



# Transforming Pain: *The Role of Integrative Pain Management*

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# HEALTHCARE





# SELF-CARE CHECKLIST

- Good sleep 
  - Meditate 
  - Exercise 
  - Read book 
  - Eat healthy 
  - Drink more water 
- Decorative elements: hearts, diamonds, and a speech bubble icon at the top.

# HOW CAN I BETTER TAKE CARE OF MYSELF?



- Pick one area in which you have not been giving yourself the right amount of care
- *How do I promise to instill care into my health in the next month?*
  - *I will start walking at lunch for 30 minutes 4 days/wk*
  - *I will make an appt with a mental health professional*
  - *I will set up that preventative test that I've put off*
  - *I will check my home blood pressure daily and make a follow up appointment to discuss*
  - *I will eat one meal mindfully every day*
  - *I will pause and do nothing for 10 minutes /day ...*

[optimize@uc.edu](mailto:optimize@uc.edu)





# Objectives

**Review**

The state of Pain Care in America

**Examine**

What Therapies can be solutions

**Evaluate**

The Role of CARE in pain care



# Complementary, Alternative, or Integrative Health: What's In a Name?

- *Non-Pharmacologic (NP) treatments*
- Complementary / Alternative Medicine (CAM)
- Integrative Medicine (IM)
- Integrative Health



JOHNS HOPKINS  
MEDICINE

ABOUT

HEALTH

PATIENT CARE

RESEARCH

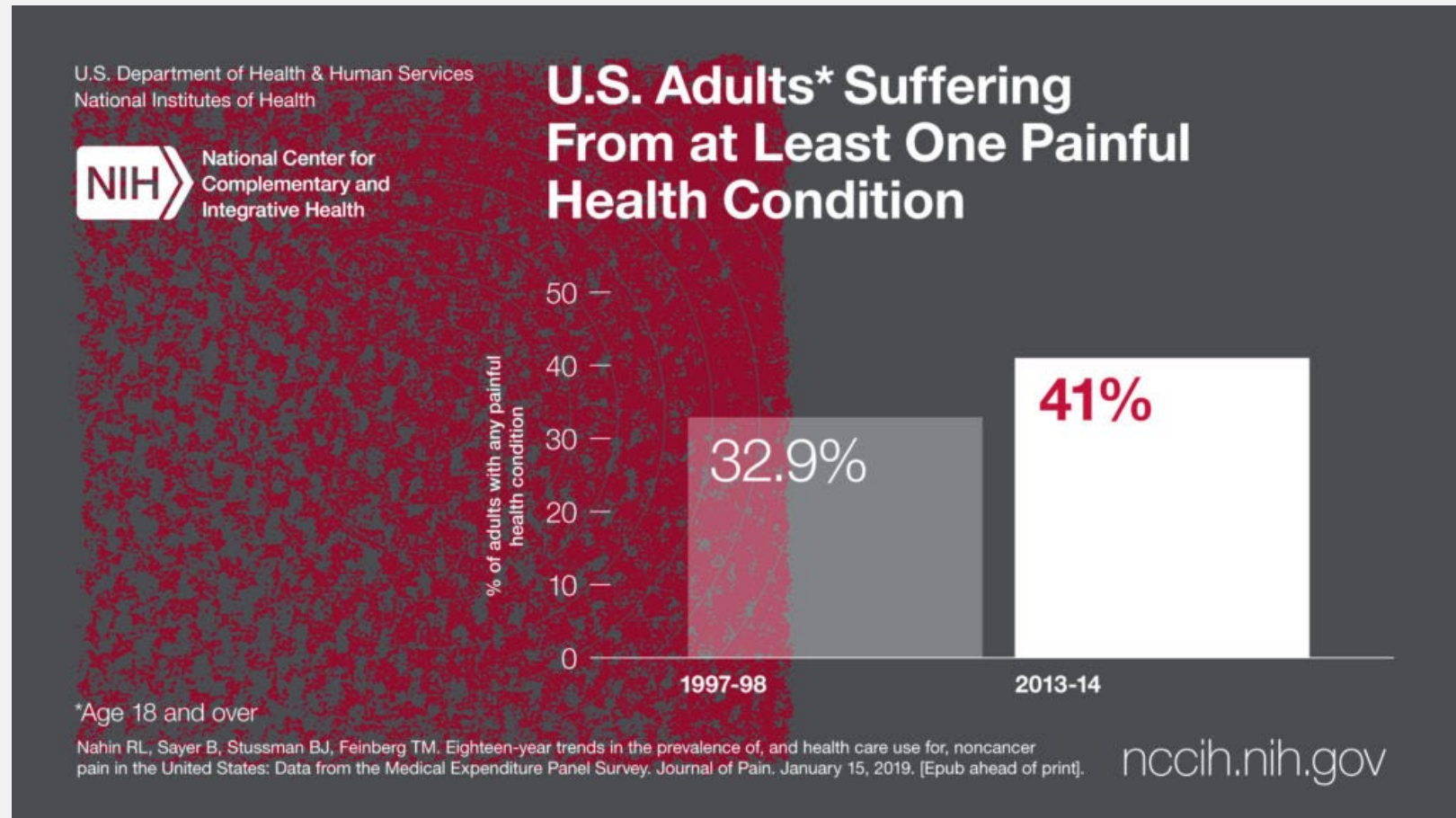
EDUCATION

## What is Integrative Medicine?

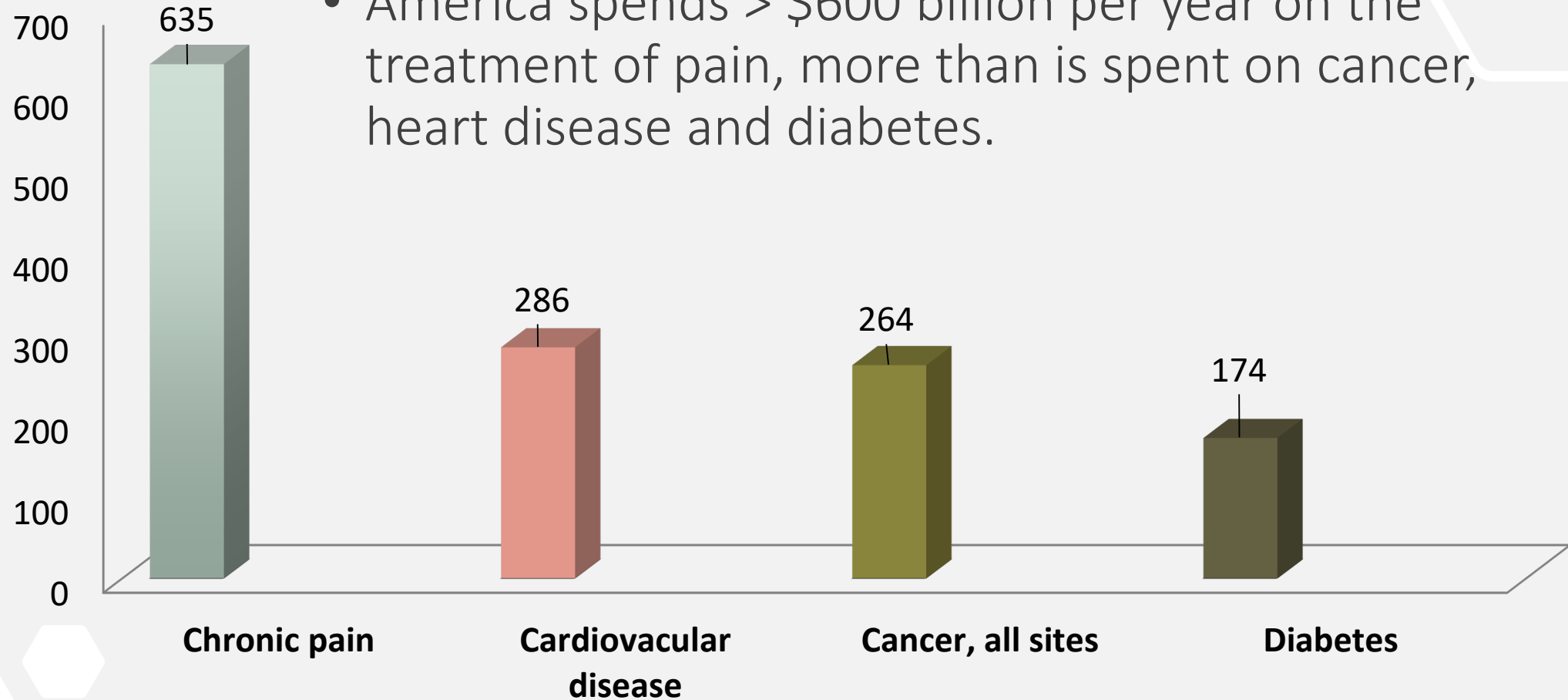
- *Integrative medicine is an approach that uses the best evidence-based practices to enhance conventional care.*

# Pain in America – Common

- Over the last 2 decades the number of American adults suffering from pain increased from 120.2 to 178 million or 41% of the adult population



# Pain in America – Costly



- America spends > \$600 billion per year on the treatment of pain, more than is spent on cancer, heart disease and diabetes.

IOM Report 2011   AHA 2007   ADA 2007   ACS 2010



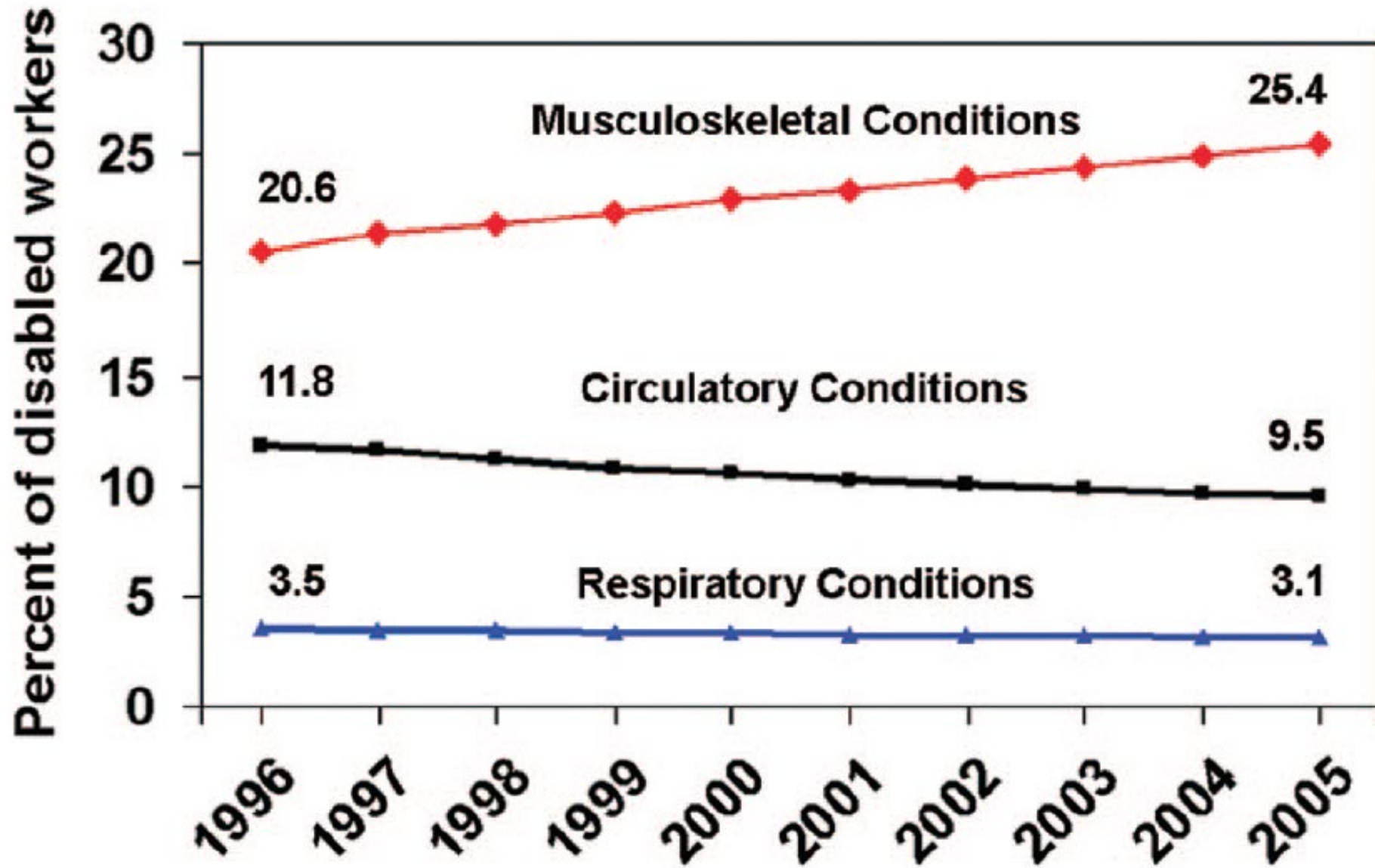


# Overtreating Chronic Back Pain: Time to Back Off?

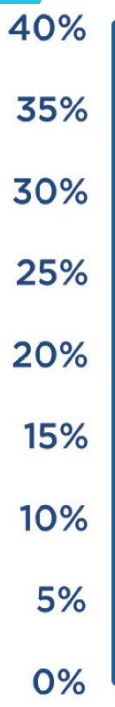
*Richard A. Deyo, MD, MPH, Sobail K. Mirza, MD, MPH, Judith A. Turner, PhD, and Brook I. Martin, MPH*

- 629% ↑ in expenditures for epidurals
- 423% ↑ in expenditures for opioids LBP
- 307% ↑ in the # of lumbar MRIs
- 220% ↑ in spinal fusion surgery rates





Percent of New SSDI Awards



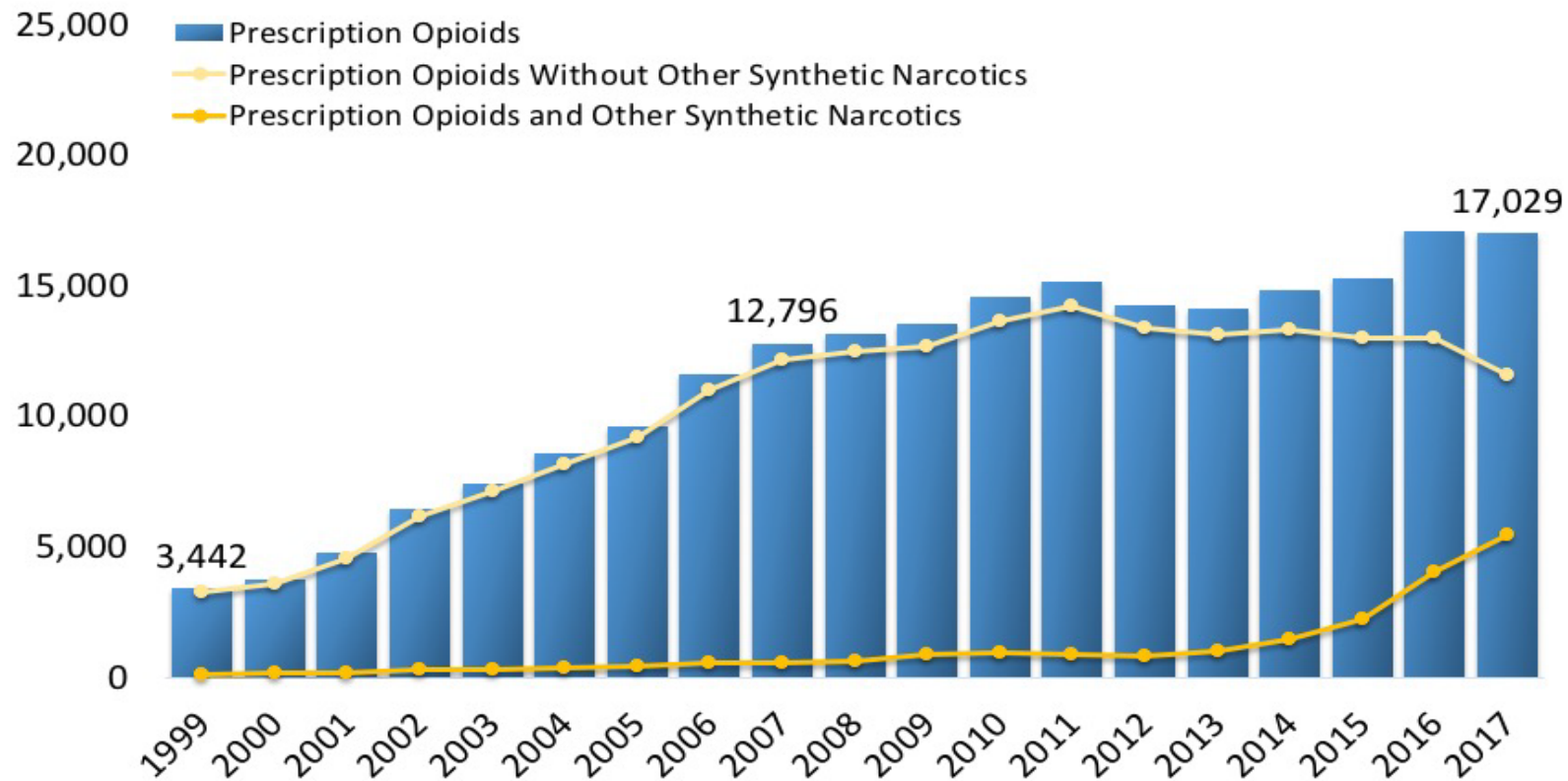
97

Source: US Soci

# Pain in America – Catastrophic



Figure 4. National Drug Overdose Deaths Involving Prescription Opioids, Number Among All Ages, 1999-2017



Source : Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2017 on CDC WONDER Online Database, released December, 2018



## The association of comorbid conditions with patient-reported outcomes in Veterans with hip and knee osteoarthritis

- Mean numbers of co-existing + activity limiting conditions → 6
- *“There is a need for clinical care models and other interventions that simultaneously address the complexity and interrelationships of multiple chronic health conditions ...”*

# Pain in America - Complex





# Complementary and Alternative Medicine Use in the US Adult Low Back Pain Population

- 2012 National Health Interview Survey
- 41.2% used CAM in the past year
- 45% with more limiting pain
- 58.1% of those who used CAM perceived a great deal of benefit.
- The most popular options: supplements, chiropractic manipulation, and massage...

## Mind-body therapy

Meditation

Guided imagery

Progressive muscle relaxation

Yoga

Tai chi

Qigong

Biofeedback

Hypnosis

- **Predictors:** Female, higher education & longer pain
- **Discussion:** Most obtained information from family & friends
- ½ didn't discuss with provider.

Ghildayal N, Jo Johnson P, Evans RL, Jo Kreitzer M. Complementary and alternative medicine use in the US adult low back pain population. *Global Advances in Health and Medicine*. 2016 Jan 1;5(1):69-78.

Dubois J et al. Chronic low back pain patients' use of, level of knowledge of and perceived benefits of complementary medicine: a cross-sectional study at an academic pain center. *BMC Complementary and Alternative Medicine*. 2017 Apr 4;17(1):193.

## Integrative Therapies for Low Back Pain That Include Complementary and Alternative Medicine Care: A Systematic Review

- *...integrative therapies in combination or combined with conventional medical care ...more effective than select single therapies alone for treating LBP*

# Are complementary therapies and integrative care cost-effective? A systematic review of economic evaluations

- *The higher-quality studies indicate potential cost-effectiveness, and even cost savings across a number of complementary and integrative therapies...*

Herman PM, Poindexter BL, Witt CM, Eisenberg DM. Are complementary therapies and integrative care cost-effective? A systematic review of economic evaluations. *BMJ Open*. 2012 Sep 3;2(5). pii: e001046. doi: 10.1136/bmjopen-2012-001046. Print 2012.

## Cost Savings from Reducing Pain Through the Delivery of Integrative Medicine Program to Hospitalized Patients

- 2730 patients who were provided Integrative services during hospital stay:
- Pain was reduced by an average of 2.05 points
- Cost of hospitalization reduced by \$898 per admission

1. Dusek JA, Griffin KH, Finch MD, Rivard RL, Watson D. Cost Savings from Reducing Pain Through the Delivery of Integrative Medicine Program to Hospitalized Patients. *The Journal of Alternative and Complementary Medicine*. 2018;24(6):557–563. doi:10.1089/acm.2017.0203.



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# EVIDENCE-BASED NONPHARMACOLOGIC STRATEGIES FOR COMPREHENSIVE PAIN CARE: THE CONSORTIUM PAIN TASK FORCE WHITE PAPER



Heather Tick, MD<sup>1#</sup> Arya Nielsen, PhD<sup>2##</sup> Kenneth R. Pelletier, PhD, MD<sup>3</sup> Robert Bonakdar, MD<sup>4</sup>  
Samantha Simmons, MPH<sup>5</sup> Ronald Glick, MD<sup>6</sup> Emily Ratner, MD<sup>7</sup> Russell L. Lemmon, MD<sup>8</sup> Peter Way  
and Veronica Zador, BSc<sup>10</sup> The Pain Task Force of the Academic Consortium for Integrative Medicine and

## F. Evidence-Based Nonpharmacologic Therapies for Chronic Pain

1. Acupuncture therapy chronic pain
2. Massage therapy chronic pain
3. Spinal manipulation therapy and manipulative therapy chronic pain
4. Manipulation therapy safety
5. Mind body directed therapies for chronic pain Mindfulness, meditation and relaxation therapy chronic pain
6. Mindfulness, meditation and relaxation therapy safety
7. Biofeedback chronic pain
8. Biofeedback safety
9. Movement therapies for chronic pain Yoga chronic pain
10. Yoga therapy safety
11. Tai chi chronic pain
12. Tai chi safety
13. Other movement therapies chronic pain: Alexander technique, Pilates and Feldenkrais chronic pain
14. Alexander technique, Pilates and Feldenkrais safety

## G. Frequency, Dosage and Timing of Nonpharmacologic Interventions for Chronic Pain

## H. Lifestyle Behaviors and Self-Efficacy Chronic Pain

1. Nutrition and pain
2. Other lifestyle factors

## I. Economic Benefits of Nonpharmacologic Therapies in the Treatment of Pain

1. Course of treatment and cost for inpatient acute care
2. Course of treatment and costs for outpatient chronic pain

## J. Recommendations Education, Treatment, and Research

1. Education
2. Treatment: nonpharmacologic therapy frequency, dosage and timing
3. Research

## • Foundational → Awareness

- Mind
  - Reduce Stress
- Body
  - Improving Breath, Balance and Muscle Tension
- Spirit
  - Connection

# RANDOMIZED, CONTROLLED TRIAL OF BREATH THERAPY FOR PATIENTS WITH CHRONIC LOW-BACK PAIN

Wolf E. Mehling, MD, Kathryn A. Hamel, PhD, Michael Acree, PhD, Nancy Byl, PhD, PT, Frederick M. Hecht, MD, MPH



- *Up to 75% of pain patients exhibited faulty breathing mechanics*

- *12 sessions of breath retraining vs PT*
- *VAS: -2.7 with breath therapy, -2.4 with physical therapy*
- *Comparable changes in measures of pain and disability vs PT*
- *Qualitative data suggested improved coping skills and new insight into the effect of stress on the body as a result of breath therapy.*

## INJURY RECOVERY

Oxygenated blood brings essential nutrients to injured areas to aid in recovery time

## REDUCES SORE MUSCLE

Circulates more blood to all areas of the body to reduce muscle soreness

## IMPROVES LUNG CAPACITY

Regular stretching of the lungs results in more available space when more oxygen is needed during intense exercises

## IMPROVES HEART FUNCTION

Regular practice of deep breathing leads to improved heart rate variability

## REDUCES PAIN

Studies show up to a 75% reduction in pain

## PROMOTES RELAXATION

Three deep breaths is enough to change the mindset of an athlete in high stress situations

# Breathing for Relief

- Deep breathing at  $\sim 5$  breaths/min
- (12 secs/ breath)



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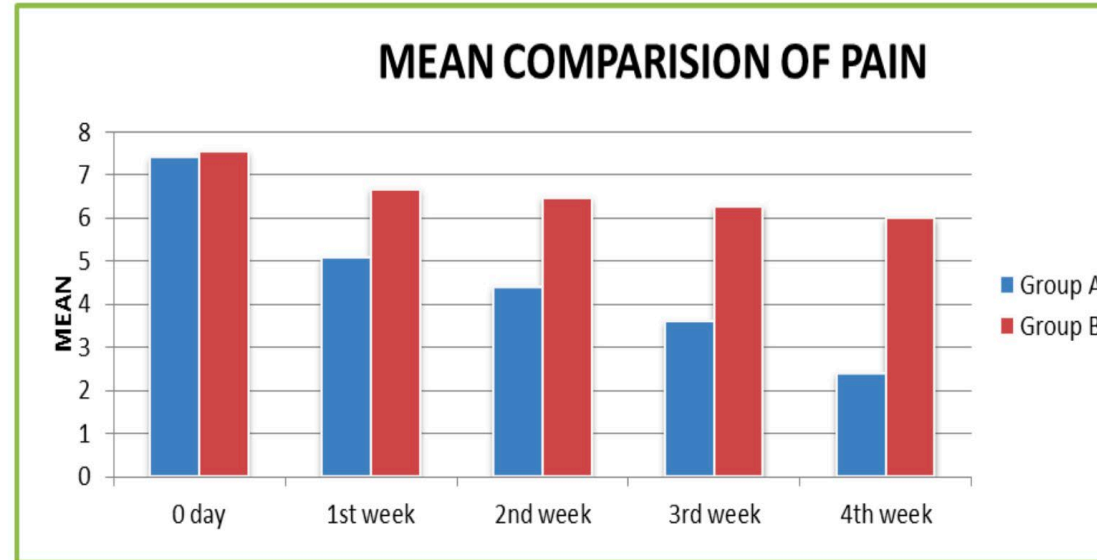
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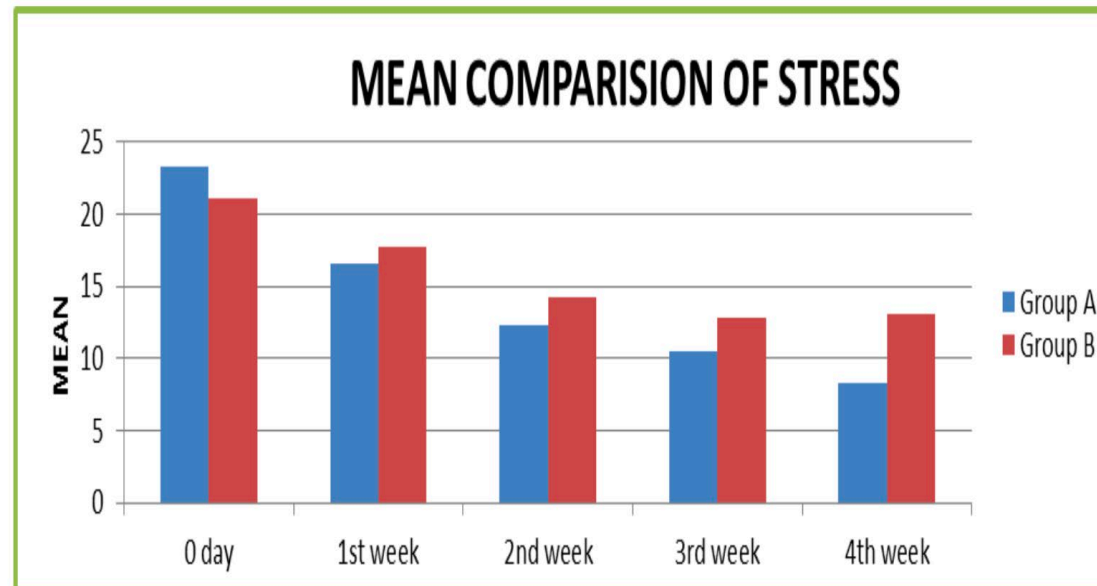


# Effect of Progressive Muscular Relaxation on Stress and Disability in Subjects with Chronic Low Back Pain

## Muscle Relaxation



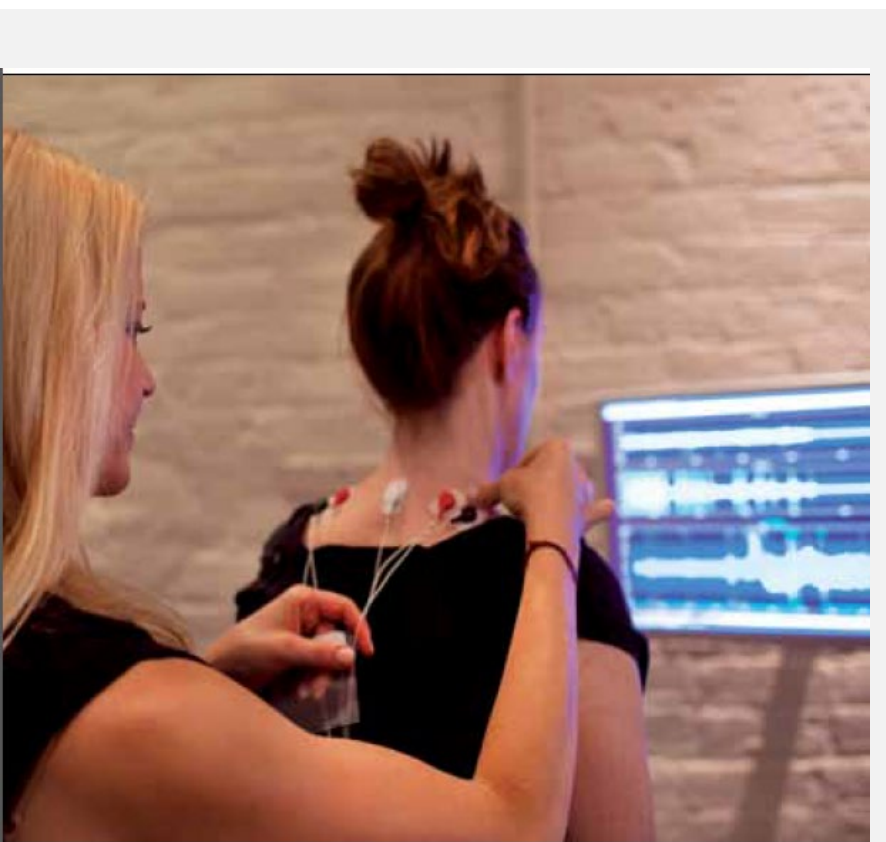
Control  
Relaxation



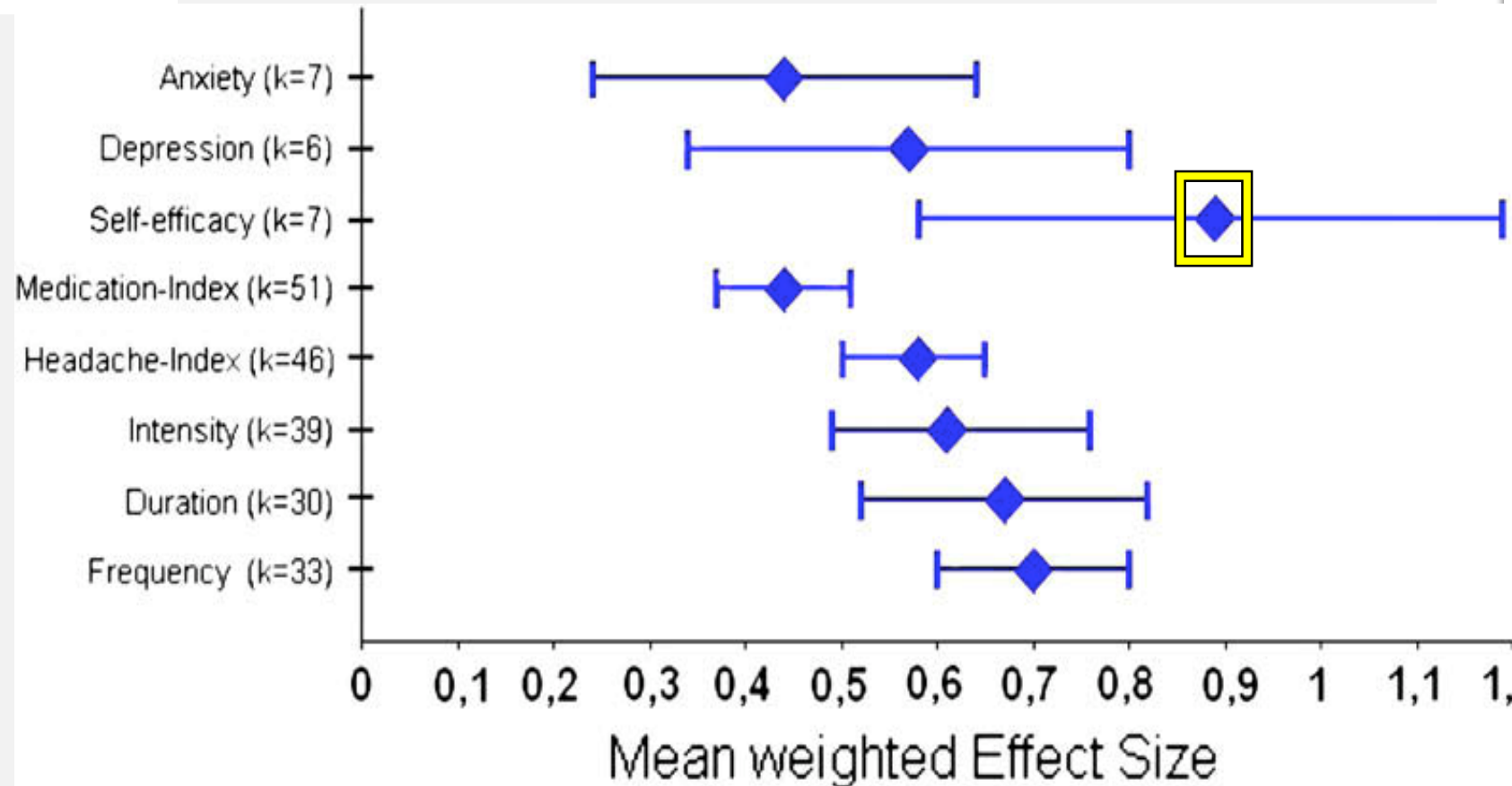
Dhyani D, Sen S, Raghumahanti R, Kour J. Effect of Progressive Muscular Relaxation on Stress and Disability in Subjects with Chronic Low Back Pain. Journal of Nursing and Health Science. 2015;4(1):40-5.

# Biofeedback: A way to regain some control over pain

Integrating biofeedback into a patient's treatment plan can ease pain and improve quality of life.



## Biofeedback in headache: An overview of approaches and evidence



Whitney A. Biofeedback: a way to regain some control over pain. *J Fam Pract.* 2014 Jun;63(6 Suppl):S12-7.

<https://www.ncbi.nlm.nih.gov/pubmed/25061629>

From Nestoriuc Y, Martin A, RiefW, et al. Biofeedback treatment for headache disorders: a comprehensive efficacy review. *Applied Psychophysiol Biofeedback* 2008;33:125-40

# Key Points

- Integrative Therapies help to approach pain at foundational levels to improve **Breath & Body Awareness**





## *Tai Chi*







# Health benefits of Tai Chi

## **Brain**

Improves cognitive function in older adults

## **Mood**

Relieves symptoms of anxiety and depression

## **Connective flexibility**

Improves strength

## **Cardiovascular system**

- Significantly lowers blood pressure
- Reduces the resting heart rate

## **Joints**

Relieves arthritic pain



## **Overall well-being**

Improves quality of life markers in healthy and chronically ill people

## **Muscles**

Improves strength

## **Immune system**

Improves immune function and reduce inflammation

## **Bones**

Increase bone density and prevent fractures in elderly

## **Balance**

Improves balance and reduces falls in elderly adults



*Yoga*

## Stress, Inflammation, and Yoga Practice

- *In patients with chronic low back pain*
- *Yoga can shift the nervous system towards vagal dominance (relaxation system) and away from sympathetic (stress) dominance*



# YOGA FOR CHRONIC LOW BACK PAIN IN A PREDOMINANTLY MINORITY POPULATION: A PILOT RANDOMIZED CONTROLLED TRIAL

**Robert B. Saper, MD, MPH,**

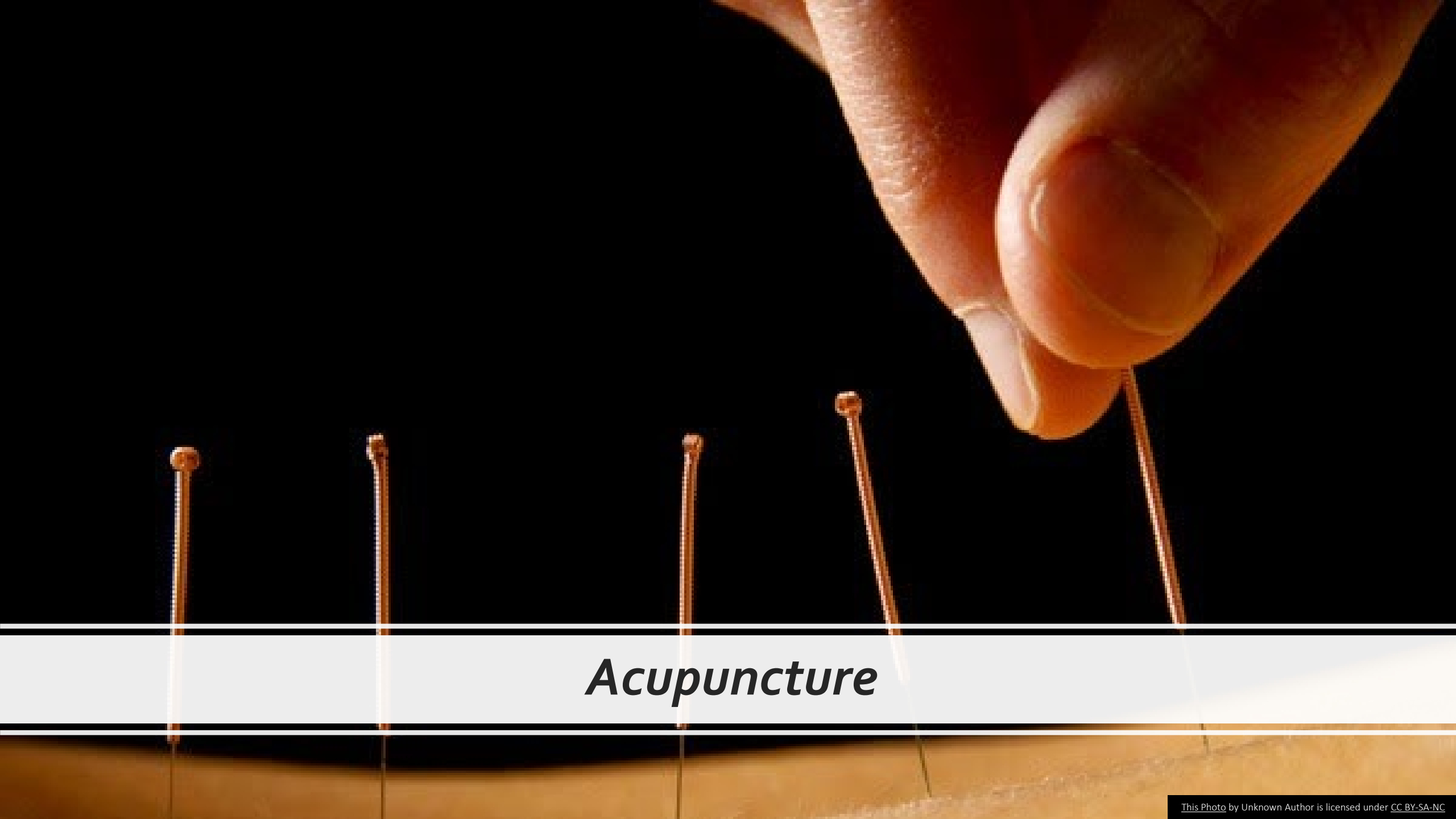
Assistant professor and director of integrative medicine in the Department of Family Medicine, Boston University School of Medicine and Boston Medical Center, Massachusetts

- At 12 weeks, yoga compared to usual care
- Participants reported: (control vs yoga)
  - Less analgesic use (13% vs 73%)
  - Less opiate use (0% vs 33%)
  - Greater overall improvement (27% vs 73%)

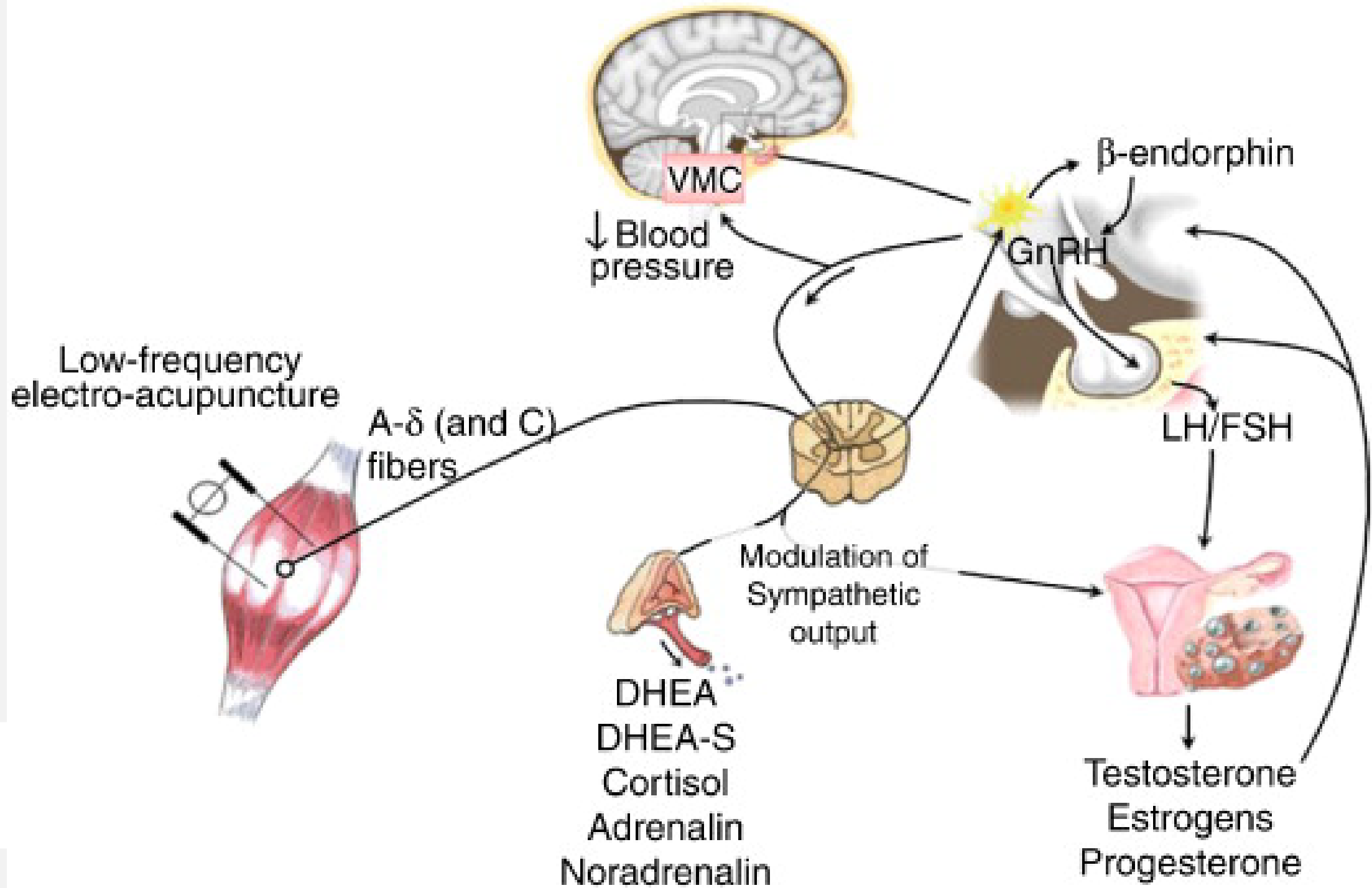


# Key Points

- Yoga and Tai Chi are effective for reducing pain often by shifting the nervous system towards balance
- Reintroduces non-painful movement



# *Acupuncture*







## Critical Reviews

Acupuncture for Chronic Pain: Update of an Individual  
Patient Data Meta-Analysis



- *Acupuncture is effective for the treatment of chronic musculoskeletal, headache, and osteoarthritis pain.*
- *Requires a course of treatment 8-12 visits*

Press release

### **CMS finalizes decision to cover Acupuncture for Chronic Low Back Pain for Medicare beneficiaries**

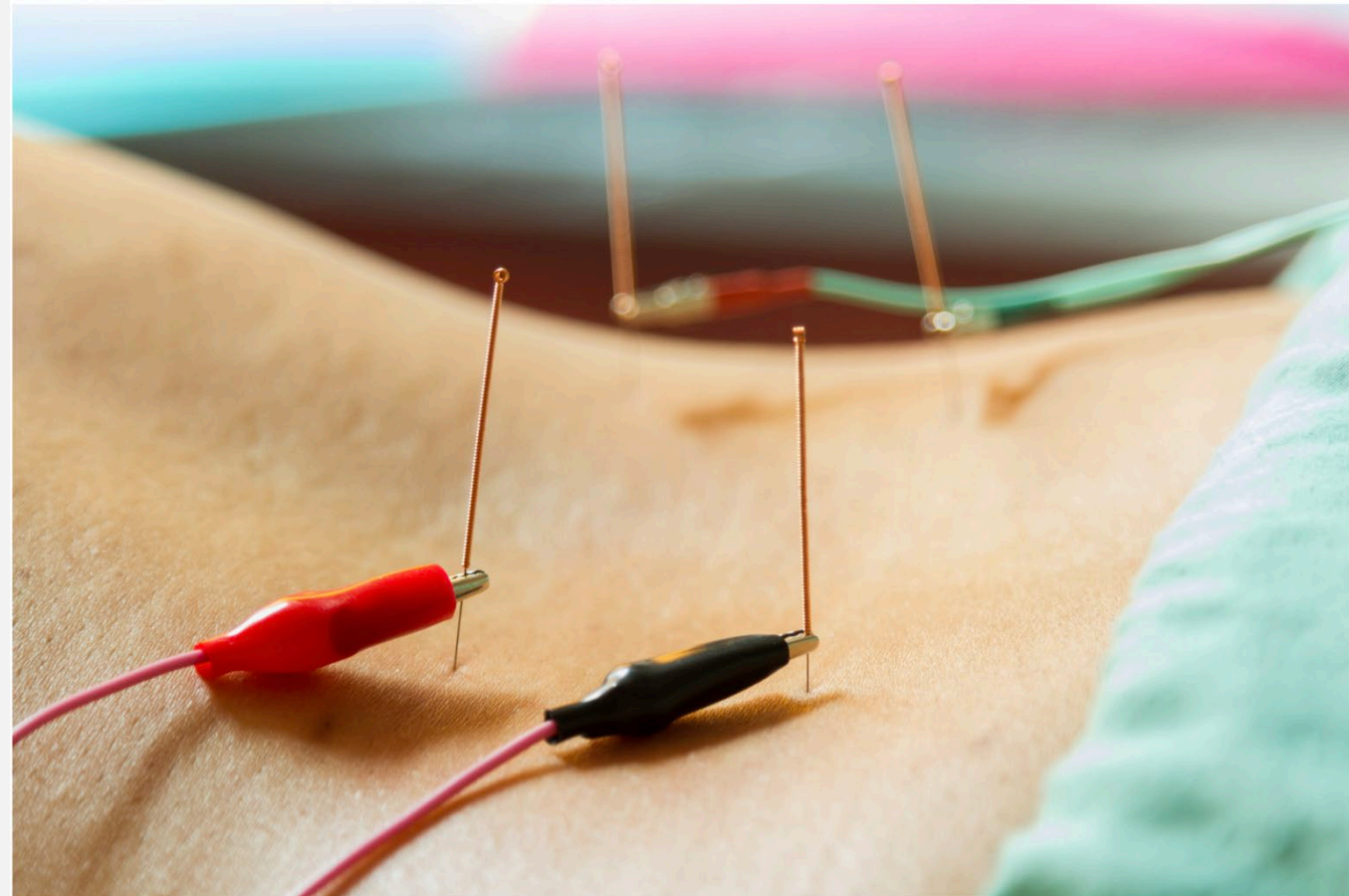
Jan 21, 2020 | Coverage, Opioids



# The Efficacy of Acupuncture in Post-Operative Pain Management: A Systematic Review and Meta-Analysis




- *Patients treated with acupuncture had*
- *less pain and used less opioid medications on the first day after surgery*





# Key Points

- 
- Acupuncture benefit goes beyond endorphins
  - Can be helpful for acute and chronic pain
  - May help to reduce medication requirement



# ***Massage and Manipulation***



# Real-World Massage Therapy Produces Meaningful Effectiveness Signal for Primary Care Patients with Chronic Low Back Pain: Results of a Repeated Measures Cohort Study



- For Bodily Pain 49.4% were clinically improved at 12 weeks, 40% at 24 weeks.
- Adults older than age 49 years had better pain and disability outcomes than younger adults.
- Important to find Therapist experienced with
  - Treating chronic pain
  - Using myofascial release / acupressure





## ***Diet and Exercise***

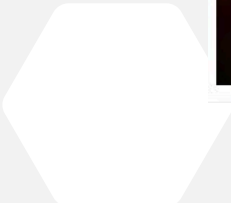


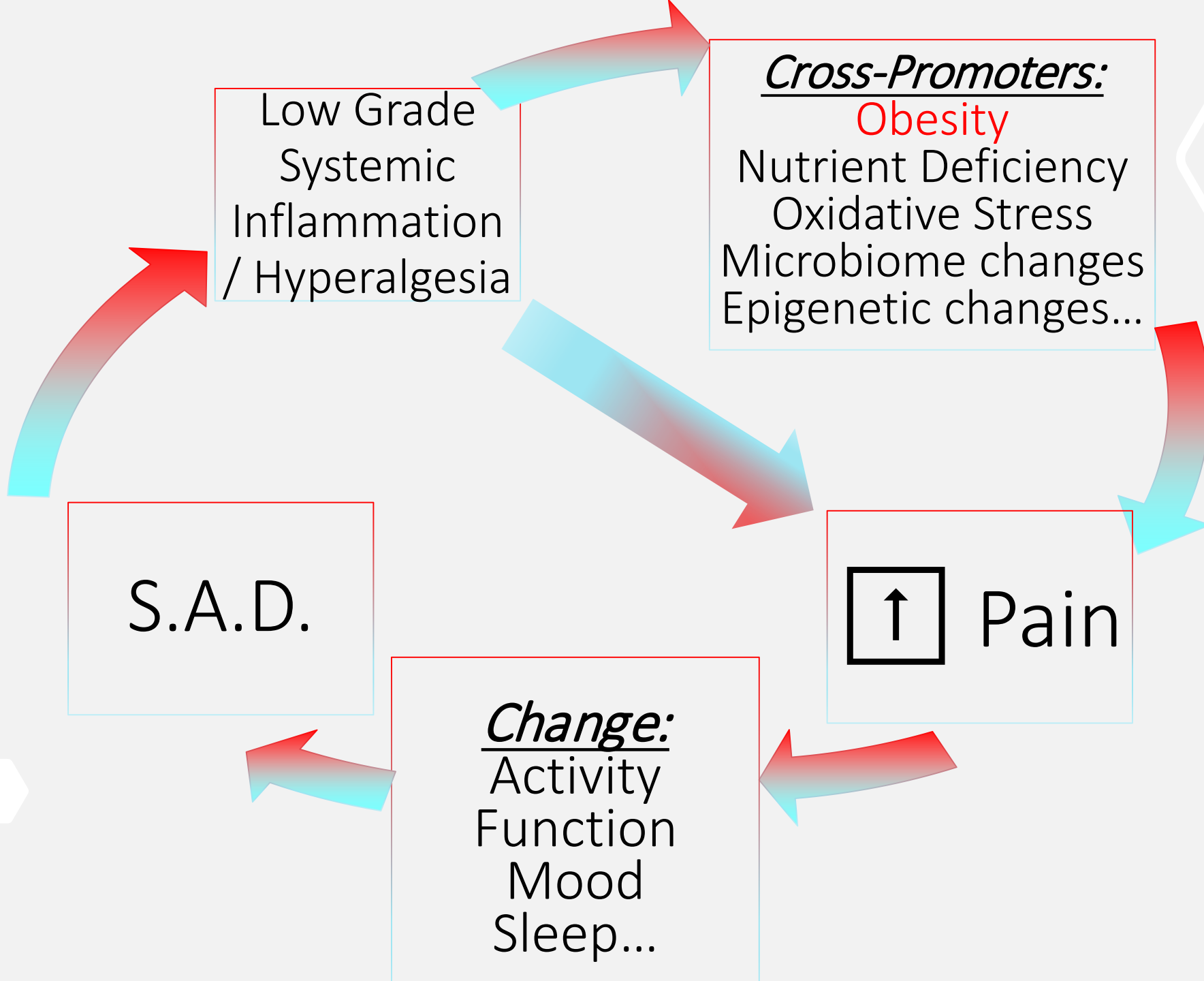
Centers for Disease Control and Prevention  
CDC 24/7: Saving Lives, Protecting People™



## Only 1 in 10 Adults Get Enough Fruits and Vegetables

New MMWR shows that few adults meet recommendations









# Relationship between total fruit and vegetable intake and self-reported knee pain in older adults

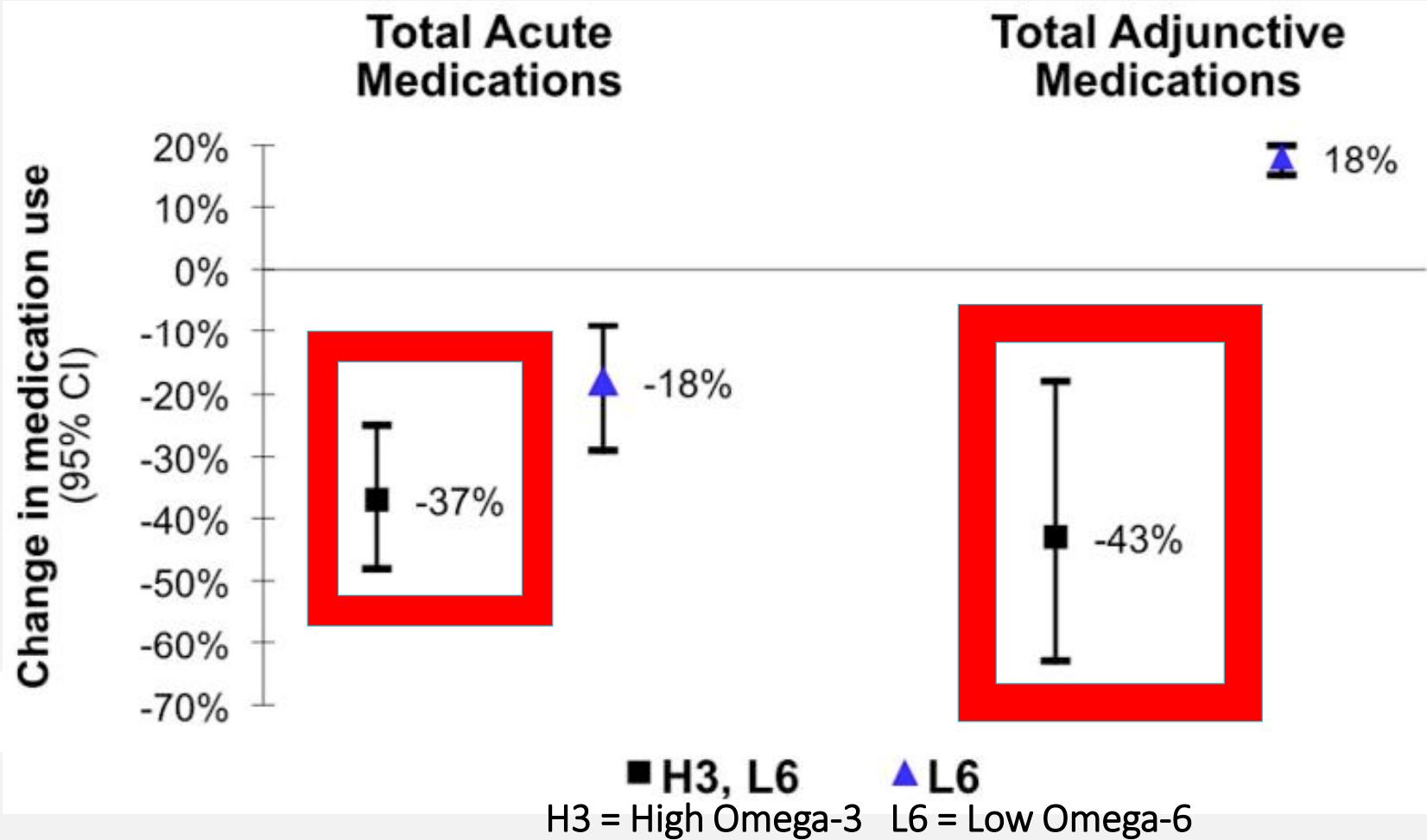
## **Polyphenol-Rich Foods Alleviate Pain and Ameliorate Quality of Life in Fibromyalgic Women**

- 6588 subjects aged  $\geq 50$  years
- Knee pain score decreased significantly with ↑ intake
- *Our findings suggest that intake of whole fruits and vegetables may help improve knee pain in older adults.*
- *... intake of foods rich in polyphenols was associated with lower numbers of tender points ...and better quality of life in the fibromyalgic group*

Han HS, Chang CB, Lee DC, Lee JY. Relationship between total fruit and vegetable intake and self-reported knee pain in older adults. The journal of nutrition, health & aging. 2017 Jul 1;21(7):750-8.

<https://www.ncbi.nlm.nih.gov/pubmed/27866465>

# Targeted alteration of dietary n-3 and n-6 fatty acids for the treatment of chronic headaches: A randomized trial



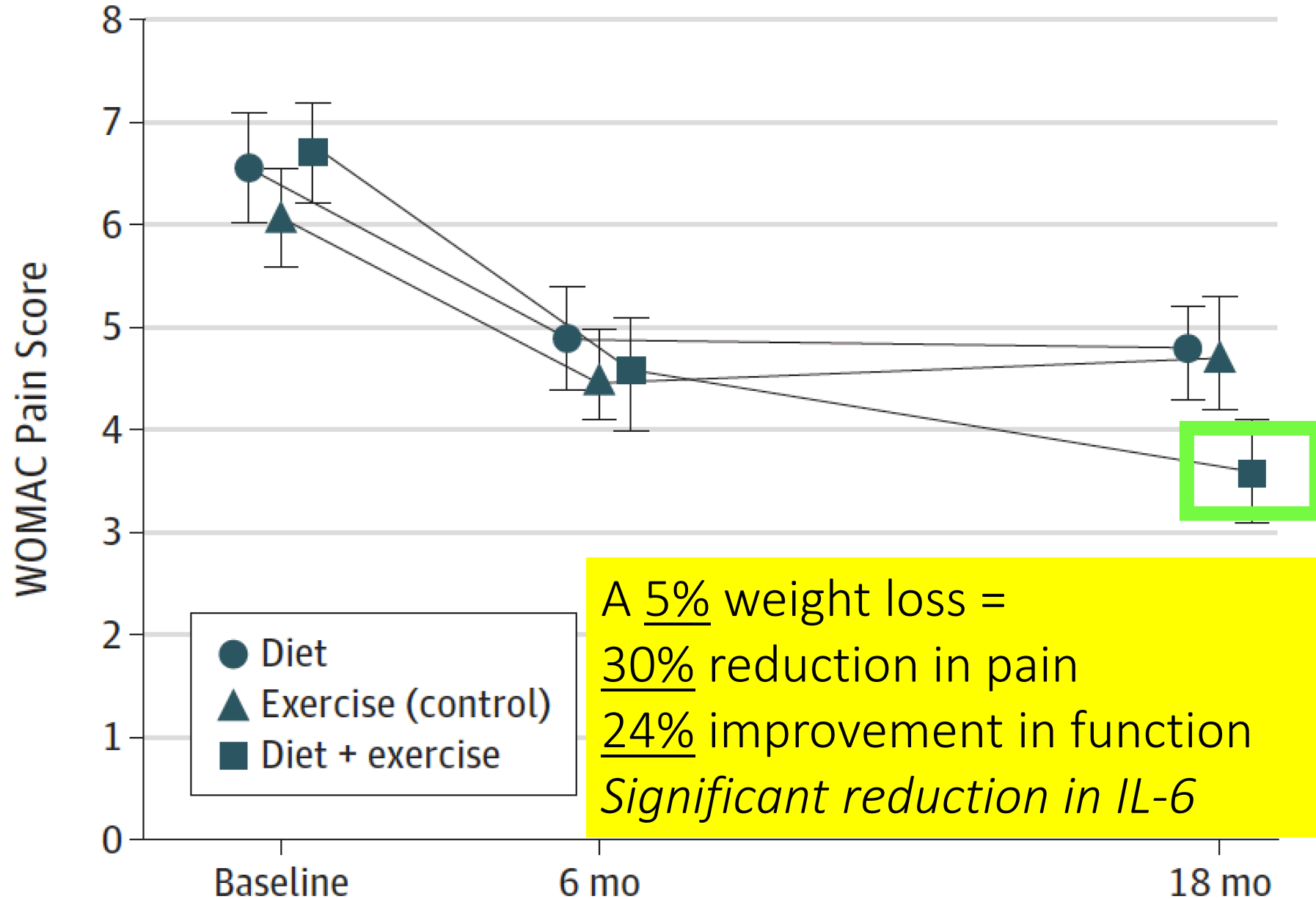
Ramsden CE, Faurot KR, Zamora D, et al. Targeted alterations in dietary n-3 and n-6 FA improve life functioning and reduce psychological distress chronic headache patients- Pain. 2015;156(4)-587-596. doi-10.1097\_01.j.pain.0000460348.84965.47.



	Baseline
<b>Weight (lbs)</b>	280.4
<b>Body Fat Weight (lbs)</b>	155.6
<b>Lean Weight (lbs)</b>	124.8
<b>Insulin (6-27)</b>	51
<b>HgA1c</b>	6.5



# The IDEA Trial 18 Month randomized trial of 450 osteoarthritis subjects to: Diet, Exercise or Combination



# More Than Just Pain Relief..

## Effects of Diet on Sleep Quality<sup>1,2</sup>

- Higher Mediterranean diet adherence associated with
  - Better Sleep and QOL
  - Decreased
    - Pain
    - Disability
    - Depressive symptoms





# Key Points

- Food is medicine
- Small changes in Diet combined with Exercise can have significant impact on pain and function



# Objectives

**Review**

The state of Pain Care in America

**Examine**

What Therapies can be solutions

**Evaluate**

The Role of CARE in pain care  
Mindfulness, Compassion,  
Community





## ***Key Concepts***

- Moment to moment awareness without judgment
- Element of self-compassion / self-acceptance
- **MBSR**: Formal 8 wk class incorporating mindful breathing, yoga and mental training



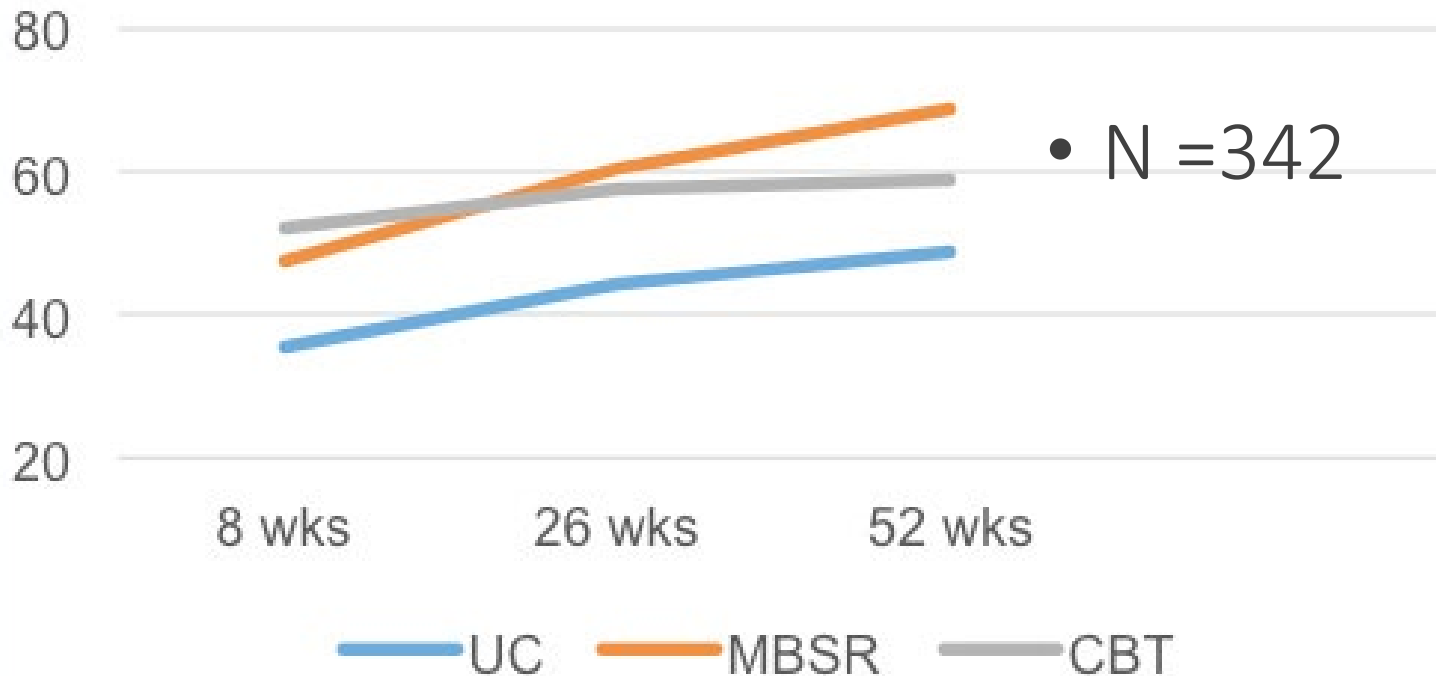


# Effect of Mindfulness-Based Stress Reduction vs Cognitive Behavioral Therapy or Usual Care on Back Pain and Functional Limitations in Adults With Chronic Low Back Pain

A Randomized Clinical Trial



% Meaningful Improvement on RDQ



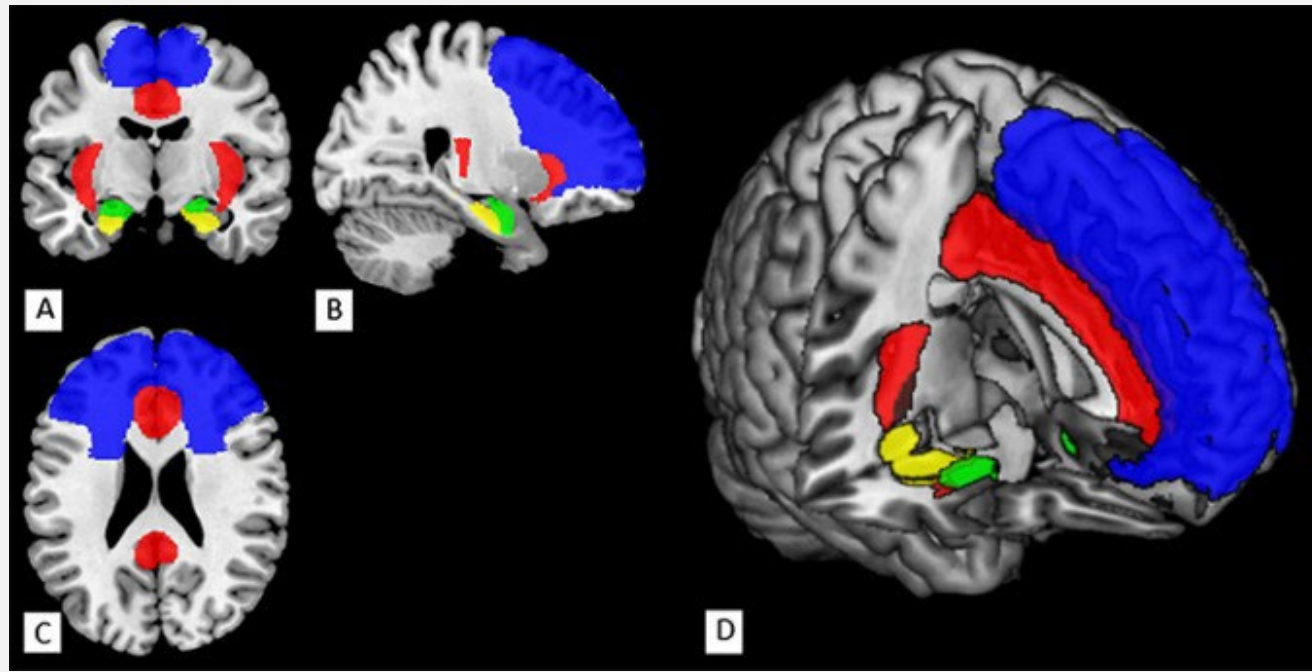
- Mindfulness training vs relaxation training:
- Mindfulness meditation is: “able to reduce distractive and ruminative thoughts and behaviors,
- This ability may provide a unique mechanism by which MM reduces distress”

Cherkin DC, Sherman KJ, Balderson BH, et al. Effect of Mindfulness-Based Stress Reduction vs Cognitive Behavioral Therapy or Usual Care on Back Pain and Functional Limitations in Adults With Chronic Low Back Pain A Randomized Clinical Trial. *JAMA*. 2016;315(12):1240–1249. doi:10.1001/jama.2016.2323

Jain S, Shapiro SL, Swanick S, Roesch SC, Mills P et al. *Ann Behav Med*. 2007 Feb;33(1):11-21.

## 8-week Mindfulness Based Stress Reduction induces brain changes similar to traditional long-term meditation practice – A systematic review

Rinske A. Gotink<sup>a, b, c</sup>, Rozanna Meijboom<sup>b</sup>, Meike W. Vernooij<sup>a, b</sup>, Marion Smits<sup>b</sup>, M.G. Myriam Hunink<sup>a, b, d</sup>  



# Gratitude Enhanced Mindfulness (GEM): A pilot study of an internet-delivered programme for self-management of pain and disability in people with arthritis

Gratitude Enhanced Mindfulness improved:

- Pain anxiety
- pain interference
- pain intensity
- fear of movement
- pain self-efficacy



# Care in Pain Care

## Exploring a compassion-focused intervention for persistent pain in a group setting



- *a group-based intervention based on a model of compassion and including mindfulness and loving-kindness exercise has potential as an intervention to be used within routine pain management settings.*

**‘All these things don’t take the pain away but they do help you to accept it’: making the case for compassion-focused therapy in the management of persistent pain**

# Group Models for *Integrating* Integrative Medicine



## Turning the Waiting Room into a Classroom: Weekly Classes Using a Vegan or a Portion- Controlled Eating Plan Improve Diabetes Control in a Randomized Translational Study



Neal D. Barnard, MD, FACC; Susan M. Levin, MS, RD, CSSD; Lise Gloede, MS, RDN, CDE; Rosendo Flores, MA

## Group treatment makes acupuncture more affordable for patients

1  
comment



By [Evelyn Theiss, The Plain Dealer](#)

[Email the author](#)

on April 16, 2012 at 4:01 PM, updated April 17, 2012 at 7:33 AM

CLEVELAND, Ohio -- Treatment for Jeff Husney's head and neck cancer made him a survivor but diminished something many of us take for granted -- the ability to eat.

The radiation aimed at the cancerous growth on Husney's tonsils left



*Lonnie Timmons III, The Plain Dealer*

Acupuncturist Jamie Starkey inserts a needle into Jeff Husney's forehead in the shared acupuncture room at the Cleveland Clinic.

# Unanticipated Benefits of CAM Therapies for Back Pain: An Exploration of Patient Experiences

Clarissa Hsu, Ph.D.,<sup>1</sup> June BlueSpruce, M.P.H.,<sup>2</sup> Karen Sherman, Ph.D.,<sup>2</sup> and Dan Cherkin, Ph.D.<sup>2</sup>

## Positive outcome themes included:

- ↑ options and hope
- ↑ ability to relax
- ↑ body awareness
- ↑ sense of well-being
- ↑ energy
- ↑ patient activation
- Changes in thinking that increased the **ability to cope** with back pain
- **Improvement** in physical **conditions** unrelated to back pain
- **+ changes in emotional states**



# Key Points

- Mindfulness, compassion and gratitude especially in a group setting enable full CARE
- Create deeper, often unanticipated, levels of healing





# *Conclusions*





## The association of comorbid conditions with patient-reported outcomes in Veterans with hip and knee osteoarthritis

- Mean numbers of co-existing + activity limiting conditions → **6**
- *“There is a need for clinical care models and other interventions that simultaneously address the complexity and interrelationships of multiple chronic health conditions ...”*



# Conclusions

- The treatment of chronic pain is often focused on Cure creating a costly and catastrophic scenario
- A focus that infuses greater CARE through integrative therapies, especially those which involve Self-Care, reflection, expression and community are key
- These approaches have the ultimate ability to truly TRANSFORM the HEALTH & CARE of Americans living with pain






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& West Chester

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[optimize@uc.edu](mailto:optimize@uc.edu)

- 
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  - GROUP CLASSES
  - BIOFEEDBACK
  - MINDFULNESS & MEDITATION
  - MINDFUL MUSIC
  - ACUPUNCTURE
  - MASSAGE THERAPY
  - YOGA
  - TAI CHI ...



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