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Gait Control After Stroke

Troubles de la marche post-AVC

1. Systematic Reviews and Meta-Analysis

1.1. Sun 2025

Sun Z, Sun H, Yu K, Zhu Z, Lin Y, Sun K, Zhang J. A Systematic Review and Meta-Analysis of Acupuncture's Impact on Hemiplegic Gait Recovery After Stroke. Complement Ther Med. 2025 Apr 25:103181. https://doi.org/10.1016/j.ctim.2025.103181

Objective	This systematic review aims to evaluate the efficacy and safety of acupuncture in alleviating gait disturbances in post-stroke hemiplegia, focusing on various gait parameters.
Methods	A comprehensive search was conducted across PubMed, EMBASE, Cochrane Library, Web of Science, AMED, CINAHL, CBM, CNKI, and WanFang databases to identify relevant randomized controlled trials (RCTs). The included studies were independently evaluated for risk of bias using Cochrane's risk of bias tool. RevMan 5.3 was used for meta-analysis, and adverse events were collected through full-text review.
Results	A total of **21 RCTs involving 1463 participants** were included. Results showed that acupuncture combined with rehabilitation therapy (RT) significantly improved stride and step length (MD = 7.79, 95% CI: 5.62 to 9.96, Z = 7.03, P < 0.00001, I^2 = 72%), cadence (MD = 10.43, 95% CI: 6.22 to 14.65, Z = 4.85, P < 0.00001, I^2 = 95%), walking speed (MD = 12.27, 95% CI: 9.22 to 15.31, Z = 7.90, P < 0.00001, I^2 = 91%), hip peak flexion angle (MD = 2.71, 95% CI: 0.94 to 4.49, Z = 2.99, P = 0.003, I^2 = 82%), and ankle peak plantarflexion angle (MD = 2.08, 95% CI: 1.11 to 3.06, Z = 4.19, P < 0.0001, I^2 = 0%) compared to RT alone. It also reduced gait cycle time (MD = -0.61, 95% CI: -0.96 to -0.26, Z = 3.44, P = 0.0006, I^2 = 98%) and the proportion of double support phase (MD = -7.16, 95% CI: -9.08 to -5.25, Z = 7.33, P < 0.00001, I^2 = 0%). These improvements in gait parameters suggest enhanced mobility and functional independence for post-stroke patients. However, heterogeneity in participant characteristics and study methodologies was noted, such as variations in stroke types, curses, severity, and acupuncture protocols. The majority of RCTs exhibited moderate to high risk of bias regarding allocation concealment and blinding. Only two RCTs reported no adverse events, while the remaining 19 studies did not mention adverse events.
Conclusion	Acupuncture appears to enhance specific aspects of hemiplegic gait, though further high-quality research is needed to fully validate its effects. Current evidence is limited by methodological weaknesses and potential biases in the included studies. Rigorous, well-designed studies are required to further validate the comprehensive effects of acupuncture on post-stroke hemiplegic gait.

1.2. Lin 2015

Lin Meiqin, Liu Weilin. [System review of the efficacy of acupuncture on hemiplegic gait in stroke patients]. Journal of Fujian University of Traditional Chinese Medicine. 2015;1:54-62. [186997].

Objectives	In order to obtain objective evidence of acupuncture therapy for stroke patients with hemiplegic gait, we would collect the published studies, and systematic review of the quality, providing reliable evidence for clinical application.
Methods	Computer comprehensively searched Pubmed, EMbase, the Cochrane library, Web of Science, Chinese Science and Technology Database, Wanfang, China National Knowledge Infrastructure, Chinese Biology Medicine and Traditional Chinese Medicine Database. According to bias risk assessment tool of Cochrane, assessed the quality of the studies, evaluated the quality of each study, Re Man 5. 2software was used for meta-analysis and statistical appraisal of effect size.
Results	Participants included 22 studies (n=1, 519), **8 of randomized controlled trials (RCT)**, 14 of controlled clinical trials (CCT). The results suggested that the lower limb Fugl-Meyer assessment scale: at the acute stage which is WMD=6. 71, 95%CI (5. 51, 5. 72) and P<0. 000, 01; at the restoration stage which is WMD=2. 50, 95%CI (1. 49, 3. 50) and P<0. 000, 01; at the sequela stage only 1 trial that has statistical significance (P=0. 003); three trials were aimed at the treatment of post stroke spasm (any course), which is WMD=1. 60, 95%CI (0. 92, 2. 28) and P<0. 000, 01. Acupuncture could improve time-distance parameters, but reported inconsistent results, improve the kinematic parameters of the hip, knee and ankle joint and enhance EMG of back extensor, slow spasm of limbs, increase the balance and walking function, improve the ability of daily life in stroke patients through analysis of quantitative gait.
Conclusions	The existing evidences suggested that acupuncture treatment could **improve time-distance and kinematic parameters of lower limbs, suppress spasm and increase balance in stroke patients**. But the trials involved are low quality, therefore, which remains need to design more rigorous randomized controlled trial to further verification.