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# **Implementing High Intensity Gait Training in a Patient with Parkinson's Disease: A Case Report**

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# Patient History

- 72-year-old male
- PMH: HTN, HLD, MI, **Parkinson's Disease (PD)- onset 2015**, dementia, mood disorder, OCD, BPH, and lumbar spondylosis w/ radiculopathy
- **Admitted for T11-S1 extension of fusion** due to increased low back pain and bilateral radiculopathy
- PLOF: living in independently living facility, **independent with all mobility**, although safety with mobility was questionable

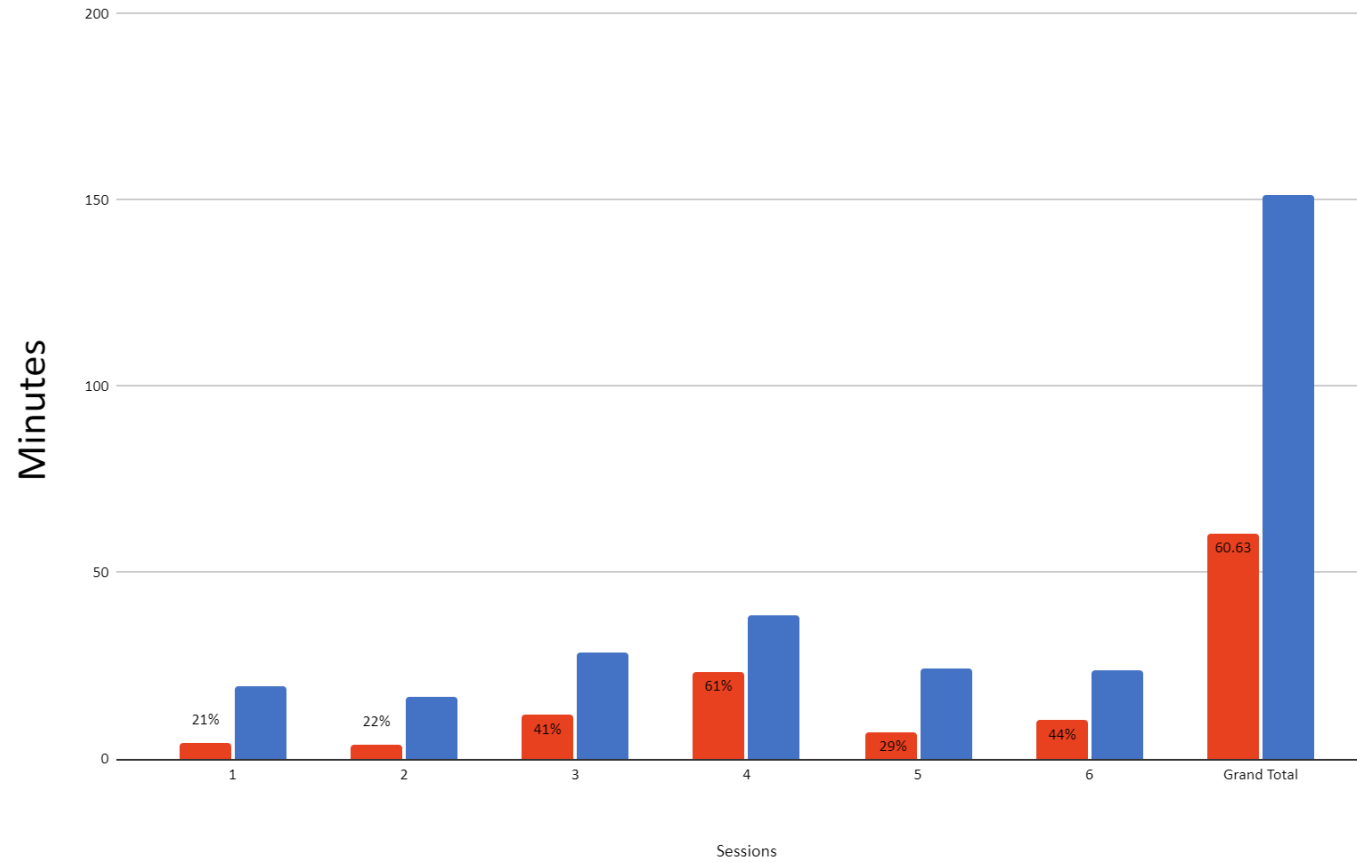
# Initial Presentation

<b>BLE Strength</b>	Grossly 4/5
<b>Posture</b>	Kyphotic, retropulsive
<b>Ambulation</b>	Short, shuffled stepping; freezing of gait in tight or busy spaces
<b>Mobility</b>	Min-mod A for bed mobility, mod A sit <> stand and SPT, and min-mod A amb
<b>10MWT</b>	0.1 m/s with RW
<b>Berg Balance Scale</b>	4/56

# PD and High Intensity Gait Training (HIT)

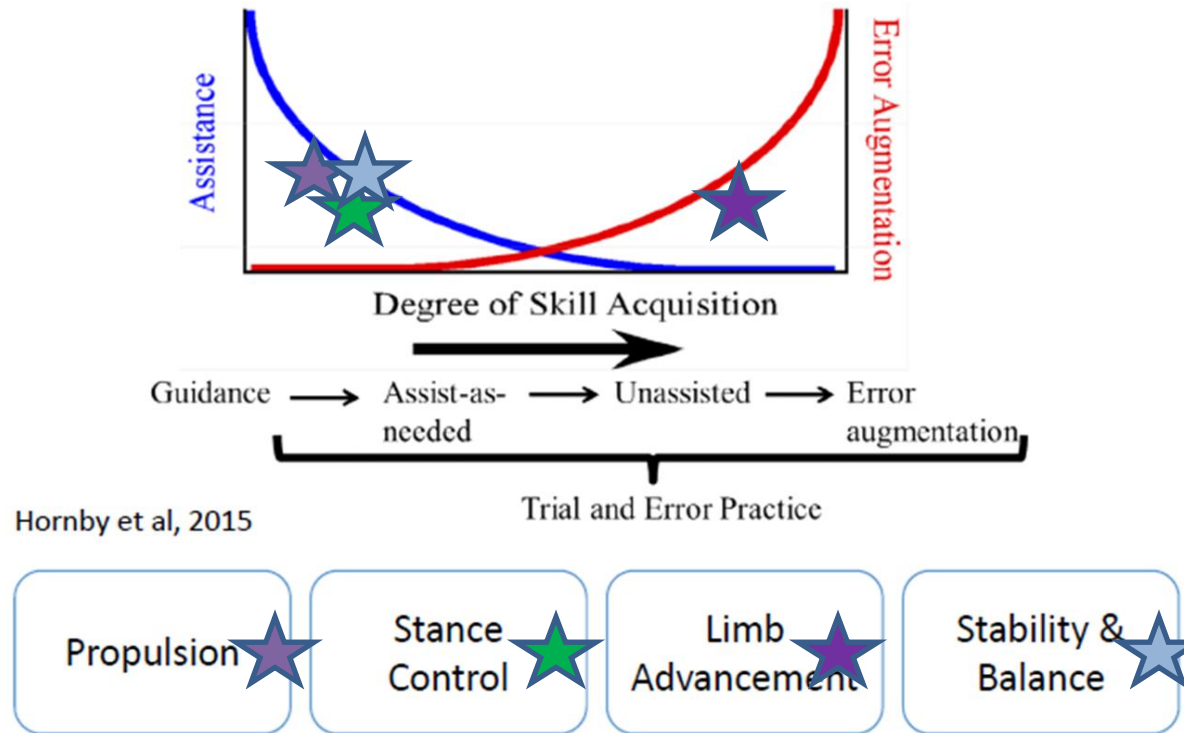
- Aqua based training, gait/balance/functional training, and training that consists of several type of exercise might have moderate beneficial effect on motor signs on Unified Parkinson's Disease Rating Scale (Ernst et al 2023)
- HIT is standard of practice for treating neurologic diseases including CVA and SCI
  - CVA- improved balance, walking endurance, walking speed outcomes (Moore et al 2020)
  - SCI- task specific training at high intensities results in greater walking speed outcomes (Lotter et al 2020)
- Limited knowledge on HIT in PD
  - High Intensity treadmill exercise may be feasible for patients with PD (Shenkman et al 2018)

# Interventions- Heart Rate Zone



# Interventions- Biomechanical Subcomponents

## Progressing Biomechanical Subcomponents of Walking



Hornby et al, 2015

Trial and Error Practice

# Interventions

Biomechanical Component	Intervention
Propulsion	Treadmill, stairs
Stance Control	Weighted vest, stairs
Postural Stability	Multi directional walking, walking without UE support
Limb Advancement	Leg weights

# Status at Discharge

	<b>Admission</b>	<b>Discharge</b>
<b>Ambulation</b>	Short shuffled steps, FOG	Increased step length, reduced FOG, and reduced cadence
<b>Level of Assist</b>	Min-mod A	Independent with RW
<b>10MWT</b>	0.1 m/s with RW	0.71 m/s with RW
<b>Berg Balance Scale</b>	4/56	35/56



# Conclusion

- Implementing HIT in this patient with PD improved his functional outcomes
- Supports evidence that high intensity, task specific gait training can improve balance and walking outcomes
- Should be an area for future research for patients with PD

# Future Considerations

- What went well: no adverse events, patient satisfaction
- Areas for Improvement: Increasing time in zone
- Further considerations/ improvements: Integrating music therapy during HIT sessions

# References

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# Questions?