



ON WITH LIFE
BRAIN INJURY + STROKE + NEURO

Understanding Cognitive Changes in Parkinson's Disease

Matt Easley, M.A., CCC-SLP, CBIS
Joe Walters, M.S., CPHQ, CBIS

SMALL STEPS. GIANT STRIDES.

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Objectives

- Describe common changes in cognition associated with the progression of Parkinson's disease
- Identify how these changes impact daily life
- Discuss and compare approaches for addressing and treating cognitive deficits in Parkinson's disease

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Changes in the Brain

Dopamine system

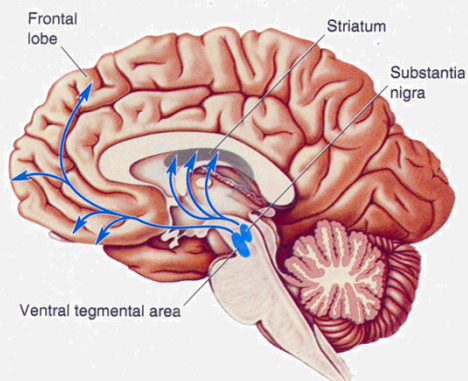


Figure 1: Dopamine System³

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Changes in the Brain

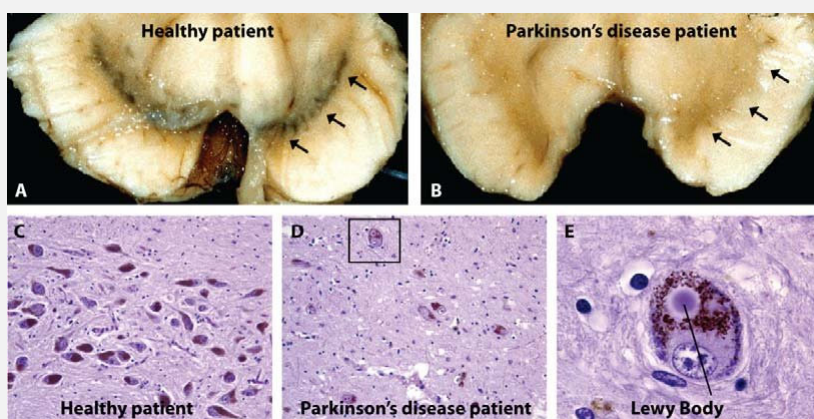


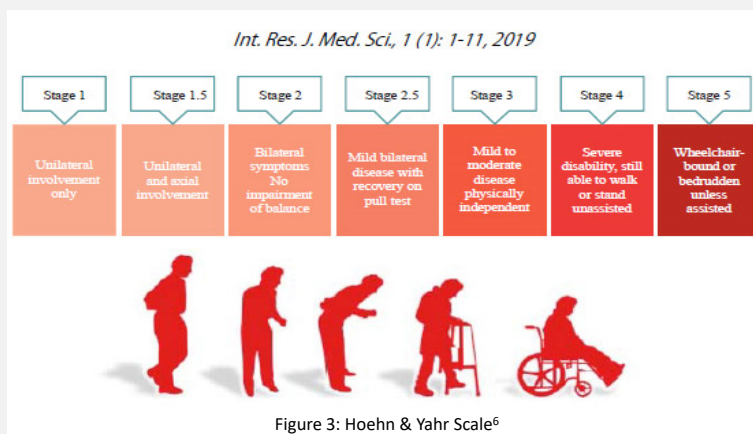
Figure 2: Substantia Nigra⁶

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Parkinson's Stages - Hoehn and Yahr



Cognition Not Addressed

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Cognition Classes

- Normal Cognition
- Subjective Cognitive Decline (SCD)
- Mild Cognitively Impaired (MCI or PD-MCI)
- Parkinson's Disease Dementia (PDD)

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Mayo-Portland Adaptability Inventory

Table 1: Mayo-Portland Sub-Scales with Items Rated²

Ability	Adjustment	Participation
<ul style="list-style-type: none"> • Mobility • Use of Hands • Vision • Audition • Dizziness • Motor Speech • Communication • Attention/Concentration* • Memory* • Fund of Information* • Novel Problem-solving* • Visuospatial Abilities* 	<ul style="list-style-type: none"> • Anxiety • Depression • Irritability, anger, aggression • Pain and headache • Fatigue • Sensitivity to mild symptoms • Inappropriate social interaction • Impaired self-awareness* • Family/significant relationships 	<ul style="list-style-type: none"> • Initiation • Social contact • Leisure/recreational activities • Self-care • Residence • Transportation • Work/school • Money management

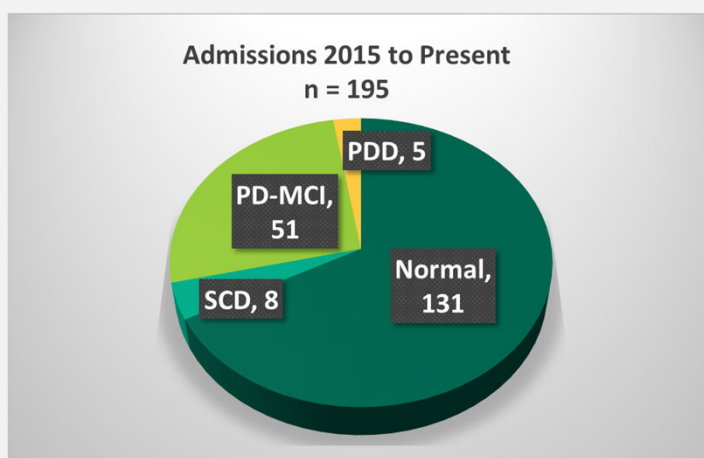
*Involved with Cognitive Abilities

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On With Life Parkinson Program

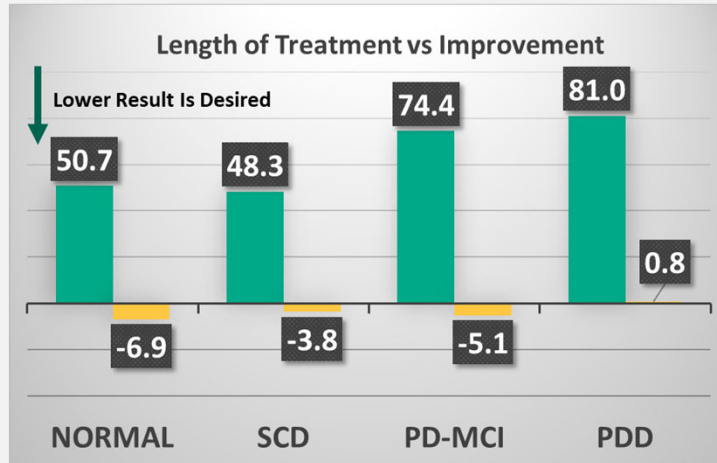


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Improvement vs Length of Treatment

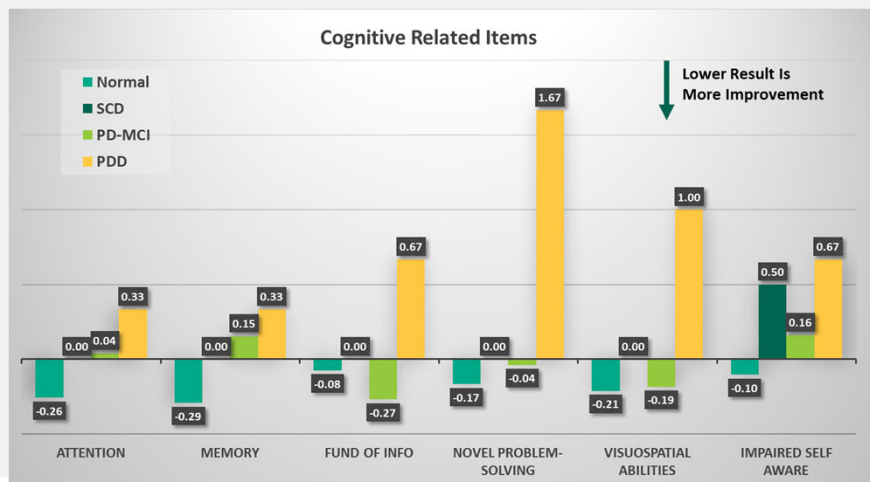


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Cognition Related Items



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Common symptoms of Parkinson's Disease

- Motor symptoms
 - Tremor
 - Rigidity
 - Balance problems
 - Bradykinesia- or slowed movement
- Non-motor symptoms
 - Anxiety or depression
 - Changes in sensation- loss of smell, taste
 - Trouble sleeping
 - Changes in cognition- Bradyphrenia

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Cognition

- What is cognition?
 - “Mental skills”
 - Memory
 - Attention or focus/concentration
 - Language
 - Visuospatial skills
 - Problem solving- planning, organizing, generating multiple solutions

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Cognition

- What do these problems look like in “real life”?
 - Remember to take medications on-time
 - Mis-placing items like wallet, purse, keys, or cell phone
 - Remembering conversations or events
 - Getting lost in multi-step tasks or routines
 - Trouble with initiation, or getting started on tasks
 - Difficulty solving new problems and formulating solutions

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Cognition

- These changes can often cause frustration and confusion not only for the person with Parkinson's, but their loved ones.
- People with PD are 4-6 times more likely to develop dementia
- So...what can we do about it?

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Addressing and treating cognition

- Compensation
 - “Making up for” deficits
 - We know that PD is progressive; physical and cognitive symptoms worsen over time
 - Analyzing current difficulties and working together to establish compensatory strategies tailored to the person’s functional difficulties
- Utilizing assistive technology

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Addressing cognition with assistive technology

- Assistive Technology
 - Defined as “any item or piece of equipment, product or system that is used to increase, maintain, or improve functional capabilities with individuals with disabilities”



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Addressing cognition with assistive technology

- Adding tools to your toolbox
 - Low-tech
 - High-tech
 - Visual
 - Auditory
 - Written
 - Typed
 - Active
 - Passive
 - Every day or as needed

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Addressing cognition with assistive technology

- Maximize safety, participation in daily activities, and wellbeing
- Increase feeling of empowerment by being in-control of one's health information and daily routine
- Maximizing independence and easing caregiver burden

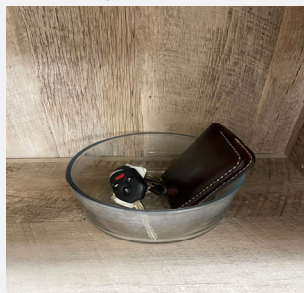
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Choosing assistive technology

- **The problem:** Mis-placing keys and wallet
- **The cognitive area:** Memory
- **The assistive technology:** Giving these items a "home"
- **The results:**
 - Decreased stress
 - Reduced conflict
 - Increased independence



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Choosing assistive technology

- **The problem:** Forgetting to take medications on time

Timing is everything

When it comes to Parkinson's medications, timing is critical. That is why it is so important to take all prescription drugs exactly as directed. Levodopa-carbidopa, in particular, must be taken in precise, consistent dosages throughout the day in order to control symptoms. The goal is to maintain a steady supply of the medicine in your bloodstream. When medication is not taken on time, "freezing" and other sudden and debilitating motor symptoms can occur.

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Choosing assistive technology

The problem: Forgetting to take medications on time

The cognitive area: Memory, initiation, planning

The assistive technology: Setting alarms on a smartphone



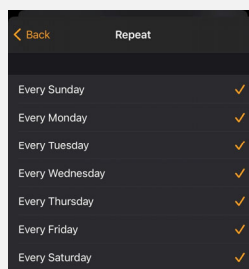
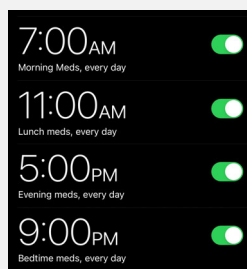
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Choosing assistive technology

- **The results:**
 - Medication works better
 - Fewer “ups and downs”
 - Less reliance on caregiver, spouse, or loved one



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Choosing assistive technology

The problem: Forgetting daily/weekly events, conversations, and details

The cognitive area: Memory and attention- or focusing on what is being said

The assistive technology: A smartphone app for logging events and information, using automatically generated time/date stamps and pictures

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Choosing assistive technology

- **The results:**
 - Better participation in conversation with family and friends about recent events and activities
 - Not relying on spouse, family, caregiver, etc. to answer questions for you
 - Improved confidence in your own memory abilities

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Choosing assistive technology



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Choosing assistive technology

- **The problem:** Can't see the channel or volume buttons on the TV remote- can't use them because they're so small
- **The cognitive area:** Visuospatial skills, memory, problem solving
 - Fine motor skills with fingers/hands
- **The solution:** A simplified remote control with large, bright buttons

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Choosing assistive technology

- **The results:**

- Re-gained independence for watching TV
- Less reliance on others to come help with the remote
- Confidence
- Can change the channel quickly if the new Jeopardy! host stinks



Roll over image to zoom in

Flipper Big Button TV Remote for Elderly - Universal Simple to Read, Proprietary Favorite Channels, Supports IR TVs, Cable, Satellite & Soundbars -

Visit the Flipper Store
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Price: \$39.95 & FREE Returns

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Brand	Flipper
Compatible Devices	TV
Connectivity Technology	Infrared
Battery Description	2 AAA batteries
Maximum Range	30 Feet

About this item

- **Three key functions:** On/Off, CHANNEL, VOLUME, Mute. It's the perfect for gift for caregivers, elderly loved ones with Dementia or Alzheimer's or someone with low and impaired vision.
- **work MULTIPLE DEVICES with ONE REMOTE** - The only remote you'll need - works with all IR (infrared) TVs and Cable / Satellite boxes, and Soundbars, like Xfinity, Comcast, Dish, Direct TV, Spectrum, Bose, and More. Two remotes combined into one to make your viewing experience simple and easy! (Be sure to Activate IR in Dish, Xfinity and DirecTV).
- **UNIQUE FUNCTIONALITY** - Customize your content with our proprietary "FAVORITES" feature - program up to 25 of your favorite channels then easily "FLIP" through your channels - eliminate hundreds of channels with nothing on!

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Challenges to using assistive technology

- **Motor symptoms**
 - Fine motor skills- tremors and coordination difficulties
 - More assistive technology!
- **Not "one size fits all"**
 - What works for one person may not work for another
 - Tweaks, changes to each tool or strategy are key
- **PD is progressive**
 - What works now might not work later
 - Episodic care

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Assistive technology in the On With Life clinic

- BITS- Bioness Integrated Therapy System

- Memory
- Attention
- Visuospatial skills
- Processing speed



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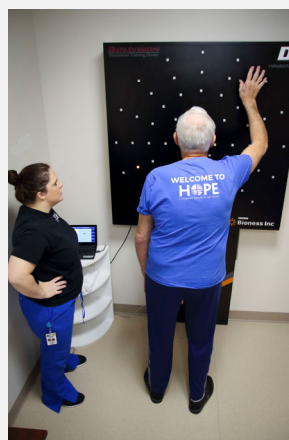


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Assistive technology in the On With Life clinic

- Dynavision board

- Target cognitive areas
- Larger, complete while standing
- Reaction time, processing
- Track scores and progress over time



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Assistive technology in the On With Life clinic

The award for Assistive Technology of the year goes to...

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Zoom!



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Assistive technology at On With Life

- Maintained our Cognitive Fitness classes during the pandemic by using Zoom
- Weekly group where we work on different strategies and tasks to stimulate your brain and get your brain thinking and exercising. Utilizing specialized and FUN tasks that address common changes in memory, attention, problem-solving, and motor integration that can affect persons with Parkinson's Disease.

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Key points

- Assistive technology is all around us
- At On With Life, our approach is to collaborate with the person with PD and caregivers to identify the problem, the root cause of the problem, and implement a personalized solution.
- These ideas can be utilized across all stages of PD and across all stages of cognitive decline

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Questions?

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