

## **Pelvic Physical Therapy Distance Journal Club**

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**Article #2: The rehabilitation of individuals with gastrointestinal issues beyond pelvic floor muscle function: considering a larger picture for best practice. Wood A, Glynn TK, Cahalin LP. JWHPT 2022. Oct.07.2022. Doi:10.1097/JWH.000000000000249.**

### **Introduction**

- Pelvic health physical therapy's (PHPT) primary role in gastroenterology (GI)-related care has been viewed in the literature as biofeedback therapy of the pelvic floor muscles (PFM)
- Emerging research suggests that expanding this role toward a whole-body approach may improve patient care
- Common GI referrals to PHPT include chronic constipation (CIC), fecal incontinence, levator ani syndrome, and mixed presentations which fall under the umbrella of disorders of gut-brain interaction (DGBIs) and have associated impairments involving multiple bodily systems
- PHPTs have expansive knowledge of multiple bodily systems and are well-positioned to be part of an interdisciplinary team
  - We can incorporate an expanded plan of care outside of just pelvic floor muscle interventions for best practice, including the incorporation of physical activity and targeting cardiopulmonary measures, mental health considerations, and nutrition-based advice
  - PT based literature that coincides with treating these individuals from a biopsychosocial holistic lens is lacking... we need more PT research!

### **Background**

- DGBIs (previously known as functional GI disorders-FGIDs) are the most common diagnosis in gastroenterology
- Rome IV criteria were introduced, defining FGIDs as DGBIs
  - Includes 33 adult and 20 pediatric diagnoses that fall under DGBIs
  - The 3 most common are functional dyspepsia, functional constipation, and irritable bowel syndrome (IBS)
  - Clinical features of DGBIs include motility disturbances, visceral hypersensitivity, altered mucosal and immune function, altered gut microbiota, and altered central nervous system processing

### **Aim/Methods**

- Clinical commentary with aims to review emerging research on the gut microbiome's influence on DGBIs and suggest ways for PHPTs to broaden their roles beyond PFM function when treating individuals with GI complaints.

### **Results**

- The gut-brain connection:
  - The gut and the brain communicate with each other through multiple bidirectional pathways such as the enteric, autonomic, central nervous system, and hypothalamic pituitary adrenal axis

- Ascending pathways of communication from the gut to the brain occur via mechanical and chemical stimuli within the gut, metabolic products, immune cells, and the gut microbiota
- Descending pathways from the brain to the gut occur via the autonomic nervous system, the hypothalamic-pituitary adrenal axis, sympathoadrenal axis, and descending pathways modulating visceral pain signals from the dorsal horn of the spinal cord
- The vagus nerve (90% afferent, 10% efferent fibers) functionally connects the digestive organs and the brain to regulate secretory products and smooth muscle contractions in the gut and can be influenced by many environmental factors (Figure 1)
  - Diet, pollution, pesticides, medications, plastics, sleep hygiene, home environment, travel, physical activity, emotions, as well as hormones, stress, antibiotics, geographic location, infections, and surgery
- The enteric nervous system connects to the central nervous system through neurons and endocrine pathways but can also act independently
- The gut microbiota:
  - Microorganisms found in the stomach, small and large intestine influence many bodily systems that impact an individual's health status
  - Very individualized, acquired at birth, maturing to adult status at the age of 3 years
  - Can change throughout a lifetime and decrease in resilience with age and comorbidities
  - A healthy gut microbiota is viewed as a community in which beneficial microbes predominate, while dysbiosis is dominance of harmful microbes
  - The variation of the gut microbiome composition can reflect lifestyle behaviors and exposures and serve as a biomarker for both health and disease
  - Diversity and the ability of the gut microbiota to resist perturbation and recover to a healthy state may be an important indicator of health status
    - Dysregulation is associated with various diseases
- PHPTs expanding role in DBGIs:
  - Research published within the past decade on the gut microbiome provides physical therapists with the opportunity to become more comprehensive practitioners in treating individuals with DBGIs under an interdisciplinary biopsychosocial umbrella
  - Gut health extends beyond the PFM and how someone coordinates a bowel movement or withholds stool and is influenced by many factors (Figure 1)
  - The International Classification of Functioning, Disability, and Health (ICF) model can be utilized in guiding treatment of DBGIs (Figure 2)
  - PHPTs may be able to impact contributing factors directly or indirectly as part of an interdisciplinary team (Figure 3)
    - Environmental factors physical therapists can positively influence include
      - Stress management, physical activity, advice on incorporation of general nutrition, providing mental health resources, education about sleep hygiene, and conservative self-care tools to help manage symptoms due to events known to exacerbate GI symptoms such as travel and surgery
      - Education on commonly researched endocrine disruptors such as plastics, pesticides, synthetic fertilizers, electronic waste, and food

additives may help individuals increase awareness of how product consumption affects their GI symptoms

- Physical activity
  - Contributes to increased biodiversity of the gut microbiota and taxa associated with better metabolic functions and positively impacts gut health
  - Physical activity to exhaustion can cause dysbiosis of the gut microbiome, gut hyperpermeability, and increased inflammation
  - Regular moderate physical activity with a focus on exercise training may cause physiological adaptations that improve the maintenance of intestinal blood flow during activity and a reduction in inflammation
    - Optimal modes and exercise intensities for gut health are unknown
  - May help manage blood pressure, obesity,  $V_{O_{2max}}$  known to influence the microbiota
  - May play a role in musculoskeletal influence on the gut
  - May mitigate the cardiovascular influence of laxative use
- Mental health
  - The gut produces up to 90% of the body's serotonin content
    - Stress-induced changes in gut microbiota composition occur through signaling via the vagus nerve and enteric nervous system leading to altered GI motility and reduce digestive activity
      - This altered GI motility likely impacts the gut microbiota by modulating physical forces within the GI tract and by altering substrate availability
  - Other influences
    - Reduced number of social supports
    - Early life trauma (ACEs- adverse childhood events)
    - Anxiety and depression are common with DBGIs (chicken-egg?)
  - Referral to cognitive behavioral therapy may help improve the quality of life in individuals with DGBIs
  - Cognitive behavioral therapy has been shown to effectively impact individuals' severity of GI symptoms, depression, anxiety, and stress
  - PHPT can educate patients on the relationship of DBGIs and mental health, validate their symptoms, provide a referral
- Nutrition
  - Diet plays a large role in influencing the gut microbiota
    - May be a confounding factor in determining the effects of physical activity and fitness
  - High fiber diet maintains colon health and reduces risk of colon cancer
    - Has a positive impact on various body functions
  - Soluble fiber (psyllium) helps mediate IBS-C symptoms
  - Low FODMAPS diet helps IBS-D

- Mediterranean diet and increased plant intake improves the microbiota
- Hydration is important
- Malnutrition and eating disorders can contribute to dysbiosis
- Referral to nutrition-based colleagues and attending further nutrition-based education courses may be beneficial for practitioners treating individuals with DGBIs
  - Guiding individuals toward general healthier eating habits such as increasing fiber and plant intake, being mindful of processed foods and unhealthy fats, staying hydrated, and mindful eating habits will likely align with the value to do no harm
- Future directions:
  - In addition to PFM oriented treatment, PHPTs can target improving cardiorespiratory fitness, provide stress management techniques through breathing exercises, physical activity, and education on healthier eating habits, and refer individuals to appropriate health care providers involved in mental health and nutrition while providing education on why seeing these providers will benefit their patients
  - Having a robust resource list of other specialized medical providers involved in nutrition and mental health with a good communicative relationship with gastroenterology is of importance
  - Helping individuals with the daily incorporation of healthier habits is within PTs scope of practice and wellness
  - They found only one study (ref #83) that included PHPT as part of a multidisciplinary model in DGBIs

### **Conclusion**

- PHPTs are qualified to address multiple bodily symptoms that position the profession as valuable members of an interdisciplinary team treating individuals with DGBIs
- More research and advocacy about their dynamic role in gastroenterology outside of mainly anorectal biofeedback needs to increase

### **Discussion**

- What are your thoughts on how these 2 articles address the role of PHPT in the treatment of DGBIs?
- Do you feel you have adequate knowledge of gut microbiome research and the role of environmental factors on gut health to educate your patients?
- How should PTs pursue education to expand their role in this field?
- Do you feel that entry-level PTs should receive training in this area?

### **Resources**

<https://www.apta.org/siteassets/pdfs/policies/role-of-pt-diet-nutrition.pdf>

<https://www.apta.org/patient-care/public-health-population-care/nutrition/pts-role-in-nutrition-and-diet>