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Enteroendocrine Cells in the Gut: Implications for Neurological and Psychiatric Disorders

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Introduction

Meta-analyses of RCTs have been included in three recent systematic reviews that summarize the effects of exercise on fibromyalgia. Aerobic exercise interventions were found to decrease depression, fatigue, and pain, as well as to improve physical fitness and health-related quality of life (HRQOL). The magnitude of effect (effect size) for aerobic, strength, mixed, and aquatic exercise interventions is summarized. Strength training was linked to significant improvements in global well-being and physical function. Additionally, it was demonstrated that mixed exercise training; a combination of aerobic, strength, and flexibility exercises; produced significant improvements in pain and physical function. These studies show that aquatic exercise can have positive effects, suggested that land-based aerobic exercise might not be better than aerobic exercise done in water. Conducted a meta-analysis on the effects of aerobic, strength, or combined aerobic and strength exercise on global well-being in fibromyalgia patients and discovered a modest but statistically significant favorability for exercise. It is essential to take into account the potential negative effects of exercise, such as an increase in symptoms (such as pain, stiffness, and fatigue) and musculoskeletal issues (such as plantar fasciitis, impingement syndrome), when weighing the benefits of exercise for fibromyalgia sufferers. Although adverse events have not always been reported, they are common and may be linked to high rates of RCT dropout. A recent review reveals that, on average, participants in aerobic exercise groups drop out at a rate of 22%, which is higher than the 10% dropout rate in untreated control groups (P 0.05) [1,2].

Description

Since over 60% of patients with lengthy COVID experience post-exertional malaise (PEM), which is identical to patients with myalgic encephalomyelitis, this topic is especially pertinent to those individuals. Exercise should be given in these situations with caution, and pacing or other cognitive approaches can be suggested (either in isolation or in combination with exercise therapy). Treatment of concomitant symptoms, particularly those with a nociplastic pain profile that might interact and perpetuate pain, such as sleep disturbances, tiredness, dyspnea, or autonomic disturbances, is also crucial for maximising treatment outcomes. In actuality, successful outcomes are less likely if related factors are not managed in addition to correcting underlying pain mechanisms (i.e., reducing central sensitization in the nociplastic post-COVID pain phenotype).

Enteroendocrine cells are specialized cells located in the lining of the gastrointestinal tract that release hormones in response to food intake. Recent research has revealed that these cells play a crucial role in regulating not only digestion but also the communication between the gut and the brain. Studies have shown that enteroendocrine cells release hormones and neurotransmitters that can influence neurological and psychiatric disorders such as depression, anxiety, and Parkinson's disease. This suggests that a deeper understanding of the complex interplay between the gut and the brain could lead to new treatments for these conditions. The implications of enteroendocrine cells in the gut for neurological and psychiatric disorders are an exciting area of research that has the potential to transform our understanding and treatment of these conditions [2,3].

The relationship between the gut and the brain has long been of interest to researchers in both the neurological and psychiatric fields. Recent research has revealed that this relationship is more complex than previously thought, with enteroendocrine cells in the gut playing a crucial role in regulating communication between the gut and the brain. These cells release hormones and neurotransmitters that can influence neurological and psychiatric disorders such as depression, anxiety, and Parkinson's disease. Understanding the implications of enteroendocrine cells in the gut for neurological and psychiatric disorders is an exciting area of research that has the potential to transform our understanding and treatment of these conditions.

Depression and anxiety are two of the most common psychiatric disorders affecting millions of people worldwide. The link between these disorders and the gut has been explored for many years, with researchers studying the gut microbiome and its relationship to mood and behaviour [4]. More recently, enteroendocrine cells in the gut have been identified as a potential mediator of this relationship. Enteroendocrine cells release hormones such as serotonin, which is known to regulate mood and behavior. Studies have shown that mice with reduced levels of enteroendocrine cells have a decreased response to stress and are less prone to anxiety and depression. These findings suggest that enteroendocrine cells in the gut may play a crucial role in the development of these psychiatric disorders.

Parkinson's disease is a neurological disorder that affects millions of people worldwide. It is characterized by the loss of dopamine-producing neurons in the brain, which leads to tremors, stiffness, and difficulty with movement. Recent studies have suggested that enteroendocrine cells in the gut may be involved in the development of Parkinson's disease. The alpha-synuclein protein, which is a hallmark of Parkinson's disease, has been found in both the brain and the gut of patients with the disease. In addition, studies have shown that the gut microbiome in patients with Parkinson's disease is different from that of healthy individuals. This suggests that there may be a link between the gut and the brain in the development of this neurological disorder.

The implications of enteroendocrine cells in the gut for neurological and psychiatric disorders are not limited to depression, anxiety, and Parkinson's disease. Studies have also suggested a potential link between these cells and autism spectrum disorder, schizophrenia, and Alzheimer's disease [5]. Autism spectrum disorder is a developmental disorder characterized by impaired social interaction and communication, as well as repetitive behaviors. Research has shown that children with autism spectrum disorder have altered gut microbiomes and increased levels of inflammation in the gut. These findings suggest that the gut may play a role in the development of this disorder. Similarly, studies have shown that patients with schizophrenia have altered gut microbiomes and increased inflammation in the gut. In addition, patients with Alzheimer's disease have been found to have reduced levels of enteroendocrine cells in the gut, which suggests that these cells may play a role in the development of this neurodegenerative disorder [6].

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The implications of enteroendocrine cells in the gut for neurological and psychiatric disorders are still being explored, but the potential implications for treatment are vast. If researchers can identify the specific hormones and neurotransmitters released by these cells that are involved in the development of these disorders, new treatment options may become available. For example, drugs that target serotonin, which is released by enteroendocrine cells in the gut, are commonly used to treat depression and anxiety. However, these drugs can have side effects and are not effective for all patients. If researchers can identify specific subtypes of enteroendocrine cells that are involved in the development of these disorders, they may be able to develop more targeted and effective treatments with fewer side effects

Conclusion

Moderate to severe ARDS-related COVID-19 damage results in irreversible functional deficits, requiring post-discharge pulmonary rehabilitation that includes exercise. While CONC exercises are standard and safe, they can limit exercise capacity due to cardiovascular stress, dyspnea, and fatigue. This can reduce potential benefits. ECC, a form of training commonly used by athletes, has been found to produce better results in functional capacity, muscle mass, and reduced complaints of fatigue and dyspnea in COPD patients. However, there is a lack of outpatient data following COVID-19.

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Conflict of Interest

There is no conflict of interest by author.

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