Physical inactivity: A behavioral disorder in the physical therapist's scope of practice

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INTRODUCTION

Physical activity is considered a strategy to improve health. This reasoning implies that physical inactivity is the reference behavior, which is not the case. In health, the gold standard is a state of complete physical, mental and social well-being.¹ Physical inactivity involves a higher risk of cardiovascular disease², hypertension³, diabetes^{2,4}, cancer⁵, depression⁶, and obesity⁷. Moreover, 6 to 10% of all deaths from non-communicable diseases worldwide can be attributed to physical inactivity.⁸ Therefore, physically active individuals appear to be closer to the health gold standard than inactive individuals. Physical activity – not inactivity – should be the standard reference behavior. In this reversed framework, physical inactivity becomes a clinically significant disturbance in an individual's behavior, which is the definition of a behavioral disorder.⁹ Therefore, physical inactivity should be treated as such.

PHYSICAL INACTIVITY DISORDER

During the past two decades, society has encouraged people to be more physically active.^{8,10} As a result, most individuals are now aware of the positive effects of regular physical activity and have the intention to be active.¹¹ Yet, this intention is not sufficient alone, as engagement in physical activity is often not

executed.¹² The World Health Organization (WHO) defines impulse control disorders, a specific type of behavioral disorder, as “the repeated failure to resist an impulse, drive, or urge to perform an act that is rewarding to the person, at least in the short-term, despite consequences such as longer-term harm either to the individual or to others, marked distress about the behavior pattern, or significant impairment in personal, family, social, educational, occupational, or other important areas of functioning.”⁹ Physical inactivity, which is characterized by the repeated failure to resist an impulse, drive, or urge to minimize energy expenditure,¹³ matches this definition perfectly.

DIAGNOSIS

From a health perspective, physical inactivity, also named insufficient physical activity¹⁴, is defined as the failure to meet the recommendations on physical activity for health. The latest recommendations from the WHO¹⁵ and the US Department of Health and Human Services¹⁶ address multiple population groups. Preschool-aged children aged 3–5 years should be physically active throughout the day. Children and adolescents aged 6–17 should do 60 min or more of moderate-to-vigorous physical activity daily. Throughout the week, adults aged 18–64 and older adults age 65 years and above should do at least 150 min of moderate-intensity, or 75 min of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity aerobic activity. They should also do muscle-strengthening activities on 2 or more days a week. Pregnant and postpartum women should do at least 150 min of moderate-intensity aerobic activity a week. Adults with chronic conditions or disabilities, who are able, should follow the key guidelines for adults and do both aerobic and muscle-strengthening activities.

EPIDEMIOLOGY

The most recent data from 1.9 million participants representing 96% of the world’s population shows that more than a quarter of all adults are physically inactive, which represents more than 1.4 billion adults.¹⁴ The prevalence of physical inactivity are highest in Latin America, the Caribbean, high-income Western countries, and high-income Asia Pacific. These data also confirmed previous findings¹⁷ demonstrating higher levels of physical inactivity in women than in men, with some of the biggest differences in south and central Asia, the Middle East, and north Africa. While multiple articles mention a pandemic of physical inactivity,^{17,18} the global prevalence of physical inactivity was stable between 2001 and 2016 with an average change across the 65 countries of less than 0.01%.¹⁴ Yet, wide variations in physical inactivity were observed across countries. Levels of physical inactivity were increasing in 37 countries, whereas they were decreasing in 28 countries. The largest increases (>15%) occurred in high-income countries such Germany and Singapore, while the largest decreases (>15%) occurred in east and southeast Asia.

ETIOLOGY

Recent findings suggest that physical inactivity disorder is caused by the combination of genetic, cerebral, and environmental factors. A study including monozygotic and dizygotic twin pairs assessed the heritability of physical activity and sedentary behavior.¹⁹ A sedentary behavior is defined as any waking behavior characterized by an energy expenditure ≤ 1.5 metabolic equivalents (METs), while in a sitting, reclining or lying posture.²⁰ Results showed that genetic factors explained 47% of the variance in the time

spent in moderate-to-vigorous intensity physical activity and 31% of the variance in the time spent in sedentary behavior. These results suggested that innate biological processes may be driving some of our daily physical inactivity. This suggestion was supported by findings of an electroencephalography study investigating the cortical activity underlying automatic approach and avoidance of physical activity and sedentary behaviors.²¹ Results showed that avoiding sedentary behaviors (vs. physical activity) was associated with higher conflict monitoring and higher inhibition. These results suggest that the human brain is automatically attracted to sedentary behaviors and requires additional cortical resources to counteract this attraction. This suggestion was supported by epidemiological data showing that lower cognitive resources predict higher levels and faster increase of physical inactivity across aging.²² Poor environmental factors such as neighborhood conditions also increase the odds of being physically inactive²³, but higher cognitive resources reduce this adverse influence.²⁴

PATHOPHYSIOLOGY

Physical inactivity disorder is associated with a loss of lean body mass, which is the result of a chronic imbalance between muscle protein synthesis and breakdown.²⁵ This imbalance can be exacerbated during the progression of aging and lead to sarcopenia²⁶, which is characterized by progressive and generalized loss of skeletal muscle mass and strength. Sarcopenia is a major contributor to the risk of physical frailty, functional impairment, poor health-related quality of life, and premature death.²⁷ Physical inactivity disorder is associated with a reduced bone density²⁸, which increases bone fragility and constitutes a risk factor for osteoporosis.²⁹ Physical inactivity disorder is associated with higher fat mass³⁰ and being overweight or obese⁷. Physical inactivity disorder is also a risk factor for cardiovascular disease², hypertension³, diabetes^{2,4}, cancer⁵, and depression⁶.

PROGNOSIS

Based on data from the National Institutes of Health–American Association of Retired Persons, adults who were consistently inactive throughout adulthood were at higher risks for all-cause, cardiovascular disease-related, and cancer-related mortality than physically active individuals.³² Yet, increasing physical activity later in adulthood (40–61 years) was associated with lower mortality risk that was similar to those associated with being physically active across the adult life course (15–61 years). These results suggest that midlife is not too late to begin engaging in physical activity for health.

EDUCATION & REHABILITATION

Physical therapists are experts in physical activity, defined as any bodily movement produced by skeletal muscles that requires energy expenditure – including activities undertaken while working, playing, carrying out household chores, travelling, and engaging in recreational pursuits.³³ This expertise should be used to help people reach the recommendations of physical activity to optimize their health and extend their life, no matter their age. Physical therapists should serve as primary educators regarding the idea that physical inactivity is a behavioral disorder resulting from multidimensional factors. Being aware of these factors, such as our automatic attraction to energetic cost minimization^{13,21}, is the first step towards a more active lifestyle. For instance, greater awareness regarding physical inactivity can lead to the

development of cognitive or environmental strategies to counteract this automatic attraction. Physical therapists should also inform the public that being physically active^{15,16} does not necessarily require specific exercise – a subset of physical activity that is planned, structured, and repetitive³³ – or doing sport – which involves competition. Walking in the street is also a physical activity. Individuals performing the least physical activity benefit most by even modest increases in moderate-to-vigorous physical activity.¹⁶ Physical therapists should emphasize that clients cannot afford to miss out on this inexpensive path to a healthier life. Recommendations emphasize that moving more and sitting less will benefit nearly everyone.¹⁶ Another central point to the rehabilitation of physical inactivity is to monitor the pleasure associated with different intensities of physical activity³⁴. This pleasure is likely to foster longer engagement in the activity, especially when it is experienced at the end of the activity.³⁵ Additional research is required to establish evidenced-based protocols supporting the return to physical activity.

CONCLUSION

Physical inactivity should not be considered a physiological behavior as it perfectly matches the definition of a behavioral disorder. This definition more accurately conceptualizes physical inactivity and clearly emphasizes the necessity to provide care for physically inactive people. Physical therapists are key health professionals in rehabilitating this disorder. This article also highlights the necessity to further investigate the etiology of this disorder. This understanding is critical to the implementation of efficient rehabilitation programs – by physical therapists or in collaboration with other health professionals – to ensure patients receive comprehensive care aiming to cure a physical inactivity disorder.

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