Why Activity and Exercise are Important for Living Well with Parkinson’s Disease

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Activity is important!

- Low activity leads to
  - Poor cardiovascular health
  - Reduced physical function

- Recommended activity levels for all folks
  - 150 min/wk of moderate to vigorous activity
  - 10,000 steps / day
Low activity in PD

Associated with:
- Motor symptom severity
- Fatigue
- Sleep problems
- Depression
- Poor cardiovascular health
- Low physical function

What is the cause and what is the effect?
Activity levels for people with PD

- **Steps taken a day**
  - Early to moderate PD: 4700 to 5400
  - Recent PD diagnosis, not yet on meds: ~5200
  - People without PD: 7800

- Even very early in PD, people tend to be sedentary or engage in light physical activity only (95% of the day in one study)
People with PD (n=699) are 1/3 less active than older adults generally (n=1,959)

Activity levels decline with increasing disease severity

Over one year:

- daily steps declined 12%
- moderate intensity walking declined 40%

van Nimwegen et al, J Neurol. 2011;258:2214-21.
**Intensity of activity**

- **Sedentary**
  - Sitting, Lying down, Sleeping!

- **Low**
  - Causal walking, bicycling <5 mph, stretching, light weight training, slow dancing

- **Moderate**
  - Brisk walking (3-4.5 mph), walking uphill, hiking, aqua aerobics, weight training, boxing, most aerobic machines

- **High**
  - Race walking, jogging/running, back packing, vigorous calisthenics, karate, vigorous dancing, boxing/sparring
The ParkFit trial (n = 586)

- A 2-year study comparing
  - physical therapy emphasizing physically active lifestyle (ParkFit Program)
  - general physical therapy (ParkSafe Program)
- Included goal setting, overcoming barriers to exercise, recruiting social support, coaching by the physical therapist (PT), and activity monitor with visual feedback for daily activity levels.
- Lasting change in exercise behavior

14 day physical activity improved
  • 90 min. / week increase with ParkFit
  • 30 min. / wk increase with ParkSafe.

Walking endurance (6 min walk test) greater at 24 mo. With ParkFit

van Nimwegen et al BMJ. 2013;346:f576
Possible barriers to activity

- Deconditioning
  - Cardiovascular
  - Muscle
- Balance difficulties
  - Instability
  - Difficulty coordinating eye/head movements
- Fear

Guided exercise can help to overcome some of those barriers
Activity is important for health in general.

Low activity is associated with a number of problems for people with PD.

Possible strategies to increase activity:
- Start slowly, build gradually but consistently.
- Consider some form of step counter.
- Join activities that encourage activity!
‘Exercise’ vs. ‘Activity’

- **Exercise** refers to specific regimens to improve specific underlying problems (e.g., balance, gait, flexibility etc); often is supervised

- **Physical Activity** refers to any movement of the body that uses energy (e.g., walking, hiking, gardening)
Specific exercise also can make a difference

- Studies that inform exercise
  - Cardiovascular
  - Flexibility
  - Strength
  - Balance
  - Combinations
Underlying deficits affect function in PD

- Range of motion of the neck and back influences balance
- Cardiovascular condition affects overall function
- Strength deficits occur commonly in PD
Exercise intervention can make a difference

- 39 studies of physical therapy vs. placebo or no Intervention: 1518 participants

Conclusions
  - Most short-term benefits were small but of a size that patients would consider meaningful.
Benefits of Exercise compared with control

- General physical therapy
- Exercise
- Treadmill
- Cueing
- Dance
- Martial arts
Findings From 5 Additional Recent Studies

- Flexibility (Schenkman)
- Aerobic endurance (Schulman)
- Resistive strengthening (Corcos; Li)
- Tai Chi (Li)
Various types of exercise show benefits
Exercise and activity are not the same
Both play an important role
Lessons yet to be learned about the role of each
Is vigorous activity important?

- Midlife, regular exercise reduces risk of subsequent PD
- Exercise reduces cognitive impairment in older people with / without dementia
- Animal models – physical exercise enhances brain plasticity

J Eric Ahlskog. *Neurology* 2011;77;288
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Does exercise slow PD symptoms?

Multicenter Trial
Compare 2 intensities of aerobic ex on a treadmill to no ex

- 60-65% HRmax
- 80-85% HRmax
- Wait listed control

Exercise 4X / wk for 6 mo. with option to exercise for another 6 mo.

Moore et al. Contemporary Clinical Trials 2013;36:90-98
124 / 126 participants randomized to date
  • Only 10% withdrawal

Outcomes anticipated in about a year!
Next steps

- Translate evidence from research studies of exercise and PD to long term real life application.
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