British Acupuncture Council

ACUPUNCTURE AND FROZEN SHOULDER

About frozen shoulder

Frozen shoulder (adhesive capsulitis) is a common, painful and sometimes disabling condition that can last for months or years. It affects around 2% of adults (Lundberg 1969). The characteristic symptoms are pain, stiffness, and limitation of active and passive shoulder movements (particularly external rotation of the joint) (DTB 2000). They may be severe enough to interfere with everyday activity (e.g. driving, dressing or sleeping), and may prevent some patients from working.

There is no universally accepted definition of frozen shoulder and the cause is poorly understood (Naviaser 1987, Bunker 1997). It is thought that scar tissue forms in the fibrous capsule surrounding the shoulder joint (Bunker 1997), causing it to thicken and contract, so restricting shoulder movement. Frozen shoulder is most common in people aged 40–60 years and, in up to 20% of those affected, it will later develop in the other shoulder (Harryman 1998). Risk factors include female sex, older age, shoulder trauma and surgery, diabetes, and cardiovascular, cerebrovascular and thyroid disease (Speed 2006).

The aims of treatment are to relieve pain, minimise joint restriction and speed resolution of the condition (DTB 2000). Common treatment approaches include simple analgesics, nonsteroidal anti-inflammatory drugs, local corticosteroid injections and physiotherapy.

References

Bunker TD. Frozen shoulder: unravelling the enigma. *Ann R Coll Surg Engl* 1997; 79: 210-3.

Harryman DT et al. The Stiff Shoulder. In: Rockwood Jr CA, Matsen III FA (Eds). *The Shoulder.* Second edition. USA: WB Saunders, 1998.

Lundberg BJ. The frozen shoulder. *Acta Orthop Scand* 1969; 119: 1-59.

Need patients be stuck with frozen shoulder. *DTB* 2000; 38: 86-8.

Neviaser TJ. Adhesive capsulitis. *Orthop Clin North Am* 1987; 18: 439-43.

Speed C. Shoulder Pain. *Clinical Evidence*. Search date February 2006.

How acupuncture can help

Some clinical trials suggest that acupuncture may improve recovery in patients with a frozen shoulder, either when used alone or in combination with physiotherapy, but more high quality studies are needed to confirm this (Cheing 2008, Ma 2006, Sun 2001). A Cochrane systematic review found little evidence to support or refute the use of acupuncture for shoulder pain, but concluded that there may be short-term benefit with respect to pain and function (Green 2005). (see Table overleaf)

Acupuncture can reduce pain, inflammation, muscle and joint stiffness, and so may help in the treatment of frozen shoulder, by:

- stimulating nerves located in muscles and other tissues, which leads to release of endorphins and other neurohumoral factors, and changes the processing of pain in the brain and spinal cord (Pomeranz, 1987, Zijlstra 2003, Zhao 2008, Cheng 2009);
- reducing inflammation, by promoting release of vascular and immunomodulatory factors (Kim 2008, Kavoussi 2007, Zijlstra 2003);
- enhancing local microcirculation, by increasing the diameter and blood flow velocity of peripheral arterioles (Komori 2009).

About traditional acupuncture

Acupuncture is a tried and tested system of traditional medicine, which has been used in China and other eastern cultures for thousands of years to restore, promote and maintain good health. Its benefits are now widely acknowledged all over the world, and in the past decade traditional acupuncture has begun to feature more prominently in mainstream healthcare in the UK. In conjunction with needling, the practitioner may use techniques such as moxibustion, cupping, massage or electro-acupuncture. They may also suggest dietary or lifestyle changes.

Traditional acupuncture takes a holistic approach to health and regards illness as a sign that the body is out of balance. The exact pattern and degree of imbalance is unique to each individual. The traditional acupuncturist's skill lies in identifying the precise nature of the underlying disharmony and selecting the most effective treatment. The choice of acupuncture points will be specific to each patient's needs. Traditional acupuncture can also be used as a preventive measure to strengthen the constitution and promote general wellbeing.

An increasing weight of evidence from Western scientific research (see overleaf) is demonstrating the effectiveness of acupuncture for treating a wide variety of conditions. From a biomedical viewpoint, acupuncture is believed to stimulate the nervous system, influencing the production of the body's communication substances - hormones and neurotransmitters. The resulting biochemical changes activate the body's self-regulating homeostatic systems, stimulating its natural healing abilities and promoting physical and emotional wellbeing.

About the British Acupuncture Council

With over 3000 members, the British Acupuncture Council (BAcC) is the UK's largest professional body for traditional acupuncturists. Membership of the BAcC guarantees excellence in training, safe practice and professional conduct. To find a qualified traditional acupuncturist, contact the BAcC on 020 8735 0400 or visit www.acupuncture.org.uk

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The evidence

Research	Conclusion
Reviews	
Green S et al. Acupuncture for shoulder pain. *Cochrane Database Syst Rev* 2005; 18: CD005319.	A systematic review, including nine randomised controlled trials, that assessed the evidence for acupuncture in the treatment of frozen shoulder and other causes of shoulder pain (e.g. rotator cuff disease, osteoarthritis). There was no significant difference in short-term improvement associated with acupuncture when compared to placebo, but this could have been due to small sample sizes. Acupuncture was of benefit over placebo in improving the Constant Murley Score (a measure of shoulder function) at 4 weeks (weighted mean difference [WMD] 17.3, 95% CI 7.79 to 26.81). By 4 months, the difference between the acupuncture and placebo groups was still statistically significant, but the reviewers considered that it was no longer likely to be clinically significant (WMD 3.53, 95% CI 0.74 to 6.32). The results of a small pilot study demonstrated some benefit of both traditional and ear acupuncture plus mobilisation over mobilisation alone. There was no difference in adverse events related to acupuncture when compared to placebo, but this was assessed by only one trial. The reviewers concluded that, due to a small number of clinical and methodologically diverse trials, little can be concluded from their review, and that there is little evidence to support or refute the use of acupuncture for shoulder pain although there may be short-term benefit with respect to pain and function.
Clinical studies	
Cheing GL et al. Effectiveness of electroacupuncture and interferential electrotherapy in the management of frozen shoulder. *J Rehabil Med* 2008; 40: 166-70.	A double-blind randomised controlled trial that assessed the addition of either electroacupuncture or interferential electrotherapy to shoulder exercises in the management of frozen shoulder. A total of 70 subjects were randomly allocated to receive either one of the test interventions (10 sessions) or no treatment (the control group), all for 4 weeks. Each patient's score on the Constant Murley Assessment and visual analogue scale were recorded at baseline, at the post-treatment session and at subsequent follow-up sessions. In both the electroacupuncture and interferential electrotherapy groups, the Constant Murley Assessment score increased and the visual analogue scale score decreased significantly (both $p < 0.001$). No significant change was seen in any outcome of the control group, and no significant difference was found between the two test intervention groups (all $p > 0.05$). The observed improvement in both intervention groups lasted at least until the 6-month follow-up session. The researchers concluded that electroacupuncture or interferential electrotherapy in combination with shoulder exercises are both effective treatments for frozen shoulder, and are similarly effective.
Ma T et al. A study on the clinical effects of physical therapy and acupuncture to treat spontaneous frozen shoulder. *Am J Chin Med* 2006; 34:759-75.	A study that aimed to assess the therapeutic outcomes of combining acupuncture and physical therapy to treat frozen shoulder in 75 patients (mean age 54.8 years). The average duration of frozen shoulder was 25.8 weeks. In all, 30 patients were treated with physical therapy, 30 with acupuncture and 15

	with both therapies. Before treatment, all patients were evaluated for static pain, motion pain, active and passive range of motion and quality of life. Follow-up assessments were conducted in the 2nd and 4th week. All patients showed improvement in quality of life (Short Form-36). Pain was controlled better by acupuncture while range of motion improved following physical therapy. However, patients treated by both methods had the best outcome. The researchers concluded that a combination of acupuncture and physical therapy to treat frozen shoulder leads to a better outcome than using only one or other therapy.
Sun KO et al. Acupuncture for frozen shoulder. *Hong Kong Med J* 2001; 7: 381-91.	A randomised controlled trial that evaluated the effectiveness of acupuncture for frozen shoulder in 35 patients. The treatment groups comprised exercise alone or exercise plus acupuncture, both given for 6 weeks. Functional mobility, power and pain were assessed by a blinded assessor using the Constant Shoulder Assessment, at baseline, 6 weeks and 20 weeks. Patients in the exercise plus acupuncture group experienced significantly greater improvement (76.4% vs. 39.8% with exercise alone; p=0.048). This was sustained at the 20-week re-assessment (77.2% and 40.3%, respectively; p=0.025). The researchers concluded that the combination of acupuncture plus shoulder exercises may offer effective treatment for frozen shoulder.
Longbottom J, Green A. Effectiveness of single-point acupuncture to Stomach 38 (Tiaokou) on pain and disability in subjects with frozen shoulder. *J Acupunct Assoc Chart Physiotherapists* 2009; 1: 37-46.	An n-of-1 study that assessed the effects of acupuncture at a single point (ST38) compared to exercises alone on range of shoulder movement, pain and disability in four patients with primary idiopathic frozen shoulder. The protocol comprised five phases involving an initial baseline phase, an exercise A phase, an acupuncture intervention B phase, a further exercise A phase and a final acupuncture intervention B phase (i.e. an ABAB research design). These phases constituted the trial and included a total of 20 treatments over a period of 50 days. A second physiotherapist, who was blinded to the protocol received, administered the Shoulder Pain and Disability Index before and after the trial, and performed a baseline measurement assessment of active range of movement of the affected and unaffected shoulders, and then on four occasions during each ABAB phase for a total of 16 measurements. Two patients had a reduction in pain and disability, and some improvement in active shoulder elevation. The other two had no improvement in pain, disability or range of elevation. The researchers concluded that their result offered only limited evidence of the efficacy of the ST38 acupuncture point for improving symptoms of pain, stiffness and functional impairment in patients suffering from frozen shoulder, and were inconclusive.

Research on mechanisms for acupuncture in general

Komori M et al. Microcirculatory responses to acupuncture stimulation and phototherapy. *Anesth Analg* 2009; 108: 635-40.	An experimental study on rabbits, in which acupuncture stimulation was directly observed to increase diameter and blood flow velocity of peripheral arterioles, enhancing local microcirculation.
Cheng KJ. Neuroanatomical basis of acupuncture treatment for some common illnesses. *Acupunct Med*	A review that looked at the acupuncture treatment formulae for some common conditions, including sciatica, trigeminal neuralgia, and facial nerve palsy. It is found that, in many cases,

2009;27: 61-4.	the acupuncture points traditionally used have a neuroanatomical significance from the viewpoint of biomedicine. From this, the reviewers hypothesised that plausible mechanisms of action include intramuscular stimulation for treating muscular pain and nerve stimulation for treating neuropathies.
Kim HW et al. Low-frequency electroacupuncture suppresses carrageenan-induced paw inflammation in mice via sympathetic post-ganglionic neurons, while high-frequency EA suppression is mediated by the sympathoadrenal medullary axis. *Brain Res Bul*. 2008; 75: 698-705.	An experimental study on rats, the results of which suggest that suppressive effects of low frequency electroacupuncture on carrageenan-induced paw inflammation are mediated by sympathetic post-ganglionic neurones, while suppressive effects of high frequency electroacupuncture are mediated by the sympatho-adrenal medullary axis.
Zhao ZQ. Neural mechanism underlying acupuncture analgesia. *Prog Neurobiol* 2008; 85(4): 355-75.	A review article that discusses the various peripheral and central nervous system components of acupuncture anaesthesia in detail.
Kavoussi B, Ross BE. The neuroimmune basis of anti-inflammatory acupuncture. *Integr Cancer Ther* 2007; 6: :251-7.	A review article that suggests the anti-inflammatory actions of traditional and electro-acupuncture are mediated by efferent vagus nerve activation and inflammatory macrophage deactivation.
Zijlstra FJ et al. Anti-inflammatory actions of acupuncture. *Mediators Inflamm* 2003;12: 59-69.	A review that suggests a hypothesis for the anti-inflammatory action of acupuncture. Insertion of acupuncture needle initially stimulates production of beta-endorphins, calcitonin gene-related peptide (CGRP) and substance P, leading to further stimulation of cytokines and nitric oxide (NO). While high levels of CGRP have been shown to be pro-inflammatory, CGRP in low concentrations exerts potent anti-inflammatory actions. Therefore, a frequently applied 'low-dose' treatment of acupuncture could provoke a sustained release of CGRP with anti-inflammatory activity, without stimulation of pro-inflammatory cells.
Pomeranz B. Scientific basis of acupuncture. In: Stux G, Pomeranz B, eds. Acupuncture Textbook and Atlas. Heidelberg: Springer-Verlag; 1987:1-18.	Needle activation of A delta and C afferent nerve fibres in muscle sends signals to the spinal cord, where dynorphin and enkephalins are released. Afferent pathways continue to the midbrain, triggering excitatory and inhibitory mediators in spinal cord. Ensuing release of serotonin and norepinephrine onto the spinal cord leads to pain transmission being inhibited both pre- and postsynaptically in the spinothalamic tract. Finally, these signals reach the hypothalamus and pituitary, triggering release of adrenocorticotropic hormones and beta-endorphin.

Terms and conditions