Research Bites, September 2020, by Mary Yoke, PhD, FACSM, MA, MM

Class III Obesity: What are the Benefits and Barriers of Exercise?

It is well-known that the U.S and the developed world are struggling with increasingly high levels of obesity. Recent data from the Centers for Disease Control and Prevention and the National Center for Health Statistics indicate that 42.4% of American adults were obese (BMI $\geq$ 30) and 9.2% of American adults were severely obese (BMI $\geq$ 40) in 2017-2018 (1). These are significantly higher numbers than the data on obesity that was reported in 2015-2016.

Researchers Joseph et al (2) wanted to explore exercise patterns, barriers, and benefits in individuals with class III/ severe obesity (BMI $\geq$ 40). Eighty severely obese adults (86% female; average age: 45 years) who had been referred to a bariatric program completed several questionnaires in a cross-sectional study. The questionnaires included the International Physical Activity Questionnaire (IPAQ), the Sedentary Behavior Questionnaire (SBQ), and the Exercise Benefits/Barriers Scale (EBBS).

The findings are striking and have much to teach those of us who want to help the general public become more physically active. Most of the study participants (76%) reported no moderate or vigorous physical activity at all, and 48% reported no walking activity. Only 16 of the participants (22.5%) met the recommended 150 minutes of moderate-to-vigorous physical activity per week. Sedentary behavior was reported for an average of 10.4 hours per day, and some individuals were sedentary for as many as 16 waking hours per day.

In order to address physical inactivity we must address peoples' perceived barriers to exercise. Participants in this study reported multiple barriers, with 70%-80% saying that "exercise tires me," "exercise is hard work," and that they were "fatigued by exercise." Predictably, time was a barrier for some. Many cited the exercise milieu as a barrier, meaning that the cost, exercise facility access, and feelings of embarrassment due to one's weight and size were all too daunting for exercise compliance. Fifty participants had limiting musculoskeletal issues such as arthritis, leading especially to prohibitive knee and leg pain.

Most participants understood the many benefits of exercise, but it is a truism that knowledge doesn't guarantee action, especially when there are so many perceived barriers. Although benefits such as increased longevity, decreased risk of heart attack, and increased feelings of well-being were acknowledged, positive reactions to questionnaire statements about exercise enjoyment or that exercise might provide pleasant social interaction were much lower.

This is the author's manuscript of the article published in final edited form as:

Yoke, M. M. (2021). Research Bites: Class III Obesity: What are the benefits and barriers of exercise? ACSM's Health & Fitness Journal, 25(1), 43–45. https://doi.org/10.1249/FIT.0000000000000633

In other words, severely obese individuals are unlikely to find exercise pleasurable and often experience social anxiety in the fitness environment.

What is the take-home message for health/fitness professionals? First, there is a great and increasing need for us to provide suitable services for the growing percentage of the population struggling with high levels of obesity. Second, we need to adapt and modify our programs to address the needs and the perceived barriers of this group. We must take into consideration the likelihood of arthritic pain, particularly in the knees and feet, and provide appropriate exercise alternatives such as recumbent cycling, water exercise, and seated muscle conditioning exercises. Exhaustive, pain-inducing activities will only result in non-compliance and discouragement. Let's consider how we can ease the burden of social anxiety and embarrassment for weight-challenged individuals in physical activity settings. The time is now for health/fitness professionals to work together to address this pressing public health need. Let's explore workarounds for the perceived barriers reported in this and other studies, and help individuals struggling with obesity enjoy the many benefits of physical activity!

Parkinson's Disease, Exercise, and COVID-19

As we're all aware, serious concerns about Covid-19 abound. Numerous studies have shown that appropriate exercise and physical activity can strengthen the immune system, and researchers are exploring the idea that exercise may decrease the risk of contracting Covid-19. In a timely literature review by Hall and Church (3), the authors parse immune response to exercise data with regard to older adults suffering from Parkinson's disease (PD). The relationship between the following four constructs are addressed and defined in the review: Parkinson's Disease, Covid-19, the immune system, and exercise.

Parkinson's disease is a common degenerative disorder of dopamine-producing neurons in the brain, and can result in muscle rigidity, balance problems, and muscular tremors, as well as neuroinflammation and immune system dysfunction. Patients, who are typically older adults, may also develop depression, sleep problems, and dementia.

Covid-19, now a global pandemic, is a virus that interacts primarily with cells in the lungs, resulting in symptoms such as fever, cough, and dyspnea (breathlessness); Covid-19 may progress to pneumonia with sepsis and require patients to utilize a mechanical ventilator due to

acute respiratory distress. The combination of Parkinson's disease and Covid-19 in older adults is particularly worrisome.

With regard to the immune system, we know that the body's natural immune response to infection, injury, or toxic agents is inflammation. However, uncontrolled inflammation (which can occur with severe Covid-19) can harm multiple organs and lead to death.

Numerous studies have shown that appropriate exercise can have a beneficial effect on both Parkinson's and on the immune system. Actually, research shows that the key word here is moderate. Too little exercise, which occurs when a person is overwhelmingly sedentary, is harmful and can contribute to numerous well-documented health problems. On the other hand, prolonged high-intensity aerobic exercise can increase the likelihood of a viral respiratory infection and decrease helpful immune system responses. It happens that the body secretes two types of cytokines, which are immune system cells that signal actions from other cells; cytokines can be either pro-inflammatory or anti-inflammatory. Exercise training has the lucky effect of lowering the pro-inflammatory cytokines while increasing the anti-inflammatory cytokines—just what we would want for a strong and vital immune system. Hall and Church write that "moderate-intensity exercise produces the most beneficial health response." The authors examine neuroinflammation with regard to Parkinson's disease, and the need for therapies that help to reduce such inflammation. They review both animal and human studies showing that moderate exercise helps protect brain neurons by reducing neuroinflammation and by enhancing neuroplasticity.

With regard to Covid-19, Hall and Church cite research showing the connection between exercise and fewer upper respiratory tract infections (URTIs); they suggest that this health benefit is also protective against Covid-19, which is primarily a disease of the respiratory system. Moderate exercise could have a preventive effect in four ways: 1) anti-inflammatory cytokines increase and thereby reduce the severity of URTI, 2) elasticity, lung tissue strength, and respiratory muscle strength improves, leading to reduced instances of breathlessness (dyspnea), 3) oxidative stress decreases (oxidative stress can contribute to cellular damage and increased risk of cancer, heart disease, and diabetes), 4) the risk of frailty is reduced. Frailty is more common among older adults and those with PD, and can predict poor health outcomes. Covid-19 symptoms are worse in frail individuals, regardless of their age or co-morbidities (other diseases). Frail people with Covid-19 have longer hospital stays and have earlier deaths.

Moderate aerobic exercise, plus strength and flexibility training are all important in the prevention of frailty.

To conclude, exercise and physical activity have a wide range of benefits, including benefits specific to the prevention of both Parkinson's disease and Covid-19. Moderate-intensity exercise is strongly recommended, as opposed to prolonged high-intensity exercise or sedentariness, for optimal immune system health and protective capabilities. Health/fitness professionals can be instrumental in spreading this good news to a public concerned about Covid-19 prevention!

Do Internet-Delivered Exercise Programs Work?

The coronavirus pandemic of 2020 (and beyond) has challenged many in the health/fitness industry to rethink the ways services are delivered. It's probably incumbent upon all of us to improve our skills in online personal training, group exercise, and health coaching, in order to help as many people as possible. We may be providing our classes and training sessions, and our expertise and motivational messages, on the internet for the foreseeable future.

Currently, few studies have examined whether online virtual training is as effective as traditional face-to-face training. A 2017 article by Bennell et al (4) though, may give us some insight. In this randomized, controlled trial, 139 participants (age: > 50), all with knee pain, were divided into control and intervention groups. The control group was simply provided with online educational material about physical activity, pain management, healthy eating, and medications. The intervention group received the same educational materials, but also received automated online modules that included relaxation and pain-coping skills. Additionally, the intervention group received seven 30-45 minute online Skype sessions with a physiotherapist over 12 weeks. The physiotherapists performed short online assessments at baseline, 3 months, and 9 months. They formulated individualized exercise prescriptions, provided video demonstrations, and sent weekly email reminders. Intervention participants received home exercise equipment such as resistance bands and ankle weights. The main outcome variables were incidence and severity of knee pain and level of physical function.

Although both the control and the intervention groups showed improvement over time, there was a significant difference between the groups, with the intervention group reporting less knee pain and higher levels of physical function at both the 3 month and 9 month time points.

Bennell et al mention several benefits to the online, interactive delivery of the knee pain reduction program. Many study participants lived in remote areas and would have found regular adherence to in-person meetings difficult. All intervention participants reported high levels of satisfaction with the online program, and home exercise adherence was high. The authors conclude that "an online intervention offers an effective, safe, acceptable, and viable alternative to traditional delivery."

Although this study involved online treatment and exercise delivered by physiotherapists to knee pain patients, it seems plausible that health/fitness professionals can also offer effective online personal training sessions and exercise classes. These offerings, if delivered skillfully, have the potential to result in high levels of client satisfaction and adherence, and can reach those in rural areas and those who cannot or do not want to meet in person due to Covid-19. Ideas for improving skills include: learn to effectively use online delivery platforms such as Zoom and Skype; practice teaching and demonstrating appropriate exercises on camera; improve cueing skills for helping clients perform exercises in good alignment remotely (including visual, educational, alignment, safety, imagery, and motivational cues); learn motivational interviewing techniques so you can better understand what the client wants and will commit to doing; utilize behavior change techniques such as short-term goal setting, self-affirmations, and the use of reminders. We all have an opportunity to increase our growth and reach new frontiers during this time. How will you serve?

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