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A Cross-over Pilot Study on the Effects of Classical Guitar Instruction on Motor and Non-Motor Symptoms in People with Parkinson's Disease

Background
A randomized post cross-over study with 26 participants found positive changes in motor and non-motor symptoms in people with Parkinson's disease (PwPD) after six weeks of group classical guitar sessions but not individualized physical therapy.

Objective
Determine if group instruction of PwPD in classical guitar specifically improved motor function, mood, and quality of life compared to group exercise in a non-randomized cross-over pilot study.

Methods
Eighteen PwPD were enrolled and 15 completed the study. Group 1 (N=10) received guitar instruction, then group exercise. Group 2 (N=8) received group exercise then guitar instruction. Assessments were at baseline, six weeks, and 12 weeks at the American Parkinson's Disease Association Headquarters Northwest Chapter. The groups were combined for analysis by two-tailed paired t-tests due to low sample size. Assessments included the Movement Disorder Society-Unified Parkinson's Disease Rating Scale (MDS-UPDRS) motor sub-section, Hoehn and Yahr scale, Parkinson's Disease Questionnaire-39 (PDQ-39), Apathy Evaluation Scale-Self (AES-S), and Beck Depression Inventory II (BDI-II).

Results
MDS-UPDRS motor scores decreased compared to pre-test scores with group guitar instruction (-5.3 points, $p<0.001$), but not group exercise (-0.47 points, $p=0.85$). BDI-II scores decreased by 2.13 ($p=0.08$) and 1.87 points ($p=0.02$) with group guitar instruction and group exercise, respectively. PDQ-39 scores decreased by 1.93 ($p=0.02$) and 2.52 ($p=0.02$) points with group guitar instruction and group exercise, respectively. AES-S scores decreased with group exercise (2.40 points, $p=0.03$) but not group guitar instruction (-2.4 points, $p=0.26$).

Conclusions
Group guitar instruction could potentially help with both motor and non-motor symptoms in PwPD. There appears to be a specific effect of group guitar instruction on MDS-UPDRS motor scores that is not due to regular meetings and general exercises. This unfunded study was registered at ClinicalTrials.gov (NCT05917704).

Keywords: music-based treatment, Parkinson disease, apathy, depression, guitar-based treatment, rhythm-based treatment, non-motor symptoms, MDS-UPDRS

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Biography

Dr. Christopher Adams is an assistant professor of neurology at the University of Tennessee Health Science Center. He is also a movement disorder neurologist at Methodist University Hospital. His medical degree was completed at Texas Tech Paul L Foster School of Medicine in 2017. His neurology residency was completed at the University of Texas McGovern Medical School at Houston in 2021. He completed his movement disorder fellowship at the University of Washington School of Medicine in 2024.

Dr. Adams specializes in biomarkers and disease-modifying therapies for people with Parkinson's disease (PwPD). With a background in Movement Disorders and training in basic science research, he brings expertise in study design and data analysis for biomarker studies in PwPD to the University of Tennessee Health Science Center. He has served as the principal investigator on two internal grants and a community-funded study at the University of Washington. His collaborations have included phase I and II clinical trials, as well as various other studies that have resulted in peer-reviewed publications and abstracts

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