

How to Exercise Safely and Consistently While Living with Parkinson's

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Outline

1. How do we move?
2. What is “*Exercise*”?
3. Applications of exercise for Parkinson’s

GOAL – provide you with information and tools you need to exercise safely and effectively!

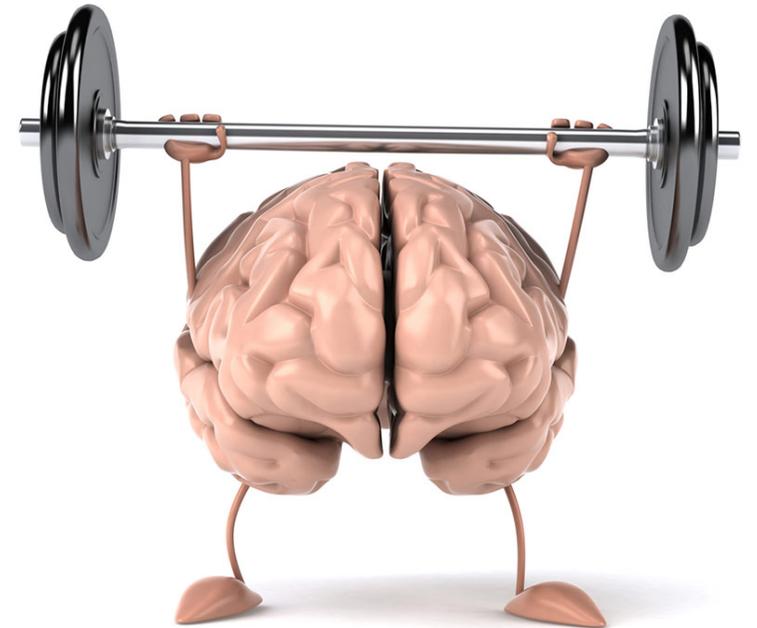
How do we move?

- Parkinson's-related changes to movement and body systems

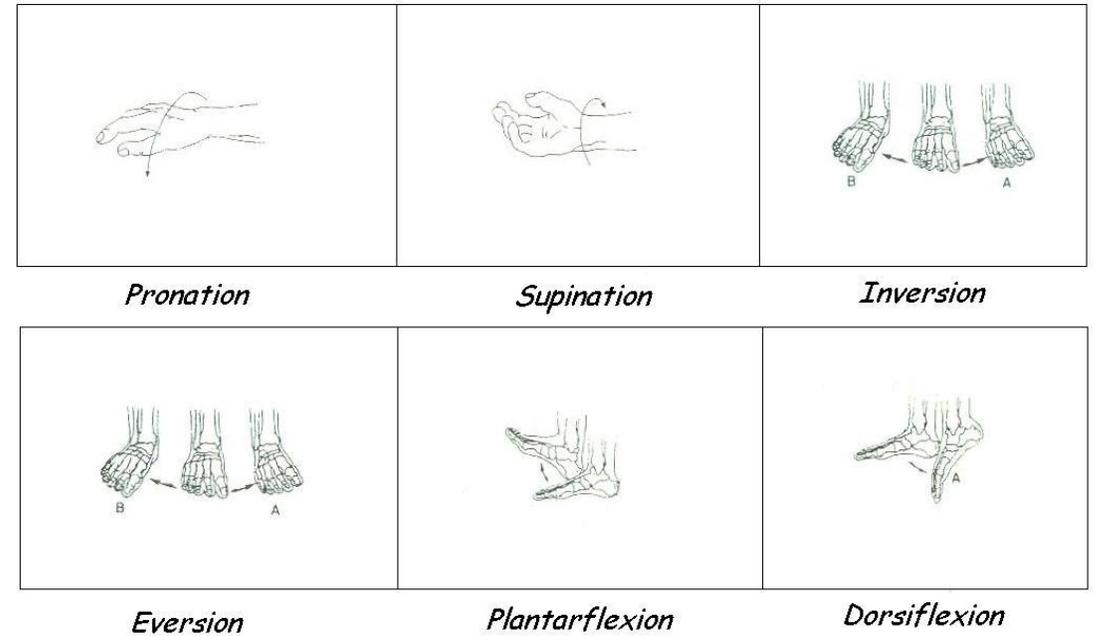
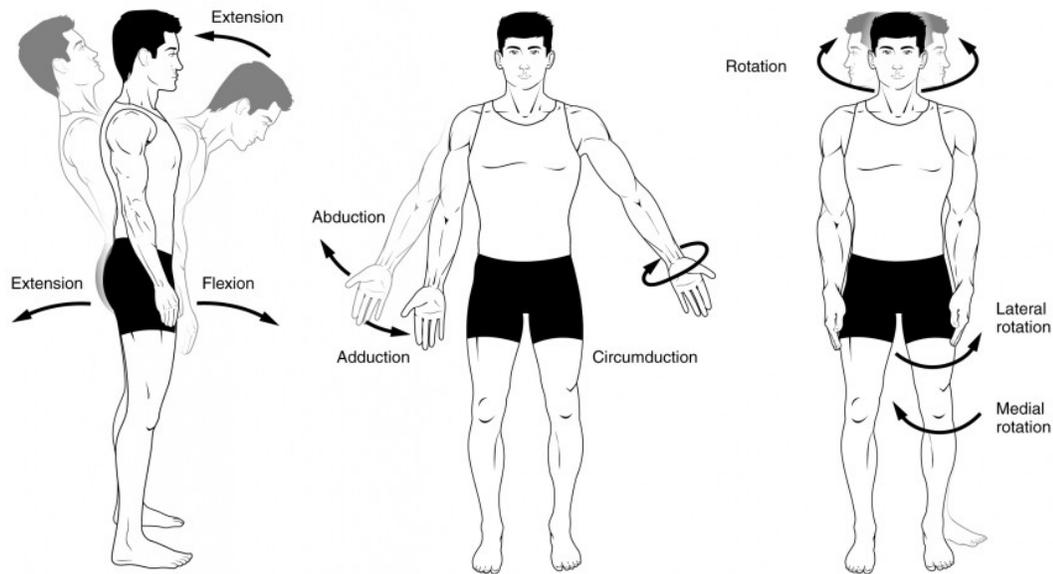
How Does the Body Move?

- Higher brain (decision)
- Brain stem (movement coordination)
- Central nervous system (sends signal)
- Muscle cells (i.e., bundles of fibers) contract or relax
 - **FORCE and MOTION =**

i.e., when a muscle moves an attached bone, or when holding an upright posture

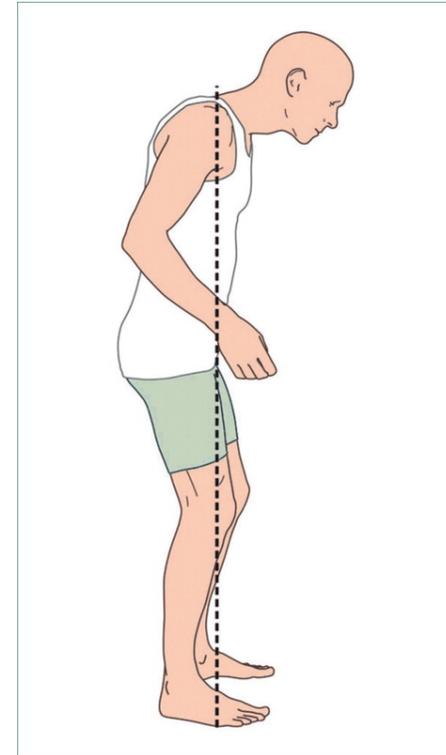
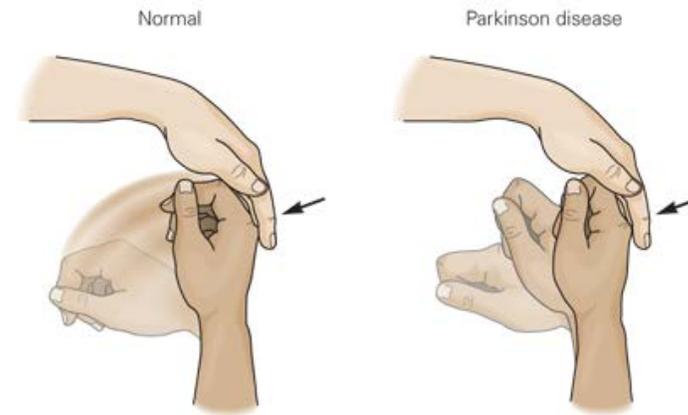


Types of Movement



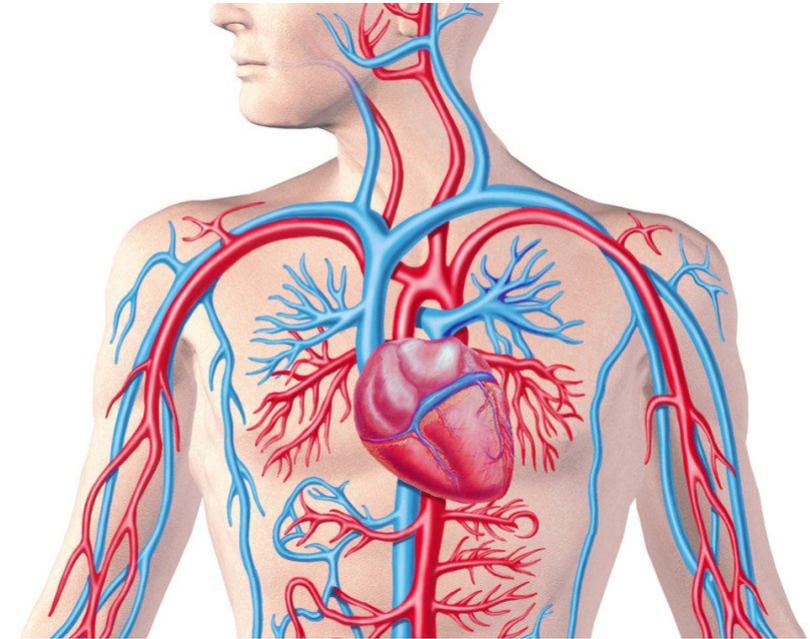
What happens to our skeletal muscles with Parkinson's?

- Increased muscle tone (also known as *rigidity*) during an entire range of motion
- Weakness
- Differences in extensor vs. flexor
- Slower movement velocity
- Less movement force



What about our cardiovascular system in Parkinson's?

- Cardiac and smooth muscles are managed by autonomic nervous system (ANS)
- Supplies body with **blood** and **oxygen**
- **Orthostatic hypotension:** failure of ANS to regulate blood pressure in response to postural changes



What is Exercise?

Different Terms, Different Meanings!

Exercise

Physical activity

Inactivity

Sedentary

Canadian Physical Activity Guidelines

FOR OLDER ADULTS - 65 YEARS & OLDER

Guidelines



To achieve health benefits, and improve functional abilities, adults aged 65 years and older should accumulate at least 150 minutes of moderate- to vigorous-intensity aerobic physical activity per week, in bouts of 10 minutes or more.



It is also beneficial to add muscle and bone strengthening activities using major muscle groups, at least 2 days per week.



Those with poor mobility should perform physical activities to enhance balance and prevent falls.



More physical activity provides greater health benefits.

Let's Talk Intensity!

Moderate-intensity physical activities will cause older adults to sweat a little and to breathe harder. Activities like:

- Brisk walking
- Bicycling

Vigorous-intensity physical activities will cause older adults to sweat and be 'out of breath'. Activities like:

- Cross-country skiing
- Swimming

Being active for at least 150 minutes per week can help reduce the risk of:

- Chronic disease (such as high blood pressure and heart disease) and,
- Premature death

And also help to:

- Maintain functional independence
- Maintain mobility
- Improve fitness
- Improve or maintain body weight
- Maintain bone health and,
- Maintain mental health and feel better

Pick a time. Pick a place. Make a plan and move more!

- Join a community urban poling or mall walking group.
- Go for a brisk walk around the block after lunch.
- Take a dance class in the afternoon.
- Train for and participate in a run or walk for charity!

- Take up a favourite sport again.
- Be active with the family! Plan to have "active reunions".
- Go for a nature hike on the weekend.
- Take the dog for a walk after dinner.

**Now is the time. Walk, run,
or wheel, and embrace life.**

What Exercise Challenges do People with Parkinson's Face?

- Inconsistency
- Too much too quick
- Inappropriate
- Lack of Parkinson's-educated instructors
- Environmental barriers (access, costs)
- Motivation (apathy)
- Lack of support
- Physical barriers (pain, fear, fatigue)

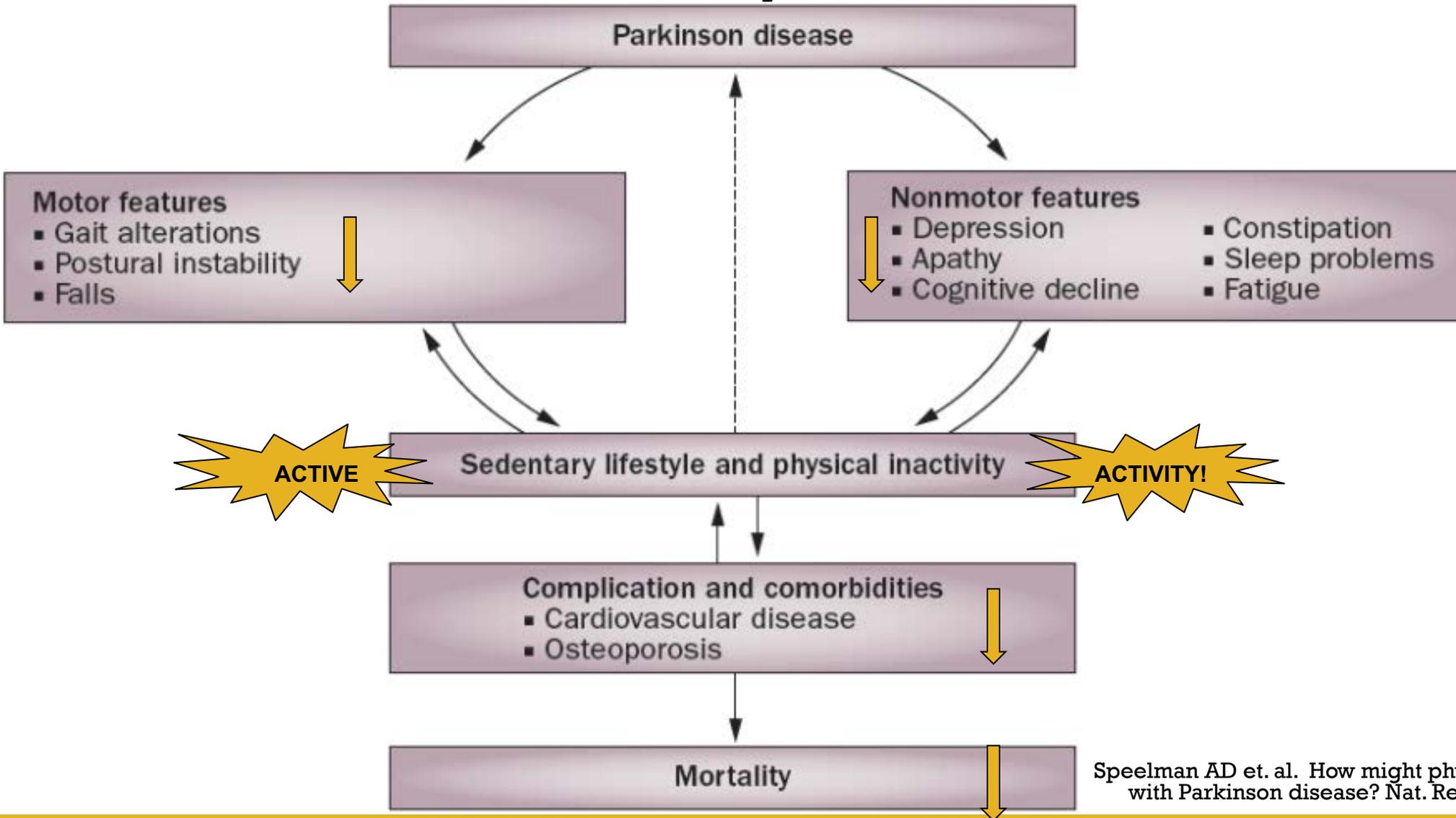


Your Exercise Support Team

- Physician / Neurologist
- PT, OT
- Certified Exercise Instructor
- Yoga Therapist / Teacher
- Kinesiologist
- Massage Therapist
- Osteopath
- Friends, family, exercise-buddy
- **YOU!**

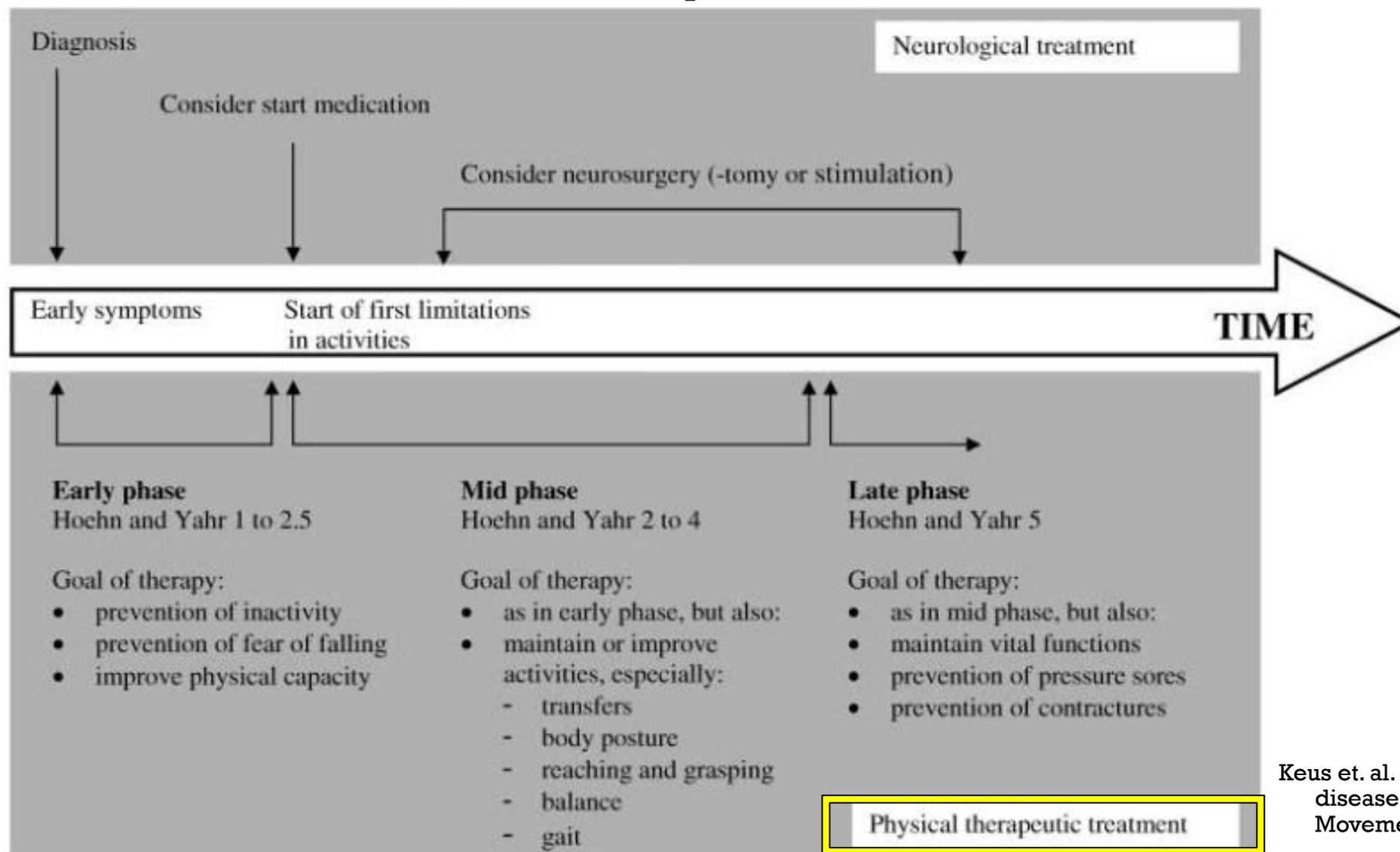


Models of Exercise, Activity and Rehabilitation



Speelman AD et. al. How might physical activity benefit patients with Parkinson disease? *Nat. Rev. Neurol.* 7, 528–534 (2011).

Models of Exercise, Activity and Rehabilitation



Keus et. al. Physical therapy in Parkinson's disease: evolution and future challenges. *Movement Disorders* 2009; 24 (1): 1-14.

Principles of Exercise in Parkinson's

- Targets Parkinson's symptoms
- Challenging / progressive
- Large amplitude movements
- Functional movements
- Neuro-plasticity approach

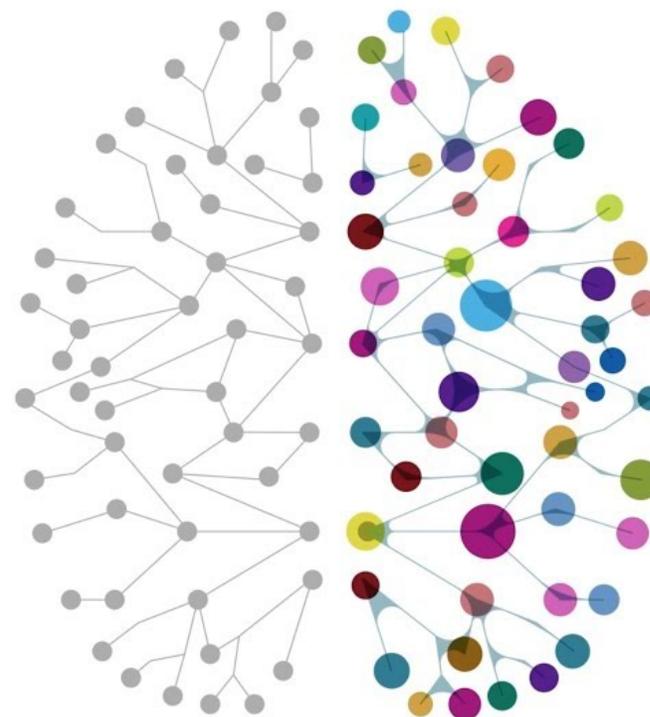
- 1. Intense**
- 2. Complex**
- 3. Rewarding**
- 4. Habitual “Use it or lose it”**
- 5. Start early**

What is Neuroplasticity and Why Do We Care?

The brain continually reorganizes itself by forming new neural connections throughout life
These changes are influenced by behaviour, environment and neural processes

The Brain Benefits of Exercise

- Prevent loss of dopamine
- Improves use of remaining dopamine
- Improves function of dopamine circuitry
- Increases ability to fight free radicals
- Increases levels of neurotrophic factors
- Decreases inflammation in the brain

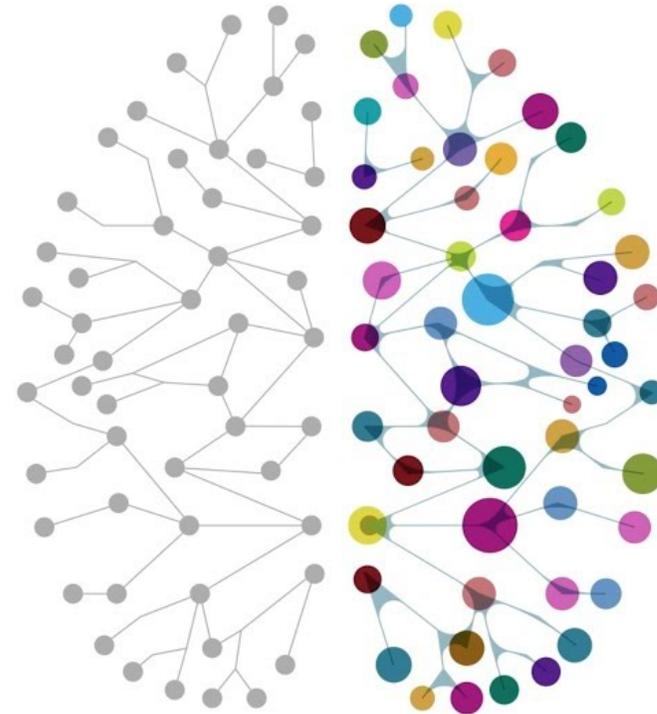


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How do we consider this in exercise?

- Starting with aerobic exercise makes the brain environment more susceptible to change
- Incorporate skills-based exercise
- Needs to be long-term and progressive



What do people with Parkinson's do to feel good and live well?

- **LSVT BIG / PWR!**
- **Cycling** - gait, balance, bradykinesia
- **Boxing** - posture, balance, self-esteem
- **Tai Chi** - balance and falls risk
- **Yoga** - balance, lower body stability, spinal health, mood, sleep
- **HIIT** - motor scores, CV health



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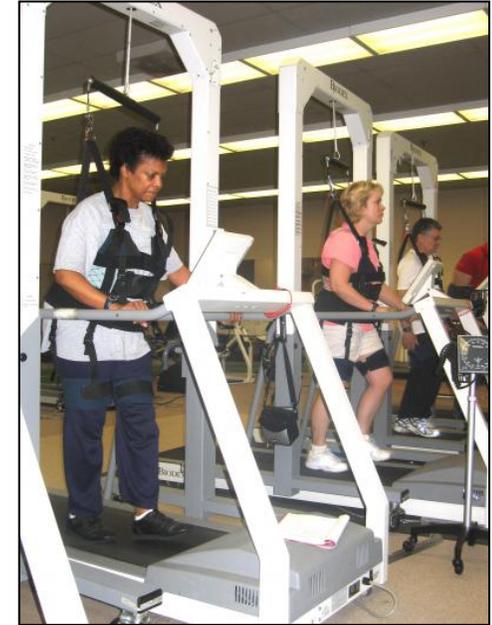
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Applications of Exercise

Why do some exercises work better than others?

How can we apply exercise to address the specific symptoms of Parkinson's?

Cueing and/or Attentional Training

- In Parkinson's, mechanisms that **initiate movement** are affected
- Cueing may improve physical performance because they utilize intact premotor cortex (not BG circuitry)
- Focus may also help **cope** with day-to-day physical and cognitive challenges



Rigidity

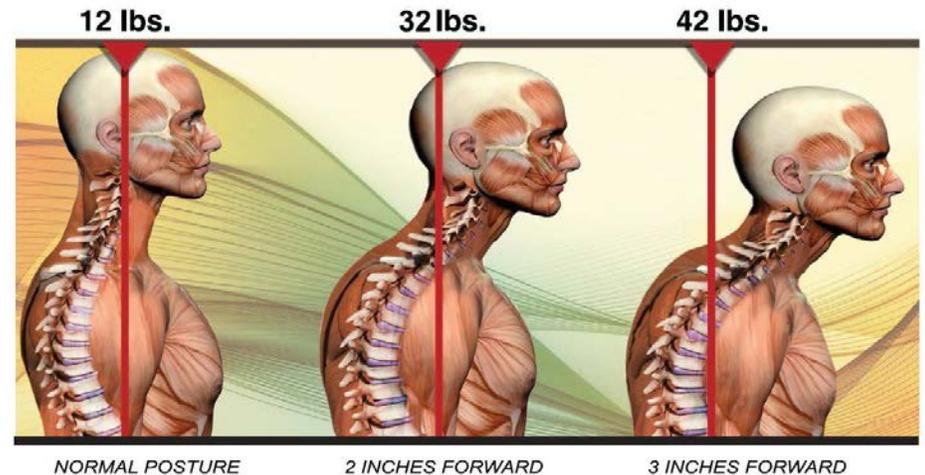
- Perform exercises slowly, rhythmically with sustained effort
- Hold exercises for shorter periods of time
- Move in-and-out of exercises
- Don't forget chest and face!



Posture and Core Muscles

- Due to postural instability or tight flexor and weak extensors
- Strengthen transverse abdominals and spinal extensors
- Stretch your hip flexors
- Focus on shoulder mobility

How Heavy is Your Head?



42 Pound Head

"For every inch of Forward Head Posture, it can increase the weight of the head on the spine by an additional 10 pounds."

Kapandji, Physiology of Joints, Vol. 3

Lower Body Muscles

- Start with your feet!
- Strengthen back of legs and lengthen front of legs



Balance

- Imbalances in
 - Front/back, left/right
 - Physical, energetic
- Build a connection with self
- Pay attention to feet
- Rock side-to-side
- Notice differences in sides



ACTION STEPS

- Use exercise to help you **move better** throughout your day
- Don't forget to **challenge** yourself (body and brain!)
- Use exercise/activity as a way to **build relationship with yourself** (check in! connect! pay attention!)