THE IMPACT OF BRAZILIAN SAMBA ON PARKINSON’S DISEASE: ANALYSIS BY THE DISEASE SUBTYPES

O IMPACTO DO SAMBA BRASILEIRO NA DOENÇA DE PARKINSON: ANÁLISE ATRAVÉS DOS SUBTIPOS DA DOENÇA

EL IMPACTO DEL SAMBA BRASILEÑO EN LA ENFERMEDAD DE PARKINSON: ANÁLISIS A TRAVÉS DE LOS SUBTIPOS DE LA ENFERMEDAD

ABSTRACT

Introduction: People with Parkinson’s disease constantly have low levels of physical activity. Dancing has become increasingly important for treating the disease and can help improve non-motor symptoms. Objective: To analyze the influence of Brazilian samba on the non-motor symptoms of PD according to TD and PGID subtypes. Methods: A 12-week, non-randomized clinical trial, through comparison with a control group. The 23 individuals who agreed to participate in the activities formed the experimental group (EG) and the 24 individuals who opted not to participate in the Brazilian samba classes comprised the control group (CG). A questionnaire was applied, composed of validated instruments. Mini Mental State Examination – MMSE; HY – Disability Scale; Unified Parkinson’s Disease Rating Scale – UPDRS 1 and total values; Parkinson’s Disease Questionnaire – PDQ-39; Parkinson’s Disease Sleep Scale – PDSS; Beck Depression Inventory – BDI; Fatigue Severity Scale – FSS and Magnitude of Perceived Changes. Results: After the twelve weeks of intervention, it was observed that the EG showed improvement in the scores of all the tests. The comparison between groups, however, indicated a significant difference in the post-UPDRS1 period in which the EG presented improvement in cognitive impairment, while the CG presented a deficit in these values. The results of the division between disease subtypes show a greater change in the values between individuals of the TD group, when comparing the EG with the CG. For the EG, the greatest difference between pre- and post- intervention was fatigue. Conclusion: There was a positive trend in all the variables studied after the application of the protocol. This demonstrates that interventions such as dance may have greater effects on non-motor symptoms, depending on the expected progression of the disease. The scarcity of studies that use this approach in their analyses may explain the lack of evidence in this symptomatology related to dance. Level of evidence II; Therapeutic studies – Investigating the results of treatment.

Keywords: Dance; Non-Motor Symptoms; Parkinson Disease.
INTRODUCTION

Parkinson’s disease (PD) affects about 1% of the world population, and although it is more associated with motor symptoms such as tremor, postural loss and balance, it also has marked non-motor symptoms such as depression, mood swings, fatigue reports, cognitive deficits and sleep disorders. Regarding PD, in the international panorama the last fifteen years were marked by evidence allowing distinguish the clinical manifestations by different morphological factors although based on the motor phenotype; also predict non-motor symptoms, namely dominant tremor (DT) and akinetic rigid or postural instability and gait difficulty (PIGD).

In this perspective, disease characterization undertake to observe not only the individual symptoms, but to consider by the clinical subtypes perspectives, the disease progression in a longitudinal analysis, in which PIGD characteristics individuals exhibit predominant axial motor symptoms, more rapid deterioration of motor function, and non-motor symptoms in general prominent when compared to the TD subtype. Considerate these clinical values may help the treatment and impact quality of life of these patients, since drug treatment of non-motor symptoms can be challenging due the subjectivity of the manifestations and non-pharmacological options are underutilized due to limited knowledge about it is therapeutic potential in this symptomatology.

The increasing number of evidence supporting the beneficial effects of non-drug therapy on non-motor symptoms, especially physical exercise in maintenance, encourages the creation of rehabilitation programs that seek through active interventions such as dance, gymnastics, and exercises planned individually or in groups, in order to increase treatment possibilities for this population. Toward there is a growing body of evidence supporting improvements in PD non-motor function with dance, and well-documented improvements in motor function.

However, since there’s still difficulties verifying significant effects in this symptomatology, biomarkers use to ascertain the interventions results may be a tool to better understand Parkinson’s behavior to non-drug therapy and thus to predict and recommend the best approach to follow according to expected progression in each disease subtype.

In such manner, the objective of this study was to analyze the Brazilian samba influence on PD non-motor symptoms according to the TD and PGID subtypes.

METHODS

Non-randomized clinical trial with 12 weeks duration, by means of comparison with control group. Approved by the Research Ethics Committee on Human Beings (CEPSH) of UDESC - protocol 1.268.353, with all the participants signatures in the informed consent term.

Individuals with PD members of the Santa Catarina Parkinson Association (APASC) were invited to voluntarily participate in the study and followed the inclusion criteria: clinical diagnosis of PD, according to criteria of the London Brain Bank; four months stable medication; of both sexes; age ≥ 50 years; performing physiotherapy at least once a week; without performing any type of dance for at least three months.

Were excluded, individuals who presented a combined practice of any physical activity schedule and/or physical exercise; who did not complete all study stages (intervention); classified in stage 5 wheelchair users; who did not reach the cutoff points in the Mini Mental State Examination (MMSE); and with physical incapacity for daily living activities or of social life arising from another condition other than PD.

The 23 individuals who accepted to participate in classes formed the experimental group (EG) and were included in the Rhythm and Movement project, took place in partnership with the State University of Santa Catarina and the Catarinense Rehabilitation Center. The mean age was 67 ± 9.2 years, with 6.1 ± 4.4 years of disease initial manifestation and approximately 2 years until the diagnosis of the disease. The 24 individuals who opted not to participate in the Brazilian samba dance classes became, through consent, automatically from the control group (CG); mean age of 69.6 ± 9.5, with 6.9 ± 6.9 years of disease initial manifestation and approximately one year until diagnosis.

The experimental group performed the intervention with the Brazilian samba protocol for individuals with PD validated by Tillmann, et al (2016), and attempted to rigorously carry out the instructions,
last twelve weeks, with two weekly classes of 60 minutes. The activities were divided into warming, main part and relaxation and had a teacher/researcher with knowledge and mastery of the rhythm (samba), besides the aid of three other researchers. To ensure the maintenance of the CG, during the intervention period telephone contacts and invitations to monthly lectures on health care were made. At the end of the research both groups received an informative note with the changes and health care tips.

The data collection occurred simultaneously between the groups, both in the initial and final period of the research. We used a questionnaire applied as an individual interview by the researcher composed of validated instruments: Mini Mental State Examination – MMSE; HY – Degree of Disability Scale; Unified Parkinson’s Disease Rating Scale – UPDRS section 1 and total values; Parkinson Disease Questionnaire – PDQ-39; Parkinson’s Disease Sleep Scale – PDSS; Beck Depression Inventory – BDI; Fatigue Severity Scale – FSS; and Magnitude of Perceived Changes.

In order to obtain results according to study outcomes, only section 1 of the UPDRS we chose to use, designated to the central objective of this study.

The division between groups was made according to the defined algorithms and widely accepted using UPDRS items. For the TD and PIGD designations were used to calculate the medium scores according to original classification, used so the reason between UPRS tremor scores (8 items) and UPDRS PIGD medium scores (5 items). To define patients with TD (reason <1.5), patients with PIGD (reason <1). Statistical analysis

The data were analyzed by the statistical package SPSS - IBM, version 20.0, in which descriptive and inferential statistics were performed. For the initial comparison between the groups, the T-test for independent samples was used, to observe the changes in the pre-and post-intervention moments, and between the groups, the Anova Two-way test with repeated measures and the Sydak comparison test were applied, level of significance of 5%.

After that, the individuals were divided into the two disease subtypes according to the predominant characteristics of the motor phenotype of each in (TD) and (PIGD) and again the Anova Two-way test was performed with repeated measures and Sydak comparison test observing the pre and post-intervention within and between groups.

Table 1. Comparison of variables after twelve weeks intra-groups and between CG and EG of subjects with PD, 2016.

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RESULTS

The two groups (EG and CG) presented at the beginning of the study general and PD characteristics distributed homogeneously and without significant differences between them. They were classified as mild to moderate severity (1.8 ±0.7) and mean values were found both in UPDRS (42.3 ±18.9) as in QoL (57.2 ±25.2). The CG also presented mean values for UPDRS (51 ±21.1) and QoL (68.1 ±26.9) (data not shown).

Figure 1 shows the groups distribution according to PD subtypes, in which 60% of the EG (n=15) presented a characteristic of TD whereas in the CG this value was 54% (n=13), there being no significant differences between groups (p=0.078).

After the twelve weeks intervention, it was observed improvement in all tests scores in EG- without significant changes; the comparison between the groups indicated a significant difference in the UPDRS I post-period (p=0.020) in which the EG group showed cognitive impairment improvement (CE = 0.4), whereas the CG presented a deficit in these values (CE = -0.4).

When observing the results from the subtypes of the disease, after the twelve weeks, a positive change in the values between the individuals of the TD group where find, where only the PDSS did not present significant differences when compared EG to CG. Differences between the pre- and post- EG period on fatigue were significant (CE =7.8/p=0.013).

Among individuals who presented PIGD characteristic, no significant changes were observed when compared to the post-period between the EG and CG, nor between the pre- and post-EG periods. In the CG, a significant improvement was observed in the scores of depressive symptoms (CE = 4.1 / p = 0.041). (Table 1)

Figure 1. Groups distribution according to PD subtypes, 2016.
Once the test results showed differences between the subgroups, the perception of the change was made in this division, in order to observe these differences after the intervention (Figure 2). Only one subject with PIGD characteristics did not report improvement after twelve weeks of intervention, whereas among subjects characterized with TD four individuals reported no change in any of the symptoms.

This improvement may be facilitated for individuals with TD characteristics, since a minor impairment in non-motor symptoms in this group is expected.10 Although these changes may reflect the rhythm used, the contagious characteristic of the Brazilian samba rhythm can, like other dances, stimulate practitioners' self-esteem and social relations, reducing the depressive symptoms scores.32 The alterations in individual's mental behavior (UPDRS I) can be justified by the possible cerebral areas activation that are no longer stimulated with the advance of PD and due to marked steps and musical stimulation, increasing their activity, resulting in cognitive behavior improvement of these individuals.33

In addition, the group with PIGD characteristics presented a different behavior from that expected after the intervention, since there was worsening in EG fatigue scores (CE=-2,3) and a significant improvement in the CG depressive symptoms scores (CE=4,1/p=0,041). Individuals classified with this subtype of PD tend to find more difficulty with disease progression, either due to the greater depreciation of symptoms or the greater difficulty in the absorption of Levodopa.8 This is because the depreciation and absorption of dopamine tends to be worse in this group, which may have interfered in this study results. Levodopa transforms into dopamine in the brain and thus alleviates neurotransmitter deficiency. However, individuals coexist with side effects of medication such as nausea, vomiting, diarrhea, episodes of akinesia, delusions, dizziness, insomnia, and depression, and it is inevitable that the disease interferes with the routine of the individual, bringing physical and emotional complications, thus triggering social isolation, increasing dependence on activities of daily living, loss of autonomy, leading to a reduction in quality of life. In this way the practice of physical activities promotes the release of endorphin and stimulates the production of dopamine, and this is probably the argument for so many dance interventions success with individuals with PD.31

However, in these individuals' samba, as presented, may not be enough to significantly stimulate non-motor symptomatology. Despite the results, it should be noted that when questioned about perceived changes, only one individual reported no improvement in symptoms after twelve weeks, which shows that, notwithstanding statistically, changes by subjects' perceptions were expressive.37 One limitation was the sample size that reduces the extrapolating results possibility to other populations, but it shows a reality of the sample surveyed in this region. It is believed that Brazilian samba may be a good option for adjuvant treatment in PD mainly in individuals with TD characteristics. The analyzes performed may also aid the production of more precise interventions for each group and may increase the positive effects on the maintenance of non-motor symptoms in this population.

CONCLUSION

Finally, it is suggested that new studies involving other dance modalities be performed, in order to provide new possibilities for interventions and directions in relation to practice, aiming to improve other symptoms of PD.

All authors declare no potential conflict of interest related to this article
REFERENCES