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Exercise is Medicine ! What's the Prescription?

- For Everyone - not just people with Parkinson's Disease!

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DISCLOSURES:

I am passionate about improving quality of life through Physical Therapy and Exercise. I am grateful to serve the community of people and families impacted by Parkinson's Disease and other movement disorders for the past 20 years. I have no financial benefit associated with this presentation.

Objectives:

- 1. Define the undeniable benefits of exercise based on respected research studies.
- 2. Introduce the exercise prescription based on the American Physical Therapy Association and the Parkinson's Foundation.
- 3. Dive into each component of this exercise prescription.
- 4. Explain how to implement these exercises into your lives today.
- 5. Discuss barriers to exercise.



Disclaimer:

- I am going to present the current research supporting a high intensity exercise approach to treating the symptoms of Parkinson's Disease.
- Please keep in mind that high intensity is different for different people.
- I want this information to be a guide.
- I do not want anyone to feel they cannot be successful with exercise.
- All exercise is good. If you feel you cannot exercise at this level, please know that all exercise will help you move better, feel better and be better.
- I still love the old saying "If we don't use it, we will lose it."



Medication targets 3 motor symptoms of PD:



- We need Exercise to target the rest of the symptoms!
- Medication + Exercise = Improved Quality of Life!
- Exercise helps medications work more effectively by helping the brain use dopamine.

1. Benefits of Exercise

- Beyond stronger heart, bones and muscles
- Slows the Effects of Aging and Disease

Neuroprotection & Neuroplasticity

- Stronger BRAIN -
 - Making growth factors
 - Leads to new brain cells
 - Better blood flow
 - Less inflammation
 - Rewires the brain
 - Builds new communication pathways
 - Utilize existing Dopamine more effectively
 - Slow the Progression of Parkinson's Disease
 - Reduce the risk of being diagnosed with Parkinson's Disease and Alzheimer's.

Ease the Motor and Non- Motor Symptoms of PD

- Improves Balance
- Decreases Fall Risk
- Decreases Constipation
- Decreases Pain
- Improves Cognition
- Improves Sleep
- Improves Mental Health
- Decreases Depression
- Decreases Anxiety
- Improves Executive Function
- Improves Motivation
- Improves Motor Control





2. Exercise Prescription: Based on the American Physical Therapy Association and the Parkinson's Foundation.

Aerobic Activity

- 3-4 days a week
- 30-40 minutes
- 3 days at High/Vigorous Intensity – 85% of heart rate max

OR

 4 days at Moderate Intensity – 65% of heart rate max



Strength Training

- 2-3 days a week
- Progressive Resistance
 Training
- Training major muscle groups important for walking, balance and posture.



Balance, Agility & Task Specific Training

- 2-3 days a week
- Balance Training
- Multidirectional Stepping
- Boxing class
- Tai Chi class
- Dance class
- LSVT BIG Lee Silverman Voice Treatment BIG
- PWR Parkinson's Wellness Recovery

+ Your Daily Walk





Parkinson's Exercise Recommendations

propression datasets of the relevant synthesis based by transfer stiffness, size movement and talance problems.

Personal Contraction Processing

Parkingsteining.

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





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3. Exercise Prescription



Aerobic Activity

- Three studies over 6 months all concluded the higher intensity aerobic exercise resulted in less progression of PD on the Unified Parkinson's Disease Rating Scale.
 MDS-UPDRS.
 - SPARX 2: USA. Newly diagnosed with PD and not on medication for PD.
 - Van Der Kolk: Netherlands. Sedentary people with PD on medication.
 - Mak: Hong Kong, China.
- Results:
 - Higher Intensity Exercise group had no decline in MDS-UPDRS Motor Score.
 - Moderate Intensity Exercise group had a 2-point decline on the MDS-UPDRS
 Motor Score
 - Usual Care group which did not exercise had the typical progression which was a 4-point decline on the MDS-UPDRS Motor Score
 - A score of zero means no symptoms of PD.
 - Example:
 - If your UPDRS score was 22 and you choose not to exercise, you can expect your score to increase to 26 in 2 years.
 - If you do exercise at 85% per protocol you can expect your score to stay the same – or even improve over 2 years.



Aerobic Activity

- High Intensity is defined as exercising at 85% of your max heart rate.
- Moderate Intensity is defined as exercising at 65% of your max heart rate.
- Start with your target heart rate. 220-age= Target Heart Rate/Beats Per Minute BPM
- High Intensity: 220-age x 85%
- Moderate Intensity: 220-age x 65%
- Example: If you are 70 years old: 220-70 x 85% = 128 BPM for High Intensity.
- Example: If you are 70 years old: 220-70 x 65% = 98 BPM for Moderate Intensity.
- The exercise prescription for maximum benefit is 3 days a week if you can achieve High Intensity for 30 minutes and 4 days a week if you can achieve Moderate Intensity for 30 minutes. The warmup and cool down period are not part of the 30 minutes.



- What if you don't want to monitor your heart rate or what if your heart rate is not an accurate indicator of your effort?
- You can use the "Talk Test" or the Borg Scale of Perceived Exertion".
 - Moderate Intensity:
 - "I can talk, but not sing"
 - 4 to 6 on the Borg Scale
 - High/Vigorous Intensity:
 - "I cannot talk or sing".
 - 7 to 8 on the Borg Scale

RPE SCALE	RATE OF PRECEIVED EXERTION
10 /	MAX SFFORT ACTIVITY freeb direct reposition to keep going. Completely can al break, unable to talk. Converting the many from a very short tree.
9 /	VERY HARD ACTIVITY Nery difficult to maintain exercise treasury. Can boostly breather and speed only a few words
7-8 /	VIGOROUS ACTIVITY borderine unconfertable. Shart of breath, conspective sentence
4-6 /	MODERATE ACTIVITY Desutives becady, can hold a shart conversation. Init accounting confurmable, turn becausing restauctify more challenging
2-3 /	LIGHT ACTIVITY Desits like you can maintain for hears. Easy to breathe and carry a conversation
1 /	VERY LIGHT ACTIVITY Hondy on, electron, but more dain desping, working TV, en

Aerobic Activity

Examples of Aerobic Activity:

- Treadmill
- Stationary Bike
- Elliptical
- Rowing Machine
- Brisk Walking
- Hiking
- Biking
- Jogging
- Water Aerobics

- Running
- Dancing
- Skiing
- Canoeing
- Skating
- Tennis
- Pickleball
- Basketball
- Swimming



Strength Training

- Age Influence on Strength Narcici et al. Study looked at muscle loss with age starting at age 60.
 - If we have a decline in strength it leads to frailty which leads to mortality.
- Progressive Resistance Exercise Training (PRET) study over 24 months using the UPDRS motor score.
 - Increased resistance as tolerated.
 - All major muscle groups.
 - Results in Corcos et al. Movement Disorders 2013 revealed there was improvement in UPDRS motor score over 24 months in the group participating in the study.
- Progressive Resistance Exercise Training with Instability this study added uneven surfaces to the strength training, which is also revealing improved UPDRS motor scores over 24 months.



Strength Training

- Cognition improves with strength training:
 - A study by David et al evidence that 24 months of Progressive Resistance Training may improve attention and working memory in patients with mild-to-moderate Parkinson's disease
 - A study by Silva-Batista et al. looking at Progressive Resistance Exercise with Instability and The Montreal Cognitive Assessment (MoCA) is a test used to detect mild cognitive decline and early signs of dementia.
 - Results indicated participants did not have a decline in MoCA score and in some cases had an improved MoCA score

Improves Cognition !



Exercise Improves Sleep

Memon et al. Study: High-intensity rehabilitation, combining resistance training and body-weight interval training, improves sleep efficiency in Parkinson's disease

This study is the first to demonstrate that high-intensity exercise has a potential role in improving sleep and leading to better cognitive performance in the memory.



Improves Sleep !

https://www.frontiersin.org/articles/10.3389/fresc.2022.952289/full - Effects of exercise on sleep spindles in Parkinson's disease

Strength Training

Recommendations and Examples of Strength Training:

- 2-3 days a week
- Research Studies indicate needs to be Progressive, meaning increase the difficulty as you are able.
- Progressive example:
 - Progressive means need to continue to change as you get stronger
 - 3 sets of a given exercise
 - 1st set more repetitions at a lower resistance
 - 2nd set less repetitions at a higher resistance
 - 3rd set may have less repetitions at an even higher resistance
- Newer studies also showing when you can add instability training to the weight training the results are even better.





Strength Training

Recommendations and Examples of Strength Training:

- Target major muscle groups for gait, balance, posture
 - Prioritize extensor muscles to combat forward stooped posture
 - Back extensors, gluts, gastrocs
- Lifting Weights
- Resistance Bands
- Bodyweight exercises:
 - Planks
 - Squats
 - Sit to Stands
 - Push-ups
- Heavy work:
 - Shoveling
 - Digging in the garden





Balance, Agility & Task Specific Training







Balance, Agility & Task Specific Training



- 2-3 days a week
- Balance Training
- Multidirectional Stepping
- Boxing class
- Tai Chi class
- Dance class
- Yoga class
- Ping-Pong
- Pickle Ball
- LSVT BIG Lee Silverman Voice Treatment BIG
- PWR Parkinson's Wellness Recovery

Imbalance is typically NOT one of the first symptoms of Parkinson's Disease.

Daily Walk

- To improve walking, you must practice walking with good quality arm swing and step length.
- Your daily walk can count as your Aerobic exercise if you can truly push to get your heart rate up.
- Benefits of walking are endless
 - Mental health
 - Cardiovascular health
 - Improves balance

I think of walking as task-specific training. If you want to walk better, you must practice walking!



4. How to get started today

- See a Physical Therapist
 - Ideally you will start with a Physical Therapist for a Comprehensive Evaluation and Prescription for Physical Therapy and Exercise.
 - See your PT every 6-12 months for re-assessment and to help you keep your plan of attack current and effective!
- Join a Group Exercise Class
 - YMCA
 - PWR Parkinson's Wellness Recovery Classes
 - The Center for Active Living at UCCS Lane Center
 - Silver Sneaker Classes
 - Boxing Classes
 - Dance Classes
 - Spin Bike Classes
- Join a Gym
- Hire a Personal Trainer
- Find a Partner in Exercise
 - Friend
 - Family
 - Spouse
- Just get Moving!



Let's Exercise right now!

Standing Exercises –

Stand with excellent posture

- 1. Standing heel raises
- 2. Standing hip kicks to the side
- 3. Standing hip kicks to the back
- 4. Sit and Stand up fast to build power and down slowly to build muscle

"Nose over Toes"

Sitting Exercises –

Sit at the front edge of your chair with excellent posture

- 1. Sitting heel raises
- 2. Sitting toe raises
- 3. Sitting marching
- 4. Sitting and extend your knee all the way out – alternate – toes up too

How do we make it progressive? Increase reps and resistance!



5. Barriers to exercise



Bas Bloem, MD, PhD, Daniel Corcos, PhD.

How do we break the barriers to exercise?





MJFox and Bloom

Summary



• All exercise is good. If you feel you cannot exercise at this level, please know that all exercise will help you move better, feel better and be better.

Contact me with any questions.

Danielle Mulligan, PT, MSPT Email questions to me at: Danielle.mulligan@uchealth.org

Please ask your doctor for orders to a see a Physical Therapist 1-2 times each year.



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Parkinson's Foundation: Staging PD – UPDRS: What it Measures and What Your Score Means

Disease rating scales give clinicians a snapshot in time of the severity of a disease, how it may be affecting a patient, and areas where therapies may be applied. Put together over time, rating scale results can indicate the progression of a disease and possibly help with long term planning. In the case of Parkinson's disease (PD), the Hoehn and Yahr scale, published in 1967, describes the progression of PD according to five stages from earliest to most advanced, based on severity of symptoms and level of disability. The Unified Parkinson's Disease Rating Scale (UPDRS) consists of four parts, each of which encompasses several subparts to give an overall total score reflecting the severity of a person's disease. In 2001, the Movement Disorder Society (MDS) took input from patients and care partners to incorporate into the UPDRS what was important to them and in 2008 published the revised MDS-UPDRS rating scale. Besides evaluating any one person's disease, rating scales provide criteria for enrollment in clinical trials and help to compare trials and outcomes

https://www.parkinson.org/library/podcast/83?psafe_param=1&utm_source=google&utm_medium=adgrant&utm_campaign=&utm_term=&gad_source=1&gclid=Cj0KCQiAz8GuBh CxARIsAOpzk8wVsl2luUQlxYj9GKubfd8uyUl3uUp0xE1rpqSGD5MNdYr92C21oX4aAm1XEALw_wcB

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Montreal Cognitive Assessment (MoCA) Test for Dementia

The Montreal Cognitive Assessment (MoCA) is a test used to detect mild cognitive decline and early signs of <u>dementia</u>. It can help identify people at risk of <u>Alzheimer's disease</u> and screen for conditions like <u>Parkinson's disease</u>, <u>brain tumors</u>, substance abuse, and head trauma.

Introduced in 2005, the MoCA test is an update from the older <u>Mini-Mental State Examination (MMSE</u>) introduced in 1975. It contains 30 questions and takes 10 minutes to complete. While the MOCA test is useful in detecting dementia, it cannot differentiate between the different <u>dementia types</u>.¹

Purpose of the MoCA Test

The MoCA test is a simple, in-office tool that can quickly determine if there is any impairment in a person's <u>cognitive function</u>, including their ability to understand, reason, and remember.

The test is used for adults 55 to 85 with early signs of dementia (the progressive loss of intellectual functioning, especially memory and abstract thinking),¹

If the test indicates that a person has mild cognitive impairment (MCI), additional evaluations may be done to check for suspected causes, like:1

- •Alzheimer's disease
- •Parkinson's disease
- Vascular dementia
- Lewy body dementia
- •Frontotemporal lobe dementia

https://www.verywellhealth.com/alzheimers-and-montreal-cognitive-assessment-moca-98617