
PARKINSON'S REHABILITATION PROGRAM IDEAS

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EDUCATION ON PARKINSON'S DISEASE

Overview of Parkinson's Disease

Parkinson's Disease is a progressive neurological condition that affects both motor and cognitive functions. Although it is not terminal, it currently has no cure and can become debilitating if not managed properly. This condition impacts all daily activities, or occupations, of your clients.

KEY POINTS TO COMMUNICATE

Progressive Condition: Parkinson's gradually worsens over time and affects both movement and thinking skills.

Dopamine Depletion: The disease affects dopamine-producing neurons in the basal ganglia and substantia nigra.

Lewy Bodies: The presence of Lewy Body Clusters can further impair brain function.

Medication: Dopaminergic medications like levodopa are commonly used to manage symptoms.

Occupational Impact: Understanding Parkinson's helps tailor interventions to maintain your clients' independence and quality of life.

NEUROLOGICAL IMPACT

Explain to your patients that Parkinson's Disease primarily affects the dopamine-producing neurons in the brain, particularly in the basal ganglia and substantia nigra. These areas are crucial for regulating complex movements and automatic body functions. The substantia nigra becomes lighter in color and produces less dopamine, leading to the characteristic symptoms such as tremors, rigidity, and bradykinesia (slowness of movement).

MEDICATION AND MANAGEMENT

Inform your patients that beyond the early stages of Parkinson's, they will most likely be prescribed dopaminergic medications like levodopa to supplement the decreased dopamine production in the brain. These medications can significantly improve motor symptoms and enhance their quality of life.

FUNCTIONAL IMPLICATIONS

Having a comprehensive understanding of both the neuroanatomy and functional implications of Parkinson's Disease will enhance your confidence in providing effective interventions. This knowledge helps build your patient's confidence in your ability to support their management of the condition. By staying informed, you can better assist your clients in maintaining their independence and improving their daily functioning despite the challenges posed by Parkinson's Disease.

Symptoms of Parkinson's Disease

Note: As an occupational therapy practitioner, it is important to address as many domains of wellness within your clinical plan of care through assessments, goals, and treatment continuums.

Nonmotor Symptoms: Early symptoms include loss of sense of smell, constipation, sleep disorders (REM behavior disorder), mood changes, urinary urgency, and low blood pressure when standing up.

Tremor: Resting tremor or "pill rolling" movements. Stress and emotion can increase the tremor.

Postural Instability: Rounded shoulders, forward head, stooping posture, decreased arm swing during walking.

Bradykinesia: Extreme slowness when starting or performing movements. It is the most functionally debilitating symptom.

Muscle Rigidity and Cramps: Increased muscle tone can lead to cogwheel movement patterns.

Decreased Productive Muscle Recruitment: Patterns of muscle activity for the agonist and antagonist muscles break down, directly affecting bradykinesia. Even with medication or deep brain stimulation, therapy is often needed to address balance and instability due to this decreased muscle coordination.

Gait Disturbances: Watch for shuffling steps, instability, freezing of gait, and general difficulties in walking and posture.

Stages of Parkinson's Disease

Educate your clients about the five stages of Parkinson's Disease to help them understand the progression and to better meet their needs.

- **Stage One:** Symptoms affect only one side of the body.
- **Stage Two:** Symptoms affect both sides of the body, but balance is still intact.
- **Stage Three:** Symptoms are mild to moderate, balance is impaired, but the person can still function independently.
- **Stage Four:** Symptoms cause severe disability, but clients can still walk or stand without assistance.
- **Stage Five:** Symptoms cause the client to become wheelchair-bound or bedridden unless assisted.

PERSON-BASED INTERVENTIONS

Physical

LSVT BIG and LSVT LOUD: Explain that these programs can improve movement and speech. They use research and evidence-based practices that can be applied in various ways.

Neuromuscular Communication: Emphasize postural control during activities like reaching and retrieving objects of various sizes, shapes, and weights.

Reaction Time, Agility, and Coordination: Highlight the importance of exercises to improve these aspects.

Managing Tone and Rigidity: Teach the use of moist heat and slow stretching strategies to prevent contractures and manage increased muscle tone early on. Teaching the entire toolkit for tone inhibition and relaxation will be helpful for your patient throughout their journey with Parkinson's Disease.

Cognition

Progressive Dementia (Lewy Body Dementia): Explain that Parkinson's can lead to progressive dementia. Encourage following evidence-based practices for executive functioning training and dual tasking.

Memory Strategies: Use repetition, errorless learning, and rhythmic cues to help retain information. Train both internal (like visualization) and external (like reminders) memory strategies.

Clear Communication: Speak slowly and clearly. Avoid asking questions like “Do you remember” or “Remember when...”

Psychosocial Skills

Group Support: Recommend joining support groups to reduce feelings of isolation and embarrassment.

Addressing Social Barriers: Work on overcoming issues like embarrassment about the disease and difficulty speaking publicly. Use a treatment plan to boost self-confidence.

Therapeutic Use of Self: Spend extra time discussing highs and lows at the beginning and end of each session to build rapport and understanding.

Environment-based Interventions

Home Modifications: Introduce changes to remove environmental barriers. Avoid medical equipment unless necessary and focus on adaptive mobility techniques.

Life Space: Use the Life Space Questionnaire to identify barriers and provide corresponding patient handouts.

Occupation-based Interventions

ADLs (Activities of Daily Living): Focus on ambulation, transitional movements, dressing, and reaching activities that require coordination. Use metronome training to reduce freezing and improve mobility.

Employment: Conduct psychosocial interviews using tools like the Kawa River, Self-Efficacy Scale, and SCOPA. Identify and address barriers caused by Parkinson’s in the workplace and daily life.

Interventions for Functions, Structures, and Skills

SPEED AND SENSORY AWARENESS:

- **Goal:** Increase speed, acceleration, and sensory awareness of movement.
- **Duration:** 40-minute sessions, 2 times per week for 5 weeks.
- **Activity:** Perform sets of 45 movements to increase range of motion and maximum speed.

MUSCLE FORCE PRODUCTION AND ADLS PARTICIPATION:

- **Goal:** Increase muscle strength, communication, cognitive function, and participation in daily activities; decrease bradykinesia.
- **Duration:** 40-60 minutes, 3 times per week for 12 weeks.
- **Activities:** Stretching, walking, riding a bike, standard resistance training, high-force eccentric training.

GAIT AND RHYTHMICITY IMPROVEMENT:

- **Goal:** Enhance step rhythm and walking ability.
- **Method:** Rhythmic Auditory Stimulation (RAS) using sensorimotor synchronization (SMS) as gait cues.
- **Benefits:** Improves step length, duration, speed, and variability.

POSTURAL CONTROL AND BALANCE:

- **Goal:** Improve postural control and automaticity.
- **Activity:** Have the client stand on a moving platform and perform a motor task such as force-matching precision grip while maintaining balance.
- **Instructions:** "Keep the platform horizontal and the tilt angle close to the target line."

MOBILITY AND STANDING BALANCE:

- **Goal:** Improve clinical symptoms, mobility, and standing balance.
- **Activities:** Two-handed coordination exercises, stabilization and spinal mobilization, trunk and limb movement with correct posture, strengthening exercises, movements with visual pacing.

POSTURE IMPROVEMENT:

- **Rationale:** Enhance self and external perturbation control, modify trunk inertia, and improve dual-tasking capabilities.
- **Activities:** Stand to sit on unstable surfaces while holding weighted hand tools, rhythmic limb movements, stepping into a rope ladder, stepping onto exercise blocks.

PROPRIOCEPTION ENHANCEMENT:

- **Rationale:** Improve joint position sense, force, and velocity awareness (and mindfulness)
- **Activities:** Walking through an agility ladder, rapid response to visual and auditory cues, concurrent arm and trunk movements, exercises with hand-held sticks.

COORDINATION IMPROVEMENT:

- **Rationale:** Improve reactive movements, anticipatory postural adjustments, and multisensory stimulation.
- **Activities:** Reactive movements to external stimuli, anticipatory postural adjustments, action observation, and auditory cueing.

REFERENCES

Summa, S., et al., Adaptive Training with full-body movements to reduce bradykinesia in persons with Parkinson's disease: a pilot study. *Journal of NeuroEngineering and rehabilitation*, 2015. 12.

Mahle, A.J. and A.L. Ward, *Adult Physical Conditions: Intervention Strategies for Occupational Therapy Assistants*. 2019, Philadelphia, PA: F.A.Davis. 1057.

David, F.J., et al., Progressive resistance exercise restores some properties of the triphasic EMG pattern and improves bradykinesia: the PRET-PD randomized clinical trial. *Journal of neurophysiology*, 2016. 116(5): p. 2298-2311.

Rodger, M.W.M. and C.M. Craig, Beyond the Metronome: Auditory Events and Music May Afford More than Just Interval Durations as Gait Cues in Parkinson's Disease. *Frontiers in neuroscience*, 2016. 10: p. 272-272.

Rodriguez-Blazquez, C., et al., The MDS-UPDRS Part II (motor experiences of daily living) resulted useful for assessment of disability in Parkinson's disease. *Parkinsonism & related disorders*, 2013. 19(10): p. 889-893.

Dibble, L.E., et al., High intensity eccentric resistance training decreases bradykinesia and improves quality of life in persons with Parkinson's disease: A preliminary study. *Parkinsonism & related disorders*, 2009. 15(10): p. 752-757.

Huang, C.-Y., et al., *Improving Dual-Task Control With a Posture-Second Strategy in Early-Stage Parkinson Disease*. *Archives of physical medicine and rehabilitation*, 2018. 99(8): p. 1540-1546.e2.

Tollár, J., et al., A High-Intensity Multicomponent Agility Intervention Improves Parkinson Patients' Clinical and Motor Symptoms. *Archives of physical medicine and rehabilitation*, 2018. 99(12): p. 2478-2484.e1.