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Parkinson's Disease: How Physical and Speech Therapy Benefit Elderly Patients

Introduction

According to the World Health Organization, neurological disorders are the second leading cause of death globally and the leading cause of disability (Santiago and Potashkin 1). Neurological disorders are a group of medical conditions that affect brain function, movement, perception, or sensation, often resulting in disability or death. Neurodegenerative diseases are a subtype of neurological disorders characterized by the progressive degeneration and death of nerve cells. Common examples include Alzheimer's disease (AD), frontotemporal dementia (FTD), amyotrophic lateral sclerosis (ALS), Huntington's disease (HD), and Parkinson's disease (PD), recognized as one of the most prevalent neurodegenerative disorders that primarily affect movement due to the loss of dopamine in the brain, caused by the degeneration or death of dopamine-producing nerve cells. It most commonly affects the elderly, as aging is considered a major risk factor for developing the disease. This paper argues that Parkinson's disease significantly affects elderly patients' motor and communication abilities, but that individualized physical and speech therapies can delay symptom progression, improve independence, and enhance quality of life.

Overview

Classification of Parkinson Disease

Parkinson's disease is known as both an incurable and non-communicable condition, placing it among the most challenging chronic disorders. Neurological disorders are identified as non-communicable diseases, meaning they are not caused by infections and cannot be transmitted from person to person. According to Cedars-Sinai,

Parkinson's is not inherited but develops gradually. For this reason, it is classified as a chronic disorder, as it tends to persist for long periods and gradually worsen over time. Dolhun supports this classification by emphasizing that chronic neurological conditions are not caused by pathogens, also referred to as organisms or agents that cause disease in the body of a living organism, such as bacteria or viruses (3). Therefore, these conditions are not spread between individuals. Extensive clinical research has confirmed that Parkinson's disease is a long-term, progressive condition that affects patients' everyday routines over time. For a better understanding of its long-term impact, it is essential to explore the risk factors associated with Parkinson's disease.

The Risk Factors of Parkinson Disease (PD)

Scientific studies and medical research, including those from Mayo Clinic and Cleveland Clinic, classify Parkinson's disease as an idiopathic neurological disorder, which means it has no single identifiable cause but is believed to result from a combination of multiple contributing factors. Understanding its pathophysiology, the internal changes that occur as the disease develops, helps identify risk factors such as Lewy bodies, alpha-synuclein, dopamine dysfunction, and basal ganglia impairment, all of which affect brain function in patients with Parkinson's disease (PD). Zhang et al. have identified that the main cause of Lewy body pathology is the accumulation of α-synuclein (1). This refers to a small protein that naturally exists in the brain, particularly at nerve endings, and plays several roles—including facilitating the release of neurotransmitters like dopamine. When α-synuclein accumulates abnormally inside neurons, it forms toxic clumps known as protofibrils. These protofibrils usually appear when there is an abnormal increase in α-synuclein levels within the cell. Over time, they aggregate into larger, insoluble fibers that eventually become what we know as Lewy bodies—a toxic protein buildup that places stress on neurons. They interfere with critical cell functions such as energy production and waste removal, disrupt signal transmission, and are strongly associated with the degeneration of dopamine-producing neurons in the substantia nigra, which causes the motor symptoms of Parkinson's disease (1).

Similarly, Baladaniya and Baldania noted that Parkinson's disease is marked by the gradual degeneration of dopaminergic neurons and the formation of Lewy bodies within nerve cells (1). Based on current evidence, the main factor behind Parkinson's disease is the aggregation of alpha-synuclein, which leads to the formation of toxic Lewy bodies, reduces the number of synaptic vesicles, and interferes with dopamine production, ultimately affecting the basal ganglia, the region responsible for controlling voluntary movement. To better understand how this impacts movement in patients with Parkinson's disease, it is necessary to examine the role of dopamine and the basal ganglia.

As mentioned earlier, the buildup of alpha-synuclein is not only a key factor in Lewy body pathology but also a major cause of dopamine-related damage within the cell. Dopamine is a neurotransmitter that helps brain cells transmit signals. According to Post et al., the accumulation of alpha-synuclein affects the enzymes aromatic L-amino acid decarboxylase (AADC) and tyrosine hydroxylase (TH), which are responsible for dopamine synthesis, by reducing their activity (4–5).

This leads to a buildup of dopamine in the cytoplasm, causing oxidation and the formation of toxic compounds that contribute to the death of dopaminergic neurons, which are the neurons responsible for producing dopamine. Through this process, the basal ganglia are also affected. These structures connect the thalamus to the frontal cortex and help coordinate voluntary movement, meaning their damage directly impacts motor control. Furthermore, Baladaniya and Baldania noted that when dopaminergic neuron dysfunction occurs in the basal ganglia, the symptoms of Parkinson's disease begin to appear (1). Overall, the accumulation of alpha-synuclein and the formation of Lewy bodies, along with impaired dopamine storage in synaptic vesicles, lead to a reduction in dopamine levels. This affects the function of the basal ganglia, which are involved in regulating voluntary movements, and is considered one of the key contributors to the development of Parkinson's disease, alongside other risk factors such as gender.

When considering gender as a risk factor, research indicates that Parkinson's disease is more prevalent in males than in females. According to Baladaniya and Baldania, "The lifetime chance of developing Parkinson's disease is 2.0% in males and 1.3% in women. This reflects the gender disparity seen across various studies. Men are 1.5 times more

likely than women to suffer Parkinson's disease" (1). This difference may be due to several biological and environmental factors, including hormonal differences, varying levels of exposure to environmental toxins, and other underlying mechanisms.

There is still no clear explanation for the increased risk of Parkinson's disease in males compared to females. Researchers suggest that the disease has a multifactorial nature, involving factors such as environmental exposure, biological status, and fundamental biological differences. According to Cattaneo and Pagonabarraga, males are generally more susceptible to developing Parkinson's disease. However, symptom progression may be more severe and faster in females, reflecting gender-based differences in how the disease progresses (59). This indicates that symptoms affect patients differently. A clear understanding of these symptoms can help minimize their impact on patients' daily lives.

Motor and Non-Motor Symptoms of Parkinson's Disease

People diagnosed with Parkinson's disease exhibit both motor and non-motor symptoms that affect their daily routines. Among the motor symptoms that appear in PD patients are those that impact body movement due to dysfunction in the nervous system responsible for motor control. The most common motor symptoms are bradykinesia and postural rigidity. Baladaniya and Baldania pointed out that bradykinesia is the principal symptom of Parkinson's disease, characterized by difficulty and slowness in movement and in performing simple tasks. On the other hand, postural rigidity refers to a persistent increase in muscle resistance during movement, even when the movement is slow and passive. Shoulder pain is considered one of the early signs of this symptom. Postural deformities, which are abnormal changes in body alignment while standing, sitting, or moving, are also often associated with rigidity (2). These motor symptoms significantly affect patients' independence and overall quality of life, highlighting the importance of early intervention.

Other symptoms of the disease are non-motor symptoms. These do not involve movement or control of the body, but they are still very important and greatly affect the patient's life. Examples include depression, cognitive impairment, fatigue, and hyposmia, which is when the patient loses the ability to smell. According to the article "Loss of Smell," hyposmia is a common symptom in the early stages of the disease. It

is often overlooked by doctors, which makes it also overlooked by some patients at that stage. Loss of smell affects daily life because it is connected to the sense of taste, leading to the patient losing the ability to enjoy food. Based on our knowledge of the motor and non-motor symptoms of the disease, early intervention and understanding available treatments can help delay the symptoms.

Physical Therapy Interventions for Parkinson's Disease

Parkinson's disease treatments assist in relieving symptoms and improving quality of life, but they do not cure the disease, as it is considered a chronic condition. As Dolhun mentioned, Parkinson's is a chronic disease that escalates—meaning it is incurable but can be managed (4). It affects the quality of life, but there are several therapies, treatments, and strategies prescribed by doctors based on the different symptoms that each patient suffers from, since these vary from one patient to another. These medications are provided to support daily lifestyle. The treatments include medication, physical therapy, speech therapy, and surgery for advanced stages of the disease. Most of these treatments focus on movement, balance, and muscle strengthening, as these motor functions are the most affected during the course of the disease.

Physiotherapy is an important branch of medicine that focuses on improving an individual's physical abilities. It is defined as the diagnosis and treatment of disability and disease through natural methods. Some physical therapy approaches for Parkinson's disease include hydrotherapy and LSVT BIG therapy. Aquatic therapy is a form of physical therapy that uses the properties of water, such as buoyancy, resistance, and fluidity, to improve quality of life. Studies have shown that hydrotherapy improves patients' mobility and gait variability, which refers to the differences and changes in walking patterns. Dai et al. found that aquatic therapy plays an important role in gait rehabilitation. Some studies have shown that these treatments reduce pressure on the lower extremities and joints, which strengthens foot stability and improves walking skills (8). Aquatic therapy can be used with all types of patients, not only those with Parkinson's disease, unlike LSVT BIG therapy which is specifically designed for individuals with Parkinson's.

Table:1 Effects of Aquatic Therapy on Different Aspects of Parkinson's Disease

Assessed Aspect	Aquatic Therapy Outcome	Additional Details
Balance	Significant improvement (WMD = 2.234, $p < 0.01$)	Aquatic therapy helped patients enhance their balance and reduced the risk of falls.
Walking Ability	Noticeable improvement (WMD = -0.911, $p < 0.01$)	Water-based exercises improved patients' walking speed and step length compared to land exercises.
Motor Function	No clear improvement (WMD = -0.328, $p = 0.658$)	Aquatic therapy did not show major changes in basic motor function.
Quality of Life	Significant improvement (WMD = -5.057, $p = 0.029$)	Patients experienced better daily living, less pain, and improved mood after aquatic sessions.

Source: (Dai et al. 6-8)

As shown in Table 1, the study compared two groups of participants, with one group receiving hydrotherapy treatment. The results showed that hydrotherapy had a significant positive effect on improving balance, walking ability, and quality of life. However, it did not lead to significant improvements in basic motor functions.

LSVT is a physical therapy program specifically designed for patients with Parkinson's disease and other neurological disorders that affect movement. The program includes two types: LSVT LOUD, which focuses on improving voice and speech, and LSVT BIG, which targets body movement and range of motion. LSVT helps improve proprioception, which refers to the ability to sense body position and movement without relying on vision. When a person is diagnosed with Parkinson's disease, their proprioceptive ability becomes impaired. Therefore, the LSVT program is applied to improve this function in patients with Parkinson's.

A study was conducted by Peterka et al. on Parkinson's patients to measure pointing error, which is the difference between the intended location the hand should reach and the actual location it reaches, especially when done without visual feedback. After receiving LSVT BIG treatment, the study found that people with Parkinson's disease (PwPD) who underwent the therapy were able to move their arms more accurately (6). As mentioned earlier, Parkinson's disease does not only affect movement but also

impacts speech and swallowing. For this reason, physical therapists and speech-language pathologists often work together to manage the condition.

Wherever the expertise is rendered, treatment plans become more efficient—from linguistic needs to physical needs of elderly patients with a speech-language therapist. “The goals of speech therapy and physical therapy are seen as complementary and mutually supporting; practitioners from both disciplines seek to improve the patient’s overall quality of life,” note Schwab et al. Such a finding similarly attests to the need for collaboration with multiple disciplines working on neurological disorders in the aged. Enhanced mobility, for instance, leads to articulation, enunciation, and pronunciation improvements. In a case study presented by Vig et al., a female in her late 70s entered with a stroke and comorbid issues of mobility and communication (3). While the SLP worked to negotiate the communicative concerns from enunciation to articulation to difficulties with swallowing, the PT sought to improve balance and overall physical capabilities. For these seniors and their neurological concerns, the collaboration was the best course of treatment and quality of life.

Table 2: Implementing Team-Based Post-Stroke Tele-rehabilitation

Stage	Time Frame	Activities
Case Setup	Week 1–2	Select patient case, obtain consent, and complete baseline assessments with PT, OT, and SLP teams.
Intervention Planning	Week 3	Develop a collaborative tele-rehabilitation plan tailored to patient’s needs and goals.
Treatment & Monitoring	Weeks 4–12	Deliver interdisciplinary tele-rehab sessions, track progress, and adjust strategies as needed.
Evaluation & Reporting	Weeks 13–14	Reassess outcomes, measure progress, and document effectiveness of the team-based intervention.

Source:(Anderson et al. 6)

The study shown in Table 2 is based on a real-world example of interdisciplinary tele-rehabilitation, in which a coordinated group of therapists assisted a stroke patient in

their recovery. To ensure efficient, team-based care, the timetable emphasizes planned strategies, patient-centered objectives, and frequent progress reviews.

Parkinson's Disease

Parkinson's disease (PD) is a known neurodegenerative disorder typically found in elderly populations, which leads to debilitating cognitive impairments that render everyday life increasingly difficult. This is a degenerative disorder. The neurodegeneration that occurs from the death of dopaminergic neurons in the brain leads to not only a loss of motor control but also an extreme loss of cognitive functioning. In addition to tremors, stiffness, and postural instability, this dopaminergic deficit also affects areas of the brain responsible for memory, cognition, and language. As a result, those with Parkinson's are vulnerable to developing dysphasia, a speech impairment that makes verbal communication and understanding increasingly difficult. Speech and swallowing problems often co-occur in people with Parkinson's disease ("Speech & Swallowing Issues" 2). Dysphasia exists ranging from issues in the timing of speech to phonological assembly to proper word-finding. For someone socially engaged with family and friends, this can become especially frustrating. With Parkinson's, it does not get better over time. What may be second nature for someone without a speech impairment, such as ordering a meal at a restaurant or sharing a water cooler story at work, may become embarrassing or frightening for someone with PD.

A person with Parkinson's struggles to access the words and/or phrases necessary for communication. Their output may be incredibly deliberate, awkwardly pausing, or excessively extending. Those who speak quickly or use high-level vocabulary or complicated terminology may get lost in translation or forget what they're saying halfway through their intended message. This plunges their world further into isolation, frustration, and even a sense of feeling ineffective. Thus, a person with Parkinson's is less likely to participate in social activities where they feel vulnerable about communications that may get misinterpreted. Similarly, family and friends may not agree on the best route of facilitation. Since the person is sick, communicative breakdowns have nothing to do with the person or the disease. When someone has Parkinson's, it's the involuntary musculature that makes it challenging to move and communicate. As Parkinson's disease worsens, the speed and accuracy of movements

gradually decrease, which can interfere with the coordinated movements of the face, mouth, throat, and chest necessary for efficient speech and swallowing ("Speech & Swallowing in Parkinson's" 1). Over time, the communication output becomes more challenging as faculties of memory, present awareness, and comprehension become compromised.

Many often confuse dysphasia and dysphagia because, even though their names are similar, they describe different issues. For example, dysphagia has to do primarily with the ability to swallow. Thus, those who suffer from dysphagia may have difficulties swallowing, eating, and forming a bolus, the soft mound created in one's mouth necessary for proper eating and swallowing. For example, those with Parkinson's disease may find it difficult or painful to swallow solid food, let alone liquids, which can create complications at the lunch table. In addition, ineffective communication can lead to "difficulties holding and chewing food, protecting their airway when swallowing, or even have difficulties getting and keeping food in their stomach" (Schult 3).

Swallowing is an essential process that involves the medulla oblongata. Since so many are engaged with transportation from the mouth to the esophagus to the stomach, they are the ones who coordinate. The central nuclei are the nucleus ambiguus and nucleus tractus solitarius, which kick off and manage the swallowing reflex. According to Iordanova et al. (3), the glossopharyngeal nerve and vagal fibers work together to regulate important muscles used for swallowing and speaking. Yet, if the medulla is damaged, it means that intersections for proper routing of food or drink fail, entering the airway instead of the esophagus, and subsequent eating becomes less effective and more fatal, which is called dysphagia.

Parkinson Disease Dementia

Another relatively common condition accompanying Parkinson's in the elderly is dementia. Dementia is a disease where a person experiences such difficulty with thinking, memory, reasoning, attention, and problem-solving that they cannot perform even basic activities of daily living. With Parkinson's Disease Dementia (PDD), individuals experience emotional regulation difficulties, and personality can change. Responding appropriately to humor, however, is significantly impaired due to difficulty

remembering facts once learned and processing complex language, especially metaphors. They may also have little response to real-life situations, such as when a sink overflows or a car stalls. Parkinson's illness, as stated in "Parkinson's Disease Dementia" (5), includes apathy, which is defined as a lack of motivation or intentional behavior, and can seriously impair a person's capacity to perform daily duties. Persons with PDD who experience mild to severe disorientation may struggle; accordingly, knowledge of date, time, and/or place is not assured. Therefore, remaining alone can become complicated for them.

Many would be interested to know: what causes PDD? The causal factor of PDD is Lewy bodies, which are alpha-synuclein proteins. Parkinson's Disease Dementia (5) highlights that similar abnormalities in the brain's processing of alpha-synuclein proteins may be the cause of Lewy body dementia and Parkinson's disease. This buildup devastates the nerve cells of the brain, or neurons. Usually, the buildup starts when PDD attacks the basal ganglia of the brain. Then, as Lewy bodies more extensively invade areas of the brain responsible for cognition, PDD sets in, transforming into Parkinson's disease.

Assessment and Management

Complications associated with Parkinson's disease, such as dementia (PDD), dysphagia, and dysphasia, are common, especially in the late stages of Parkinson's disease. Dysphagia, or difficulty swallowing, can start out as mild symptoms like prolonged eating or coughing during meals, but it can progressively worsen and become a serious complication of Parkinson's disease ("Speech & Swallowing Issues" 2). Diagnosing and remediating these disorders require a speech-language pathologist as part of the comprehensive treatment plan. Typically, diagnosis of PDD starts with an examination of cognitive screening tools focusing on memory, attention, and problem-solving: the Mini-Mental State Examination (MMSE) or the Montreal Cognitive Assessment (MoCA). Since PDD is a gradual onset phenomenon, attention to decrementing cognition over time is necessary. While there is no cure, cognitive-stimulating activities or consistent routines can help with activities of daily living, and medication such as rivastigmine can help mediate symptoms.

Another significant concern for those afflicted with Parkinson's is dysphagia. Dysphagia, or trouble swallowing, can be problematic as it has a higher incidence of leading to aspiration pneumonia or choking. According to Vega et al. (3), neurological disorders like Parkinson's disease or stroke are common causes of dysphagia. The assessment of such complications begins with a bedside swallow assessment for efficacy, followed by additional instrumental assessments for further investigation. The two most effective swallow assessments are the Video Fluoroscopic Swallowing Study (VFSS) and the Fiberoptic Endoscopic Evaluation of Swallowing (FEES). VFSS remains the gold standard for assessing aspiration risk and oropharyngeal swallowing physiology (Cui et al. 2). The VFSS is a moving X-ray that allows the practitioner to see all components of swallowing in motion, including the movement of the bolus and the anatomy of the oropharynx and esophagus. It assesses where the swallow breaks down and in what fashion. On the other hand, the FEES involves a small scope with a fiberoptic camera that is passed transnasally to visualize the larynx and pharynx during the swallow. The FEES can also show whether you are aspirating (Hopkins 2). It is excellent for bedside assessments to determine conditions such as silent aspiration of saliva, which does not trigger a cough reflex but is equally dangerous. Such assessments enable practitioners to prescribe targeted therapeutic regimens involving dietary changes, postural adjustments, and exercises to strengthen musculature.

Dysphasia (sometimes referred to as aphasia) translates as difficulty in reading, writing, understanding, or speaking. While it occurs with neurodegenerative diseases, it is more commonly associated with brain injury post-stroke. People with Parkinson's disease (PD) may have trouble finding words, which causes them to speak more slowly ("Speech & Swallowing Issues" 2). Diagnosis is through the Western Aphasia Battery (WAB) or Boston Diagnostic Aphasia Examination (BDAE), both conducted by a speech-language pathologist to assess the range and type of language dysfunction. Treatment typically includes specialized therapy related to improving communication but varies depending on need. Speech-language pathologists (SLPs) diagnose and treat all three of these conditions. According to the "Speech & Swallowing Issues" study, people with Parkinson's disease frequently experience changes in both their speech and swallowing. They test cognitive and communicative function, create treatments and treatment plans, and assess and troubleshoot swallowing issues. With their intervention, those with Parkinson's have increased quality of life, safety, and improved

communication. Their role is especially important among the population in need of long-term care because, without an SLP, much would go unaddressed, leaving many unable to eat and/or communicate.

Recommendations

- Engaging in regular physical therapy helps enhance quality of life.
- Incorporating aquatic therapy into treatment programs can improve balance.
- Practicing daily physical activity, such as Tai Chi, yoga, and walking, contributes to improving motor function and mental health.
- Elderly people, particularly those with neurological disorders like Parkinson's disease, require early, multidisciplinary care that includes physical therapy and speech-language therapy.
- Collaborative therapy promotes greater independence and emotional well-being by improving swallowing, mobility, and communication.
- For older people, regular, specialized treatment regimens can greatly enhance quality of life and slow functional decline.

Conclusion

Older adults with Parkinson's disease have considerably reduced physical activity and verbal communication skills. Healthcare providers must prioritize interdisciplinary interventions early in diagnosis to reduce degeneration and promote independence. Although the disease is degenerative and there is no cure, a mixture of drugs offsets symptoms and allows for daily function. Physical therapy strengthens, stabilizes, and increases range of motion; breathing and speech therapy assist in swallowing and conversation. Altogether, they promote independence and exponentially reduce symptoms. By treating doctors who have access to both physical and non-physical means of therapy, this population can improve their physical and mental disposition. For this population to feel better and function more like themselves, an early diagnosis is essential, with continued treatment as the disease progresses.

Work Cited

Adult Dysphagia. *American Speech-Language-Hearing Association*, www.asha.org/Practice-Portal/Clinical-Topics/Adult-Dysphagia/. Accessed 12 Apr. 2025.

Anderson, Melissa, et al. "Implementing Team-Based Post-Stroke Telerehabilitation: A Case Example." *International Journal of Telerehabilitation*, vol. 14, no. 1, May 2022, https://doi.org/10.5195/ijt.2022.6438.

Baladaniya, Maheshkumar, and Shraddha Baldania. "Motion for Wellness: Integrating Physical Therapy in Parkinson's Disease Management." *Journal of Physical Medicine Rehabilitation Studies & Reports*, vol. 5, no. 6, Dec. 2023, pp. 1–7, https://doi.org/10.47363/JPMRS/2023(5)182.

Cattaneo, Carlo, and Javier Pagonabarraga. "Exercise for People with Neurodegenerative Diseases: A Narrative Review with Clinical Considerations." *Diabetes Therapy*, 2024, https://doi.org/10.1007/s40120-024-00687-6.

Dai, Shengyu, et al. "Effects of Aquatic Exercise on the Improvement of Lower-Extremity Motor Function and Quality of Life in Patients with Parkinson's Disease: A Meta-Analysis." *Frontiers in Physiology*, vol. 14, 2023, article 1066718, https://doi.org/10.3389/fphys.2023.1066718.

Dick, J., et al. “Sentence Production in Parkinson’s Disease.” *Clinical Linguistics & Phonetics*, vol. 32, no. 9, 2018, pp. 804–822, https://doi.org/10.1080/02699206.2018.1444791.

Iordanova, Radostina. “Neuroanatomy, Medulla Oblongata.” *StatPearls* [Internet], U.S. National Library of Medicine, 24 July 2023, www.ncbi.nlm.nih.gov/books/NBK551589/.

“Loss of Smell.” *Parkinson’s Foundation*, https://www.parkinson.org/understanding-parkinsons/non-movement-symptoms/loss-of-smell. Accessed 21 June 2025.

Leta, Valentina, et al. “Viruses, Parkinsonism and Parkinson’s Disease: The Past, Present and Future.” *Journal of Neural Transmission*, vol. 129, no. 9, Sept. 2022, pp. 1119–1132, https://doi.org/10.1007/s00702-022-02536-y.

Martin, L., et al. “Role of Allied Health Care Professionals in Goals-of-Care Discussions with Hospitalized Patients and Perceived Barriers: A Cross-Sectional Survey.” *CMAJ Open*, vol. 6, no. 2, 2018, https://doi.org/10.9778/cmajo.20170162.

Okun, Michael, and Jennifer Beck. “Homepage (Better Lives. Together).” *Parkinson’s Foundation*, 8 Aug. 2022, https://www.parkinson.org/.

"Parkinson's Disease: An Overview." *Cleveland Clinic*, reviewed 15 Apr. 2022, https://my.clevelandclinic.org/health/diseases/8525-parkinsons-disease-an-overview. Accessed 21 June 2025.

"Parkinson's Disease – Diagnosis and Treatment." *Mayo Clinic*, https://www.mayoclinic.org/diseases-conditions/parkinsons-disease/diagnosis-treatment/drc-20376062. Accessed 21 June 2025.

"Parkinson Disease." *Cedars-Sinai*, https://www.cedars-sinai.org/health-library/diseases-and-conditions/p/parkinsons-disease.html. Accessed 20 June 2025.

Post, Michael R., et al. "Can Interactions Between α-Synuclein, Dopamine and Calcium Explain Selective Neurodegeneration in Parkinson's Disease?" *Frontiers in Neuroscience*, vol. 12, 2018, article 161, https://doi.org/10.3389/fnins.2018.00161.

Peterka, Manuel, et al. "LSVT-BIG Therapy in Parkinson's Disease: Physiological Evidence for Proprioceptive Recalibration." *BMC Neurology*, vol. 20, 2020, article 276, https://doi.org/10.1186/s12883-020-01858-2.

Parkinson's 360: A Holistic Guide to Navigating Parkinson's Disease. E-book ed., Michael J. Fox Foundation for Parkinson's Research, Dec. 2020, https://www.michaeljfox.org/sites/default/files/media/document/PD_360_full_12.07.20_0.pdf.

Porter, H. L., et al. “Asha.” *American Speech-Language-Hearing Association*, https://www.asha.org/.

Santiago, Jose A., and Judith A. Potashkin. “Physical Activity and Lifestyle Modifications in the Treatment of Neurodegenerative Diseases.” *Frontiers in Aging Neuroscience*, vol. 15, 2023, https://doi.org/10.3389/fnagi.2023.118671.

Schwab, S. M., et al. “Reciprocal Influence of Mobility and Speech-Language: Advancing Physical Therapy and Speech Therapy Cotreatment and Collaboration for Adults with Neurological Conditions.” *Physical Therapy*, vol. 101, no. 11, 2021, https://doi.org/10.1093/ptj/pzab196.

Staff, Mayo Clinic. “Parkinson’s Disease—Symptoms and Causes.” *Mayo Clinic*, https://www.mayoclinic.org/diseases-conditions/parkinsons-disease/symptoms-causes/syc-20376055.

Staff, Cleveland Clinic. “Parkinson’s Disease Dementia.” *Cleveland Clinic*, https://my.clevelandclinic.org/health/diseases/parkinsons-dementia.

Schult, H. “What Is the Difference between Aphasia and Dysphagia?” *NAPA Center*, 29 Apr. 2022, https://napacenter.org/aphasia-vs-dysphagia/.

Sisterhen, Laura L., and Paulette Ann W. Wy. “Temper Tantrums.” *NCBI Bookshelf*, 2025th ed., *StatPearls*, Treasure Island (FL), StatPearls Publishing, https://www.ncbi.nlm.nih.gov/books/NBK544286/.

“Speech & Swallowing Issues.” *Parkinson’s Foundation*, www.parkinson.org/understanding-parkinsons/non-movement-symptoms/speech-swallowing. Accessed 12 Apr. 2025.

Taylor, Tracey A., and Chandrashekhar G. Unakal. “Staphylococcus Aureus Infection.” *NCBI Bookshelf*, 2025th ed., *StatPearls*, Treasure Island (FL), StatPearls Publishing, https://www.ncbi.nlm.nih.gov/books/NBK441868/.

U.S. Department of Health and Human Services. *National Institute of Neurological Disorders and Stroke*, 1950, https://www.ninds.nih.gov/.

Vega, Jose. “Swallowing Exercises for Dysphagia from Neurological Causes.” *Verywell Health*, https://www.verywellhealth.com/swallowing-exercises-3146018.

Zhang, Guoxin, et al. “New Perspectives on Roles of Alpha-Synuclein in Parkinson’s Disease.” *Frontiers in Aging Neuroscience*, vol. 10, 2018, article 370, https://doi.org/10.3389/fnagi.2018.00370.

- Replace the rhetorical question hook ("What if one day…") with an **academic hook** such as a **statistical fact or striking statement**.

  Instead of:

  What if one day, your hands refused to obey you…

  Use:

  According to the World Health Organization, neurological disorders are the second leading cause of death globally and the leading cause of disability (Santiago and Potashkin 1).

  Revise Thesis Example:

  This paper argues that Parkinson's disease significantly affects elderly patients' motor and communication abilities, but that individualized physical and speech therapies can delay symptom progression, improve independence, and enhance quality of life.

2. Structure: Reshape into Clear, Balanced Sections

Suggested Structure with Clear Section Headings

- Introduction
- Understanding Parkinson's Disease (Definition & Risk Factors)
- Motor and Non-Motor Symptoms
- Physical Therapy Interventions
- Speech Therapy and Cognitive Support
- Interdisciplinary Care in Elderly Populations
- Recommendations
- Conclusion
- Works Cited

3. Body Paragraphs: Apply TEASL/SEER for Source Integration

4. Synthesis: Balance Physical and Speech Therapy Discussion

- **Current Issue**: The first 75% of the paper focuses on physical symptoms and therapies; **speech therapy is introduced late** and discussed unevenly.
- **Solution**: Move speech-language therapy into its own early section or create a joint section: *"Therapeutic Interventions: Physical and Speech Therapy"*. Structure both with equal weight and TEASL formatting.
- Emphasize how both therapies **complement each other**, especially in elderly PD patients (see Schwab et al.).

5. Academic Tone: Replace Informality & Simplify Sentences

Revise:

- Informal or conversational phrases:

  "This plunges their world further into isolation…" = "As a result, patients may experience increased social withdrawal and emotional distress."

- Complex or fused sentences:

  "Dysphagia…difficulty swallowing, eating, and forming a bolus, the soft mound created in one's mouth…" = "Dysphagia refers to difficulty swallowing and forming a bolus—a small mound of chewed food necessary for safe digestion (NAPA Center)."

6. MLA 9 In-Text Citation Corrections

- Use **author's last name and page number**:
  - **Correct**: (Dolhun 4), (Peterka et al. 6)
  - **For websites with no page**: ("Parkinson's Foundation")
- Avoid citation drop-ins or unclear attribution:
  - **Wrong**: "As mentioned in, Parkinson's Disease…"

- **Correct**: According to Cedars-Sinai, Parkinson's is not inherited but develops gradually (Cedars-Sinai).

Use **signal phrases** to introduce each source:

As Baladaniya and Baldania explain, "…" (1).
Dai et al. found that "…" (8).

See: **MLA 9 - Intext citations.pdf**

7. Works Cited Page: Final Polishing for MLA 9

Ensure:

- **Double-spacing**, **alphabetical order**, **hanging indents**
- Italicize journal/book titles (e.g., *Frontiers in Neurology*), not article titles.
- No duplicates (some sources like Cleveland Clinic appear twice)
- Date of access is optional in MLA 9 but can be included for web sources without publication dates.

8. Conclusion: Expand to Reflect Argument and Future Impact

- Restate thesis in a new way.
- Emphasize broader implications: e.g., *early diagnosis and therapy improve long-term independence*.
- Add a **call to action or future direction**:

  "Healthcare providers must prioritize interdisciplinary interventions early in diagnosis to reduce degeneration and promote independence."