



Mindfulness and Yoga: Promising treatments for chronic pain

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Disclosures/Conflicts of Interest

none

Pain ⇔ *Everything*

THE PAIN STARTS IN MY HUSBAND'S LOWER BACK,
THEN IT TRAVELS UP HIS SPINE TO HIS NECK,
THEN IT COMES OUT HIS MOUTH AND INTO MY EARS.
AND THAT'S WHY I GET THESE HEADACHES.



Potential downside to only Western medicine

Meds & procedures at times effective, but:

- may promote external locus of control, dependency on medications & procedures for management of condition
- especially urgent with opioid epidemic
- de-emphasizes personal responsibility, may reinforce “sick role”
- hence great need for evidence-based complementary therapies such as mindfulness and yoga
- today will learn about and also explore together



Mindfulness



- subject of recent 60 Minutes report
- per NPR “the next public health revolution”, “Headspace” ads during NCAA tournament

Mindfulness

Skill of paying attention
to present-moment experience –
sensations, thoughts, feelings, circumstances -
on a moment-to-moment basis
in a non-judgmental way



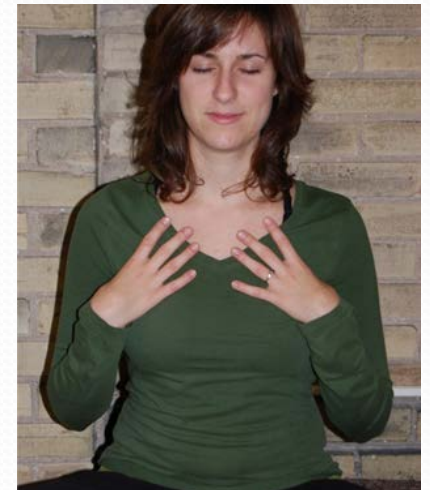
Why keep attention on present moment?

- when driving?
- talking w/ significant other?
- playing sports?
- when stressed?



Mindfulness in Healthcare

- origins in Asian meditation traditions – Buddhism, Yoga, Taoism
- Mindfulness-based Stress Reduction (MBSR) since 1979, developed by Jon Kabat-Zinn
- Acceptance and Commitment Therapy (ACT) since ~ 1994, developed by Steven Hayes



Mindfulness Research

➤ since ~1995 swelling tide of research indicates mindfulness training:

↓ persistent pain (ES ranging 0.35 - 0.48)

↓ blood pressure, stress hormones, anxiety, depression

↑ immune & neurological function, relationship functioning

helpful adjunctive treatment for a wide variety of medical and mental health conditions



Selected Mindfulness RCTs

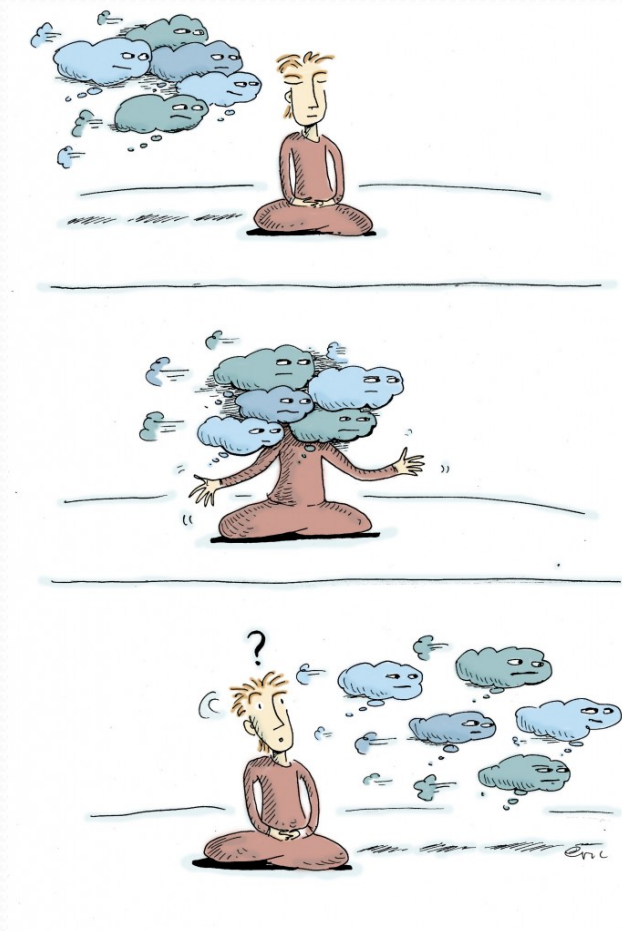
- failed back surgery syndrome
 - Esmer et al., *J Amer Osteop Assoc*, 2011
 - RCT of MBSR in 25 patients compared to usual care
 - sig improved pain, acceptance, sleep, functional disability, use and potency of analgesics
-
- mixed chronic pain
 - Vowles & McCracken, *J Cons & Clin Psychology*, 2008
 - RCT of ACT in 171 patients
 - sig. effects for pain, depression, pain-related anxiety, disability, medical visits, work status, physical performance



Basic mindfulness: breath awareness



tsunami of thoughts and feelings



tsunami of thoughts and feelings



Mindfulness changes brain structures

recent studies (mostly in healthy subjects):

Grant JA, *Ann New York Acad Scien*, 2014; Holzel BK et al., *Psychiatry Res*, 2011; Holzel BK, et al. *Social Cog & Affect Neuroscience*, 2008; Holzel BK, et al., *Neuroscience Letters*, 2007.

- anterior cingulate cortex
- posterior cingulate cortex
- left hippocampus
- insula
- pons
- amygdala
- temporo-parietal junction
- fronto-limbic network
- default mode network structures



Mindfulness changes brain functions

these changes imply improvements in:

- attention regulation
- emotion regulation (especially capacity to calm fear)
- body awareness
- learning, cognition, memory
- perspective taking, empathy and compassion



Mindfulness alters neural processing of pain

3 recent fMRI studies: Grant JA, *Ann New York Acad Scien*, 2014; Gard T et al, *Cerebral Cortex*, 2012; Grant JA et al., *Pain*, 2011; Lutz A et al, *Trends Cog Scien*, 2008.

↓ pain ratings, along with:

➤ ↑ sensory processing

(dorsal anterior cingulate cortex, anterior insula)

➤ ↓ emotional & cognitive processing
(amygdala, hippocampus, orbitofrontal, medial prefrontal, dorsolateral prefrontal cortices)



- “decoupling of the cognitive-evaluative and sensory-discriminative dimensions of pain, possibly allowing practitioners to view painful stimuli more neutrally”
- Zeidan F et al., *J Neuroscience*, 2016: mindfulness works on a different pain pathway in the brain than opioids

Yoga? really?



Yoga = Union (“yoking”)

- experiencing union of mind & body
- practices to facilitate that experience, and reaching full potential, including optimal health
- traditionally emphasized meditation, postures were minor component to calm body



Recent Reviews of Yoga for Pain Conditions

- Bussing, Ostermann, Ludtke, & Michalsen, *J of Pain*, 2012
- Meta-analysis of 16 trials (4 not RCTs) for pain conditions;
- conclusion: average effect sizes for pain = $-.74$, for pain-related disability = $-.79$



- Cramer, Lauche, Haller & Dobos, *Clinical Journal of Pain*, 2013
- review and meta-analysis of 10 yoga RCTs for low back pain;
- conclusion: strong evidence for a short- and long-term effect on pain and moderate evidence for a long-term effect on back-specific disability

Recent Reviews of Yoga for Pain Conditions

- Ward, Stebbings, Cherkin & Baxter, *Musculoskeletal Care*, 2013
- review and meta-analysis of 17 yoga RCTs for conditions such as low back pain, fibromyalgia, osteoarthritis, and rheumatoid arthritis;
- conclusion: acceptable, safe, may result in clinically relevant improvements in pain and functional outcomes



- All 3 reviews: additional rigorous yoga studies are needed



- distinct from emphasis on precise execution of poses
- shifting ways we relate to challenging experiences such as persistent pain or fatigue, troubling thoughts, and disturbing emotions
- gaining insight into unskillful reactions – such as fear of movement, and guarding reactions in the musculature – so can shift out of these often subtle patterns



Mindful Yoga Program



➤ 8 weeks of practices:

1. mindfulness meditation
2. breath awareness exercises
3. mindful movement - poses
4. group discussions
5. “self-study” - topics such as the mind-body connection



Mindful Yoga Clinical Trials



1. metastatic breast cancer (not RCT) (N=13)
(*J Pain & Symp Management*, 2007)
2. RCT of early stage breast cancer survivors
with treatment-related arthralgia
(N=37) (*Supportive Care in Cancer*, 2009)
3. RCT of fibromyalgia (N=53)
(*Pain*, 2010; *Clin J Pain*, 2012)



- Intense feelings of heat in the face
- Rapid or irregular heartbeat
- Flushing, or reddened face and neck
- Sleep disturbances
- Perspiration
- Cold chills



Consistencies across studies



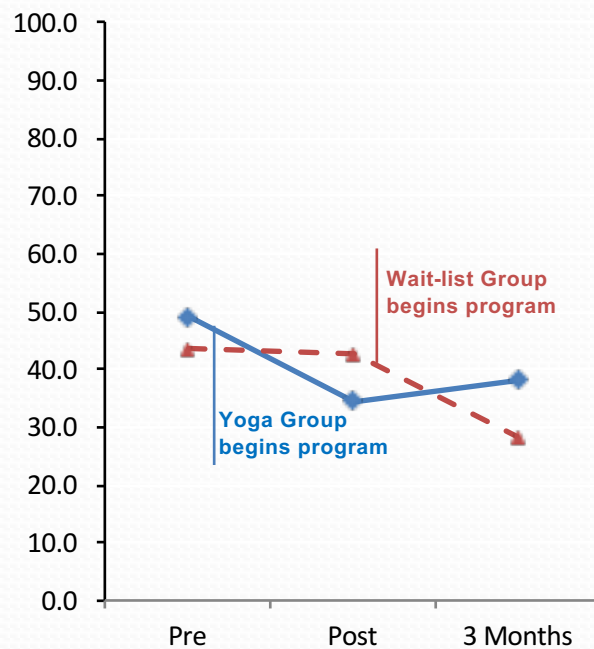
- ↓ pain, including clinically significant in fibromyalgia (20.5% at post-treatment, 23.2% at 3 month follow-up)
- ↓ emotional distress, fatigue, other targeted sx's
- more practice ⇨ more benefit
- no concerning adverse events in vulnerable populations
- limitations: small samples, no control for non-specific factors, mostly self-report measures



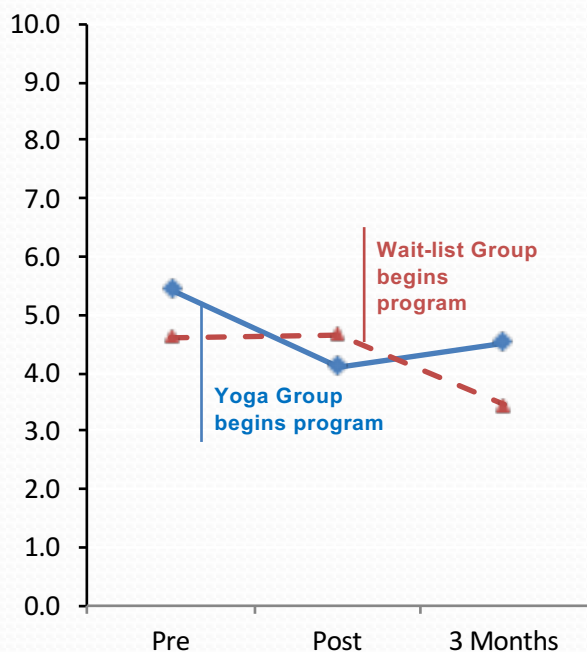
Mindful Yoga for Fibromyalgia RCT: Results at pre/post/3 months



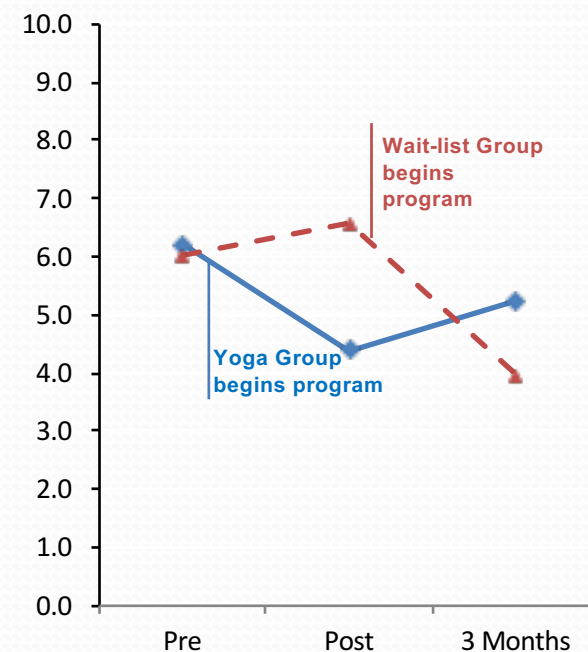
FIQR Total Score



Pain (FIQR)



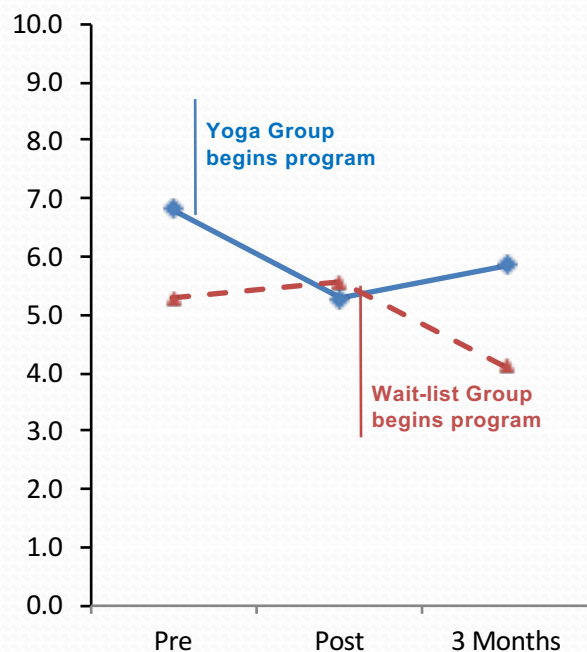
Fatigue (FIQR)



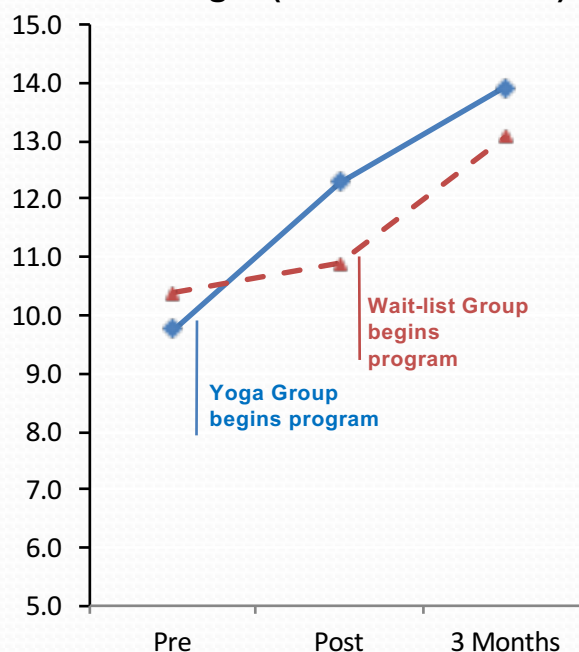
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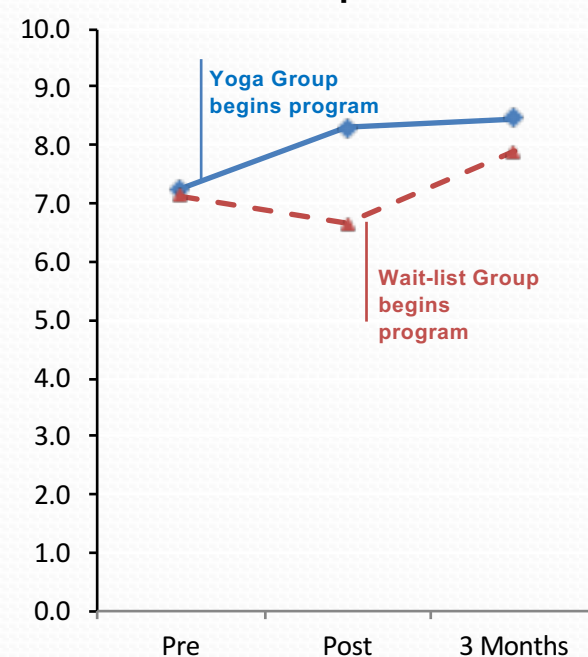
Poor sleep (FIQR)



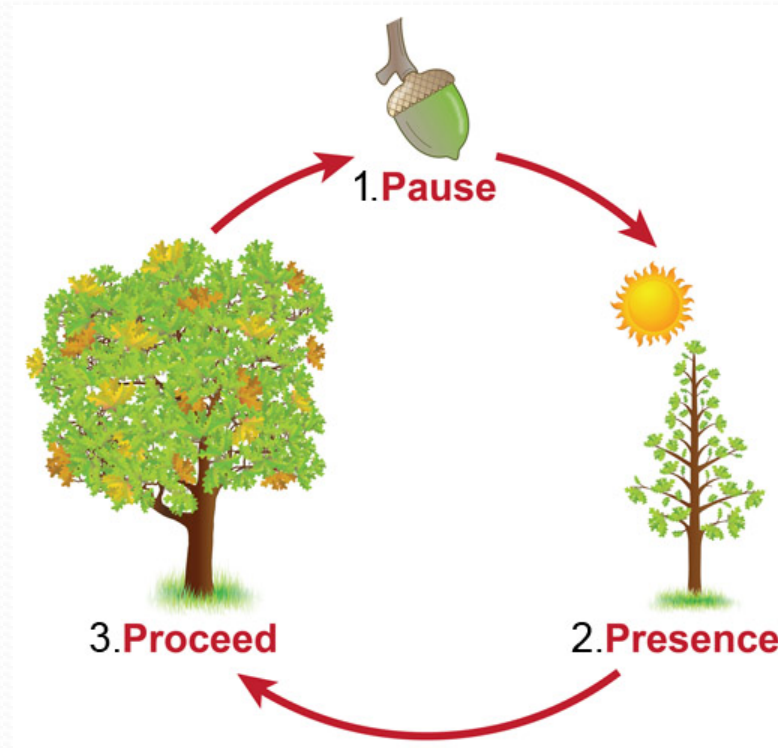
Strength (Timed Chair Rise)



Acceptance



Mindful movement



Piloting QST Effects



- Carson et al., *Internat J Yoga Therapy*, 2016
- QST (quantitative sensory tests) - abnormalities in fibromyalgia that imply altered central nervous system pain processes include:
 - ↓ pressure pain threshold (PPT),
 - ↓ heat pain threshold & tolerance,
 - ↑ ratings of prolonged heat pain,
 - ↑ intensity and duration of after-sensations of painful stimuli

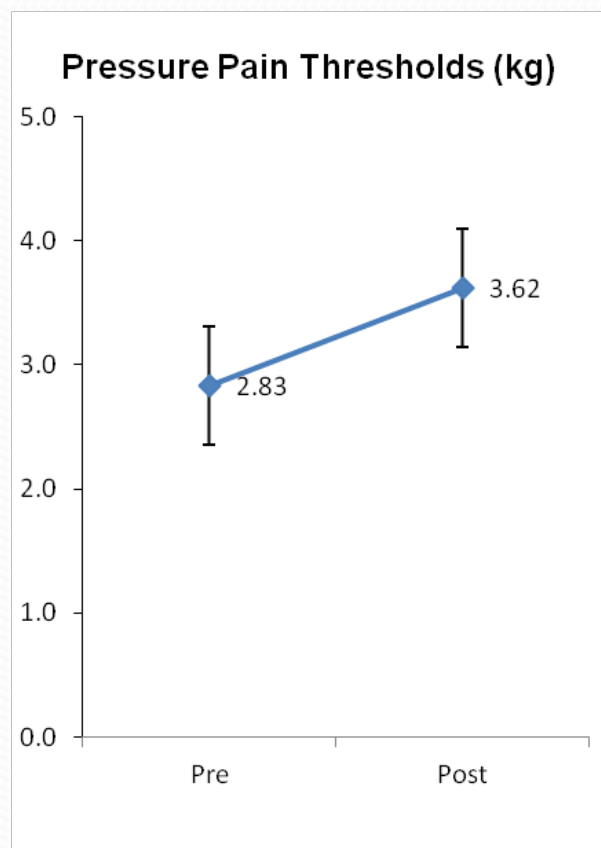


Results: Mindful Yoga QST Pilot

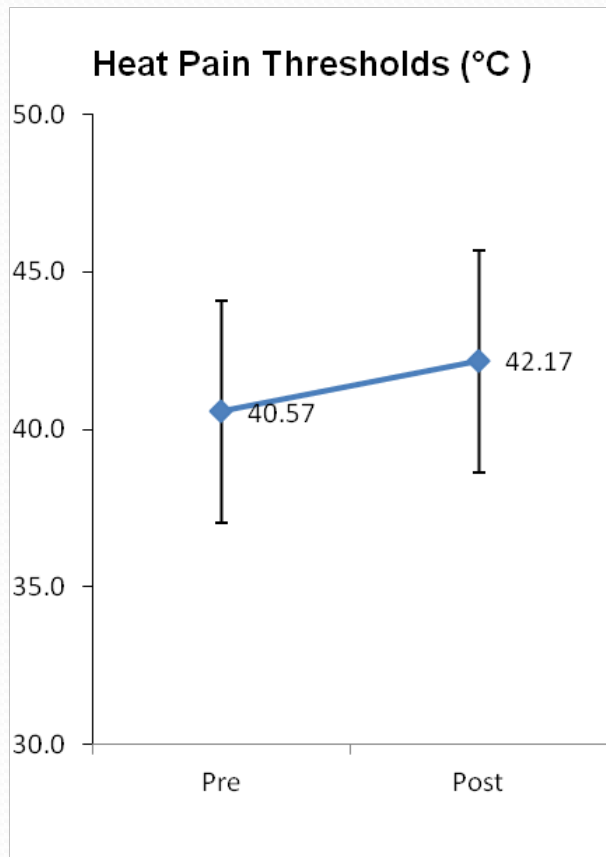


- additional group of 7 fibromyalgia patients,
- replicated improvements in pain (-51.2%), fatigue, sleep, balance, strength, etc
- all QST variables passed separation test (Aickin, 2004)

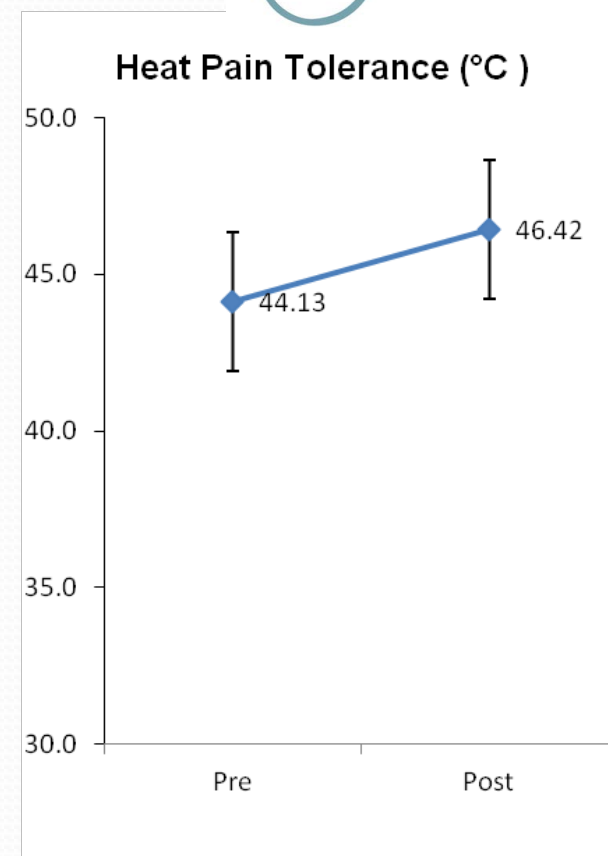




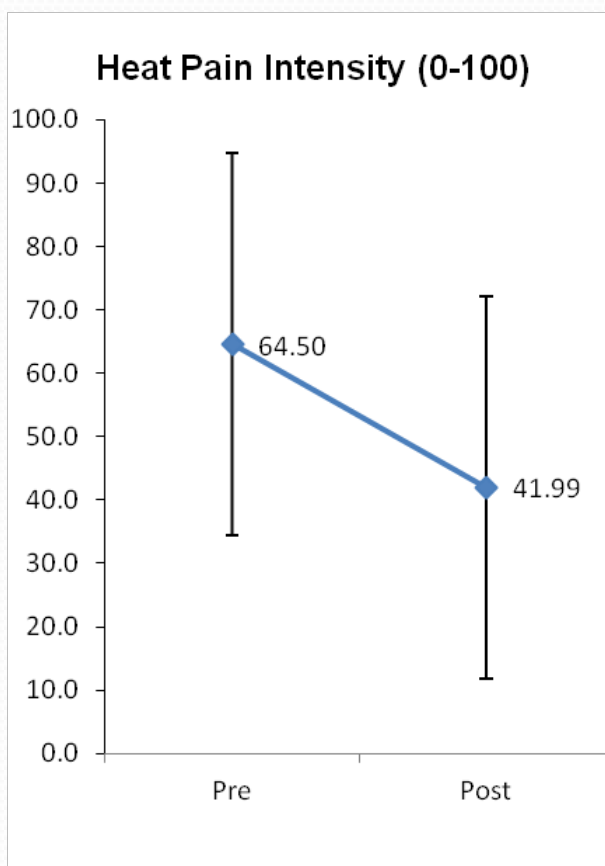
$d = 1.63$



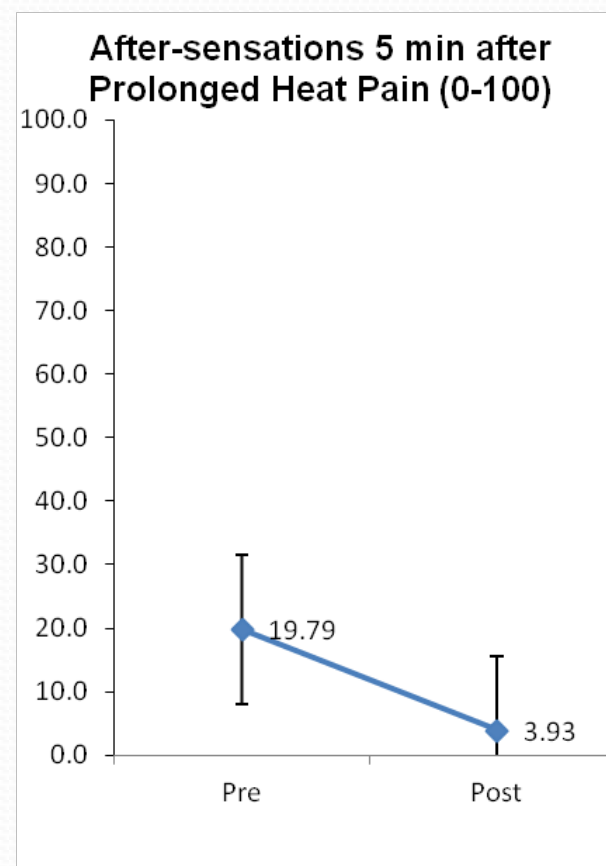
$d = 0.45$



$d = 1.04$



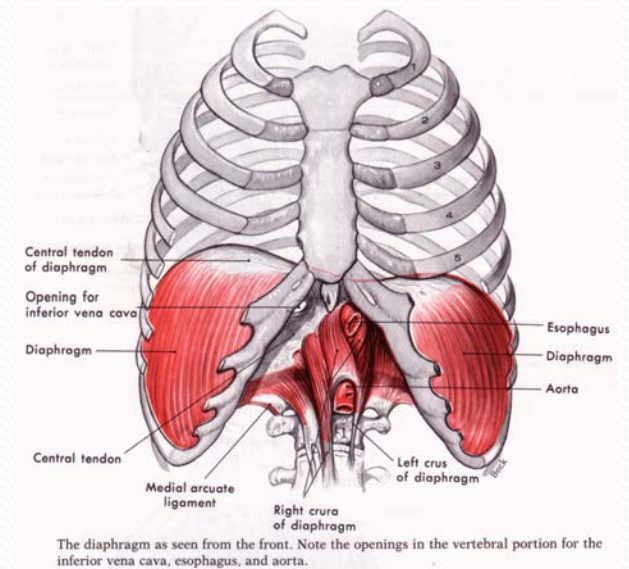
$d = -0.75$



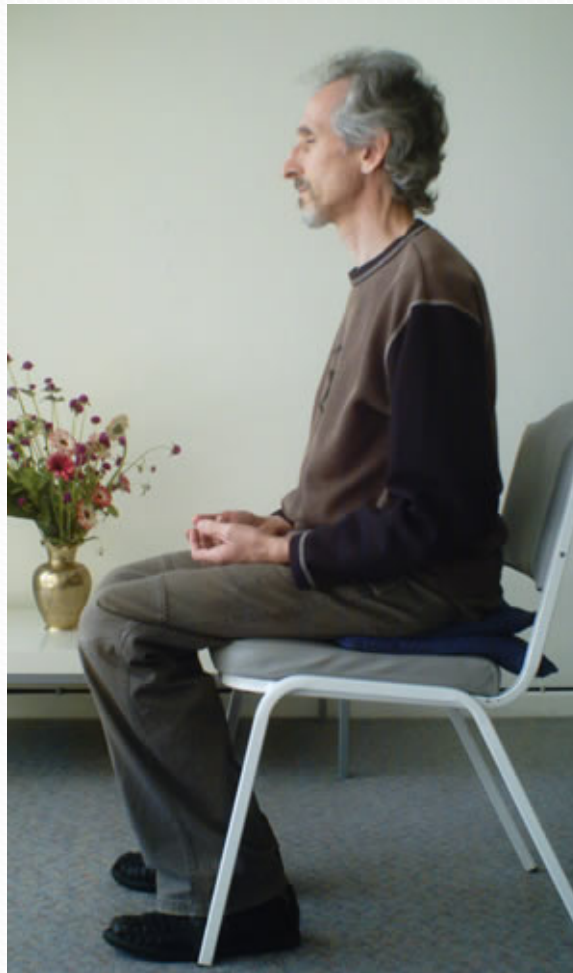
$d = -1.36$

Mindful paced breathing

- How we breathe \Rightarrow powerful effect on both mind and body – tense/fast/shallow vs. relaxed/slower/fuller
- diaphragm - responsible for 75% of all respiratory effort
- diaphragmatic breath - lungs expand more completely, more O_2 taken in, more CO_2 released each breath
- multiple studies show pain-relieving effects



Mindful relaxation body scan



“Coming to Your Senses”



Mindful Yoga current classes



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Mindful Yoga for Chronic Pain Program: Drop In Series



Participate in a mindful yoga program that has been shown in clinical trials to reduce pain levels. This course combines gentle yoga, mindfulness training, and education about how mindful yoga can impact the experience of chronic pain.

Facilitated by Kimberly Carson, MPH, C-IAYT, a yoga therapist who co-developed the program and is considered a national leader in the adaptation of mindful yoga for medical challenges.

Winter 2018 • Mindful Yoga for Chronic Pain • Drop in Series



ohsu.edu/mindfulness



Mindfulness at OHSU

OHSU is one of many major academic medical centers that have incorporated mindfulness services for patients, caregivers and staff. Mindfulness, defined as moment-to-moment, non-judgmental awareness, can be cultivated through simple meditation practices and other strategies that enhance presence of mind. The benefits of mindfulness are tangible and include physical and psychological improvements, as well as enhanced quality of life. OHSU is dedicated to providing treatments, conducting research, and offering classes based in mindfulness as a measure to support the health and wellness of the entire OHSU community.

Mindfulness for health and wellbeing

Mindfulness classes at OHSU

Mindfulness classes teach the participants specific skills to develop greater presence of mind, concentration, deep relaxation, and mental and emotional clarity. Many of the techniques learned in mindfulness classes at OHSU can be practiced in daily life to help create feelings of contentment, centeredness, and joy even in the midst life's challenges.

For patients, caregivers and staff, OHSU currently offers:

- * 8 week [Mindfulness-Based Stress Reduction \(MBSR\)](#) classes
- * Free drop-in [Mindfulness Breath by Breath](#) at various times and locations
- * Free 30-minute **Mindfulness Wednesday** classes on Wednesdays, 12-12:30pm, Doernbecher Meditation Room (DCH 10301)

For OHSU staff and providers only, the Career Workplace Enhancement Center (CWE) offers

Mindfulness Breath by Breath free drop-in class

Breath-by-Breath Class



Breath by Breath is an ongoing drop-in class inspired by the [Mindfulness-Based Stress Reduction Program](#). This free class is tailored to support patients, caregivers and staff as they pursue well-being in the OHSU healthcare environment. During each class, a trained instructor guides participants in mindfulness meditation, various breathing practices, gentle mindful movement, and group discussions. Classes are 60 minutes and are offered at various times at OHSU (see [Calendar](#) for details). Patients, caregivers and staff are free to come to whichever class suits their needs

Class comments

"Breath by Breath classes are the highlight of my week! I have gained valuable tools, practices and insights that I am able to use in my daily life. Learning to be present in my body, in the moment, has helped me considerably as I deal with chronic health issues. I find that these simple practices are a key component to my overall health and healing." - Katy Wahlstrom

"At first, I was skeptical that simple breathing techniques could change my anxiety levels. Attending bi-monthly classes for an hour proved to me that by following the breathing techniques taught in class, my anxiety episodes could decrease. OHSU has been very proactive in offering this

Class resources

[Breath-by-breath class handout \[PDF\]](#)

[3-part breath audio clip \[mp3\]](#)

[Simple meditation audio clip \[mp3\]](#)

Breath by Breath program contact

For more information or questions about the program, please contact Kimberly Carson, MPH, C-IAYT, eRYT,

Trainings for professionals



Mindful Yoga Professional Teacher Trainings:

OHSU Dept of Anesthesiology,
focus on chronic pain
Sept 23-29, 2018



Duke Integrative Medicine,
focus on cancer
June 14-21, 2018



Trainings for professionals



Mindful Yoga Trainings for VA Providers

Roseberg VA
October 2017



Boise VA
June 2018



Ongoing Research

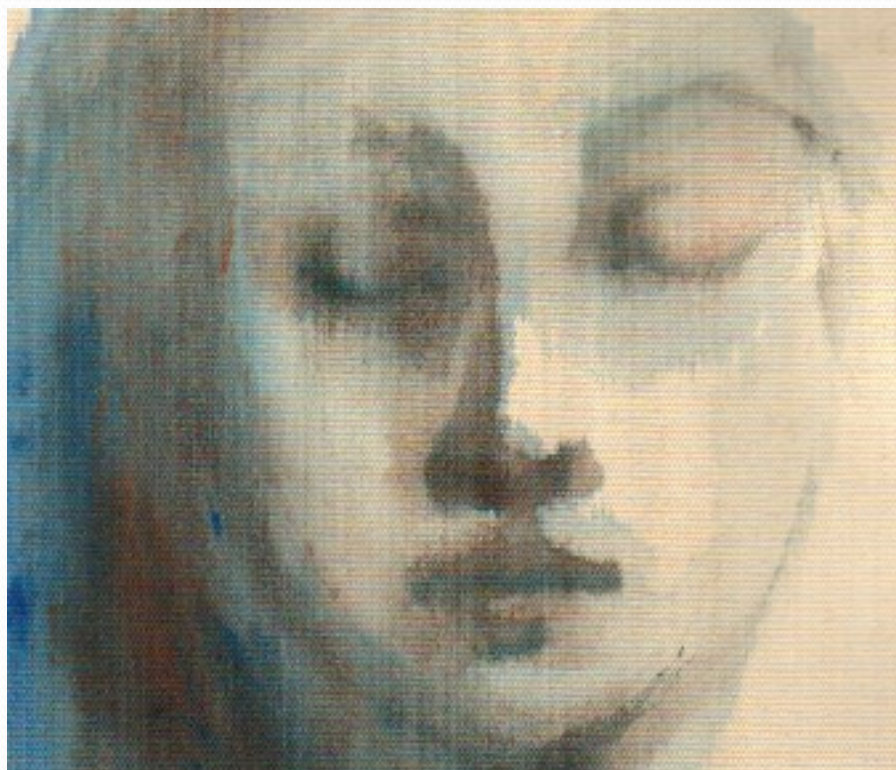


- NIH-funded pragmatic trial for opioid-dependent pain patients at Kaiser NW, Atlanta, Hawaii



- NCCIH-funded RCT in metastatic breast cancer at Duke Cancer Center





Thank you !