

PainWeek®

GET TO THE POINT!

Acupuncture for Pain Management

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Disclosures

- Stockholder: Mind Medicine Inc, Braxia Scientific Corp, Hollister Biosciences Inc, Compass Pathways Plc

ALSO:

- I like a wordy slide
- I enjoy an onslaught of evidence review
- I practice “Westernized” acupuncture

Learning Objectives

- Review the historically understood mechanism/description of acupuncture
- Discuss possible anatomic correlates of acupuncture points and meridians
- Explore evidence regarding possible mechanisms of action
- Summarize patient oriented evidence for efficacy and indications for use
- Introduce logistics of obtaining or providing acupuncture therapy

Acupuncture: historical understanding

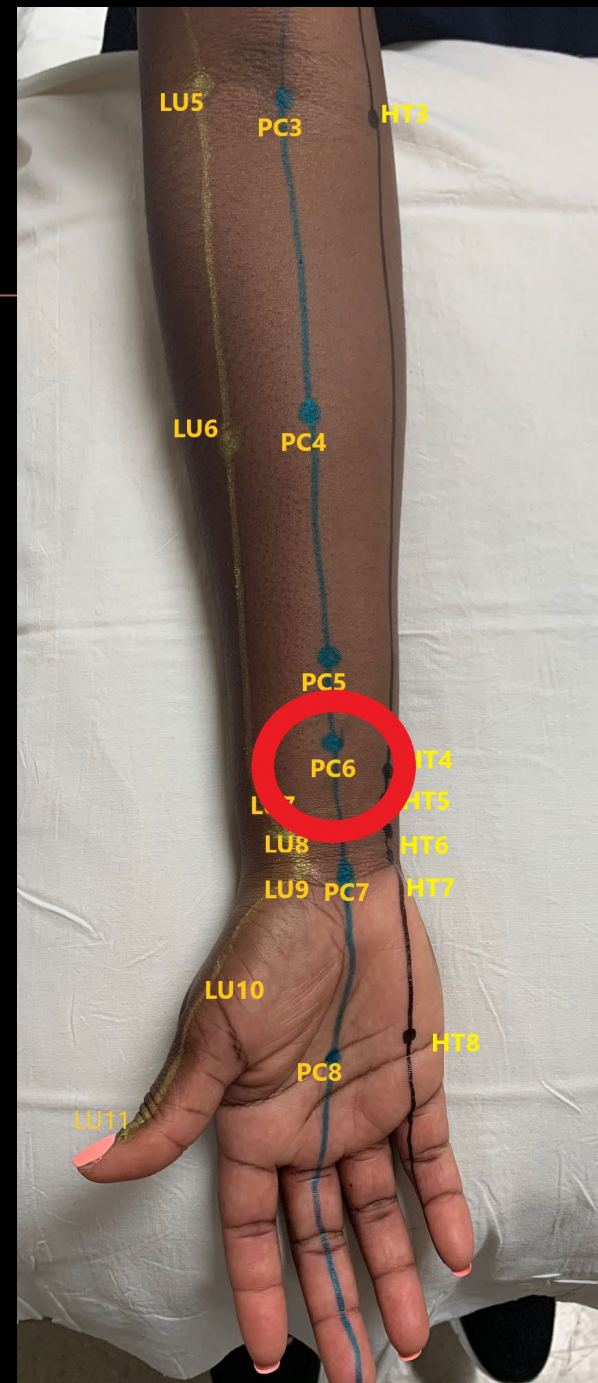
- Earliest major reference on acupuncture: Huangdi Naijing 黄帝内经 (Yellow Emperor's Inner Classic)
 - Han dynasty (206 B.C.- 220 A.D.)
- **Qi 气 (vital force, or life energy)** flows through channels/meridians
- 12 primary meridians, each corresponding to an organ or TCM organ function
 - kidney-heart-small intestine-bladder
 - liver-pericardium-triple warmer-gall bladder
 - spleen-lung-large intestine-stomach
 - 8 secondary or “extra-ordinary” meridians
 - Injury, illness, stress deplete or block qi

Acupuncture: historical understanding

- The number of described points varies by text (300s-600s)
 - WHO proposed standardization of acupuncture nomenclature identifies 361 points
 - Acupuncture points have a traditional individual Chinese name, and are also numerically named by meridian
- Each point is meant to have specific associations to functions
- Manipulation of specific points via needling, heat, pressure, light wavelength, or electricity is intended to stimulate flow through a meridian and/or replete a deficiency

PC6 (pericardium 6): 內關 nei guan (inner pass)

- Volar forearm, proximal to flexor retinaculum
- Between FCR and palmaris longus
- Reported functions: treatment of nausea, indigestion/hiccups, chest pain, palpitations, arm pain, PONV



Other manual modalities:

Cupping



GuaSha

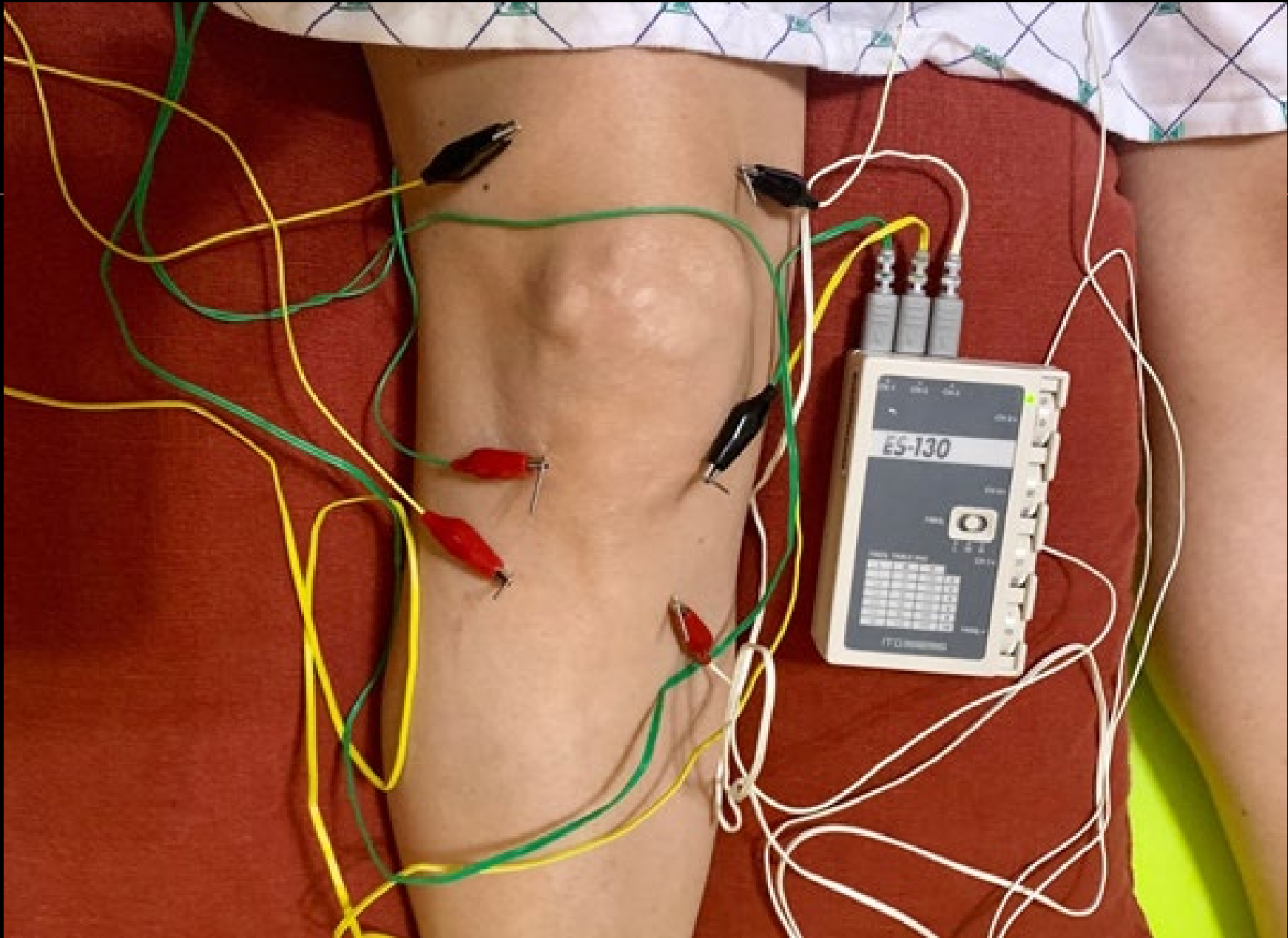


Moxabustion

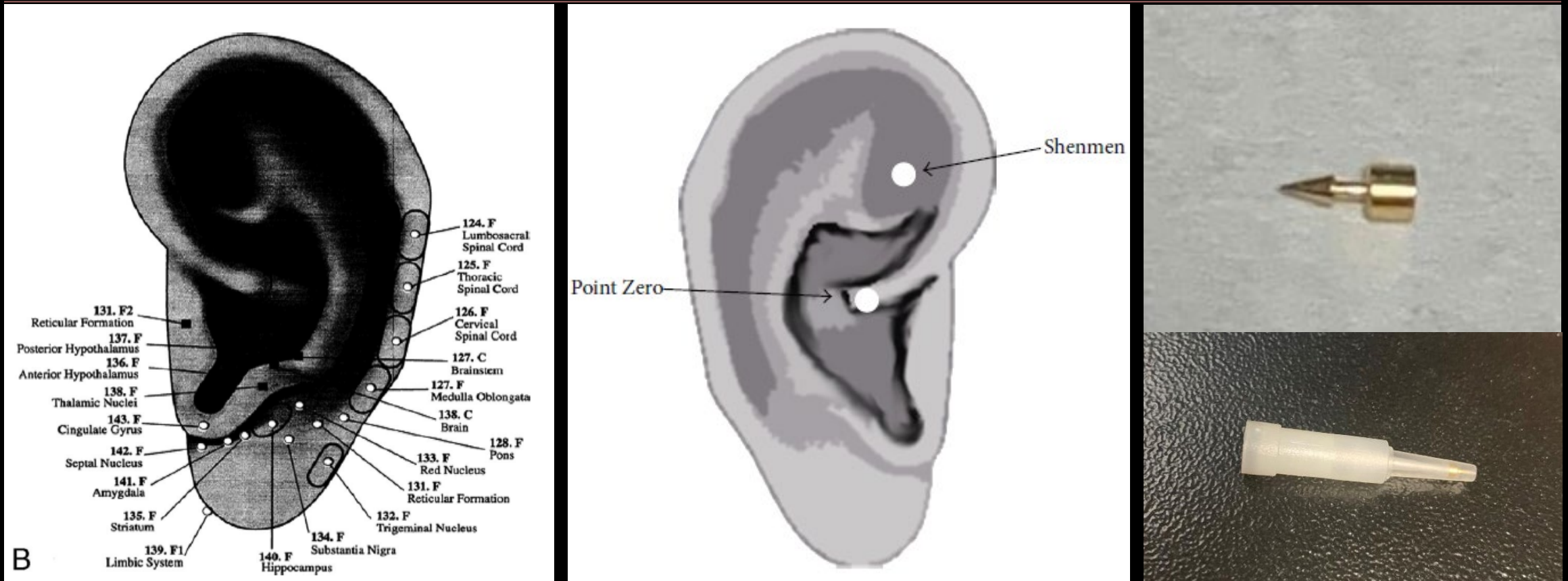


Acupuncture treatment paradigms

- TCM evaluation: tongue, pulses, hand shape, odor, auscultation, tender points
- **De Qi (得气)**
 - Subjective sensations of the acupuncture point
 - Quantified using MASS (Massachusetts General Hospital Acupuncture Sensation Scale)
- Local vs non-local treatment
 - Ah-shi points
- Electrical Acupuncture (EA) vs Manual or Simple Acupuncture (MA/SA)
- Microsystem acupuncture
 - (scalp acupuncture, auricular—ear--acupuncture, hand or foot)
 - Based on the idea of somatotopic mapping (or the idea that particular locations on the scalp, ear, etc, correspond to specific other parts of the body)



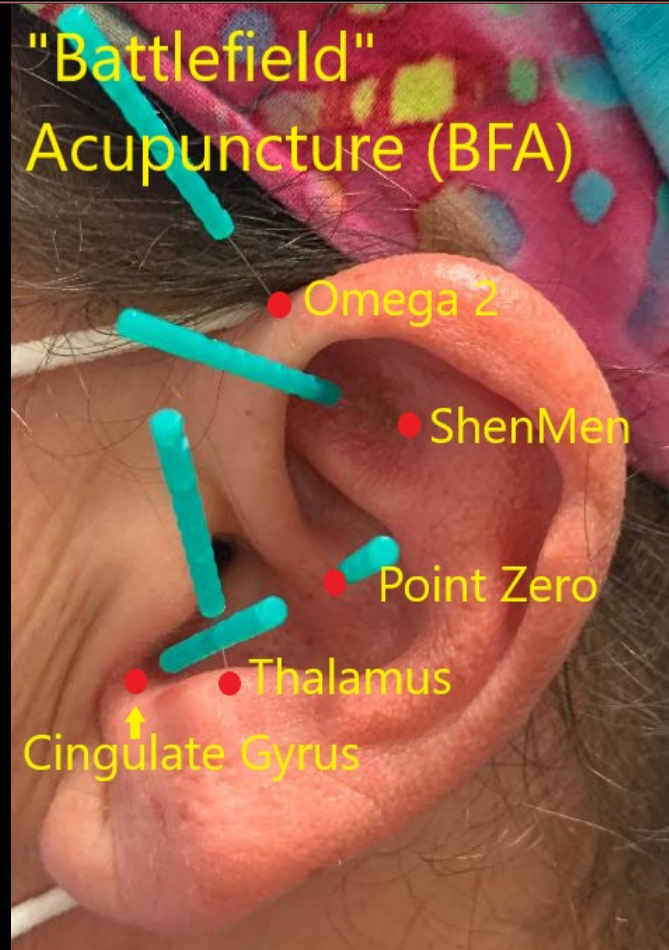
Auricular acupuncture (an acupuncture microsystem)



Goertz, et al. Auricular Acupuncture in the Treatment of Acute Pain Syndromes: A Pilot Study. Military Medicine. 2006; 171(10): 1010-1014

Arai, et al. Auricular Acupuncture at the "Shenmen" and "Point Zero" Points Induced Parasympathetic Activation. Evidence Based Complimentary and Alternative Medicine. 2013; 2013: 945063

Aricular acupuncture stock treatments: BFA & NADA



Battlefield Acupuncture

- Developed by military physicians
- 2021 meta-analysis: N=344, no significant benefit
- 2017 meta-analysis: N=286, significant benefit
- 2020 retrospective of 11,000 pts found it was
 - Effective at reducing pain in >60% of pts treated
 - Associated with a pain reduction of 2.2-2.5 on 10pt NRS
 - Less effective in patients on opioids just prior to treatment

Yang, et al. Battlefield Acupuncture for Adult Pain: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. *The American Journal of Chinese Medicine*. 2020;49(1): 25-40

Jan, et al. Does Ear Acupuncture Have a Role for Pain Relief in the Emergency Setting? A Systematic Review and Meta-Analysis. *Medical Acupuncture*. 2017; 29(5): 276–289

Zeliadt, et al. Patient Feedback on the Effectiveness of Auricular Acupuncture on Pain in Routine Clinical Care: The Experience of 11,406 Veterans. *Medical Care*. 2020. 58(2 9 Suppl): S101–

S107

Is there something special about acupuncture points?

- Anatomic/histological (controversial/contradictory studies):
 - Increased microvessels
 - High density A-d and C-fiber neurons
 - High concentration mast cells
- Biomolecular (early, preliminary):
 - Adenosine, NO, cGMP, NE, O₂ partial pressure, ion concentration may be higher at acupuncture points
- Electroconductivity (controversial/contradictory studies):
 - Reduced impedance, higher conductance/capacitance
 - May not be demonstrated in patients with pathology in the associated domain

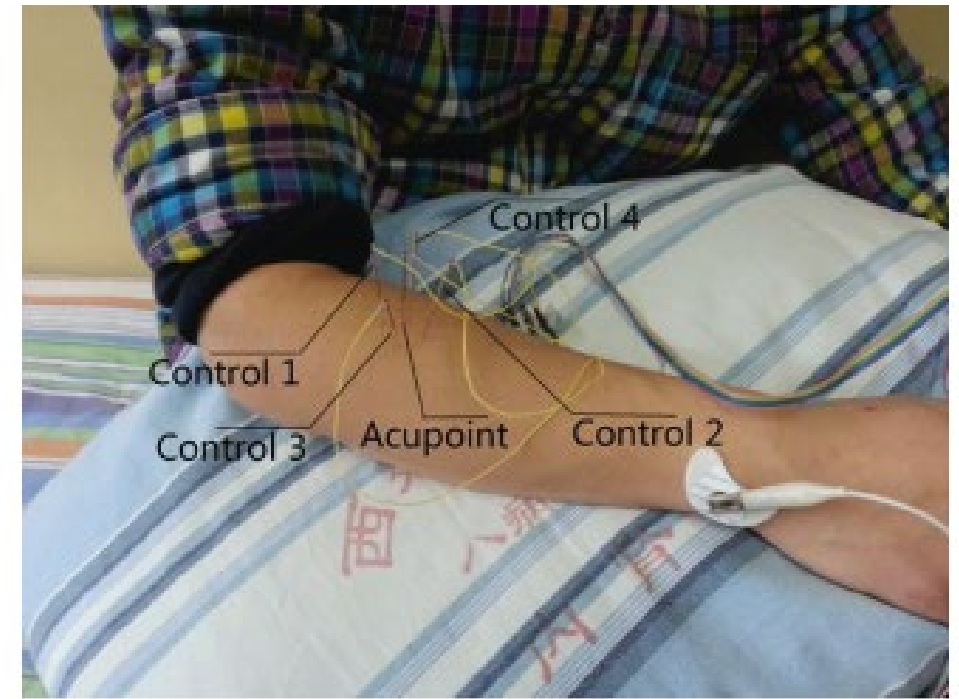
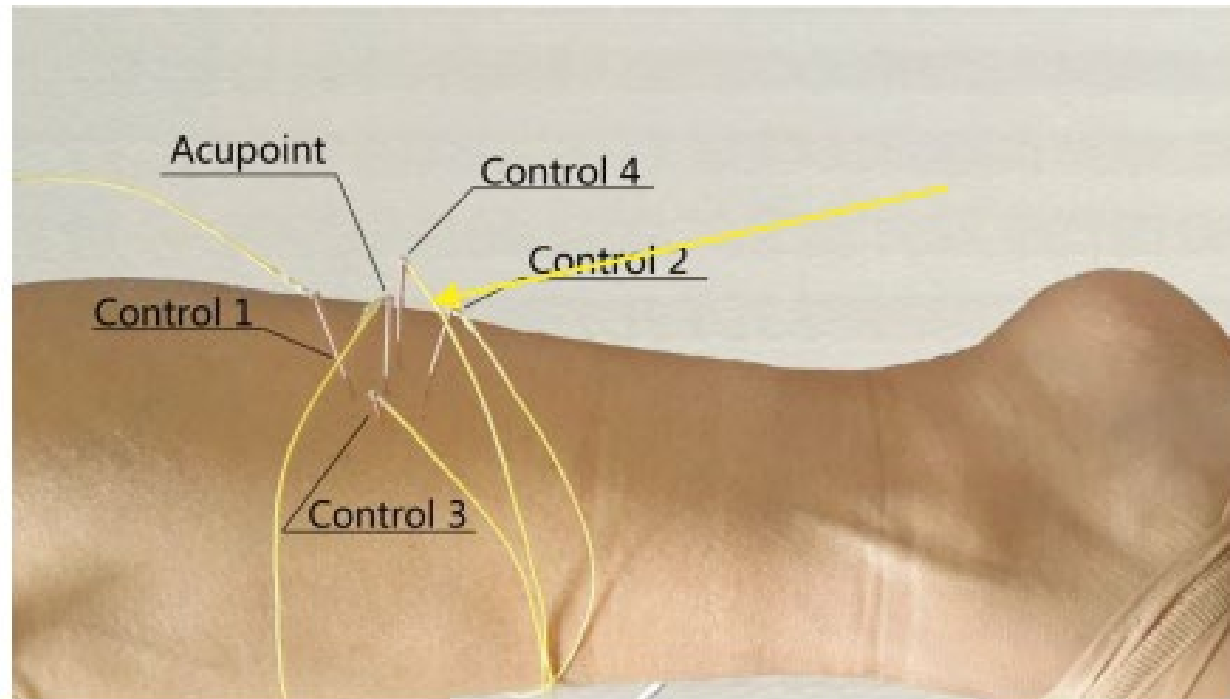
Lee, et al. What is the Acupoint? A Preliminary Review of Acupoints. Pain Medicine. 2015; 16: 1905-1915

Andrew Ahn, et al. Electrical properties of acupuncture points and meridians: A systematic review. BioElectroMagnetics. 2008; 29(4): 245-256

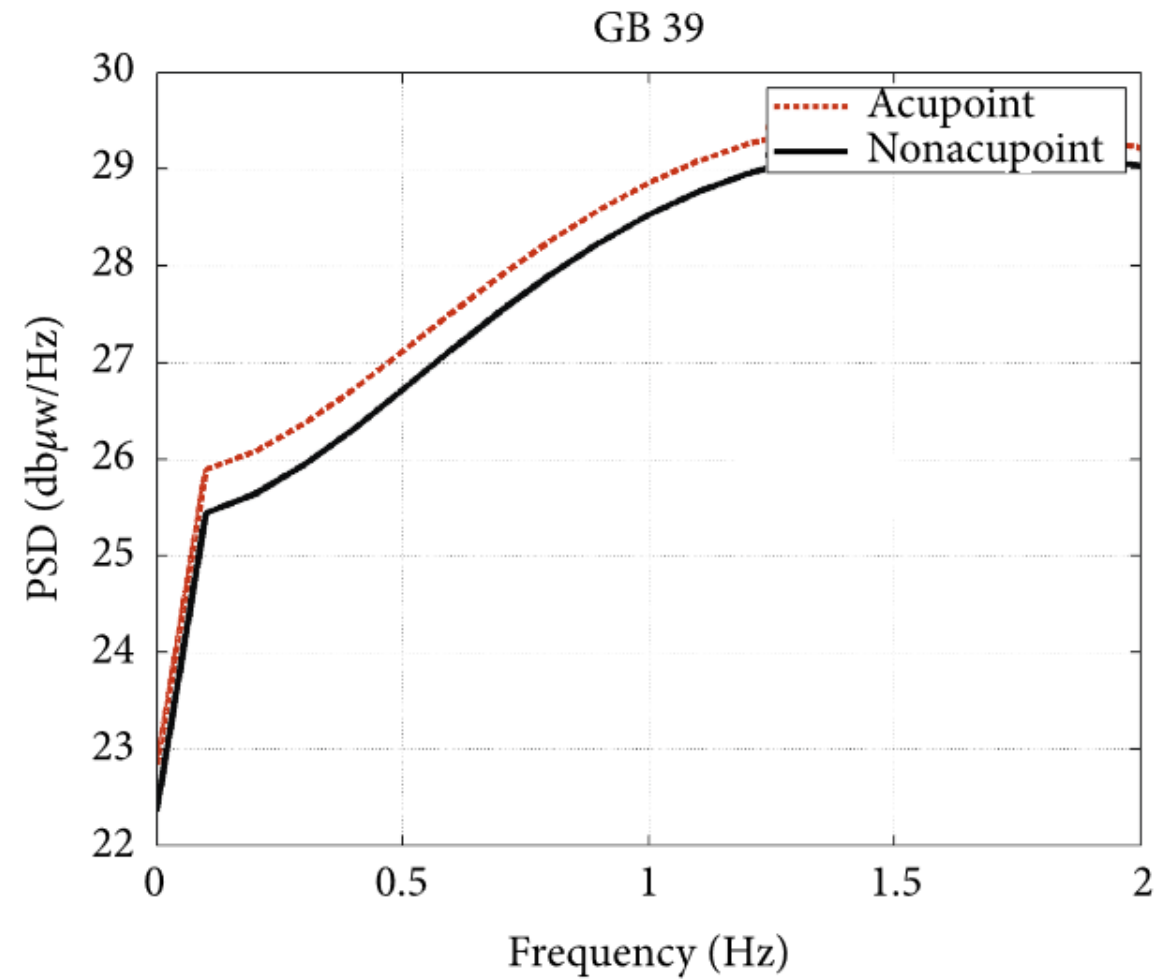
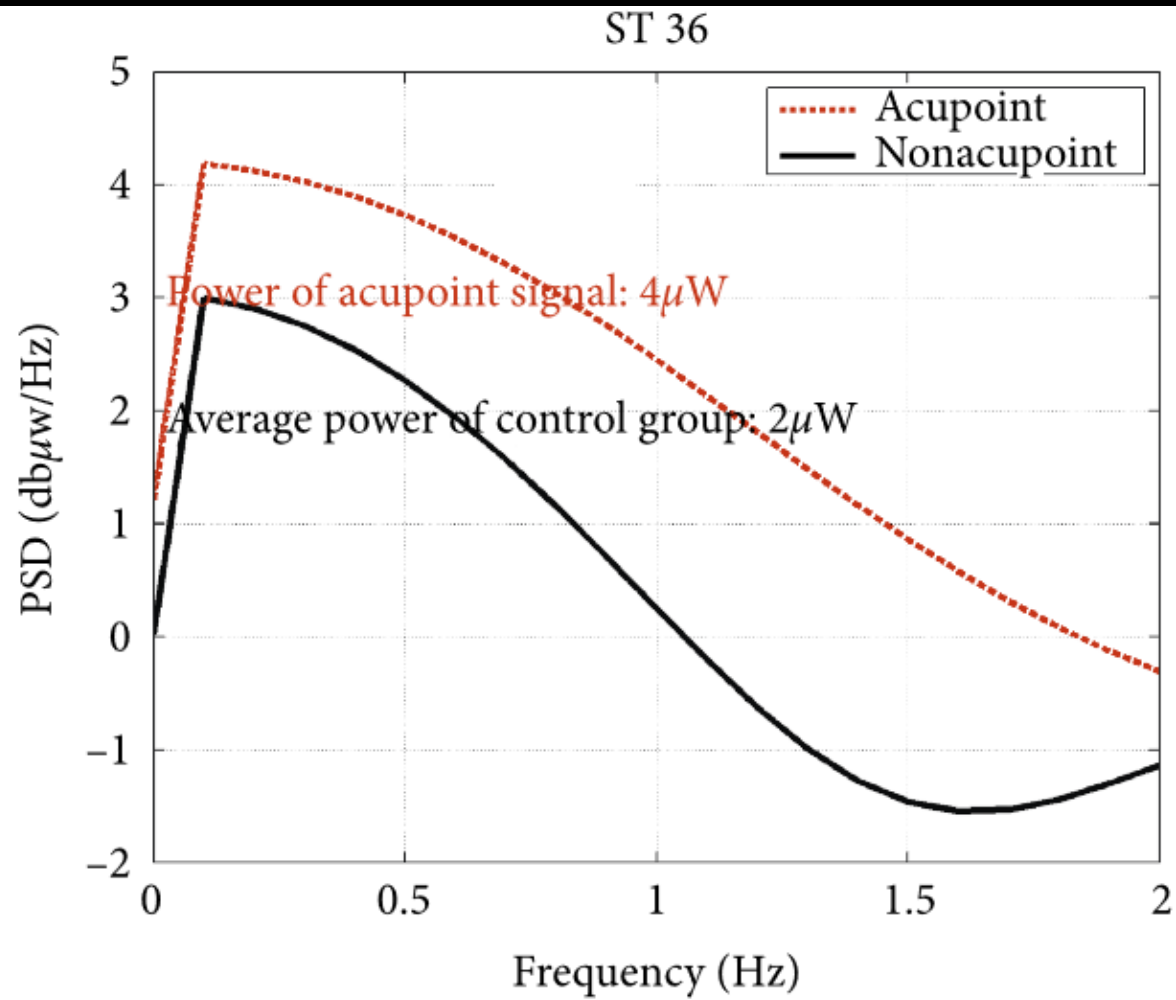
Measurement of electrical resistance can be influenced by...

- Presence of sweat glands
- Frequency used to test
- Electrode polarization
- Local movement or electrical fields produce artifact
- Application of external electricity

Jingjing Zhang. Power Spectrum Features of Acupoint Bioelectricity Signal. Evidence-Based Complimentary and Alternative Medicine. 2021; 2021 (6638807)



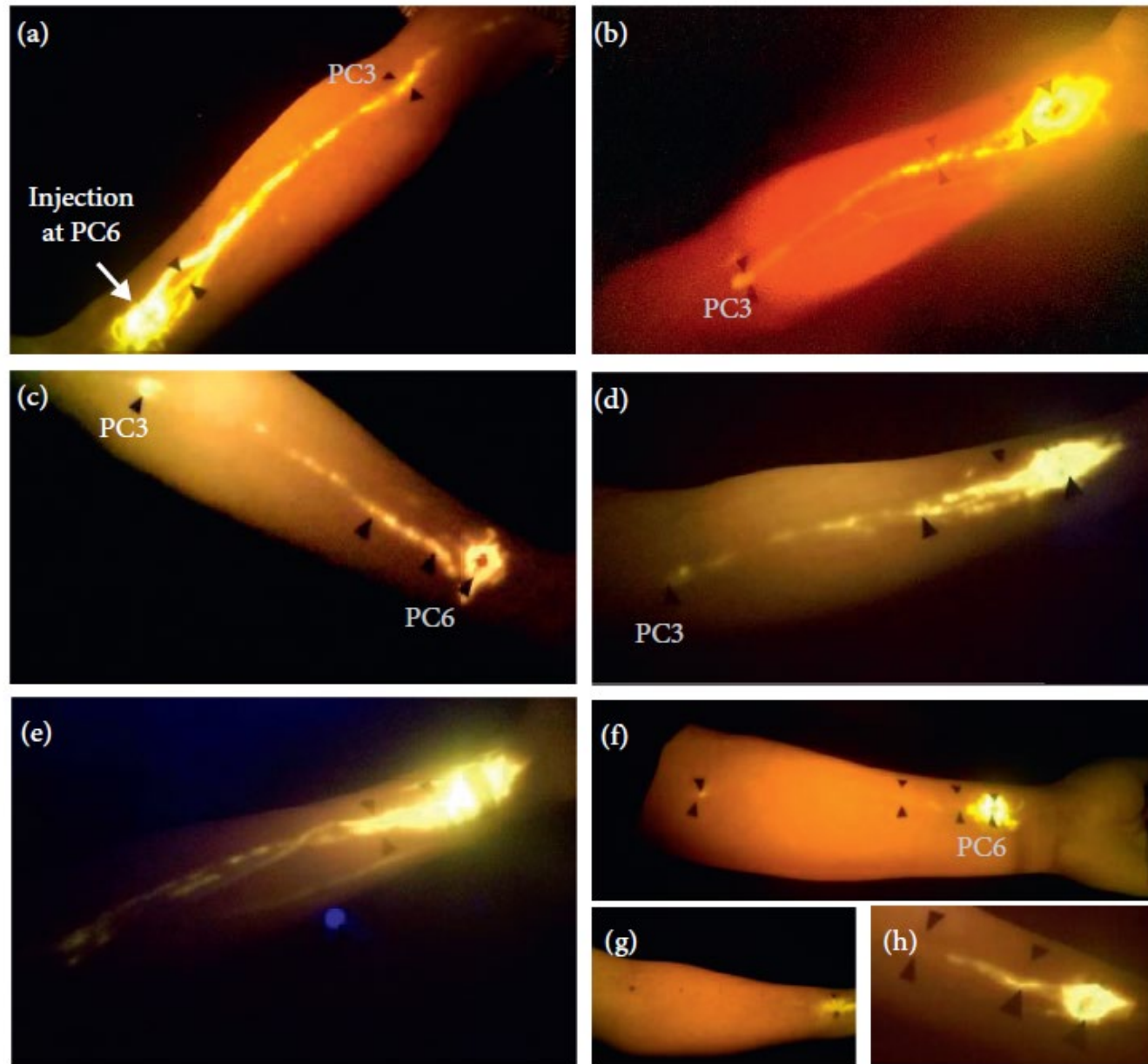
Jingjing Zhang, et al. Power Spectrum Features of Acupuncture Bioelectricity Signal. Evidence-Based Complimentary and Alternative Medicine. 2021; 2021 (6638807)



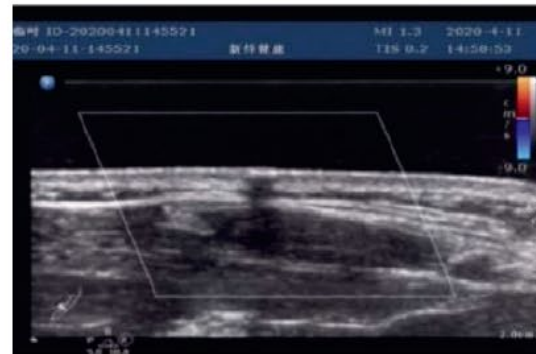
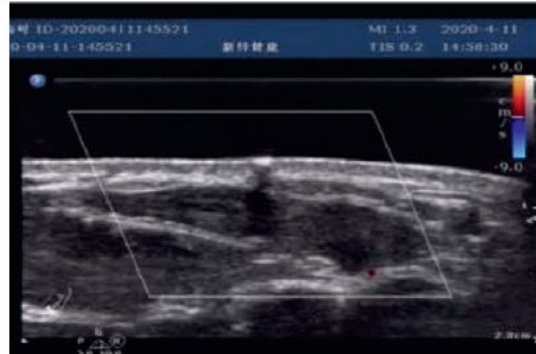
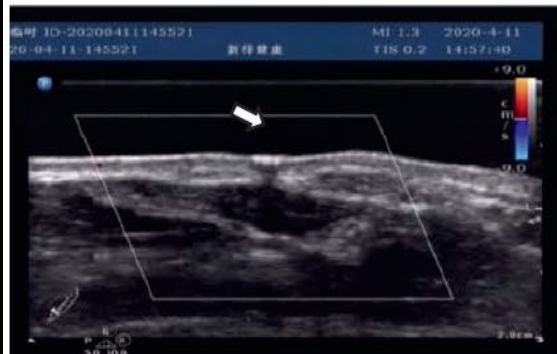
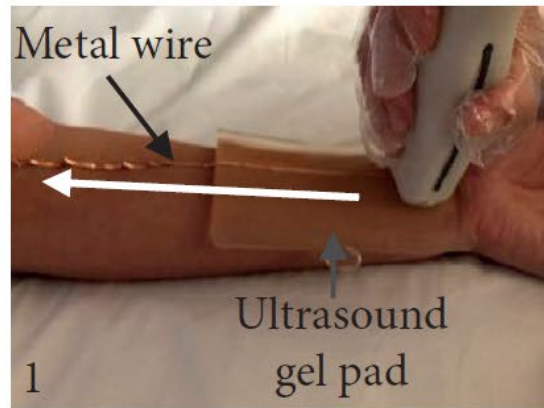
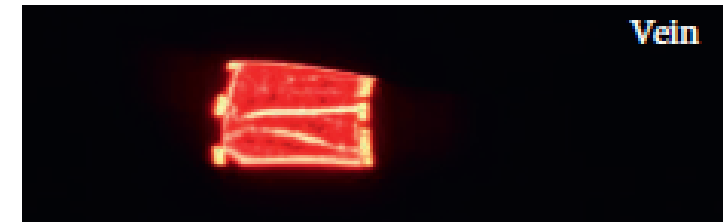
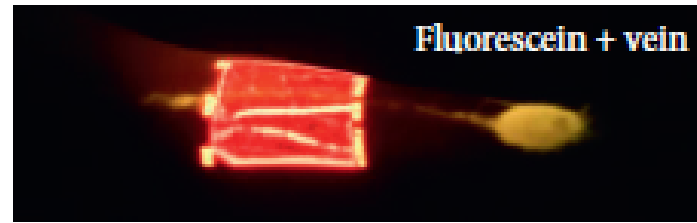
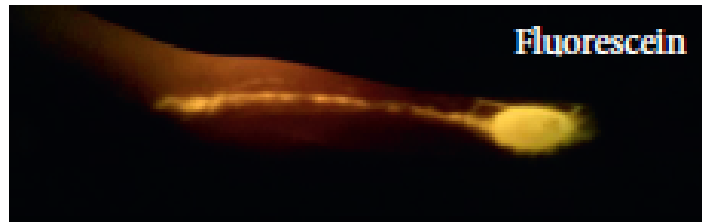
Jingjing Zhang, et al. Power Spectrum Features of Acupuncture Bioelectricity Signal. Evidence-Based Complementary and Alternative Medicine. 2021; 2021 (6638807)

Anatomic correlates of acupuncture points/meridians

- Is there any evidence for meridians?



Tangju Li, et al. In Vivo Visualization of the Pericardium Meridian with Fluorescent Dyes. Evidence Based Complimentary and Alternative Medicine. 2021; 2021 (5581227)



Physiologic Effects of Acupuncture

- Biochemical
- Neuro-functional

Physiologic Effects of Acupuncture: Biochemical

- Reduced inflammatory markers
 - In post-stroke patients, daily scalp acupuncture x7d reduced hs-CRP and NDS (neurological dysfunction scale) significantly better than control
 - In patients with RA, 14 sessions of acupuncture reduced CRP and ESR
 - In patients with Crohns Disease, acupuncture reduced CRP compared to sham control

JH Wang et al. Effect of scalp-acupuncture treatment on levels of serum high-sensitivity c-reactive protein, and pro-inflammatory cytokines in patients with acute cerebral infarction. *Acupuncture Research*. 2016; 41 (1): 80-84

Seung-Tae Kim, et al. The effect of acupuncture for changing the levels of erythrocyte sedimentation rate, C-reactive protein and cytokines in the sera of rheumatoid arthritis patients. *Korean Journal of Acupuncture*. 2009; 26(2): 27-38

Chun-Hui Bao. Randomized controlled trial: Moxibustion and acupuncture for the treatment of Crohn's disease. 2014. 20(31): 11000-11011

Physiologic Effects of Acupuncture: Biochemical

- Reduced inflammatory cytokines
 - In asthma patients, systemic IL-6 reduced
 - In patients with RA, 30 sessions of acupuncture reduced IL-6 and IL-1, and increased inhibitory cytokines IL-4 and IL-10 in serum or joint fluid
 - Electroacupuncture > simple acupuncture
 - In patients with OA, 24 sessions over 8 weeks reduced TNF- α , and multiple inflammatory cytokines
 - Electroacupuncture > simple acupuncture

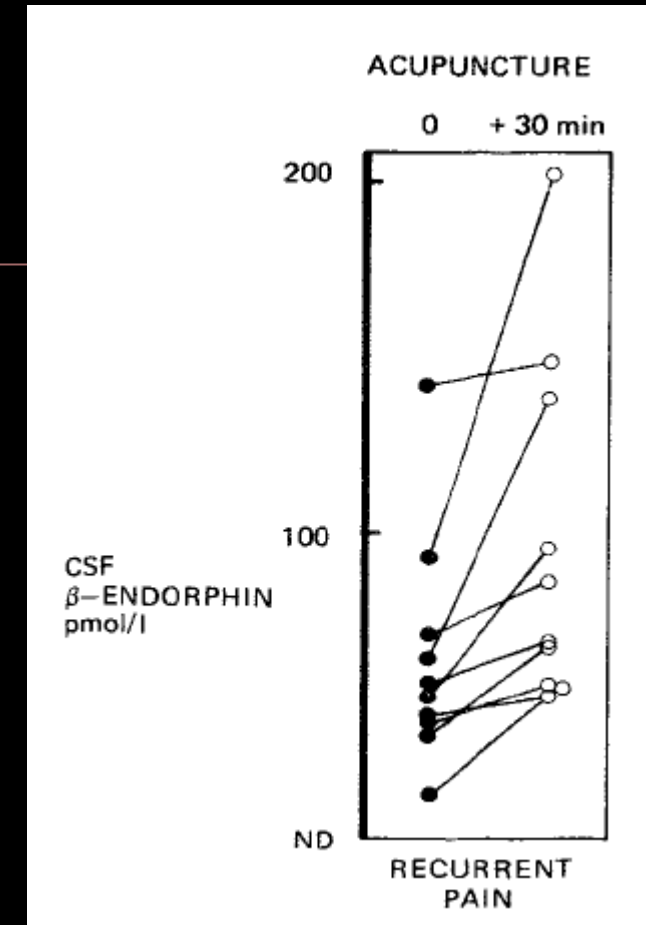
Jiang et al. Conventional Treatments plus Acupuncture for Asthma in Adults and Adolescents: A Systematic Review and Meta-Analysis. *Complimentary and Alternative Medicine*. 2019; 9580670

Ouyang et al. Effects of electroacupuncture and simple acupuncture on changes of IL-1, IL-4, IL6, and IL-10 in peripheral blood and joint fluid in patients with rheumatoid arthritis. *Zhonguo Zhen Jiu*. 2010; 30(10): 840-844

Shi, et al. Effect of Electro-Acupuncture (EA) and Manual Acupuncture (MA) on Markers of Inflammation in Knee Osteoarthritis. *Journal of Pain Research*. 2020; 13: 2171-2179

Physiologic Effects of Acupuncture: Biochemical

- Low frequency electro-acupuncture increases β -endorphin concentration in CSF
- Different electroacupuncture frequencies (i.e. 2Hz vs 100Hz) modulate different endorphins
 - Alternate frequencies rather than running them simultaneously to stimulate multiple endorphins
- HOWEVER...naloxone doesn't seem to abolish benefit (in humans)

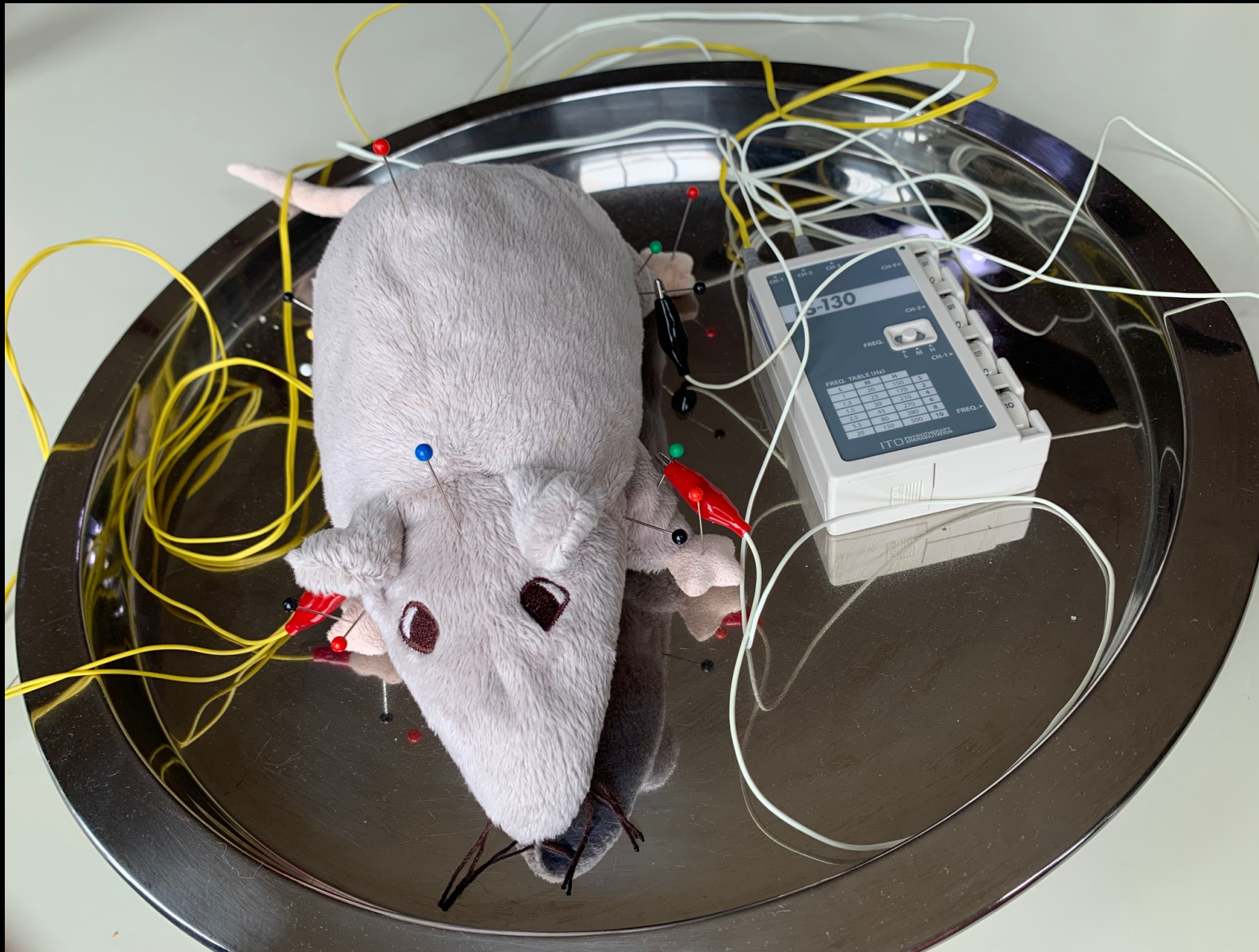


Jones, et al. Increased B-endorphin but not met-enkephalin levels in cerebrospinal fluid after acupuncture for recurrent pain. *The Lancet*. 1980. 316(8201): 946-949

Ji-Sheng Han. Acupuncture and Endorphins. *Neuroscience Letters*. 2004; 361(1-3): 258-261

Kenyon, et al. Randomized double-blind trial on the immediate effects of naloxone on classical Chinese acupuncture therapy for chronic pain. *Acupuncture & Electro-therapeutics Research*. 1983; 8(1): 17-24

Chapman, et al. Naloxone fails to reverse pain thresholds elevated by acupuncture: acupuncture analgesia reconsidered. *Pain*. 1983. 16(1): 13-31



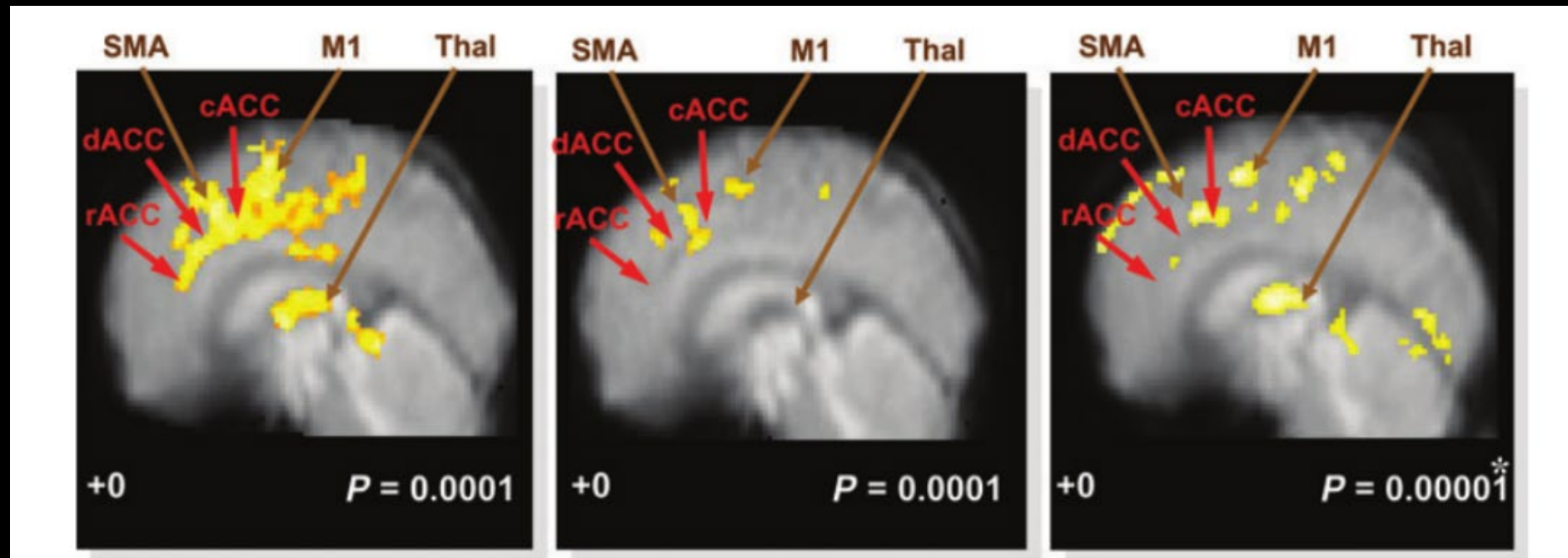
Pomeranz. Naloxone blockade of acupuncture analgesia: Endorphin implicated. Life Sciences. 1976; 19(11): 1757-1762

Physiologic Effects of Acupuncture: Neuro-functional

Pain

Pain + True
(Meridian Acu)

Pain + Sham
(Non-meridian Acu)



Cho, Z. Neural substrates, experimental evidences and functional hypothesis of acupuncture. Mechanisms. Acta Neurol Scand. 2006; 113: 370-77

Physiologic Effects of Acupuncture: Neuro-functional

- Acupuncture appears to modulate activity in the Default Mode Network (DMN)
- DMN: activity/connectivity in posterior cingulate gyrus and precuneus, medial prefrontal cortex, angular gyrus
 - “autopilot program” related to non-attention requiring states
 - theorized to be the neuroanatomic circuit of the “self”—memories, beliefs, goals
 - Wandering or “monkey” mind
- DMN activity is altered in psychiatric disorders, neurodegenerative disorders, and acute and chronic pain states

Whitfield-Gabrieli, and Ford. Default Mode Network Activity and Connectivity in Psychopathology. Annual Review of Clinical Psychology. 2012; 8: 49-76

Alshelh, et al. Disruption of default mode network dynamics in acute and chronic pain states. Neuroimage, Clinical. 2017; 17: 222-231

Physiologic Effects of Acupuncture: Neuro-functional

- Acupuncture can modulate function in DMN
- Study of 20 pts with LBP vs 10 healthy controls: at baseline, LBP pts had less connectivity in DMN regions
 - After 4 weeks of acupuncture, DMN activity similarity to healthy controls improved
 - Degree of improvement in pain correlated to degree of improvement in DMN
- Modulation of DMN increases with stimulation of acupuncture needles (increasing number of local needles or manual stimulation)

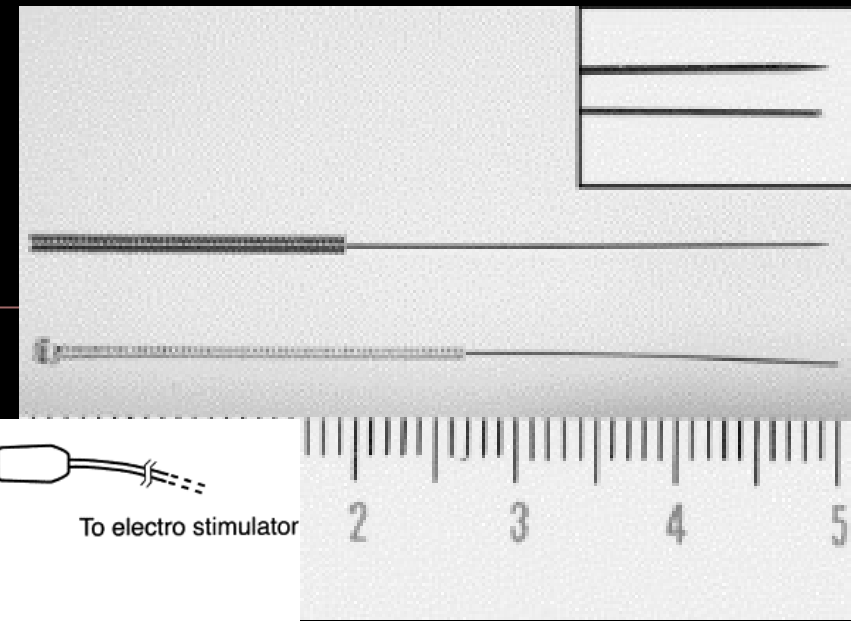
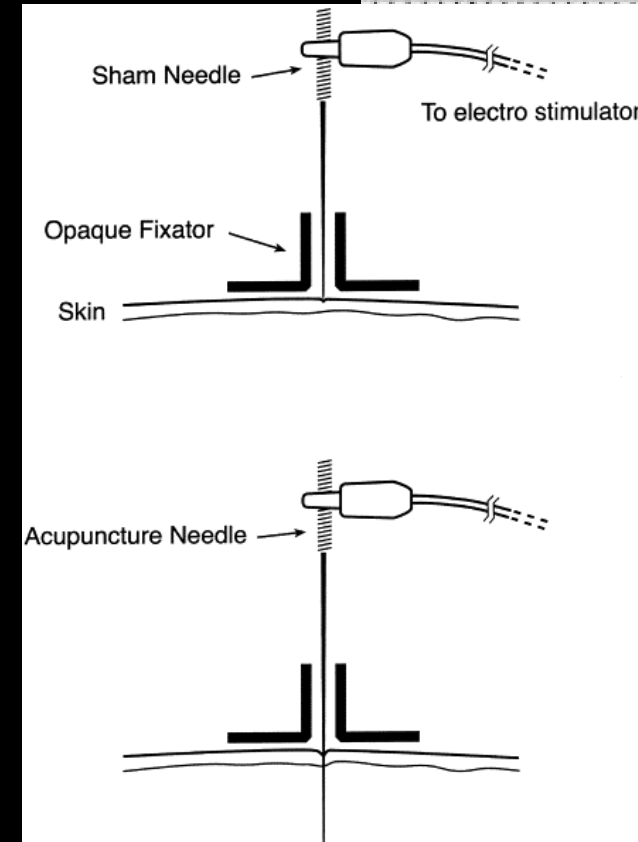
Li, et al. Acupuncture Treatment of Chronic Low Back Pain Reverses An Abnormal Brain Default Mode Network in Correlation with Clinical Pain Relief. *Acupuncture in Medicine*. 2014; 32(2): 102-108

Li, et al. Effect of acupuncture 'dose' on modulation of the default mode network of the brain. *Acupuncture in Medicine*. 2016; 34: 425-432

What is “Sham Acupuncture?”

- Manipulation or factitious manipulation of an acupuncture point or any body point to indicate a treatment has been provided
- Can be penetrating (needle placed), or non-penetrating
 - If puncture/needle based, typically uses needling of non-meridian locations
 - May use a small shallow needle at appropriate point, but quickly removed, or no attempt to elicit De Qi
- Non-puncture sham options:
 - Pressure (insertion tube, toothpick, etc), sham laser, TENS

What is “Sham Acupuncture?”



Is acupuncture a placebo?

- Wikipedia seems to think so
- Literature **NOT** supporting a significant benefit of acupuncture:
- Ernst: 9 year (2000-2009) systemic review of reviews without meta-analysis. Questions quality of studies, highlights conflicting results
 - identifies 95 severe AEs and 5 deaths
- Colquhoun: Editorial/Op-Ed
 - “We see no point in discussing surrogate outcomes, such as functional magnetic resonance imaging studies or endorphine release studies, until such time as it has been shown that patients get a useful degree of relief. It is now clear that they do not.”

Is acupuncture a placebo? **And is that a problem?**

- Placebo: neuro-humoral-immune modulation
 - Via expectation, co-regulation, interpersonal interactions
- Interpersonal interaction has clear and rapid biological effects
 - Empathetic care is associated with rapid/measurable changes in cytokines and white cells
- Placebo response is present in all treatments, some more than others
 - One analysis: ~80 of antidepressant benefit could be attributable to placebo
- Open Label Placebos (OLPs) have demonstrated benefit for pain, mood, other symptoms

Rakel, et al. Perception of Empathy in the Therapeutic Encounter: Effects on the Common Cold. Patient Education and Counseling. 2011; 85(3): 390-397

Kirsch, et al. Initial Severity and Antidepressant Benefits: A Meta-Analysis of Data Submitted to the Food and Drug Administration. PLOS Medicine. 2008; 5(2): e45

Von Wernsdorff, et al. Effects of open-label placebos in clinical trials: a systematic review and meta-analysis. Scientific Reports. 2021; 11: 3855

Is acupuncture safe? Adverse Events

- Prospective safety studies report rates between <1% and 8% and no severe AEs
- Vast majority are minor (fatigue, nausea, bruising, site pain)
- Major adverse events
 - Most common SAE: Infection
 - Before 2000: hepatitis due to nonsterile needles
 - After 2000: bacterial infections
 - Other AEs: pneumothorax, CNS injury, migration of broken needles, cardiac tamponade
 - 308 SAEs, and 3 deaths, in 12 year systematic review
 - Reported acupuncture related SAEs declined in US between the 70s-90s vs post-2000

For reference...

- In 2012, 25 patients died of spinal meningitis after epidural steroid injection
- At least 13 deaths due to cervical transforaminal epidural steroid injection have been reported
- >49,000 overdose deaths involving opioids in the US in 2019

Pountos, et al. Safety of Epidural Corticosteroid Injections. *Drugs in R and D*. 2016; 16(1): 19-34
Centers for Disease Control and Prevention. Drug Overdose Deaths. 3/3/21.
<https://www.cdc.gov/drugoverdose/deaths/index.html>

Is acupuncture cost-effective?

- As compliment to standard of care for CLBP, acupuncture costs ~\$48,000 per QALY (quality-adjusted life year) gained
- It also appears to alleviate comorbid depression, and when this occurs, it costs ~\$18,000 QALY
- Lumbar ESI cost-effective analyses put cost/QALY at \$62,000
- Lumbar facet joint blocks cost \$4,400/QALY
- Per WHO, highly cost effective treatment should be < 1 GDP per capita (\$65,000 in 2019)

Taylor, et al. Cost-effectiveness of Acupuncture for Chronic Nonspecific Low Back Pain. Pain Practice. 2014; 14(7): 599-606

Carreon, et al. Cost-effectiveness of Lumbar Epidural Steroid Injections. Spine. 2018; 43(1): 35-40

Manchikanti et al. Therapeutic lumbar facet joint nerve blocks in the treatment of chronic low back pain: cost utility analysis based on a randomized controlled trial. Korean Journal of Pain. 2018; 31(1): 27-38

How does acupuncture compare to other CAM options?

- 2002 National Health Interview Survey
- Patients with back pain who used CAM methods
- Patients rated which modalities provided “great benefit”
- Patients with poorer self-rated health reported less benefit from all modalities
- Also true if referred by conventional physician

Table 2. Perceived Benefit of the 6 Most Frequently Used Complementary and Alternative Medicine Modalities for Back Pain

Modalities*	Those with Great Benefit from CAM (Weighted %)
Chiropractic (n = 1,163)	66
Massage (n = 196)	56
Yoga, Tai chi, Qi Gong (n = 45)	56
Acupuncture (n = 89)	42
Herbal therapies (n = 78)	32
Relaxation techniques (n = 76)	28

*The modalities listed are not mutually exclusive.
CAM, complementary and alternative medicine.

Review of Patient Based Outcomes: All Chronic Pain

- In large meta-analyses, acupuncture is superior to no-acupuncture, and “sham” acupuncture
- 2012 Meta-analysis summary, calculated predicted benefits based on effect sizes:
 - 30% in no-acupuncture group, 42% of sham acupuncture, and 50% of true acupuncture group would achieve 50% pain reduction
 - OR, if baseline NRS was 6, post-treatment it would be 43 in no-acupuncture group, 35 in sham acupuncture, and 30 in true-acupuncture group
- 2018 Meta-analysis
 - True acupuncture effects are less compared to penetrating sham than non-penetrating sham, but still significant

Vickers, et al. Acupuncture for Chronic Pain: Individual Patient Data and Meta-analysis. Archives of Internal Medicine. 2012; 172(19): 1444-1453

Vickers, et al. Acupuncture for Chronic Pain: Update of an Individual Patient Data Meta-Analysis. The Journal of Pain. 2018; 19(5): 455-474

Acupuncture benefits appear to be dose-related

- More needles per session
- More sessions overall
- Every additional 5 treatments, increased effect size by 0.1 in meta-analysis

MacPherson, et al. Characteristics of Acupuncture Treatment Associated with Outcome: An Individual Patient Meta-Analysis of 17,922 Patients with Chronic Pain in Randomised Controlled Trials. PLoS 1. 2013; 8(10): e77438

Vickers, et al. Acupuncture for Chronic Pain: Update of an Individual Patient Data Meta-Analysis. The Journal of Pain. 2018; 19(5): 455-474

Progressive changes in pain/function with EA/MA in patients with knee OA (Shi, 2020)

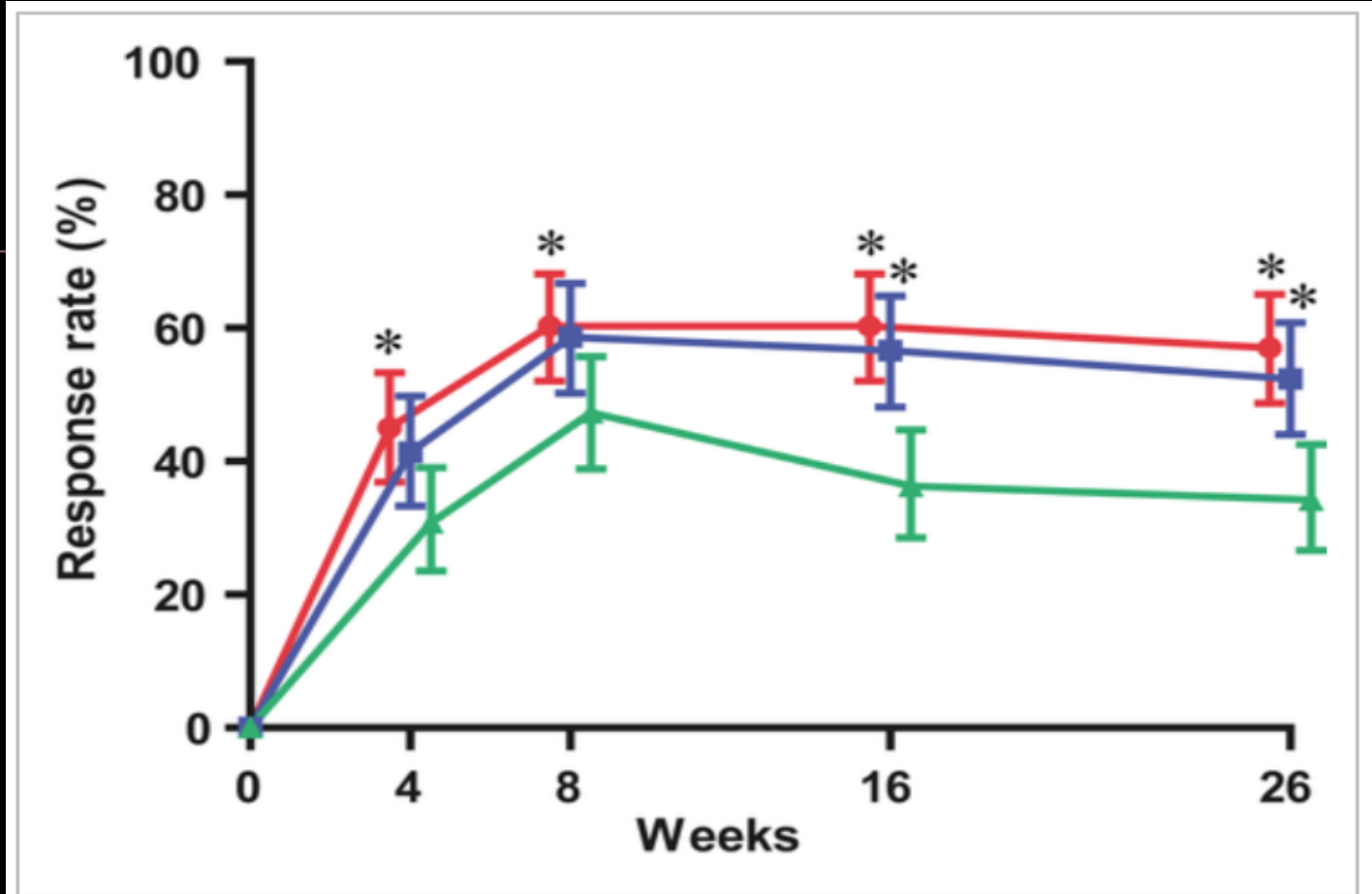


Figure 2

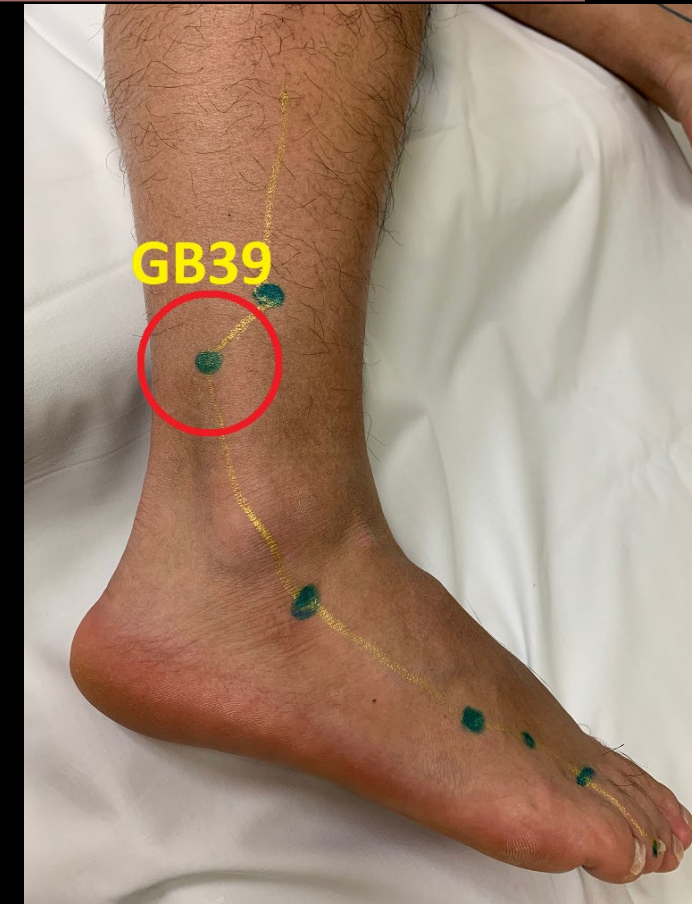
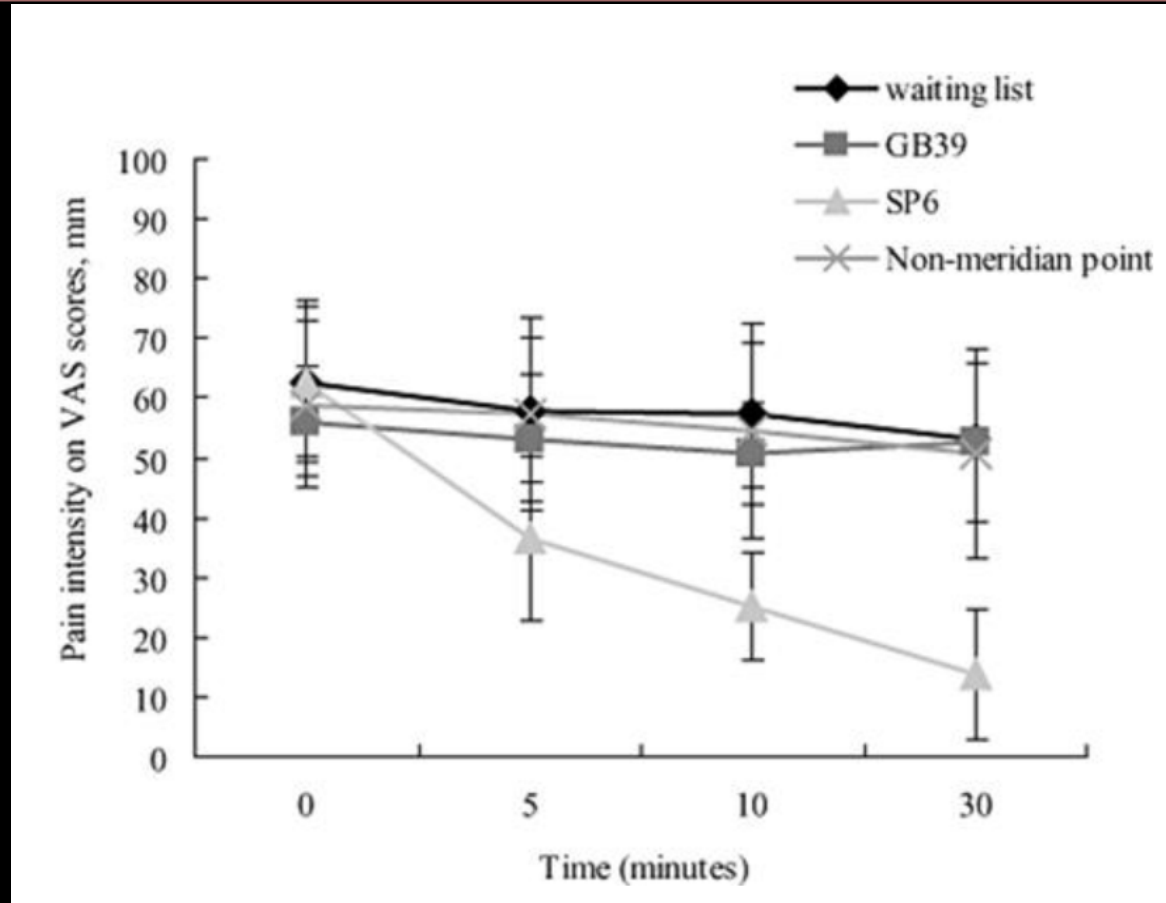
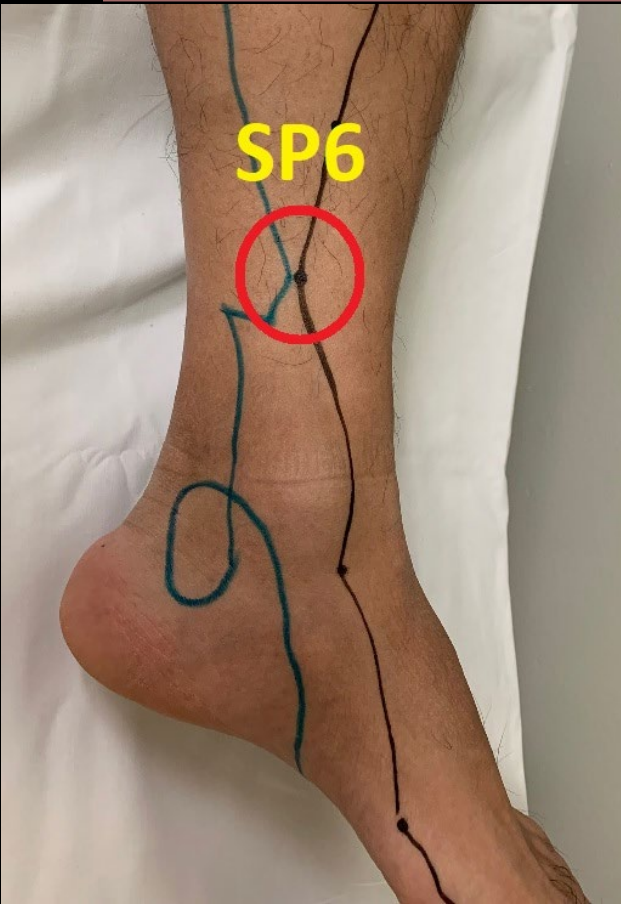
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Trajectory of response rates over time in the EA group (red line), MA group (blue line), and SA group (green line). Bars show the 97.5% confidence interval. * = $P < 0.025$ versus SA group. See Figure 1 for definitions.

Does it matter where the needle is placed?

Does it matter where the needle is placed? **Sometimes**



Ma, et al. A Comparative Study on the Immediate Effects of Electroacupuncture at Sanyinjiao (SP6), Xuanzhong (GB39) and a Non-Meridian Point, on Menstrual Pain and Uterine Arterial Blood Flow, in Primary Dysmenorrhea Patients. Pain Medicine. 2010; 11(10): 1564-1575

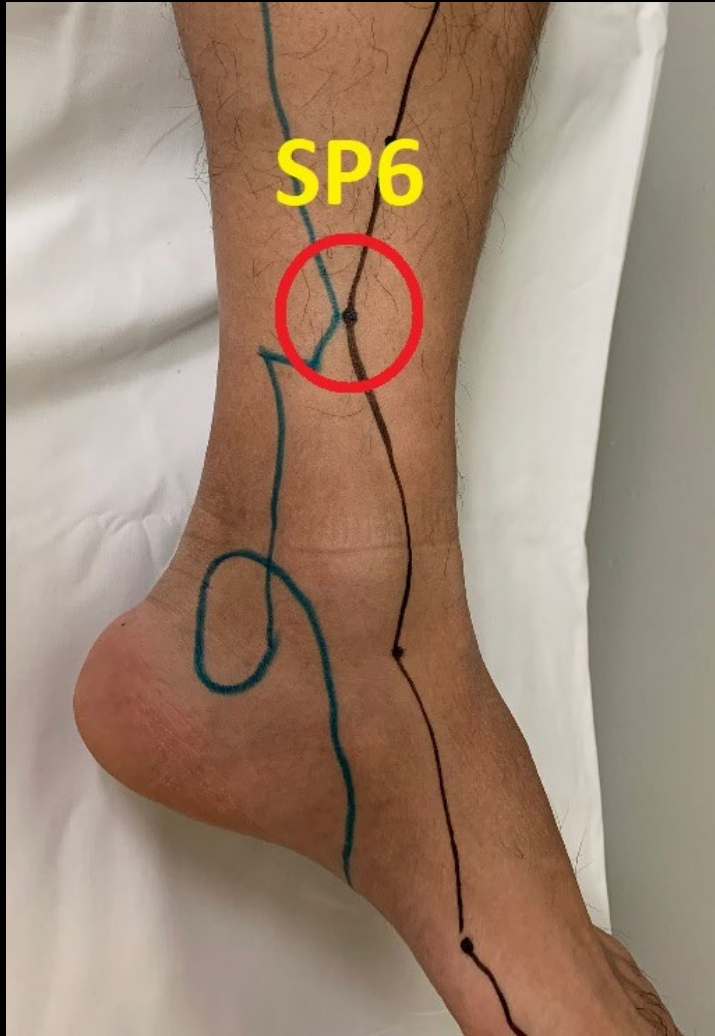


Figure 1 Stimulator and technique for percutaneous tibial nerve stimulation (PTNS).

Gaziev, et al. Percutaneous tibial nerve stimulation (PTNS) efficacy in the treatment of lower urinary tract dysfunctions: a systematic review. BMC Urology. 2013; 13: 61

Are “standardized” or “protocol-based” based treatments effective, or does treatment need to be individualized for each patient?

Standardized vs Individualized Acupuncture

- Data conflict: some studies show equivalent outcomes, others show individualized treatment superior
 - 2007 knee OA study: individualized was better
 - 2013 chronic LBP study: neither superior
- In part, this question depends on the “quality” of the standardized acupuncture protocol, as well as the subtlety of the TCM practitioner in evaluating and designing individual treatments

Byun, et al. Individualized Acupuncture versus Standardized Acupuncture in Symptomatic Treatment of Osteoarthritis of the Knee-a Randomized Controlled Trial. 2007; 24(4): 183-195

Pach, et al. Standardized versus Individualized Acupuncture for Chronic Low Back Pain: A Randomized Controlled Trial. Evidence-Based Complementary and Alternative Medicine. 2013; vol 2013. Article ID 125937

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3830844/>

Review of Patient Based Outcomes: Cancer Pain

- Acupuncture alone is not superior to medication therapy alone
- Acupuncture combined with medication therapy is superior to medication alone
 - Reduced pain
 - Reduced analgesic use
 - Improved response rate and duration of relief
 - Improved quality of life

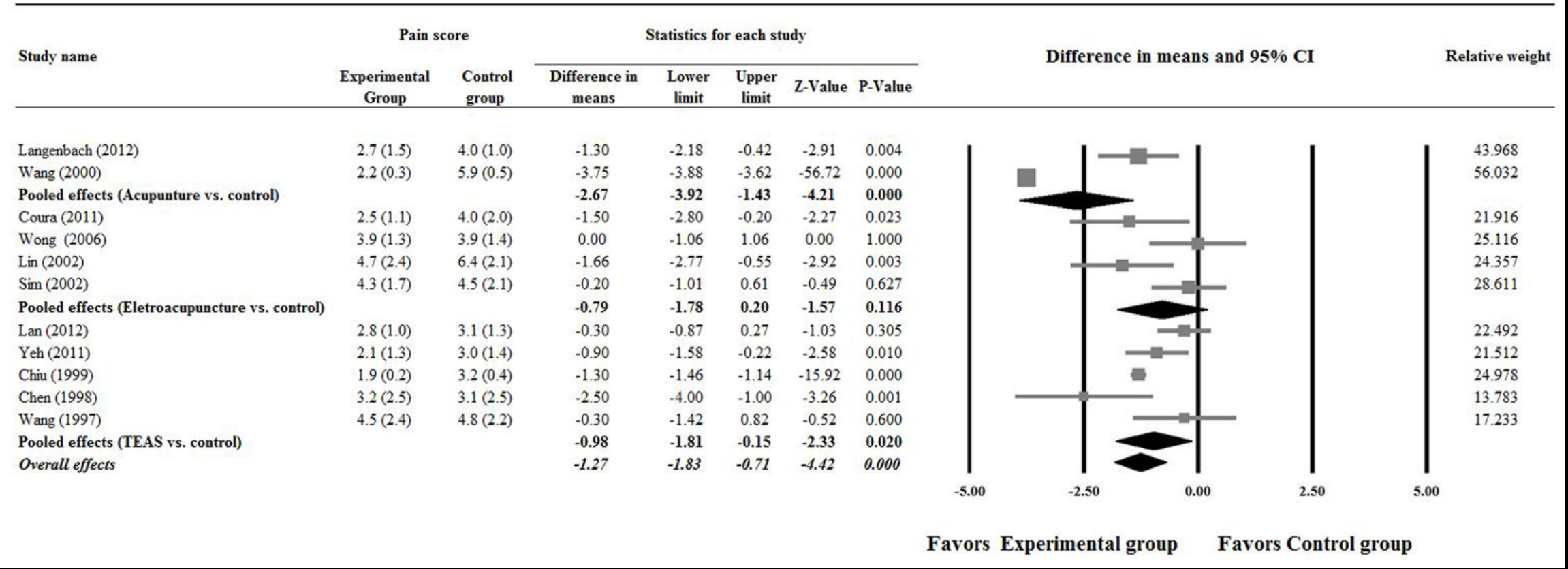
Hu et al. Acupuncture for Pain Management in Cancer: A Systematic Review and Meta-Analysis.

Evidence-Based Complementary and Alternative Medicine. 2016; 2016: 1720239

He, et al. Clinical Evidence for Association of Acupuncture and Acupressure With Improved Cancer Pain: A Systematic Review and Meta-Analysis. JAMA Oncology. 2020; 6(2): 271-278

Review of Patient Based Outcomes: Post-Op pain

Meta-analysis for pain score on the first day after surgery.



Acupuncture Indications: Pain (Cochrane Database)

- Migraine headache
- Tension type headache
- Chronic nonspecific low back pain (short term, limited benefit over sham)
- Neck pain (however: article withdrawn, is pending an update)
- Fibromyalgia (electro-acupuncture > manual acupuncture)

- Cochrane reviews at this time do not currently clearly support acupuncture for:
peripheral joint osteoarthritis, dysmenorrhea, rheumatoid arthritis, hip arthritis,
IBS, cancer pain, neuropathic pain, carpal tunnel syndrome
 - Mostly due to small studies, high risk of bias or unblinding, minimal (<15%) change over sham or other accepted treatments

Cochrane Database References

Linde K, Allais G, Brinkhaus B, Fei Y, Mehring M, Vertosick EA, Vickers A, White AR. Acupuncture for the prevention of episodic migraine. Cochrane Database of Systematic Reviews 2016, Issue 6. Art. No.: CD001218. DOI: 10.1002/14651858.CD001218.pub3.

Linde K, Allais G, Brinkhaus B, Fei Y, Mehring M, Shin BC, Vickers A, White AR. Acupuncture for the prevention of tension-type headache. Cochrane Database of Systematic Reviews 2016, Issue 4. Art. No.: CD007587. DOI: 10.1002/14651858.CD007587.pub2.

Mu J, Furlan AD, Lam WY, Hsu MY, Ning Z, Lao L. Acupuncture for chronic nonspecific low back pain. Cochrane Database of Systematic Reviews 2020, Issue 12. Art. No.: CD013814. DOI: 10.1002/14651858.CD013814.

Deare JC, Zheng Z, Xue CCL, Liu JP, Shang J, Scott SW, Littlejohn G. Acupuncture for treating fibromyalgia. Cochrane Database of Systematic Reviews 2013, Issue 5. Art. No.: CD007070. DOI: 10.1002/14651858.CD007070.pub2.

Trinh K, Graham N, Irnich D, Cameron ID, Forget M. Acupuncture for neck disorders. Cochrane Database of Systematic Reviews 2016, Issue 5. Art. No.: CD004870. DOI: 10.1002/14651858.CD004870.pub4.

Acupuncture Indications: Non-Pain Indications

- Asthma
 - Meta-analysis supports: decreased symptoms, reduced IL6
- Post-Operative Nausea and Vomiting (PC6 aka MH6)
 - Meta-analysis supports: reduced vomiting, reduced rescue-anti-emetics
- Insomnia
 - Meta-analysis supports: auricular acupuncture, superiority to diazepam

Jiang et al. Conventional Treatments plus Acupuncture for Asthma in Adults and Adolescents: A Systematic Review and Meta-Analysis. Complimentary and Alternative Medicine. 2019; 9580670

Lee, et al. Stimulation of the wrist acupuncture point PC6 for preventing postoperative nausea and vomiting. Cochrane Database Systematic Reviews. 2015; 2015(11): CD003281

Chet et al. Auricular Acupuncture Treatment for Insomnia:

A Systematic Review. The Journal of Alternative and Complimentary Medicine. 2007; 13(6): 669-676

State regulation of acupuncture practitioners: MD/DO

- MDs/Dos may practice without specific additional training/certification
 - Alabama, Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Iowa, Idaho, Illinois, Indiana, Kansas, Kentucky, Massachusetts, Maine, Michigan, Minnesota, Missouri, Mississippi, North Carolina, North Dakota, Nebraska, New Hampshire, New Mexico, Ohio, Oklahoma, Oregon, South Dakota, Tennessee, Texas, Utah, Vermont, Washington, Wisconsin, West Virginia, Wyoming
- MDs/Dos are required to meet training and/or certification requirements
 - Georgia, Hawaii, Louisiana, Maryland, Montana, Nevada, New Jersey, New York, Pennsylvania, Rhode Island, South Carolina, Virginia, District of Columbia,

State regulation of acupuncture practitioners: LAc/DACMCP/DOM/D-TCM/AP

- No specific requirements for training or license/certification

Alabama, Oklahoma,
South Dakota

- Specific requirements for training and/or license/certification

Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming

ACAOM: Accreditation Commission for Acupuncture and Oriental Medicine

NCCAOM: National Certification Commission for Acupuncture and Oriental Medicine

Selecting an acupuncturist

- What is your background training?
- What kind of needles do you use, and are they single use/sterile needles?
- What kind of negative side effects do your patients report?
- Do your patients typically report that acupuncture is painful for them?
- Have you treated my kind of symptoms before?
- What is your availability?
- Do you accept insurance? Do you bill insurance directly, or provide itemized bills for patients to seek reimbursement?

Selecting an acupuncturist

- Outcomes are **NOT** apparently associated with...
 - Different styles of acupuncture (Western vs TCM, electro vs manual, protocol vs individualized)
 - Level of experience or hours of training
- Medical (physician) acupuncturists and Traditional Chinese Medicine (LAc/D-TCM) tend to chose similar acupuncture point

Witt, et al. Physician characteristics and variation in treatment outcomes: are better qualified and experienced physicians more successful in treating patients with chronic pain with acupuncture? The Journal of Pain. 2010; 11(5): 431-435

Vickers, et al. Acupuncture for Chronic Pain: Update of an Individual Patient Data Meta-Analysis. The Journal of Pain. 2018; 19(5): 455-474

Kalaoukalani, et al. A comparison of physician and nonphysician acupuncture treatment for chronic low back pain. 2005; 21(5): 406-411

MacPherson, et al. Characteristics of Acupuncture Treatment Associated with Outcome: An Individual Patient Meta-Analysis of 17,922 Patients with Chronic Pain in Randomised Controlled Trials. PLoS 1. 2013; 8(10): e77438

Who is most likely to benefit from acupuncture?

- Based on 1 study:
 - Women
 - People who live in a multi-person household
 - People who have failed other treatments
 - People with a past positive experience with acupuncture
- Based on my personal experience, who is NOT likely to benefit...
 - People who get vasovagal/anxious with acupuncture or needling in general, and this doesn't abate/improve within 3 visits

Witt, et al. Patient characteristics and variation in treatment outcomes: which patients benefit most from acupuncture for chronic pain? The Clinical Journal of Pain. 2011; 27(6): 550-555

Contraindications to acupuncture

- Profound immune deficiency
- Metal allergy to stainless steel (there is still a small amount of nickel)
- Indwelling electric devices: typical contra-indication to **electro**acupuncture (though case reports of successful uncomplicated treatment in this setting exist)
- Note: anticoagulation is **NOT** a contra-indication to acupuncture
 - 0.003% moderate bleeding complication rate in systematic review
 - No higher risk in anticoagulated patients in prospective study
 - But, alert your acupuncturist if you are anticoagulated

Michael McColloch. Acupuncture Safety in Patients Receiving Anticoagulants: A Systematic Review. The Permanente Journal. 2015; 19(1): 68-73

Lee, et al. Evaluation of bleeding-related adverse events following acupuncture treatment in patients on anticoagulant or antiplatelet drugs: A prospective observational study . Complimentary therapies in medicine. 2018; 41: 23-28

Billing considerations for acupuncture

- Many insurances now cover
 - Pro-tip: apply for authorization for as many sessions as you plan/expect to need
 - (10-20 typical)
- CPT codes
 - Manual: 97810 (first 15 min of needle placement), 97811 (additional 15min)
 - Electro: 97813 (first 15 min), 97814 (additional 15 min)
- Medicare covers acupuncture for **chronic low back pain** diagnosis only
 - Cancer/infection related back pain NOT included
 - 12 visits per 90 days, though an additional 8 available with progressive improvement
 - ≤20 visits/year
 - Medical (physician/NP/etc.) acupuncturist...OR...licensed masters/doctoral level TCM

Frameworks to think about acupuncture

- Energy traveling through meridians
- Neuromodulation through diffuse noxious inhibitory control (DNIC) or other mechanism
- Pain Exposure Therapy
- Facilitated/Obligated Relaxation Practice

Summary

- Historical context: Qi flows via Meridians to sustain health and function
- DeQi is the sensation patients (and acupuncture providers) experience with placement of needles
- Meta-analysis shows true acupuncture to be superior to sham acupuncture
- Anticoagulants do not require adjustment for acupuncture
- No clear superiority in particular type of acupuncture overall, but certain points, styles may be superior in certain circumstances