Evidence base

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RESEARCH

Cupping therapy is the current poster-child for Chinese medicine, thanks to its eye-catching use by photogenic Olympic athletes such as Michael Phelps.

There has been a flurry of interest in the media, including the usual journalistically-manufactured tug of war between enthusiastic anecdotal reports of its usefulness by those who have received it and 'believe in it' on one side, and sceptics saying it has 'no scientific basis' on the other.

Below are summaries of some of the most recent scientific studies on cupping. Hopefully they will be of use to practitioners trying to explain the benefits and mechanisms of cupping to patients, journalists and sceptics alike.

Evidence for cupping as a treatment for musculoskeletal pain is promising. In the most recently reported (2016) clinical study, 60 Taiwanese subjects with neck and shoulder pain received either cupping therapy (CT) at local points or no treatment. Neck pain intensity decreased by six points on a ten-point scale in the cupping group, but did not change in the control group. Cupping was also shown to increase skin surface temperature, due to increased blood flow resulting from vasodilation, and reduce blood pressure.

In a 2013 German study, 61 patients with chronic neck pain were randomised to either partner-delivered, home-based cupping massage, or progressive muscle relaxation, and asked to undertake the assigned treatment twice weekly for 12 weeks. After the treatment period, both cupping and relaxation groups showed clinically relevant reductions in subjective pain reports compared to baseline, without significant differences between the two types of treatment. However, cupping performed significantly better in terms of increased wellbeing and decreased objective pain threshold measurements.

The Effectiveness of Cupping Therapy on Relieving Chronic Neck and Shoulder Pain: A Randomized Controlled Trial. Evid Based Complement Alternat Med. 2016;2016:7358918 ❱ tinyurl.com/h4ngmcd

Effectiveness of home-based cupping massage compared to progressive muscle relaxation in patients with chronic neck pain--a randomized controlled trial. PLoS One. 2013 Jun 7;8(6):e65378 ❱ tinyurl.com/hrgx9v7

Small preliminary studies support the use of cupping for low back pain and knee osteoarthritis. Twenty-one patients with chronic back pain received a single session of cupping over the lower erector spinae muscles in a US pilot study. Significant improvements were found in the subjects' perceived pain after the treatment, and they also showed increased pressure pain tolerance and increased range of motion. German researchers allocated 40 patients with knee osteoarthritis to either eight sessions of cupping over four weeks or no intervention (both groups were allowed to take painkillers). Compared with controls, patients who received cupping demonstrated statistically and clinically significant differences in osteoarthritis measures (including pain, stiffness and physical function) after four weeks of treatment and these persisted at eight week follow up. Meanwhile an Indian team found that the effects of cupping therapy on knee osteoarthritis symptoms were comparable to that of paracetamol, in terms of analgesia, inflammatory control and resolution of oedema, with minimal side effects compared with the drug.

A pilot study analysing the effects of Chinese cupping as an adjunct treatment for patients with subacute low back pain on relieving pain, improving range of motion, and improving function. J Altern Complement Med. 2014 Feb;20(2):113-7) ❱ tinyurl.com/zl3x7ga

Pulsatile dry cupping in patients with osteoarthritis of the knee - a randomized controlled exploratory trial. BMC Complement Altern Med. 2012 Oct 12;12:184 ❱ tinyurl.com/zyw4jr6

Management of knee osteoarthritis with cupping therapy. J Adv Pharm Technol Res. 2013 Oct;4(4):217-23

The most up-to-date and comprehensive review of the evidence supporting cupping as a treatment for musculoskeletal pain is a 2015 paper by two Israeli authors, published in the Journal of Bodywork & Movement Therapies. They trace the history of cupping therapy, summarise clinical studies and examine its mechanical and physiological mechanisms of action, as well as its potential complications. The authors report that the physiological effects of cupping are based on its ability to activate the immune system, both by increasing lymph flow and by causing local inflammation. Tissue trauma leads to increased blood flow, followed by activation of the complement cascade and an increase in concentrations of histamine, serotonin, potassium ions, prostaglandins and bradykinin, as well as pro-inflammatory cytokines (including interleukins, tumor necrosis factor and interferon). Cupping also instigates an analgesic effect via nerves that are sensitive to mechanical stimulation. Its mechanism of action in this regard is similar to acupuncture in that it activates Aδ and C nerve fibres, which provoke the diffuse noxious inhibitory control (DNIC) system - a pain modulation pathway which has been described as 'pain inhibits pain'. In addition, as a form of massage and social interaction, cupping can induce comfort and relaxation on a systemic level, and the resulting increase in endogenous opioid production leads to improved pain control. The authors conclude that since cupping is an inexpensive, non-invasive and low-risk (if performed by a trained practitioner) therapeutic modality, that it should be included in the arsenal of musculoskeletal medicine.

Arya Nielsen's extensive work on the mechanisms of gua sha is also highly relevant to cupping, since many of the same therapeutic actions apply. The two techniques cause a significant increase in surface microperfusion, and the therapeutic petechiae caused by both are due to red blood cells that have extravasated from the capillary bed. Nielsen explains that as this blood is reabsorbed, the breakdown of haemoglobin upregulates gene expression for heme oxygenase-1 (HO-1), an enzyme that is an antioxidant and cytoprotectant, as are its products (biliverdin, bilirubin and carbon monoxide).

And...if you really want to geek out on the intricacies of the underlying neurobiological bases for cupping and related therapies like gua sha, look no further than Musial et al's 2013 review paper on the subject.

New is the well-forgotten old: The use of dry cupping in musculoskeletal medicine. J Bodyw Mov Ther. 2016 Jan;20(1):173-8 ❱ tinyurl.com/ho7mqdu

The Science of Gua Sha ❱ tinyurl.com/glh29ph

Naturopathic reflex therapies for the treatment of chronic back and neck pain - Part 1: Neurobiological foundations. Forsch Komplementmed. 2013;20(3):219-24 ❱ tinyurl.com/ho9tokg

Positive short-term effects of cupping on reducing pain intensity compared with no treatment, heat therapy, usual care, and conventional drugs were confirmed in a 2014 systematic review covering 16 trials with 921 participants. However, since only six of these trials were assessed as low risk of bias, many more high quality research studies are of course needed in order to fully confirm the efficacy of the treatment in western scientific terms.

Cupping therapy for acute and chronic pain management: a systematic review of randomized clinical trials. Journal of Traditional Chinese Medical Sciences 2014;1(1):49–61 ❱ tinyurl.com/hmrjtaf

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