



Postural Instability, Gait Freezing, and Falls in Parkinson Disease  
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# Postural Instability-what is it?

- The inability to maintain balance
  - when trying to start movement
  - when something sets one off balance
  - when standing still.
- A person with postural instability may easily fall backwards.

*Postural instability... can be present even at diagnosis, but becomes more prevalent and worsens with disease progression. (Kim SD, Allen NE, Canning CG, Fung VS.,2013)*

## Some statistics (Appeadu M, Gupta V., 2021)

Postural instability occurs in approximately 16% of Parkinson disease patients.

Falls resulting from postural instability occur in approximately 60% of patients with Parkinson disease.

Internationally, falls and fractures are the reason for about 75% of the total hospitalizations in patients with Parkinson disease.

# Postural Instability-why does this happen?

- People rely on several factors to keep control of their balance. Signals come into the brain, are processed, and accommodations made.
- People with Parkinson disease may have slower reaction times.
- They may also have vision problems as well as changes in their visuospatial orientation.
- These issues may affect a person's ability to compensate and maintain balance.

# Causes of postural instability

- Sensory changes
- Posture changes
  - forward leaning
  - Abnormal postures in feet or leg (dystonia)
- Cognitive changes
- Small steps (decreased stride length)
- Reduced arm swing
- Dyskinesia
- Other medical conditions can affect people as well : orthostatic hypotension, orthopedic issues, pain, certain medications

# Freezing of Gait

*Freezing of gait (FOG) was defined as “brief, episodic absence or marked reduction of forward progression of the feet despite the intention to walk”*

*Patients suddenly feel as if their feet are glued to the ground when they try to move forward. (Gao, C., Liu, J., Tan, Y. et al., 2020)*

# What causes Freezing of gait?

- Largely unknown, likely multifactorial
- Some correlations or predictive indicators **may** include (Gao, C., Liu, J., Tan, Y. *et al.* 2020):
  - being male
  - depression
  - cognitive impairment
  - duration of disease
  - early gait dysfunction

# Falls

Falls lead to increased disability from injuries, loss of independence, worsening of quality of life. Falls also contribute to caregiver distress.

People with Parkinson Disease are not simply dealing with PD related complications. They also have other problems found in any similarly aged population



# Falls Prevention

- Assess for potential risk factors
- Develop appropriate patient-centered interventions

**Have the conversation**

Think about it

Bring it up with your healthcare providers

Work together to find solutions

# Tools to assess falls risk and guide interventions

- The CDC reports that *Falls among adults aged 65 and over are common and costly.*
  - *In 2016, falls led to about 3 million emergency department visits, 962,000 hospitalizations, and 30,000 deaths.*
  - *Additionally, the annual medical cost associated with falls and fall deaths is an estimated \$50 billion.*
- CDC's **STEADI initiative** encourages clinical fall prevention by providing resources for healthcare providers, older adults, and caregivers on how to reduce fall risk. (Centers for Disease Control and Prevention, 2019)

# Physical Risk Factors for Falls

- Advanced age
- History of previous falls
- Weakness or pain
- Balance issues
- Problems with walking
- Poor vision
- Orthostatic hypotension
- Bowel and bladder dysfunction
- Chronic medical conditions
- Fear of falling
- Cognitive decline
- Taking many medications

# Environmental Risk Factors for Falls

- Lack of handrails on stairs
- Lack of bathroom grab bars
- Poor lighting
- Trip hazards
- Uneven surfaces
- Throw rugs that can cause trips or sliding
- Loose fitting footwear
- Pets and small children (just be aware of where they are)
- Using furniture to lean on to walk around vs cane or walker

# Specific Risks for Falls in Parkinson Disease

Many risk factors for falls in people with Parkinson Disease have been identified. These include:

- freezing of gait (FOG)
- cognitive impairment
- poor leaning balance
- previous falls
- lower limb weakness
- slow gait speed

Gait problems over time tend to be a combination of Parkinson disease progression and age related changes

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What can we do about these problems?

# Interventions

- Physical therapy & exercise to build strength and endurance
- Occupational therapy referral for home safety evaluation as well as therapy to promote safe functioning with Activities of Daily Living
- Alternative therapies such as dance, martial arts
- Cues for freezing
  - Walkers or canes with lasers, for example
  - Teach strategies to break the freeze (count, step over a line or object, sing)

# Interventions

- Addition of medications to help with issues (dopaminergic, cholinergic, noradrenergic, GABA-ergic, Adenosine A2a antagonist drugs)
- Check blood pressures to watch for orthostatic changes. There are medications that can help with orthostatic hypotension.
- Review the person's current medications and look for any that can contribute to falls risk (those causing sedation, drops in blood pressure, those impairing cognition)
- Evaluate for other issues that may contribute and work to address those problems



# Considerations

- Falls related to postural instability and freezing of gait are a serious concern for those with Parkinson Disease.
- Falls are costly: not just in hospitalizations, but also in that they can cause loss of independence and quality of life. They can lead to death as well.
- Ongoing evaluation and careful monitoring of risk factors is necessary
- Appropriate patient specific interventions can help prevent or reduce falls.



Thank you for your interest and time to watch this presentation

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