

# *Exercise in Parkinson's Disease: Importance of Aerobic, Skill Based and Dual Task Exercise*



***Presented by:***

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# *Exercise in Parkinson Disease*

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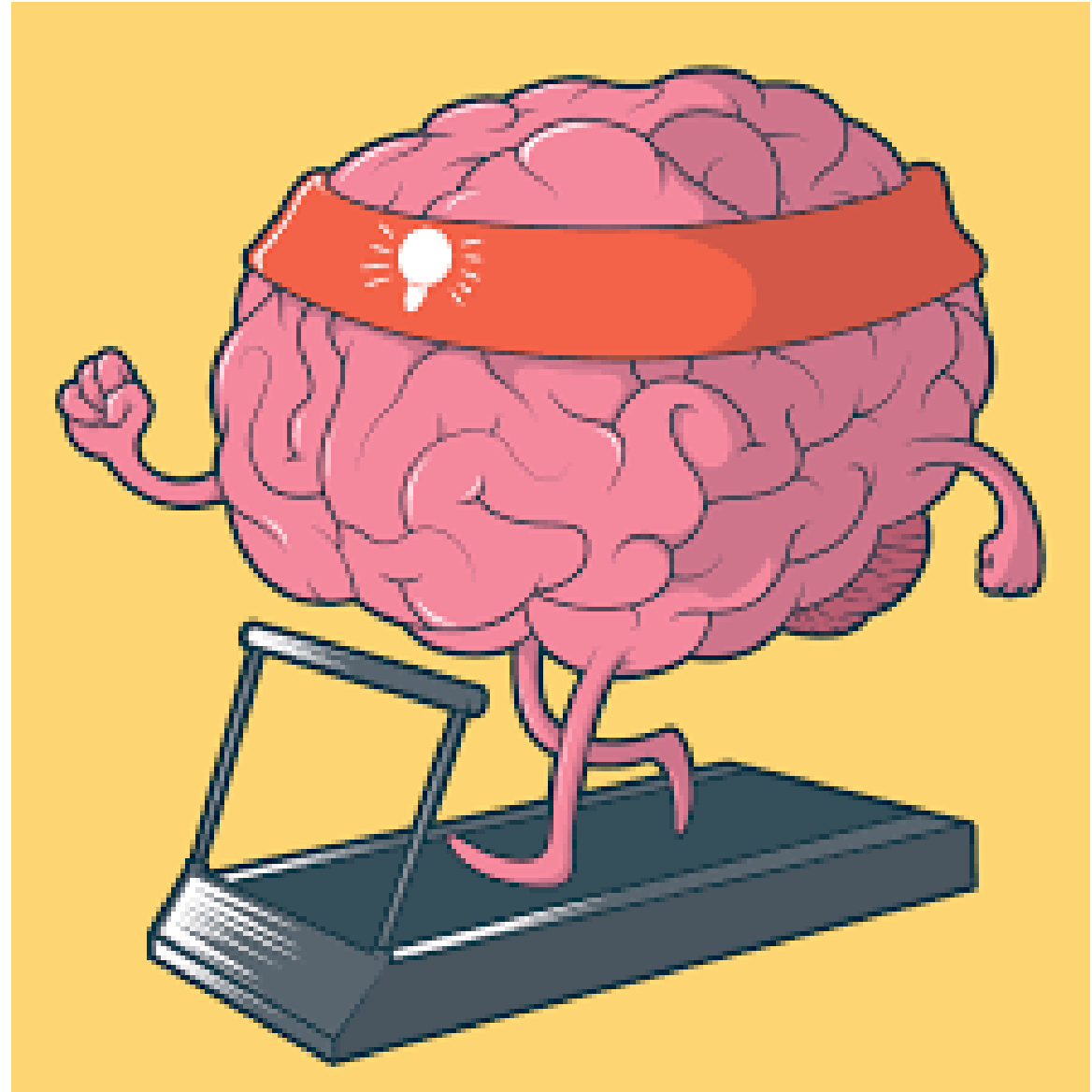
Today's Discussion:

- Why is exercise important in Parkinson Disease and what can it do for you?
- How do we need to exercise to achieve these outcomes?
- Role of Aerobic, Skill Based and Dual task Exercise

FIRST UP.....



*Exercise is  
Medicine!!*



# Benefits of EXERCISE

Exercise is important because it improves **BRAIN FUNCTION!**

- Improved heart and lung function= improved motor function, attention and cognitive speed
- Improves attention, executive function and memory in healthy older adults
- Improves memory, executive function and balance

Physical activity such as exercise increases brain derived neurotrophic factors (BDNF), therefore promoting neuroplasticity (regeneration of neurons/neuronal pathways) within the brain. This promotion of neuroplasticity provides benefits such as improved motor functioning, brain functioning, and slowing of the progression of PD.

Brain- Derived Neurotrophic Factors (BDNF): A protein in the brain that is in charge of creating and controlling the growth of neurons.

Levels of BDNF are decreased in many neurodegenerative diseases such as Parkinson's Disease

# Exercise in Parkinson Disease— General Guidelines

## Parkinson's Exercise Recommendations

Parkinson's is a progressive disease of the nervous system marked by tremor, stiffness, slow movement and balance problems.

**Exercise and physical activity can improve many motor and non-motor Parkinson's symptoms:**



### Aerobic Activity

3 days/week for at least 30 mins per session of continuous or intermittent at moderate to vigorous intensity

**TYPE:** Continuous, rhythmic activities such as brisk walking, running, cycling, swimming, aerobics class

**CONSIDERATIONS:** Safety concerns due to risks of freezing of gait, low blood pressure, blunted heart rate response. Supervision may be required.



### Strength Training

2-3 non-consecutive days/week for at least 30 mins per session of 10-15 reps for major muscle groups; resistance, speed or power focus

**TYPE:** Major muscle groups of upper/lower extremities such as using weight machines, resistance bands, light/moderate handheld weights or body weight

**CONSIDERATIONS:** Muscle stiffness or postural instability may hinder full range of motion.



### Balance, Agility & Multitasking

2-3 days/week with daily integration if possible

**TYPE:** Multi-directional stepping, weight shifting, dynamic balance activities, large movements, multitasking such as yoga, tai chi, dance, boxing

**CONSIDERATIONS:** Safety concerns with cognitive and balance problems. Hold on to something stable as needed. Supervision may be required.



### Stretching

>2-3 days/week with daily being most effective

**TYPE:** Sustained stretching with deep breathing or dynamic stretching before exercise

**CONSIDERATIONS:** May require adaptations for flexed posture, osteoporosis and pain.



**See a physical therapist** specializing in Parkinson's for full functional evaluation and recommendations.



**Safety first:** Exercise during on periods, when taking medication. If not safe to exercise on your own, have someone with you.



It's important to **modify and progress** your exercise routine over time.



Participate in **150 minutes** of moderate-to-vigorous exercise per week.



Helpline: 800.473.4636/Parkinson.org

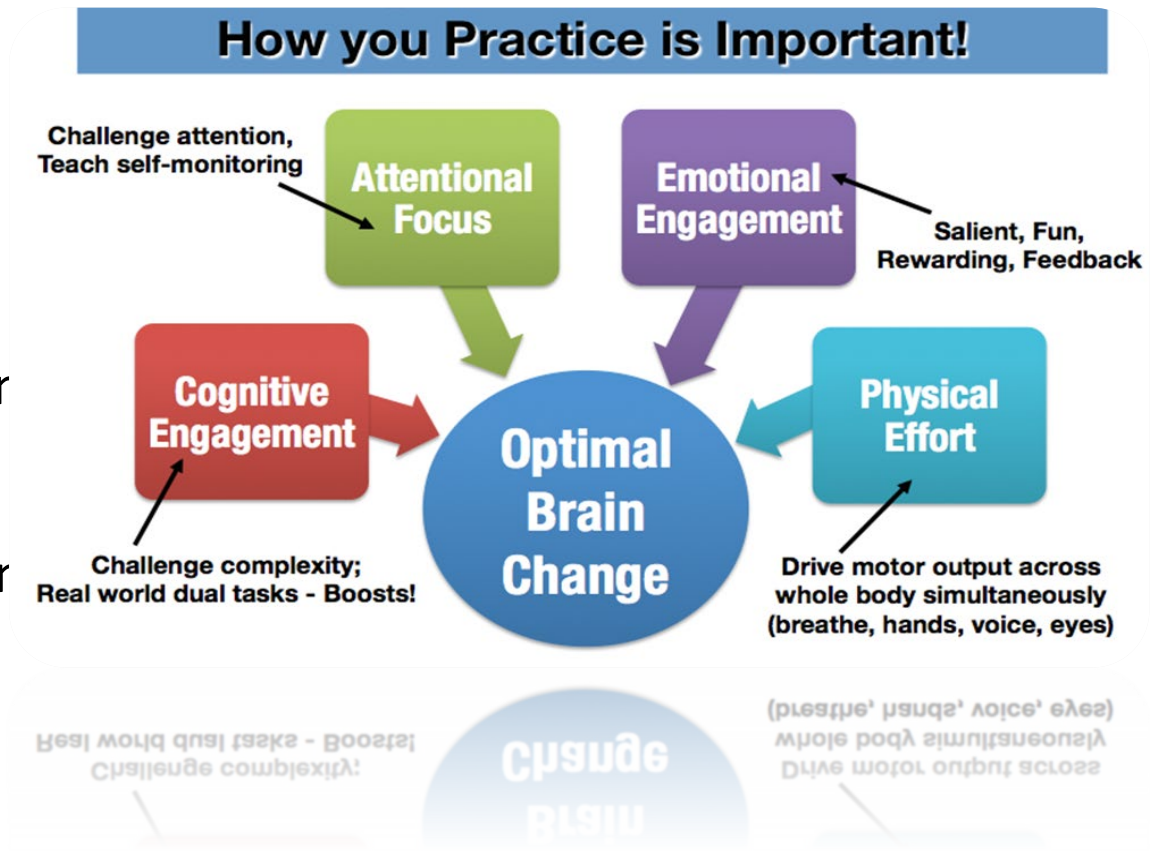
HOW we  
Exercise is KEY!!  
We NEED to  
Achieve  
Neuroplascity!



# Research/Exercise Recommendations

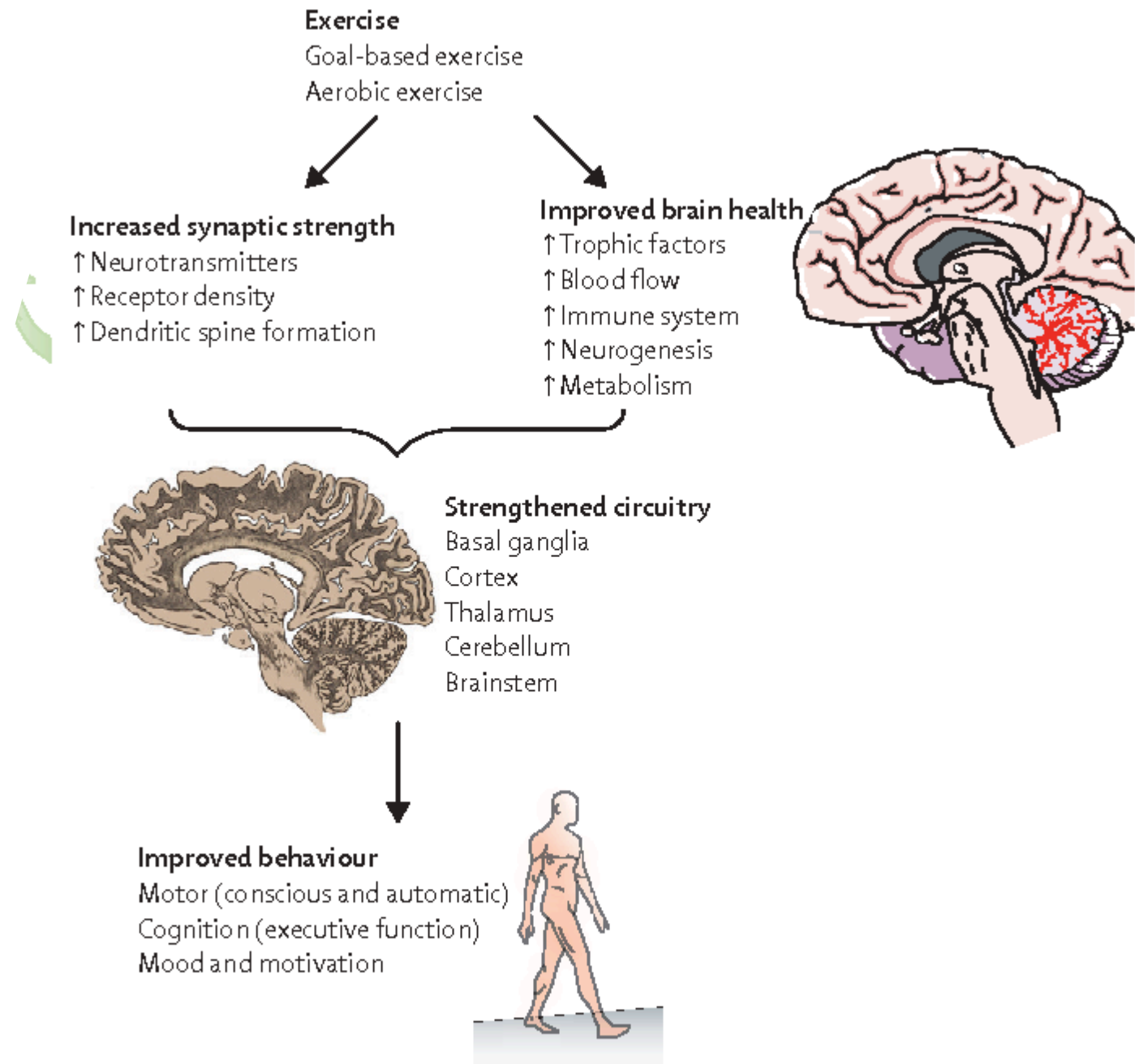
## NEUROPLASTICITY!!!

- Our brains CAN Change! BUT, It matters HOW we exercise!
- We achieve neuroplasticity by:
  - Physical Effort - work hard
  - Attentional Focus – self monitoring
  - Cognitive Engagement - complex
  - Emotional Engagement – like it
    - Based upon Parkinson's Well Recovery (PWR!) concepts



# Research/Exercise Recommendations

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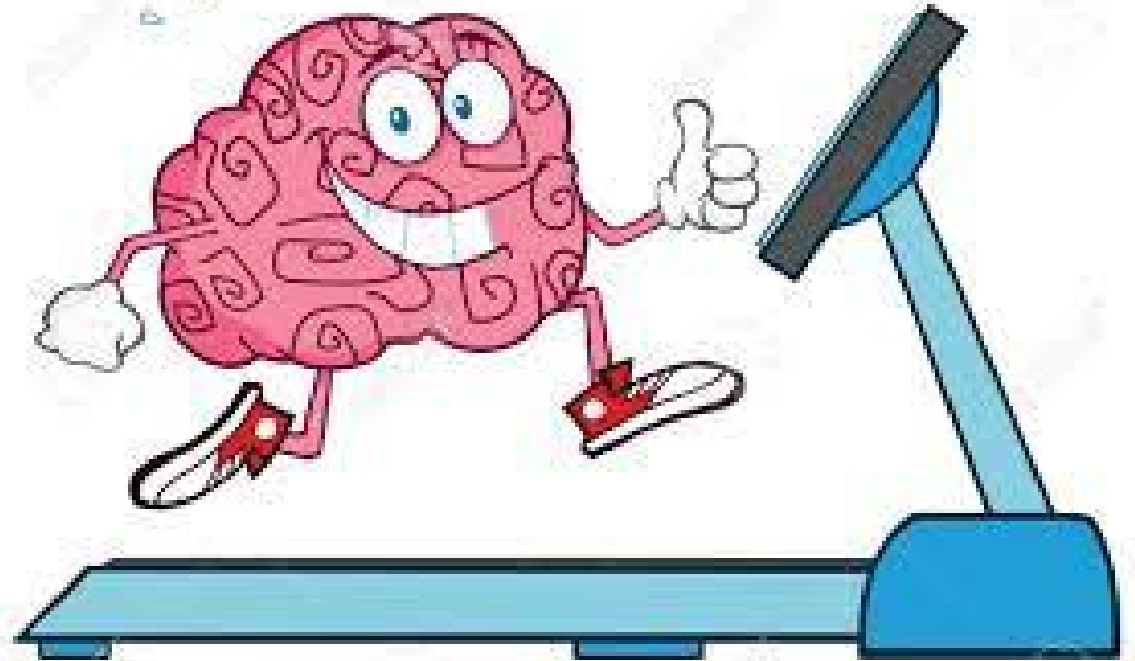




# *Aerobic Exercise: Key Components*

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- **Duration:**
  - As little as 10 min has shown benefit
  - Most studies do 45-60 min per session
  - 150 min /week minimum
- **Intensity:**
  - 60-80% of HR Max
  - 8/10 RPE
  - Start with what you can do, use intervals
- **Frequency:**
  - Most studies show at least 3-4 days a week



# *Aerobic Exercise: Key Components*

- Heart Rate Calculations and use of Heart Monitors
  - Max HR= 220-age, then 60-80% of that
  - May need to use RPE vs Heart rate monitor
  - Using Heart rate Monitor or RPE increases ATTENTION to how hard you are working – and this alone helps you work harder!
- Safety Considerations
  - May have altered heart rate response in PD as well as due to medications
  - Functional level may dictate safest aerobic equipment, i.e seated vs standing



# Rating Of Perceived Exertion Scale (RPE)



## RATING OF PERCEIVED EXERTION (RPE) CHART

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1-10 SCALE	EFFORT DESCRIPTION	ACTIVITY TYPES	BRAIN ZONE
10	<b>All-Out Sprint</b> The maximum possible effort, sustainable for just 20-30 seconds	Cardio: Speed 2 HIIT, Boxing (during high intensity bouts)	Dopamine Zone
9	<b>Very Hard Intensity</b> Hard to speak, breathing labored after a few seconds, good for 1 minute intervals	Cardio: Speed 2 HIIT, Boxing (during high intensity bouts)	Dopamine Zone
8	<b>Hard Intensity</b> Hard to say more than 2-3 words	Cardio: Speed 2 HIIT, Boxing (during high intensity bouts) PWR! Moves with Strength	Dopamine Zone
7	<b>Vigorous Activity</b> Can speak in short sentences; becomes uncomfortable quickly	Cardio: Speed 2 HIIT, Boxing (during high intensity bouts) PWR! Moves with Strength	Dopamine Zone
6	<b>Hard Activity</b> Labored breathing, challenging and uncomfortable but sustainable for 30-60 minutes	Cardio: Speed 1 PWR! Moves with Mobility/ Balance/ Stretch/ Flow Flow Yoga	Functional Zone
5	<b>Progressive Pace</b> A pace that requires some pushing and effort to maintain; still able to hold a conversation	Cardio: Speed 1 PWR! Moves with Mobility/ Balance/ Stretch/ Flow Flow Yoga	Functional Zone
4	<b>Comfortable Pace with Some Effort</b> Slight "push" but still at a pace which you could speak a few sentences without struggling	Cardio: Speed 1 PWR! Moves with Mobility/ Balance/ Stretch/ Flow Flow Yoga	Functional Zone
3	<b>Comfortable Pace</b> Able to maintain a conversation without getting out of breath	Cardio: Warmup/Cooldown PWR! Moves with Mobility/ Balance/ Stretch/ Flow Tai Chi, Restorative Yoga	Comfort Zone
2	<b>Light and Easy</b> Very gentle and easy to maintain a conversation - could continue for hours	Static stretching, Slow walking, Tai Chi, Restorative Yoga	Comfort Zone
1	<b>Minimum Effort</b> Bare minimum exertion; a gentle stroll in your backyard - could continue all day	Static stretching, Slow walking, Tai Chi, Restorative Yoga	Comfort Zone
0	<b>No Effort</b> Your body is still (seated, standing, on your back) - You are exerting no effort	Meditation	Meditation Zone

To view the research supporting dopamine production related to exercise, please visit [www.roguept.com/cardio-class-research](http://www.roguept.com/cardio-class-research)



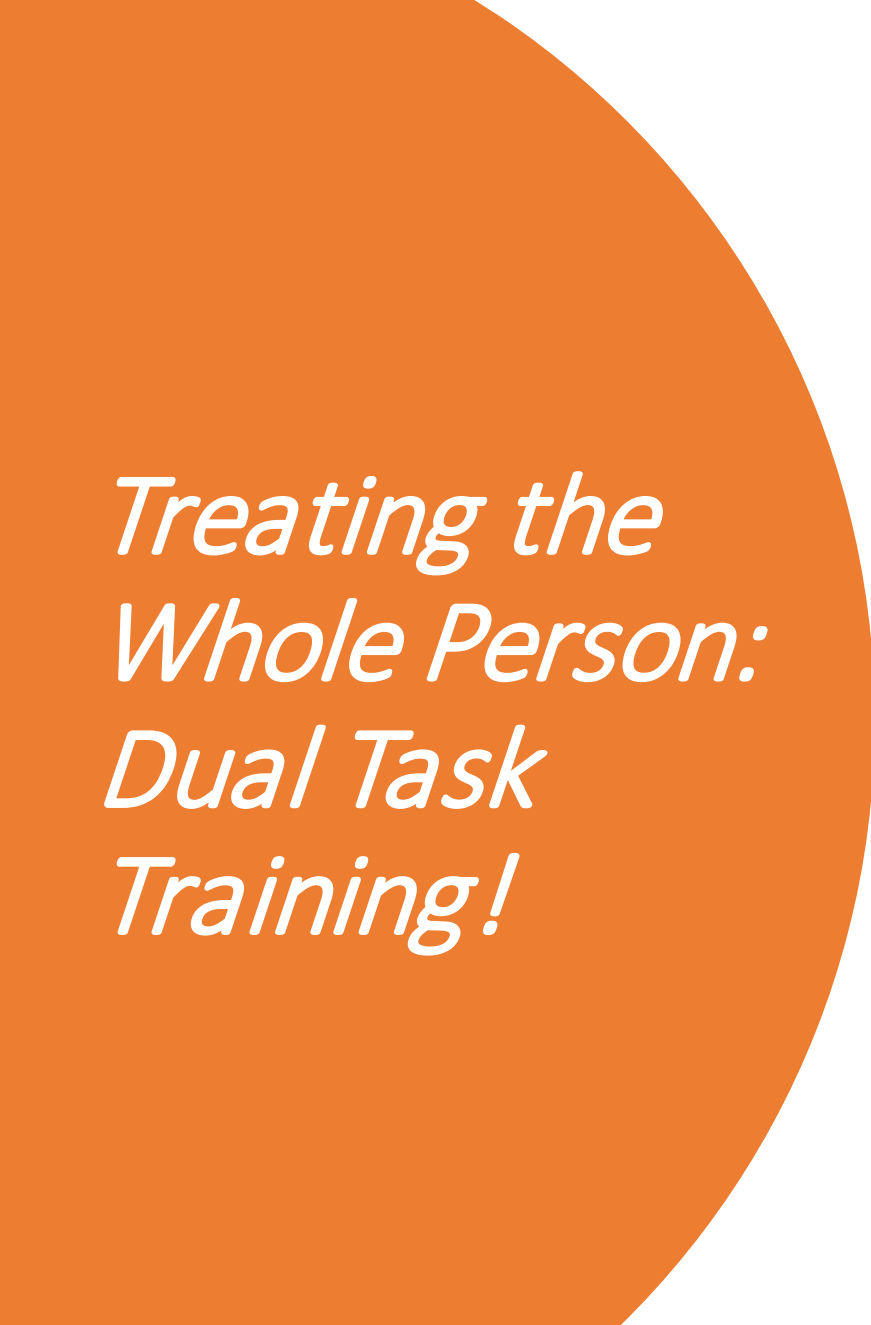
*Skill Based  
Training:  
Key  
Components*

- Working on Parkinson's specific skills (posture, balance, trunk rotation, stepping)
  - Mobility Practice (moving in each position)
  - Transitions between positions
  - Adding Strengthening, extra balance and stretching!
- 

# *Skill Based Training: Key Components*

## HOW DO WE WORK ON IT?


- With skilled exercise we can work on all these skills and directly counteract the effects of Parkinson's
- Hypokinesia - Movement Size
- Bradykinesia - Work on Movement Speed
- Rigidity – Muscle flexibility, activating the right muscles!
- Functional Mobility – Practice the movements you need for life!
- Posture – (PWR! Up) in all positions and add advanced challenges
- Walking – Practice it! Treadmill, outside, in house – with the best walking you can possibly do!
- Turning – Practice it!
- Balance – Practice it!
- Coordination – Practice activities with specific timing, upper and lower body coordination
- Strength – we do functional strengthening – lifting our own body weight in all positions, and add weights!
- Flexibility – Stretch – WITH MOVEMENT!!



*Treating the  
Whole Person:  
Dual Task  
Training!*

***Is Dual Tasking Better than Physical Exercise Alone?***

Zhu et al (2016) combined data from 20 randomized controlled studies with 2667 participants and found:

- Dual Tasking improved cognition greater than no intervention
  - Dual Tasking improved cognition better than physical exercise by itself
  - Dual Tasking improves cognition more in older participants
  - Dual Tasking effects appear to last longer than single tasking effects
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## *Purpose of using Dual Task approach*


- Our daily life demands us to dual-task such as:
  - Getting dressed and watching the news
  - Drinking a cup of coffee and reading the newspaper
  - Walking, carrying a bag, and talking to a friend or spouse
- Our ability to dual task as we age declines due to decreased motor and cognitive abilities as well as executive function decline



# *Dual Task Exercise: Key Components*

- Dual Tasking is recommended for PwPD early after diagnosis
- There are many way to incorporate Dual task training in your exercise including simple things like: counting repetitions in various ways, naming items in a category, keeping your pace while completing a cognitive activity or even while voicing, spelling etc
- Some types of exercise lend themselves to being Dual Task such as Boxing, Dancing but Dual Task should be incorporated into your Parkinson's Exercise program
- Dual Task is FUN, more complex/difficult, requires increased attention – all components needed for NEUROPLASTICITY!
- Goal is to practice dual tasking until it becomes more automatic, and we can keep moving well even when distracted by other things...
- Safe, efficient mobility **REQUIRES COGNITION!**





Don't look for  
someone who will solve  
all your problems.  
Look for someone who  
won't let you face  
them alone.

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## *HOW TO START?*

### *Don't do it alone!*

- Exercise IS Medicine and you need someone to help prescribe it for you!
- If you haven't had PARKINSONS SPECIFIC Physical, Occupational and Speech Therapy, YOU NEED TO!
- You should partner with an experienced therapist to help you design a program specific to you that meets the requirements to ACHIEVE NEUROPLASTICTY!
- You can GET BETTER!
- You can CHANGE YOUR COURSE of Parkinsons!
- GET STARTED NOW!