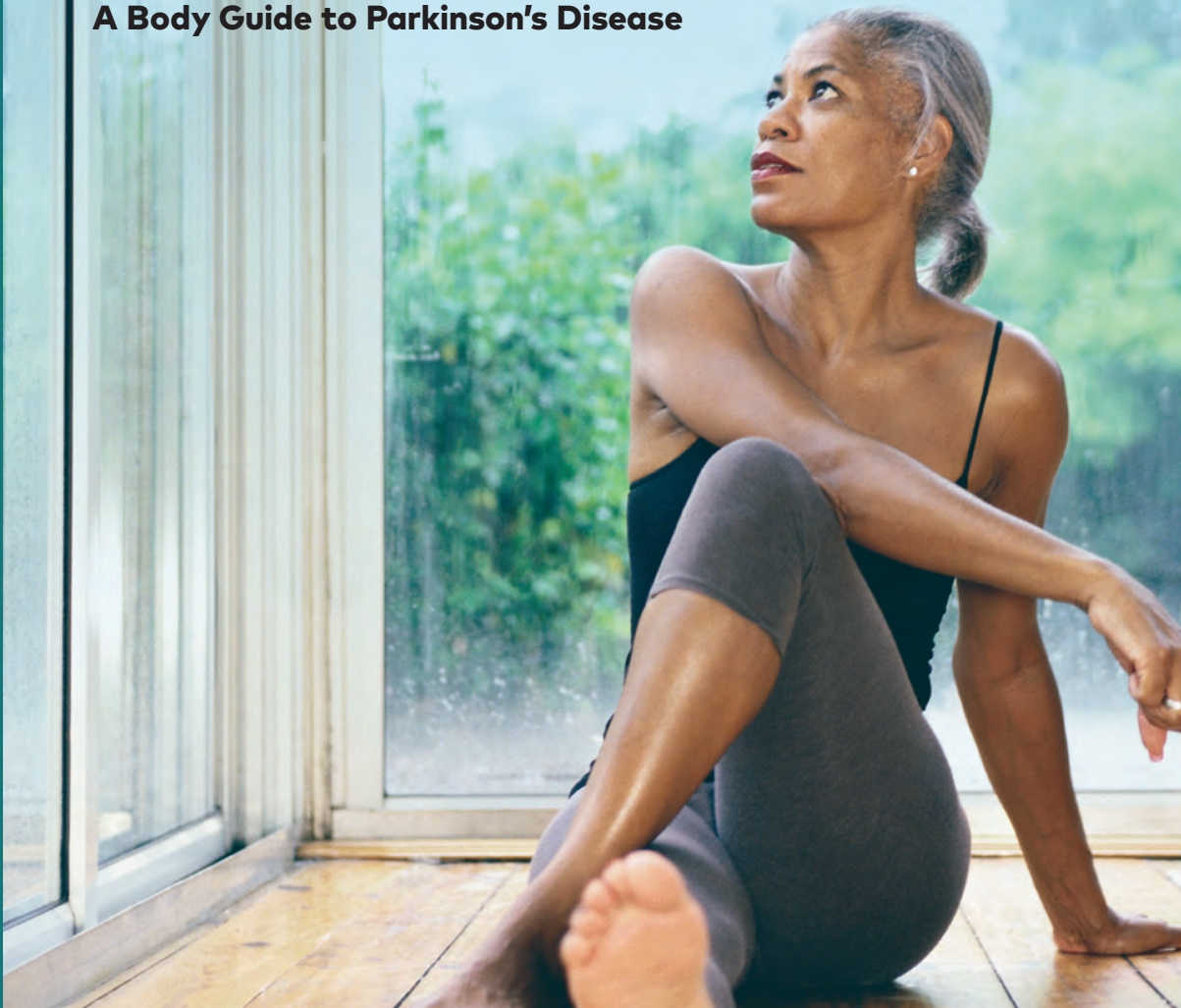


Fitness Counts

A Body Guide to Parkinson's Disease



About this book

GLOSSARY

Definitions for all words underlined in blue can be found in the glossary starting on page 61.

A comprehensive Parkinson's disease glossary can be found at [Parkinson.org/Glossary](https://parkinson.org/Glossary).

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An index of key words and topics can be found on page 64.

PARKINSON'S FOUNDATION RESOURCES

Learn more about exercise through *Substantial Matters: Life and Science of Parkinson's* podcast episodes at [Parkinson.org/Podcast](https://parkinson.org/Podcast).



For people with Parkinson's disease (PD), exercise is key to a healthy and active life. Research has shown that exercise can improve mobility, strength and balance. It may also improve non-motor symptoms such as depression, anxiety, fatigue, as well as cognition (thinking). In fact, most movement disorder neurologists say that exercise is as important as your Parkinson's medications. Though exercise is not a cure, it may help slow the progression of symptoms.

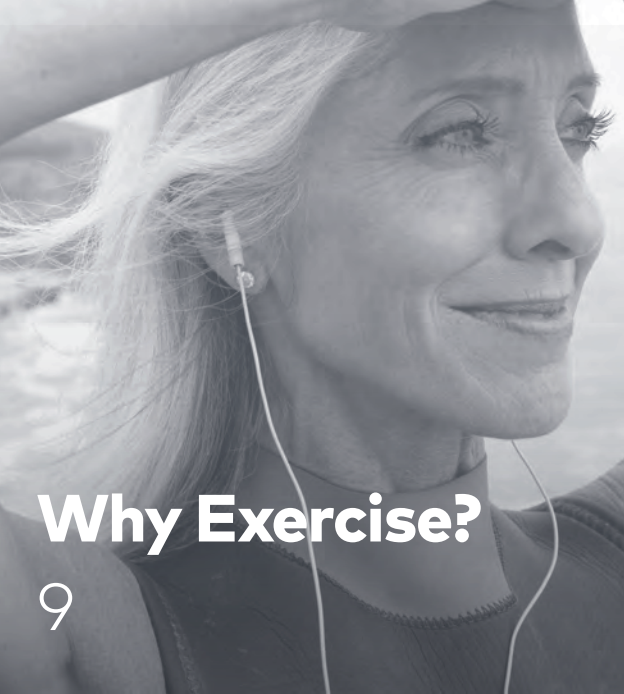
Who Is This Book For? Exercise is increasingly accepted by clinicians, exercise professionals and people with PD as an effective treatment for Parkinson's disease. Early and regular exercise is associated with slower declines in motor symptoms and improved quality of life. This book provides general exercise information and suggestions for people living with PD. It can be used to help increase your fitness level and aid in your ability to do everyday activities. In addition, this book includes resources and information for exercise professionals, physical therapists and occupational therapists about treatment options for people with PD.

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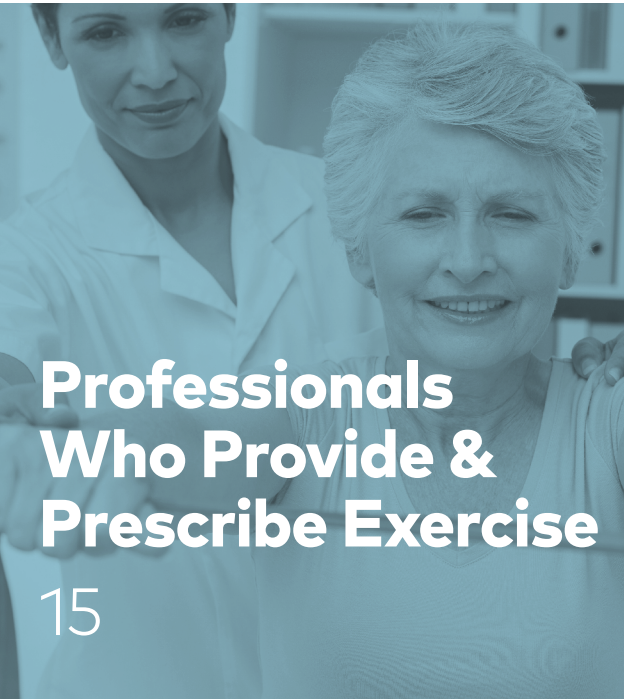
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Acknowledgements

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CHAPTER ONE



About Parkinson's Disease

To understand the role fitness plays in treating Parkinson's disease (PD), we first need to understand the symptoms of the disease. Parkinson's is a progressive, neurodegenerative disorder that affects one million people in the U.S. and 10 million people worldwide. It is called a movement disorder because of the motor features it can cause — tremors, slow movements, stiffness and muscle cramping. Symptoms are diverse and usually develop slowly over time. Parkinson's not only disrupts brain networks that control movement, but also those linked to mood, behavior and cognition (thinking).

Parkinson's disease is not diagnosed with a test or a scan; instead it is diagnosed by a neurologist, who asks you questions about your health and medical history and observes your movement. Your doctor may want you to have some tests or imaging; some, like a magnetic resonance imaging (MRI), can help rule out other conditions, while others, like a DaTscan, may help confirm a Parkinson's diagnosis if there is uncertainty.

From a biological perspective, Parkinson's results in low levels of the brain chemical dopamine, and this leads to the loss of effective communication between the higher brain structures on the surface of the brain (called the cortex) and the deep part of the brain that manages more basic functions (called the basal ganglia). The higher brain structures are where you think, and the deep structures are where those thoughts are translated into actions, particularly movement. Researchers continue to study how cells and brain networks are affected in Parkinson's to improve our understanding of the disease and potential for treatments. The dopamine system is not the only one affected by Parkinson's. The disease process also disrupts other brain networks, including those linked to mood, behavior, and cognition (thinking).

Although there is currently no way to correct the brain changes that cause Parkinson's, we know that exercise can help fight the disease and that staying healthy can help reduce setbacks that make living with PD more challenging. In addition to regular medication adjustments and physical/occupational therapy, exercise is a core aspect of Parkinson's treatment and symptom management.

NOTE

Before starting an exercise program, it is important to get a baseline evaluation by a physical or occupational therapist. Physical and occupational therapists are uniquely trained to design an exercise routine that targets your specific movement challenges and can give you tips on how to exercise most effectively and safely. (See Chapter 3, *Professionals Who Provide Exercise*, on pages 19-20, for how to find a therapist near you.)

Parkinson's Symptoms

Parkinson's symptoms vary in both intensity and how they progress from person to person. Although early symptoms can be mild and even go unnoticed for several years, symptoms will continue to develop as Parkinson's progresses. Initially, doctors consider these three core symptoms in making a diagnosis:

1. Slowness of movement (bradykinesia)

2. Tremor

3. Rigidity (stiffness)

The fourth core symptom, postural instability (trouble with balance and falls), usually does not occur until later in the course of PD.

Bradykinesia in addition to either tremor or rigidity must be present for a Parkinson's diagnosis. Although symptoms often start on one side of the body, they can affect both sides over time.

Other PD-related motor symptoms include:

- Changes in walking
- Difficulty turning
- Rapid, small, involuntary steps (festination) or shuffling
- Retropulsion (quick, small, involuntary steps backward)
- Freezing episodes (an inability to perform a movement, or a feeling that your feet are stuck to the ground)
- Dystonia (sustained or repetitive muscle twisting, spasm or cramp)
- Micrographia (small, cramped handwriting)
- Speech and swallowing changes

Non-motor PD symptoms can also indirectly affect mobility. They include:

- Bowel and bladder changes (constipation, urinary urgency and frequency, incontinence)
- Cognitive changes (attention, memory problems, multi-tasking)
- Mood changes (anxiety, depression, apathy)
- Orthostatic hypotension (a drop in blood pressure and a feeling of lightheadedness upon standing)
- Sensory changes (pain, tightness, tingling, burning)
- Sleep disorders
- Visuo-spatial problems (difficulty detecting changes in the amount of space surrounding objects; e.g., detecting the correct height of a step)

Parkinson's is a Movement and Sensory Disorder

People with Parkinson's have difficulty regulating the size and speed of their movements. Movements are bradykinetic (too slow) and hypokinetic (too small).

Changes in the movement system (muscles) lead to challenges controlling movements, including:

- Starting and stopping movements
- Automatically controlling muscles
- Linking different movements to accomplish one task: for example, moving from sitting to standing
- Finishing one movement before beginning the next. For example, not completely turning around before sitting down

Changes in the sensory system also lead to challenges, particularly noticing and correcting movement and voice issues. Examples include:

- Slowness or smallness of movements: for example, when told to make a movement bigger, a person with PD may feel the movement is now too big
- Lack of movement: for example, an arm that does not swing during walking
- Changes in posture: for example, stooped posture or rounded shoulders
- Changes in voice volume: for example, when told to speak louder, people with PD may feel they are shouting

NOTE

Research from the Parkinson's Foundation Parkinson's Outcomes Project, the largest-ever clinical study of Parkinson's, suggests that people with PD who exercise for at least 2.5 hours a week can experience a better quality of life.

CHAPTER TWO

Why Exercise?

Research from the Parkinson's Foundation Parkinson's Outcomes Project shows that starting an exercise routine and consistently exercising have positive effects on self-reported health-related quality of life and mobility. It is important to keep exercising and find new ways to support exercise as Parkinson's disease (PD) progresses. It is better to start earlier, but it is never too late.

Ideally, people with Parkinson's will have access to regular exercise led by qualified exercise professionals. It is also beneficial to see a physical or occupational therapist for ongoing evaluation and therapy that goes beyond an exercise program.

"For five years I drove past a gym on my 45-minute commute to school and one day I finally went in. I began riding my bike and noticed that when I did, my tremor improved. I joined a yoga studio. With hard work I ended up losing a significant amount of weight and became an advocate for moving!" – Carey

There are two main reasons that exercise is important for people with Parkinson's:

1. In addition to PD, your body is coping with the general effects of aging.

As we age, certain changes occur in our bodies:

- Loss of tissue elasticity (skin wrinkles or muscles can tighten)
- Mineral loss in bones (fractures can occur more readily)
- Loss of muscle tone and mass (less function and strength). We lose 1% of muscle mass per year after the age of 60.

If you combine normal, age-related changes with an inactive lifestyle, you increase your risk of developing cardiovascular disease, osteoporosis, diabetes and cognitive impairment. Without regular exercise, our bodies and minds become weaker, stiffer and more likely to suffer an injury.

2. Research proves that exercise benefits people with PD. Studies in both animals and humans have demonstrated the brain and body benefits of exercise for people with Parkinson's.

Exercise as Medicine

Ongoing research is showing us that in addition to directly benefiting Parkinson's symptoms, exercise helps the brain compensate for PD-related changes. Studies have shown that exercise and physical activity can help manage motor and non-motor Parkinson's symptoms. Aside from taking medications on time, exercise is the single most important activity you can do to manage Parkinson's and lead the best possible life.

Reported benefits of exercise include improvements in:

- Gait and balance
- Flexibility and posture
- Endurance
- Working memory and decision making
- Attention and concentration
- Quality of sleep

Exercise can also lead to reductions in:

- Falls
- Freezing of gait
- Depression and anxiety

Exercise Effects on Cognition

About half of people with Parkinson's experience challenges with executive function, which involves planning activities, keeping a schedule, staying organized and similar tasks. Executive dysfunction can appear as problems with working memory (measured by how many things you can keep track of at the same time) and problems focusing on a task and responding to changes.

The parts of the brain that perform executive function tasks are the same ones that help you adapt to changing environments. For example, you use your executive function centers when you go from walking inside the house to walking outside. You also use them when you learn a new skill or improve an old skill.

Cognitive Dual Tasking

When two activities are performed at once — one with a cognitive focus and another with a motor focus — this is considered cognitive dual tasking (DT). DT mirrors daily life in a way that many single-task exercises do not. For example, a person with Parkinson's may find themselves walking across the street (motor) while negotiating traffic (cognitive). Boxing, Tai Chi and dancing are all examples of physical activities that promote DT. By integrating dual-tasking exercise into your fitness routine, you exercise both the body and brain!

Aerobic Exercise

It is well-known that aerobic exercise makes your heart healthier and improves how your body uses oxygen. Studies also show that aerobic exercise can improve age-related changes in executive function. Scientists are studying if and how aerobic exercise works to slow Parkinson's disease and what the right "dose" of exercise is to get the best benefits. (See page 24 for more information on aerobic exercise and examples of exercises you can try.)

Skill-Based Exercise

Skill-based exercises focus on complex movements of the whole body, such as balance, hand-eye coordination and reaction time. Studies of skill-based exercise have been shown to improve motor function. We currently do not know if aerobic or skilled-base exercise is better for Parkinson's symptom management. In fact, the answer may be doing both, especially

for targeting cognition. Your therapist or exercise professional may incorporate skill-based and aerobic training by having you do exercises with specific goals. An example might be to walk a course through your neighborhood and finish in a pre-set time.

NOTE

Download or order our educational book *Cognition: A Mind Guide to Parkinson's* at [Parkinson.org/Books](https://parkinson.org/books) or through our Helpline at 1-800-4PD-INFO (1-800-473-4636) to learn more about how Parkinson's affects thinking and memory.

Exercise and Neuroplasticity

You know that exercise improves muscle strength, flexibility, bone density and cardiovascular health, but did you know that this same exercise leads to changes in your brain? When you begin a new activity or exercise, your brain — not just your muscles — is learning the movements. This process of teaching your brain a new pattern — whether it is a movement, being comfortable in a new place or even learning a way to think — is called [neuroplasticity](#).

Research has measured the following Parkinson's-fighting changes in the brains of animals that exercise:

- More effective use of dopamine by brain cells
- Growth of new blood vessels, which helps brain cells get the oxygen and nutrients they need to stay healthy and participate in the activities of thinking
- Improved use of energy by brain cells (better metabolism)
- Increased release of special proteins that strengthen connections (synapses) between brain cells, and growth of new connections
- Reduced potentially harmful effects of the immune system (less inflammation)
- Growth of new brain cells

All of this can help contribute to experiencing better effects of PD medicines. Take advantage of the fact that by doing something enjoyable to make your body healthier, you are also making your brain healthier! Consider the following:

Tips

- When you learn a new exercise skill (such as Tai Chi, boxing or yoga) it helps how you move and think.
- There is not one best exercise — you should combine aerobic, strength and skill-based exercises to maximize benefits.
- Doing a variety of exercises, as well as pushing yourself to get better at the exercises you do, helps your brain cells grow new connections, resulting in learning.
- Exercise is a lifelong commitment.

Social and Emotional Benefits

It is important to challenge yourself with exercise, but not to the point that you feel discouraged. Exercise is a daily achievement. You need to believe you can do it and feel that you are accomplishing something for yourself. If you are struggling with motivation or with believing in your own ability, ask your care team, friends or family for help. You might join a group fitness class or ask a friend to join you on a walk. Exercise can provide social and emotional benefits, as well as physical and mental ones. The key is finding exercises and activities you enjoy that also help you feel and move better. Choose an exercise program that you will actually do! Do not design a Parkinson's-specific exercise program and then skip it because it is too hard or not fun. Exercise should be scheduled in your daily routine just like your medications.

TIP

Mixing exercises that are skill-based and aerobic increases the chance of getting motor and cognitive benefits. Some examples of skill-based exercise are yoga, non-contact boxing, tennis and Tai Chi.

Chapter Check-In: Why Exercise?

We encourage you to personalize these reflection questions. You can choose to respond to them in writing, use them as discussion prompts or simply reflect.

My top three takeaways from this chapter:

1.

2.

3.

Reflection Questions:

Your Relationship with Exercise: How do you feel about exercising? Do you love it or put it off as long as possible? How have your exercise routines evolved?

Your Movement: How does exercise affect your ability to move? For example, do you feel less stiff or stronger after exercising?

Your Other Symptoms: How does exercise make you feel? Does it improve your mood, energy, confidence, thinking or sleep? If so, do you feel these benefits immediately or gradually?

CHAPTER THREE

Professionals Who Provide & Prescribe Exercise

Licensed rehabilitation specialists, including physical and occupational therapists, work in a variety of healthcare settings and play a vital role in helping people with Parkinson's disease (PD) stay mobile and active. Your therapy team will help you meet your fitness goals and show you ways to perform exercises safely and effectively. They will work with you, provide feedback, challenge you, design exercises that integrate problem-solving skills and encourage you to stick with your exercise program.

"A physical therapist specializing in Parkinson's disease changed ... saved my life as I know it. The most important gift she gave me was a different understanding, on an emotional level, of the value and importance of the exercise in which she was training me. I had many questions regarding the specific benefits of the individual movements and why and how they provided those benefits. She answered those questions in an accessible and useful way. For instance, she summarized that she was 'retraining my brain.'" – Brian

A physical therapist (PT) is a movement expert who improves quality of life through prescribed, hands-on care and education. They address balance, strength and range of motion related to a person's functional mobility (e.g., walking, getting in and out of chairs and changing position in bed). They can also design a personalized exercise routine. They complete a doctor of physical therapy degree, and must pass a state licensure exam.

An occupational therapist (OT) helps people participate in daily activities (e.g., dressing, bathing, cooking) and other activities they want to continue to do despite having Parkinson's. Occupational therapists can provide strategies to help you stick to your exercise program and maximize your engagement in daily activities that are meaningful to you. They complete a master's or doctoral degree from an accredited occupational school, and must pass a state licensure exam.

Exercise professionals design personalized exercise routines, which may include personal training, group fitness instruction or small-group training. They regularly work with clients once they are no longer receiving physical or occupational therapy or in combination with physical or occupational therapy.

Certified personal trainers and certified group fitness instructors generally work at fitness centers, senior centers, private gyms and in the home. Certification is available through a number of national organizations. Make sure your trainer is certified and ask about their knowledge and experience working with people with PD. Trainers do not have degree requirements but are qualified to lead individual or group sessions.

Certified strength and condition coaches, certified clinical exercise physiologists or certified medical exercise specialists are required to have degrees. These exercise professionals have additional training on how exercise impacts the mind and body.

Working with an exercise professional is a good way to supplement your therapy or to continue with your exercise routine once you are no longer receiving physical or occupational therapy. Encourage your physical or occupational therapist to review and explain your program to your trainer to ensure a smooth transition.

Exercise professionals, PTs and OTs who work with people with Parkinson's can do the following to create a healthy exercise program:

- Design or modify workout routines
- Help with poor balance or falls
- Teach care partners proper body mechanics and techniques for assisting their loved one with their exercise program
- Make referrals to movement and exercise programs in the community

Exercise professionals should refer their clients to physical and occupational therapy for an initial functional evaluation prior to starting exercise sessions.

The following areas should be addressed in the initial assessment or in additional sessions:

- Evaluate and treat mobility and walking problems
- Recommend and teach the use of adaptive equipment and walking devices
- Evaluate and treat joint or muscle pain that interferes with mobility and activities of daily living ([ADLs](#))
- Teach care partners proper body mechanics and techniques for assisting someone with PD with mobility and activities of daily living
- Identify barriers that have led to not exercising in the past

Four Phases of Intervention

Physical and occupational therapy can be helpful throughout your journey with Parkinson's. These professionals can create a plan to work on your specific physical needs.

Interventions generally occur in four stages:

Phase 1: Pre-habilitation

Like prevention, in this stage you work on a problem before experiencing symptoms. Begin an exercise program even if there are no noticeable movement difficulties. You can ask for a referral to a physical or occupational therapist as soon as you receive a Parkinson's diagnosis.

Phase 2: Rehabilitation

At this point, you notice symptoms, but you can take steps that help. Continue your exercise program. Learn how to walk better, get up from bed or a chair, get out of a freezing episode and improve posture.

Phase 3: Preservation

Do your best to make sure you do not lose what you have. Stay active. Join a group class, get physical and social, and have fun!

Phase 4: Prevention

The stages come full circle. You do not want new problems in addition to existing challenges. Continue your exercise program. Learn about home modifications, care partner training and ways to stay strong.

NOTE

It is ideal for every person diagnosed with PD to begin a fitness routine early on. Data from the Parkinson's Foundation Parkinson's Outcomes Project show that people with PD who start exercising earlier experience a slower decline in quality of life than those who start later. If you have Parkinson's and are not yet exercising, speak with your healthcare provider about beginning therapy. Establishing early exercise habits is an essential part of overall symptom management.

How to Find Help

Many states allow you to go directly to a physical or occupational therapist without a referral from a healthcare professional. However, depending on your health insurance plan, there may be limitations on where you can receive treatment or the number of visits that are covered.

Note: The Parkinson's Foundation has worked with the PD community to address Medicare challenges related to physical, occupational and speech-language therapies. As of 2018, the former Medicare therapy caps now are annual thresholds that speech, physical and occupational therapists are permitted to exceed when they append claims with the KX modifier for medically necessary services.

For help finding a physical or occupational therapist near you, particularly one with experience working with people with Parkinson's, try the options below.

1. Call the Parkinson's Foundation Helpline.

Contact our free Helpline at 1-800-4PD-INFO (1-800-473-4636) or Helpline@Parkinson.org. Speak with a PD information specialist to find a nearby PD-trained physical or occupational therapist and your nearest exercise classes.

2. Call your local movement disorders center.

Movement disorders centers in the Parkinson's Foundation Centers of Excellence network are medical centers with a specialized team that is up to date on the latest Parkinson's medications, therapies and research. They have PD-trained physical and occupational therapists on staff or health professionals who they can refer.

3. Search the American Physical Therapy Association (APTA).

Visit www.apta.org. Click on "For the Public," then "For Patients," then "Choosing your PT." The search will note physical therapists who have specialized certifications; choose geriatric or neurological rehabilitation. You can also call 1-800-999-2782.

4. Search the LSVT Global Directory.

Visit www.lsvtglobal.com to find LSVT BIG-certified physical and occupational therapists. Click on "Find a Clinician," choose "LSVT BIG" and follow the instructions. You can also call 1-888-438-5788. See page 60 for information on LSVT.

5. Parkinson's Wellness Recovery (PWR!) Directory.

Visit www.pwr4life.org to find physical and occupational therapists. Click on "For People with Parkinson's," choose "Find a PWR! Moves Professional in Your Area." You can also call 520- 591-5346. See page 60 for more information on PWR!.

6. Contact the rehabilitation department of your nearest health system.

Recent research from ParkinsonNet, a collaborative network of medical and allied health professionals in the Netherlands, led by the medical director of a Parkinson's Foundation Center of Excellence, shows that people with Parkinson's who receive physical therapy from a specialized provider (someone with training and experience in PD) had fewer complications (fractures, injuries, pneumonia) and therefore better health outcomes.

TIP

Ask for a referral to a physical or occupational therapist with geriatric or neurological experience. Explain that you are looking for someone who has experience working with people with Parkinson's.

Chapter Check-In: Professionals Who Provide & Prescribe Exercise

We encourage you to personalize these reflection questions. You can choose to respond to them in writing, use them as discussion prompts or simply reflect.

My top three takeaways from this chapter:

1.

2.

3.

Reflection Questions:

Communicating with Your Care Team: What exercise questions or concerns do you have for your therapy team and/or doctor?

Your Movement Goals: What are some of your movement goals? Do you want to improve your balance, gain strength, be able to do one of your favorite activities or something else?

Maintaining Your Therapy Gains: How do you plan to build upon your exercise gains (mobility improvements) after working with a therapist? Have you considered joining a group exercise class, trying virtual exercises, or working out with an exercise partner or a personal trainer?

CHAPTER FOUR

What Exercises Should I Do?

The primary goals of exercise and physical and occupational therapy are to improve Parkinson's disease (PD) symptoms and help you do the activities you enjoy. Your therapist should design a program in which you practice skills to improve and maintain your mobility. These skills might include walking, balance, and maintaining good posture. Your program needs to push your brain as well as your muscles. Your therapist will help you challenge yourself by encouraging you to try different exercises, set goals for improvement and work harder (for example, by increasing repetitions). Scientists believe that learning this way is good for cognition.

"I am determined to remain active! I still do my daily household and outside chores and try to not dwell on the disease. I attend a Silver Sneakers class three days a week, which really helps my strength. We use weights, resistance bands and cardio. I made sure my instructor knew my health history and she is very helpful with giving me other exercises to help with balance. I also attend a line dancing class twice a week. This is also great for balance and the brain, and it is so much fun!" – Paula

While there are many benefits of exercise for Parkinson's, challenges such as fatigue, pain, lack of motivation and fear of injury can make it more difficult to exercise. Talk to your doctor and your therapy team about how to address your particular needs. Ask your doctor about how exercise might impact your PD medications. You may need to plan exercise for "on" times to avoid experiencing wearing off symptoms in the middle of your exercise routine. Your doctor may even recommend medication adjustments tailored to your exercise schedule. Although you will likely discover that exercise gives you more energy, extreme fatigue may be a sign of another health issue. Finally, remember to listen to your body and ease into any new exercise program.

NOTE

The Parkinson's Foundation and American College of Sports Medicine (ACSM) updated exercise recommendations to provide safe and effective guidelines on physical activity for people with Parkinson's. View the recommendations in the Appendix or by searching "Fitness Recommendations" at [Parkinson.org/Library](https://www.parkinson.org/Library).

Working with an Exercise Professional

To improve your performance on a routine skill, like walking, an exercise professional might have you focus on a complex task, like walking while bouncing a ball or counting backwards. This is called dual-task practice, and it can help you target specific mobility impairments. Do you have difficulty getting up from a chair? An exercise professional will likely work with you on muscle strength and ask you to practice sitting and standing with seats at different heights. You may also be encouraged to perform this task while standing on a balance pad and answering questions.

An exercise professional should help you focus on these four areas:

- Aerobic activity
- Strength training
- Balance, agility and multitasking (or Cognitive Dual Tasking)
- Stretching

TIP

Research has shown that everyone benefits from exercise. Talk to your doctor before you begin or change the intensity of your exercise program. Also ask for help if you are struggling to stay motivated. Your physical or occupational therapist can help you find exercises that are challenging and enjoyable and lead to improvements in mobility.

Aerobic Exercises

Aerobic exercise is any activity that works the heart, lungs and muscles and helps the body burn calories. A range of national and international health organizations, including the Department of Health and Human Services, the American Heart Association, American College of Sports Medicine, the World Health Organization and others, recommend that most adults get at least 150 minutes per week of moderate intensity exercise, or 75 minutes per week of vigorous exercise.

Data from the Parkinson's Outcomes Project confirms that 2.5 hours of weekly exercise is the target amount for people with Parkinson's to maintain a better quality of life. This means 30 minutes of exercise, five times a week. You can be creative and work around physical limitations. For example, walk for 10 minutes, three times a day instead of one 30-minute walk.

EXAMPLES OF AEROBIC EXERCISE

- Walking, jogging, running
- Swimming
- Dancing
- Water aerobics
- Chair aerobics
- Biking: indoor (stationary) or outdoor

NOTE

For maximum benefit in people with PD, research suggests that aerobic activity should be at a moderately to high intensity or pace at least three times a week for 30 minutes. This can be performed continuously or spread out throughout the day.

Target Heart Rate

Your target heart rate is the range in which your heart should be beating to give you the most benefit during exercise. Your target heart rate is important because it helps determine your fitness level when you start your exercise program and shows you how you are progressing.

CALCULATING YOUR HEART RATE

Calculate your maximum heart rate by subtracting your age from the number 220.

According to the American College of Sports Medicine (ACSM), your target heart rate should stay within 50-85% of your maximum heart rate for moderate-intensity exercise. Take your pulse every so often while you exercise to make sure you stay within your range.

TARGET HEART RATE AND MAXIMUM HEART RATE AVERAGES

AGE	TARGET HEART RATE (50-85%)	MAX HEART RATE (100%)
30 years	95-162 beats per minute	190
35	93-157	185
40	90-153	180
45	88-149	175
50	85-145	170
55	83-140	165
60	80-136	160
65	78-132	155
70	75-128	150
75	73-123	145
80	70-119	140
85	68-115	135

Caution! If you take high blood pressure medications be sure to check with your doctor for help calculating your target heart rate. It's important to remember that your heart rate is being slowed by these medications, so you will need to adjust your target heart rate accordingly to achieve the right exercise intensity.

Strengthening Exercises

Strong muscles are vital to maintaining and improving functional ability (ability to perform activities of daily living). Individuals can strengthen muscles no matter their stage of PD or ability level.

Strength training can take the form of lifting weights, using machines at the gym, using your own body weight for resistance or even using common household items like a milk jug filled with sand.

The American College of Sports Medicine and the American Heart Association recommend the following guidelines for everyone:

- Perform at least one set of each exercise, 10–15 times.
- Do strengthening exercises 2–3 days per week (but do not work out the same muscles on consecutive days; muscles need a day to rest before training again) for at least 30 minutes.

At a minimum, a strengthening program should include the following muscles, which help to combat posture and strength changes common in PD:

1. Core muscles (abdominals)
2. Thigh muscles (quadriceps)
3. Buttocks (gluteals)
4. Back muscles
5. Back of the arm muscles (triceps)

Strengthening Tips

- Stop any exercise that causes pain.
- Concentrate on good posture and form while exercising.
- Keep movements smooth and even.
- Do not grip hand weights too tightly.
- Do not hold your breath. Breathe evenly throughout each exercise. As a rule, you should breathe out on the hardest part of the movement, and breathe in on the easiest part.

STANDING STRENGTHENING EXERCISES

Wall Slides

1. Stand with feet 6-8 inches from the wall.
2. Rest back and hands on the wall.
3. Slowly bend knees and slide down the wall.
4. Do not let your knees move past your feet.
5. Hold this pose for a count of 5.
6. Slide back up the wall.



Quad Strengthening

1. Sit tall on the edge of a chair with your arms crossed on your chest.
2. Slowly lean forward and use your legs to push up to stand.
3. Stand for a moment.
4. Slowly lean forward again and lower yourself to sit.



SEATED STRENGTHENING EXERCISES



Shoulder Blade Squeeze

1. Sit tall on the edge of a chair.
2. Open arms out to the sides, fingers spread.
3. Pull arms back and squeeze shoulder blades together.



ON-THE-GROUND STRENGTHENING EXERCISES

Bridge

1. Lie on back with knees bent and feet flat.
2. Raise hips and squeeze buttocks.
3. Hold this pose for a count of 5, then lower.



Quadruped

1. Begin on hands and knees. Keep your back flat.
2. Reach one arm straight forward.
3. Extend opposite leg straight back.
4. Hold for a count of 3-5.
5. Repeat on other side.



Back Extension

1. Lie on stomach.
2. Lift upper body off surface, supporting body weight on forearms.
3. Hold position for a count of 5-10.

NOTE: Remember, this is not a push-up. Your back muscles should be doing the work, not your arms.



Stretching

Regular stretching is an important part of your exercise program, and it can be one of the most enjoyable. Stretching helps you fight the muscle rigidity that comes with PD. It also helps your muscles and joints stay flexible. People who are more flexible tend to have an easier time with everyday movements.

While there are no standard stretching exercises for people with PD, the American College of Sports Medicine and the American Heart Association recommend the following guidelines for everyone:

- Perform active/dynamic stretching (shifting body positions) prior to exercise.
- Perform stretches at least 2-3 days per week; daily is better.
- Perform static stretching, where you hold each stretch for 10-30 seconds.
- Perform 2-4 repetitions of each stretch.

The muscles that tend to become tight in PD are those that bend and rotate the joints. At a minimum, a flexibility program should focus on the following body areas:

1. Chest wall
2. Shoulders and elbows
3. Back of the thighs (hamstrings) and knees
4. Front of thighs, especially front of hips
5. Calves
6. Front of wrists and palms
7. Low back and neck

Stretching Tips

- Your stretch should feel like a gentle pull. Do not stretch to the point of pain.
- Remain motionless while holding your stretch. Do not bounce while stretching. Bouncing can cause small tears in muscle fibers, and this can actually lead to less flexibility.
- Breathe evenly in and out during each stretch. Do not hold your breath.

STANDING STRETCHES

Chest Stretch

1. Stand facing a corner, placing forearms and hands on each wall.
2. Lean forward into the corner.
3. Keep head up and feet flat on the floor.



Back Stretch

1. Stand with feet hip-width apart.
2. Place palms on low back.
3. Gently lean trunk and neck back.



Shoulder Stretch

1. Stand tall with feet hip-width apart.
2. Clasp hands behind back.
3. Gently lift arms up and away from the back, keeping head up.



FLOOR STRETCHES



Shoulder Stretch

1. Lie flat on your back.
2. If you are using a pillow, place it only under your head, not under your shoulders.
3. Slowly lift arms straight up and allow them to fall back overhead.



Rotation Stretch

1. Lie on back with knees bent and feet flat. Arms should be outstretched at your side.
2. Rotate both knees to one side, keeping arms and upper torso flat. Turn head in opposite direction.
3. Repeat, rotating knees in the opposite direction.

SEATED STRETCHES

Neck and Chest Stretch

1. Sit tall in a chair with hands clasped behind back of chair.
2. Allow neck to gently fall back.



Hamstring Stretch

1. Sit tall in chair and place one leg straight out on another chair.
2. Keep toes pointed up, knees flat and back straight.
3. Gently reach for toes.
4. Only reach as far forward as you can without your knee bending.



Rotation Stretch

1. Sit tall with your right arm behind the chair.
2. Reach left arm across your body to grab the back of chair or the right armrest.
3. Turn neck and look over your right shoulder.
4. Repeat on the other side.





Ankle Circles

1. Kick foot in front of you.
2. Move foot in slow, complete circles.
3. Repeat in both directions.



Overhead Stretch

1. Sit tall in a chair and lace fingers together.
2. Turn palms facing out and slowly lift arms overhead.
3. Gently allow neck to fall back.
4. Look up at hands.



Seated Side Stretch

1. Sit to one side of a chair that has armrests.
 2. Keep feet flat on the floor.
 3. Reach right arm down toward the floor.
 4. Reach left arm up and over toward the right.
 5. Repeat on the other side.
-

Deep Breathing

Breathing deeply will help you relax, and relaxing will help you stretch. Do not hold your breath, strain or take shallow breaths while exercising. Shallow breaths overwork the upper chest muscles and upper parts of the lungs, leading to tension and fatigue. Full, deep breaths allow the diaphragm to lower and the lungs to expand deeply. This helps you take in more oxygen with each breath.

Proper Diaphragmatic Breathing

Lying comfortably on your back, place one hand on your chest and one hand on your abdomen.

Take in a slow, full breath (inhale) through your nose, and feel the hand on your abdomen rise as the lungs fill with air.

As you breathe out (exhale) through your mouth, feel the hand on your abdomen lower as your lungs empty.



Massage

Massage therapy has been shown to increase circulation, reduce muscle tension and promote relaxation. It may be helpful if you have problems with rigidity, anxiety or stress. Massage is not a substitute for regular movement and exercise, but it can be a wonderful addition to your overall exercise program. Self-massage and care partner-assisted massage can be helpful. Many stores sell items such as wooden rollers and hand-held electric massagers that you or your care partner can use.

If you want a professional massage, select a massage therapist who is certified by the American Massage Therapy Association (AMTA). To find one near you, visit www.findamassagetherapist.org or call **1-877-905-0577**. It is important to note that massage services are often not covered by health insurance.

Other Exercise Options

Yoga

Yoga increases flexibility, breathing and posture awareness and helps with relaxation and stress reduction. Yoga is a self-paced activity, which means that not everyone has to perform a pose in the same way or hold it for the same amount of time. Most poses can be modified depending on your needs. You can even practice yoga in a chair.

Yoga classes and private sessions are held at many fitness centers, senior centers and community recreation centers. Since there are many types of yoga, it is important to contact the instructor or the facility prior to starting a class to see if it is right for you.

Call our toll-free Helpline at 1-800-4PD-INFO (1-800-473-4636) or email Helpline@Parkinson.org to find a PD-specific yoga class in your area. You can also search for an instructor in the Yoga Journal online directory at www.yogajournal.com/directory or the Yoga Alliance, www.yogaalliance.org, 1-888-921-YOGA (9642).

Finally, there are many books and videos on yoga for people with Parkinson's that you can order or view online.

Tai Chi

Tai Chi is an ancient Chinese form of exercise that involves slow, gentle movements, each flowing into the next. Tai Chi incorporates posture, mental focus and deep breathing as the body is in constant motion. Research has shown that Tai Chi can improve balance in people with PD. Many people with Parkinson's also report improvements in flexibility, strength and relaxation. Fitness centers, senior centers and community recreation centers might offer Tai Chi classes. It is important to speak with the Tai Chi instructor to learn if the class will be beneficial for you.

You can learn more about Tai Chi and other therapies discussed in this chapter from the National Center for Complementary and Alternative Medicine at the National Institutes of Health at www.nccam.nih.gov.

Pilates

The Pilates method focuses on developing strong core muscles to help build strength and teach body awareness, good posture and graceful movement. The exercises can be performed using a floor mat and a variety of equipment. Pilates can help improve flexibility and agility and may also help with back pain. Classes are often offered at fitness centers, senior centers and community recreation centers. It is important to first speak with the Pilates instructor to learn which exercises are best for you.

To learn more about Pilates or for help locating an instructor, visit the Pilates Method Alliance at www.pilatesmethodalliance.org or call 1-866-573-4945.

Dance

Dance classes engage participants' minds and bodies in a social environment. Many people with PD who cannot walk well report they can still dance. Studies show that dance can help with:

- Balance
- Walking ability
- Balance and walking confidence
- Movement initiation
- Quality of life and sense of well-being

There are many dance options for people with PD, including general dance therapy as well as specific types of dance, such as tango. Dance and movement therapists work with individuals and groups in a variety of settings. To locate a dance therapist, visit the American Dance Therapy Association at www.adta.org or call 410-997-4040.

Two popular Parkinson's dance programs include Dance for PD® and Let Your Yoga Dance®. Find classes at www.danceforparkinsons.org and www.letyouryogadance.com.

Boxing

Non-contact boxing, when performed safely and in the proper setting, can be a fun and beneficial type of exercise. Programs like Rock Steady Boxing work exclusively with people with PD and provide training to instructors and links to classes in your area. Rock Steady Boxing classes combine many aspects of exercise that are important for people with PD, including aerobic, strengthening, balance/agility, and dual-task practice. Find a nearby class at www.rocksteadyboxing.org or call 1-888-217-0577.

Music Therapy

Many people with PD are aware of the positive effect that music has on them. Studies show that music can reduce stress, improve breathing and voice quality and promote self-expression. In addition, music therapy can help with many aspects of PD, including:

- Reducing bradykinesia
- Improving movement quality
- Helping coordinate movement through rhythm improves quality of life

Music therapists work in a variety of settings, and some insurance companies will pay for their services. Music therapists work with individuals or groups through the use of some of the following:

- Singing
- Interpreting music through movement
- Using music for relaxation
- Using music to help initiate movement
- Song writing
- Lyric discussion
- Imagery
- Performing music
- Therapeutic drumming

For more information on music therapy, visit the American Music Therapy Association at www.musictherapy.org or call 301-589-3300.

TIP

Be creative with your fitness. Exercise indoors and out. Change your routine frequently. Dance. Use music. Try a new exercise. Exercise with a partner, child, friend or animal. Join an exercise program or group. Above all, challenge yourself and have fun!

Chapter Check-In: What Exercises Should I Do?

We encourage you to personalize these reflection questions. You can choose to respond to them in writing, use them as discussion prompts or simply reflect.

My top three takeaways from this chapter:

1.

2.

3.

Reflection Questions:

Your Exercise Preferences: What type of exercise do you like to do?

Where do you feel most comfortable exercising — at home, in nature, solo or in a group? Do you look for ways to exercise throughout your day by doing house projects or running errands on foot?

Varying Your Exercise Program: Does your current exercise program include stretching, aerobic exercise and resistance or weight training? What is a good way to integrate these?

Finding Your Motivation: What makes it hard for you to exercise? How do you motivate yourself to exercise? Is there a time of the day when it's easier to exercise? Does it help to pair up with a friend or join a group class?

CHAPTER FIVE

Walking, Turning and Falls Prevention

Walking and balance problems are common in people with Parkinson's disease (PD). However, the right combination of exercise and new ways of moving can improve balance, limit or prevent falls and put confidence back into your stride. Most people do not think about their walking. Arms swing naturally, and feet land on the heels with each step. Individuals with PD, on the other hand, experience a reduction in their automatic movements. Feet begin to shuffle and performing two tasks at the same time becomes more difficult. Turning becomes challenging, often leading to a freezing episode and sometimes a fall.

Freezing of gait is the sudden inability to move the feet. You might feel stuck in place, completely unable to move, or legs may tremble in place.

Parkinson's-related walking changes include:

- Smaller steps
- Slower speed
- Less trunk movement (especially rotation)
- A narrow base of support (feet too close together)
- Less or absent arm swing (on one side of the body or both)
- Feet that land flat on the floor with each step instead of on the heel (this leads to shuffling, which can cause tripping and/or falling)

Managing Changes in Your Walking

Along with exercise, focusing on each movement helps improve the quality of walking.

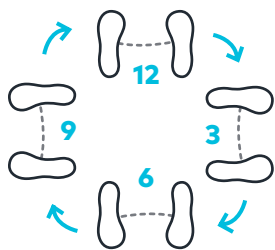
Walking Tips

- Tell yourself to land heel first. You can do this by thinking of each step as a big kick.
- Focus on the size of your steps rather the speed of your steps.
- Avoid carrying things while walking. People with PD may experience difficulty performing more than one task at a time.
- The moment you begin to shuffle or freeze, try to come to a complete stop. Take a breath, stand tall and start again, focusing on making that first step a big step.
- Stand tall and look out in front of you; do not look directly down at your feet.
- Use a cane, walking poles or walker/rollator if recommended by your therapist or doctor.

NOTE: The golden rule of using a walking device: if you need to reach out and touch furniture, walls or people when you are walking, then you most likely need a device. Another test to determine if you should use a walking device is if you feel more comfortable when pushing a shopping cart than not.

Turning Tips

- When beginning a turn from a stopped position, lead with your foot, not your upper body. Planting your feet and turning your upper body frequently leads to a freezing episode.
- If you want to turn right, shift your weight to the left foot and step out with the right foot. To turn left, shift your weight to the right and step out with the left foot.
- Avoid initiating a turn with your upper body. Instead, focus on how you lift your feet.
- To turn in a small area, or when you are stopped and must turn, try the “clock turn” technique: start at 12:00, take two slow steps to 3:00, etc.
- To turn in an open area, use large steps and make a U-turn.



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To turn in an open area, use large steps and make a U-turn.

TIP

People with Parkinson's may need to “tell” their feet how to move. Thinking about what you are doing uses a different part of your brain than the part affected by PD. Intentional movement improves the safety of the movement.

Freezing Tips

FREEZE "TRIGGER"	FREEZE REDUCTION STRATEGY
Answering the phone	Never rush to answer the phone. Keep a cordless phone within easy reach. Keep pathways open; rearrange furniture to keep floors free of clutter. Use an answering machine.
Walking on to/off of an elevator, train or bus	Allow everyone else to get on or off first. Announce that you have Parkinson's and ask people to be patient. Walk up to the threshold, stop, then focus on stepping over it. When waiting to enter an elevator, stay to the side of those exiting. This can prevent falling backwards (retropulsion) when trying to back out of the way of those exiting.
Walking through a doorway	Tell yourself not to focus on the doorway; instead, focus on how your feet hit the ground. Guess how many steps it will take to walk from where you are through the doorway, then count your steps as you move through to see how close you were to your guess. Look through the doorway at an object inside and focus on approaching the object. Walk up to the threshold, stop, then focus on stepping over it. Place colored tape in horizontal stripes in front of and through the doorway and focus on stepping over the tape. You can also place colored tape on the threshold itself, so you focus on stepping over it. Keep areas around doorways well-lit and free of clutter.
Walking in crowds	Try to walk near walls. Take slow, deep breaths and focus only on how your feet are moving, not on the people around you. Alternate between walking a few feet and stopping.
Starting to walk	Stop all movement and take a deep breath. Make sure weight is even on both feet. Visualize stepping over or kicking an object. Shift weight to the side and step with the unweighted foot. March in place before stepping. Have your care partner place their foot ahead of your foot and step to it. Have nightlights in areas you walk through at night, such as the path from the bedroom to the bathroom.

Note: For all strategies in the table above, focusing on the task is important. Rushing, carrying objects, talking with others or even looking away for a moment may limit how well the strategy works. People with Parkinson's should avoid multi-tasking.

Falls and Balance

People with Parkinson's are twice as likely to fall compared to the general older population. Once falls begin, they are likely to continue. Falls lead to injuries, fractures, pain and fear of falling. Ultimately, falls can cause a decline in mobility, strength and cardiovascular health.

Causes of Falls

- Slowed reaction time
- Freezing of gait
- Leg weakness
- Dizziness
- Blood pressure drop
- Shuffling steps that lead to tripping
- Poor safety awareness
- Doing two things at once
- Balance difficulties
- Visual-spatial changes (overreaching for an object, difficulty navigating steps)

BALANCE EXERCISES

Physical and occupational therapists and some exercise professionals can recommend specific exercises, equipment and techniques to improve balance and mobility inside and outside the home.

For balance exercises to be most effective, they should include different elements such as:

- Strengthening
- Sensory (awareness) training
- Balance reaction training
- Balance confidence
- Functional mobility training

Ideally, you should incorporate exercises that challenge you to lose your balance and then work to regain it.

TIP

Research is highlighting the need for starting balance training earlier in the course of PD rather than later. Do not wait until you think there is a problem, talk with your therapist now about starting a program.

BALANCE EXERCISE**Single Leg Stand**

1. Stand with a bed or couch behind you and a sturdy chair next to you.
2. Shift your weight onto one leg, lifting the other leg up for a few counts.
3. Switch to the other leg and repeat.

NOTE: You can hold the chair to steady yourself as needed. To make the exercise more challenging, place two large soup cans or heavy containers on the floor in front of you and try to tap the can/container one or more times with your lifted foot before you put your foot down.



Balance exercises should have you moving in different directions, shifting your weight and moving outside of your comfort zone, and performing agility and multitasking activities. It is recommended that you perform balance exercises at least 2-3 days per week and work up to practicing them daily. Remember that you need specific balance exercises tailored to your symptoms and abilities. Standing on one leg could be far too easy for someone who is newly diagnosed with PD, but very challenging for someone who has been living with Parkinson's for many years.

"I started grieving for all the things I thought [Parkinson's disease] would take from me. One of those was hiking. My husband and I like to take vacations to National Parks and go hiking; get out and see nature. How was I ever going to be able to hike again? Most of the parks that we've visited are in the mountains. Not exactly a walk on the beach. I'm not sure when my attitude changed, but I decided that I wasn't going to let this disease win. I would do what I could to continue to do the things I loved. [Several years ago], we took a vacation to Rocky Mountain National Park in Colorado. I was able to still do my hiking, but I noticed my arm not swinging and realized that I would need hiking poles in the future." -Sue

Safe Movement Techniques



Sitting Down in a Chair

When sitting, turn all the way around so that the backs of both legs touch the chair.

Reach back with both arms to slowly lower yourself down.



NEVER reach forward for the chair first and then turn to sit. This can lead to landing sideways on the end of the chair, landing too hard in the chair or missing the chair and falling to the floor.



Standing Up from a Chair

When moving from sitting to standing, do not push yourself straight up out of the chair. This frequently leads to falling back on to the chair. Instead, do the following:

1. Move to the front of the chair.
2. Place legs wide apart.
3. Bend knees so feet are under you.
4. Place hands on arms of chair.
5. Lean forward so your weight is on the balls of your feet and your bottom begins to lift off the chair ("nose over toes").
6. Push to stand.



Reaching Tips

There are many strategies you can use to make reaching safer.

- Stand in the "power stance" with feet wide apart and staggered. This allows you to shift your weight side to side and front to back.
- Stand directly in front of the object you are reaching for.
- Place one hand on the counter, wall or other stable object while you reach with your other hand.
- Avoid reaching for an object that is farther than arm's length.
- Never lean your center of gravity (near the belly-button area) too far forward. If you reach for an object and your weight moves up onto the balls of your feet or your toes, you are too far from the object.



Tips for Preventing Backward Falls

- Avoid stepping backward. Instead, step sideways. Make a safe turn, then walk forward.
- Do not stand directly in front of the oven door, refrigerator door, microwave or other appliance you are trying to open. Instead, stand slightly to the side and use a "power stance," with one hand on a stable surface.



This stance can lead to retropulsion or falls.



This technique is safer. Note the "power stance" position of the feet.



Getting up from a Fall



Begin to bend your knees.



Once your knees are bent and your feet are flat on the floor, reach one arm out to the side.



Reach the arm that was out to the side across your body while allowing your knees to fall over so that you can roll onto your side.



Push yourself up to a side sit.



Push yourself up onto your hands and knees.



Crawl to a sturdy piece of furniture, like a chair.

- Hold onto the chair with both hands.
- Bring your strongest leg up in front of you so that your foot is flat on the floor under your knee.
- Be sure your legs are wide apart.



Push up with your strong leg. Bring your other leg up so that the foot is flat on the floor. Pause here for a moment to be sure you are not lightheaded.



Slowly push your trunk up to stand tall.

How can you prevent falls?

- Do not rush.
- Do not multi-task.
- Use walking devices as recommended.
- If you think an activity is unsafe, it likely is. Ask for help.
- Use handrails when available and consider adding them to areas for extra support like steps (even one step), bathrooms and kitchens.
- Practice new turn, walking and freeze-break techniques often.
- Declutter your surroundings and remove tripping hazards such as cords and throw rugs.
- Use good lighting and nightlights.
- Avoid rolling chairs.
- Stay consistent with your home exercise routine.

Home Safety Assessments

For a complete safety review of your home, contact a physical therapist, occupational therapist or certified aging-in-place specialist (CAPS). You can locate a CAPS by contacting the National Association of Home Builders at 1-800-368-5242.

When a Fall Occurs

1. Remain calm. Feel and look for any pain or possible injuries before you try to get up. Plan your strategy carefully.
2. Use a heavy piece of furniture to assist you in getting up. If you doubt your ability to safely get up alone, crawl or scoot to a phone and call for help.
3. If you are someone who frequently falls, it is recommended that you enroll in a home emergency response system.

TIP

Begin practicing getting up from the floor even if you have not had a fall.

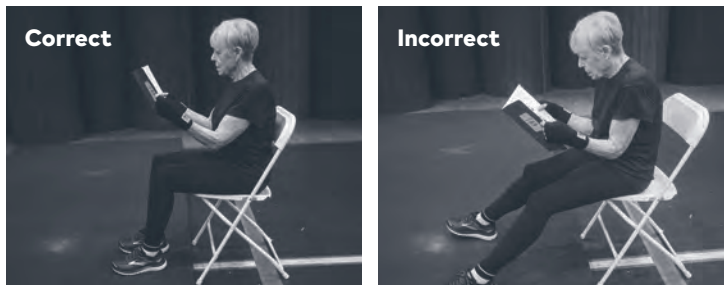
CHAPTER SIX

Posture

Your mother was right. You do need to sit up straight! Even without Parkinson's disease (PD), it is easy to fall into the habit of bad posture. Many of our daily activities contribute to bad posture:

- **Sitting and watching TV for too long**
- **Leaning over to work on the computer**
- **Sitting for too long while driving or riding in the car**
- **Looking down while reading or texting**
- **Propping your head against the headboard while lying down in bed**

The following tips are helpful for maintaining good posture in all positions:



Sitting

- Sit so that your back is fully in contact with the chair back.
- Use a back support or pillow along your low back, especially for long car and plane rides and in the theater — it will help you to sit tall.
- Keep the computer screen and TV at eye level to minimize neck & eye strain.
- While reading, use a bookstand or rest your elbows on a pillow or a table. This allows you to look directly ahead at the pages.
- Maintain eye contact during conversation. This holds the head erect.
- Avoid sitting in chairs without back support or armrests.
- Avoid recliners. They promote rounding of the neck, shoulders and head, as well as tightness in the hips.
- Avoid low, soft couches and chairs. The height of your chair should allow for your hips and knees to be level with one another.
- Shift positions, stretch, get up and move around.

In Bed

- Avoid using too many pillows or a pillow that is too thin under the head.
- The best position for sleeping is lying on your side with a pillow between the knees.
- Avoid sleeping in a chair. Lie down on a bed to nap.
- Choose a comfortable, yet supportive bed.
- When reading in bed, sit with your entire back resting on the headboard, not just your head and neck.

More Tips

- Perform frequent neck and shoulder stretches to relieve muscle tension.
- Place written reminders on commonly used items like the bathroom mirror, computer screen and television: "STAND TALL."

Posture Exercises

Posture check: Press your back up against the wall with your heels 6" away from the wall. Tuck your chin, then slowly lift it to look straight ahead. Pull in your stomach muscles and bring your lower back closer to the wall. Lift your chest, bringing your shoulders back and down. Walk away and try to maintain this position.

Standing back line-up: Stand with your back against the wall. Place your arms out against the wall. Make yourself look like a giant "T" with your palms flat to the wall. Press your hips, low back, shoulders, head, elbows and hands to the wall. Now push against the wall with your hands as hard as you can for 10 seconds. Repeat this activity with palms facing down, palms out and palms up.

Standing shoulder stretch: Stand with your back against the wall. Raise your arms above your head, then bend your elbows to 90 degrees. Press your arms into the wall, palms facing out. Press your entire body to the wall. Move both arms up the wall over your head as far as you can go, keeping elbows tight to the wall. Return your arms to starting position. Repeat this movement 5 times.

Arm circles: Stand away from the wall, place arms in the giant "T" position, palms facing forward. Pinch your shoulder blades together and stand tall. Move arms forward in a circular motion; make small, medium and large circles. Repeat each circle 2 - 5 times. Move arms backward and repeat for each circle size. Repeat circle exercises with palms down, palms up and palms back.

TIP

Good posture is critical to good balance. When the body is correctly aligned, movement is more efficient and more stable.

CHAPTER SEVEN



Young Onset Parkinson's Disease

People with Young Onset Parkinson's disease (YOPD) — diagnosed before age 50 — are commonly in the busiest stage of their life, managing a career, raising a family or juggling both. They often face unique issues relating to Parkinson's, including employment, body image and long-term planning for finances and health care. This makes prioritizing self-care even more important.

As you adjust to life with Parkinson's, your priorities will change, and it is essential to include exercise in your new routine. Getting involved with exercise early can give you a sense of control, increase your self-confidence, and improve your overall sense of well-being. It can also potentially slow the course of the disease and limit functional disabilities.

"I was diagnosed with Early-Onset Parkinson's Disease. This was just before my 44th birthday... One of the first things I thought was that my days as a competitive rower were over. After several months of dwelling on things, I returned to rowing, albeit slower and more awkwardly than I'd like... I ended up getting invited to the Paralympic training camp in Boston in early June and eventually ended up in a two-person boat that raced at the 2019 World Rowing Championships in Linz, Austria finishing in sixth place." -Todd

YOPD Symptoms and Research

People with YOPD are more likely to experience:

- Dyskinesia (involuntary, sudden movements from levodopa)
- Dystonia (muscle contractions or cramping)
- More fluctuations between "on" and "off" times

On the other hand, those with YOPD generally have fewer difficulties with everyday activities early in the disease. This is in part because they tend to have fewer medical issues to deal with as compared to older adults with PD. Research shows that:

- Younger brains have greater potential for neuroplasticity (brain change).
- When an exercise program is challenging, intense and works toward specific goals greater gains are made for those with PD.
- Seeing a physical or occupational therapist upon diagnosis for a baseline evaluation and exercise recommendations leads to better outcomes.
- High intensity biking and treadmill training can improve gait and balance, if easily performed and deemed safe by your doctor.

Individualized Exercise Is Key

The "right" exercise for you will depend on your movement challenges, fitness goals and personal preferences. Your exercise routine may not need to change much if it is safe and effective for you. For some, however, exercising the way you always have may not be enough. Cycling, for example, will not improve a diminished or lost arm swing. This is why working with physical and occupational therapists and exercise professionals is so important. They will advise you on what exercise and functional training are best to regain or prevent loss of movements.

It is never too early to participate in physical or occupational therapy. Do not wait until you start having pain or problems with movements. Be proactive!

- Your ideal fitness routine should:
- Be something you enjoy doing (and will actually do!)
- Not add extra stress to your life
- Fit in to your daily routine
- Challenge you physically and mentally
- Include moderate to high aerobic activity, strengthening, flexibility and balance exercises, and allow you to practice multitasking
- Be designed to meet specific movement challenges and fitness goals

There are Parkinson's-specific classes available that can help connect you with a peer group and that are geared toward commonly-experienced movement challenges. However, for many people with YOPD who are experiencing mild symptoms, these classes may not be challenging enough.

TIP

Is there a fitness activity that you have always dreamed of doing, like completing a half marathon, learning to dance, or hiking the Appalachian Trail? Defining a fitness goal that you are excited about and working towards it, and adapting along the way, can help you stay motivated and challenge yourself.

Remember that you are not alone. Making connections and friends with people your age living with Parkinson's and facing similar challenges and goals can give your strength and inspiration. Stay fit and get connected!

For more information about exercise resources in your community or ways to connect with others living with YOPD, call the Helpline at 1-800-4PD-INFO (1-800-473-4636).

Chapter Check-In: Young Onset Parkinson's Disease

We encourage you to personalize these reflection questions. You can choose to respond to them in writing, use them as discussion prompts or simply reflect.

My top three takeaways from this chapter:

1.

2.

3.

Reflection Questions:

Your Understanding of Exercise: How have your feelings about exercise evolved since your diagnosis? In what ways does exercise impact your symptoms? Do you feel the benefits right away or over several days?

Your Exercise Challenges: Is it difficult to fit exercise into your schedule? What are some of the strategies that have worked for you to keep exercising regularly? Have you felt self-conscious exercising around other people? What are your other exercise challenges?

Individualizing Your Exercise Routine: Has Parkinson's changed the way you exercise? Have you joined a Parkinson's-specific exercise class or adapted your exercise routine in other ways? What are your fitness goals?

Appendix

Fitness Recommendations

As a leader in driving better health outcomes and quality of life for people with Parkinson's, the Parkinson's Foundation teamed up with the American College of Sports Medicine (ACSM) to create new Exercise Guidelines for people with Parkinson's.

Visit Parkinson.org/ExercisePros to learn more and to download the fitness recommendations.

Parkinson's Exercise Recommendations

Parkinson's is a progressive disease of the nervous system marked by tremor, stiffness, slow movement and balance problems.

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

Aerobic Activity	Strength Training	Balance, Agility & Multitasking	Stretching
3 days/week for at least 30 mins per session of continuous or intermittent at moderate to vigorous intensity TYPE: Continuous, rhythmic activities such as brisk walking, running, cycling, swimming, aerobics class CONSIDERATIONS: Safety concerns due to risks of freezing of gait, low blood pressure, blunted heart rate response. Supervision may be required.	2-3 non-consecutive days/week for at least 30 mins per session of 10-15 reps for major muscle groups; resistance, speed or power focus TYPE: Major muscle groups of upper/lower extremities such as using weight machines, resistance bands, light/moderate handheld weights or body weight CONSIDERATIONS: Muscle stiffness or postural instability may hinder full range of motion.	2-3 days/week with daily integration if possible TYPE: Multi-directional stepping, weight shifting, dynamic balance activities, large movements, multitasking such as yoga, tai chi, dance, boxing CONSIDERATIONS: Safety concerns with cognitive and balance problems. Hold on to something stable as needed. Supervision may be required.	>2-3 days/week with daily being most effective TYPE: Sustained stretching with deep breathing or dynamic stretching before exercise CONSIDERATIONS: May require adaptations for flexed posture, osteoporosis and pain.

See a physical therapist specializing in Parkinson's for full functional evaluation and recommendations.

Safety first: Exercise during on periods, when taking medication. If not safe to exercise on your own, have someone with you.

It's important to **modify and progress** your exercise routine over time.

Participate in **150 minutes** of moderate-to-vigorous exercise per week.

AMERICAN COLLEGE OF SPORTS MEDICINE
LEADING THE WAY

Parkinson's Foundation

Helpline: 800.473.4636/Parkinson.org

TRAINING THE THERAPISTS AND TRAINERS

This section provides resources for physical & occupational therapists and other fitness professionals. Share these pages with your fitness team.

Parkinson's Foundation Trainings

Team Training for Parkinson's

Team Training teaches healthcare professionals the best techniques in Parkinson's care through a team-based approach. The interactive training program includes care strategies for all stages of Parkinson's, interdisciplinary training to foster stronger care teams and continuing education credits. Physical and occupational therapists and exercise professionals can join with other health professionals to create a well-rounded plan for the person with Parkinson's. Learn more at Parkinson.org/TeamTraining.

Physical Therapy Faculty Program

This "train the trainer" program improves Parkinson's physical therapy care by training faculty leaders across the U.S. so they can, in turn, educate physical therapy students. This intensive course allows physical therapy educators to immerse themselves in learning the latest evidence-based findings in Parkinson's research and care. For more information visit Parkinson.org/ProfessionalEducation.

Online Courses for Allied Health Professionals

The Parkinson's Foundation offers multi-module online courses for physical and occupational therapists, nurses, and speech-language pathologists and provides continuing education units (CEUs) for course completion. Visit Parkinson.org/ProfessionalEducation.

Other Trainings for Health Professionals

There are many certification programs available for allied health professionals to enhance their ability to care for people with Parkinson's disease, including the following:

LSVT Global: LSVT LOUD® and LSVT BIG®

LSVT Global, Inc. provides specialized training and certification to speech-language clinicians (LSVT LOUD), and physical and occupational therapy clinicians (LSVT BIG) in clinically-proven methods to help improve communication and movement in people with Parkinson's and other neurological conditions. Visit www.lsvtglobal.com or call 888-438-5788 for more information.

Parkinson Wellness Recovery | PWR!

PWR! provides training and certification opportunities for physical and occupational clinicians and fitness professional in Parkinson's-specific, learning-principled exercise programs. Visit www.pwr4life.org or call 520-591-5346 for more information.

The Brian Grant Foundation Exercise for Parkinson's Online Training for Professionals

This training covers the basics of Parkinson's, safety considerations for exercise instructors, and research on the most effective types of activities for people living with the disease. Visit BrianGrant.org/training-for-professionals for more information.

Rock Steady Boxing Affiliate Training Camp (ATC)

This training camp provides an overview of Parkinson's, beginning boxing techniques, and adaptations of their fitness program designed to combat common symptoms of PD. Visit RockSteadyBoxing.org/become-an-affiliate or call 317-205-9198 for more information.

American Physical Therapy Association (APTA)

APTA has released Clinical Practice Guidelines (CPG) for the management of PD, and also offers continuing education courses on PD. For more information visit www.apta.org.

American Occupational Therapy Association (AOTA)

AOTA advances occupational therapy practice, education and research through standard setting and advocacy. For more information visit www.aota.org.

Glossary

Glossary terms are underlined in blue the first time they appear in this book.

A **ADLs** Activities of daily living

B **Bradykinesia** Slowness of movement

D **DaTscan** Isoflurane I 123 injection, also known as phenyltropane, is a radiopharmaceutical agent which is injected into a patient's veins in a procedure referred to as SPECT imaging.

F **Festination** Quick, short steps

Freezing Temporary, involuntary inability to take a step or initiate movement; when it refers to walking, it is called "freezing of gait" (FOG)

M **Micrographia** Small, cramped handwriting

N **Neuroplasticity** The brain's ability to reorganize itself by forming new connections; this allows the brain to compensate for injury and disease and to respond to new situations and changes in the environment

O **Orthostatic hypotension** A drop in blood pressure upon changing position from lying down or sitting to standing; also called "postural hypotension" and can cause fainting; when related to a neurological disorder like Parkinson's disease, it is called "neurogenic orthostatic hypotension," or nOH

R **Retropulsion** Quick, small, involuntary steps backward that can result in falls

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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. A wealth of information about Parkinson's and about our activities and resources is available on our website, Parkinson.org.

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