
Effects Of Apathy On Exercise Therapies To Reduce Parkinson Symptoms

One of the most important factors to staying independent as an older adult is the ability to perform daily tasks of living and self-care. The progression of Parkinson's Disease (PD) leads to an increasing inability to perform daily activities, loss of independence, and a decreased quality of life, and it generates socioeconomic and occupational impairments (Morris, Watts, & Iansek, 2009). The most effective interventions that are beneficial not only for PD prevention, but also for most other common chronic diseases, is an increase in physical activity (Ascherio & Schwarzschild, 2016). The potential benefits of exercise in individuals with Parkinson's disease are an area of active investigation, including randomized trials.

An inverse relation between amount of physical activity and PD was first prospectively reported in the Neurology (2005) and substantiated in five additional longitudinal studies (the Harvard Alumni Health Study (2006), the CPS-IIN (2008), the NIH-AARP Diet and Health Study (2010), the Finnish Mobile Clinic Study (2014), and the Swedish National March Cohort (2015)). The combined results of these studies show that frequent moderate or vigorous physical activity is associated with a reduction in PD risk and development of symptoms, such as bradykinesia, rigidity, tremor, and postural instability. Especially when associated with decreased activity and a sedentary lifestyle due to apathy, the impairments in PD accelerate the decline in motor function.

PubMed, CINAHL, and Embase electronic literature searches were conducted to find current research using exercise therapy as an adjunct to pharmaceuticals in the relief of PD symptoms. Following key words and MeSH terms were used: Physical therapy, exercise therapy, L-Dopa, dopamine, therapy, pharmacology, Parkinson's disease, symptoms, tremors, routine, administration, and nervous system. The following limitations were applied: full text, abstract available, English language, last 5 years research article, peer reviewed and human subjects only. Of the most appropriate level IV articles (Polit & Beck, 2012), four are described in detail in Table 1, which include one from PubMed, two from CINAHL, and one from Embase.

The pathophysiology of tremor in Parkinson disease (PD) involves a complex interaction between central and peripheral mechanisms. The therapeutic response of tremor to dopaminergic medications is generally unpredictable as no drug has been proven to consistently relieve the symptom (Jitkriksadukul et al., 2015). Dopamine replacement strategies, either through pharmacological or non-pharmacological means, like exercise, are effective for many motor symptoms. Throughout the disease course, essentially all patients with PD will receive treatment with L-DOPA. In a healthy individual, L-DOPA is converted by amino acid decarboxylase to dopamine within dopaminergic neurons and is released via normal synaptic and non-synaptic mechanisms. In Parkinson's disease, conversion sites for L-DOPA to dopamine diminish progressively, causing the PD symptoms (Svenningsson et al., 2015). Therapeutic options for PD should not be limited to interventions that involve basal ganglia and cerebellar circuits like pharmacologic therapies or surgical procedures (Bloem, de Vries, & Ebersbach, 2015).

A physical activity that has had some success in preventing fall injury is strength training. These

exercise programs target the fall risk factors of balance, leg strength, and freezing of gait. Although falls were only significantly reduced in those with milder forms of PD, there were signs of improved physical and psychological health overall with strength training (Canning et al., 2015). Physical rehabilitation is commonly used in patients with PD. Both strength training and aerobic training have been shown to be effective to improve their health and alleviate the symptoms of PD patients (Carvalho et al., 2015).

The willingness to do exercise and strive for self-improvement must be fueled by a desire to reach certain physical goals. Not having the desire to overcome obstacles in life, such as a neurodegenerative disorder like PD, combined can make outcomes detrimentally worse. Apathy is highly prevalent in Parkinson's disease and can severely affect the quality of life of both patients and caregivers (Pagonabarraga et al., 2015). The integrity of subcortical structures that link the prefrontal cortex with the limbic system is necessary for human motivation. Dopaminergic treatment of Parkinson's disease is the frontline intervention when it comes to staving off apathy and other symptoms.

Apathy is a frequent neuropsychiatric disturbance that can precede the onset of the first motor symptoms of PD (Pont-Sunyer, Hotter, & Gaig, 2014). Apathy seems to decrease after introduction of dopaminergic treatment and is a key symptom of the worsening of PD as the disease progresses; predictive of decreased functioning in activities of daily living, decreased response to treatment, poor outcome, and diminished quality of life. (Dujardin et al., 2009). Dopaminergic drugs in combination with exercise therapy to improve the emotional and behavioral aspects of motivation, and for cholinesterase inhibitors to treat the cognitive aspects of apathy, is what the current literature points to as the most effective treatment. (Drijgers et al., 2009).

It can be concluded that physical training associated with pharmacologics contributes synergistically to improving the PD treatment response and should be prescribed by healthcare providers to improve the mental and physical health of patients. Even with optimal dopaminergic treatments and physical activity, many patients with Parkinson's disease are frequently incapacitated by apathy, accelerating the disease process. We should give patients all the tools they need to have the best chance at their success.