

Jumper JD, Glover AL, Jordan DJ, James ZE. THE EFFECTS OF MUSIC CUED TREADMILL TRAINING ON SPATIOTEMPORAL GAIT PARAMETERS IN PEOPLE WITH PARKINSON'S. Hardin-Simmons University Department of Physical Therapy, Abilene, TX.

**PURPOSE:** To observe the effects of gait training with music-enhanced cadence cues in two patients with varying levels of Parkinson's disease. **SUBJECTS:** Two female participants with varying levels of Parkinson's disease volunteered to be part of this study. **METHODS:** Participants obtained physician clearance and signed written informed consent prior to participation and were informed of their ability to withdraw from the study at any time. A Unified Parkinson's Disease Rating Scale (UPDRS) with Hoehn and Yahr (HY) staging was utilized to establish severity of PD prior to pre-test procedures. Blood pressure, heart rate, and oxygen saturation was assessed prior to and following each session. Pre-test procedures involved using a functional Six-Minute Walk Test (6MWT), in which total distance walked was compared to 6MWT post-test data. Following the 6MWT, participants walked at a self-selected pace on a Biodex treadmill for three minutes, utilizing an unweighting system with Participant 2. Step length, stride length, stance time for each leg, and total distance covered was recorded. Pre-test procedures were repeated on three different days within one week and did not include cadence-cued music. Data was analyzed to establish desired walking intensity during a training period of eight total weeks. Participants walked on the Biodex Treadmill with cadence-cued music at 10 percent above their established baseline cadence, two non-consecutive days per week. Four weeks through the training period, cadence was increased to 25 percent of baseline and continued through the remaining training duration. Post-testing was completed the following week utilizing the same pre-testing procedures. Stride length, step length, stance time, and distance traveled during 6MWT were analyzed within subjects using a paired t-test and two standard deviation band graph to determine statistical significance of results. An alpha level of 0.05 was used for statistical analyses. **RESULTS:** For Participant 1 (HY Stage 1), no significant differences were noted in pre and posttest comparisons of gait kinematic parameters. The two standard deviation band graph revealed a decreasing trend in stride length. For Participant 2 (HY Stage 3), significant differences were noted in stride length and step length in both lower extremities ( $p < .01$ ) along with distance traveled during the 6MWT ( $p < .05$ ). No significant differences were noted in stance time for either participant. **CONCLUSIONS:** Music enhanced cadence cues produced no significant differences in the participant with a HY stage of 1, which could indicate that a ceiling effect was encountered during the training period. Stride length trending downward could be anticipated to accommodate the increase in cadence. However, significant improvements were noted in kinematic gait parameters and distance traveled for the participant with HY stage of 3, indicating that external musical cues may be very beneficial for individuals with more advanced disease. **CLINICAL RELEVANCE:** Music enhanced cadence cues can be a valuable tool in the clinic to improve step length, stride length and distance walked in individuals with PD (HY>2.5). Further research with a larger sample size is needed to increase reliability and to investigate the potential beneficial effects in mild to moderate PD.