

## DISSERTATION DEFENSE: LUÍS AUGUSTO MENDES FONTES

DATE: JUNE 15, 2021

TIME: 2:00 pm

PLACE: Meeting Google

TITLE: ACUTE EFFECT OF WHOLE BODY VIBRATION OF DIFFERENT FREQUENCIES ON BALANCE AND FUNCTIONAL MOBILITY OF PATIENTS WITH PARKINSON: CROSSOVER-TYPE CONTROLLED CLINICAL TRIAL

Keywords: Vibration. Parkinson's disease; Physiotherapy; Vibration; Functional mobility; Balance;

WORDS: 479

### ABSTRACT

**INTRODUCTION:** Parkinson's disease (PD) can be defined as a movement disorder, caused by a decrease in dopamine in the central nervous system, more specifically in the substantia nigra. The most common findings in PD are bradykinesia, rest tremor and stiffness. Often, patients also present postural instability, causing an increase in imbalance and an increased risk of falls. The most common treatment is pharmacological, in most cases, through Levodopa. Physiotherapy plays a supporting role in the therapeutic plan, through balance, resistance and coordination exercises, aiming at the patient's functional improvement. More recently, it has been proposed to use whole body vibration (WBV) for PD, in order to generate sensory inputs for activate specific brain areas. However, it is still uncertain which frequency of the whole body vibration is ideal for the application on PD. Therefore, the aim of the study was to identify the best frequency of WBV to improve functional mobility and balance in patients with PD. For this, the study on screen was performed through a single session cross-over. **METHODS:** The screened and selected patients underwent three types of WBV (group A: 6 Hz WBV, group B: 25 Hz WBV and group C: sham WBV), with an interval between sessions of at least one week. The following outcomes were evaluated before and immediately after the application of the WBV : functional mobility through timed up and go, static, dynamic balance and risk of falls assessed by the MiniBest scale, and by the Balance biodex system, functionality through the unified scale for Parkinson's disease (UPDRS), plantar distribution assessed by baropodometry. **RESULTS:** The results inherent to mobility ( $t = 3.06$ ;  $p = 0.011$ ;  $CI = 0.17$  to  $1.08$ ), the risk of falls ( $t = 2.91$ ;  $p = 0.014$ ;  $CI = 0.22$  to  $1, 60$ ) and the plantar distribution ( $t = 2.68$ ;  $p = 0.023$ ;  $CI = 2.90$  to  $31.41$ ) were changed after the 6 Hz vibration, with only the latter being compared to the sham group. In addition, the functionality ( $t = 2.43$ ;  $p = 0.033$ ;  $CI = 0.44$  to  $8.88$ ), was modified by both 6 Hz and 25 Hz vibration, although it did not reach the clinically significant minimum difference. **CONCLUSION:** Although the effects found were not of a large effect size, the frequency of 6 Hz seems to have a better tendency to improve the balance of patients with PD.

### EXAMINATION BOARD:

Internal Examiner: Patrícia Érika de Melo Marinho (UFPE)

External Examiner: Ricardo Oliveira Guerra (UFRN)

External Examiner: Adriana Carla Costa Ribeiro Clementino (UFPB)

Advisor: Maria das Graças Rodrigues de Araújo

Co-advisor: Adriana Baltar do Rêgo Maciel