</b> were included. Although according to the standards of the Rob 2.0 tool, most studies are considered to have some problems. Comprehensive analysis of the results revealed a consistent trend indicating several advantages of using fire needles compared to conventional acupuncture in treating post-stroke spasms, including the effective rate, recovery rate, and improvement of multiple scales represented by MAS. Concerning secondary outcomes, using the scales of FMA, BI, or NDS in this random model meta-analysis, fire acupuncture exhibited better performance compared to acupuncture [SMD = 2.27, 95%CI [1.40,3.13 (random-effects model) ], [SMD = 1.46,95% CI [1.03,1.90 (random-effects model)], and [SMD = 0.90, 95%CI [0.44,1.35 (random-effects model)], respectively, with moderately high heterogeneity. When the effective rate was used as an outcome in the subgroup analysis, fire needles performed better than conventional acupuncture with respect to damage to the upper or lower limbs, and the thickness and depth of acupuncture. When the modified Ashworth scale (MAS) was used as the outcome, and the damage occurred in the lower extremity, the acupuncture depth exceeded 15mm, or the duration of stroke was longer than six months, the fire needles did not perform better than conventional acupuncture, [SMD = 0.01, 95%CI [-0.47,0.48 (fix-effects model)], [SMD = 0.21 [-0.51,0.93(random-effects model)], and [SMD = 0.76, 95%CI [-0.08,1.60 (random-effects model)], respectively. The acupoints identified with the highest frequencies in this study were Yang-meridian, including LI11-Quchi (nine times), LI4-Hegu (seven times), and ST36-Zusanli (five times). Moreover, no serious adverse effects were reported in any of the studies included in this analysis.</p>
<p><b>Conclusions</b></p>	<p>Despite several limitations, this was the first meta-analysis to focus on the treatment of post-stroke spasticity using fire needle acupuncture compared with conventional acupuncture. Our results confirmed that fire needles could provide a better clinical effect than conventional acupuncture, which will help standardize fire needle treatment strategies for post-stroke spasms.</p>

**1.2.3. Warm-needle moxibustion**

**1.2.3.1. Yang 2018**

Yang L, Tan JY, Ma H, Zhao H, Lai J, Chen JX, Suen LKP. Warm-needle moxibustion for spasticity after stroke: A systematic review of randomized controlled trials. *Int J Nurs Stud.* 2018;:129-138. [115380].

<p><b>Background</b></p>	<p>Spasticity is a common post-stroke complication, and it results in substantial deterioration in the quality of life of patients. Although potential positive effects of warm-needle moxibustion on spasticity after stroke have been observed, evidence on its definitive effect remains uncertain.</p>
<p><b>Objectives</b></p>	<p>This study aimed to summarize clinical evidence pertaining to therapeutic effects and safety of warm-needle moxibustion for treating spasticity after stroke. DESIGN: Randomized controlled trials were reviewed systematically on the basis of the Cochrane Handbook for Systematic Reviews of Interventions. The report follows the PRISMA statement.</p>

<b>Methods</b>	Ten electronic databases (PubMed, CENTRAL, EMBASE, AMED, CINAHL, Web of Science, CBM, CNKI, WanFang, and VIP) were explored, and articles were retrieved manually from two Chinese journals (The Journal of Traditional Chinese Medicine and Zhong Guo Zhen Jiu) through retrospective search. Randomized controlled trials with warm-needle moxibustion as treatment intervention for patients with limb spasm after stroke were included in this review. The risk of bias assessment tool was utilized in accordance with Cochrane Handbook 5.1.0. All included studies reported spasm effect as primary outcome. Effect size was estimated using relative risk, standardized mean difference, or mean difference with a corresponding 95% confidence interval. Review Manager 5.3 was utilized for meta-analysis.
<b>Results</b>	Twelve randomized controlled trials with certain methodological flaws and risk of bias were included, and they involved a total of 878 participants. Warm-needle moxibustion was found to be superior to electroacupuncture or acupuncture in reducing spasm and in promoting motor function and daily living activities. Pooled results for spasm effect and motor function were significant when warm-needle moxibustion was compared with electroacupuncture or acupuncture. A comparison of daily living activities indicated significant differences between warm-needle moxibustion and electroacupuncture. However, no difference was observed between warm-needle moxibustion and acupuncture.
<b>Conclusions</b>	Warm-needle moxibustion may be a promising intervention to reduce limb spasm as well as improve motor function and daily living activities for stroke patients with spasticity. However, evidence was not conclusive. Rigorously designed randomized controlled trials with sample sizes larger than that in the included trials should be conducted for verification.

### 1.2.4. Electroacupuncture

#### 1.2.4.1. Cai 2017

Cai Y, Zhang CS, Liu S, Wen Z, Zhang AL, Guo X, Lu C, Xue CC. Electroacupuncture for Poststroke Spasticity: A Systematic Review and Meta-Analysis. Arch Phys Med Rehabil. 2017;98(12):2578-2589. [42608].

<b>Objective</b>	To evaluate the effects and safety of electroacupuncture (EA) for stroke patients with spasticity.
<b>Methods</b>	DATA SOURCES: Five English databases (PubMed, EMBASE, CINAHL, Cochrane Central Register of Controlled Trials, Allied and Complementary Medicine Database) and 4 Chinese databases (Chinese Biomedical Database, Chinese National Knowledge Infrastructure, Chongqing VIP Database, Wanfang Database) were searched from their inception to September 2016. STUDY SELECTION: Randomized controlled trials were included if they measured spasticity with the Modified Ashworth Scale (MAS) in stroke patients and investigated the add-on effects of electroacupuncture to routine pharmacotherapy and rehabilitation therapies. DATA EXTRACTION: Information on patients, study design, treatment details and outcomes assessing spasticity severity, motor function, and activities of daily living was extracted.

<b>Data synthesis</b>	In total, 22 trials involving 1425 participants met the search criteria and were included. The estimated add-on effects of EA to reduce spasticity in the upper limbs as measured by the MAS (standardized mean difference [SMD]=-0.57; 95% confidence interval [CI], -0.84 to -0.29), and to improve overall motor function as measured by the Fugl-Meyer Assessment of Sensorimotor Recovery (mean difference [MD]=10.60; 95% CI, 8.67-12.53) were significant. Significant add-on effects of EA were also shown for spasticity in the lower limbs, lower-limb motor function, and activities of daily living ([SMD]=-0.88; 95% CI, -1.42 to -0.35;], [MD=4.42; 95% CI, 0.06-8.78], and [MD=6.85; 95% CI, 3.64-10.05], respectively), although with high heterogeneity. For upper-limb motor function, no significant add-on effects of EA were found.
<b>Conclusions</b>	EA combined with conventional routine care has the potential of reducing spasticity in the upper and lower limbs and improving overall and lower extremity motor function and activities of daily living for patients with spasticity, within 180 days poststroke. Further studies of high methodological and reporting quality are needed to confirm the effects and safety of EA, and to explore the adequate and optimal protocol of EA for poststroke spasticity, incorporating a group of comprehensive outcome measures in different populations.

**1.2.5. Zhang 2017 (technique des méridiens tendino-musculaires) ☆**

Zhang Y, Ma TM, Bai ZH, Sun BW, Zhao HY. [Meta-analysis on the Therapeutic Effect of Acupuncture at Meridian Sinew for Spastic Paralysis After Stroke]. Zhen Ci Yan Jiu. 2017; 42(2): 178-82. [184444].

<b>Objective</b>	To review systematically the clinical effects of spastic paralysis after stroke treated with acupuncture at meridian sinew (“Jingjin”, musculotendon).
<b>Methods</b>	“Meridian sinew” “stroke” and “spasm” were taken as the key words to retrieve from the Chinese National Knowledge Infrastructure Database (CNKI), Chongqing VIP Chinese Science and Technology Periodical Database (VIP), Chinese Biomedical Library (CBM), Wanfang Data, PubMed and the Cochrane Library. The Cochrane “risk of bias” tool was used to conduct the methodological quality evaluation to the literature. RevMan 5.3 software was adopted for Meta-analysis.
<b>Results</b>	Totally, <b>13 papers were included, with 820 patients involved.</b> In reference to Cochrane Reviewers' Handbook 5.0.2, the randomized controlled trial (RCT) risk of bias was assessed and it was unclear for all of the 13 papers. The results of Meta-analysis showed that the clinical effect was improved with acupuncture at meridian sinew as compared with normal acupuncture technique[①total effective rate:OR=3.86, 95% CI (2.67,5.57), Z=7.20, P<0.00001; ②modified Ashworth spasm scale:OR=4.54, 95% CI (2.91,7.10), Z=6.64, P<0.00001; ③evaluation of limb motor function with Fugl-Meyer score:MD=4.18, 95% CI (-0.59,8.94), Z=1.72, P=0.09>0.05]. The publication bias of included papers was not obvious and therefore it could be neglected in the impact on the combined effect size.
<b>Conclusions</b>	<b>Acupuncture at meridian sinew is effective in the treatment of spastic paralysis after stroke.</b> The total clinical effect and the improvement in muscular tone with acupuncture at meridian sinew are better than those with normal acupuncture technique. The quality of the included literature is not high generally. Hence, it is necessary to have more clinical studies with high-quality and strict design.

**2. Overviews of Systematic Reviews**

**2.1. Choi 2022**

Choi TY, Jun JH, Lee HW, Yun JM, Joo MC, Lee MS. Traditional Chinese Medicine Interventions in the Rehabilitation of Cognitive and Motor Function in Patients With Stroke: An Overview and Evidence Map. *Front Neurol.* 2022 May 17;13:885095. <https://doi.org/10.3389/fneur.2022.885095>

<b>Objective</b>	Evidence mapping of systematic reviews (SRs) systematically and comprehensively identifies, organizes, and summarizes the distribution of scientific evidence in a field. The aim of this evidence map is to provide a synopsis of the best clinical practices and interventions in stroke rehabilitative care and to identify areas with a paucity of evidence to guide future research.
<b>Methods</b>	PubMed, EMBASE, CDSR, six Korean databases, and two Chinese databases were searched for SRs evaluating the effectiveness of any stroke rehabilitation intervention through October 2021. The quality of the SRs was assessed using AMSTAR 2. A bubble plot was used to graphically display clinical topics, the number of articles, the number of patients included, confidence, and effectiveness.
<b>Results</b>	In total, ninety-five SRs were identified; however, after methodological analysis, only 48 had sufficient quality to be included. In total, forty-eight SRs were included in the evidence mapping. The overall search identified SRs from 2015 to 2021. A total of four SRs focused on post-stroke cognitive impairment, whereas the other forty-four SRs focused on post-stroke motor function. In total, nineteen different traditional Chinese medicine (TCM) intervention modalities were included. Acupuncture was the most commonly used treatment. Overall, the quality of the included SRs was low or very low. Most SRs concluded that TCM interventions may have potential benefits in stroke rehabilitation. The results were more promising when acupuncture was used for shoulder-hand syndrome.
<b>Conclusions</b>	However, the identified reviews cautioned that firm conclusions cannot be drawn. The evidence map provides a visual overview of the research volume and content involving TCM interventions in stroke rehabilitation. Evidence mapping can facilitate the process of knowledge translation from scientific findings to researchers and policymakers and possibly reduce waste in research.
	Spaticity, hand spasms, spastic hemiplegia.

### 3. Clinical Practice Guidelines

⊕ positive recommendation (regardless of the level of evidence reported)  
 ∅ negative recommendation (or lack of evidence)

#### 3.1. American Academy of Physical Medicine and Rehabilitation (AAPM&R, USA) 2024 ⊕

Verduzco-Gutierrez M, Raghavan P, Pruento J, Moon D, List CM, Hornyak JE, Gul F, Deshpande S, Biffi S, Al Lawati Z, Alfaro A. AAPM&R consensus guidance on spasticity assessment and management. *PM R.* 2024 Aug;16(8):864-887. <https://doi.org/10.1002/pmrj.13211>

*Acupuncture, including electro-acupuncture.* Moderate level evidence for electro-acupuncture combined with conventional routine care (pharmacological and rehabilitation) in reduction in upper-limb and lower-limb spasticity, improved overall motor function, activities of daily living. It is proposed that acupuncture works by decreasing the pain-spasm cycle, spinal motor neuron regulation, and neurochemical regulation, though exact mechanisms are not clear.

#### 3.2. Department of Veterans Affairs and Department of Defense (VA/DoD,

## USA) 2024 Ø

VA/DoD Clinical Practice Guideline for Management of Stroke Rehabilitation. Department of Veterans Affairs and Department of Defense. Washington, DC: U.S. Government Printing Office. 2024.

[https://www.healthquality.va.gov/guidelines/Rehab/stroke/VADoD-2024-Stroke-Rehab-CPG-Full-CPG\\_final\\_508.pdf](https://www.healthquality.va.gov/guidelines/Rehab/stroke/VADoD-2024-Stroke-Rehab-CPG-Full-CPG_final_508.pdf)

25. There is insufficient evidence to recommend for or against the use of acupuncture or dry needling for **spasticity management**. (Neither for nor against / Reviewed, New-added)

## 3.3. Stroke Foundation (Australia, New-Zealand) 2022 Ø

Australian and New Zealand Clinical Guidelines for Stroke Management. Chapter 6: Managing complications. <https://app.magicapp.org/#/guideline/WE8wOn>

For stroke survivors with **spasticity**, acupuncture should not be used for treatment of spasticity in routine practice other than as part of a research study. (Lim et al 2015) [Weak recommendation against].

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