Mind Body Medicine and Heart Health

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Disclosures

• I have no relevant financial conflicts of interest
Overview

• What is mind body medicine
• How stress negatively affects heart health
• How mind body medicine improves heart health
  – Meditation
  – Yoga
  – Tai chi
• Experiential opportunity and how to start a personal practice
What is Mind Body Medicine?

• Practices that focus on the interactions among the brain, mind, body, and behavior, with the intent to use the mind to affect physical functioning and promote health.

• Includes: meditation, deep-breathing, guided imagery, progressive muscle relaxation, biofeedback, yoga, qi gong, and tai chi.
Mind Body Practices in America

Frequency of use by adults in 2012:

- 10.9% deep breathing
- 9.5% yoga
- 8.0% meditation
- 2.1% progressive relaxation
- 1.7% guided imagery
- 1.1% tai chi
- 0.1% biofeedback

Clarke, Natl Health Stat Report, 2015
How Do Mind Body Practices Work?

Dusek, Minn Med. 2009

[Diagram showing the stress response and relaxation response with labels for ACTH, Cort, Ne, Epi, NO, Heart Rate, Blood Pressure, Oxygen Consumption, Inflammation, Sympathetic nervous system activity, and various organ connections.]
1. Repeat a word, sound, phrase, prayer, or muscular activity.

2. Passively disregard everyday thoughts that inevitably come to mind and return to your repetition.
Meditation Changes Brain Structure

Regions of the brain affected involve

- cognition & executive function
- emotion regulation
- neurotransmitter release

Changes in Gene Expression

- > 1500 differentially regulated genes
- Decreases in inflammatory pathways
- Increased insulin function
- Associated increase in nitric oxide

Coronary Heart Disease Statistics

- Responsible for over 1/3 of deaths in individuals over the age of 35
- 17.6 million Americans have CHD
  - 8.5 million have had a heart attack
  - 10.2 million have angina
- For Americans age 40 the lifetime risk of CHD is
  - 49% for men
  - 32% for women

Wilson, et. al., UpToDate
How Stress Affects the Heart

Emari, *Circ Heart Fail*, 2010
Risk Factors for Cardiovascular Disease

- Family History
- Age
- High blood pressure
- High cholesterol
- Diabetes
- Smoking
- Diet
- Inactivity
- Mindset
- Stress
Mental & Emotional Risk Factors for Acute Cardiovascular Events

<table>
<thead>
<tr>
<th>Mental stressors</th>
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</thead>
<tbody>
<tr>
<td>1. Emotional upset</td>
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<tr>
<td>2. Anger</td>
</tr>
<tr>
<td>3. Anxiety</td>
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<tr>
<td>4. Bereavement</td>
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<tr>
<td>5. Sadness/frustration</td>
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<tr>
<td>6. Work-related stress (high-pressure deadline)</td>
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<tr>
<td>7. ‘Alarm response’</td>
</tr>
</tbody>
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Meditation

- Traditions in all of the world’s cultures

- Conscious focusing of one’s awareness – on the breath, a word or phrase, a sound, an image, sensations

- Conscious disregard of every day thoughts
Effects of Meditation on Cardiovascular Risk Factors

• In healthy individuals, meditation reduces
  – Perceived stress
  – Anger, anxiety, & depression
  – Blood pressure
  – Resting heart rate

• May improve health behaviors

Goyal, JAMA Intern Med, 2014
Vranceanu, Psychosomatics, 2014
Effect of TM on Blood Pressure

Reduced Need for BP Medication

- In individuals with systolic hypertension, regular elicitation of the relaxation response allowed 32% of participants to eliminate 1 or more blood pressure medications compared to 14% in a lifestyle modification control group.

Meditation & Heart Disease

- In stable coronary heart disease, TM
  - Lowered BP
  - Decreased insulin resistance
  - Improved heart rate variability

Meditation & Heart Disease

48% risk reduction in all-cause mortality, myocardial infarction, & stroke

Meditation + Cardiac Rehab

\[ p = 0.07 \]

Meditation & Heart Failure

- Reduced levels of norepinephrine
- Improved quality of life
- Less depression
- Improved functional capacity
- Trend to fewer hospitalizations

Yoga

• Origins in ancient India

• Combination of postures, breathing techniques, meditation, and philosophy

• Many styles of hatha yoga in the US: Ananda, Ashtanga, Bikram, Iyengar, Kripalu, Kundalini, Vini, others
Yoga & Cardiovascular Risk Factors

• 44 trials with 3168 subjects
• Improvements in:
  – Blood pressure
  – Heart rate
  – Waist circumference
  – Cholesterol
  – HbA1c and insulin resistance
• Effects were similar to exercise

Yoga & Heart Disease

• Paroxysmal atrial fibrillation
  – Decreased arrhythmia episodes
  – Decreased BP & heart rate
  – Decreased anxiety and depression

• For individuals with ICDs
  – Decreased anxiety
  – 32% lower risk of device-related firing

Yoga Caveats

• These yoga practices are not the same as what you might find at your local yoga studio
  – They include breathing exercises and meditation
  – Many yoga teachers are not trained to modify postures for chronic health conditions

• Speak with your physician and yoga instructor before starting a program.

• Consider working with a yoga therapist
Tai chi (Taiji)

- Martial art originating in China
- Consists of slow, gentle movements incorporating mindful awareness and the breath
- Sometimes referred to as “moving meditation”
Tai Chi & Heart Disease

• Coronary artery disease
  – Reduces blood pressure
  – Reduces resting heart rate

• Heart Failure
  – Improves depression
  – Increases quality of life
  – May increase exercise capacity

Yeh, J Cardiopulm Rehabil Prev. 2009, 2013
Guided Practice
What Did You Notice?

- Nothing
- Sleepy
- Relaxing
- Anxious
- Pleasant
- Restless
- Thinking about something on your “to do” list
Services Offered at the Benson-Henry Institute

- Physician consults
- Stress-management & resiliency training program
- Yoga classes
- Tai chi classes
Summary

• Mind body techniques such as meditation, yoga, and tai chi elicit the relaxation response and reduce the negative health consequences of stress.

• These techniques reduce cardiovascular risk factors and improve health outcomes in individuals with a range of heart-related conditions.

• MGH offers opportunities to integrate these approaches into your personal health toolkit.
"I’m learning how to relax, doctor — but I want to relax better and faster! I want to be on the cutting edge of relaxation!"

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