

Physical Activity Levels in People with Parkinson's Disease who have Sub-Thalamic Deep Brain Stimulation

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BACKGROUND

The beneficial effects of deep brain stimulator (DBS) surgery for advanced Parkinson's disease (PD) on motor function, activities of daily living and quality of life have been extensively reported. However there is limited information of the effects of DBS surgery on physical activity.

AIM

The aims were to measure self-reported physical activity (PA) levels of people with PD who had subthalamic nucleus deep brain stimulation (STN-DBS) and to investigate relationships between their PA levels and factors that might influence their activity behaviour.

METHODS

Subjects

24 patients from the Kingston Centre Movement Disorders Program who had STN-DBS surgery for their PD, participated in the study. Inclusion criteria were a diagnosis of idiopathic PD; classification at Hoehn and Yahr (H&Y) stages 1 to 4; and living at home. Exclusion criteria included stopping of STN-DBS.

Outcome variables

Participants were mailed a survey that included questionnaires relating to physical activity (the Physical Activity Scale for the Elderly {PASE}¹), self-efficacy (Self-Efficacy for Exercise Scale²) and the Stages of Readiness to Exercise Questionnaire. Secondary outcomes included fear of falling (FESI), quality of life (PDQ39), fatigue and depression. Demographic data recorded were sex, age, disease severity (H & Y), disease duration, time since surgery and falls history.

Data Analysis

Statistical analyses used were descriptive statistics and non parametric correlations.

RESULTS

See Table 1 for group characteristics.

- Most participants (58.3%) had low self-efficacy to exercise.
- 75% of participants reported having had at least one fall over the previous 12 months. 89% of fallers had more than 2 falls.
- The mean PASE score was 115.2 (64.1). Males, but not females were significantly less active than reported norms for the same age range. Domestic tasks, such as house and lawn work, were the largest contributors to the total activity score. A history of falls, fear of falling and fatigue were associated with lower levels of PA. A history of falls was the only significant moderator of physical activity.

Table 1. Characteristics of the 24 participants

Variable	Value
Sex M:F	14:10
Age mean (SD)	66.0 (4.9) years
Hoehn & Yahr median (IQR)	3 (1,3)
Disease duration mean (SD)	19 (5.2) years
Time since surgery mean (SD)	4.4 (2.0) years

Table 2. Correlations with PASE values of 24 participants

Variable	Spearman rho	p value
PDQ39	-.49	.016
FESI	-.57	.004
Fatigue	-.58	.003
Anxiety	-.39	.054
Falls \geq 1 last 12 mths	-.56	.004

CONCLUSION

Physical activity levels of people with PD who have STN-DBS was associated with many of the common problems present in PD. When aiming to improve PA behaviour after STN-DBS, clinicians need to consider potential barriers to exercise, such as falls risk and fear of falling.

Refs [1] Washburn RA et al. (1993) J Clin Epidemiol 46:153
[2] McAuley E et al. (1992) J App Soc Psych 22 (4):312

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