



Parkinson's Disease

Exercise as Medicine

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Who Am I?

- Department of Rehabilitation Services, Roseville & Lincoln
- Doctorate in Physical Therapy, Samuel Merritt University
- Neurologic Clinical Specialist, American Physical Therapy Association
- Certified PWR! (Parkinson's Wellness Recovery) Therapist

Parkinson's Disease: Objectives

Parkinson's Disease : What it is, what it isn't

Your Kaiser Permanente Team: Who we are, what we do

Exercise as Medicine: YOU are in control of your PD

What can you do at home?

Question & Answer Session

Parkinson's Disease

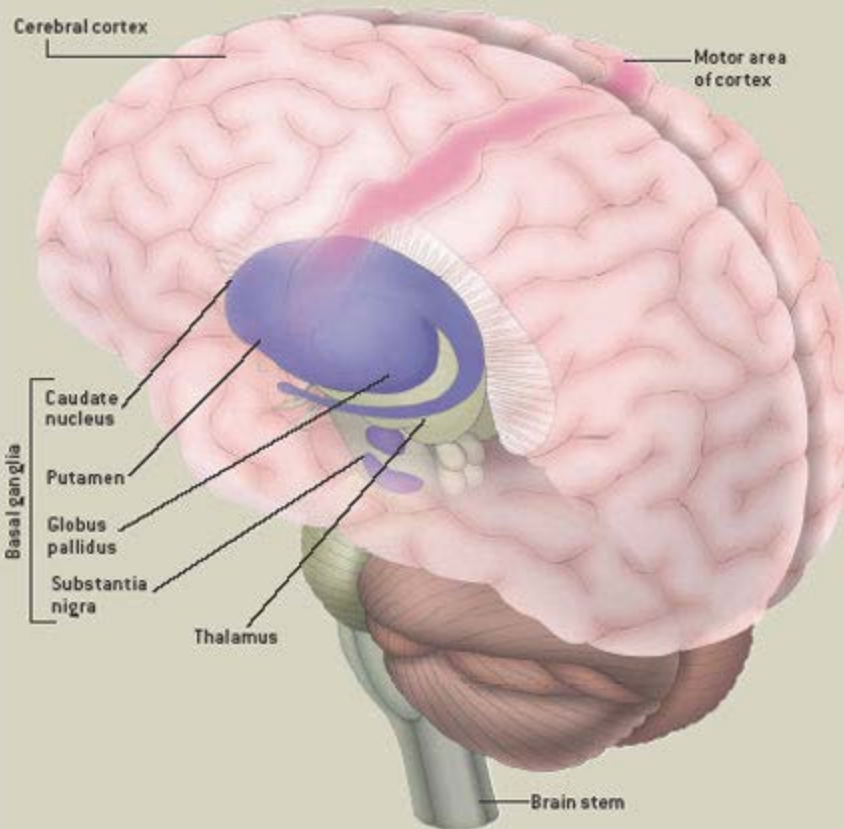
What is Parkinson's Disease?

- Progressive, neuro-degenerative disease affecting the brain
- Deficiency of dopamine (neuro-transmitter)
- Characterized by 4 symptoms
 - Bradykinesia (slow movement)
 - Rigidity (stiffness)
 - Tremor (at rest)
 - Postural Instability (poor balance)



BRAIN REGIONS AFFECTED BY PARKINSON'S

Most cell death occurs in the substantia nigra, which controls voluntary movement and helps to regulate mood. Although the rest of the brain can initially compensate, it can no longer do so when 50 to 80 percent of the cells in the substantia nigra have been lost. At that point, other parts of the brain engaged in motor control, including the rest of the basal ganglia (of which the substantia nigra is part), the thalamus and the cerebral cortex, can no longer work together, and movement becomes disjointed and uncontrollable.





Parkinson's Disease

Types of Parkinson's Disease

- Idiopathic Parkinson's Disease
- Atypical Parkinsonism: ~15% of PD diagnoses
 - Corticobasal Degeneration
 - Lewy Body Dementia
 - Multi-System Atrophy
 - Progressive Supranuclear Palsy



Parkinson's Disease

Stages of Parkinson's Disease

- Stage 1: Initial onset, one limb affected, mild postural changes
- Stage 2: Bilateral symptoms, balance and activities of daily living more difficult
- Stage 3: Slowing of movement, more prominent symptoms
- Stage 4: Increased rigidity, decreased walking abilities, bradykinesia (slow movement)
- Stage 5: Loss of walking or standing abilities, requires assistance with activities of daily living

WHAT IS PARKINSON'S?

PARKINSON'S DISEASE AFFECTS **ONE IN 100 PEOPLE OVER AGE 60**. IN THE UNITED STATES, 60,000 NEW CASES WILL BE DIAGNOSED THIS YEAR ALONE.

1 / 100
OVER
AGE 60

60,000
NEW



LESSER-KNOWN SYMPTOMS

OF PARKINSON'S INCLUDE DEPRESSION, APATHY, FATIGUE, AND DEMENTIA.



PARKINSON'S DISEASE IS CAUSED BY THE DEATH OF DOPAMINE CELLS.

60 TO 80%
OF THESE CELLS ARE ALREADY LOST BY THE TIME MOTOR SYMPTOMS APPEAR.



THE EXACT CAUSE OF PARKINSON'S DISEASE IS **UNKNOWN** BUT BOTH **GENETICS** AND **ENVIRONMENT** ARE CAUSES.



THERE IS **NO TEST** TO DIAGNOSE PARKINSON'S DISEASE. PEOPLE WITH PARKINSON'S VISIT MULTIPLE DOCTORS AND **CAN WAIT YEARS** BEFORE A CORRECT DIAGNOSIS.



THERE IS NO CURE FOR PARKINSON'S DISEASE TODAY. BUT THE **MICHAEL J. FOX FOUNDATION** IS WORKING URGENTLY TO CHANGE THAT.

LEARN MORE AT
WWW.MICHAELJFOX.ORG


THE MICHAEL J. FOX FOUNDATION
FOR PARKINSON'S RESEARCH

1M / US **5M / WORLD**

TODAY, AN ESTIMATED **ONE MILLION** PEOPLE IN THE UNITED STATES AND MORE THAN **FIVE MILLION** WORLDWIDE ARE LIVING WITH PARKINSON'S DISEASE.

3 OUT OF 5
AMERICANS WILL SUFFER FROM A NERVOUS-SYSTEM DISEASE SUCH AS PARKINSON'S OR ALZHEIMER'S.



RESEARCHERS ARE INVESTIGATING POTENTIAL EARLY SYMPTOMS, SUCH AS **IMPAIRED SENSE OF SMELL, CERTAIN SLEEP DISORDERS, CONSTIPATION, AND UNUSUAL FATIGUE.**



TODAY'S BEST PARKINSON'S DRUG WAS **DISCOVERED IN 1967**



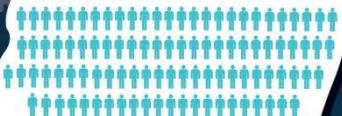
LYNDON B. JOHNSON WAS PRESIDENT AND NEIL ARMSTRONG HAD NOT YET WALKED ON THE MOON.

DYSKINESIA IS OFTEN MISTAKEN FOR A SYMPTOM OF PARKINSON'S DISEASE, BUT IT IS ACTUALLY A SIDE EFFECT OF PARKINSON'S TREATMENT. **MANY PATIENTS REPORT DYSKINESIA TO BE AS DEBILITATING AS THE DISEASE ITSELF.**



PARKINSON'S DISEASE

Parkinson's disease affects the nervous system which controls movement. Damage to the levels of dopamine in the brain impairs the ability to relay messages to parts of the body which control movement. While the exact cause of the disease is unknown, researchers are examining genetic causes linked to the LRRK2 gene and environmental factors.



X 100,000 = 10,000,000

Global estimate of people that have Parkinson's (2)



SYMPTOMS: Tremors, muscle rigidity, slowed movement, balance instability (1)



Men have a 1.5x greater risk than women of developing the disease. (3)

60,000

The number of people in the US that are diagnosed with the disease each year. (4)



Exposure to herbicides and pesticides may increase the risk of developing the disease. (4)

60

years old is the average onset age. (8)

14th

Leading cause of death in the U.S. (7)



Decreased ability in sense of smell, which is thought to be linked to alpha-synuclein. (5)

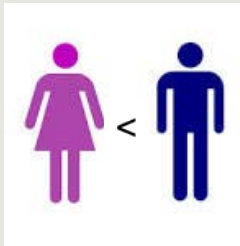
 **NOVUS**
BIOLOGICALS

Learn more about Parkinson's disease at
www.novusbio.com/diseases/parkinson-disease.html

SOURCES: WWW.MICHAELJFOX.ORG/UNDERSTANDING-PARKINSONS/I-HAVE-GOT-WHAT-PHP | WWW.MICHAELJFOX.ORG/UNDERSTANDING-PARKINSONS/LIVING-WITH-PD-HTML

Parkinson's Disease: Exercise as Medicine

Who has Parkinson's Disease?



- Roughly 60,000 Americans per year
- Incidence increases with age



Parkinson's Disease

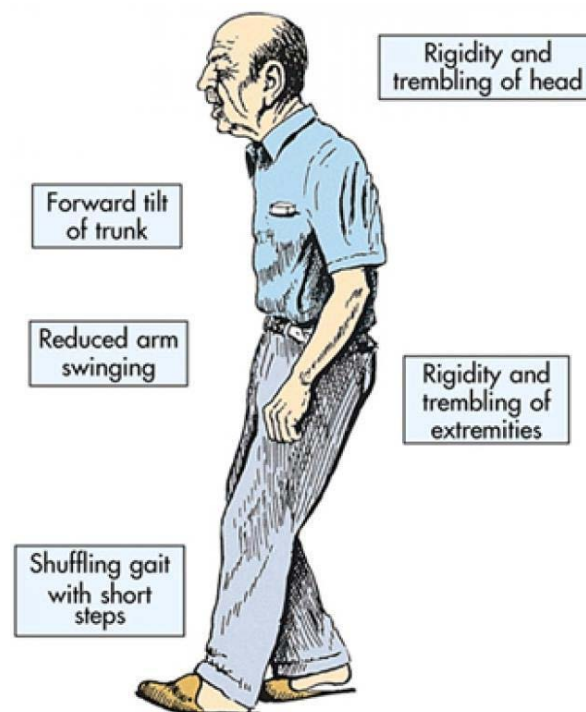
Why do people get Parkinson's Disease?

- Likely combination of environmental and genetic factors
- Exposure to environmental chemicals or toxins
 - Rural living, well water, manganese, pesticides
- ~15% of all diagnosed have family history

Parkinson's Disease

What are the Signs and Symptoms?

- Primary motor symptoms
 - Bradykinesia: slowness of movement
 - Rigidity: stiffness, limited flexibility
 - Tremor: RESTING
 - Postural instability: off balance when standing
- Secondary motor symptoms
 - Freezing: "my feet are glued to the floor"
 - Micrographia: small handwriting
 - Mask-like expressions: lack of facial expressions
 - Unwanted acceleration with walking





Parkinson's Disease

What is freezing?

- Freezing of gait may feel like, "my feet are glued to the floor"
- Often, people who fall and have no idea why or how, are experiencing freezing of gait
- Most common times for freezing
 - Narrow space/doorways
 - Turning around/corners
 - Crowded or small spaces

Parkinson's Disease

What are the Signs and Symptoms?

- Secondary motor symptoms (continued)
 - Stooped posture/leaning forward
 - Dystonia: repetitive, awkward postures (toe curling)
 - Impaired dexterity/coordination
 - Decreased arm swing while walking
 - Akathisia: inner feeling of restlessness, desire not to sit still
 - Speech problems: drooling, quiet voice, choking, difficulty swallowing
 - Cramping: any muscle group
 - Sexual dysfunction: erectile dysfunction, loss of lubrication, urinary control



Parkinson's Disease

What are the Signs and Symptoms?

- Non-motor symptoms
 - Loss of smell
 - Vision (dry eyes due to limited blinking)
 - Excessive saliva (can cause dental issues, drooling)
 - Bladder issues (trouble with control)
 - Constipation
 - REM sleep behavior disorder
 - Mood disorder, depression
 - Fatigue, lack of energy/motivation
 - Weight loss or gain
 - Cognitive issues: slowed thinking, memory loss, confusion
 - Medication side effects

Parkinson's Disease: Exercise as Medicine

Typical treatment options

Medication	Deep Brain Stimulation	Exercise
<ul style="list-style-type: none">■ Individualizing dopamine management■ Changes through the disease process■ MUST be taken on schedule to maximize benefits■ Side effects	<ul style="list-style-type: none">■ Not for everyone■ May increase fall risk■ Complications	<ul style="list-style-type: none">■ Address/improve function■ Neuroprotective■ Neurorepair■ Start early in disease process

Parkinson's Disease

Medications

- **Gold standard medication:** Carbidopa/Levodopa (Sinemet), Duopa (Sinemet pump)
- Carbidopa only (Lodosyn)- to help with excessive nausea
- Dopamine Agonists: Pramipexole (Mirapex), Requip (Ropinirole), Rotigotine (Neupro)
- Anticholinergics: Trihexyphenidyl (Artane), Benztropine (Cogentin)
- MAO-B Inhibitors: Selegiline (Eldepryl), Rasagiline (Azilect®)
- COMT Inhibitors: Entacapone (Comtan)
- Amantadine

Parkinson's Disease

Making the most of your medication(s)

- Medication should be taken at the same time, daily
- Avoid protein for 30 minutes before or after Sinemet
- Take with sparkling mineral water



Parkinson's Disease: Your Kaiser Permanente Team

Who we are and what we do

- Neurology
- Physical Therapy
- Speech Therapy
- Occupational Therapy
- Social Medicine
- Psychiatry



Parkinson's Disease: Your Kaiser Permanente Team

Who we are and what we do

- Occupational Therapy
- Assist with activities of daily living
 - Dressing
 - Bathing
 - Toileting/hygiene
 - Writing/fine motor activities, i.e.: using computer mouse

Parkinson's Disease: Your Kaiser Permanente Team

Who we are and what we do

- Speech Therapy
- Can assist with
 - Problems with drooling
 - Difficulty swallowing or choking
 - Speaking difficulties
 - Cognition testing and strategies



Parkinson's Disease: Your Kaiser Permanente Team

During your visit with a Physical Therapist

- Come prepared with a list of questions/concerns and priorities (Pre-Assessment Form)
- Be open and honest, especially about falling, keep a diary of your falls
- Areas we assess
 - Walking, Balance, Physical Capacity (endurance), Functional Ability
 - Bring a caregiver, family or friend



Parkinson's Disease

What to expect in Physical Therapy

- Cues to assist with movement
- Balance training
- Strength training
- Practice activities of daily living and collaborate on modifications
- Initiate exercise routine
- Exercise groups

Parkinson's Disease

Key components to exercise for PD

- Cardiovascular exercise
- Balance training
 - Balance during quiet stance
 - Reactive
 - Anticipatory
 - Dynamic



Parkinson's Disease

Exercise Principles

- Trunk Rotation
- Large Amplitude Movement
- Focused Movement
- High Intensity Movement
- Dual Task Activity
- Balance challenge

Parkinson's Disease: Exercise as Medicine

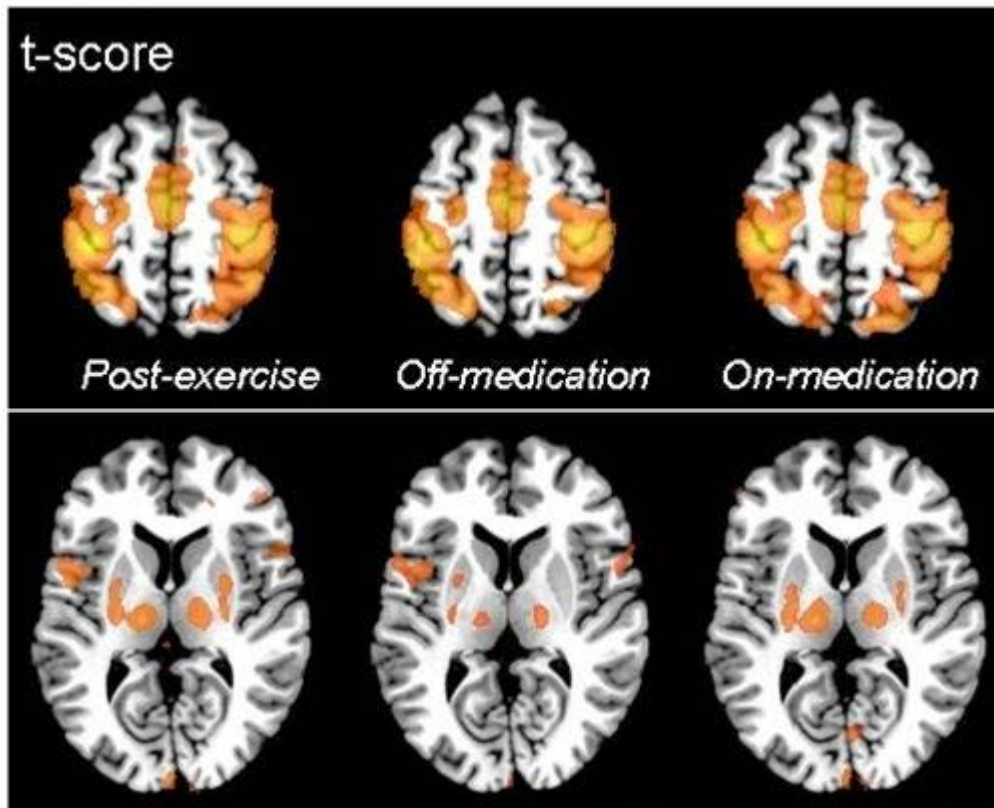
Why Should We Exercise?

- Parkinson's Disease = decreased dopamine
- Benefit of exercise
 - Increase availability of dopamine
 - Improves cognition
 - Decreases disability
 - Improves quality of life



How does exercise change the brain?

Medscape



Source: Exerc Sport Sci Rev © 2011 American College of Sports Medicine

It Is Not About the Bike, It Is About the Pedaling: Forced Exercise and Parkinson's Disease

Dr. Jay Alberts, Cleveland Clinic, 2011

Parkinson's Disease: Exercise as Medicine

Intensity of exercise

- Animal studies
- Relationship between exercise induced protection and amount of running
- Mice running 18,000 revolutions/day were protected
- Mice running 6,000 revolutions/day were not protected
- Separate experiment: required 2-3 months of running for protection, if running was for only 1 month, no protection
- Bottom line → MORE is better, lifestyle modification, not short-term



Consider a
wearable
fitness
tracker

Parkinson's Disease: Exercise as Medicine

World Health Organization (WHO) – Exercise guidelines

- Aerobic physical activity for:
 - ≥ 150 minutes/week at moderate intensity
 - Or ≥ 75 minutes at vigorous intensity
- Must be performed in bouts of at least 10 minutes duration
- Muscle strengthening activities on ≥ 2 days/week
- For additional health benefits:
 - 300 minutes of moderate intensity aerobic physical activity/week
 - Or 150 minutes of vigorous intensity aerobic physical activity/week
 - For those > 65 years: physical activity to prevent falls and enhance balance > 3 days/week

Parkinson's Disease

How to Start Exercising?

- Borg Scale/Perceived Exertion

Target = 13-17





















Rating of Perceived Exertion Borg RPE Scale		
6	Extremely Light Very Light Fairly Light	How you feel when lying in bed or sitting in a chair, relaxed Little or no effort
7		
8		
9		
10		
11		
12	Somewhat Hard Hard	Target Range How you should feel with exercise or activity
13		
14		
15		
16		
17	Very Hard Extremely Hard Maximum Exertion	How you felt with the hardest work you have ever done Don't work this hard!
18		
19		
20		

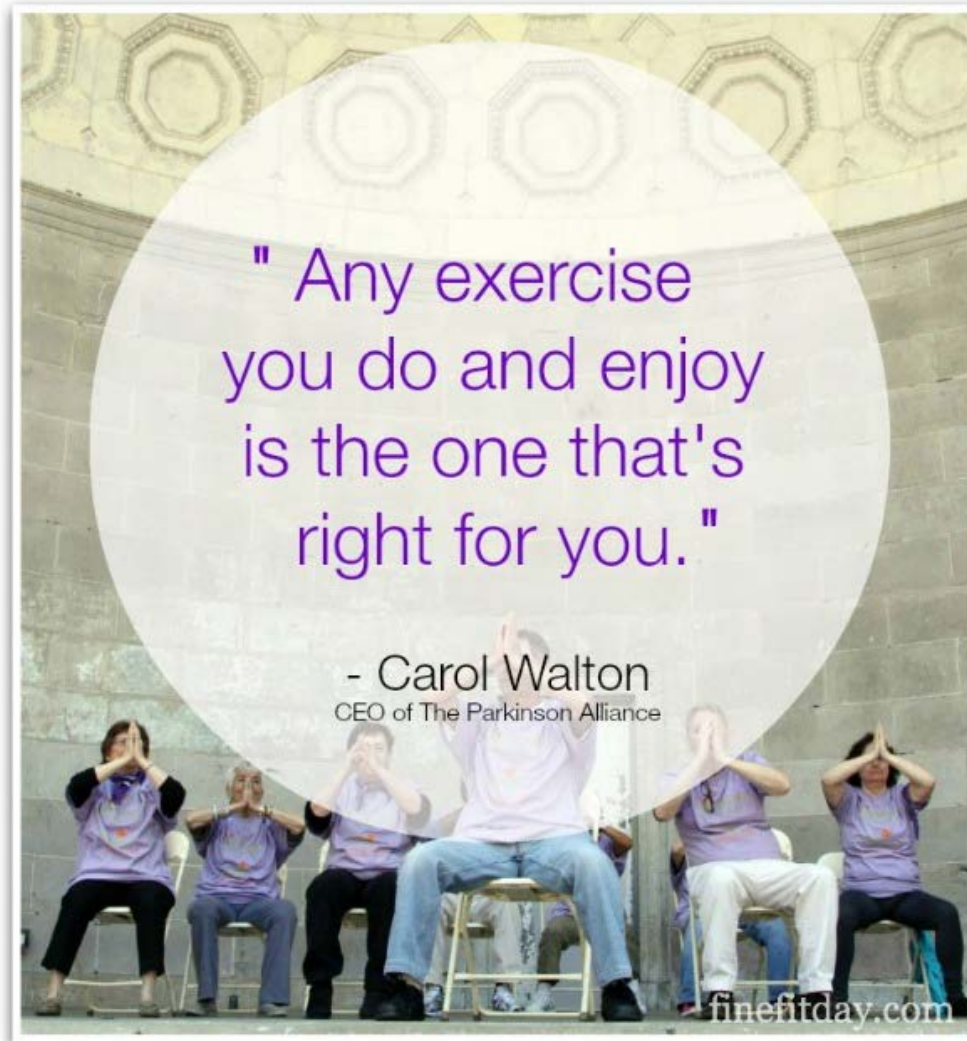
Parkinson's Disease: Exercise as Medicine

How to Start Exercising?

- Activity Log:

DATE:	ACTIVITY:	MINUTES:	INTENSITY: (0-10) (Borg scale)	MEDICATION ON/OFF	Good 	Bad 
						
						
						
						
						
						
						
						

Where do I start, what can I do?



Parkinson's Disease: Exercise as Medicine



Video examples

<https://www.youtube.com/watch?v=wElz9jNrqnS>



Parkinson's Disease: Exercise as Medicine

Options for Exercising

- Tai Chi
- Yoga/Pilates
- Walking
- Cycling
- Dancing
- Boxing
- Chair Classes
- Gym (cycling, mat classes, cardio machines, etc.)
- Kaiser's Parkinson's Exercise Class



Parkinson's Disease: Exercise as Medicine

What can I do today?

- Start exercising
- Meet with a physical therapist if you would like some help getting started
- Tips and ideas to implement at home



Parkinson's Disease: Exercise as Medicine

Challenges in the Home

- *Let's be proactive!*
 - Clear hallways of clutter
 - Remove throw rugs
 - Hand rails if needed (in bathroom, etc.)
 - Sticky tape for visual cues
 - Use assistive device if appropriate



Parkinson's Disease : Exercise as Medicine

Challenges at Night

- Medication (off phase)
- Decreased visual support
- WHAT to DO?
 - Add night lights
 - Remove throw rugs
 - Avoid slippers



Parkinson's Disease: Exercise as Medicine

What can I do today, as a caregiver?

- Encourage exercising, exercise together
- Attend physical therapy appointment to learn ways to help
- Help make changes to the home environment
- Remember the next slide.....

Parkinson's Disease: Exercise as Medicine

Challenges to exercise

Apathy	Depression	Anxiety
<ul style="list-style-type: none">■ 17-20%■ Lack of motivation, loss of interest■ Loss of spontaneity or goal directed behavior■ Blunted emotional experience	<ul style="list-style-type: none">■ 40-50%■ Manifests as pessimism■ Feeling of hopelessness	<ul style="list-style-type: none">■ 69%■ Apprehension■ Nervous, irritability■ Feelings of impending disaster (hyperventilation, insomnia, palpitations)

Parkinson's Disease

What's the Take Home Message?

- Parkinson's disease progresses slowly
- Effects of Parkinson's disease are individual
- Exercise is a form of medication
- Principles of exercise for PD are important
- Monitor any changes and tell your doctor

Parkinson's Disease: Exercise as Medicine

"I have no choice about whether or not I have Parkinson's Disease. I have nothing but choices about how I respond to it"

— Michael J Fox

Thank YOU!

Any Questions???

KP ParkinsonNet Member Pathway

Symptoms

You may have one or more of these common motor symptoms:

- Slow movement
- Stiffness, limited flexibility
- Resting tremor
- Lack of balance when standing
- Freezing – feeling as though “feet are glued to the floor”
- Unwanted acceleration when walking
- Lack of facial expressions

Early non-motor symptoms that may come before motor symptoms

- Loss of sense of smell
- Constipation
- REM sleep behavior disorder
- Anxiety, depression
- Low blood pressure upon standing up

Finding out I have Parkinson's Disease

- A Neurologist will conduct a **workup** that may include:
 - Detailed history
 - Neurological exam
 - Medication review
 - Treatment options
- Your doctor will decide with you what treatment is best for you.
- Come prepared with a list of priorities, questions & concerns.
- Be open and honest with your KP clinician, especially about falling.

Treating my Parkinson's Disease (PD)

Possible Treatment(s):

- Physical Therapy (PT)
- Occupational Therapy (OT)
- Speech Therapy (ST)
- Exercise
- Medication
- Surgery (rarely)

Learning to live with my PD

Suggested classes (see listings next page)

- Member Education Class
 - Exercise Class
- Connect with your local Parkinson's Disease Association

Exercise is Treatment!

With Parkinson's disease, the brain makes less dopamine, which is a chemical important for movement. With less dopamine, people with Parkinson's start having movement problems.

People with PD who exercise show improvement in movement and measured brain activity.

Exercise is as important as any other aspect of treatment for PD.

Going for a walk can get you started, but your Physical Therapist will work with you to find the best form of exercise.

With PD you will first be referred to a Neurologist. You then may see different PD specialists for therapy, such as Physical, Speech and/or Occupational Therapy.

You and your care delivery team will discuss and agree on your plan of care suited to your goals. Your plan will likely include:

- Exercise with effort
- Getting regular sleep
- Staying hydrated
- Implementing tips for home
- Exploring classes, support groups and community resources

Tips for home

- Clear hallways of clutter
- Remove throw rugs
- Add handrails if needed
- Avoid wearing slippers
- Add night lights
- Talk with your PT about a home safety check

Primary Team may include:

- Patient
- Family/Caregiver
- Primary Care Doctor
- Neurologist
- Physical Therapist
- Speech Therapist
- Occupational Therapist

Other team members may include:

- Dietician
- Social Worker
- Care Coordinator
- Mental Health Clinician



My Plan:

MRN

My Goals:

What is important to me?

I have concerns about:

My Diagnosis:

Date of Diagnosis:

Family history of PD or other neurological disorder?:

Exposure to heavy metals or pesticides? Yes/No

History of repetitive head trauma? Yes/No

☐ Neurology

Appointment Date(s):

Where?

Who is my Neurologist?

PD Medications:

Possible short term and long term symptoms to expect:

What else do I need to know:

Next Steps:

☐ Physical Therapy (PT) ****

Start Date:

End Date:

Where?

Who is my Physical Therapist?

Recommended physical activity

What else do I need to know?:

Classes: Dates and times of class(es)

PD Education Class: No referral needed – Call:

Date:

PD Exercise Class: Your therapist can enroll you.

☐ Speech Therapy (ST) or Occupational Therapy (OT)

Start Date:

End Date:

Where?

Who is my Speech Therapist?

Who is my Occupational Therapist?

What else do I need to know:

Dates and times of appointment(s)



Information I need to know

- Support Groups (When? Where? Phone #):
- My Care Coordinator / Navigator (name / phone #):
- Neurologist (name / department phone #):
- Physical Therapist(name / department phone #):
- Speech Therapist (name / department phone #):
- Occupational Therapist (name / department phone #)
- Pharmacy (phone #):
- 24-hr Advice Nurse (for weekends or evenings):


Resources for my caregivers:

****How do I access PT, ST or OT?

Answer: PCP or Neurologist may refer.

KP online resources: <http://www.kp.org/parkinsoncare>

KP/Community Resources: (customized by area)

 KAISER PERMANENTE®