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Fractures, Traumatology

Fractures, Traumatologie

2. Systematic Reviews and Meta-Analysis

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

2.1. Generic Acupuncture

2.2. Special clinical forms

2.2.1. Rib fractures

2.2.1.1. Weinberg 2022

Weinberg BJ, Roos R, van Aswegen H. Effectiveness of nonpharmacological therapeutic interventions on pain and physical function in adults with rib fractures during acute care: A systematic review and meta-analysis. S Afr J Physiother. 2022 Jun 28;78(1):1764. https://doi.org/10.4102/sajp.v78i1.1764

Background	Rib fractures are a common thoracic injury and notable source of chest pain. Chest pain may lead to compromised respiratory and physical function.
Objectives	Our study aimed to synthesise the evidence on the effectiveness of nonpharmacological therapeutic interventions on pain and physical function in adults admitted with rib fractures to acute care settings. Secondary outcomes included length of stay (LOS), respiratory complications, respiratory function and mortality rate.
Method	A systematic literature search of English articles in nine databases was conducted. The Joanna Briggs Institute's System for the Unified Management, Assessment and Review of Information (SUMARI) was used to conduct our study. Articles written from January 2000 to December 2017 were considered and a search update was completed in 2021. Meta-analysis was conducted for pre- versus post-bundle of care implementation for LOS, pneumonia incidence and mortality rate. Certainty of evidence was appraised using the grading of recommendations, assessment, development and evaluation (GRADE) approach.
Results	Sixteen studies were included (n = 2034). Certain interventions were shown to improve respiratory function and reduce pain, pulmonary complications, LOS and mortality rate. No interventions were identified which objectively improved physical function. Meta-analysis showed a statistically significant reduction in relative risk of developing pneumonia (p = 0.00) by 63% following bundled care implementation. Certainty of evidence for this outcome was rated as very low following GRADE appraisal.

Conclusion	Nonpharmacological therapeutic interventions used in combination with pharmacological management are viable treatment options to reduce pain, improve respiratory function and reduce the incidence of respiratory complications following acute rib fractures.
Clinical implications	**Acupuncture**, transcutaneous electrical nerve stimulation (TENS), noninvasive ventilation (NIV) modalities, physiotherapy techniques and multidisciplinary pathways used alongside pharmacological interventions are effective modalities for use in the treatment of acute rib fractures. Multidisciplinary care pathways are important management strategies and reduce the risk of developing pneumonia.

2.2.2. Humeral Fracture

2.2.2.1. Chang 2021

Chang H, Lee H, Kim H, Chung WS. The Use of Acupuncture in the Management of Patients With Humeral Fractures: A Systematic Review and Meta-analysis. J Manipulative Physiol Ther. 2021;44(2):146-153. [219999]. doi

Objective	The purpose of this study was to conduct a systematic review and meta-analysis of the effects of acupuncture on humeral fractures.
Methods	Randomized controlled trials were searched systematically from inception to January 2020 using the Cochrane Central Register of Controlled Trials, Embase, PubMed, Web of Science, China National Knowledge Infrastructure, and 7 Korean databases. Pain scale and Japanese Orthopaedic Association scores were the primary and secondary measurements. A risk-of-bias assessment and meta-analysis were conducted.
Results	**Seven randomized controlled trials** were included in the systematic review; the quality of the studies was ambiguous. The meta-analysis showed that acupuncture improved the pain severity score compared with conventional therapies (standard mean difference = -4.55, 95% confidence interval, -7.48 to -1.61, I2 = 98%, P < .00001) but did not improve the Japanese Orthopaedic Association score (standard mean difference = 4.99, 95% confidence interval, -0.31 to 10.30, I2 = 99%, P < .00001).
Conclusion	Our meta-analysis shows that acupuncture reduced pain after proximal humeral fracture, in addition to common rehabilitative modalities. However, the conclusion of this review should be cautiously applied in clinical practice owing to the low quality of the included studies.

2.2.3. Osteoporotic Vertebral Compression Fracture

2.2.3.1. Li 2022 (retracted)

RETRACTED. Li W, Ou H, Zhang L, Zhang C, Chen W, Wang H. Meta-Analysis of PKP or PVP Combined with Acupuncture in the Treatment of Osteoporotic Vertebral Compression Fractures. Contrast Media Mol Imaging. 2022 Aug 13;2022:9721702. https://doi.org/10.1155/2022/9721702

Objective	The efficacy of acupuncture combined with percutaneous kyphoplasty (PKP) or percutaneous vertebroplasty (PVP) in the treatment of osteoporotic vertebral compression fracture is systematically evaluated.

Methods	The clinical trials of acupuncture combined with PKP or PVP in the treatment of osteoporotic vertebral compression fracture published before July 2021 are searched in databases of CNKI, WF, VIP, CBM, PubMed, Cochrane Library, and Embase. The information of included studies is extracted, and the quality is assessed by two independent researchers. The meta-analysis is performed by using RevMan 5.3 software.
Results	A total of **9 trials are included, involving 851 patients. The experimental results show that the therapeutic effect of acupuncture combined with PKP/PVP in the treatment of osteoporotic vertebral compression fracture (OVCF) is superior to that of PKP/PVP alone, and both the VAS score and ODI score of PKP/PVP combined with ordinary acupuncture or silver needle acupuncture are better than those of the control group one month after the operation. The effect of ordinary acupuncture combined with PKP/PVP on the increase of bone mineral density is better than that of the control group.
Conclusions	Acupuncture combined with PKP/PVP in the treatment of osteoporotic vertebral compression fracture has better efficacy than PKP/PVP, and it can effectively relieve patients' pain, improve bone density, and improve the quality of life.

2.2.3.2. Li 2021

Li JL, Rong S, Zhou Z, Zhang XB, Tang ZH, Huang QS, Li WH. The Efficacy and Safety of Acupuncture for Treating Osteoporotic Vertebral Compression Fracture- (OVCF-) Induced Pain: A Systematic Review and Meta-Analysis of Randomized Clinical Trials. Evid Based Complement Alternat Med. 2021. [222738]. https://doi.org/10.1155/2021/8574621

Background	Osteoporotic vertebral compression fractures (OVCFs) are common health issues in the elderly that cause chronic pain in over one-third of patients. This study was sought to evaluate the efficacy and safety of acupuncture for alleviating pain caused by OVCFs.
Methods	We performed a search of 8 electronic databases for publications from the inception to 30th March 2021. Eligible studies were randomized clinical trials (RCTs) that evaluated the effect of acupuncture for the treatment of OVCFs. Two investigators evaluated literature quality and extracted data independently. RevMan V.5.4.1 was used for data analyses, with pooled risk estimates presented as mean difference (MD) or relative risk (RR) along with corresponding 95% confidence intervals (CIs), as appropriate.
Results	Fourteen RCTs involving 1,130 patients were included in this meta-analysis. Compared with the control group, acupuncture showed a greater benefit on pain reduction caused by OVCFs (1 week: MD = -1.26, 95% CI: (-1.82,-0.70); 1 month: MD = -1.63, 95% CI: (-1.82,-1.43); 6 months: MD = -1.13, 95% CI: (-1.55, -0.70)). Acupuncture treatment was also associated with fewer adverse events, lower ODI index, and higher bone density than the control group (safety: (RR: 0.30, 95% CI: 0.12-0.75); ODI: MD = -3.19, 95% CI: (-5.20, -1.19); bone density: MD = 0.15, 95% CI: (0.05, 0.26)). The GRADE quality of these results was assessed as low or very low.
Conclusions	Compared with the control treatment, acupuncture was more effective and safer in relieving the pain caused by OVCF and made a greater improvement on patient's ODI score and bone density. Given the low level of our study evidence, future high-quality studies are needed to verify our study findings.

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Last update: **28 Dec 2023 18:23**