

Your PD Coach: Re-defining the Relationship with Your Physical Therapist

Presenters:

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Who are we?

- **Angela Rusher, PT**

- Assistant Director of Clinical Education & Instructor, Samuel Merritt University
- Board-Certified Clinical Specialist in Neurologic Physical Therapy
- PWR!Moves Certified Therapist, Parkinson Wellness Recovery

- **Jason Hardage, PT**

- Associate Professor, Samuel Merritt University
- Board-Certified Clinical Specialist in Geriatric Physical Therapy
- Board-Certified Clinical Specialist in Neurologic Physical Therapy
- Registered Yoga Teacher (RYT 500), Yoga Alliance
- PWR!Moves Certified Therapist, Parkinson Wellness Recovery

Objectives

Balance Systems and Fall Prevention

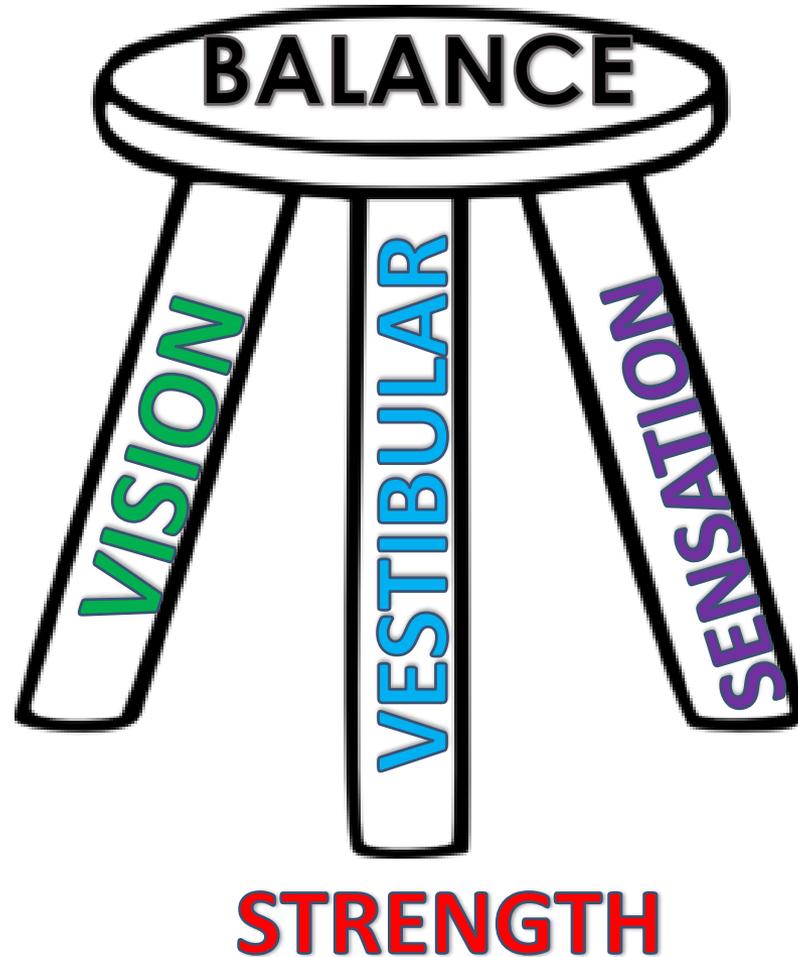
Exercise Recommendations and Movement Principles

Physical Therapist as Coach

Wellness Planning

Tying it all together: What can I do NOW?

Components of Balance



Factors Affecting Your Balance Systems – General Population

- **Vision**

- Vision changes as we age
- Co-morbid factors: DM retinopathy, macular degeneration
- Bifocals, Trifocals, and Progressive Lenses while walking

- **Sensation/Somatosensory**

- Peripheral neuropathy

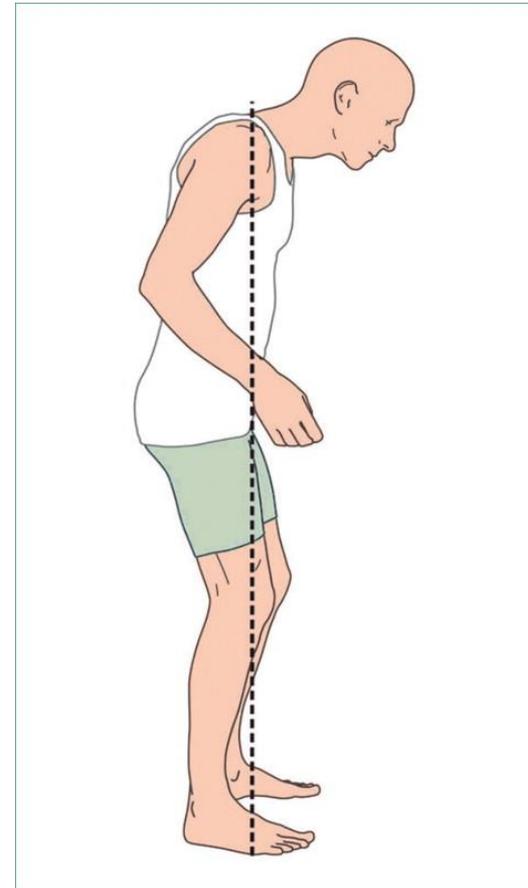
- **Vestibular**

- Decreased head movement with age or immobility
- Reliance on other balance systems

Parkinson's and Postural Instability

Faulty Processing of:

- *Sensory organization:*
 - One or more of the orientational senses (visual, vestibular, and somatosensory) are involved and integrated within the basal ganglia.
- *Motor adjustment process:*
 - provides a properly scaled neuromuscular response (anticipatory, reactionary)
- *Background muscle tone:*
 - Hypertonic in PD



Parkinson's and Postural Instability

Sensory Organization

Visual	Vestibular	Somatosensory
<ul style="list-style-type: none">▪ Decreased visual acuity + contrast sensitivity▪ Decreased eye movements, motion perception, visual processing speed▪ <u>Over-reliant</u> on visual information	<ul style="list-style-type: none">▪ Delayed and decreased righting reactions▪ Delayed and decreased postural reactions to head movements▪ “Hypofunction” due to slow movement or immobility	<ul style="list-style-type: none">▪ Decreased limb position sense▪ Decreased discrimination in direction of movement▪ Decreased discrimination of movement amplitude

Parkinson's and Postural Instability

Motor Adjustment Processes

Delayed Muscle Activation	Inappropriate Amplitude	Reversal of Normal Sequencing
<ul style="list-style-type: none">■ Delay in muscle activation for postural and balance correction = FALL RISK	<ul style="list-style-type: none">■ Too LARGE of a movement or response to perturbation■ Too SMALL a movement or NO movement in response to perturbation	<ul style="list-style-type: none">■ Smaller than normal ankle strategies■ Incorrect muscle firing■ Hip muscles turn on BEFORE ankle muscles (this is abnormal)

Parkinson's and Postural Instability

Abnormal Background Muscle Tone

- **What is Rigidity and What Does it Look Like?:**

- Muscle hypertonia
- Increased stiffness with passive movement
- Impaired arm swing during gait
- Head moves with body during turning
- Increases forward trunk flexion

- **How Does it Affect Balance?**

- Reduces body rotation during sleep
- Abnormal head-trunk coordination during walking and turning
- Neck rigidity may affect vestibular balance



"How are the new relaxation techniques going?"

Fall Prevention and Balance with PD

• Balance System Integration

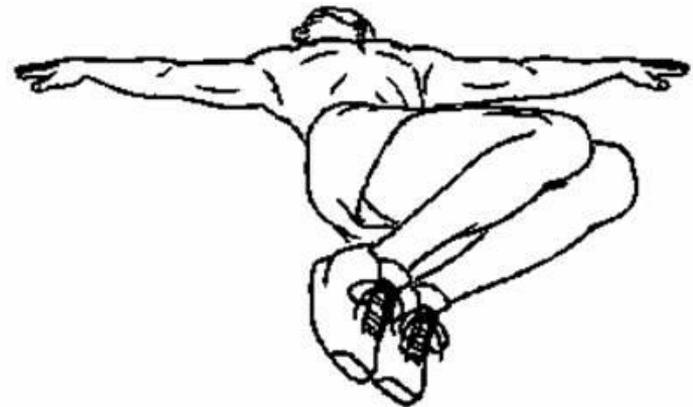
- Use a corner for safety
- Feet apart vs. together
- On vs. Off foam/pillow
- Head rotations
- Eyes open vs. Eyes closed



Fig 1. CTSIB position 4.

• Stretching and Flexibility

- Rotational Exercises in bed, sitting, standing
- Yoga
- Head/Neck Rotation



Fall Prevention and Balance with PD

- **Weight Shifting and Balance strategy practice**

- Keep Feet wide and apart (anti-freezing!)
- Shift from one foot to the other and pick your feet OFF the ground
- Step forwards, back, and sideways



Home Safety for Fall Prevention

Challenges in the Home

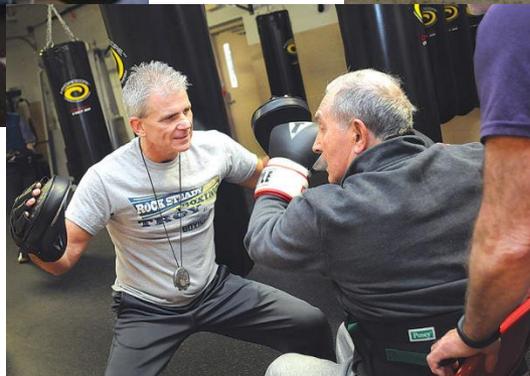
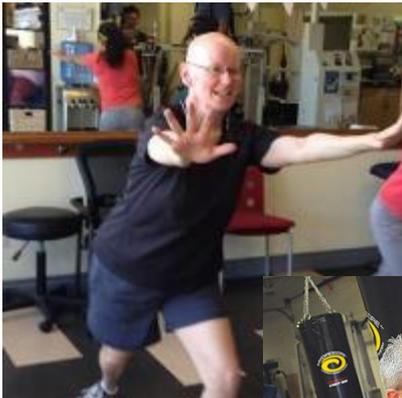
- *Let's be proactive!*
 - Clear hallways of clutter
 - Remove throw rugs
 - Hand rails if needed (in bathroom, etc.)
 - Sticky tape for visual cues
 - Use assistive device if appropriate

Home Safety for Fall Prevention

Challenges at Night

- Medication (off phase)
- Decreased visual support
- WHAT to DO?
 - Add night lights
 - Remove throw rugs
 - Avoid slippers

Exercise Recommendations and Movement Principles



Exercise Recommendations and Movement Principles

Why is “Exercise Medicine” for PD?

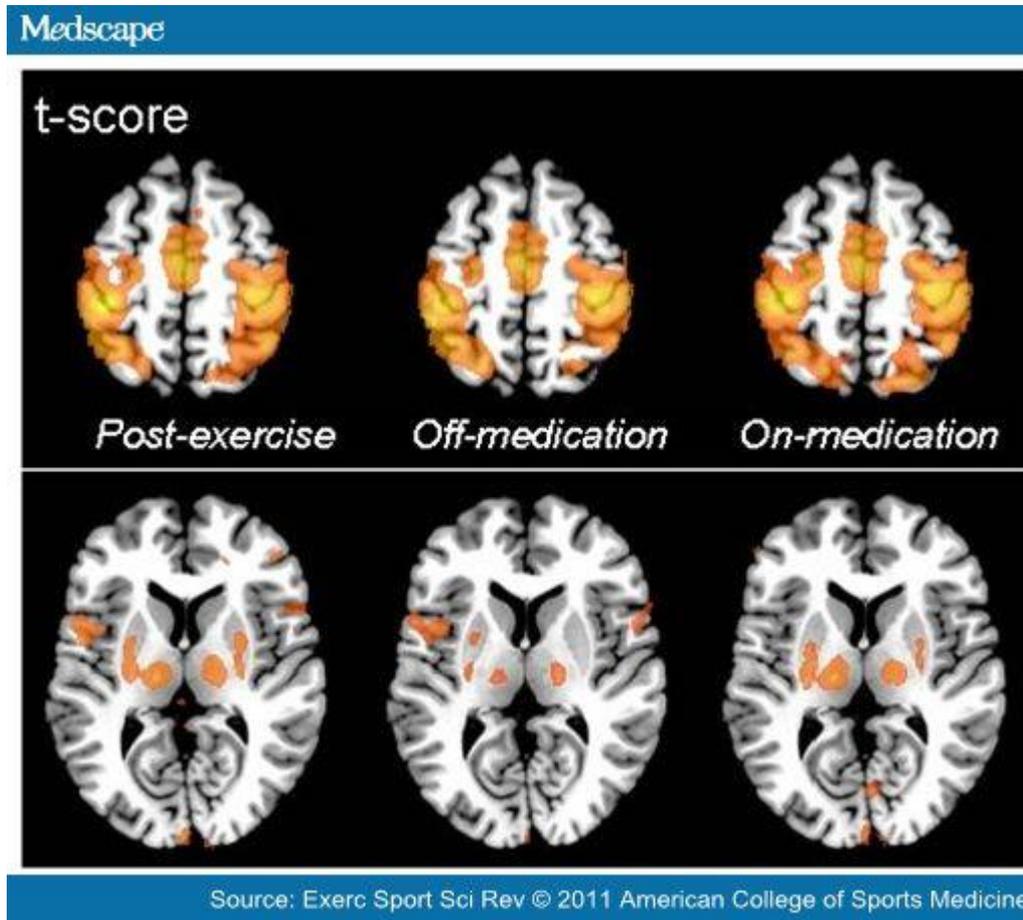
- Parkinson’s Disease = ↓ Dopamine
- Exercise = ↑ dopamine, ↑ cognition
 - ↑ Quality of life, ↓ disability

Exercise Recommendations and Movement Principles

What does the evidence say?

- Identified key principles of exercise that drive activity-dependent neural plasticity
- Demonstrated that exercise can improve brain functioning (neural plasticity) and may slow disease progression

How does exercise change the brain?



It Is Not About the Bike, It Is About the Pedaling: Forced Exercise and Parkinson's Disease

Dr. Jay Alberts, Cleveland Clinic, 2011

Exercise Guidelines

Intensity of exercise

- Animal studies
- Relationship between exercise induced protection and amount of running
- Mice running 18,000 revolutions/day were protected
- Mice running 6,000 revolutions/day were not protected
- Separate experiment: required 2-3 months of running for protection, if running was for only 1 month, no protection
- Bottom line → MORE is better!



**Consider a
wearable
fitness
tracker**

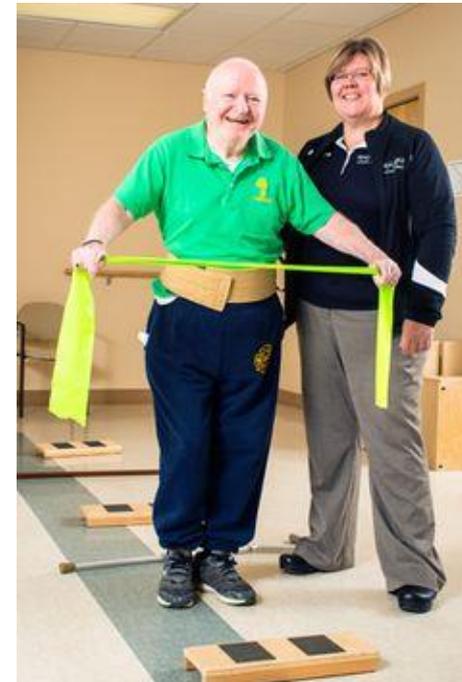
Exercise Guidelines

World Health Organization (WHO) – Exercise guidelines

- **Aerobic physical activity for:**
 - **≥ 150 minutes/week at moderate intensity**
 - **Or ≥ 75 minutes at vigorous intensity**
- **Must be performed in bouts of at least 10 minutes duration**
- **Muscle strengthening activities on ≥ 2 days/week**
- **For additional health benefits:**
 - **300 minutes of moderate intensity aerobic physical activity/week**
 - **Or 150 minutes of vigorous intensity aerobic physical activity/week**
 - **For those > 65 years: physical activity to prevent falls and enhance balance > 3 days/week**

Movement Principles

- **High Amplitude**
 - Move BIGGER than you think you can!
- **High Intensity**
 - Re-set your preferred motor drive
- **High Effort**
 - Increase complexity as able
 - Don't Hold back!
- **Self Monitoring**
 - How am I doing?
- **Dual Tasking**



Movement Principles

- **Weight Shift**

- Anti-freezing technique
- Initiation of movement

- **Posture**

- Stretch pectoral muscles
- Strengthen back muscles
- Improve upright posture to improve balance

- **Stepping Activities**

- Transitional movements
- Agility

- **Rotation**

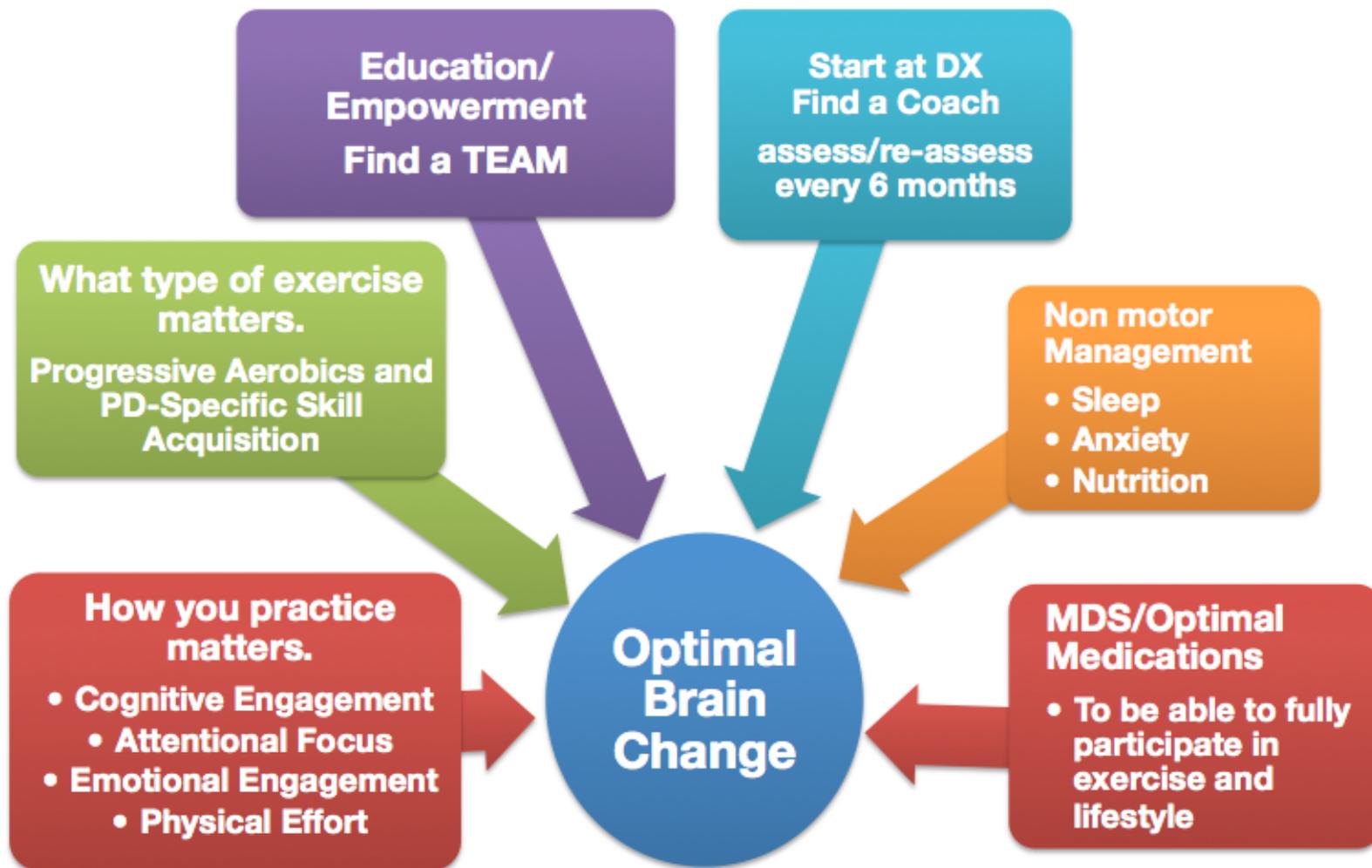
- Decreases rigidity
- Improves flexibility
- Ie: bed mobility,



What can a PT do for you?

- Why not just take exercise classes?
- 3 reasons:
 - It's important to have an **individual assessment** and **tailored recommendations**.
 - It's important to have someone who knows the literature on exercise recommendations and holds the **bird's-eye view** of your overall exercise program.
 - PTs have expertise in the science of health behavior change and **health and wellness coaching**.

PWR! Model of Care



Creating an Exercise Program

What can I do today?

- Start exercising.
- Involve family, friends, and/or find a group to exercise with to improve adherence and have fun!
- Create a log sheet and stick to a program.
- Find activities or exercise groups that you ENJOY!
- **Intensity**, **Amplitude** + **Frequency** are important.

Dimensions of Wellness



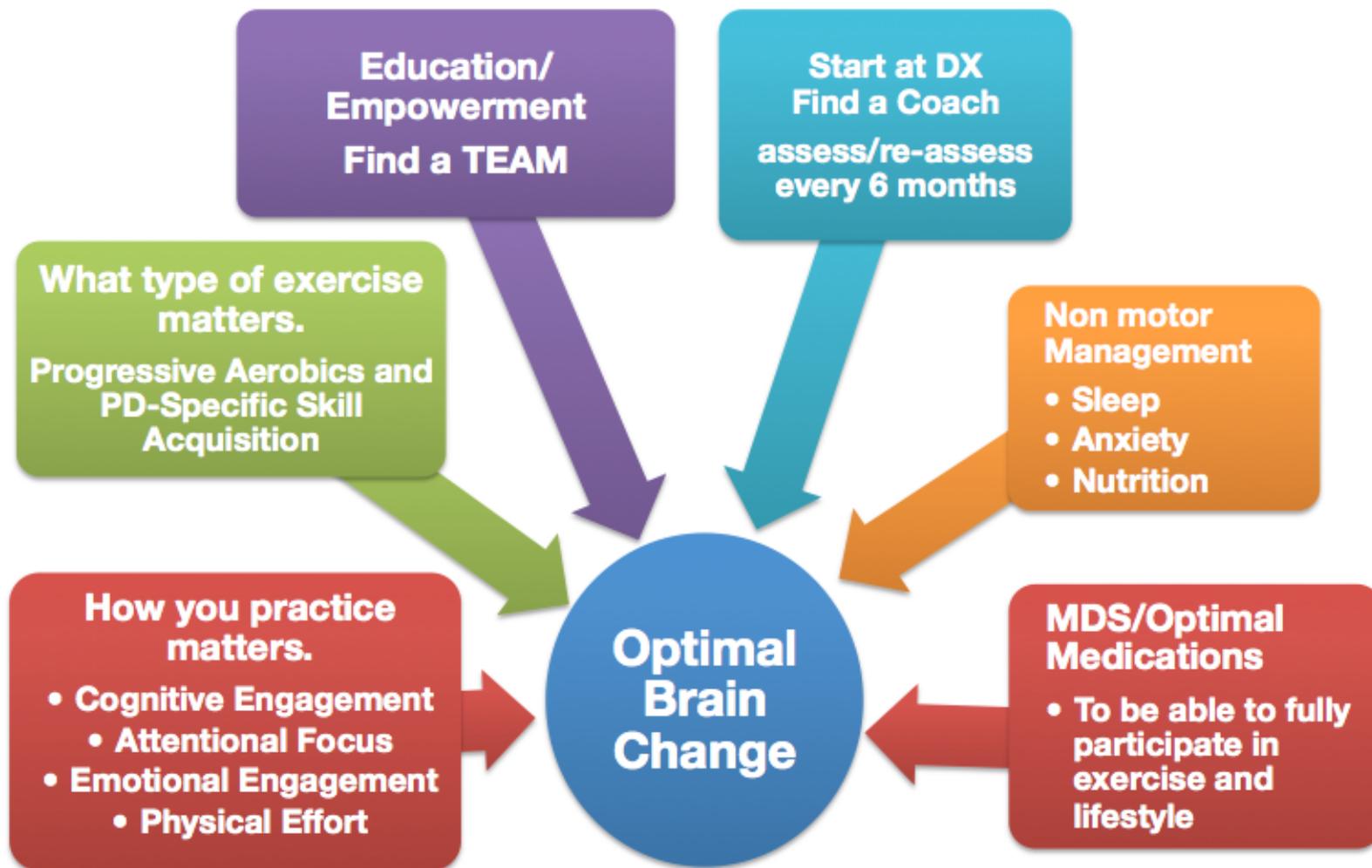
Consider all dimensions of wellness...

- Make a plan that includes exercise, along with activities that encompasses the other dimensions of wellness that are right for you.

Tying it all together: what can I do now?

- See a PT if you don't already have one.
- Make sure that it is a PT who specializes in neurology and has experience with and expertise in Parkinson's disease.
- In particular, seek out a PT who is certified in a Parkinson's-specific exercise approach, such as PWR!

PWR! Model of Care



Summary: Key Messages

1. Build a team, and include a PT in a coach role. The PT should specialize in neurology.
 - The team should also include exercise/fitness instructors, broadly defined—personal trainers who teach exercise classes, dance teachers, yoga teachers & yoga therapists...
 - YOU are the hub. The healthcare system isn't always good at coordination of care, so it's up to you. Know that the PT is there to help support you in that role.

Summary: Key Messages

2. Your exercise program should include aerobic training and PD-specific skills training—movements building blocks like posture, weight-shifting, twisting, and stepping.
 - Aerobic exercise → improved function, non-motor symptoms, & possible disease-modifying effects (at least 30-45 min, 3x/week)
 - High-level balance training → improved balance, walking speed, & dual-tasking

Potential Motor & Non-Motor Targets of Aerobic Exercise

Speelman, AD et al. *Nature Reviews Clinical Neurology* Sept2011;7:528-534

- **Prevention of cardiovascular complications**
- **Arrest of osteoporosis**
- **Improved cognitive function**
- **Prevention of depression**
- **Improved sleep**
- **Decreased constipation**
- **Decreased fatigue**
- **Improved functional motor performance**
- **Improved drug efficacy**
- **Optimization of the dopaminergic system**



GOOD NEWS
Exercise does
more than one
thing!

Summary: Key Messages

3. Your exercise program should include classes that you attend and activities that you practice at home and throughout your day.

Summary: Key Messages

4. Exercise is one component of wellness. Wellness includes other dimensions, too, such as socializing and relaxation. There's evidence to support the health benefits of these practices, too.

Summary: Key Messages

5. Harness the power of planning! Make a log as a weekly roadmap. Try different things and have fun!

Resources at Samuel Merritt University

- Community Participant Lab (CPL) and other programs for **individual sessions** x6 weeks
- **Group programs**
- **This July: we're hosting the PWR!Instructor and PWR!Therapist courses at Samuel Merritt University. Tell your group class instructor and physical therapist so they can get certified!**
- For more information: Call Jason Hardage, PT, at **510.879.9200 x7343**

THANK YOU! QUESTIONS??

- References available upon request
- Angela Rusher contact:
Arusher@samuelmerritt.edu
- www.pwr4life.org
- Videos:
 - www.youtube.com
 - Search: PWR! Moves Positions
 - Search: PWR! Gym social (weeks 1-13)