

A BRIEF DESCRIPTION OF PARKINSON'S DISEASE (PD)

Frank C. Church, PhD

Journey with Parkinson's <<https://journeywithparkinsons.com>>

Frank C. Church Foundation for Parkinson's Disease <<https://frankchurch.org>>

WHAT IS IT? WHAT ARE THE MAIN SYMPTOMS? IS IT INHERITED OR ACQUIRED?

Parkinson's disease (PD) is a neurodegenerative disorder that begins following the death of dopaminergic neurons located in the midbrain. The resultant degeneration of dopaminergic pathways in the basal ganglia results in the Cardinal motor signs of PD, which include bradykinesia (slowness of movement), tremor (trembling in hands, arms, legs, jaw, and face), and muscle rigidity (stiffness of the limbs and trunk) along with impaired gait and posture. There are numerous non-motor symptoms, and they may include depression, psychosis, REM sleep disruption and hallucinations, difficulty swallowing and speaking, urinary problems, or constipation. About 15% of those with PD have a family history (genetic or inherited). Most people (~85%) with PD have an acquired "idiopathic" form of PD, which means the cause is unknown.

IS IT COMMON? DOES PD PROGRESS?

Approximately 90,000 people per year in the U.S., 65 or older, will receive a diagnosis of PD. A total of 7-10 million people worldwide are currently living with the disease. PD symptoms occur gradually over several years, making diagnosing it difficult. PD is a chronic disease, and symptoms progress with time. The nature of PD means that slowing down progression will require a multifaceted therapeutic (or intervention) strategy. To this point in time, PD is not curative. One of the most important treatment strategies for PD is exercise, which can be neuroprotective.

DOPAMINE PROMOTES MOVEMENT

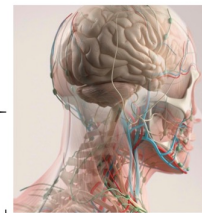
You want to grab a coffee cup off the kitchen counter, now what? Your basal ganglia take over to manage movement, and it's a complex series of excitatory and inhibitory steps. The frontal lobes send an excitatory signal through glutamate to the striatum. The striatum then sends additional inhibitory signals to the globus pallidus internus and the pars reticulata of the substantia nigra neurons, and this signals the motor neurons down the spinal cord resulting in the desired movement. Dopaminergic nigrostriatal projections increase motor activity since dopamine excites the Direct Pathway. Significantly and simultaneously, dopamine inhibits the Indirect Pathway, resulting in movement.

EXERCISE FOR QUALITY OF LIFE (QoL)

Regular exercise has been shown to benefit the health of older adults. We have the choice to use exercise in PD. We must be aware of our physical, mental, social, and emotional factors in daily life. Exercise is important and can improve your QoL. It has also been said that exercise is medicine for PD.

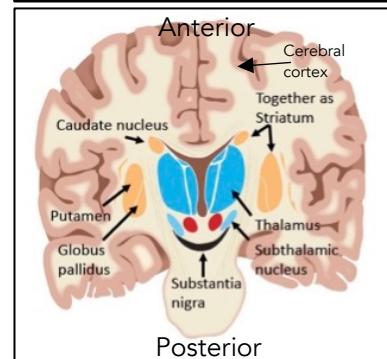
WHAT CAUSES PD TO DEVELOP?

Advanced aging
Environmental toxin
Genetic
Immune system dysfunction, including Autoimmune disease
Intracellular protein denaturation and aggregation
Neuroinflammation
Oxidative stress
Reduction in mitochondrial activity



Loss of dopaminergic neurons in the brain's substantia nigra pars compacta results in the loss of the main source of dopamine.

BRAIN CROSS-SECTION



EXERCISE AS A PD PRESCRIPTION

Aerobic

Key is the importance of getting heart rate up to 70-80% max for 20-30 min and 3 days/week. Hardest, most strenuous type of exercise provides for neuroprotection. Sustained use of large muscle for walking, running, cycling, and rowing.

Resistance

Involve major muscle groups using weight machines, bodyweight devices, and resistance bands. 2 days/week; 1-3 sets of 10 repetition; try to achieve 40-70% max exertion.

Flexibility

Workout alone/local groups and therapist trained for PwP; dance, boxing, PWRI/Moves, Tai Chi, yoga, ping pong, golf, and other activities. ≥2-3 day/weeks; furthermore, including daily stretching is ideal; helpful in all PD stages.

Neuro-motor

PT, OT, and SLP-directed oversight for motor (balance, freezing, gait, dystonia tremor), and speech/swallowing defects. Therapy as needed.

Exercise Type

IS THERE TREATMENT AVAILABLE?

Treatment goals in PD revolve around symptomatic management. PD is both a chronic disease process and a progressive disorder. The symptoms occur gradually over several years, and the progression varies from person to person regarding the development timeline and the extent to which they manifest. PD limits movement ability and results in functional instability, affecting physical well-being and QoL. The traditional first line of therapy for PD is usually carbidopa/levodopa or a dopamine agonist; they both work well for motor symptoms. The complex non-motor symptoms will not be discussed in this brief review. DAs mimic dopamine and bind to dopamine receptors. MAO-B inhibitors inactivate enzymes that degrade dopamine. COMT inhibitors block the processing of levodopa. Many use a Complementary & Alternative Medicine (CAM) approach to treat their PD.

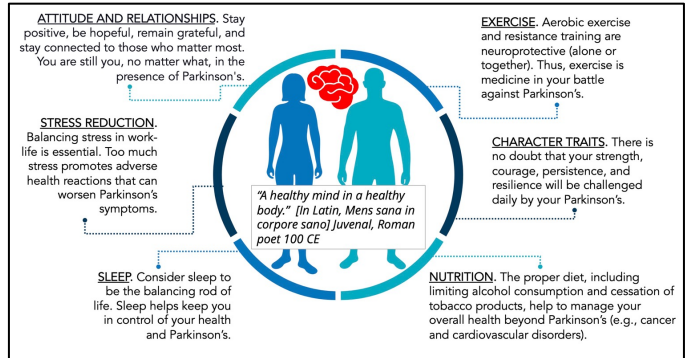
SIX WAYS TO MANAGE YOUR PD

In the presence of PD, each person encounters a different disease that can progress slowly, or it might evolve quickly. Symptoms expressed are typically from the motor side of the disorder; however, the non-motor symptoms separately contribute to substantial morbidity. However, we are unified by PD and its effect on our lives, regardless of its penetrance, severity, symptoms expressed visibly, and speed of progression. On the right are given what I call the six pillars of PD; another way to describe it is, here are six things you can try to potentially allow you to take control of your PD.

THERAPEUTIC OPTIONS FOR MOTOR SYMPTOMS

Type Compound	Drug Name	Brand Name
Dopamine replacement	Carbidopa/Levodopa	Sinemet IR, Sinemet CR, Ryтары, Duopa
		Ryтары Duopa Inbrija
Dopamine agonist (DA)	Apomorphine	Apokyn Kynmobi
	Pramipexole	Mirapex Mirapex ER
	Ropinirole	Requip Requip XL
	Rotigotine	Neupro
MAO-B Inhibitors	Selegiline	Eldepryl Zelapar Azilect Xadago
	Rasagiline Safinamide	
COMT Inhibitors	Opicapone Entacapone	Ongentys Comtan
	Carbidopa, levodopa, and Entacapone Tolcapone	Stalevo Tasmar
Anticholinergic	Trihexyphenidyl Benzotropine mesylate	Cogentin
		Symmetrel Gocovri Symadine
Anti-influenza drug	Amantadine	

THE 6 PILLARS (ESSENTIAL SUPPORT) OF PD



LIVING BETTER WITH PD

The task ahead is to stay healthy and be strong in life with Parkinson's. Our path forward is both continuous and possibly unsure. Given on the right are 11 different character traits and tips for living better in the presence of PD. A hopeful goal is to help provide a way through this complicated journey with PD. Read each trait/tip and see if it supports you. If it does, then embrace and empower yourself. Remember the words of Wendell Berry, "It may be that when we no longer know what to do, we have come to our real work, and that when we no longer know which way to go, we have begun our real journey."

11 CHARACTER TRAITS AND TIPS FOR LIVING BETTER WITH PD

You will have good hours/days and you will have some not so good hours/days; here are some tips and character traits that will help keep you balanced and hopefully having many happy 'life-filled' days ahead.

"Do not confuse my bad days as a sign of weakness. Those are actually the days I'm fighting my hardest." Unknown

<p>Persistence</p> <p>As President Coolidge remarked "Nothing in the world can take the place of persistence"; says to me we must always keep going in dealing with our disorder. Staying persistent is creating new options, and it requires the courage of one's convictions.</p>	<p>Hope</p> <p>We must stay the course, treat our symptoms proactively, and use this hope to try to stymie the expected Parkinson's progression. "No matter how dark the moment, love and hope are always possible." George Chakiris</p>	<p>Mindfulness</p> <p>Being mindful brings us to dwell only on the immediate time, the current moment. "Mindfulness helps you go home to the present. And every time you go there and recognize a condition of happiness that you have, happiness comes." Thich Nhat Hanh</p>
<p>Courage and Strength</p> <p>Your own strength provides the fulcrum where resistance resides to confront the effects of the disorder. "Strength does not come from winning. Your struggles develop your strengths. When you go through hardships and decide not to surrender, that is strength." Arnold Schwarzenegger</p>	<p>Gratitude And Contentment</p> <p>Being grateful and content relieves stress and rejuvenates the heart; ultimately, this will enrich our response to Parkinson's. "When we give cheerfully and accept gratefully, everyone is blessed." Maya Angelou</p>	<p>Exercise Is Your Friend</p> <p>Exercise improves balance, reverses joint stiffness, improves mobility, and bolsters your spirit. "Choose the body in which to dwell." Lailah Gifty Akita</p>
<p>Journey On</p> <p>The stumbling blocks of Parkinson's are everpresent and our journey will be up and down. Include all of the people capable of assisting your journey. Your team will follow the path of your journey, they matter in your life; and your maximum effort in this journey matters a lot. "Everyone is handed adversity in life. No one's journey is easy. It's how they handle it that makes people unique." Kevin Conroy</p>	<p>Understand Nutritional Needs</p> <p>There is no special diet for Parkinson's; however, a well-balanced, nutritious diet is extremely beneficial. "Healthy habits harbor happiness." Zero Dean</p>	<p>Believe</p> <p>Believe that remaining positive is life re-affirming. "Believe you can and you're halfway there." Theodore Roosevelt</p>
<p>Stay You</p> <p>Always remember, your life matters now with Parkinson's as much as it did before Parkinson's. "In the midst of winter, I found there was, within me, an invincible summer." Albert Camus</p>		