

Parkinson Disease Aerobic Training

Produced by: Parkinson Disease Knowledge Translation Task Force

Fact Sheet

Physical therapists should implement moderate- to high-intensity aerobic exercise to improve oxygen consumption (V_{O2}), reduce motor disease severity, and improve functional outcomes in individuals with Parkinson disease

Types individuals with PD who would most/least benefit from the intervention

- Studies have been predominately conducted on individuals with mild-moderate PD (H&Y 1-3)
- For those with balance deficits (H&Y 3-4), stationary biking should be considered to minimize the risk of falls while still allowing the participant to achieve the FITT principle

How to perform the intervention

- Frequency: 3x/wk
- Intensity: moderate (60% to 75% of maximum HR) to high (75% to 85% of maximum HR)
- Time: 30-40 minutes
- Type: Stationary cycling and treadmill walking appear to have the same benefit; it is unclear if speed or incline is superior when performing treadmill walking.

What does it improve?

What does aerobic exercise improve?	Tools for Assessment
Cardiovascular fitness/Oxygen consumption	VO ₂ max, 6 minute walk test
Motor and non-motor symptoms	Movement Disorder Society – Unified Parkinson's Disease Rating Scale (MDS-UPDRS) <ul style="list-style-type: none">• motor portion (III)• non-motor portion (I, II, IV)
Quality of Life	Parkinson's Disease Questionnaire (PDQ)-8 or PDQ-39

Considerations related to safety (precautions, contraindications; when should you NOT choose the intervention; consider including info from the CPG that has "Exclusion" sections)

- Therapists should follow appropriate screening procedures to ensure there are no other medical conditions (eg, cardiac) that would preclude engagement in moderate- to high-intensity aerobic exercise.
- Benefits **have** not been assessed in individuals with more advanced disease (Hoehn and Yahr 4 and 5)
- Take appropriate precautions to prevent falls (eg harness system, selection of cycling over treadmill walking for those with freezing of gait or at high risk for falls);
- Therapists should assess patient performance in the clinic to ensure appropriate vital sign response and overall safety before prescribing aerobic training at home or in the community.



- Considering the prevalence of autonomic dysfunction in PD, RPE should be considered as a measure of intensity if HR does not respond as expected. On a 6-20 point Borg Scale, a RPE of 12-13 is considered moderate intensity; 14-17 is considered vigorous intensity
- Mild incidence of musculoskeletal pain can occur. Gradual progression of the duration and intensity is recommended to reduce the risk of injury.
- Screen for orthostatic hypotension and manage if identified

Considerations for exercise progression

- Progression of intensity can be done by manipulating variables such as speed, resistance/load, or incline/grade.
- Use of equipment (treadmill, recumbent cycling, elliptical or stair climber machines) allows therapists to selectively control of variables that affect intensity. The home health and acute care settings may not have equipment available with which to assess and train PwPD.
- In the outpatient setting, it is important to explore community based resources to enhance consistent follow through if the patient does not have the equipment or means to safely perform aerobic exercise at home.

Considerations for cost, space

- Geographical area: if the individual can implement a program safely outdoors without added cost (sidewalks, local parks, hiking)
- Local indoor/ mall walking opportunities (free of cost and temperature controlled. Individuals will need to drive, have a ride, or take local transportation)
- Access to home cardiovascular equipment on an individual basis (can the individual support the financial investment and do they have the space in their home environment?)
- Access to a local fitness facility with cardiovascular equipment and the cost of a membership (Individuals will need to drive, arrange a ride, or take local transportation):
 - Senior Center
 - Local fitness center (YMCA's often have senior programs and discounts)
 - Local outpatient clinics that have a gym attached for individuals to continue their home programs
 - Hospital based fitness center
 - Non-profit based neurological fitness centers

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