



Early Results on Preservation of Motor Performance in a Community-Based Exercise Program

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OBJECTIVE

To present 6-month results of motor performance assessments of participants in physical activity programs at a new community center, InMotion (IM), for persons with movement disorders.

BACKGROUND

Numerous studies in the past decade have demonstrated the value of physical activity for Parkinson's disease (PD)¹⁻³. These studies lack the uniformity of design to permit conclusions regarding ideal type, frequency, duration or intensity of activity. Instead, the realization that almost all such studies demonstrate superior outcomes for participants over non-participants, regardless of protocol, suggests that any and all forms of physical activity may be better than none. Thus neurologists have begun recommending physical activity in earnest to their patients with PD. However, data confirming the value of such recommendations are lacking.

InMotion is a destination in suburban Cleveland for persons with movement disorders offering open classes with certified instructors in a variety of physical activities free of charge. A core feature of IM is a proprietary program of traditional exercise for people with PD, entitled "Better Every Day" (BED), developed by one of the authors (BMR), an expert in physical fitness. BED is offered at 3 intensity levels, with the top level equivalent to a workout for someone without PD. Classes are also offered in a number of other disciplines, including tai chi, yoga, cycling, boxing, modern dance and ballroom dance.

InMotion opened its doors in March 2015. We present a summary of results of a variety of motor performance assessments conducted over a 6-month interval in our first 28 participants.

METHODS

Participants all carried a diagnosis of PD and were able to complete gait and balance assessments independently. Enrollment was otherwise unselected. Attendance was recorded for all participants at each class they attended.

Motor performance assessments were conducted at baseline and after 6 months. Assessments (with data endpoints) included a 2-minute walking test (total distance), 60-second sit-to-stand and lateral hurdle stepping tests (# repetitions), and 30-second bilateral single-limb balance (# corrective floor touches with the contralateral foot), single-arm clean-and-press (C&P, i.e., lifting from the ground to overhead) (2.72 kg for men, 1.36 kg for women) (# repetitions), and rotational body turn tests (# repetitions). Participants also completed an extended Timed-Up-and-Go (ETUG) test in alternate directions (time). Mean figures of all data endpoints were derived. Statistical significance was determined using a paired t test.

RESULTS

28 participants completed the assessments at both time points. Results are tabulated below. Sit-to-stand, right arm C&P and bilateral rotational body turn repetitions improved to a significant degree. All assessments show a trend to improvement, though negligible ($p > 0.5$) in some.

Assessment	@ Baseline	@ 6 months	<i>p</i> value
2-minute walk	186 m	214 m	.3210
Sit-to-stand	27.2 reps	31.0 reps	.034*
Limb stance left	4.2 touches	4.1 touches	.648
Limb stance right	4.3 touches	4.2 touches	.668
Lateral stepping	49.6 reps	53 reps	.6631
Clean & Press left	12.8 reps	14.5 reps	.111
Clean & Press right	12.9 reps	15.4 reps	.001**
ETUG left turn	12.2 seconds	10.4 seconds	.340
ETUG right turn	11.5 seconds	9.8 seconds	.105
Body turns left	19.9 reps	23.7 reps	.001**
Body turns right	20.2 reps	24.3 reps	.000**

All figures represent means of all participant data endpoints

** $p \leq 0.05$ in expected direction*

*** $p \leq 0.001$ in expected direction*

Participants attended a mean of 49.4 sessions (range: 9-133) over 6 months, or approximately 2 per week. BED classes accounted for 66% of total attendance (1,382 sessions).

CONCLUSION

Motor performance in this cohort was stable or improved over a 6-month period, as measured by an assortment of mobility and balance tests. We cannot claim an intervention effect because we could not control for other contributory factors, including changes in medication and outside levels of physical activity. However, given the progressive nature of PD, our results suggest we may be contributing to stabilization of the clinical course of these participants⁴. In that respect, the data are consistent with a large body of literature documenting the value of physical activity for persons with PD.

In the future, we intend to expand our investigations to a larger cohort and over a longer time period, allowing us to generate data regarding dose effects and potential differences among types of physical activity. In the meantime, our results support the practice of recommending physical activity as a therapeutic measure for persons with PD.

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