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Mindfulness and Beyond: Changing the brain through mind-body discipline

Presenters:

Dr. Robert Moore, Partnership HealthPlan of California

David L. Green, Ph.D., Q.M.E

August 3, 2015

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Agenda

- Background: Why this matters
- Overview of PHC effort
- Mindfulness and Beyond: Changing the brain through mind-body discipline
- Q&A

Background

The death rate from opioid overdose has quadrupled in the U.S. in the last decade



- **15,000**

Nearly 15,000 people die every year of overdoses involving prescription painkillers.



- **1 in 20**

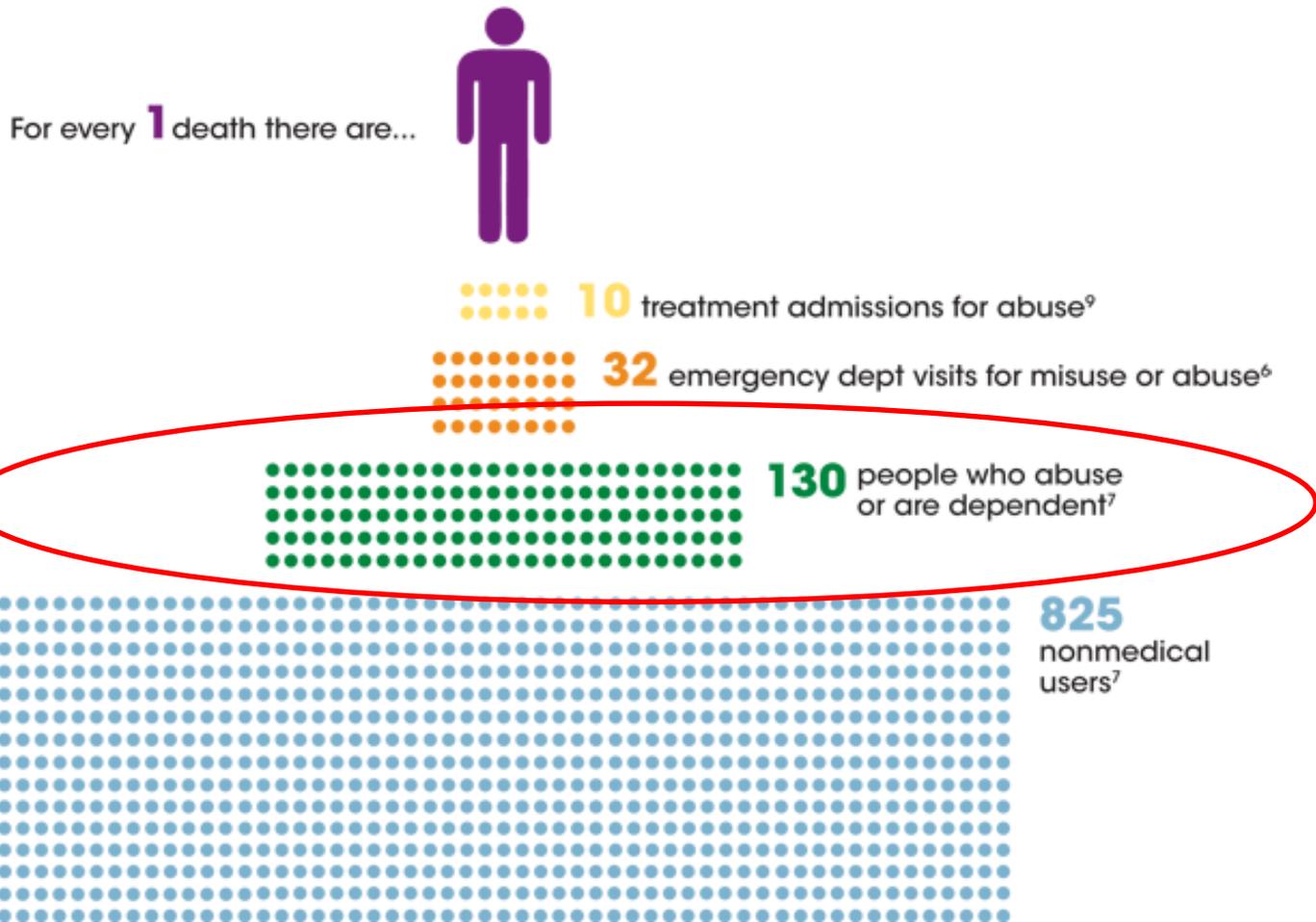
In 2010, 1 in 20 people in the US (age 12 or older) reported using prescription painkillers for nonmedical reasons in the past year.



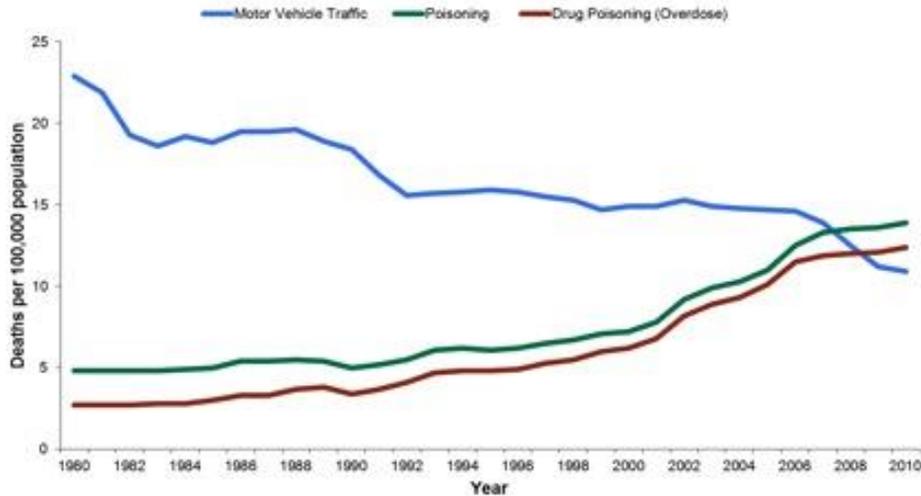
- **1 Month**

Enough prescription painkillers were prescribed in 2010 to medicate every American adult around-the-clock for a month.

CDC Statistics (2008)

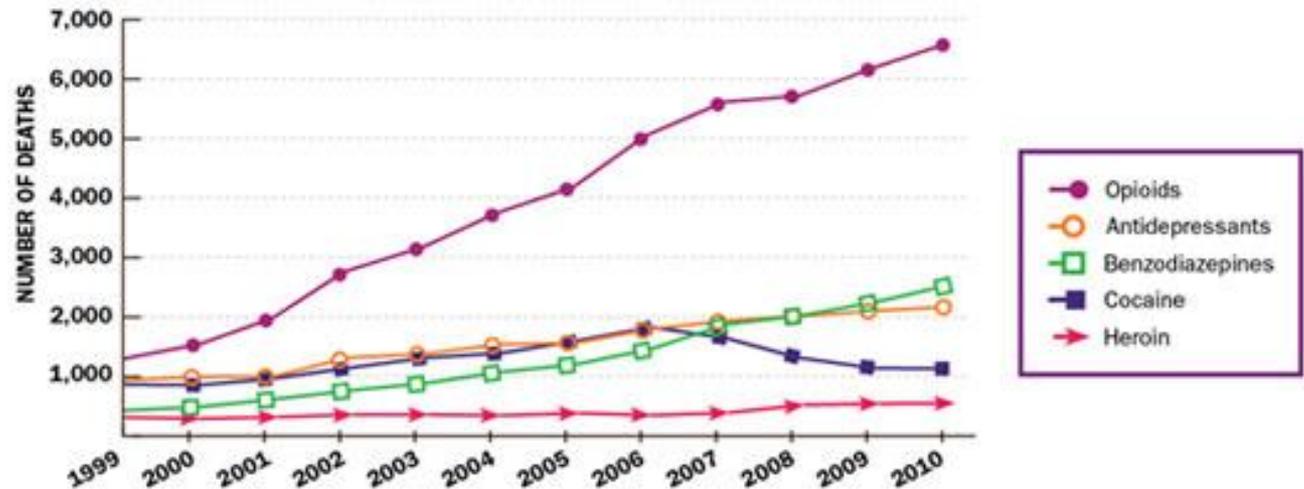


Deaths due to prescription Opioid overdose



U.S. Drug Overdose deaths surpass Motor Vehicle deaths

Mortality Increase due to Opioids



PHC's Managing Pain Safely Initiative

Goal – To optimize the use of medication and other modalities so that pain is treated appropriately, depending on the needs of the patient, informed by current medical science.

Interventions

- Education
- HealthPlan Pharmacy Prior Authorization Changes
- Additional options for treating pain
- Community activation
- Aligned incentives

Inte

PHC Prior Authorization Policy

October, 2014: Medical Justification required for dose escalation for patients on high dose of opioids

Early March, 2015: Mailed lists of patients on >120mg MED to prescribers and requested providers to fill out opioid treatment explanation for each patient. Promoted creation of local pain medication oversight committees.

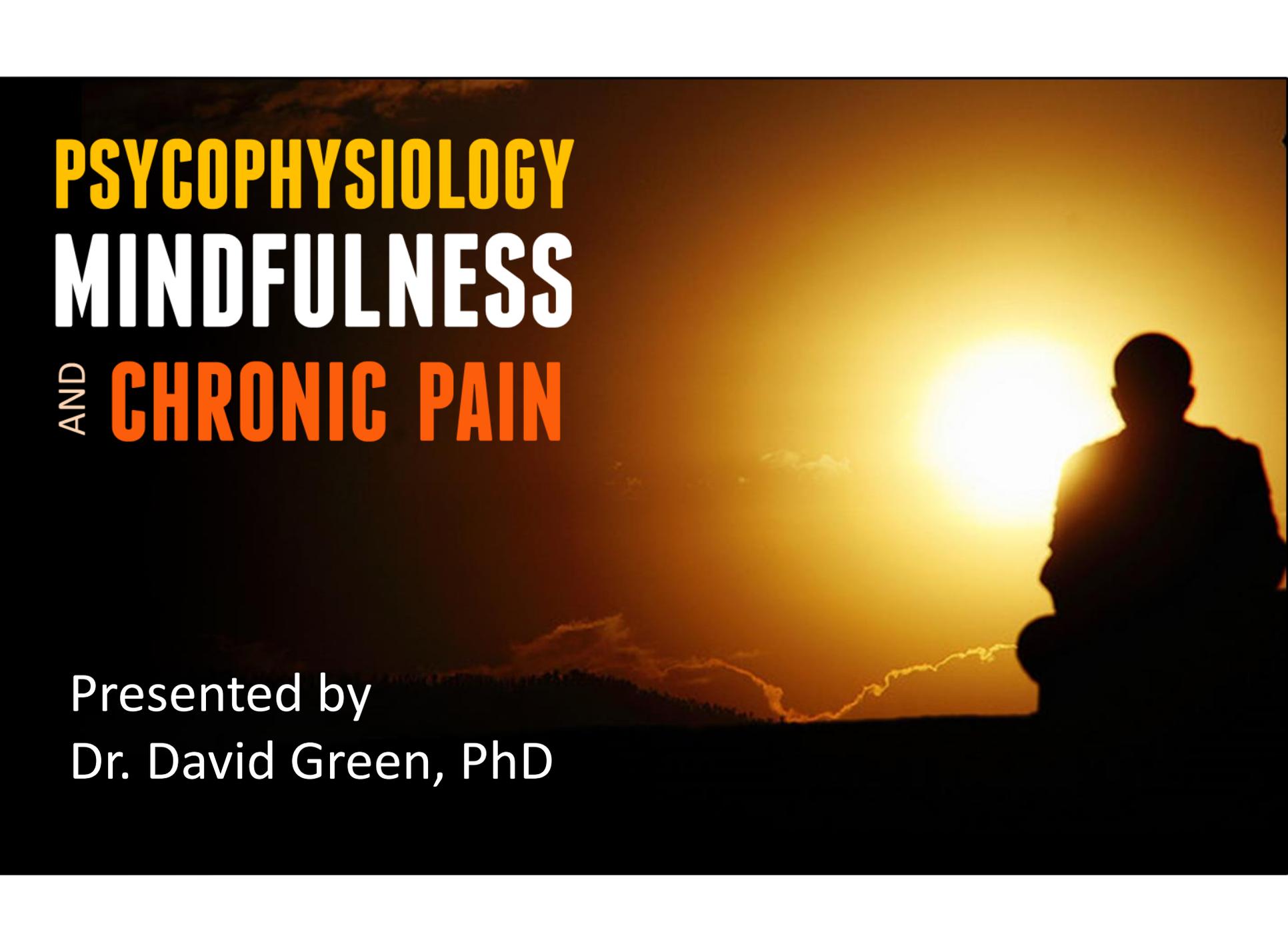
April, 2015: if no opioid treatment explanation or care plan is received on refill request for high doses of opioids (>120mg MED), PHC pharmacy staff will evaluate pattern of opioid use in the last 3 months. If dose stable will send patient-specific inquiry requesting medical justification for continued, prolonged use of high dose opioids.

June, 2015: PHC's Pain Medication Oversight Committee first meets to review submitted cases

Guest Speaker



David L. Green, Ph.D., Q.M.E.



PSYCOPHYSIOLOGY
MINDFULNESS
AND **CHRONIC PAIN**

Presented by
Dr. David Green, PhD

Aim of this presentation

- To introduce to busy primary care PHP physicians to two well researched, relatively inexpensive pain and stress management interventions:
 1. Mindfulness Meditation
 2. Clinical hypnosis and self hypnosis

Wide acceptance of biosocial model

- It is now understood that this classic biomedical approach to understanding and treating pain is incomplete. Its exclusive application can result in unrealistic expectations on the part of the physician and patient, inadequate pain relief, and excessive disability in those with pain that persists well after the original injury has healed.

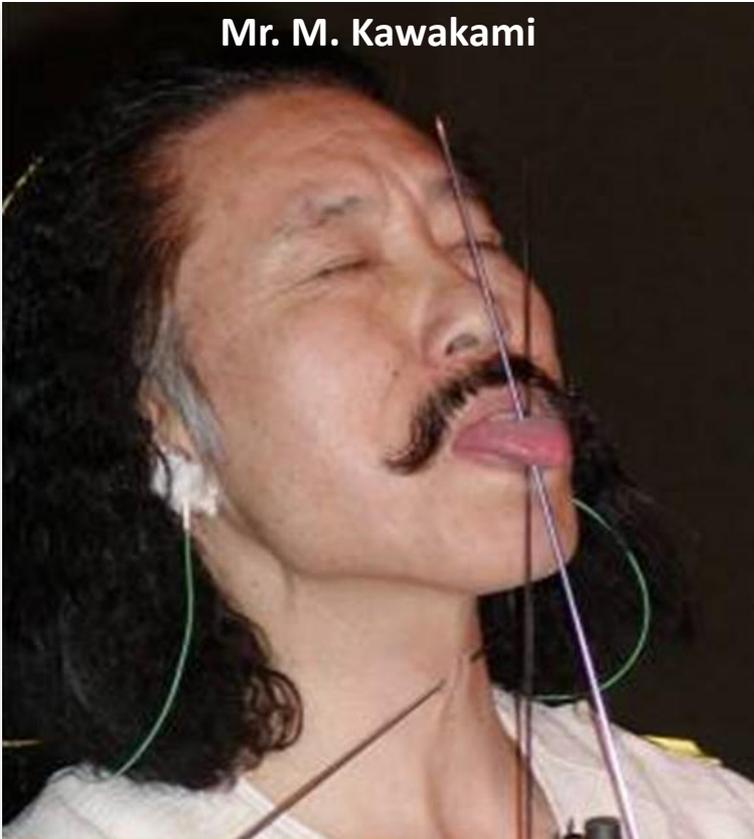
The Biophysical Model

- The biopsychosocial model of pain instead recognizes that pain is ultimately the result of the pathophysiology **plus** the psychological state, cultural background/belief system, and relationship/interactions with the environment (workplace, home, disability system, and health care providers)

Human Potential

1. Multicultural Examples of Mind Body Healing Potential
2. Pain suffering vs Pain Intensity
3. Courtesy of Eric Pepper PDr. Peper is President of the Biofeedback Foundation of Europe and past President of the Association for Applied Psychophysiology and Biofeedback (AAPB).

Mr. M. Kawakami



A Japanese Yogi and healer with 37 years of experience with pain management

Ok, he's not necessarily practicing mindfulness, but he is meditating.

He says that he

- **Accomplishes freedom from pain, by accepting this pain**
- **Meditates on the feeling that 'his mind, his soul, and his body and pain are all one'**



Apparently that works.

Photo credit to San Francisco State psychologist Erik Pepper



Dr. Eric Peper

the psychologist who studies the adepts

**Research with the Kasnazani Sufis in Amman
Jordan under the guidance of their Sheikh**



**Initially the knives were hammered
into the head and then I was asked
to remove them.**

**Research with the Kasnazani Sufis in Amman
Jordan under the guidance of their Sheikh**



- After removal the wounds healed rapidly as you can see by picture
- This is minutes after the knives were taken out.
- For all these subjects, the healing was very rapid, no edema, no fear. It was just normal.
- The critical issue is feeling totally safe and trust.



Dr. Eric Peper

With a knife through his cheek

- His work done with the collaboration and support by the Shaikh Mohammed Al-Kasnazan.
- His collaborators in the research are: Annette Booiman, Safaa Saleh, Thomas Collura, and Howard Hall

Mindfulness comes of age

- The MBSR program started in the Stress Reduction Clinic at the University of Massachusetts Medical Center in 1979
 - It is now offered in well over 250 medical centers, hospitals, and clinics around the world, including some of the leading integrative medical centers such as the *Scripps Center for Integrative Medicine*, the *Duke Center for Integrative Medicine*, and the *Jefferson-Myrna Brind Center for Integrative Medicine*.
- Last year there were 550 published research articles on mindfulness



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Home > 1986 - Volume 2 - Issue 3 > **Four-Year Follow-Up of a Meditation-Based Program for the Se...**

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Four-Year Follow-Up of a Meditation-Based Program for the Self-Regulation of Chronic Pain: Treatment Outcomes and Compliance.

Kabat-Zinn, J.; Lipworth, L.; Burncy, R.; Sellers, W.

Abstract

Two hundred twenty-five chronic pain patients were studied following training in mindfulness meditation. Large and significant overall improvements were recorded post-intervention in physical and psychological status. These gains were maintained at follow-up in the majority of subjects. Follow-up times ranged from 2.5-48 months. Status on the McUill Melzack Pain Rating Index (PRI), however, tended to revert to preintervention levels following the intervention. Most subjects reported a high degree of adherence with the meditation techniques, maintenance of improved status over time, and a high degree of importance attributed to the training program. We conclude that such training can have long-term benefit for chronic pain patients.

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NEW ...
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Ninety chronic pain patients were trained in mindfulness meditation

Statistically significant reduction

- Present-moment pain
- Negative body image
- Inhibition of activity by pain
- Symptoms
- Mood disturbance
- Psychological symptomatology, including anxiety and depression



Pain-related drug utilization decreased



Activity levels and feelings of self-esteem increased

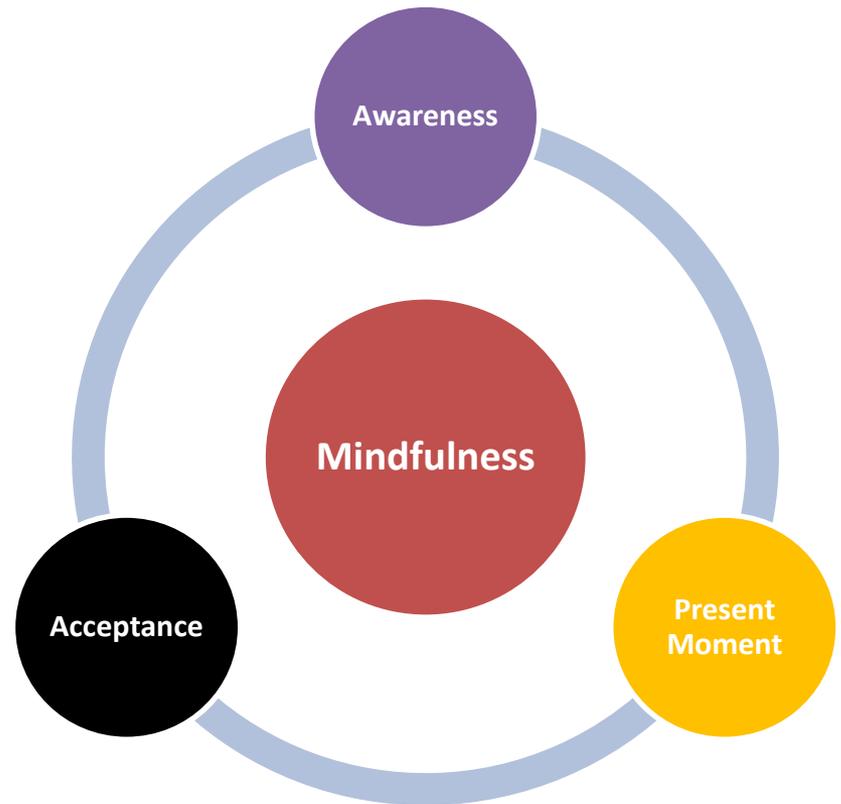
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A comparison group of pain patients did not show significant improvement on these measures after traditional treatment protocols

Definition | Mindfulness

- Mindfulness can be defined as paying attention in a particular way on purpose in a present moment and non-judgmentally.
- Mindfulness is not a state of doing but a state of being.
- Put simply, mindfulness is paying attention, on purpose, without judgments.

Jon Kabat -Zinn



Mindfulness Gone Wild

Millions of people are now trying mindfulness.

Andy Puddicombe, the co-founder of Headspace, a meditation app, conducts a meditation moment for commuters



Experience mindfulness

- Close your eyes. Focus on the changing sensations of the breath
- Whenever your mind drifts away to an emotional sensation, fleeting feeling, or some other mental event, acknowledge it and let it go without any further judgment evaluation.
- Gently bring yourself back to the breath.
- Repeat this over and over.

Is mindfulness just a fad, a placebo, or just a new fangled relaxation technique?

This piece of research has been cited for awards:

Neural Mechanisms Supporting Mindfulness-Based Pain Relief as Compared to Placebo Analgesia Published on Jun 26, 2015

www.ouramazingworld.org Fadel Zeidan

Findings:

- With just 4 days of 20 minutes per day of mindfulness training, MRI findings distinguished mindfulness subjects from active placebo subjects and , from sham meditation subjects.
 - The MRI findings confirm that even brief Mindfulness practice leads to changes in areas of the brain implicated in pain processing.
 - The MRI study reveals that mindfulness deactivates of the brains' pain gait (the thalamus) while increasing limbic and prefrontal activation.
 - These findings distinguished mindfulness practice from placebo, sham meditation/relaxation .

Primary Care Meta Analysis

- **Methods**

- Included articles written in English and that were published up to January 2012.
- 428 empirical studies found, but only eight were included as randomized controlled trials of mindfulness intervention for chronic pain in our meta-analysis.
- Data was analyzed after extraction and synthesis from the selected eight trials.

- **Results**

- Compared with control intervention, mindfulness intervention had no specific effect on reducing pain intensity (weighted mean difference 3.24, 95% confidence interval [CI]: -8.92 to 2.45).
- Mindfulness intervention led to greater improvement in psychological comorbidity with chronic pain, such as depression (weighted mean difference -3.91, 95% CI -5.94 to -2.32) and trait anxiety (weighted mean difference -4.07, 95% CI -4.48 to -3.65).

- **Conclusion**

- There is insufficient evidence that mindfulness intervention relieves pain intensity. However, it improves depression and trait anxiety in patients with chronic pain. Further research in larger, properly powered, and better-designed studies is warranted.

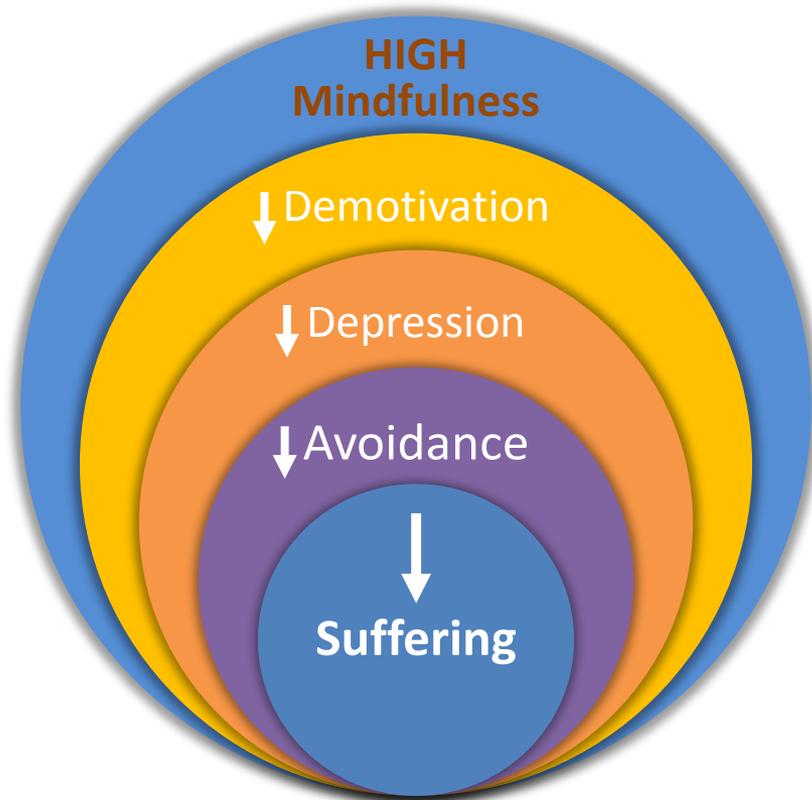
Disability: Psychological Factors That Delay Recovery

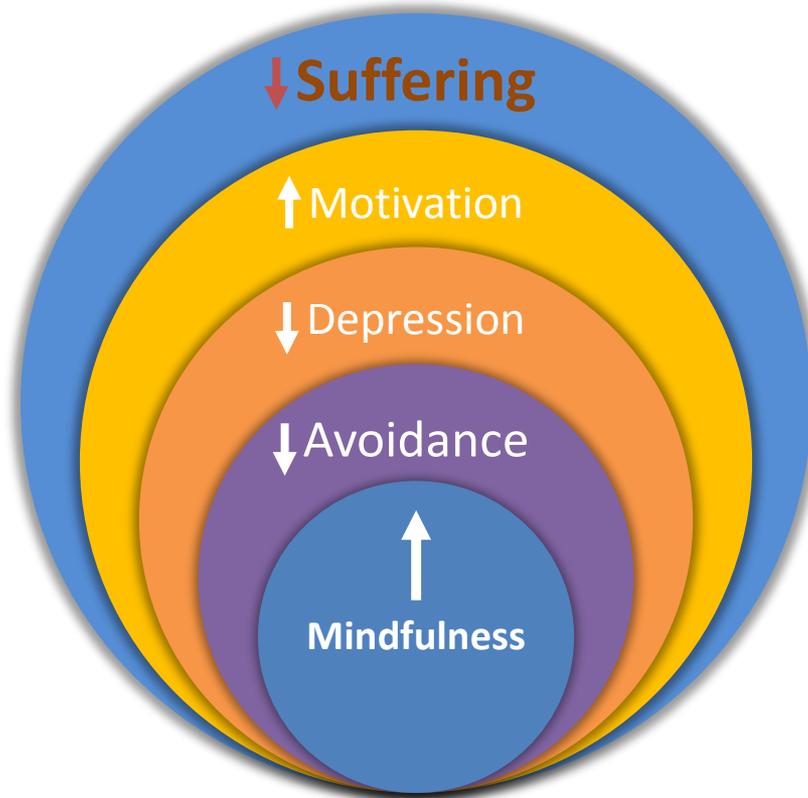
1. Catastrophizing
2. Fear avoidance- fear of re-injury
3. Identification with being disabled or with having a diagnosis, passive participation in pain recovery
4. Anger and depression

Definition | Catastrophizing

Catastrophizing
a cognitive process that enhances fear







Low mindfulness predicts pain catastrophizing in a fear-avoidance model of chronic pain

[Robert Schütze](#) , [Clare Rees](#), [Minette Preece](#), [Mark Schütze](#)

Received 4 July 2009; received in revised form 30 September 2009; accepted 30 October 2009; published online 30 November 2009.

Abstract

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Abstract

The relationship between persistent pain and self-directed, non-reactive awareness of present-moment experience (i.e., mindfulness) was explored in one of the dominant psychological theories of chronic pain – the *fear-avoidance model* [53]. A heterogeneous sample of 104 chronic pain outpatients at a multidisciplinary pain clinic in Australia completed psychometrically sound self-report measures of major variables in this model: Pain intensity, negative affect, pain catastrophizing, pain-related fear, pain hypervigilance, and functional disability. Two measures of mindfulness were also used, the Mindful Attention Awareness Scale [4] and the Five-Factor Mindfulness Questionnaire [1]. Results showed that mindfulness significantly negatively predicts each of these variables, accounting for 17–41% of their variance. Hierarchical multiple regression analysis showed that mindfulness uniquely predicts pain catastrophizing when other variables are controlled, and moderates the relationship between pain intensity and pain catastrophizing. This is the first clear evidence substantiating the strong link between mindfulness and pain catastrophizing, and suggests mindfulness might be added to the fear-avoidance model. Implications for the clinical use of mindfulness in screening and intervention are discussed.

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ILLUMINATING NEUROSCIENCE STUDIES

- *The impact of mindfulness on the brain's processing of pain-* a selected sample of studies illustrating that the way we relate to our internal experience changes connectivity between various areas of our brain.
- What fires together wires together



Review

Mindfulness meditation-related pain relief: Evidence for unique brain mechanisms in the regulation of pain

F. Zeidan^a,  , J.A. Grant^b, C.A. Brown^c, J.G. McHaffie^a,  , R.C. Coghill^a,  

 [Show more](#)

Abstract

The cognitive modulation of pain is influenced by a number of factors ranging from attention, beliefs, conditioning, expectations, mood, and the regulation of emotional responses to noxious sensory events. Recently, mindfulness meditation has been found attenuate pain through some of these mechanisms including enhanced cognitive and emotional control, as well as altering the contextual evaluation of sensory events. This review discusses the brain mechanisms involved in mindfulness meditation-related pain relief across different meditative techniques, expertise and training levels, experimental procedures, and neuroimaging methodologies. Converging lines of neuroimaging evidence reveal that mindfulness meditation-related pain relief is associated with unique appraisal cognitive processes depending on expertise level and meditation tradition. Moreover, it is postulated that mindfulness meditation-related pain relief may share a common final pathway with other cognitive techniques in the modulation of pain.

Abstract

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Behavioral/Systems/Cognitive

Brain Mechanisms Supporting the Modulation of Pain by Mindfulness Meditation

Fadel Zeidan¹, Katherine T. Martucci¹, Robert A. Kraft², Nakia S. Gordon³, John G. McHaffie¹, and Robert C.Coghill¹[Show Affiliations](#)

The Journal of Neuroscience, 6 April 2011, 31(14): 5540-5548; doi: 10.1523/JNEUROSCI.5791-10.2011

[Abstract](#)[Full Text](#)[Full Text \(PDF\)](#)

Abstract

The subjective experience of one's environment is constructed by interactions among sensory, cognitive, and affective processes. For centuries, meditation has been thought to influence such processes by enabling a nonevaluative representation of sensory events. To better understand how meditation influences the sensory experience, we used arterial spin labeling functional magnetic resonance imaging to assess the neural mechanisms by which mindfulness meditation influences pain in healthy human participants. After 4 d of mindfulness meditation training, meditating in the presence of noxious stimulation significantly reduced pain unpleasantness by 57% and pain intensity ratings by 40% when compared to rest. A two-factor repeated-measures ANOVA was used to identify interactions between meditation and pain-related brain

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Cogn Ther Res (2011) 35:581–594
DOI 10.1007/s10608-011-9391-x

ORIGINAL ARTICLE

Selective Attentional Bias Towards Pain-Related Threat in Fibromyalgia: Preliminary Evidence for Effects of Mindfulness Meditation Training

David R. Vago · Yoshio Nakamura

Published online: 18 September 2011
© Springer Science+Business Media, LLC 2011

Abstract The current study investigated the effects of an 8-week mindfulness-based meditation training (MMT) intervention on attentional bias, engagement and disengagement of pain-related threat in fibromyalgia patients as compared to an age-matched control group. A well validated dot-probe task was used to explore early versus later stages of attentional processing through the use of two stimulus exposure durations (100, 500 ms) of pain-related threat words. The enduring effects of MMT were assessed

cognitive, emotional, and physical functioning, fibromyalgia (FM) is a syndrome of uncertain etiology with no proven long-term treatment. Although various external stimuli such as infection, trauma and stress may contribute to development of FM, recent studies have emphasized the role of cognitive and emotional processing of pain-related information. A generalized pattern of hypervigilance (McDermid et al. 1996; Peters et al. 2000; Crombez et al. 2004) and avoidant emotion regulation strategies (Keogh

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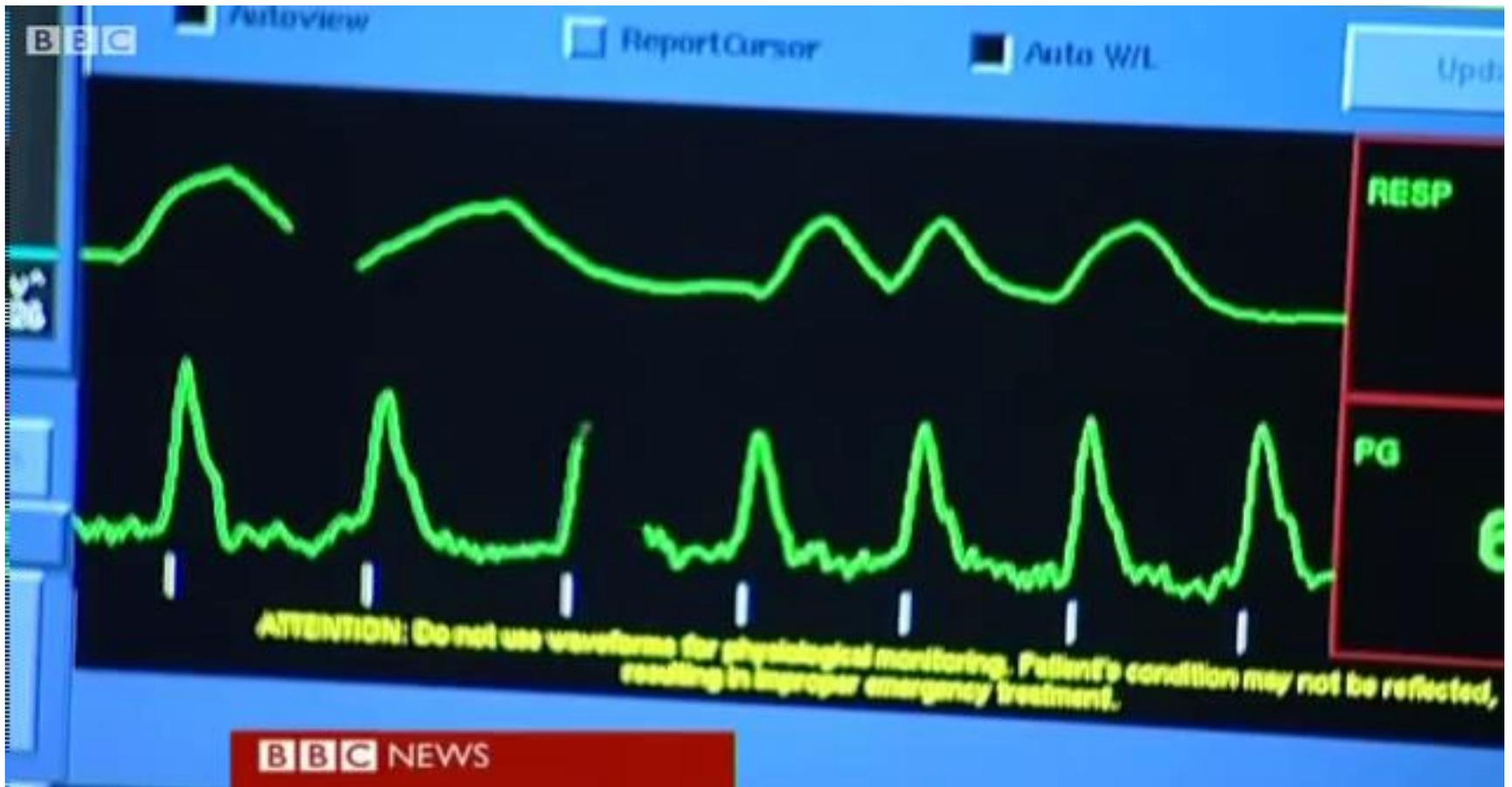
COGNITIVE
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Talking about the brain
to patients is sexy



<http://www.bbc.co.uk/news/health-16406814>

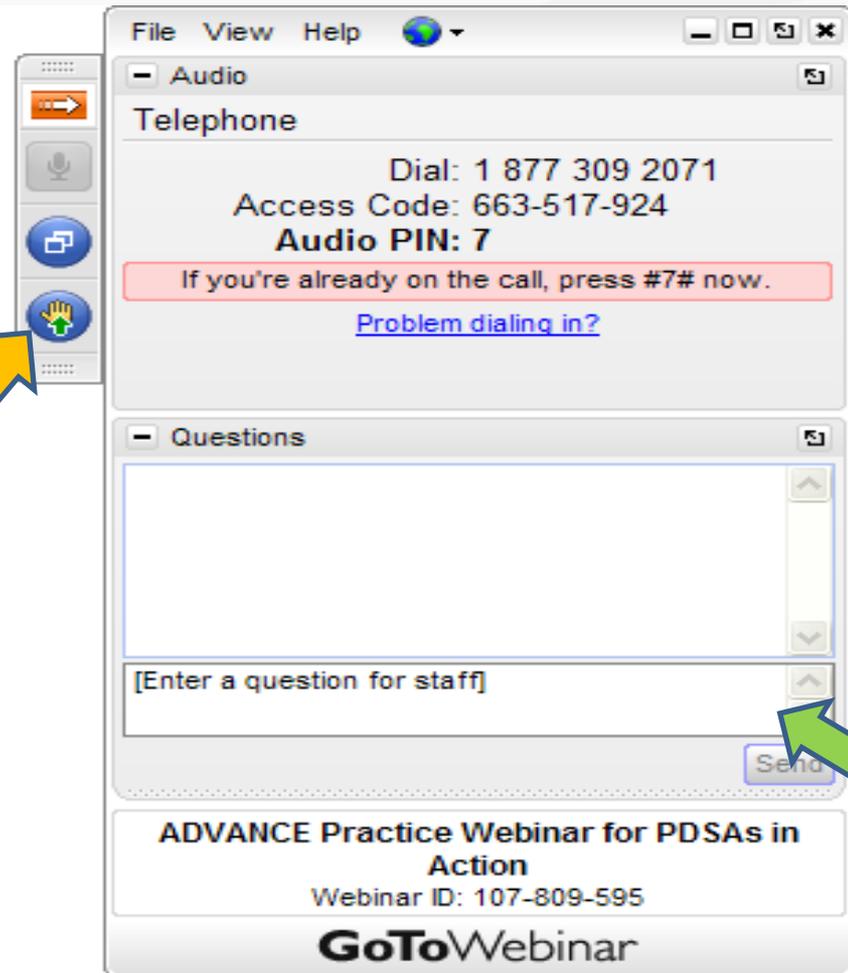
Benefits of Hypnosis

- Research has shown medical hypnosis to be helpful for acute and [chronic pain](#).
 - In 1996, a panel of the National Institutes of Health found hypnosis to be effective in easing [cancer](#) pain.
 - More recent studies have demonstrated its effectiveness for pain related to burns, [cancer](#), and [rheumatoid arthritis](#) and reduction of [anxiety](#) associated with surgery.
 - An analysis of 18 studies by researchers at Mount Sinai School of Medicine in New York revealed moderate to large pain-relieving effects from hypnosis, supporting the effectiveness of hypnotic techniques for [pain management](#).

Questions?

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PHC Resources

PHC Website:

<http://www.partnershiphp.org/Providers/HealthServices/Pages/Managing-Pain-Safely.aspx>

Member Resources:

<http://www.partnershiphp.org/Members/Medi-Cal/Pages/ManagingPainSafely-MemberResources.aspx>

PHC Resources

Upcoming Opportunities

August 27th 12-6pm- Northern Region Eureka Forum

September 25th, 12-1pm - “Headaches: Making the Right Diagnosis and Providing the Best Treatment” Webinar

For more information, please visit the MPS Website

<http://www.partnershiphp.org/Providers/HealthServices/Pages/Managing-Pain-Safely.aspx>

Thank You!

Contact Information:

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