



University of California
San Francisco

Learning Environments and Mindfulness: The Inside Matters, Too.

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<https://mindfulsurgeon.ucsf.edu>




University of California San Francisco

Developing
Medical Educators
of the 21st Century

Nothing to disclose

Mindfulness



8:30p– 4	8 hours
Sleep	<u>5 hours</u>
Eat	3 hours
Shower	
Study/P	
Exercise	
Socializ	

Mindfulness

Some definitions and background

A specific skill set:

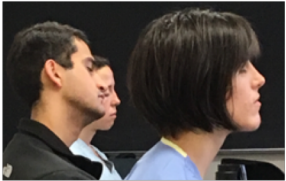
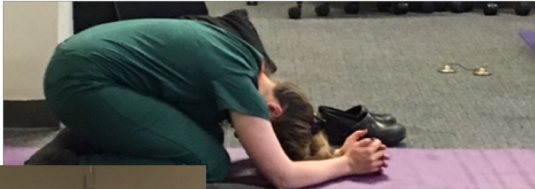
- Interoception (recognition of thoughts, emotions and sensations in real time)
- Acceptance (emotional regulation, non-reactivity to stimuli)
- Meta-cognition (conscious awareness of cognitive control processes)

A formal curriculum:

- Derived from secular, codified Mindfulness-Based Stress Reduction (MBSR)
- Breathing, sitting, lying and moving meditation practices to teaching skills through EXPERIENCE
- Scientific background, exercises, home practice

Mindful Surgeon

Mindfulness-Based Stress Reduction (MBSR)

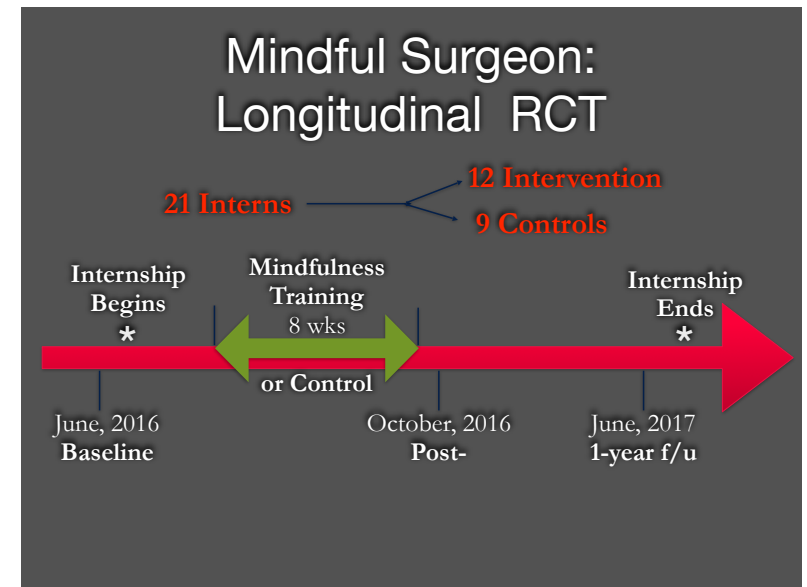


Mindful Surgeon

Multiple Iterations

Studies since 2016:

- Surgery Interns (n=40) longitudinal, pilot RCT
- Mixed-level surgery residents (n=18), cohort
- Surgery and Anesthesia faculty (n~70), SWT
- Surgical and non-surgical interns (n=45), pilot RCT



Enhanced Stress Resilience Training

“ESRT”

Five Ways to Ritualize Formal Mindfulness Practice



Formal Mindful Practice is purposeful.

We set aside time for practices such as the body scan, sitting meditation, and mindful movement.

1. RISE. PEE. MEDITATE (RPM)

Practice when you first rise, before the day gets in your way. THREE dedicated minutes can change everything.

2. PEE. MEDITATE. BED (PMB)

Try 3 MINUTES for 3 DAYS, morning or night, and see what happens...



3. INCLUDE YOUR PEOPLE

Include your partner in a body scan, or Belly Breathing with your kids:

Inhale deeply and slowly: imagine a balloon in your belly that expands when you inhale. Pause at the top of the inhale, and listen for your heartbeat. Exhale out of the nostrils, emptying the lungs of air. Focus on your body sensations for each moment, in silence.

4. MINDFUL WALKING

Walk to or from any destination without doing anything else (no texting, talking, eating, etc). See your surroundings, feel your footfalls and notice the muscles involved in motion. How does it feel to balance? To propel yourself forward? For 3, 5, or 10 minutes, you can mindfully walk quickly or slowly.

5. SCHEDULE MEDITATION TIME

Just like you'd schedule a meeting or exercise, schedule when you will meditate every day and protect it.

6. MAKE IT FUNDAMENTAL, NOT OPTIONAL

Like brushing your teeth - if you forget, you notice all day and over time it's unhealthy. Even when tired, brushing feels good, it's fundamental, and people like being around you!



15 Informal Ways to Practice

Morning	Work	Evening
Upon waking: Notice a single breath. What sensations, thoughts and feelings start your day?	Being paged: What happens in your body. Do your senses sharpen? What thoughts arise? Notice, let it go, and move on.	Leaving the hospital: Notice as you walk outside. What do you see, smell and hear? Darkness or sunshine? Fresh air or birds? How does it feel to leave?
Frame the day: Consciously say something to yourself to begin your day ('Focus', 'Joy', 'Ease').	Rounding: Feel your footfalls as you walk the halls. Feel your jaw and shoulders. Is there tension? Can you release it?	Driving home: Just drive. Feel your seat, your shoulders, your hands. Take a breath. Does anything change?
Brushing your teeth or Taking a shower: Notice the bristles on your gums and the water hitting your skin. Try and just feel. Without thinking.	Standing at the bedside: Purposefully shift the weight on your feet, or stand evenly on both. Notice the sensation of moving or being grounded.	While exercising: Be completely present in your body: Your breath, your sensations, the space around you. Can you recognize your thoughts? Notice your emotions?
First sip of coffee or tea: Notice the smell, the feeling in your mouth. How does your body respond?	Cleaning hands: Push dispenser and inhale; Rub hands and hold breath; Step forward and exhale.	Eating your evening meal: If you can, just eat- fast or slow. Notice your hunger, the smell of your food, feel the texture and how your body responds. Try just eating for 3 minutes.
Stepping outside: Take a breath, look at the sky. Feel the temperature. What kind of day will this be?	Crossing Thresholds: <u>In the elevator:</u> Enter and inhale, hold your breath and ride, exhale when the door opens. <u>Switching ORs or patient rooms:</u> Exit one and inhale; walk between and hold your breath; enter a new room and exhale.	Bringing your work home: Notice if you are multi-tasking – how your focus shifts between family, self and work. How does it feel to do several things at once? Try just doing one thing, with your family or self, for 3 minutes.
Look around and take in your surroundings, focus on something you didn't notice before.		

Learning Environments– The Inside Matters

Overview:

Frame the Learning Environment



The Inside Matters

Why and How

- The Learner – mental training, cognitive load
- The Practitioner – well-being and performance
- The Institution – culture, reform and self-awareness

All interconnected, cross-influential

The Learning Environment

Complexity

Medicine is an *art* and a *science*



Physicians strive to be complex

- Intellect/Empathy
- Sacrifice/Guidance
- Humility/Strength

Historically, duality represents conflict

- Logic/Emotion
- Mind/Body
- Systems/Culture

Need for Evidence

Linear vs. complex

Mechanistic and linear approach

- Thinking, teaching, interventions

Evidence-based medicine

- “Bench to Bedside”

Implementation is essential

- Behavior and culture are key
- Things get complicated



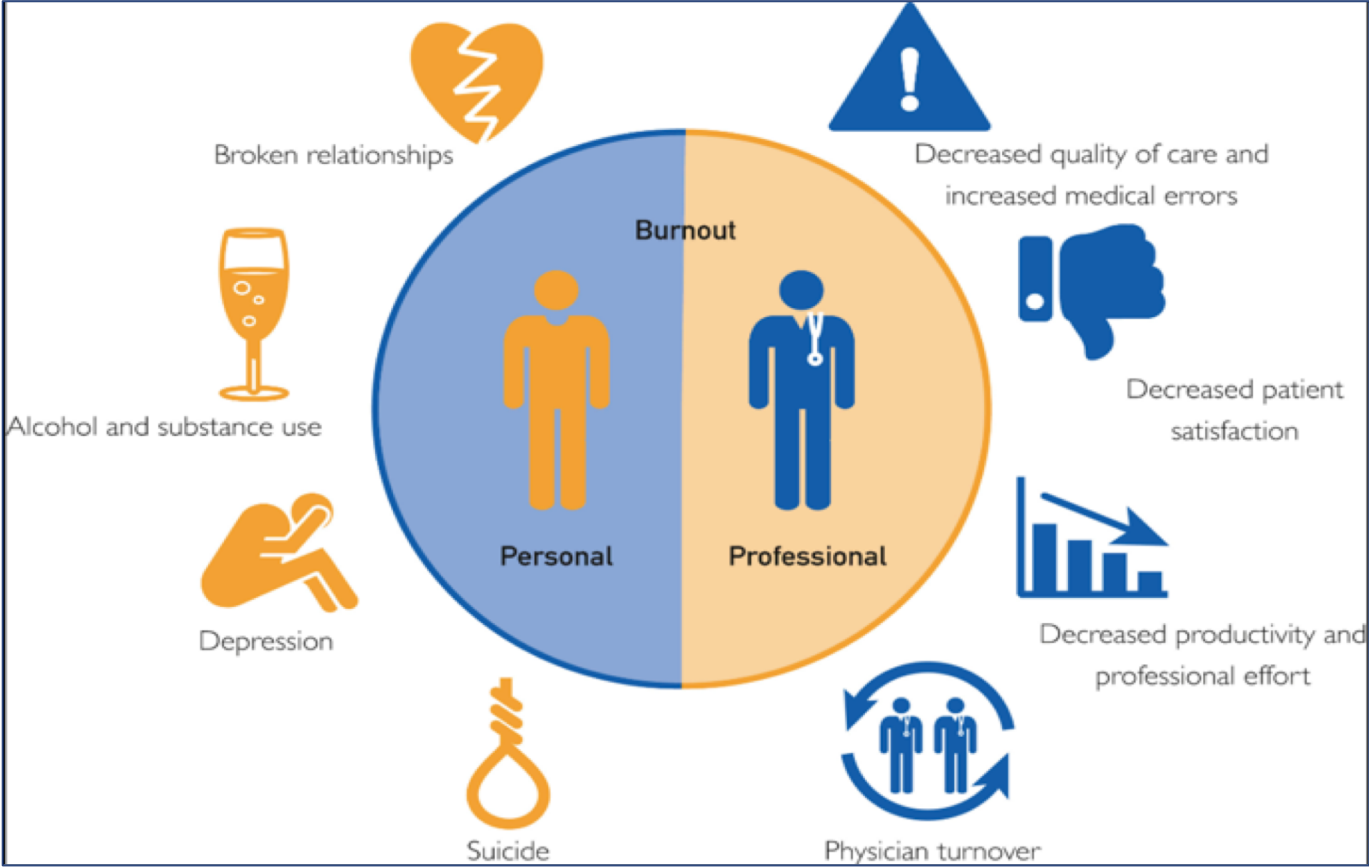
The Inside Matters

Critical inter-relationships



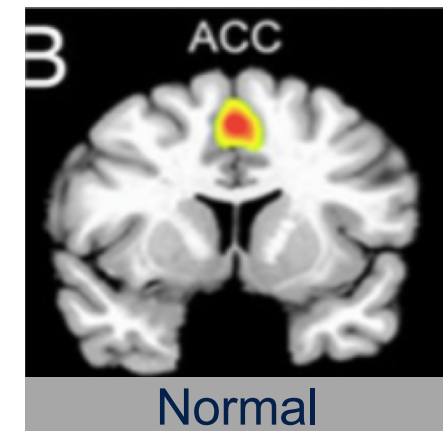
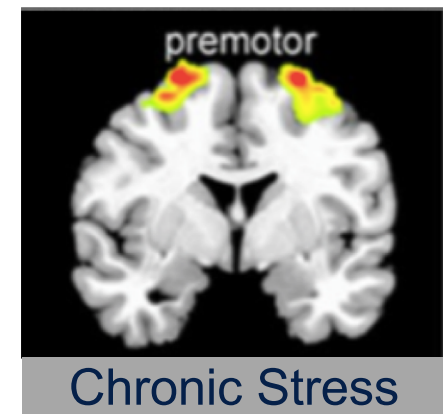
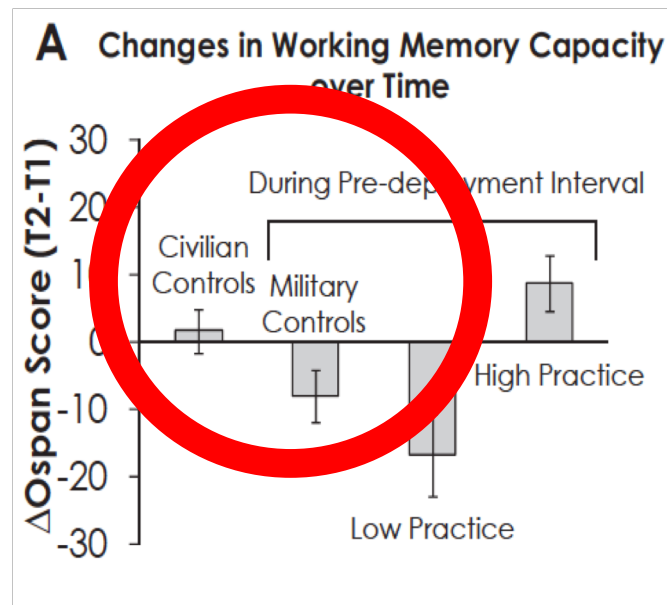
- Learners – Emotion and cognition (cognitive load)
- Practitioners – Mind and body (perception and performance)
- Institution – Culture and systems (reform)

Why It Matters To All of Us



Why It Matters To Learners

- Burnout and stress
- Diminished learning, memory, decision making
- Decrements in executive function
- Changes in brain architecture



	TOTAL BURNOUT	HIGH STRESS	HIGH ANXIETY	MOD-SEV DEPRESSION	SUICIDAL IDEATION	ALCOHOL MISUSE	ALCOHOL ABUSE
ALL PGY LEVELS	69%	53%	45%	20%	11%	49%	33%

Naturally-occurring
“mindfulness” makes a
difference

FACTOR	MINDFULNESS	
	OR	p
EMO EXHAUSTION	0.24	<0.001
DEPERSONALIZATION	0.29	<0.001
SEVERE STRESS	0.15	<0.001
HIGH ANXIETY	0.21	<0.001
MOD-SEV DEPRESSION	0.26	<0.001
SUICIDAL IDEATION	0.25	<0.001

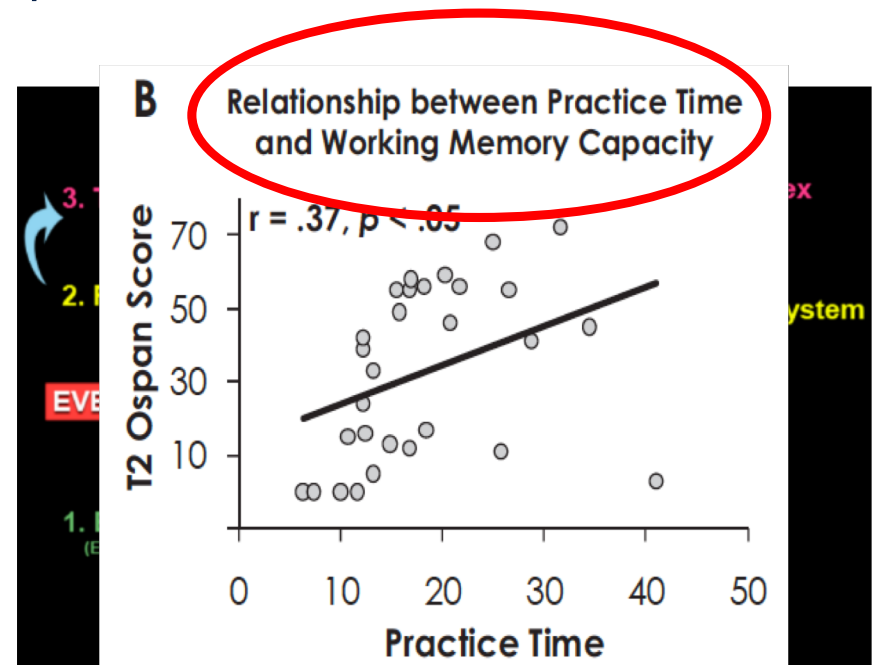
Inside Learners: Emotion and Cognition

A static character trait? Or a skill to be developed?

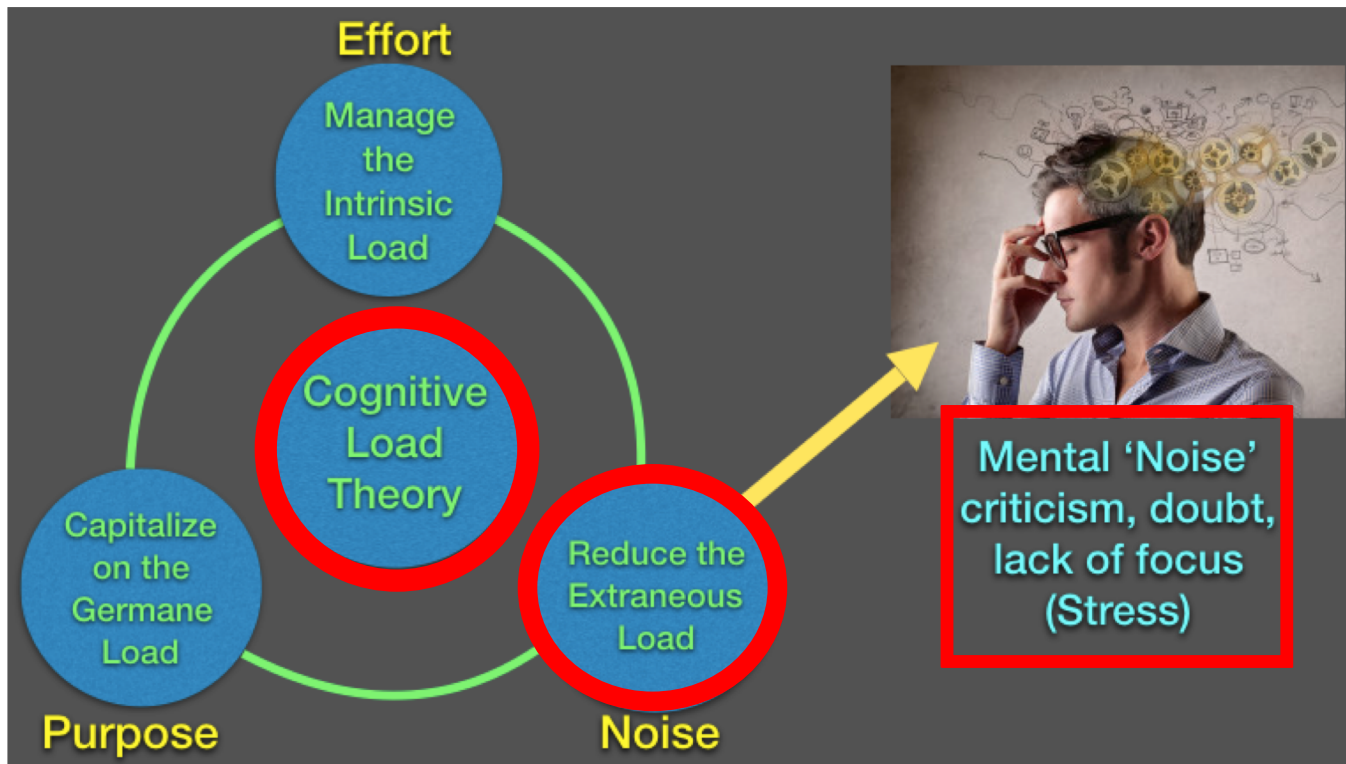
MBIs: peak performance, prophylaxis

- Professional athletes
- Marines
- Urban School teachers
- Incarcerated youth

Why is adoption within Medicine so slow?

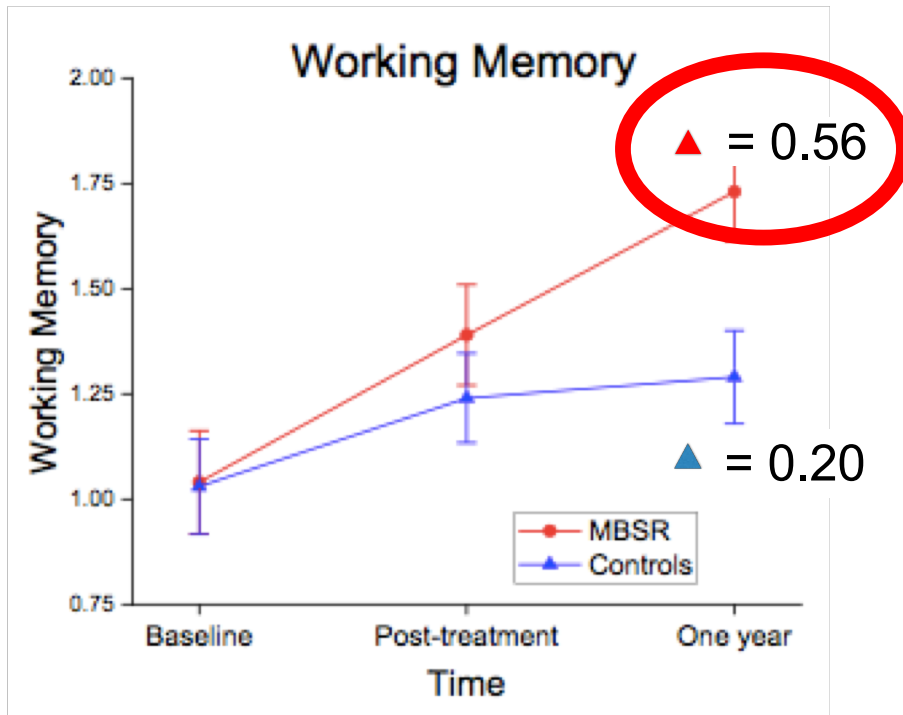


Inside Learners: Cognition and Learning



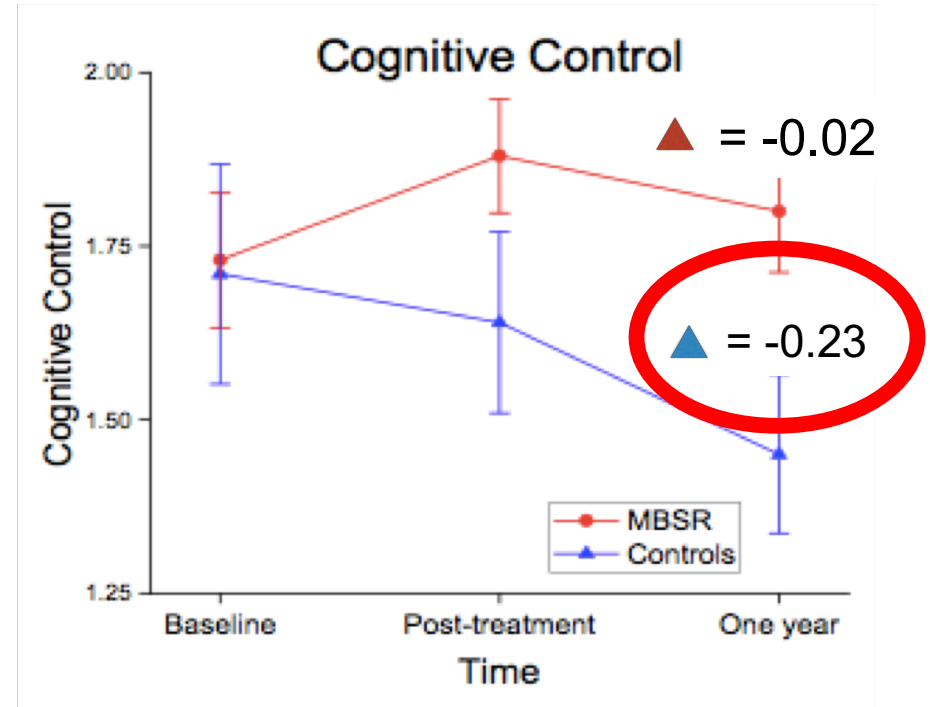
Young, Perspect Med Educ, 2015; Sewell, Med Teach 2018; Mancinetti, Eur J Int Med, 2019

Mindful Surgeon pilot RCT



2-fold greater increase in WMC

$$\eta^2=0.20$$



10-fold less decrement in CC

$$\eta^2=0.16$$

* Cohen's $d=0.91$ is approximately equivalent to $\eta^2=0.17$

Why It Matters To Practitioners

Process-Centered Skills: Teaching the horse to drink

- Stress, burnout and diminished satisfaction affect decision-making, patient care and career longevity
- More exercise, more money, changing institutions, may help, but external answers to our problems are not always possible or may take time
- Self-regulation is a skill broad applicability, making us more resilient, even as we strive for broader changes



Why It Matters To Practitioners

Learned coping:

“Right now we use anger as a coping mechanism. It’s a very temporary fix, (and) doesn’t help anyone.

I think that anger and shortness are (culturally) learned behaviors in surgery.”

“... You start responding differently to the same stressors. You don’t necessarily like the person you’re becoming. The ED calls ...and you’re immediately mad at them (although) they haven’t done anything.

Then you look back and think: “that’s not who I am; I don’t want to be that way.”

Why It Matters To Practitioners

Distorted thinking:

If I get stressed ***I tend to spiral in my mind.*** I start thinking I'm doing it all wrong, maybe I'll never be good, maybe everyone else is already good.

It can spin out of control...

... I really like procedures, but my hands are always shaky... On OB,...vaginal repairs, (especially if I'm not) expecting it.

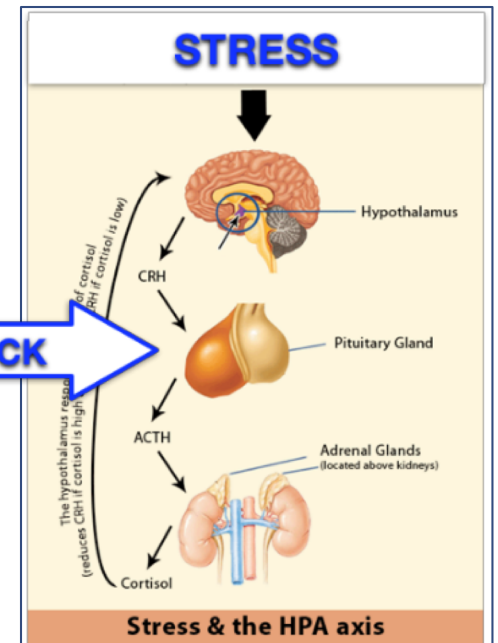
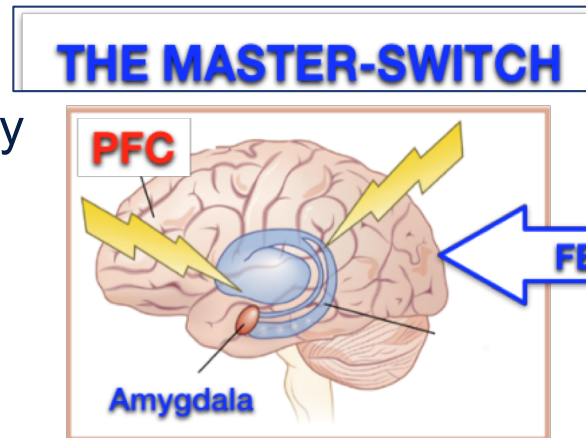
I feel surprised and nervous...I'm totally shaky! I see it, I feel it and my confidence erodes.

Inside Practitioners: Mind-Body Connection

Perception Effects Experience

Chronic or overwhelming stress influences:

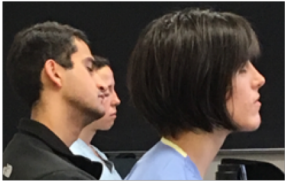
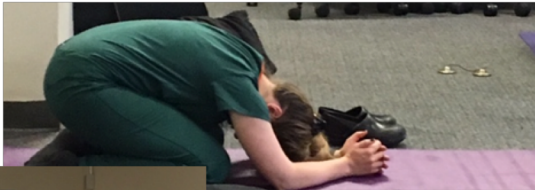
- Burnout
- Psychological vulnerability
- Creativity
- Performance



A different way of training: *Experiential not intellectual*

Mindful Surgeon

Experiential Learning



Feasible and Acceptable

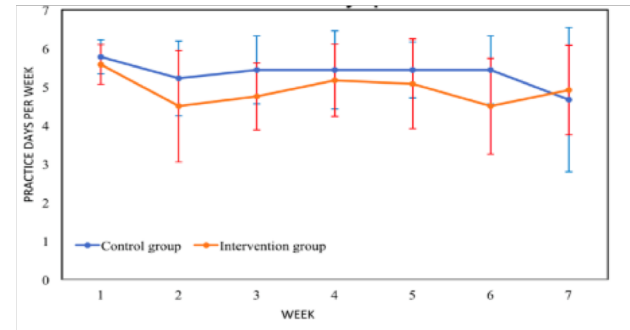
High demand

No attrition

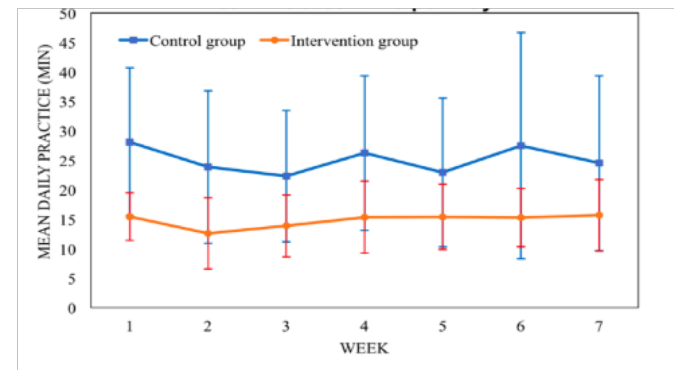
High attendance (11% vs 15% absences)

Consistent and persistent home practice

Broad integration



mean practice days/week = 5

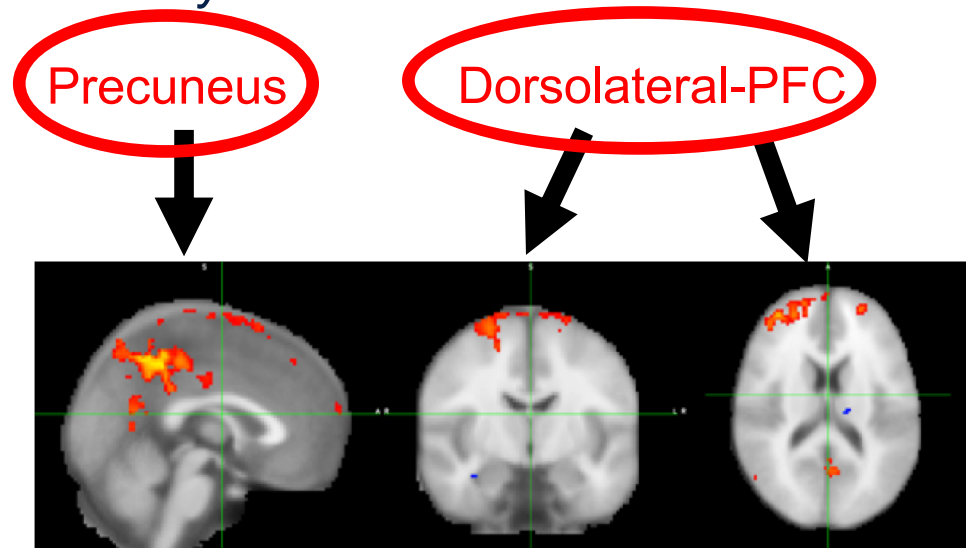


mean minutes/day = 14.82

Mindful Surgeon, fMRI - BOLD

Emotional Regulation Task, whole brain analysis

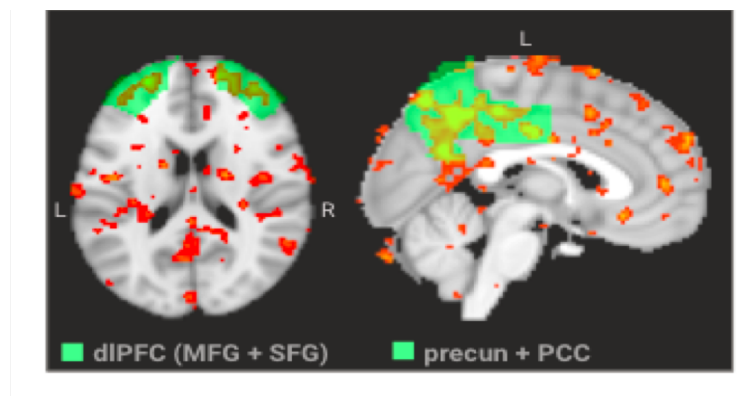
- Interoception (Self-Awareness)
- Executive Control Hub (Emotional Regulation)



Unique areas of activation
Only in MBSR participants, post-intervention

Mindful Surgeon, fMRI - BOLD

Emotional Regulation Task, 'Region of Interest' analysis



When faced with emotional stress, MBSR group showed unique activation of brain regions considered to be *neural substrates of problem-solving, emotional regulation and self-awareness*

Does increased activity correlate with enhanced capability???

DL-PFC	0.008*	0.448
SFG	0.008*	0.454
Precuneus	0.015*	0.414

Why It Matters To Practitioners

Behavior change

“At work, I am much less reactionary to pages, nurse requests...***I have somehow gained some ‘space’ between certain stimuli and my reaction to them.***

I take a moment to understand my role and how it relates...improving my interaction with them, with my patients.”

“I thought I’d be learning a relaxation technique, but this is work. ***At first I thought it was sort of ridiculous, but it has changed me. ..changed how I think.***

Before I go in the OR to update the chief - especially if I have something that will upset him - I do the breathing, I focus, and I am clearer, explain better, I’m not nervous.”

Why It Matters To Practitioners

Self-confidence

If I get stressed *I tend to spiral in my mind*. I start thinking I'm doing it all wrong, maybe I'll never be good, maybe everyone else is already good. It can spin out of control...

... I really like procedures, but my hands are always shaky... On OB,...vaginal repairs, (especially if I'm not) expecting it. I feel surprised and nervous...I'm totally shaky! I see it, and my confidence erodes.

...but this helped me take a second, **to see this response and note it. Now I can float back to the top** and say 'oh this uncomfortable, this is stressful – of course it is! This stuff is hard. For everyone.'

... **I focused on my breath**, ...one really deep breath, ..I FELT it, the focus, and all I heard was my senior. **My hands were still and I believe I did it better than ever.**

I didn't know I could be present. I always thought meditation couldn't work for me, that I couldn't do it, **but now I see that I can. I do.**

The Inside Matters: Culture and Reform

Culture is Highly Influential

Culture is an essential factor for any reform

Work hour reform

- Cultural shift (2003-2008)

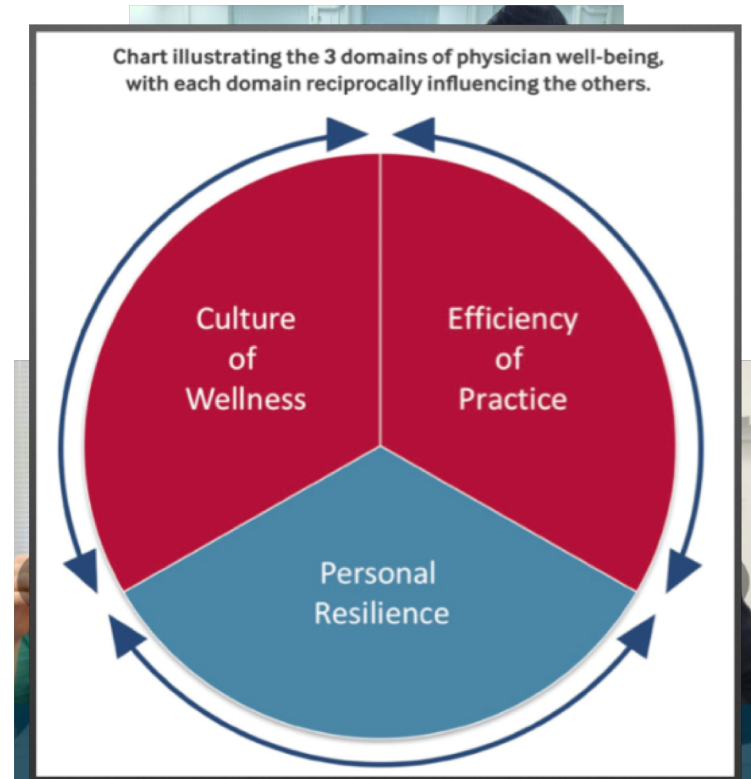
Skills lab

- From closets to classroom and curricula

Quality improvement (OR safety)

- Depends on a shared 'culture of safety'

Culture? Logistics? Need? Hurdles?



Inside Institutions: Culture and Reform

Key Interviews, Focus Groups, Field Notes

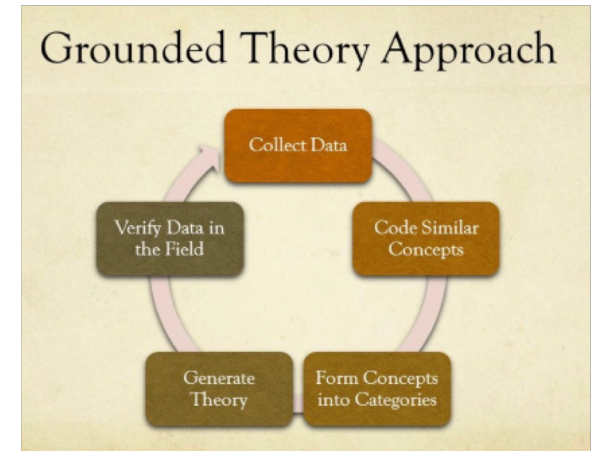
Skill set, professional mastery

Self-care IS patient care

Self care is a matter of service

Flexible expectations, try for a routine, use when you can

Less stress, better sleep



Infrastructure



Building Stakeholders



Leadership
Support



Meetings and
Demonstrated
Value



Knowledge of
Evidence



Evidence-Focused
Grand Rounds



Personal
Experience



Iterative
Beta - Testing

Time



Protection



80-hour
Work Week



Strategic
Planning
and Scheduling



Protection
from Pagers



Educational Days
GR Summer
Hiatus



No Retribution
for Participation



Calling on Strong
Leadership
Support

Cosmology of Change




AMERICAN COLLEGE OF SURGEONS
Inspiring Quality: Highest Standards, Better Outcomes
 100+ years

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How can Mindfulness Improve your Surgical Skills?



ENHANCED STRESS RESILIENCE MANUAL



Five Ways to Ritualize Formal Mindfulness Practice

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 Practice when you first rise, before the day gets in your way. **THREE** dedicated minutes can change everything.

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Formal Mindful Practice is purposeful.
We set aside time for practices such as the body scan, sitting meditation, and mindful movement.



Inside Institutional Reform

Implementation Science and Complexity Theory Integration

Task	Tailored solutions and iterative processes
Theory	Understanding unpredictability, uncertainty, emergence, interconnection
Intervention	Anticipate complex interventions and complex settings
Context	Expect change in culture, politics, and characteristics
Tools and methods	Realist evaluation, long-term case study, stakeholder analysis, systems mapping, social network analysis
Research Aims	Focus on turning evidence into practice Sustained improvements may depend on intervention adaptation

Chart illustrating the 3 domains of physician well-being, with each domain reciprocally influencing the others.



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Cornum, *Amer Psychol* 2011
ett, *US Army Med Dep J*, 2008
Lester, *Amer Psychol* 2011

Summary

The inside is critical

- For addressing old problems in new ways and new problems in effective ways
- For improving ourselves – not as an onus, but as an opportunity
 - We didn't adopt QI because we were sloppy
 - Or checklists because we were negligent
 - Or bundles because we didn't know what to do
- We reform our practices and build new systems because we care about being **BETTER**
- To change ourselves, our behavior, our culture, our institutions, our systems, we need to understand the inside

Thank You

