



GRAPHOSCOPIC EVALUATION AFTER A FINE MOTOR SKILL REHABILITATION PROGRAM IN PARKINSON'S DISEASE – EXPLORATORY STUDY

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01 INTRODUCTION

Legal documents signed by individuals with Parkinson's disease, are often disputed due to inconsistencies in their signature when compared to those executed prior to the onset of the disease [1]. This neurological disorder can lead to progressive alterations in handwriting due to bradykinesia, tremor and rigidity, which limit movement, contribute to muscular pain, and compromise the control of fine motor skills [2]. Rehabilitation programmes for Parkinson's disease typically focus on the lower limbs to improve gait and prevent falls. However, these individuals also face other daily challenges with potential legal implications involving the control of fine motor skills (such as handwriting and preserving their graphic identity).

Aim

The main objective of the present work was to evaluate the effect of a 12-week fine motor skill rehabilitation program on the handwriting of individuals with Parkinson's disease.

02 MATERIALS AND METHODS

Procedures

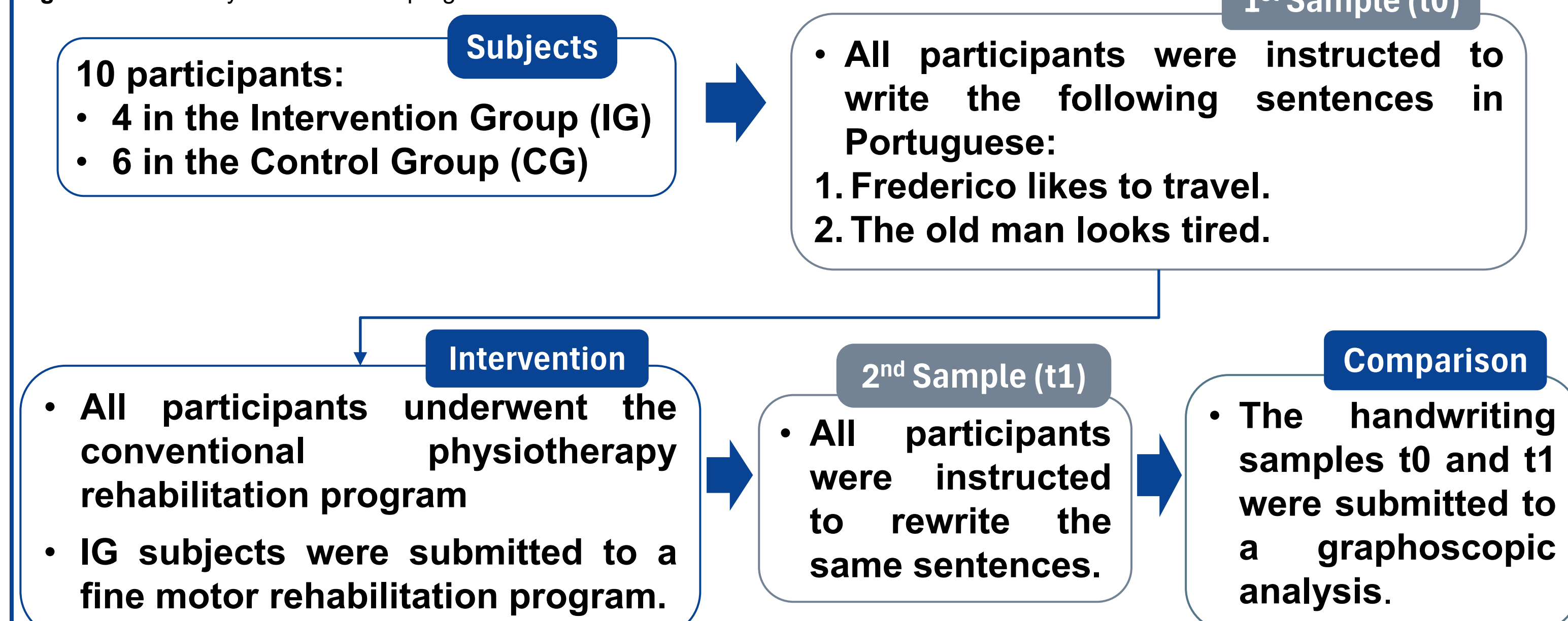
- Registration: www.clinicaltrials.gov (NCT06693401)
- Scientific approval: Egas Moniz Scientific Council
- Ethical approval: EM Ethics committee (protocol code 1171/2023).

Study Sample

- 10 participants from *Clínica de Fisioterapia Egas Moniz*
- Subjects signed consent forms after information of protocols & conditions
- Data collected, processed and disseminated anonymously

Rehabilitation Program

Figure 1. Pilot study's rehabilitation program



03 RESULTS

The main changes were observed on features such as **tremors**, **retouching/overwriting**, **size** and **overall appearance**.

Table 1. Results of the comparisons of IG and CG handwriting features after the fine motor rehabilitation program

Groups Features	Intervention Group - IG	Control Group - CG
<u>Tremors</u>	Decreased	Increased
<u>Retouching/ Overwriting</u>	General decrease	Inconsistent (no changes, decrease and increase)
<u>Size</u>	Inconsistent (decrease and increase)	Increase
Pen Lifts	Mostly no changes	Mostly no changes
Calligraphic box	Sinuous	Sinuous
Baseline	Inconsistent (horizontal, descending and ascending)	Inconsistent (horizontal and descending)
Slant	Mostly mixed	Mostly mixed
<u>Overall Appearance</u>	Better legibility and execution of the letters	Worse legibility, more confused

04 CONCLUSIONS

These preliminary results suggest that individuals with Parkinson's disease engaging in a handwriting rehabilitation program **can improve** their graphomotor skills, which will promote the recovery of their handwriting skills recovery as well as their graphic identity.

In future work, a larger sample size would be desirable to validate these results and to enhance the characterization of variability in Parkinson's disease handwriting.