CAM Therapies Are No Longer Complementary or Alternative: Yoga, Acupuncture, and Mind-Body Medicine

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Target Audience

• The overarching goal of PCSS is to train a diverse range of healthcare professionals in the safe and effective prescribing of opioid medications for the treatment of pain, as well as the treatment of substance use disorders, particularly opioid use disorders, with medication-assisted treatments.
Outline

1. Review the current literature supporting effectiveness of yoga for chronic pain
2. Understand the evolving neuroscience that makes yoga an effective mind-body intervention to improve chronic pain
3. Introduce the practice of acupuncture
4. Demonstrate the spectrum of scientific evidence supporting the clinical effects and revealing the physiologic effects of acupuncture
5. Show how acupuncture has become a mainstream practice in large medical systems in the US like VA
Educational Objectives

At the conclusion of this activity participants should be able to:

- understand the evolving neuroscience that makes yoga an effective mind-body intervention to improve chronic pain
- summarize recent clinical studies and scientific foundations that have prompted mainstream acceptance of acupuncture
- discuss key learnings of integrating a yoga and acupuncture program into a Western Medical System.
THE NEUROSCIENCE OF YOGA
Complementary and Alternative Medicine CAM

- 1991-US Congress established the Office of Alternative Medicine within the NIH
- History of use or origins outside of ‘mainstream’ medicine
- 2015 changed to Center for Complementary and Integrative Health
  - 3 categories:
    1. Natural products
    2. Mind/body practices-YOGA
    3. Other complementary approaches
Benefits of Yoga

- Well Being
- Improved Balance
- Better Sleep
- Stress Management
- Less Pain
- Improved Energy
Who is doing yoga?

• Yoga was the most commonly used complementary health approach among U.S. adults in 2012 (9.5 percent) and 2017 (14.3 percent).
• Non-Hispanic white adults were more likely to practice yoga compared with Hispanic and non-Hispanic black adults.
• The use of yoga was highest among adults aged 18 to 44 and decreased with advancing age.
Overview of Literature

• American College of Physicians-first line treatment of chronic LBP
• Growing body of clinical research studies demonstrating both physical and psychological effects of yoga
  ▪ Bussing, 2012-meta-analysis showing positive effects for back pain, rheumatoid arthritis, headache/migraine and other pain conditions
  ▪ Chang, et al, 2016-systematic review for chronic low back pain suggesting reduced pain and disability and improved physical and mental function
  ▪ Neuroimaging evidence shows both structural and functional changes in the brain (van Aalst, 2020)
Yoga Practice May Improve Pain Tolerance and Alter Brain Anatomy

- People who practiced yoga had more gray matter in multiple brain regions related to pain processing, pain regulation and attention
- Able to tolerate cold pain twice as long as controls
- The more they practiced, the larger that change

Reference

Effects of Yoga on the Brain and CNS

- Yoga practice has neuroprotective effects against age-related brain degradation
- Brain is more parasympathetically driven and in positive affective state
- Reverses memory loss

Reference
Measurements

- Self reported questionnaires-bias difficult to account for
- Reduces inflammation-oxidative stress, blood glucose, blood lipids (Ross, 2010), C-reactive protein (CRP) and inflammatory cytokines—measured biomarkers (Garner, 2016)
- Reductions in levels of salivary cortisol—indicator of activation of the HPA axis response to stress (Ross, 2010)
- Neuroimaging studies and GABA levels (Streeter, 2010)
- Heart Rate Variability (HRV)—a measure of the heart’s resiliency or ability to respond to changes in demands; measure the balance between SNS/PSN
Autonomic Nervous System

**Sympathetic**

- Fuel the body and brain to take action
- “fight or flight”
- accelerator/gas pedal

**Parasympathetic**

- Regulates basic body functions: digestion, wound healing, sleep
- “rest and digest”
- brake
https://www.morningsideacupuncture.co...
“The Wanderer”

• Superhighway of body-longest CN, brain to rest of major organs
• Stimulate vagus nerve to trigger body’s natural relaxation response
• 80% of neural fibers communicate from the body up to the brain—“gut feeling”
• Easiest way to stimulate the vagus nerve is with the breath
• Helps shift from fight/flight mode
The Polyvagal Theory

- 1994-Dr. Stephen Porges

- Autonomic NS system and social behavior

- Neurological architecture of the mind-body connection

https://www.stephenporges.com/
Yoga stimulates the Vagus Nerve

1. Postures/poses-stretching and compressing

2. Breathing-especially diaphragmatic breath

3. Vocalization-vagus nerve passes through larynx
   ▪ Chanting, singing, humming

4. Kindness and gratitude behaviors
The BREATH is key-Diaphragmatic breath

- The breath affects:
  - neuroendocrine regulation
  - cortisol regulation
  - GABA system
  - Hypothalamic-Pituitary-Adrenal (HPA) axis regulation
YOGA
Accessible Yoga-Chronic Pain

- US Culture has developed fitness focus on yoga
- Instructors not appropriately trained to modify poses/limitations
- GOAL: Find trained and experienced practitioners who can adapt yoga practice to individual and avoid injuries
Certification/regulation

- No legal regulation or third-party accreditation in US
- Yoga Alliance-volunteer registry
- International Association of Yoga Therapists (IAYT)-self-regulation for lay trained yoga therapists
HealthPartners-Yoga for Chronic Pain

- 75 participants enrolled, 32 fully completed (42.7%)
  - Average age 51.7, quarter of participants male
- Max 15 participants, in person classes
- 2 hours/week over 8 weeks
- Received both written and online education “OM work”
- Collected weekly practice logs to track engagement
- Average pain interference reduced 4.7 to 3.9 and average pain intensity 5.5 to 4.8
- 84.8% reported feeling “a little better” or “better”
- Likelihood of continuing yoga-8.3 (0-10)
HealthPartners-Yoga for Chronic Pain-2.0

- Minnesota Department of Health grant for 2020-2022
  - One of 5 grant recipients focused on non-opioid treatment of pain
  - Creating a self-paced, virtual yoga program that is divided into 7 modules, with 3 parts (education, demonstration and practice-2 levels).
  - Reach a broader and more diverse audience
  - Collect data via REDCap database
  - Option to connect 1:1 or within small groups to develop connection/community
Next Steps…

• 2011 Relieving Pain in America: A Blueprint for Transforming…
  ▪ Biopsychosocial (BPS) model-most effective and cost-effective way to address pain
• Majority of health problems in US are preventable and can improve with health behavior change – ADHERENCE and MOTIVATION
• Create sustainable habits-Dr. BJ Fogg, Wendy Wood, PhD
• Less “fix me” and more “self-care”
• Yoga-active participation and self-reflection help empower people
Find a Yoga Therapist Near You

To find IAYT-certified yoga therapists (C-IAYTs) by area, enter a city and/or state/province. You can also search for a specific person.

Search tip: Choose your country, then your state or province from the dropdown list; you can enter just the first two or three numbers of a postal code to filter for your area; add search factor(s) to ensure that you’re seeing everyone. (The system displays a maximum of 1,000 C-IAYTs at a time, so without additional factors you won’t see everyone.) If you believe that someone has not been listed and should be, please Contact Us.

Name
City/Town
Country
Location
Postal Code

Continue »
Conclusions

- Increasing volume of literature showing improvement of chronic pain in those who practice yoga
- Toning the Vagus nerve is a key result of practicing yoga
- The yoga community is slowly developing ways to integrate into the western medical system
- The more one practices, the better benefit they will achieve
- Finding well-trained yoga practitioners is key for those with chronic pain
References:

- Villemure x 2
Sara Hall, MS, RN-BC, ACNS
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Acupuncture: ancient practice becomes mainstream

Miles Belgrade, MD
Minneapolis VA Comprehensive Pain Center
No Disclosures
Objectives

• Summarize the **history and practice** of acupuncture briefly
• **Outline** some of the modern **basic and clinical research** evidence that support acupuncture practice
• **Identify** acupuncture as an **accepted practice** by health care systems like VHA
Acupuncture History

600 BC
Written documents on acupuncture theory and technique

618 AD
Acupuncture officially recognized as an independent specialty by the Imperial Medical Academy of the Tang Government

4th to 10th centuries
Acupuncture introduced to other countries like Japan

1822
Acupuncture banned from the Imperial court as Western medicine is introduced to China

1969
Endorphins are discovered

1971
President Nixon opens diplomacy with China and acupuncture is rediscovered by the West

1977
Acupuncture analgesia in humans shown to be reversed by Naloxone

1997
The NIH holds a consensus conference on acupuncture supporting its use in certain conditions

21st Century
Opioid crisis
VA Adopts acupuncture
Numerous favorable Meta-analyses and systematic reviews

Acupuncture Technique

- Needles
- Insertion
- Point location
- Stimulation
- Point selection
- Duration & frequency
Acupuncture Point Selection

- Local points treat local disorders
- Tender points (Ashi points)
- Points on a meridian traversing the problem region
- Six important distal points treat the head, neck, and trunk
- Certain points have general effects: e.g. sedation, tonification, homeostasis
- Ear regions correspond with the body via a homunculus-like projection
Risks of Acupuncture

• Common
  ▪ Discomfort 40%
  ▪ Bruising 2%
  ▪ Bleeding – minimal but common
  ▪ Fainting 1%

• Uncommon
  ▪ Infection
  ▪ Pneumothorax
  ▪ Retained needle fragment
  ▪ Peripheral nerve injury
  ▪ Spinal cord injury
  ▪ Miscarriage
Epidural Hematoma After Acupuncture
RESEARCH ARTICLE

Publication Trends in Acupuncture Research: A 20-Year Bibliometric Analysis Based on PubMed

Yan Ma¹,²*, Ming Dong³, Kehua Zhou⁴, Carol Mita⁵, Jianping Liu⁶, Peter M. Wayne⁷

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Therapeutics

Review: Acupuncture reduces migraine frequency more than usual care, sham acupuncture, or prophylactic drugs


22 trials 4895 participants

Acupuncture > No Acupuncture
Acupuncture > Sham Acupuncture
Acupuncture > Prophylactic Drug Therapy at 3 months

Moderate quality evidence
Acupuncture for the Management of Chronic Headache:
A Systematic Review

Yanxia Sun, MD
Tong J. Gan, MB, FRCA

Figure 2. Response rate in acupuncture versus sham-controlled trials for chronic headache. RR = relative risk; CI = confidence interval.
Authors’ conclusions The available results suggest that acupuncture is effective for treating frequent episodic or chronic tension-type headaches, but further trials - particularly comparing acupuncture with other treatment options - are needed.
Authors’ conclusions Moderate-quality evidence suggests that acupuncture relieves pain better than sham acupuncture, as measured at completion of treatment and at short-term follow-up, and that those who received acupuncture report less pain and disability at short-term follow-up than those on a wait-list. Moderate-quality evidence also indicates that acupuncture is more effective than inactive treatment for relieving pain at short-term follow-up.
Review

Acupuncture for peripheral joint osteoarthritis
A systematic review and meta-analysis
Y. D. Kwon¹,², M. H. Pittler¹ and E. Ernst¹

Review

Acupuncture treatment for chronic knee pain: a systematic review
A. White, N. E. Foster¹, M. Cummings² and P. Barlas²
Improvement in Fibromyalgia Symptoms With Acupuncture: Results of a Randomized Controlled Trial

DAVID P. MARTIN, MD, PhD; CHRISTOPHER D. SLETEN, PhD; BRENT A. WILLIAMS, MS; and INES H. BERGER, MD
Acupuncture for Chronic Pain

Individual Patient Data Meta-analysis

Andrew J. Vickers, DPhil; Angel M. Cronin, MS; Alexandra C. Maschino, BS; George Lewith, MD; Hugh MacPherson, PhD; Nadine E. Foster, DPhil; Karen J. Sherman, PhD; Claudia M. Witt, MD; Klaus Linde, MD; for the Acupuncture Trialists’ Collaboration

Background: Although acupuncture is widely used for chronic pain, there remains considerable controversy as to its value. We aimed to determine the effect size of acupuncture for 4 chronic pain conditions: back and neck pain, osteoarthritis, chronic headache, and shoulder pain.

Methods: We conducted a systematic review to identify randomized controlled trials (RCTs) of acupuncture for chronic pain in which allocation concealment was determined unambiguously to be adequate. Individual patient data meta-analyses were conducted using data from 29 of 31 eligible RCTs, with a total of 17,922 patients analyzed.

Results: In the primary analysis, including all eligible RCTs, acupuncture was superior to both sham and no-acupuncture control for each pain condition ($P < .001$ for all comparisons). After exclusion of an outlying set of RCTs that strongly favored acupuncture, the effect sizes were similar across pain conditions. Patients receiving acupuncture had less pain, with scores that were 0.23 (95% CI, 0.13-0.33), 0.16 (95% CI, 0.07-0.25), and 0.15 (95% CI, 0.07-0.24) SDs lower than sham controls for back and neck pain, osteoarthritis, and chronic headache, respectively; the effect sizes in comparison to no-acupuncture controls were 0.55 (95% CI, 0.51-0.58), 0.37 (95% CI, 0.50-0.64), and 0.42 (95% CI, 0.37-0.46) SDs. These results were robust to a variety of sensitivity analyses, including those related to publication bias.

Conclusions: Acupuncture is effective for the treatment of chronic pain and is therefore a reasonable referral option. Significant differences between true and sham acupuncture indicate that acupuncture is more than a placebo. However, these differences are relatively modest, suggesting that factors in addition to the specific effects of needling are important contributors to the therapeutic effects of acupuncture.

Published online September 10, 2012.
Studies w/o sham acup

Studies with sham acup

Acupuncture exerts its effects at every level of the nervous system:
At The Tissue Level

Preventive effect of acupuncture on histamine-induced itch: A blinded, randomized, placebo-controlled, crossover trial

Florian Pfab, MD \textsuperscript{ab}
Michael Hamnes, MD
Marcus Bücke, MD
Johannes Huss-Marp, MD \textsuperscript{ab}
Georgios I. Athanasiadis, MD
Thomas R. Tölle, MD
Heidrun Behrendt, MD
Johannes Ring, MD
Ulf Darsow, MD \textsuperscript{ab}

FIG 2. Mean itch intensity in verum-point acupuncture reaches a lower score and decreases faster below scratch level represented by the turquoise line at 0.0% itch intensity than in control groups. Asterisks indicate time points of significant differences between QuaLi acupuncture and control, and crosshairs indicate time points of significant difference between QuaLi acupuncture and placebo-point acupuncture. \textsuperscript{*}P < .05, \textsuperscript{**}P < .01.
At the primary nociceptor
Early Research Into Acupuncture Mechanisms
J.S. Han AAPM Honolulu 2008
Acupuncture Analgesia is Reversed by Naloxone

Mayer et al, Brain Res, 1977

% baseline pain threshold

Saline (n=9)
Naloxone (n=11)
Placebo (n=31)

ANW/SKI PAIN SERVICES
Antiendorphin Antisera Blunt
AA at Specific Sites

Xie and Han, *Int'l J Neurosci*, 1983

% Change of ARL

Control

Anti B-End

min

-50

0

10

20

30

40

50

ANW/SKI PAIN SERVICES

PAG EA
Endorphin Assay After Acupuncture

CSF B-Endorphin pmol/l

Recurrence Pain

Pain Free

Clement-Jones et al
The Lancet, 1980

ANW/SKI PAIN SERVICES
At the autonomic nervous system

Anesth Analg 2011

Acupuncture in Critically Ill Patients Improves Delayed Gastric Emptying: A Randomized Controlled Trial

Florian Pfab, MD, PhD,* † Martina Winhard, MD,* Martina Nowak-Machen, MD, † Vitaly Napadow, PhD, † Dominik Irnich, MD, PhD,§ Michael Pawlik, MD, PhD,* Thomas Bein, MD, PhD,* and Emil Hansen, MD, PhD*

BACKGROUND: Malnutrition remains a severe problem in the recovery of critically ill patients and leads to increased in-hospital morbidity and in-hospital stay. Even though early enteral nutrition has

Figure 2. Mean enteral feeding balance (volume of enteral feeding minus gastric residual volume). The asterisks indicate significant (*P < 0.05) or highly significant (**P < 0.01) differences in comparison to day 0 within each group. The brackets mark comparison between groups on day 1.
In the brain
Intrinsic Brain Connectivity in Fibromyalgia Is Associated With Chronic Pain Intensity

Vitaly Napadow,1 Lauren LaCount,2 Kyungmo Park,3 Sawsan As-Sanie,4 Daniel J. Clauw,4 and Richard E. Harris4

Objective. Fibromyalgia (FM) is considered to be the prototypical central chronic pain syndrome and is associated with widespread pain that fluctuates spontaneously. Multiple studies have demonstrated altered brain activity in these patients. The objective of this study was to investigate the degree of connectivity between multiple brain networks in patients with FM, as well as how activity in these networks correlates with the level of spontaneous pain.

Methods. Resting-state functional magnetic resonance imaging (fMRI) data from 18 patients with FM and 18 age-matched healthy control subjects were analyzed using dual-regression independent components analysis, which is a data-driven approach for the identification of independent brain networks. Intrinsic, or resting-state, connectivity was evaluated in multiple brain networks: the default mode network (DMN), the executive attention network (EAN), and the medial visual network (MVN), with the MVN serving as a negative control. Spontaneous pain levels were also analyzed for covariance with intrinsic connectivity.

Results. Patients with FM had greater connectivity within the DMN and right EAN (corrected $P_{corr} < 0.05$ versus controls), and greater connectivity between the DMN and the insular cortex, which is a brain region known to process evoked pain. Furthermore, greater intensity of spontaneous pain at the time of the fMRI scan correlated with greater intrinsic connectivity between the insula and both the DMN and right EAN ($P_{corr} < 0.05$).

Conclusion. These findings indicate that resting brain activity within multiple networks is associated with spontaneous clinical pain in patients with FM. These findings may also have broader implications for how subjective experiences such as pain arise from a complex interplay among multiple brain networks.

Chronic pain disorders cause significant disability and dysfunction in patients and are particularly troublesome for both researchers and clinicians. Since pain is...
BRIEF REPORT

Decreased Intrinsic Brain Connectivity Is Associated With Reduced Clinical Pain in Fibromyalgia

Vitaly Napadow, Jieun Kim, Daniel J. Clauw, and Richard E. Harris

Figure 1. Levels of pain in fibromyalgia patients before therapy (solid bars) and after therapy (open bars) as assessed with the short form of the McGill Pain Questionnaire. Clinical pain levels were assessed just prior to functional magnetic resonance imaging. There was a significant reduction in pain on the McGill sensory subscale and a trend toward diminished pain on the McGill affective subscale following therapy. Bars show the mean ± SEM. * = P < 0.02; ++ = P < 0.01.

Figure 2. Default mode network (DMN) connectivity to the anterior insula in fibromyalgia patients before and after therapy. DMN connectivity was positive at baseline, and was significantly reduced following therapy. Bars show the mean ± SEM. R Ant Insula = right anterior insula. Color figure can be viewed in the online issue, which is available at http://onlinelibrary.wiley.com/journal/10.1002/(ISSN) 1529-0131.
Background and Policy: VA Acupuncture is one of the complementary and integrative health (CIH) approaches within the VHA Whole Health System of care included in VHA Directive 1137 – Provision of Complementary and Integrative Health, published in May 2017. This allows acupuncture care to be covered by the Veteran’s medical benefits package, when clinically necessary, as determined by the patient’s care team. In February 2018 a Qualification Standard was published that permitted licensed acupuncturists to be hired to provide acupuncture care at VA Medical Centers (VAMC).
In fiscal year 2017, more than 185,000 acupuncture treatments were provided to patients at VHA medical centers.

In 2017, more than 47,000 veterans were authorized to receive acupuncture care outside VHA medical centers.

The VHA also published Directive 1137: Provision of Complementary and Integrative Health (CIH) calling for eight CIH modalities—including acupuncture—to be covered in the Veteran’s Medical Benefits Package.
Conclusions

- Acupuncture effects are exerted throughout the pain transmission and pain modulation pathways
- Acupuncture has a clinical evidence-base that gets stronger and broader every decade
- Acupuncture for chronic pain is embraced by clinicians and health care systems and, of course by patients
- Acupuncture has been marginalized by the payers in the health care industry
- The poor reimbursement and exclusion of acupuncture services threatens acupuncture’s integration in American pain medicine
PCSS Mentor Program

- PCSS Mentor Program is designed to offer general information to clinicians about evidence-based clinical practices in prescribing medications for opioid addiction.

- PCSS Mentors are a national network of providers with expertise in addictions, pain, evidence-based treatment including medication-assisted treatment.
  
  • 3-tiered approach allows every mentor/mentee relationship to be unique and catered to the specific needs of the mentee.
  
  • No cost.

For more information visit: pcssnow.org/mentoring
PCSS Discussion Forum

Have a clinical question?

Ask a Colleague

A simple and direct way to receive an answer related to medication-assisted treatment. Designed to provide a prompt response to simple practice-related questions.

Ask Now ›
**PCSS** is a collaborative effort led by the American Academy of Addiction Psychiatry (AAAP) in partnership with:

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