



Can We Put the Brakes on PD Progression?

WELCOME TO EXPERT BRIEFINGS!

- ✓ The program will begin at the top of the hour
- ✓ Meeting attendees will be muted

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Can We Put the Brakes on PD Progression?

James Beck, PhD

Chief Scientific Officer, Parkinson's Foundation

Joash Lazarus, MD

Multiple Sclerosis Center of Atlanta

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Expert Briefings
Parkinson's Foundation

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A red arrow points from the 'Live Transcript' icon in the Zoom toolbar to the 'Better Lives. Together.' slogan on the slide.

Our Mission



The Parkinson's Foundation makes life better for people with Parkinson's disease by improving care and advancing research toward a cure. In everything we do, we build on the energy, experience and passion of our global Parkinson's community.

We have everything you need to live better with Parkinson's.



Better Lives. Together.

Our Goals



To help our global community live better with Parkinson's, we pursue **three goals**:



Better Lives. Together.

Thank You!



Genentech

A Member of the Roche Group



KYOWA KIRIN

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For Your Convenience



RECORDING

Expert Briefings are recorded and archived on **Parkinson.org/ExpertBriefings** within one week

SLIDES

Download today's presentation via link in the chat.

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Poll: Getting to Know You



What best describes your connection to Parkinson's disease?

- Person with PD
- Spouse/Partner
- Parent has/had PD
- Other family
- Healthcare Professional
- Physician/Clinician
- Scientist/Researcher
- Nurse/Nurse Practitioner
- Other

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Meet Your Presenter



Joash Lazarus, MD
Multiple Sclerosis Center of Atlanta

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Can We Put the Brakes on PD Progression?

Joash T. Lazarus, MD
Director of Clinical Research
Multiple Sclerosis Center of Atlanta
jtlazarus@mscatl.org



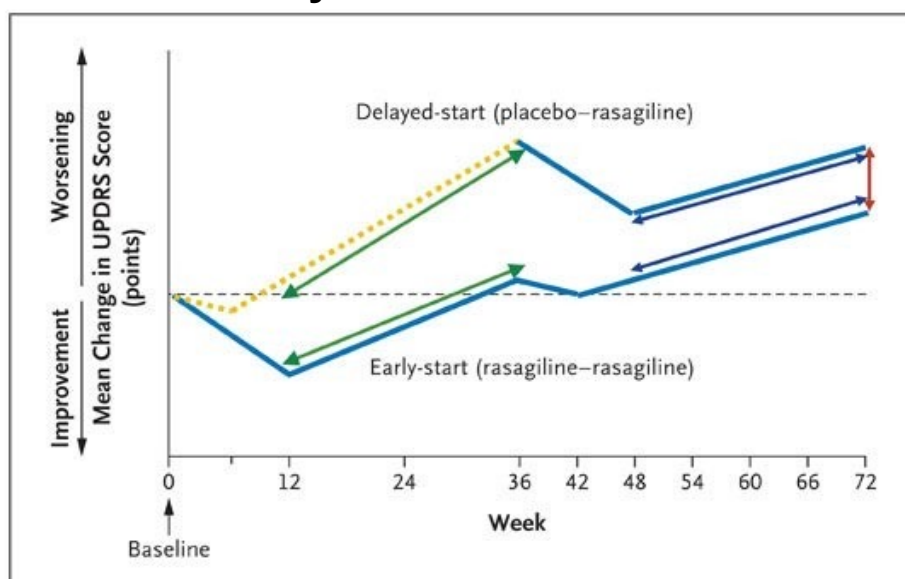
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Current Therapeutic Approach in PD

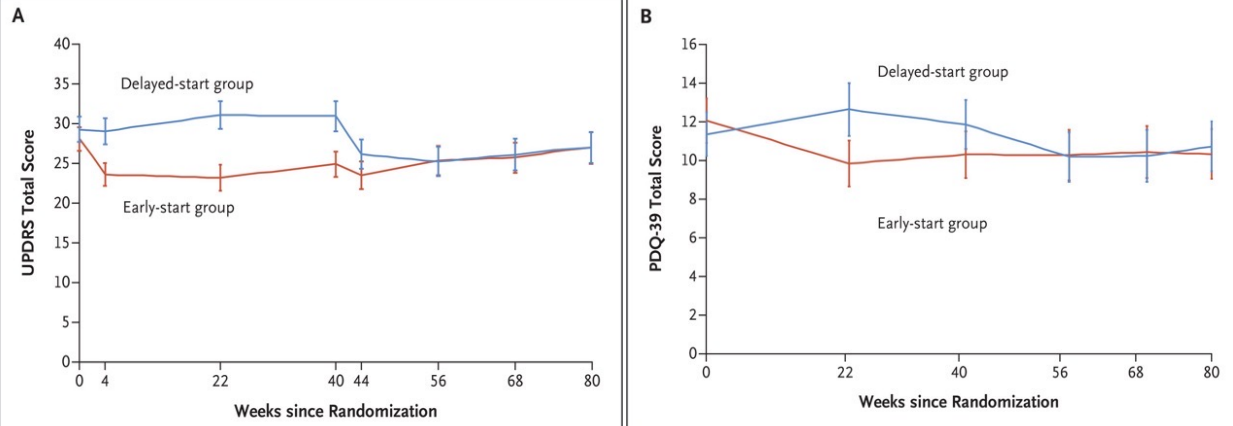
- Diagnosis, education
- Pharmacotherapy
 - Motor symptoms
 - Non-motor rx.
- Join support groups
- Participation in clinical trials
- Other therapies
 - **Gait & balance problems: PT and exercise**
 - Speech Rx., massage, mindful-based Rx
- Continuous dopaminergic stimulation
- DBS

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ADAGIO study

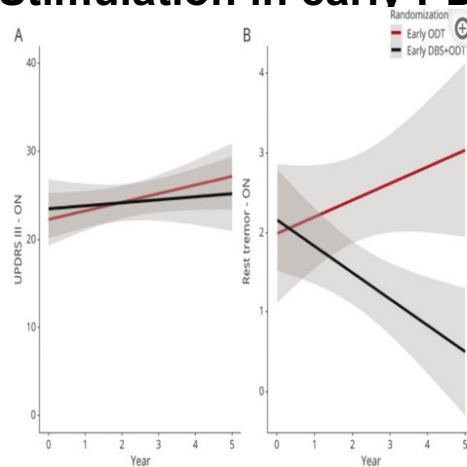


Unified Parkinson's Disease Rating Scale and Parkinson's Disease Questionnaire-39 Scores during the Delayed start Levodopa Trial.



The NEW ENGLAND JOURNAL of MEDICINE
CV Verschuur et al. N Engl J Med 2019;380:315-324.

Deep Brain Stimulation in early PD



Motor symptoms

(A) Single-blind motor examination (Unified Parkinson's Disease Rating Scale, part III [UPDRS-III]) scores, baseline through 5 years ($p = 0.12$, $\beta = -3.70$, 95% confidence interval [CI] -8.42 to 1.01). (B) Single-blind rest tremor (UPDRS-III item 20) scores, baseline through 5 years ($p = 0.005$, $\beta = -2.0$, 95% CI -3.4 to -0.6).

DBS = deep brain stimulation; ODT = optimal drug therapy.



Feedback

Neurology, 2020 Jul 28; 95(4): e393-e401.

Deep Brain Stimulation in early PD (Continued)

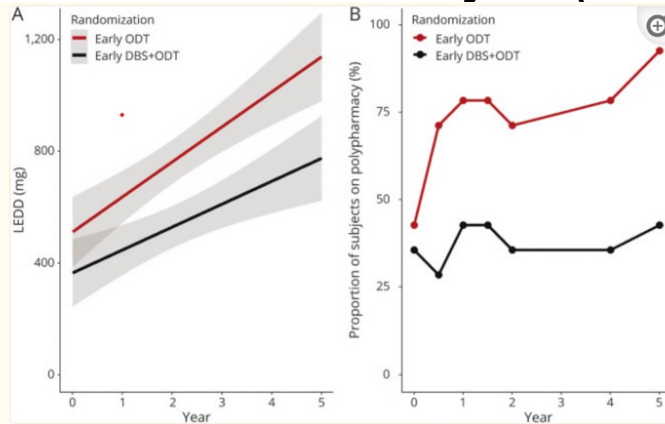


Figure 2

Parkinson disease medications

(A) Levodopa equivalent daily dose (LEDD) (mg), baseline through 5 years ($p = 0.04$, $\beta = -240$ mg, 95% confidence interval -471 to -8). (B) Proportion of participants requiring polypharmacy at each annual study visit. DBS = deep brain stimulation; ODT = optimal drug therapy.

Neurology, 2020 Jul 28; 95(4): e393–e401.

Role of Diet and Nutritional Supplements in Parkinson's Disease Progression



Association between dietary practices and Parkinson's disease progression

Food item (serving size)	Mean change in PRO-PD score (SE)*	P value (95% CI)*
Fresh vegetables (1/2 cup)	-53.2 (7.9)	<0.000 (-68.7 to -37.6)
Fresh fruit (1/2 cup)	-44.1 (8.5)	<0.000 (-60.7 to -27.5)
Nuts (1/4 cup or 2 tbsp spread)	-38.5 (7.5)	<0.000 (-53.2 to -23.7)
Fish (4 oz)	-37.1 (8.9)	<0.000 (-54.6 to -19.5)
Olive oil (1 tsp)	-34.1 (6.8)	<0.000 (-47.4 to -20.8)
Wine (6 oz)	-23.6 (5.3)	<0.000 (-34.1 to -13.1)

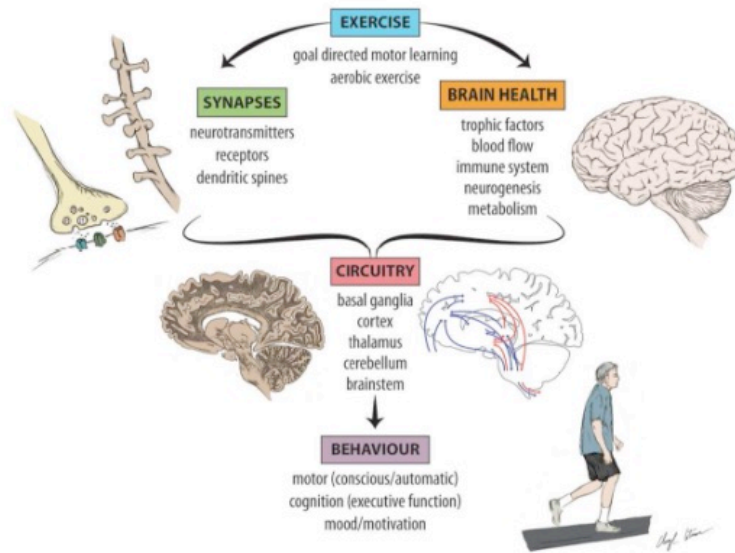
Oxid Med Cell Longev. 2017; 2017: 6405278.



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Exercise: From global brain health to specific neurotransmitter and circuit changes

Experience-Dependent Neuroplasticity



G Petzinger 2015
MOV DIS MT 2.4

Potential neuroprotective mechanisms of exercise in Parkinson Disease



- Protection of dopaminergic neuron loss (Gerecke et al, 2010): animal model showing that 3 months of exercise completely protected against MPTP induced damage
- Restoration of dopaminergic and glutaminergic balance in the striatum (Fischer, 2004)
- Upregulation of neurotrophic factors, e.g. BDNF
- Attenuates mitochondrial dysfunction and oxidative stress

Benefits of Exercise in the Elderly: Fall Reduction



- Falls are common in the elderly
- PD pts. fall frequency = 3X or about 46-68% fall >1X/yr
- Up to 50% of falls result in injury
- Fall related injuries = top causes of morbidity, loss of independence and increased health care costs.
- Preventing falls in the elderly and in neurologic disorders = high priority in most HC systems in the UK, US and Europe

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General Targets of Exercise



- 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 dopaminergic transmission**
- **Neuroprotection?**



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Exercise

Exercise improves brain function in many ways

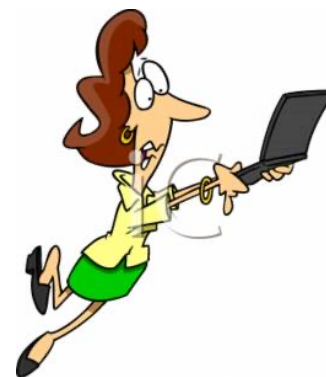
- Improved heart & lung function → improved motor function, attention, cognitive speed
- In general, aerobic exercise improves:
 - Attention, executive function, and memory in healthy older adults
 - Memory, executive function, and balance in people with Alzheimer's Disease
 - Working memory, processing speed, and visual learning in people with depression



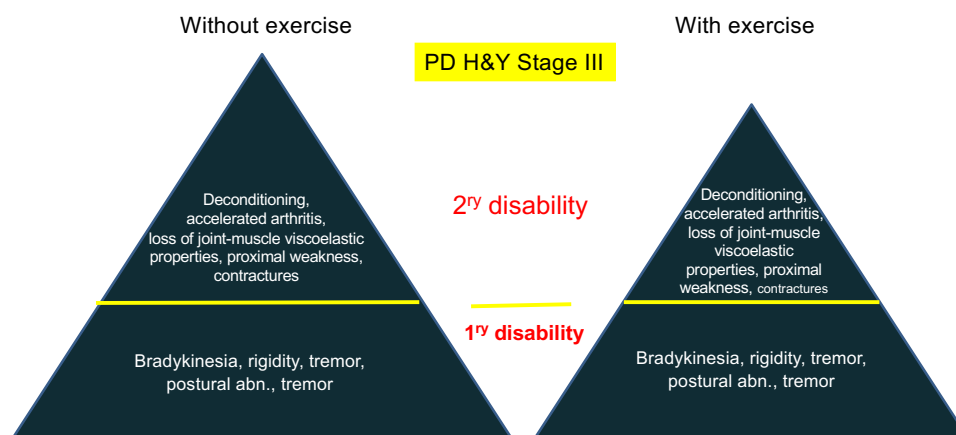
Reynolds GO, et al. Movement Disorders 2016 January;31(1)23-38.

Multi-tasking in PD

- With frontal cognitive dysfunction and MCI, speed and quality of gait are negatively affected by a dual task activity
- Additionally, with PD you have an impaired "autopilot", you now must **THINK** about movements/proper posture that used to come naturally
- So...performing more than one task at a time may lead to falls...



Parkinson Disability



Exercise

Exercise improves brain function in many ways

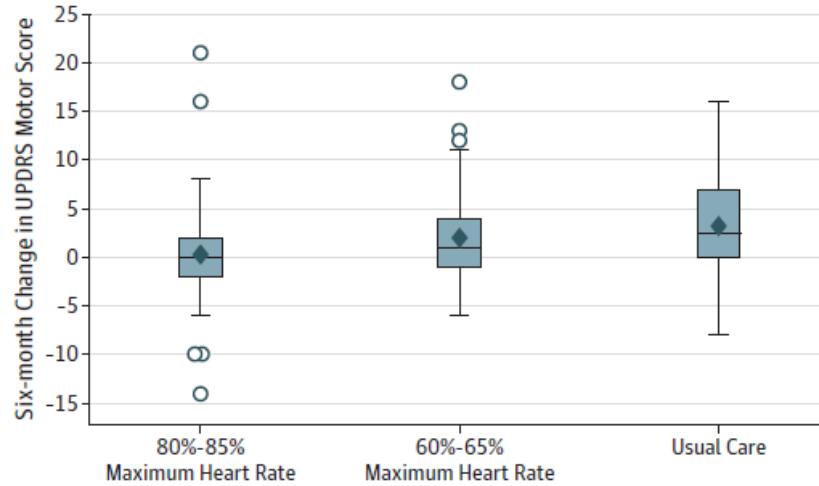
- Increases BDNF levels in healthy adults *and* in people with PD
- In PD:
 - Moderate-intensity aerobic exercise, 45-60 minutes 3 times per week: improved executive function
 - Progressive resistance exercise, 60-90 minutes 2 times per week: improved working memory, executive function, and attention
 - Large, randomized controlled trial of high-intensity treadmill exercise (4 days per week, either 60-65% or 80-85% maximum heart rate): improved mobility compared with moderate-intensity and usual care

Vigorous exercise appears to be *neuroprotective*

- People with PD who reported regular exercise had less cognitive decline after 1 year
- Still requires long-term/prospective research to confirm this

SPARX study: High-intensity aerobic exercise in early PD

C Six-month change in UPDRS motor score



Schenkman et al. JAMA Neurology 2018;75(2):219-226

Exercise Registry Study



In a study of 4886 individuals with PD:

- 44% did more than 150 min of exercise per week
- 20% did "low" exercise (<150 min per week)
- 36% did no exercise

Important findings:

- Regular exercise = better quality of life, physical function, less depression
- 1 year later, physical activity at baseline = better QOL, mobility, physical and cognitive function
- "Dose" matters!

Ogih, O., Eisenstein, A., Kwasny, M., & Simuni, T. (2014). Back to the basics: regular exercise matters in Parkinson's disease: results from the National Parkinson Foundation QIL registry study. *Parkinsonism & related disorders*, 20(11), 1221-1225.



Paradigm Shift in PD Treatment



- Diagnosis, education
- Pharmacotherapy
 - Motor symptoms
 - Non-motor rx.
- Join support groups
- Participation in clinical trials
- Other therapies
 - **Gait & balance problems: PT and exercise**
 - Speech Rx., massage, mindful-based Rx
- Continuous dopaminergic stimulation
- DBS



- Diagnosis, education
- **Gait & balance problems: PT and exercise (exercise therapy first!)**
- Pharmacotherapy
 - Motor symptoms
 - Non-motor rx.
- Join support groups
- Participation in clinical trials
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MOV DIS MT 2.4



For _____
 Address _____ Date _____

Rx

Total of 150 minutes per week

- Heart rate elevated
- Sweating!
- Enough to feel fatigued (but not exhausted or in pain)

*Your Friendly Movement
 Disorders Specialist*

REFILL _____ TIMES _____, M.D.
 DEA NO. _____ Address _____

QUESTIONS?



THANK YOU

2022 Expert Briefings



Wednesday, February 2

Sights, Sounds and Parkinson's
Ali G. Hamedani, MD, MHS



Wednesday, March 2

Conversations About
Complementary Therapies and PD
Natalia Diaz, MD



Wednesday, April 6

Can We Put the Brakes on
PD Progression?
Joahn L. Marcus, MD



Wednesday, September 7

The Impact of Physical
Activity in PD
Miriam Rafferty, PT, DPT, PhD

Wednesday, October 5

Understanding Gene and Cell-
Based Therapies in PD
Roger Barker, BA, MBB, MRCP, PhD

Wednesday, November 2

Let's Talk About Dementia
James Leverenz, MD

Register at Parkinson.org/ExpertBriefings

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Resources and Support



Aware in Care
Parkinson.org/AwareInCare



PD Library
Parkinson.org/PDLibrary



PD Health @ Home
Parkinson.org/PDHealth

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Resource and Support Continued



Podcast: Substantial Matters
Parkinson.org/Podcast



Professional Education
Parkinson.org/ProfessionalEducation



PD Generation
Parkinson.org/PDGeneration

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We're Here For You



Parkinson.org
1-800-4PD-INFO
Helpline@Parkinson.org



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Before You Go...



Your feedback is important to us!
Please complete the evaluation after the close of this webinar.

A clipboard with a silver clip at the top, holding a white sheet of paper. The paper is titled 'EXPERT BRIEFING EVALUATION' and contains a survey question.

EXPERT BRIEFING EVALUATION

Page 1 of 1

1. What best describes your connection to Parkinson's disease (PD)?

- Person with Parkinson's
- Spouse / Partner
- Parent has / had Parkinson's
- Other family of person with Parkinson's
- Friend of person with Parkinson's
- Healthcare Professional
- Other

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