Get Up and Go: How Exercise Can Treat Your Parkinson’s Disease

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“If you have Parkinson Disease, make exercise a priority and take it as seriously as the medications you take.”
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Overview

- Motor Impairment in Parkinson’s Disease
- Types of Exercise
- Motor Symptom Benefits of Exercise
- Non Motor Benefits of Exercise
- Neuroprotective??
- Exercise Recommendations
- Tips to keeping motivated
Motor Impairment in Parkinson’s Disease

- Compared to their healthy peers patients with PD have:
  - Reduced muscle strength
  - Reduced walking speed
  - Postural instability

- Postural instability and gait dysfunction are associated with worsening activities of daily living and increased number of falls.

- Frequent falling can lead to serious injuries such as hip fractures or head injuries and can be associated with loss of independence.
Why Exercise?

- Unfortunately medications do not provide significant improvement on symptoms such as gait disturbance and postural instability.

- Exercise is an essential part of treating Parkinson’s Disease as it may be associated with slowing motor deterioration and prolonging functional independence.
Why exercise?

- Research has shown exercise is associated with improved gait, balance, flexibility, and motor coordination.

- Studies have shown that physically active patients had a lower mortality rate, better quality of life, and increased function in activities of daily living than less active individuals with PD.
Types of Exercise

- Research shows that the best benefit of exercise is when using a combination of:
  - Aerobic Exercise
  - Stretching
  - Resistance Training

- No one modality is superior to the other and given that there are several types of impairment in PD, patients are likely to get the most benefit by using a combination
Aerobic Exercise

- Aerobic walking in patients with Parkinson’s Disease is associated with improved:
  - Aerobic fitness
  - Motor function
  - Fatigue
  - Mood
  - Quality of life

- Treadmill training is shown to improve gait speed, postural instability, stride and step length
Aerobic Exercise

- Jogging
- Walking
- Cycling
- Swimming
- Dance
- Tennis
“Sometimes it’s good to change your walking routine. Try walking around the block instead of wandering around the kitchen.”
Forced Exercise

- A mode of aerobic exercise in which the participant is assisted to achieve and maintain a rate higher than their preferred voluntary rate

- Examples include
  - Walking on a treadmill at a higher speed than normal
  - Using a tandem bike, forcing the participant to pedal faster than typical speed
Forced Exercise

- The effects of forced exercise were found serendipitously when a patient who had been using a tandem bike reported improvement of her Parkinson's symptoms including tremors and changes in handwriting.

- She was evaluated and found to have improvement in her physical exam that had been previously documented.

- This discovery has led to further research on how forced exercise can impact Parkinson’s symptoms with research showing up to 35% improvement in symptoms.

- In animals forced to participate in forced exercise, release of hormones involved in repairing cell damage as well as changes in dopamine have been found.
Forced Exercise

• Pedaling for Parkinson’s
  • Several branches affiliated with the YMCA have opened to allow patients to participate in a tandem exercise program that uses forced exercise
  • Patients not only feel that motor symptoms are improved but also find the social aspect rewarding

• Florida branches:
  • Sarasota
  • Venice
  • Orlando
Forced Exercise
Resistance Training

• Associated with increased muscle strength and endurance and is likely to result in improved gait parameters and functional mobility.

• With age and a sedentary lifestyle loss of muscle mass is inevitable. Resistance training is important for preventing this.

• Muscle mass and strength are important for daily activities and to maintain balance.

• Additionally, strengthening postural muscles may help to maintain a more upright posture.
Resistance Training

- Does not have to include lifting heavy weights.
- Repetitions with light weights or resistance bands can be just as effective.
- Other alternatives to lifting weights include:
  - Activities in a standing position to strengthen legs
  - Modified squats
  - Repetitively rising and sitting from a chair
  - Wearing ankle and wrist weights around the house or out on a walk
Stretching

- PD patients are known to have abnormally flexed posture with shortened flexor muscles including their hip flexors, hamstrings and pectoral muscles.

- Decreased ROM of the trunk is associated with poorer function and improving this can help
Yoga

- Patient’s that participate in yoga experience improvement in
  - Motor scores
  - Balance
  - Flexibility
  - Depression
  - Quality of life measures
  - Memory scores
Specific Exercise Programs

• Skill based exercises can show a greater improvement than pure aerobic exercises by also focusing on a complex set of movements that require balance and coordination, stopping and starting movement, and flexibility
Specific Exercise Programs

- **Tango Dancing**
  - Groups that participate in Tango dancing for 12 weeks have improvement of motor function off medications greater than 25%
  - Improvement in balance and movement noted

- **Tai Chi**
  - A form of exercise that involves a series of movements performed in a slow purposeful manner with accompanying deep breathing exercises
  - Study had patients do this 2 times/week for 24 weeks and showed improved functional outcomes and postural instability
  - Patients also showed improved gait speed and stride length
Tango Dance
LSVT BIG Therapy

- Specialized form of physical and occupation therapy designed for patients with Parkinson’s Disease
- Helps patients to develop skills to make movements BIGGER and faster
- Can be particularly useful for patients with freezing of gait as well as improve the ability to arise from a chair, start and stop movement, and turning
Parkinson Wellness and Recovery

- Designed by the creator of LSVT BIG therapy
- Offers a more advanced form of therapy that again focuses on movements that are high amplitude and effort to fight the smaller movements seen in PD.
- Goal of therapy is to provide real world improvement in tasks such as dressing, getting in and out of the car, turning, and arising from the chair.
- The therapy also takes into account the cognitive impairment that can be present in PD.
Parkinson Wellness and Recovery
Non-Motor Symptoms That Benefit

- Depression
- Memory Loss
- Fatigue
- Constipation
- Sleep disturbance
Depression

- Depression is common in patients with Parkinson’s Disease and exercise has been shown to improve depressive symptoms in patients with neurologic disorders.

- Patients that exercise have a greater sense of well-being, even across all stages of severity.
Memory Loss

- Parkinson’s Disease is associated with both mild cognitive deficits and dementia.
- Up to 30% of patients with PD will go on to develop dementia.
- Several studies support that regular physical exercise can reduce the risk of developing memory loss.
Fatigue and Sleep Disturbance

- Fatigue is a commonly reported problem in patients with PD. Regular physical exercise can help fight fatigue as well as lead to a more restful sleep at night.

- Better sleep is associated improvement in your PD symptoms.
Constipation

- Up to 50% of patients with Parkinson’s Disease will experience problems with constipation during the course of their disease.

- In addition to being associated with bloating and abdominal discomfort, the slowed motility time with constipation can impair the effectiveness of your medications by slowing absorption which can contribute to motor fluctuations.

- Regular physical exercise can be highly effective at reducing constipation where as a sedentary life style can worsen it.
What happens in your brain when you exercise?

- Parkinson’s Disease is characterized by a loss of dopamine in your brain.

- Scientists have looked at what happens with dopamine in your brain when you exercise.

- Although exercise does not increase dopamine levels in your brain, they have found that it influences the way dopamine is handled in the brain and have found that with exercise dopamine becomes handled more efficiently.
Neuroprotective?

- Neuroprotection refers to a treatment that actually slows or halts the progression of a neurodegenerative disease like Parkinson’s Disease.

- Currently there are no known neuroprotective treatments in PD.

- There is ongoing research looking at the role of exercise in slowing PD as animal models suggest that this may be the case.
When to start? NOW

• Patients at any stage in Parkinson’s Disease can benefit from exercise

• Stages of intervention:
  1. Pre-habilitation: start before there is a problem
  2. Rehabilitation: fix the problem
  3. Preservation: do not lose what you have
  4. Prevention: do not add any new problems
When to start?

- Prior to starting any new exercise regimen, first clear the program with your doctor so that you can make sure you are safe to participate.

- If you have not been active in awhile, consider working with a physical therapist or personal trainer so that you can learn how to do exercises safely and correctly.

- Start off slow and increase the amount a little each time.
Making the most of your workout

- Limit distractions

- Exercise at a time when your medication is working at its peak. You want to give yourself the best chance you can at having a successful workout. This will also decrease risk of injury with exercise

- Exercise your “best time of day.” Most PD patients have a time of day that their symptoms are the least severe. Schedule your workout times to correlate with this
Tips to staying motivated

- Find something that you enjoy doing
- Add variety
- Make exercise part of your daily routine
- Exercise with a friend or your spouse
- Set realistic goals for yourself and break them up into small steps
- Tell others about your goal so feel you obligated to stick with it
“What fits your busy schedule better, exercising one hour a day or being dead 24 hours a day?”
IF IT DOESN'T CHALLENGE YOU, IT DOESN'T CHANGE YOU
References

- Fuzhong Li, Ph.D., Peter Harmer, Ph.D., M.P.H., Kathleen Fitzgerald, M.D., Elizabeth Eckstrom, M.D., Tai Chi and Postural Stability in Patients with Parkinson’s Disease. NEJM. February 9, 2012.


