

MEDICINE IN THE MODERN HEALTHCARE SYSTEM: WHY IT MATTERS

DARSHAN H.

MEHTA, MD MPH

LEARNING OBJECTIVES

- Understand the role of mind body medicine in primary and specialty care practice
- Review the epigenetic and physiologic basis of mind body medicine that supports the health outcomes
- Understand how to deliver mind body medicine in ambulatory, inpatient, and virtual settings

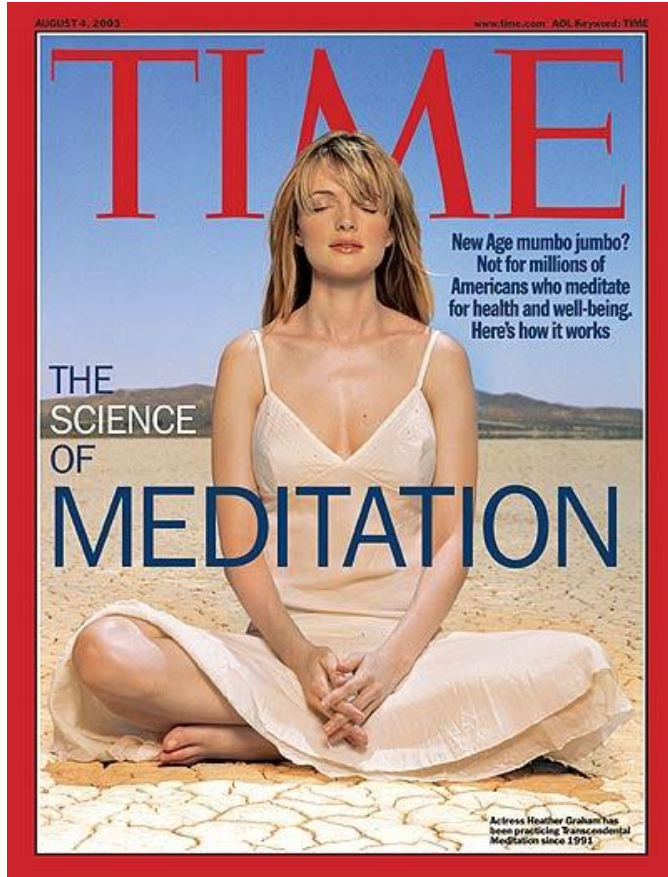
Case Study


- 35 y/o M with no significant PMH who presents for a routine physical examination
- FH: Father died of lymphoma; Mother with long-standing HTN
- SH: Recently married. Works in IT industry, requiring significant amount of travel. Denies tobacco, alcohol, or illicit drug use. Due to travel, he tends to eat a lot of fast food.




Case Study (Continued)

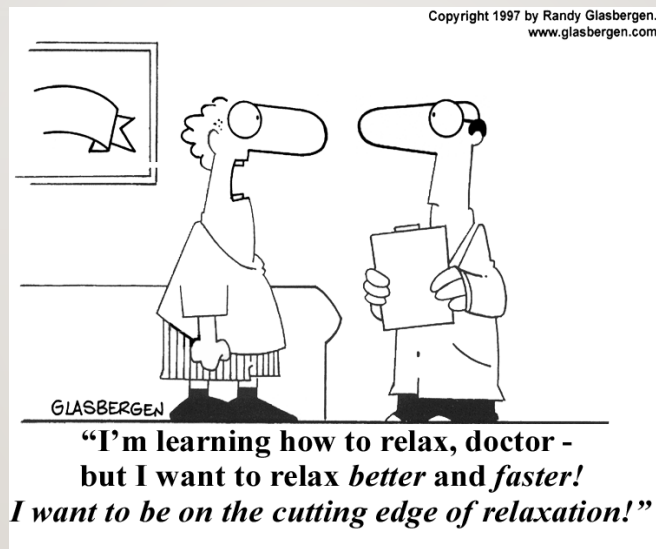
- Physical exam: BMI – 31; BP – 135/90; otherwise, no remarkable findings
- Labs: HDL – 41; LDL – 148; TG – 150; FPG - 120
- Assessment: Hypertension; ?Metabolic syndrome
- Plan: Patient is adamant that he does not want medication. In addition, to diet and exercise counseling, he wants to share with you something that he read:



 **BENSON-HENRY INSTITUTE**
FOR MIND BODY MEDICINE
AT MASSACHUSETTS GENERAL HOSPITAL



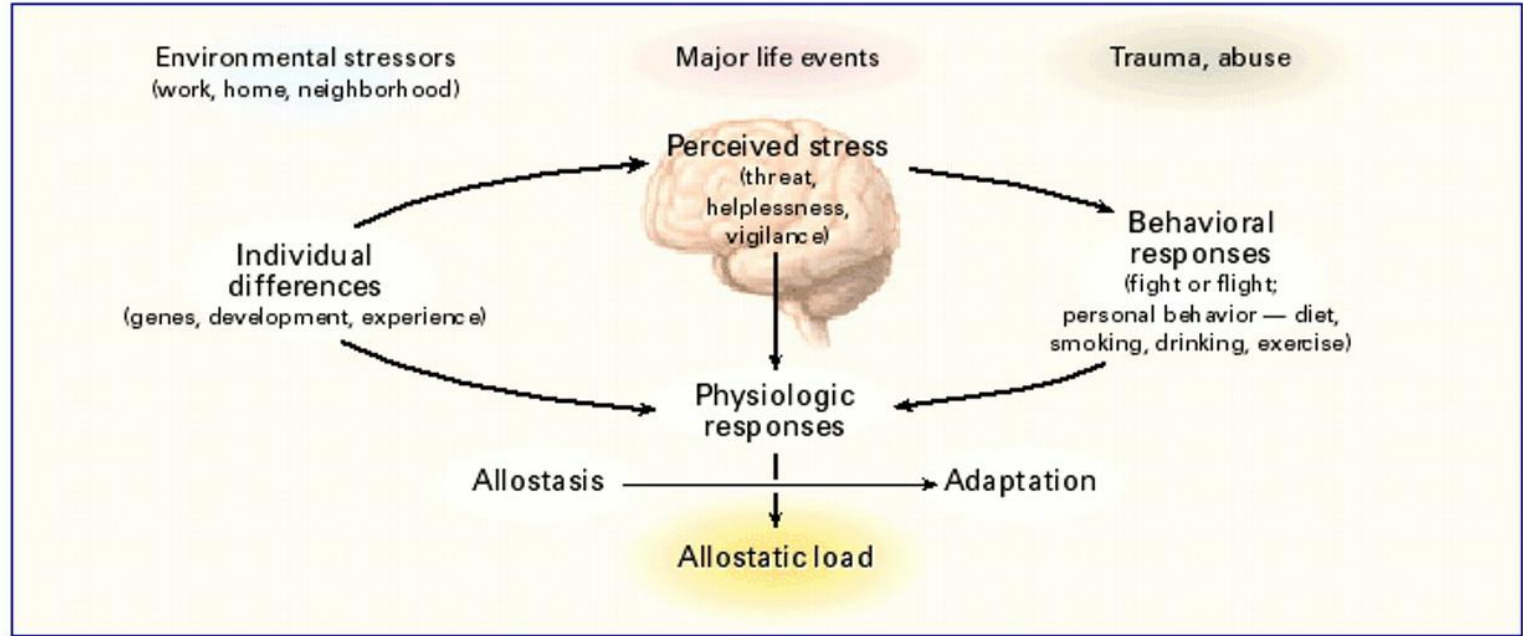
PRESENT REALITY



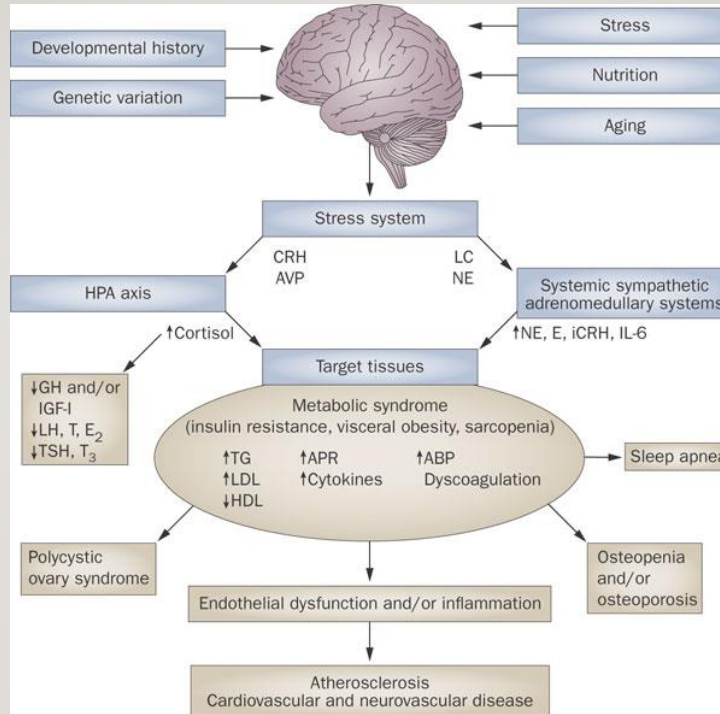
GLOBAL DISEASE BURDEN

Non-communicable diseases are the most important global health challenge of the 21st century in terms of disease burden and mortality

(Narayan, Ali and Koplan, 2010)



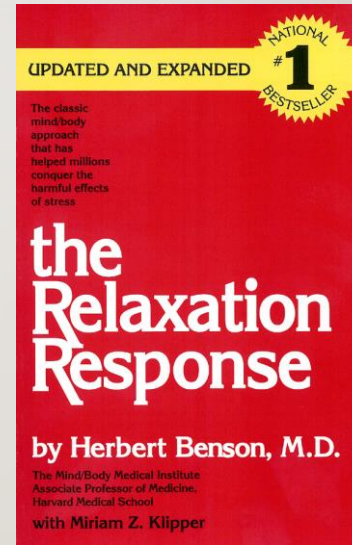
LOAD



Chrousos GP. Nature Reviews Endocrinology 5, 374-381 (July 2009)

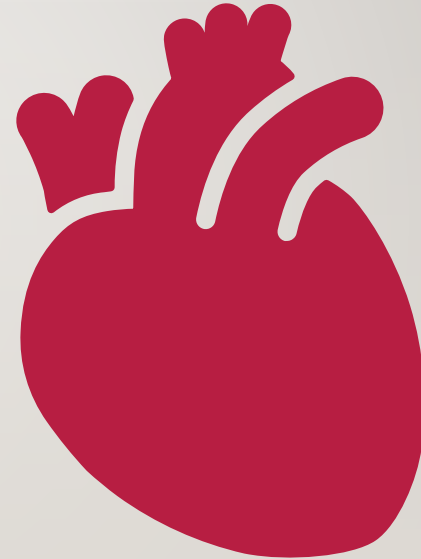
RELAXATION RESPONSE

- Initially described by Dr. Herbert Benson in mid-1970s
- Conditions by which it is evoked
 - The repetition of a word, sound, prayer, thought, phrase or muscular activity
 - The passive return to the repetition when other thoughts intrude
- Breaks the train of everyday thought
- Benefits seen when performed 15-20 minutes 1-2x/day



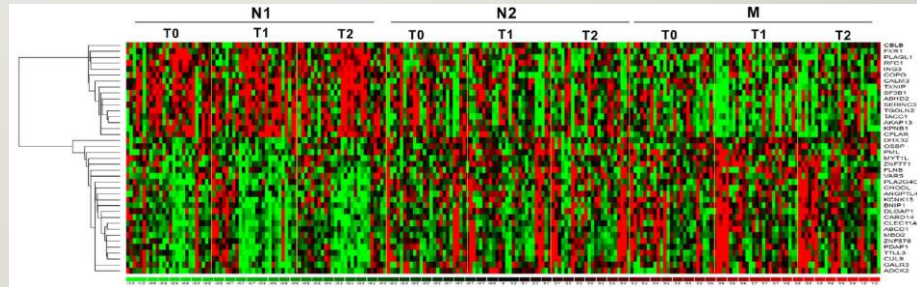
RELAXATION RESPONSE

- State which is elicited by many mind-body practices, including meditation, tai chi, and yoga
- Conceptually the opposite of the stress response
- Accompanied by physiological changes include:
 - Decreased heart rate
 - Decreased blood pressure
 - Decreased respiratory rate
 - Increased exhaled nitric oxide



MEDITATION CHANGES GENE EXPRESSION

- > 1500 differentially regulated genes
- Decreases in inflammatory pathways
- Improved insulin utilization
- Increased ATP synthase/mitochondrial energy production

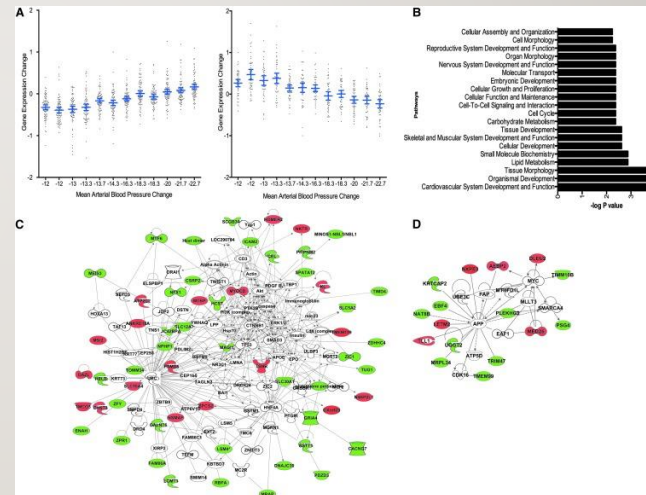


Dusek, *PLoS ONE*, 2008

Bhasin, *PLoS ONE*, 2013

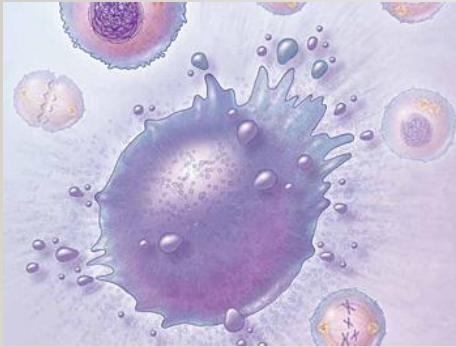
TRANSCRIPTOME CHANGES ASSOCIATED WITH BLOOD PRESSURE REDUCTION IN HYPERTENSIVE PATIENTS AFTER MEDITATION

- 121 genes for which change in MAP and change in gene expression were significantly correlated ($p < 0.05$)
- Represents cardiovascular system development and function
- Meditation is associated with significantly upregulated glucose transport and suppressed inflammation pathways in BP responders

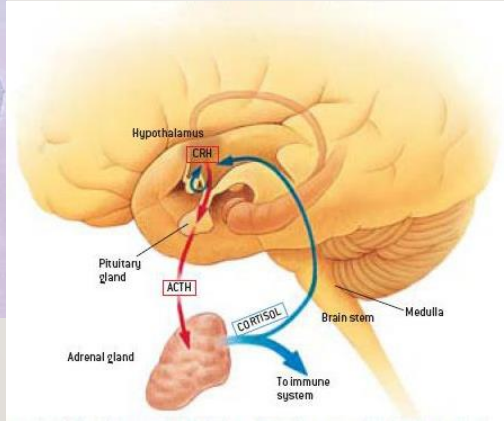


Bhasin, MK et al. Specific Transcriptome Changes Associated with Blood Pressure Reduction in Hypertensive Patients After Relaxation Response Training. *J Altern Complement Med*. 2018 May;24(5):486-504.

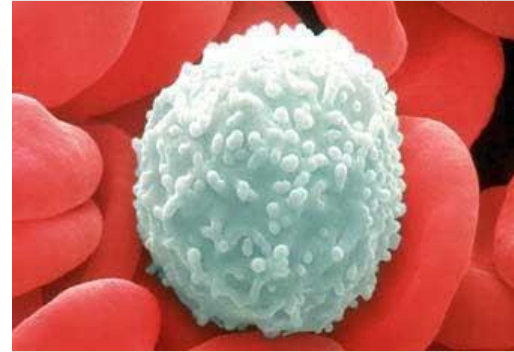
ELICITING THE RELAXATION RESPONSE IMPACTS...



...Apoptosis



...Stress Response

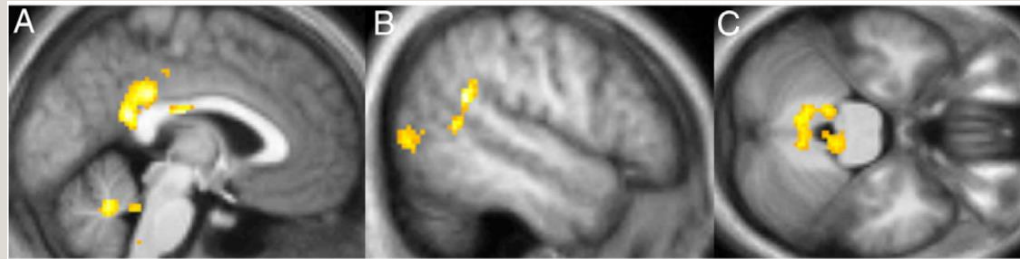


...Inflammation

MEDITATION CHANGES BRAIN STRUCTURE

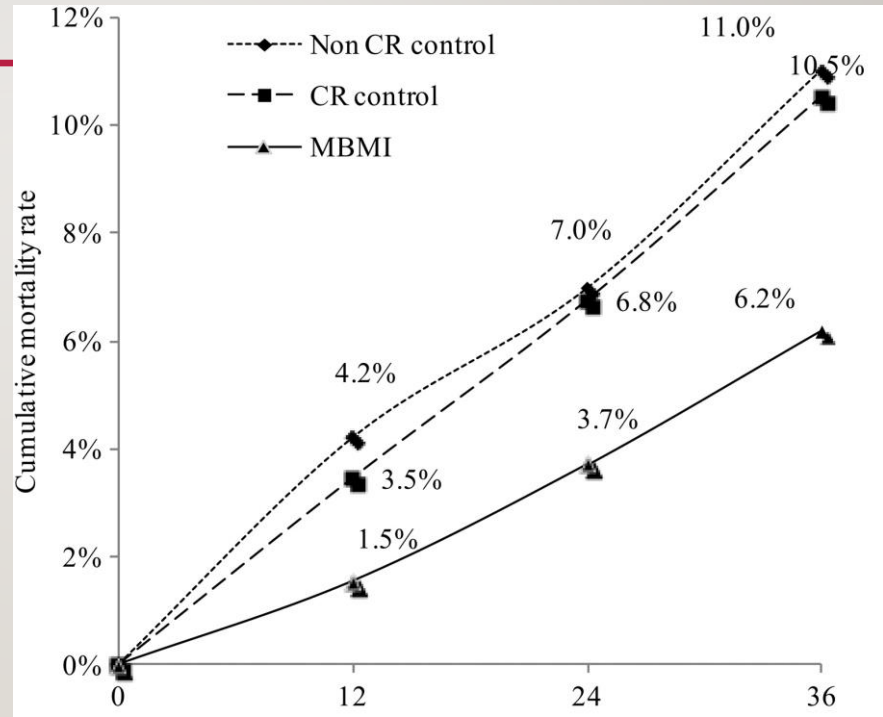
Regions of the brain affected involve:

- cognition & executive function
- emotion regulation
- neurotransmitter release



CARDIAC REHABILITATION WITH MIND BODY COMPONENT

- Zeng W, Stason WB, Fournier S, et al. Benefits and costs of intensive lifestyle modification programs for symptomatic coronary disease in Medicare beneficiaries. *Am Heart J.* 2013;165(5):785-792.



MIND BODY MEDICINE AND HEALTHCARE UTILIZATION



43% reduction in billable encounters across all functional categories



Amongst high utilizers, there was average relative utilization reduction of:

18.3% in functional categories

24.7% reduction across clinical site categories



Clinical encounters were 21.4% lower in the intervention group compared to controls



Cost savings from reduced emergency room visits alone in the treatment group is on the order of \$2360/patient/year.



Expected range of cost savings of \$640 - \$25,500/patient/year

STRESS MANAGEMENT AND RESILIENCY TRAINING PROGRAM

Resiliency can be built through a three-tiered process

ongoing practice of techniques which elicit the relaxation response (e.g., meditation, yoga)

building awareness of stress and its negative effects

promoting social connectedness and healthy lifestyle behaviors



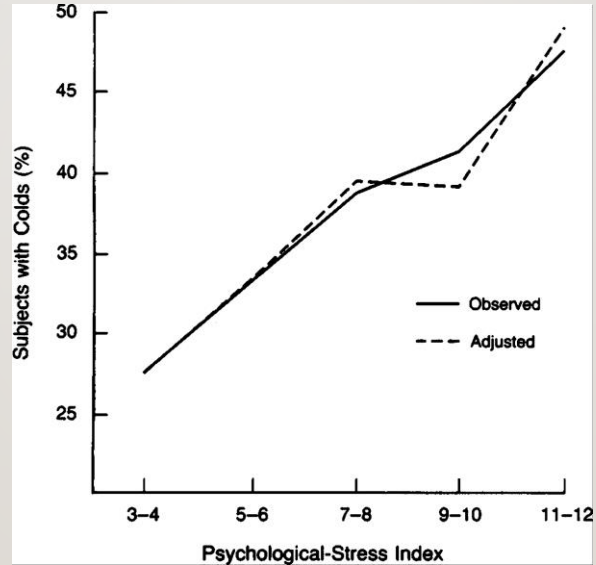
8-week multimodal program which incorporates elements of modern psychotherapy with wisdom traditions through mind body practices

TREATING PATIENTS WITH MIND BODY MEDICINE

- Reduces frequency of medical symptoms
 - e.g., pain, fatigue, and gastrointestinal symptoms
- Decreases severity of psychiatric symptoms
 - e.g., anxiety, interpersonal sensitivity and depression
- Increases health-promoting lifestyles
 - e.g., spiritual growth, health responsibility and stress management

Samuelson et al. 2010

OBSERVED ASSOCIATION BETWEEN THE PSYCHOLOGICAL-STRESS INDEX AND THE RATE OF CLINICAL COLDS AND THE ASSOCIATION ADJUSTED FOR STANDARD CONTROL VARIABLES



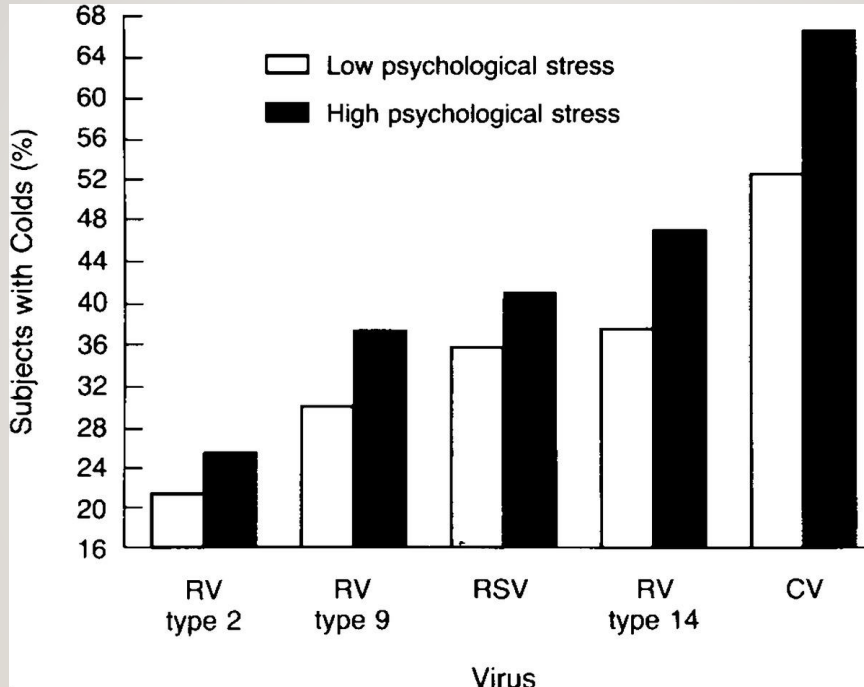
Cohen S et al. N Engl J Med 1991;325:606-612.



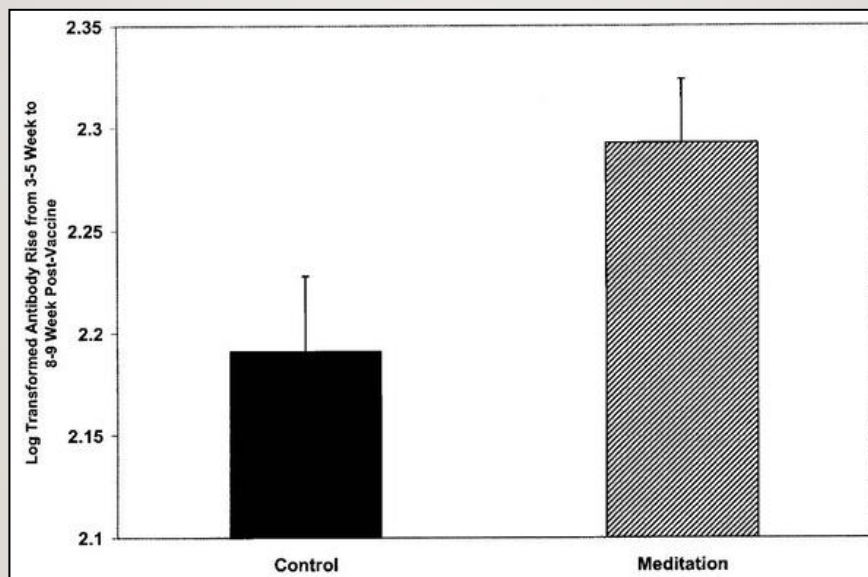
OSHER CENTER FOR INTEGRATIVE MEDICINE
HARVARD MEDICAL SCHOOL AND BRIGHAM AND WOMEN'S HOSPITAL



Subjects with Low Degrees of Psychological Stress (Index Values below the Median) and High Degrees of Stress (Values above the Median) Who Had Colds, According to Challenge-Virus Group

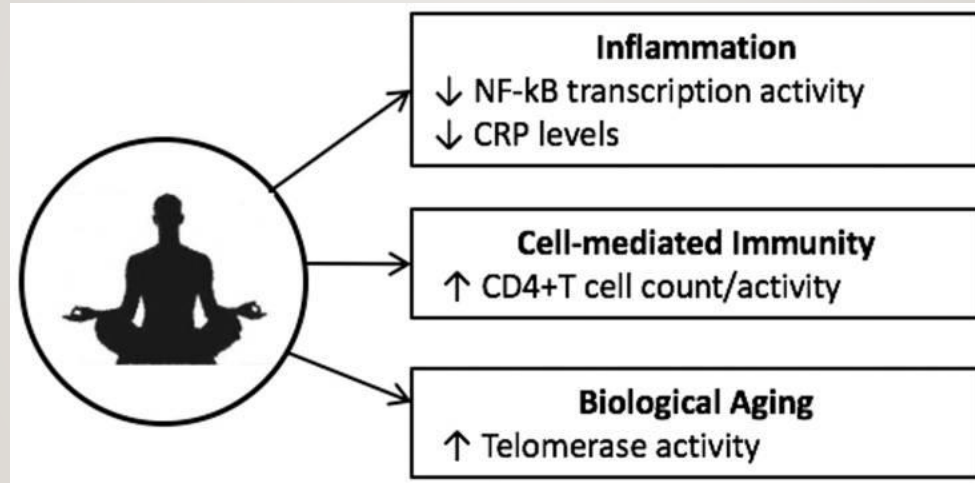


ALTERATIONS IN BRAIN AND IMMUNE FUNCTION PRODUCED BY MINDFULNESS MEDITATION



Davidson, Richard *et al.* Psychosomatic Medicine. 65(4):564-570, July 2003.

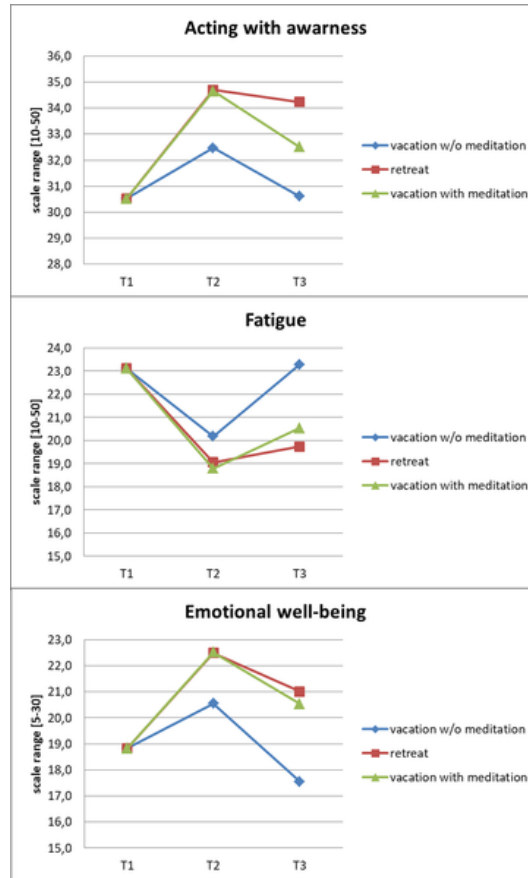
MEDITATION AND THE IMMUNE SYSTEM



Black DS, Slavich GM. Mindfulness meditation and the immune system: a systematic review of randomized controlled trials. *Ann NY Acad Sci.* 2016;1373(1):13-24

IS IT TIME FOR A VACATION?

- Question: Are vacation effects more lasting if individuals practiced meditation during the leisure episode?
- What is known:
 - Vacations are good
 - Positive effects of vacation decline rapidly (within 1-3 weeks)
 - Meditation retreats are good, but very few will choose to do them
- Setting:
 - If you add meditation to vacation, then ...



FINDINGS

- Ten days after the stay, there were no differences except for an increase in mindfulness for those practicing meditation.
- Ten weeks after the stay, meditation retreats and vacations including meditation were associated with **greater increases in mindfulness, lower levels of fatigue, and higher levels of well-being than an "ordinary" vacation during which meditation was not practiced.**
- The finding suggests that the inclusion of meditation practice during vacation could help alleviate vacations' greatest pitfall, **namely the rapid decline of its positive effects.**



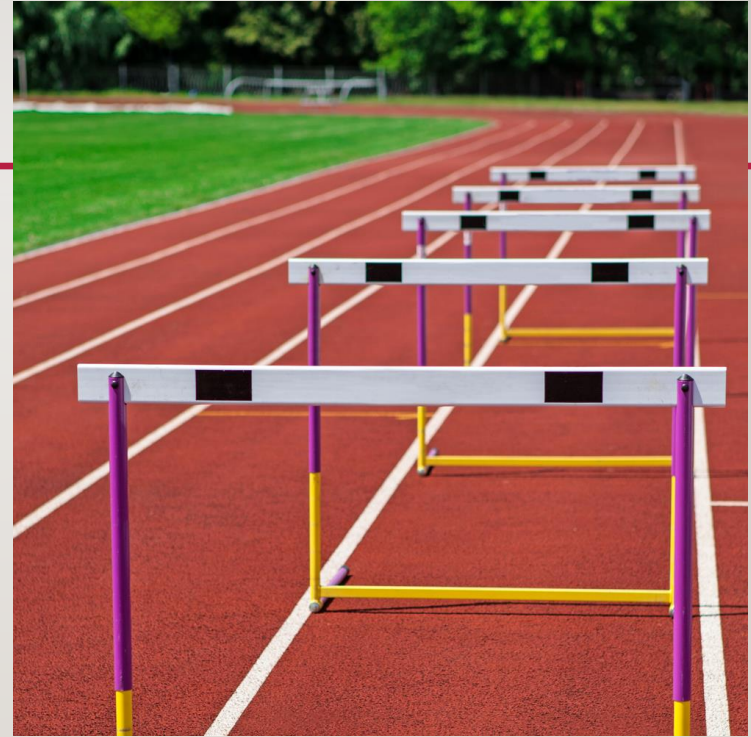


BENSON-HENRY INSTITUTE FOR MIND BODY MEDICINE AT MASSACHUSETTS GENERAL HOSPITAL

- Independent thematic center at MGH
- Clinical practice, research and education
- Study ways to combat stress and enhance resiliency
- Focus on mind body practices in the healthcare system:
 - Meditation
 - Yoga
 - Tai chi

MANY HURDLES LEFT TO CLEAR

- Funding the science that needs to be done
- Proving clinical efficacy in specific conditions
- Determining specific biological mechanisms
- Demonstrating cost effectiveness
- Overcoming bias, convincing skeptics
- Creating culture change within medicine
- Broadening acceptability and accessibility in the community
- Using evidence to convince payers and governments to cover these interventions



CONTACT INFORMATION

Darshan Mehta, MD, MPH: Dmehta@mgh.harvard.edu

URLS

- Office for Well Being: <https://www.massgeneral.org/faculty-development/divisions/owb>
- Center for Faculty Development: <https://www.massgeneral.org/faculty-development/>
- Benson-Henry Institute: <https://www.bensonhenryinstitute.org/>
- Osher Center for Integrative Medicine: <https://www.oshercenter.org/>