

Rhythmic Auditory Stimulation For Improved Gait in Parkinson's Disease

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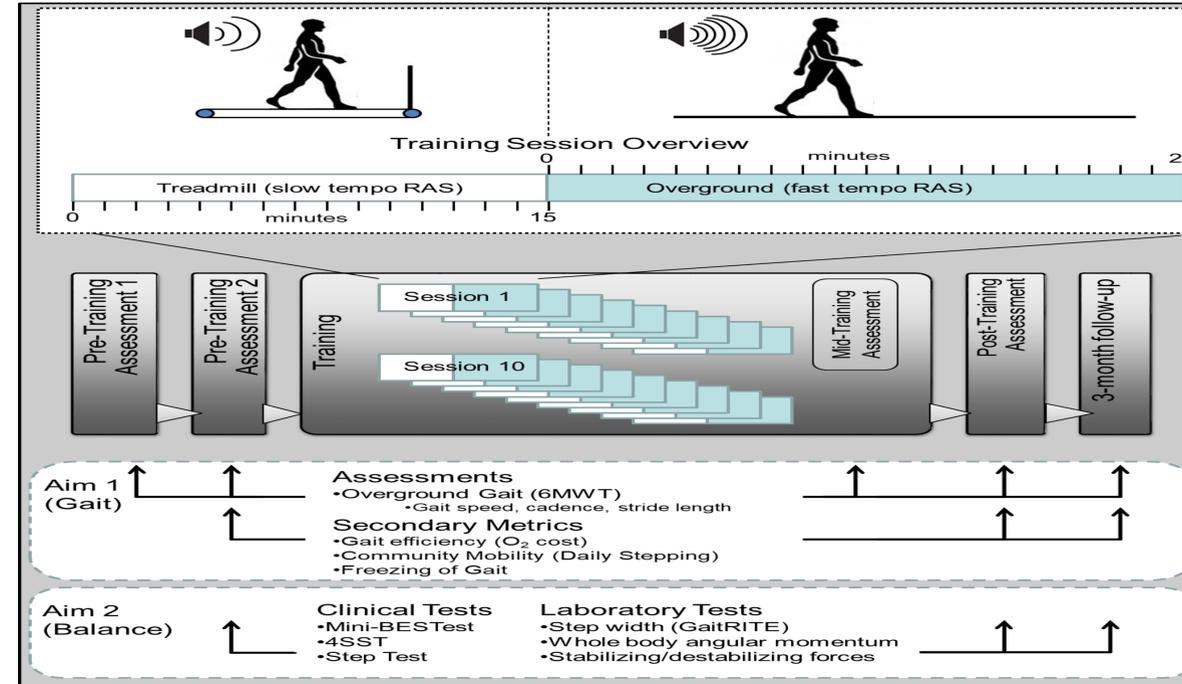
Introduction

- Individuals with Parkinson's disease demonstrate slow gait speed and shorter stride lengths^{1,2}
- Impaired automaticity of gait contributes to episodes of freezing of gait and increased risk of falls³
- Pharmacologic management improves disease symptoms but is ineffective at improving gait deficits^{4,5}
- Intensive gait training on a treadmill and overground is often utilized as an adjunct to pharmacologic management⁶
 - External cues from the treadmill improves gait automaticity⁸
- Auditory cues are a commonly used intervention
 - Rhythmic auditory stimulation (RAS) can improve gait initiation, gait speed, stride length and cadence²
 - RAS also has the potential to improve static and dynamic balance⁸

Purpose

To perform an exploratory analysis of the effect of training with rhythmic auditory stimulation on gait speed, cadence, stride length, and static and dynamic balance.

Methods



- Training occurred 3x/wk for 6 weeks.
- Metronome frequency during treadmill training was set to 85% of participants self-selected cadence.
- Metronome frequency during overground training was set to 115% of participants self-selected cadence.

Participant Demographics

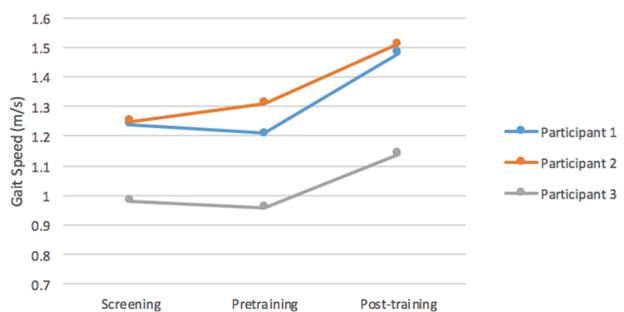
	Age	Gender	Hoehn-Yahr Stage
Participant 1	72	Male	2
Participant 2	66	Female	2
Participant 3	75	Female	2

Discussion

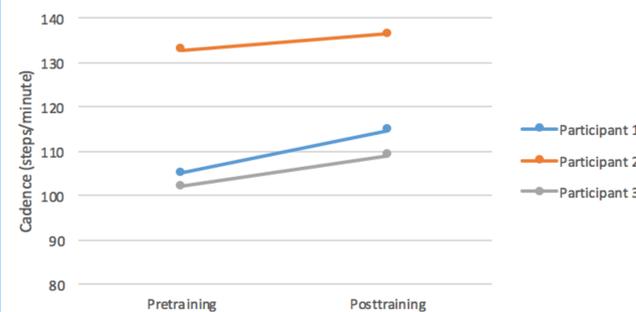
- Individuals with Parkinson's disease are capable of improving various parameters of gait
 - RAS can lead to significant improvements in gait speed and stride length
 - Changes in cadence can be made with training but they are not as significant
- No significant improvements in balance were found
 - Further research is warranted on the effects training has on balance
- A treadmill and overground gait training program utilizing rhythmic auditory stimulation is a feasible intervention shown to improve gait kinematics and balance in individuals with Parkinson's disease.

Results

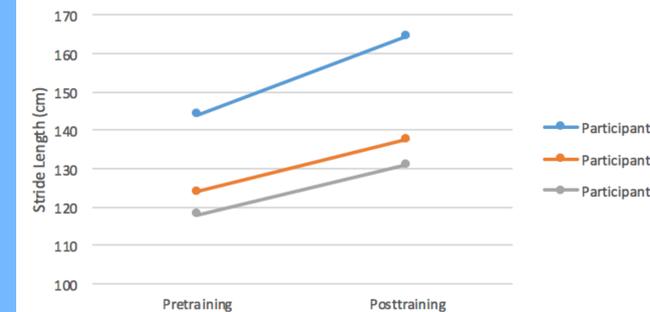
Changes in Gait Speed



Changes in Cadence



Changes in Stride Length



Changes in Balance Measures

	Participant 1		Participant 2		Participant 3	
	Pretraining	Posttraining	Pretraining	Posttraining	Pretraining	Posttraining
Mini-BESTest	27	27	25	28	19	22
Step Test (reps)	25	38	41	52	30	28
4 Square Step Test (s)	11.9	7.9	6.4	5.1	11.1	11.1
Freezing of Gait	7	4	3	2	10	10

References

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