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Delayed Onset Muscle Soreness

Douleurs musculaires retardées du sportif : évaluation de l'acupuncture

1. Systematic Review and meta-analysis

1.1. Chang 2020

Chang WD, Chang NJ, Lin HY, Wu JH. Effects of Acupuncture on Delayed-Onset Muscle Soreness: A Systematic Review and Meta-Analysis. Evid Based Complement Alternat Med. 2020;2020:5864057. [210813]. doi

Objectives	Evidence for the effects of acupuncture on delayed-onset muscle soreness (DOMS) is inconsistent. The aim of this study was to explore the effects of acupuncture on DOMS.
Methods	Studies investigating the effect of acupuncture on DOMS in humans that were published before March 2020 were obtained from eight electronic databases. The affected muscles, groups, acupuncture points, treatment sessions, assessments, assessment times, and outcomes of the included articles were reviewed. The data were extracted and analyzed via a meta-analysis.
Results	A total of **15 articles were included**, and relief of DOMS-related pain was the primary outcome. The statistical meta-analysis showed that there were no significant differences between acupuncture and sham/control groups, except for acupuncture for DOMS on day 1 (total SMD = -0.62; 95% CI = -1.12~0.11, $P < 0.05$) by comparing with control groups.
Conclusion	Acupuncture for DOMS exhibited very-small-to-small and small-to-moderate effects on pain relief for the sham and no acupuncture conditions, respectively. Evidence indicating the effects of acupuncture on DOMS was little because the outcome data during the follow-up were insufficient to perform an effective meta-analysis.

1.2. Huang 2020

Huang C, Wang Z, Xu X, Hu S, Zhu R, Chen X. Does Acupuncture Benefit Delayed-Onset Muscle Soreness After Strenuous Exercise? A Systematic Review and Meta-Analysis. Front Physiol. 2020;11:666. [210814]. doi

Purpose	This systematic review and meta-analysis was designed to evaluate the effects of acupuncture intervention on alleviating delayed onset of muscle soreness (DOMS) after intense exercise.

Method	Randomized controlled trials (RCTs) were searched from online databases including Medline (PubMed), Cochrane Library, Web of Science, Embase, PsycINFO, China Knowledge Resource Integrated Database (CNKI), and Wanfang (Chinese) up to April 2019. Data points were extracted from the eligible RCTs at the time points of 24, 48, and 72 h post strenuous exercise-induced DOMS. The outcomes of muscle soreness rating (MSR), creatine kinase (CK), and maximal isometric force (MIF) were pooled into the meta-analysis to assess the acupuncture intervention on DOMS.
Results	**Six eligible RCTs** were included in the meta-analysis, and the results showed that acupuncture intervention significantly decreased MSR [standardized mean difference (SMD) -0.49, 95%CI -0.73 to -0.24, P < 0.001, I 2 = 34%] and the serum level of CK (SMD -0.91, 95%CI -1.27 to -0.56, P < 0.001, I 2 = 30%), accompanied with the improvement of the muscle strength (MIF) (SMD 0.54, 95%CI 0.16 to 0.93, P = 0.006, I 2 = 51%) after intense exercise. At the same time, the findings also revealed that acupuncture intervention had a long-lasting effect and tended to accumulate the effect size and that it had the most efficacy on alleviating DOMS at the time point of 72 h post exercise.
Conclusion	The current evidence indicates that acupuncture intervention after intense exercise could be effective for alleviating DOMS and improving muscle recovery. The long-lasting effect of acupuncture intervention on DOMS started from 24 h and would reach a peak on the time point of 72 h post exercise.

1.3. Ko 2020

Ko GWY, Clarkson C. The effectiveness of acupuncture for pain reduction in delayed-onset muscle soreness: a systematic review. Acupuncture in Medicine. 2020;38(2):63-74. [212135]. doi

Objective	The aim of this study was to systematically review the literature on acupuncture for delayed-onset muscle soreness (DOMS) and report upon study quality and treatment outcomes.
Design	Systematic review. Data sources: Searches were conducted in the following electronic databases from their inception to 31 March 2018: CINAHL, MEDLINE, Allied and Complementary Medicine (AMED) and SPORTDiscus. Reference lists of all included studies and relevant reviews were hand-searched for additional studies. Eligibility criteria for selecting studies: Randomised controlled trials (RCTs) that evaluated the effectiveness of acupuncture in DOMS in adults measuring the pre-specified primary outcome (pain) were included. Data collection and analysis: Data were extracted using pre-defined extraction forms and the Standards for Reporting Interventions in Clinical Trials of Acupuncture (STRICTA) checklist. Quality of studies was evaluated based on the Cochrane risk of bias assessment.
Results	Five RCTs investigating laboratory-induced DOMS in the upper limbs with a total sample size of 182 healthy participants were included. Of the included studies, three reported superiority of acupuncture over no treatment in DOMS pain reduction as measured by visual analogue scale, pressure pain threshold or electrical pain threshold, while two studies yielded non-significant results. All studies demonstrated risk of bias in one or more areas, commonly lack of blinding of participants and personnel.
Summary/conclusion	There is conflicting to limited evidence to support the effects of acupuncture on the relief of pain associated with DOMS. The findings were confounded by methodological limitations and reporting insufficiency. More rigorous, high-quality, and well-reported RCTs are required to further evaluate the effectiveness of acupuncture for DOMS.