De Oro Devices

NexStride Research

Effect of Three Cueing Devices for People with Parkinson's disease with Gait Initiation Difficulties

Published: July 1, 2016 – Neuropsychologia, peer-reviewed scientific journal focusing on cognitive neuroscience

Cue Type	Nothing	Laser	Sound
% of freezing episodes during trial	**82%**	**28%**	**44%**

> **"...immediate improvements during gait initiation when using the laser cane over the other interventions."**

Effect of On-Demand Cueing on Freezing of Gait in Parkinson's Patients

Published: January 2012 - *International Journal of Biomedical Engineering*

Cue Type	Baseline	Vibratory Alert	Auditory Alert	Vibratory Rhythm	Auditory Rhythm	Visual Cue
Average Freeze Duration	**7.9 s**	**7.1 s**	**6.7 s**	**6.3 s**	**6.4 s**	**5.3 s**

> **"...interestingly, patients subjectively evaluated the audio alert and vibratory signals to have a significantly better effect for reducing their freezing duration than the visual cue."**

Effects of visual and auditory cues on gait in individuals with Parkinson's disease

Published: April 15, 2004 – *Journal of the Neurological Sciences*, official journal of the World Federation of Neurology

> **"...this study showed that either visual or auditory cues significantly improved gait performance in PD. Gait speed was significantly increased by auditory cues, as well as the combination of both cues compared to an uncued condition."**

The Power of Cueing to Circumvent Dopamine Deficits: A Review of Physical Therapy Treatment of Gait Disturbances

Published: November 6, 2002 – *Movement Disorders*, the official Journal of the International Parkinson and Movement Disorder Society

> **"...sensory cueing, with or without physical therapy, is a noninvasive, virtually risk-free treatment option..."**
>
> **"Although it remains unclear which types of cues are the most effective and how exactly they work, almost every cueing study showed significant positive effects on gait."**

Influence of visual cues on gait in Parkinson's disease: contribution to attention or sensory dependence?

Published: October 25, 2006 – *Journal of the Neurological Sciences*, official journal of the World Federation of Neurology

> **"In conclusion, visual cues may contribute to attention and/or to vision depending on the situation. A common mechanism may be the shunt of the Basal Ganglia–Supplementary Motor area interaction either by a more important implication of the motor cortex by attention or by the activation of a specific visuomotor pathway for external stimuli."**

The short-term effects of different cueing modalities on turn speed in people with Parkinson's disease

Published: October 23, 2009 - *Neurorehabilitation and Neural Repair*, official journal of the American Society of Neurorehabilitation

> **"...freezers improved their turning performance considerably in response to cues."**
> **"In conclusion, somatosensory and auditory cues make the performance of a complex turn faster in the home environment for people with PD. This effect was apparent in both freezers and nonfreezers."**

Effect of rhythmic auditory cueing on parkinsonian gait: A systematic review and meta-analysis

Published: Jan 11, 2018 – *Scientific Reports*, a mega journal emphasizing scientific quality, rather than perceived impact

> **"Out of fifty-included studies 88% reported beneficial effects of rhythmic auditory cueing on gait parameters."**
>
> **"In conclusion, this review strongly suggests the early incorporation of rhythmic auditory cueing for enhancing gait performance in patients affected from parkinsonism."**

The effect of visual cues on the number and duration of freezing episodes in Parkinson's patients

Published: September 1, 2012 - Presented at 34th Annual International Conference of the IEEE Engineering in Medicine and Biology Society

Cue Type	Baseline	Visual – On-Demand	Visual – Continuous
Avg Length of Freezing Episodes	**8.8 s**	**2.7 s**	**4.3 s**

Cue Type	Baseline	Visual – On-Demand	Visual – Continuous
Avg Number of Freezing Episodes	**2.3**	**2.1**	**1.3**

> **"The results show that on-demand cueing seems to be more effective to reduce the duration of freezing episodes than continuous cueing...on-demand cueing had little effect on the number of freezing episodes while continuous cueing proved to avoid a certain percentage of freezing episodes."**

Effect of Sensory Cues Applied at the Onset of Freezing Episodes in Parkinson's Disease Patients

Published: September 1, 2012 - Presented at 34th Annual International Conference of the IEEE Engineering in Medicine and Biology Society

> **"The most robust finding from our study is that cueing applied after the onset of freezing leads to a reduction of the average duration of freezing."**
>
> **"An additional explanation for the reduction of freezing duration with cues is that cues might help patients to bypass defective basal ganglia circuits... thereby enabling them to overcome freezing episodes quicker than without cues."**

Laserlight cues for gait freezing in Parkinson's disease: an open-label study

Published: May 2011 - *Parkinsonism & Related Disorders*, official journal of the International Association of Parkinsonism and Related Disorders

> **"These results demonstrate efficacy of a laserlight visual cue in overcoming FOG in PD patients, as measured by a modest but statistically significant reduction in FOGQ scores, and by a substantial reduction in the frequency of falls in PD patients with FOG who suffer frequent falls."**
>
> **"...use of the laserlight visual cue was associated with a nearly 40% reduction in the fall frequency..."**

The Effectiveness of Utilizing a Combination of External Visual and Auditory Cues as a Gait Training Strategy in a Pharmaceutically Untreated Patient with Parkinson's Disease: A Case Report

Published: 2011 - *Physical & Occupational Therapy in Geriatrics*, official journal of the Academy of Geriatric Physical Therapy

> **"These data suggest that, in this particular patient, even without medication, training with external cues increased gait velocity and ambulatory distance, as well as reduced freezing episodes. These data also suggest that utilizing combined visual and auditory cues during gait was more effective than utilizing only a visual cue in increasing velocity and distance ambulated, as well as decreasing the frequency of freezing episodes per trial."**