

# **Cognitive Challenges in PD and What to Do About Them!**

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# Overview/Background

# Cognitive Changes and Challenges in Parkinson's

- Common and important non-motor symptoms
- Up to 30% of people with Parkinson's have already noticed cognitive changes at diagnosis.
- Heterogeneity of changes
  - *Aspects of cognition affected*
  - *Order of domains affected*

# Types of Parkinson's Cognitive Changes and Challenges

- Common areas affected
  - Memory
  - Executive functions
  - Visuospatial
  - Attention
  - Language
  - Processing speed

# Cognitive Continuum

**Normal Aging**



**Mild Cognitive Impairment**



**Dementia**



# Common Parkinson's Cognitive Symptom Profiles

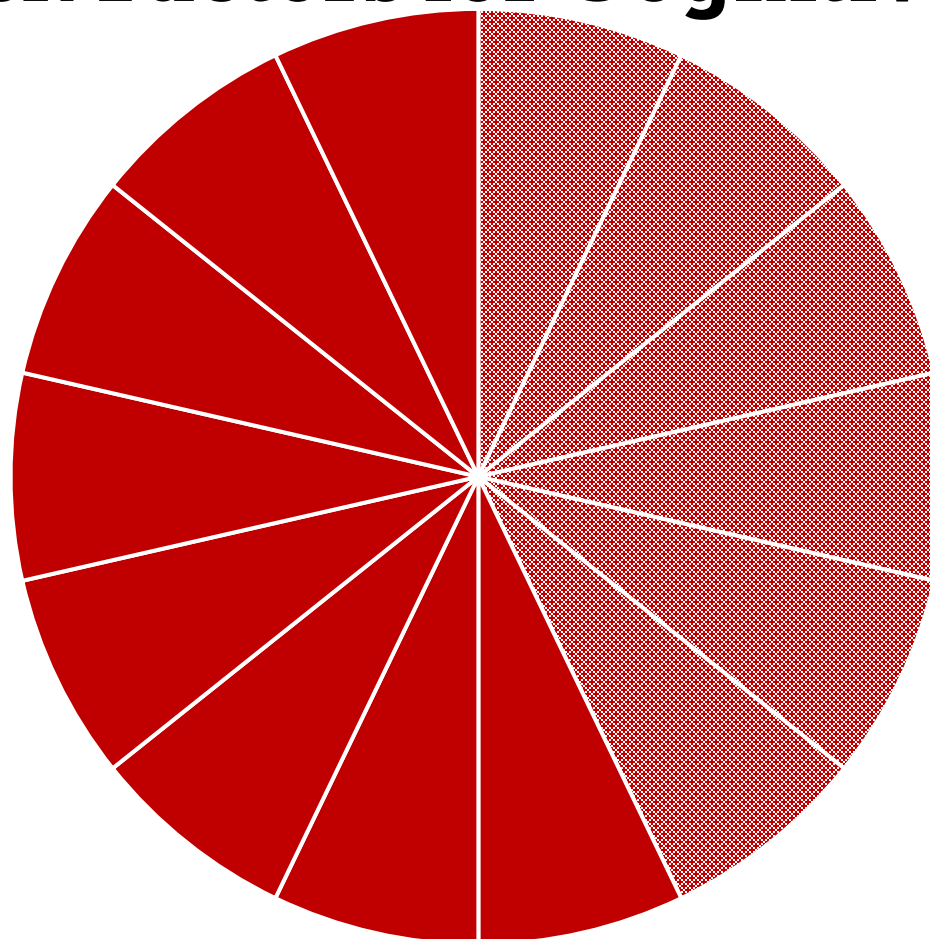
- **Frontal-executive**
  - Young age of onset
  - Fronto-striatal dopamine depletion
  - Respond well to DRT
  - Less likely to lead to dementia
- **Memory Visual/Spatial**
  - Increasing age of onset
  - Increasing age in face of long-standing disease
  - More axial, less responsive to medication
  - Clinically complex/increased dementia risk

# **Difficulties Associated with Cognitive Challenges**

- Decreased independence
- Medication adherence
- Diminished quality of life
- Poorer treatment outcomes
- Depression
- Anxiety
- Care partner burden
- Safety

# Contributing Risk Factors for Cognitive Impairment

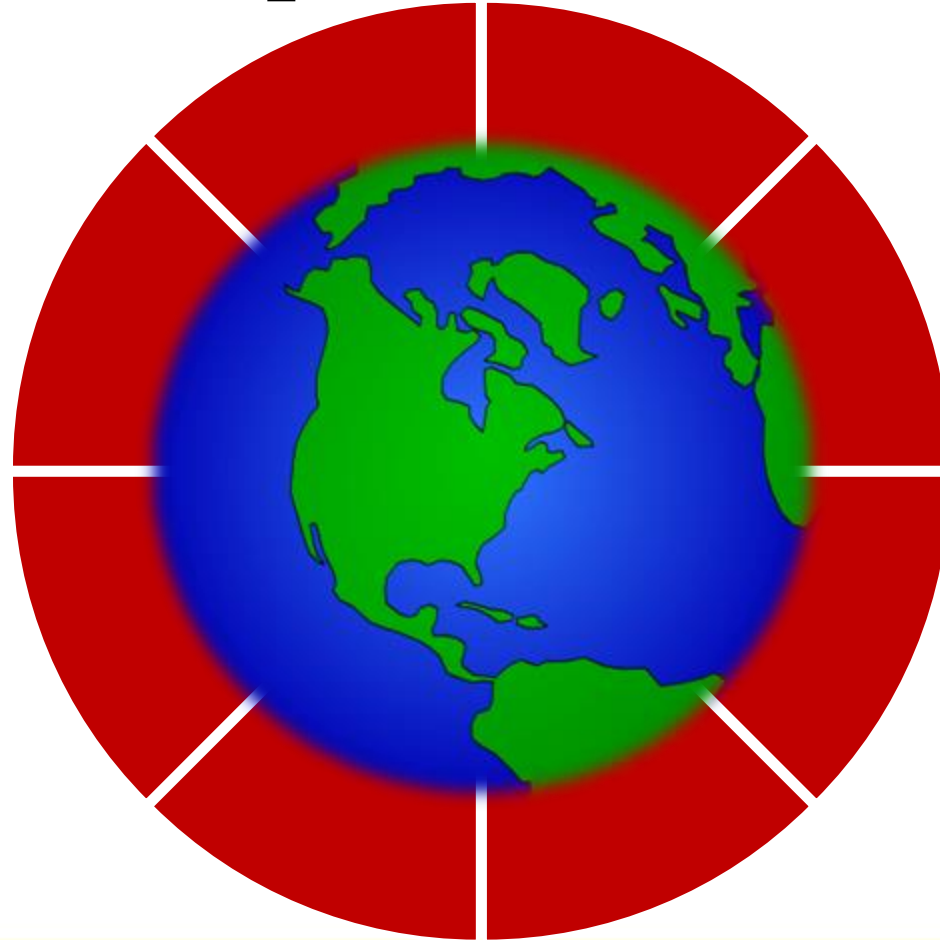
- Age
- Disease Duration
- Baseline Cognitive Impairment
- Other Medical Illness
- Postural Instability/Gait Disorder
- REM Sleep Behavior Disorder
- Motor Severity
- Neuropsychiatric Issues
- Daytime Sleepiness
- Social Isolation
- Depression
- Exercise
- Diet
- Self Care





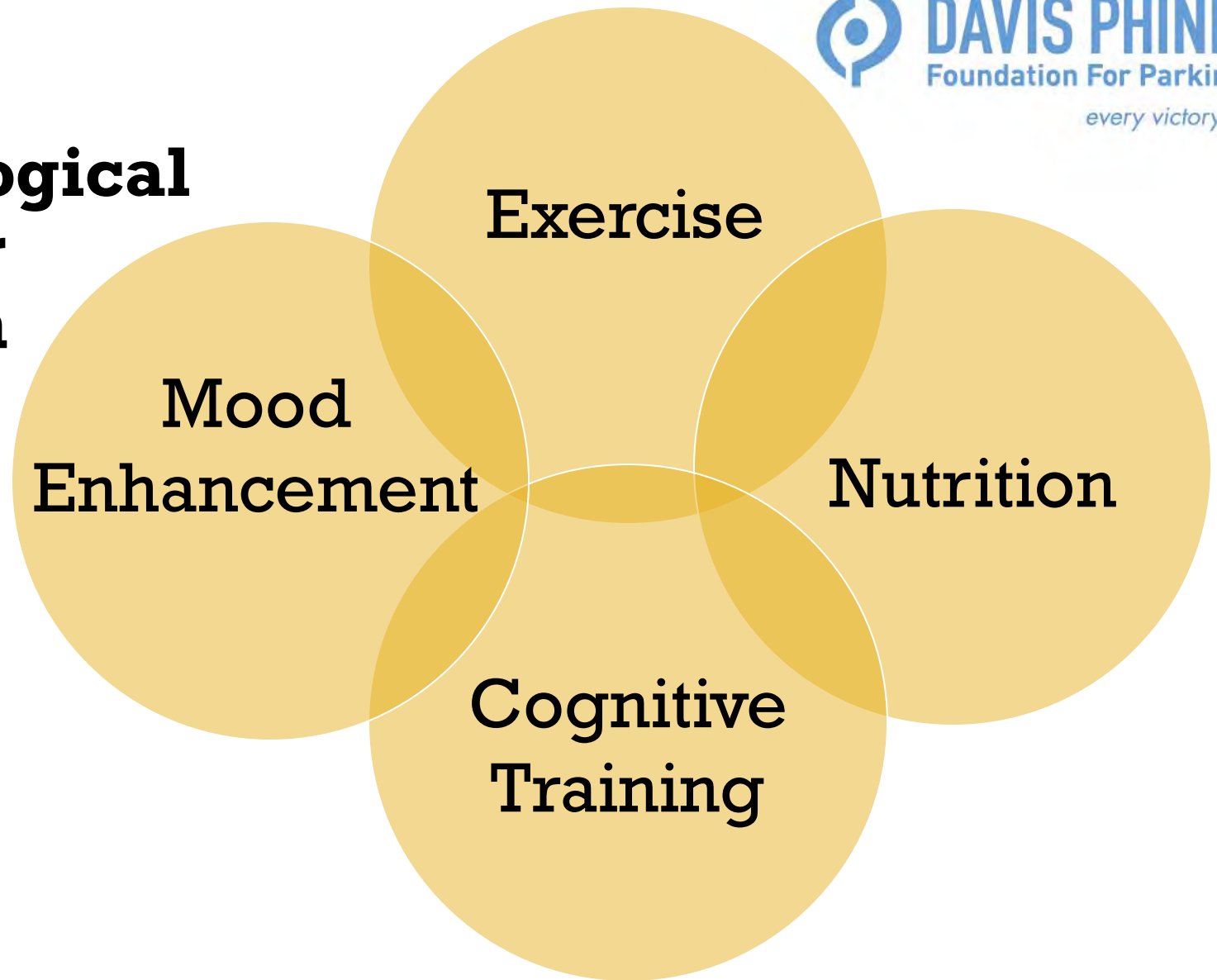
# Areas That You Can Impact!

- Motor Severity
- Neuropsychiatric Issues
- Daytime Sleepiness
- Social Isolation
- Depression
- Exercise
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# Interventions

# **Non-Pharmacological Interventions for Cognitive Health**



# Exercise

## Modifiable Risk Factors:

- Motor Severity
- Neuropsychiatric Issues
- Daytime Sleepiness
- Social Isolation
- Depression
- Exercise
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- Self Care

# Exercise

- Exercise may enhance cognition through neurobiology and physiology
- Studies have shown improvements in
  - Attention
  - Processing speed
  - Executive function
  - Memory
  - Spatial cognition

## Exercise

- Most widely studied= aerobic exercise, strength training and their combination
- **Significant improvements** in cognition with at least **150 min of moderate-intensity** physical activity per week for 6 months, with benefits persisting after 18 months
- Some studies showed differences in as little as 6 weeks!

## **Exercise**

- **Aerobic Exercise → Executive Function**
  - Walking 45 min 3x/week for 6 months
- **Strengthening → Working Memory, Executive Function, Attention**
  - Progressive Resistance 2x/week for 24 months
- **Tango → Spatial Cognition**
  - Dance Group 90 min 2x/week for 12 weeks

# Nutrition

## Modifiable Risk Factors:

- Motor Severity
- Neuropsychiatric Issues
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# Nutrition

- There is growing interest in nutrition and its relationship to cognition
  - Brain-Gut Connection
  - Microbiome
  - Macronutrients
- Nutrition may impact inflammation, neurodegeneration.
- Studies in non-Parkinson's populations suggest that foods such as blueberries, cocoa, dark chocolate, tea and wine may protect against cognitive decline

# Nutrition

- Nutrients that may have a relationship to increased/decreased risk of Parkinson's
  - Dairy
  - Fruit, vegetables, fish, caffeine
  - Nutritional supplements (folate, vitamin B12) may have cognitive benefit
- Specific Diets (Mediterranean-DASH Intervention for Neurodegenerative Delay (MIND))

## Nutrition: the MIND Diet

10 Brain Healthy Food Groups		5 Brain Unhealthy Food Groups
Green Leafy Vegetables	Whole Grains	Butter & Stick Margarine
Other Vegetables	Seafood	Red Meat
Nuts	Poultry	Cheese
Berries	Olive Oil	Pastries & Sweets
Beans	Wine	Fried/Fast Food

# Nutrition

- In one study, the MIND diet was associated with a 54% reduction in risk for AD
- “The difference in rates was the equivalent of being 7.5 years younger in age.”
- “The MIND diet score was statistically significantly associated with each cognitive domain, particularly for episodic memory, semantic memory and perceptual speed.”

(Morris et al., 2015)

# Cognitive Training

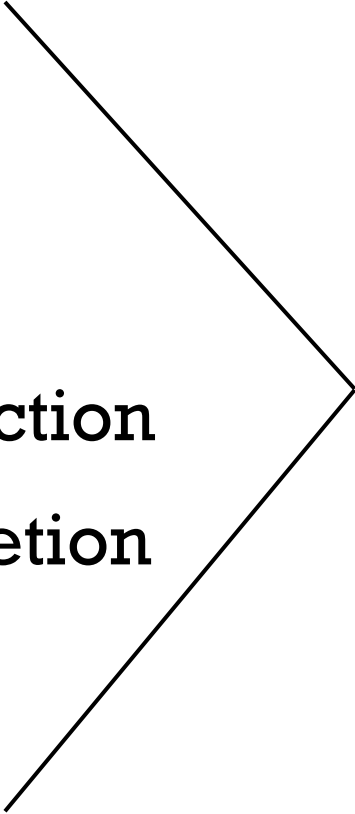
## Modifiable Risk Factors:

- Motor Severity
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# Cognitive Training

- Based on the idea that cognitive functions can be “strengthened” over time with practice
  - Neuroplasticity/Neurogenesis
- “Brain Exercises” and “Targeted Practice”
- Improvements in executive functioning, working memory and processing speed

## **Cognitive Training**

- Search tasks
  - Matrices
  - Puzzles
  - Speech production
  - Picture completion
  - Storytelling
  - Sudoku
- 

**Improvement in  
Executive functioning**

# Mood Enhancement

## Modifiable Risk Factors

- Motor Severity
- Neuropsychiatric Issues
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- Self Care

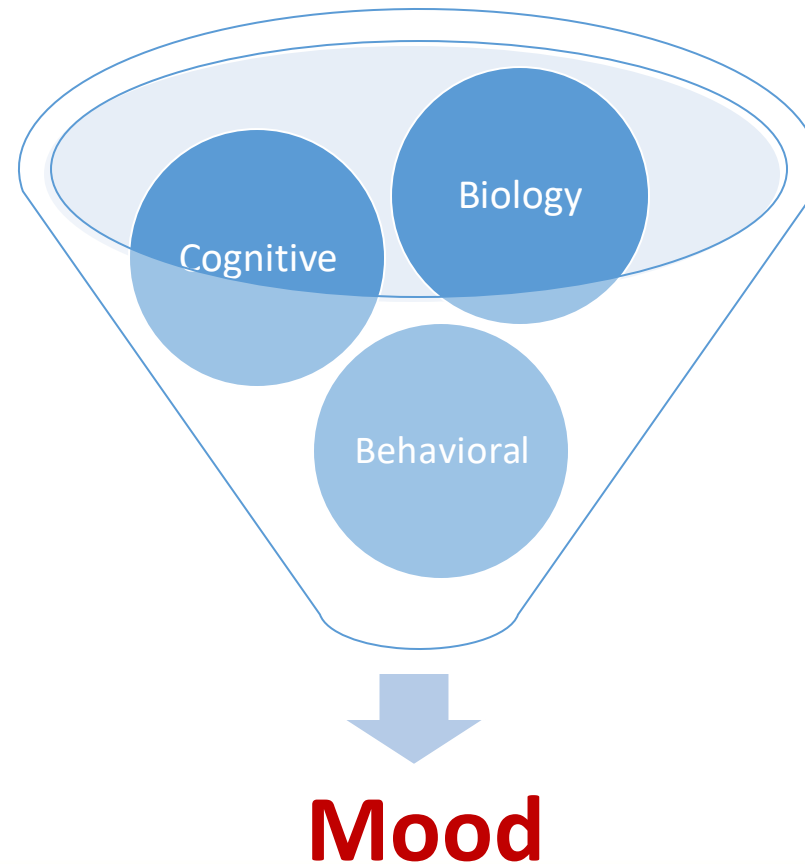


## **Mood Enhancement and Coping**

- **Anxiety, Depression, Sleep, and Fatigue:**
  - Mirror symptoms of cognitive challenges (memory, concentration)
  - Increase impact of existing cognitive symptoms
  - Treating mood simultaneously addresses associated cognitive symptoms

# Cognitive Behavioral Therapy

- **Multiple interacting causal factors**



## Examples of 1:1 Interventions

- Increasing meaningful and social activities
- Problem solving for physical limitations
- Anxiety management and relaxation
- Sleep hygiene
- Thought monitoring and restructuring
  - \* Identify
  - \* Pause
  - \* Rewind
  - \* Replay

# Practical Recommendations

## **Talk to your Doctor!**

- Make sure Parkinson's medications are optimized
- Consult with a professional if appropriate
  - Neuropsychiatrist – medical doctor; can prescribe and manage medication
  - Neuropsychologist – assessment and treatment
  - Both can diagnose and create treatment plans – **experience with Parkinson's is Key!**
- Evaluate the pros and cons of medications for cognitive function vs. side effects

## **Get Moving!**

- **Any exercise is better than no exercise!**
- **Meet with a Parkinson's-informed physical therapist for a tailored plan**
  - Experience
  - Evidence
  - Training
- **Aerobic + strength training**
- **Yoga, dance, boxing**

## **Add More Healthy Foods!**

- Avoid processed/fried foods
- Eat more veggies, especially green leafy ones!
- Nuts/berries/beans
- Whole grains
- Seafood/poultry
- Olive oil

# Cognitive Training

- Stay engaged!
- Puzzles, word searches, memory games
- Reasonable level of difficulty
- Computer training
  - Adaptive
  - Generalized
  - Varied



## **Grow Your Healthy Coping Toolbox**

- Understand and normalize experience
- Seek help if feeling depressed or anxious
- Hobbies
- Stay active socially
- Talk back to negative thoughts
- Relaxation and breathing
- Focus on what you CAN DO to take control over your cognitive abilities

## Selected References

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