



# GHAPP

Gastroenterology & Hepatology  
Advanced Practice Providers

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# Benefits of Yoga for Disorders of Gut-Brain Interaction (DGBI)

Christina Unger, CRNP-BC, RYT

# Disclosures

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# Disclosures

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**Christina Unger, CRNP-BC, RYT**

No financial relationships to disclose.

# Objectives

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- Understand the benefits that a Yoga and Mindfulness practice can have on patients with Disorders of Gut Brain Interaction (DGBI).
- Recognize the role stress plays in the development and expression of symptoms in certain subsets of patients with DGBIs and why yoga is beneficial.
- Stimulate interest in designing large prospective research studies to evaluate the benefits and safety of yoga therapy in DGBIs.

## Gut Brain Communication



Have you ever had a 'gut feeling' that you should take a certain course of action?



Have you ever had a 'gut wrenching' experience that left you feeling sad or anxious?



Have you ever noticed that feeling of nausea or 'butterflies in your stomach' before a presentation?

# Disorders of Gut-Brain Interaction (DGBI)

## Previously Known as Functional Disorders

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- Defined by Rome IV Criteria (2016).
- Diagnosis based on symptoms with no definitive biomarkers or structural evidence of disease.
- Multiple disorders fall under the umbrella of DGBIs.
- Affects quality of life and is costly to the individual and Health Care System.

# Gut-Brain Bidirectional Communication Gut-Brain Axis

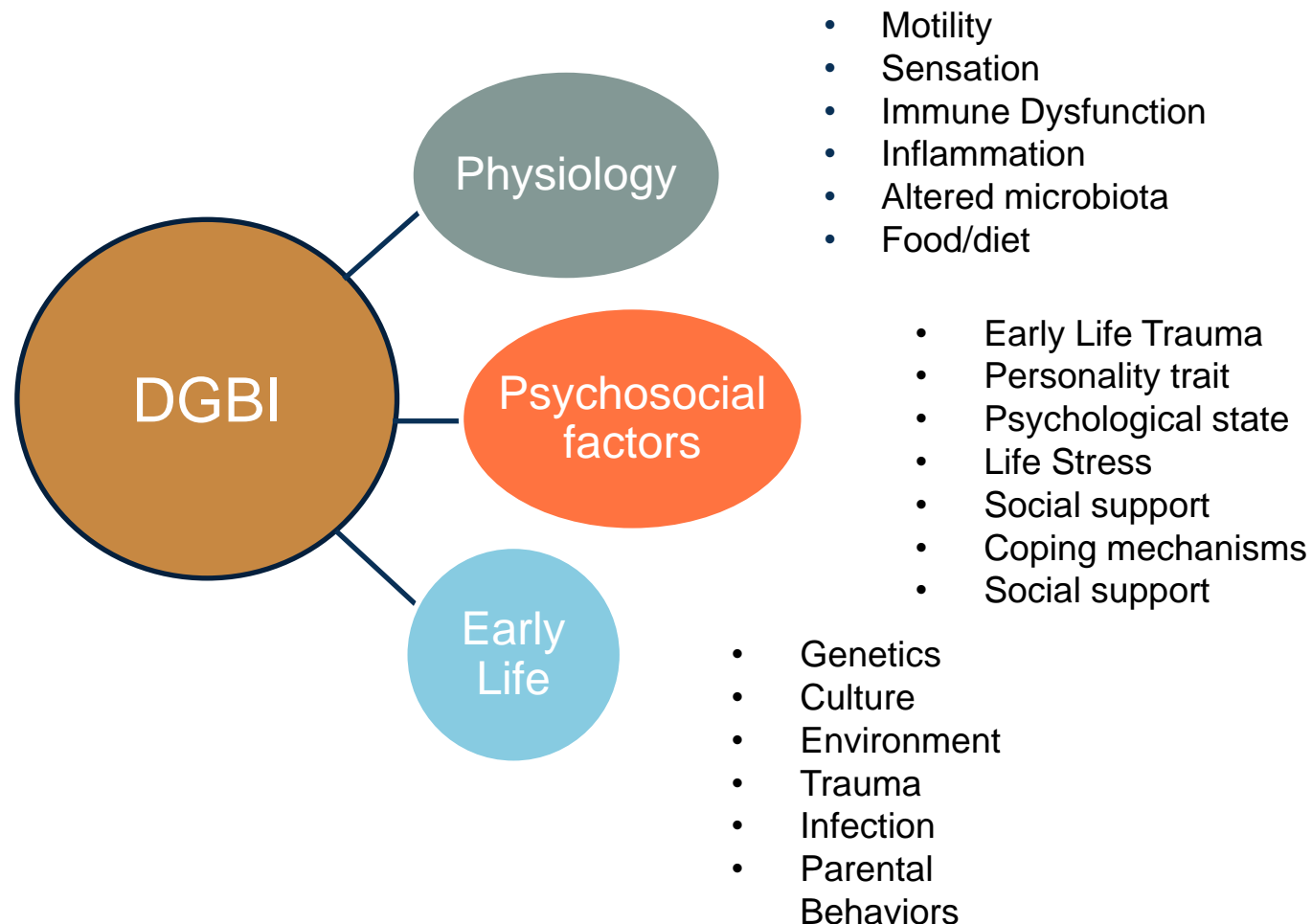
- The brain and gut send messages through nerve pathways, hormones, neurotransmitters, the immune system, and the microbiome.
  - Enteric Nervous System
  - Vagus nerve
  - ANS: Sympathetic (SNS) and Parasympathetic Nervous System (PNS)
  - Limbic System (amygdala, hypothalamus, anterior cingulate cortex (ACC))
  - Microbiome
  - Immune System



# Disorders of Gut-brain Interaction

- Associated with **Dysregulation of the Gut-Brain Axis**
- Group of disorders that are classified by symptoms related to:
  - Motility Disturbance
  - Visceral Hypersensitivity
  - Altered Mucosal and Immune Function
  - Altered Gut Microbiota
  - Altered Central Nervous System (CNS) processing

# Biopsychosocial Model for DGBIs



# Brain/Gut on Stress

## **AMYGDALA PATHWAY**

**(threat that is a hard-wired reaction or a learned association)**

- THREAT → Thalamus → Amygdala → Hypothalamus → Adrenal glands → Adrenaline → increase HR, BP, muscle tension → fight/flight/freeze → if stress prolonged → HPA → cortisol

## **CORTEX PATHWAY**

**.. A check on the Amygdala**

- ANTICIPATION OF THREAT → cortex anticipates stress and looks for an explanation sometimes triggering a spiral of worry → Amygdala engages and triggers fight-or-flight reaction

# Prevalence of DGBIs

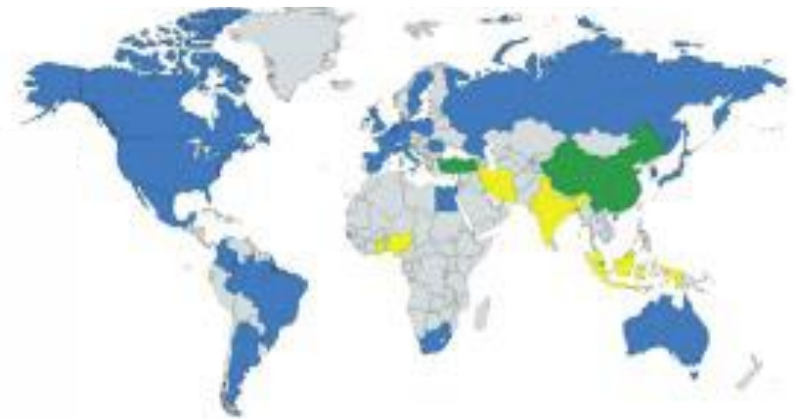
## Conclusions

- In a large-scale multinational study, we found that more than 40% of persons worldwide
- have FGIDs, which affect quality of life and health care use.

## Graphical abstract

A global epidemiological study of functional GI disorders

- 73,076 adults surveyed (33 countries, 6 continents)
- Data collection: By Internet (24 countries, blue), by household interview (7 countries, yellow), or both methods (China and Turkey, green).



Prevalence of meeting criteria for at least one of 22 functional GI disorders (%):

|                   | All Participants | Females | Males |
|-------------------|------------------|---------|-------|
| Internet surveys  | 40.3             | 46.5    | 34.2  |
| Household Surveys | 20.7             | 23.1    | 18.3  |

Gastroenterology

# Irritable Bowel Syndrome (IBS)

- Rome IV criteria
  - Recurrent abdominal pain on average at least 1 day/week during the previous 3 months that is associated with 2 or more of the following\*
    - Related to defecation
    - Associated with a change in frequency of stool
    - Associated with a change in stool form or appearance
  - \*Criterion fulfilled for the last 3 months with symptom onset at least 6 month prior to diagnosis

# IBS

- Common Disorder of gut-brain interaction
- Estimated that 10-12% of adults in North America are affected
- More common in women and younger individuals
- 25-50% of GI visits and 10-15% of primary care visits
- Majority of patients believe that stress causes or triggers their symptoms
- Up to 50% of individuals with IBS symptoms don't seek healthcare and individuals who do have symptoms for an average of 7 years prior to being diagnosed with IBS.



- What if there was a medicine that could:
- Stimulate the para-sympathetic nervous system and improve digestion
- Promote increased attention, self regulation and resilience
- Decrease psychological stress and anxiety
- Increase feelings of well-being and joy
- Improve flexibility, focus, and strength?



Yoga





# Why DO Americans Practice Yoga?

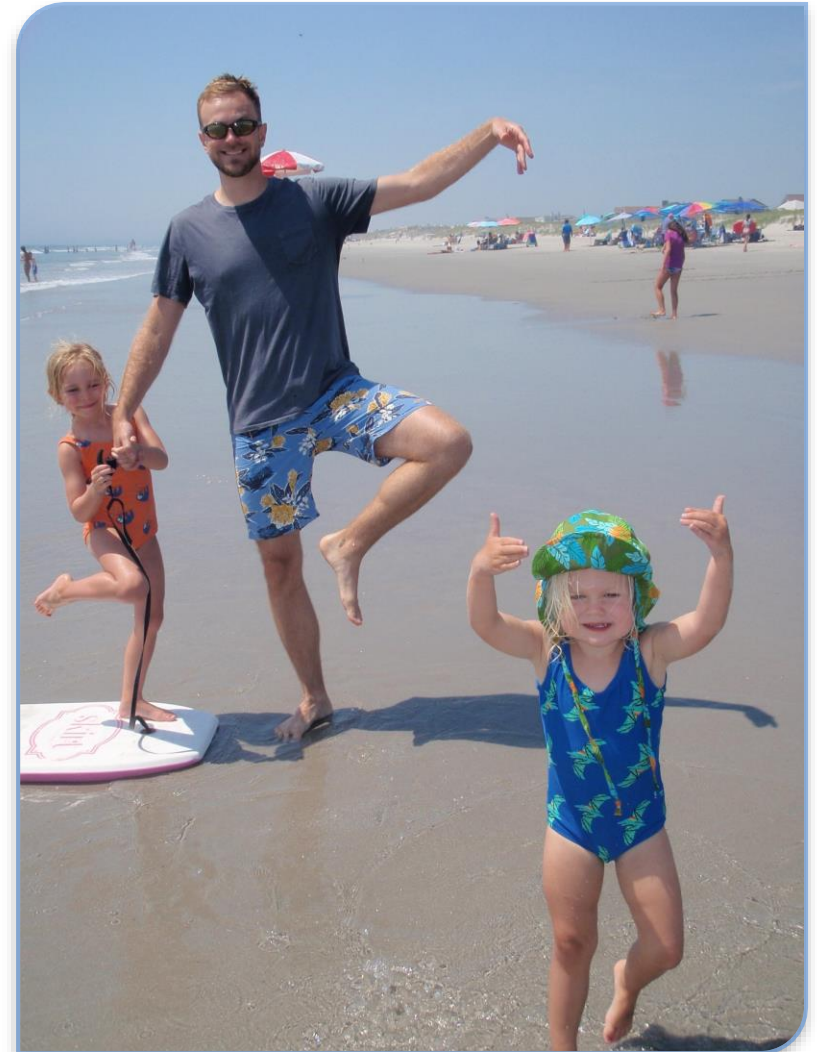
- National Survey Data from 2012 showed that 94 percent of adults who practiced yoga did it for wellness-related reasons, while 17.5 percent did it to treat a specific health condition.
- 86 percent said it reduced stress.
- 67 percent said it helped them feel better emotionally.
- 63 percent said it motivated them to exercise more regularly.
- 59 percent said it improved sleep.
- 82 percent said it improved overall health and made them feel better.

# Why IS Complementary and Alternative Medicine (CAM) Popular?

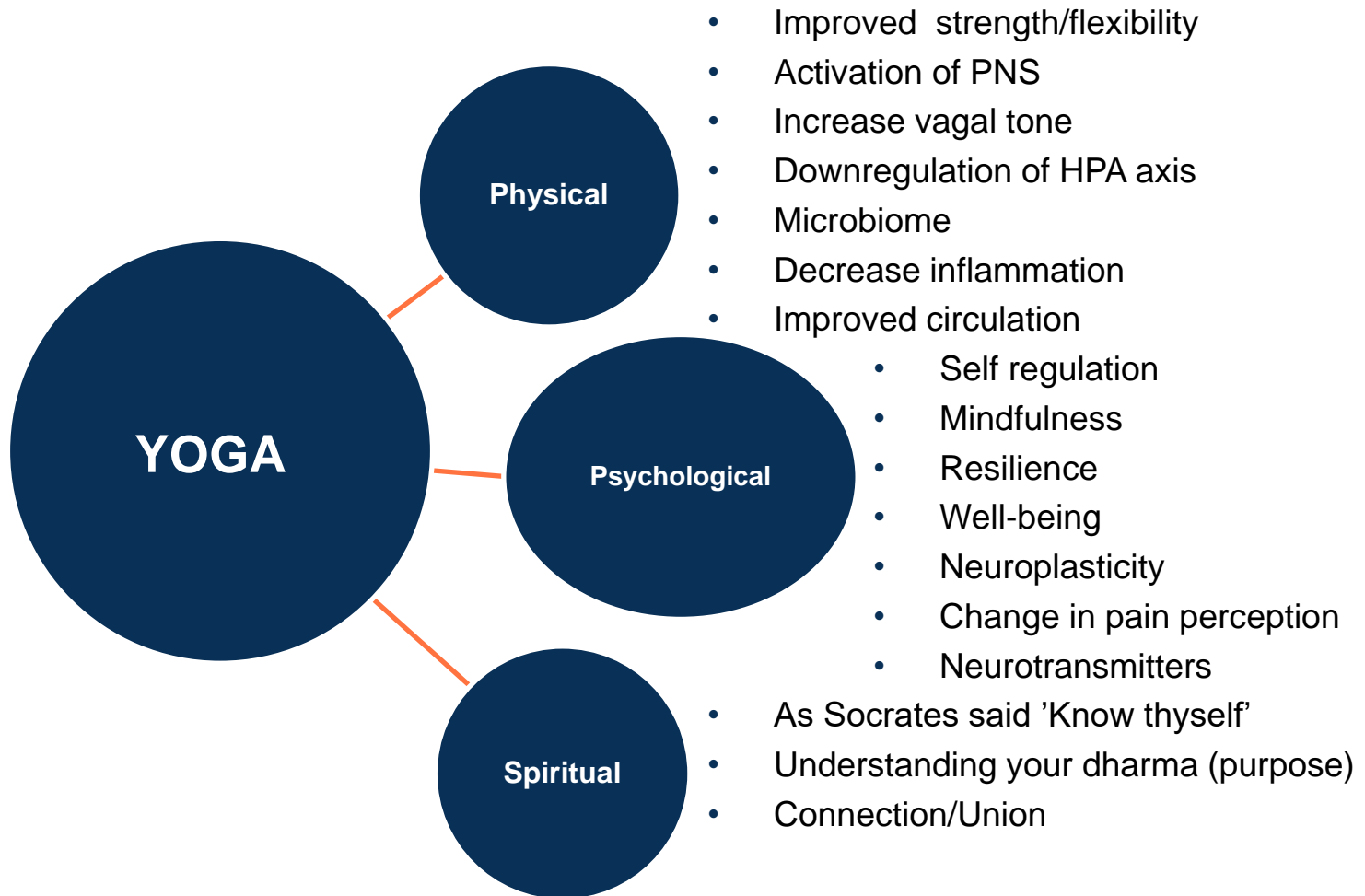
- Increased sense of control.
- Provide alternative to conventional therapies that have failed to alleviate symptoms.
- Attractive to patients who are unhappy with the ways their health care providers understand and explain illnesses or complaints.
- A 2018 review by Gan et al. reported prevalence of CAM for GI disorders to range from 23.6% - 44%, with the biggest users being women with higher incomes and education.

# Yoga

- The word Yoga is derived from the Sanskrit “yaj” translated as ‘union’, ‘to yoke’, or ‘to join’. The goal of yoga is to achieve union of body, mind, and spirit.
- **Yoga is a Practice:** Physical discipline linking postures (asanas) with breath (pranayama)
- **Yoga is a State:** The state of yoga is a state where you are no longer a prisoner to the fluctuations of the mind. “Yoga chitta vritti nirodha” Sutra 1.2.
- **A Philosophy:** Borrowing from multiple sources (Vedas, Bhagavad Gita, Upanishads, Patanjali’s Yoga Sutras).



# Benefits of Yoga



Integrative Medicine: Brings together conventional and complementary approaches for a holistic, patient-focused approach

# Effect of Yoga in the Therapy of Irritable Bowel Syndrome: A Systematic Review

Dania Schumann,<sup>\*</sup> Dennis  
Anheyer,<sup>\*</sup> Romy Lauche,<sup>\*,‡</sup>  
Gustav Dobos,<sup>\*</sup> Jost Langhorst,<sup>\*</sup>  
and Holger Cramer<sup>\*,‡</sup>

- 6 RCTs with a total of 273 patients were included in the qualitative analysis. There was evidence for a beneficial effect of a yogic intervention over conventional treatment in IBS.
- The findings of this systematic review suggest that yoga might be a feasible and safe adjunctive treatment for people with IBS. Nevertheless, no recommendation can be made regarding yoga as a routine intervention for patients with IBS because of major flaws in study methods.

# ACG Clinical Guideline 2020

- From the ACG Clinical Guideline: Management of Irritable Bowel Syndrome 2020
  - Recommendation: “We suggest that gut-directed psychotherapies (GDPs) be used to treat global IBS symptoms.” (Conditional recommendations; very low-quality evidence)
    - Cognitive behavioral therapy (CBT) and Gut-directed hypnotherapy
  - ... “behavioral interventions, offered in conjunction with effective medical and dietary therapies, are relatively low risk, and despite low quality evidence their NNT collectively remains 4 when the validated IBS symptom severity scale (IBS-SSS) is used as a primary outcome measure.”

# Randomized Clinical Trial: Yoga vs a Low-FODMAP Diet in Patients With Irritable Bowel Syndrome

- Fifty-nine patients with irritable bowel syndrome.
- Single-blind, randomized controlled trial involving yoga or a low-FODMAP diet for 12 weeks.
- Primary outcome was change in GI symptoms (IBS-SSS).

## Conclusions

- Patients with irritable bowel syndrome might benefit from yoga and a low-FODMAP diet, as both groups showed a reduction in gastrointestinal symptoms.

- Results:
  - 175 records identified, 15 met inclusion criteria.
  - Studies reported on seated or gentle yoga that included breath work, meditation, mantra repetition, or breathing exercises. For 14 of the 15 studies, study retention was 70% or higher.
- Overall, studies reported significant improvements in PTSD symptoms in participants in these interventions.



# Postures (Asanas)

## Warm Up

- Benefits
  - Tones abdominal and spinal muscles
  - Connects movement with breath
  - Improves gas, bloating, and discomfort
  - Encourages circulation to gut
- Poses
  - Cat Pose (Majaryasana)
  - Cow Pose (Bitilasana)
  - Wind-removing Pose (Apanasana)
  - Reclining hand-to-big toe Pose (Supta Pandangusthasana)
  - Happy Baby Pose (Ananda balasana)
  - Crocodile Pose (Makarasana)
  - Child's Pose (Balasana)
  - Down Dog (Ado Mukha Svanasana)
  - Gate Pose (Parighasana)



# Postures (Asanas)

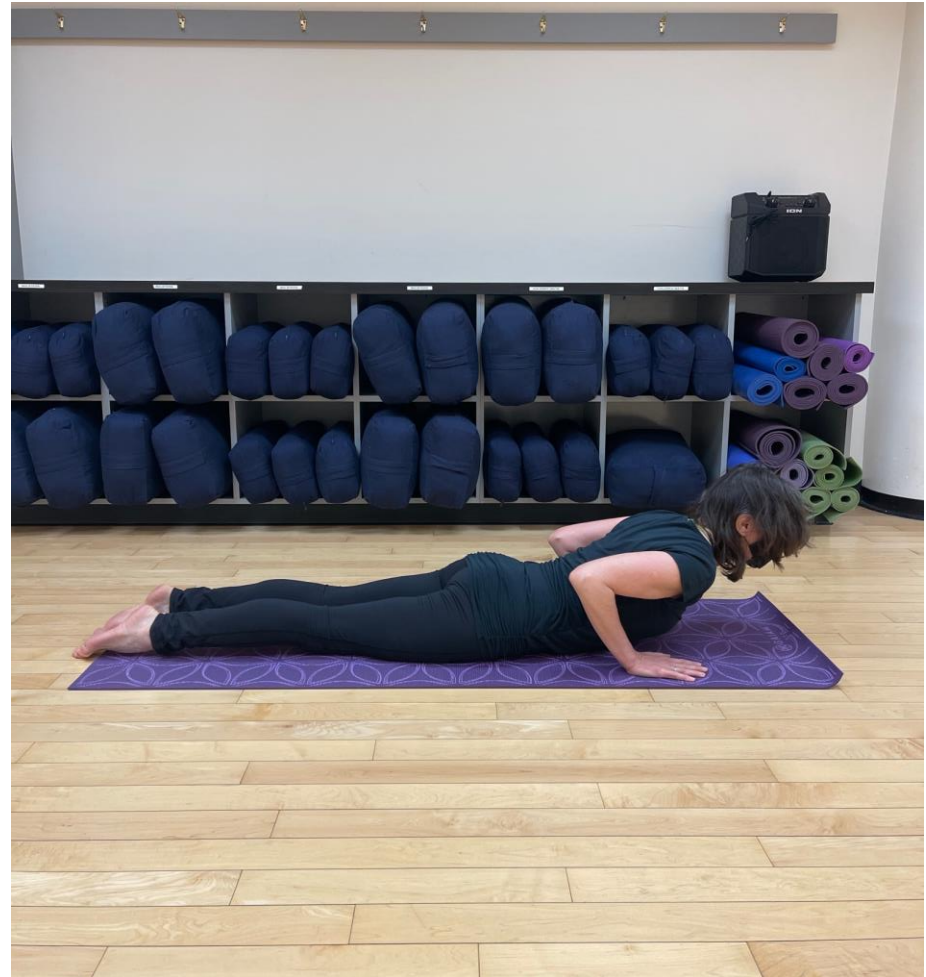
## Backbends

- Benefits

- Gentle pressure in prone backbends helps stretch abdominal muscles and strengthen lumbar support
- Encourages circulation to the gut
- Relieves abdominal cramping

- Examples

- Cobra pose (Bhujangasana)
- Sphinx pose
- Locust pose (Shalabhasana)
- Bow pose (Dhanurasana)
- Bridge pose (Setu bandha sarvangasana)



# Postures (Asanas)

## Twists

- Benefits
  - Gentle compression and release brings blood flow and encourages peristalsis and motility
  - Strengthens muscles surrounding the internal organs
  - Improves bloating and encourages movement of gas
  - Relieves tension around abdomen (reclined abdominal twist)
- Postures
  - ½ Lord of the Fishes Pose (Ardha Matsyendrasana)
  - Marichi's Pose (Marichyasana)
  - Reclined Abdominal twist (Jathara Parivartanasana)





# Standing Postures

- Benefits
  - Strengthens pelvic floor and core
  - Strengthens and tones muscles surrounding abdominal organs
  - Gentle compression and release encourages circulation
- Postures
  - Warrior I, II, III (Virabhadrasana I, II, III)
  - Triangle and Revolved Triangle (Trikonasana and Parivrtta Trikonasana)
  - Chair and Revolved Chair (Utkatasana and Parivrtta Utkatasana)
  - Revolved Side Angle (Parivrtta Parshvakonasana)





# Postures (Asanas)

## Forward Folds

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- Benefits

- Stimulates Parasympathetic Nervous System
- Improves vagal tone
- Tones the abdomen and pelvic floor

- Postures

- Seated forward fold (Paschimottanasana)
- Standing forward fold (Uttanasana)
- Intense Side Stretch (Parsvottanasana)
- Head to Knee Pose (Janu Sirsasana)
- Prasarita Padottanasana (Wide legged forward fold)



# Pranayama (Breathing Practices)

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- **Benefits**
  - Tool for self-regulation. Redirects attention to present.
  - Breaks common pattern of 'over breathing' associated with stress and SNS stimulation.
  - Exhale longer than Inhale stimulates PNS.
  - Creates space between a stimulus and our response.
  - Changes relationship to stress and pain.
  - Diaphragmatic breathing improves lung capacity and vagal tone.



# Relaxation

- Benefits

- Soothes the nervous system
- Allows for integration of practice

- Postures

- Corpse Pose (Savasana)
- Legs-up-the-wall pose (Viparita Karani)
- Reclined Cobbler's Pose (Supta Baddha Konasana)



# Mindfulness Meditation



- Mindfulness Meditation IS:
  - Paying attention
  - On purpose
  - In the present moment
  - Without judgement
- Mindfulness Meditation IS NOT:
  - The cessation of thought
  - Thinking intently about something

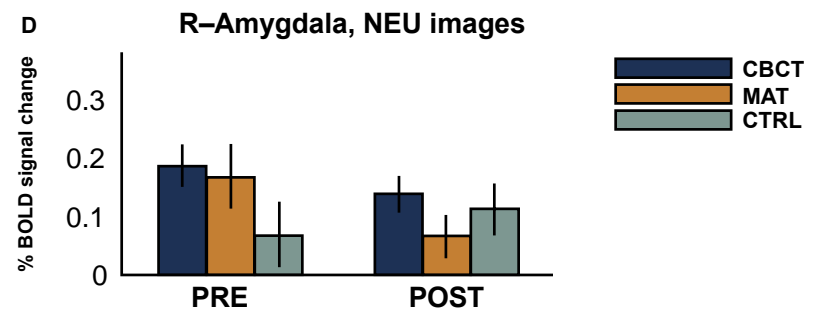
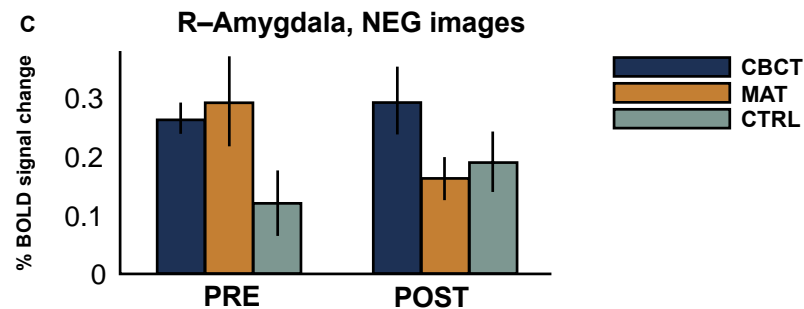
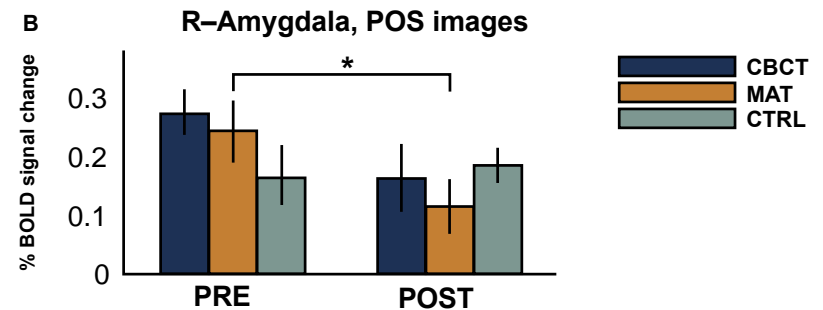
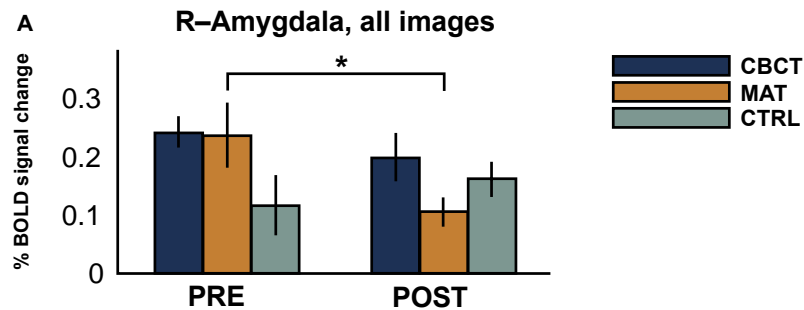
# Brain on Mindfulness

## Amygdala Pathway

- Less likely to react to threat or trigger as strong a fight-or-flight response.
- Amygdala is smaller and less reactive in people who practice mindfulness consistently

## Cortex Pathway

- Cortex not as likely to anticipate threat.
- Mindfulness strengthens awareness and attention centers of cortex.
- Negative thoughts are less likely to trigger the amygdala





# Mindfulness-Based Stress Reduction (MBSR)

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- Founded by Dr. Jon Kabat Zinn at the University of Massachusetts Medical Center.
- Author of multiple books on mindfulness and founded the Center for Mindfulness
  - Full Catastrophe Living: Using the Wisdom of Your Body and Mind to Face Stress, Pain, and Illness, Wherever You Go, There You Are, Falling Awake

# Food for THOUGHT: We Need Well Designed Studies to Evaluate the Benefits of Yoga in the Treatment of DGBI

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- Future studies
  - Well designed studies that limit bias and report adverse events.
  - Utilize Rome Criteria for diagnosis.
  - Have clearly defined measurable endpoints using validated tools for measuring outcomes in IBS.
  - Use an intelligently designed Hatha Yoga sequence that incorporates breathing, postures, mindfulness meditation, and relaxation to target the gut/brain connection.
  - Include a comparison group and be performed 2-3x /week for at least 12 weeks with follow-up of at least 12 weeks.

# Summary

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- Yoga is a holistic therapeutic practice that has positive effects on DGBIs in the physical, psychological, and spiritual domains.
- Being knowledgeable about the benefits of CAM therapies improves the patient-provider relationship and expands the toolbox available to providers for the treatment of DGBIs.
- More well-designed studies are needed to show evidence of the benefits and safety of yoga as a complementary therapy for DGBIs.

“You can’t stop the waves from coming but you can learn to surf.”

—Jon Kabat-Zinn





**NAMASTE!**