

Introduction to Clinical Exercise:

What is it & why is it needed?

Where We Are Today

- In the United States, adults have decreased their number of steps per day by an estimated 70% since the Industrial Revolution (Booth, Roberts, & Laye, 2012)
- Screen time is estimated to be 7.5 hours per day for children and adolescents, adding up to over 114 days (Centers for Disease Control and Prevention [CDC], 2018).
- Time in front of the television has increased by 1% per year for the past 50 years to a current median time of 4.5 hours per day (Brownson, Boehmer, & Luke, 2005; CDC, 2018)
- More screen time is associated with (Twenge & Campbell, 2018):
 - Lower psychological well-being
 - Less curiosity
 - Lower self-control
 - More distractibility
 - More difficulty making friends
 - Less emotional stability
 - Being more difficult to care for
 - Inability to finish tasks
- The average adult spends only 1%-5% of each day performing moderate-to-vigorous activity (Hamilton, Healy, Dunstan, Zderic, & Owen, 2008)
- Less than 23% of U.S. adults, aged 18-65, meet the recommendations for aerobic and muscle-strengthening exercise (Waters & Graf, 2018)

Chronic Disease

Chronic disease is slow in its progress and long in its continuance, as opposed to acute disease, characterized by a swift onset and short course (Booth et al., 2012; Pedersen & Saltin, 2015; Spivey, 2015). Table 2 lists some examples of chronic diseases.

Table 2

Chronic diseases

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|-------------------------------------------------------|-------------------------------------------------------|
| • Low cardiorespiratory fitness (VO ₂ max) | • Arterial dyslipidemia |
| • Asthma | • Hemostasis |
| • Sarcopenia | • Deep vein thrombosis |
| • Metabolic syndrome | • Cognitive dysfunction |
| • Obesity | • Depression and anxiety |
| • Insulin resistance | • Osteoporosis, osteopenia, and osteoarthritis |
| • Pre-diabetes, type I diabetes, and type II diabetes | • Balance disorders/falls |
| • Cardiovascular disease | • Bone fractures |
| • Peripheral artery disease | • Rheumatoid arthritis and other autoimmune disorders |
| • Pre-hypertension and hypertension | • Various forms of cancer |
| • Stroke | • And some conditions brought about by pregnancy |
| • Endothelial dysfunction | |
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Booth et al., 2012; Pedersen & Saltin, 2015; Spivey, 2015

Newton's third law of motion states for every action, there is an equal and opposite reaction. The reaction to the sedentary lifestyle adopted by a majority of U.S. adults is an overweight and obesity rate of over 70% (The National Institute of Diabetes and Digestive and Kidney Diseases, 2017). More than 63 million U.S. adults complain of joint pain, and by conservative estimates, close to 60% of individuals over age of 60 have some form of arthritis, as do one-third of individuals between the ages of 18-64 (Arthritis Foundation, n.d; Weinstein, Yelin, & Watkins-Castillo, 2015). Close to 50% of the population has at least one chronic disease, and the rate of comorbidities is rising. In adults under age 65, 25% have multiple comorbidities, and by 2030, there will be 70 million people age 65 years and over; and almost 75% will have multiple chronic diseases or conditions (Tinetti, Fried, & Boyd, 2012). Interestingly, at the same time lifespans have increased from about 70 years of age in 1970 to almost 79 years now. However, due to lifestyle shifts, poor nutrition, and increased inactivity,

chronic disease now afflict the population at a younger age, meaning we will have to live with chronic diseases or conditions for a longer time.

The combined result is an unhealthy and aging population, placing undue financial burdens on society, and taxing an already strained health care system. Almost 70% of deaths in the U.S. are attributed to chronic disease, with an associated annual cost of almost \$3.7 trillion in medical expenses and lost productivity. Over \$1.4 trillion is attributed to cardiovascular disease, and obesity, which is by far considered the greatest burden, costs \$1.72 trillion annually (American Public Health Association, 2014; Waters & Graf, 2018).

Clinical Exercise

Physical activity, defined as any bodily movement produced by voluntarily contracting skeletal muscle that results in energy expenditure above a basal level, can positively affect over 30 chronic conditions, making it the best deterrent of chronic disease in primary and secondary prevention. Therefore, the main goal of clinical exercise in the healthcare continuum is to prevent the onset of chronic disease. (Ali & Katz, 2015; Booth et al., 2012; Durstine, Gordon, Wang, & Luo, 2013; Spivey, 2015).

Clinical exercise helps bridge the gap between clinical intervention and conventional fitness programs (Muth, 2007; Williamson, 2010). A medical fitness specialist (MFS) develops exercise programs for individuals or groups that have, or are at risk for, chronic disease or dysfunction, or for individuals who need specialized care (Jacobs, 2018; Spivey, 2015). A MFS can work with clients and groups at risk for chronic disease, have health conditions that may be mitigated or managed by exercise and activity, are newly diagnosed with disease and need exercise guidance, or have completed a medically supervised rehabilitation program, such as cardiovascular or orthopedic, and need to continue to progress.

The Exercise is Medicine (EIM) initiative was established in 2007 as a collaboration between the American Medical Association and the American College of Sports Medicine. The main goal of EIM is to advance physical activity as a method of primary prevention in healthcare, and to encourage physicians to prescribe evidence-based exercise as an intervention in the management of chronic disease. Through interprofessional collaboration, EIM establishes referral networks and clinical teams to compliment and leverage the strengths of each team member to improve population health (Lobelo, Stoutenberg, & Hutber, 2014).

According to the World Health Organization (2010), interprofessional collaboration occurs when multiple health workers from different professional backgrounds work together with patients, families, caregivers, and communities to deliver the highest quality of care. Based on the growing incidence of chronic disease and comorbidities, it makes sense to manage the associated complex health care demands, using a team of providers with varying skill sets to collaborate and deliver the best care possible (van Dongen et al., 2016).

The role of the fitness professional is to work with a client's team of other healthcare providers. Building this medical network indicates a fitness professional's main goal is the wellbeing of a client. The team of providers may include:

- A nutritionist or registered dietitian
- A rehabilitation specialist or physical therapist
- A massage therapist
- A chiropractor
- A mind and body specialist such as Yoga, Tai Chi, or meditation
- A clients' referring physician who is the center of a client's healthcare team, and should be provided regular updates as to a client's progress (Mikeska, 2015; Spivey, 2015)

Discussion and application

1. What is Interprofessional Collaboration and how will it benefit your clients and your business?
2. What are some of the common deficits caused by inactivity, which ones have you experienced in your business, and how have you addressed them?
3. How would you define and describe Medical Exercise?

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