

Beyond assumptions: exploring feasibility and efficacy of a ballet-based intervention on motor and non-motor symptoms in advanced Parkinson's disease.

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Background and objectives

Objective: To explore the feasibility and acute and longitudinal effects of the PD-Ballet intervention in advanced Parkinson's disease (PD) (Hoehn and Yahr [HY] stages IV and V).

Background: Programmed physical activity such as dance is known to improve motor and some non-motor(NM) symptoms of PD[1]. Current evidence focuses mainly on mild to moderate severity of PD, with little attention to those in the advanced stages of motor progression. This abstract explores the effects of a dance-based intervention and its feasibility in People with Parkinson's(PwP) in HY IV and V, who have participated in the PD-Ballet study, world-first randomised clinical trial of such intervention for holistic management of PD.

Methods

PD-Ballet [2] is a randomised, controlled, single-blind study evaluating feasibility, effectiveness, and professional implementation of a 12-week ballet programme delivered by English National Ballet. Of 77 recruited participants, six were presenting with advanced PD and five were randomly allocated to the intervention group. Feasibility was explored by a percentage of attended sessions, and motor and non-motor outcomes were examined to observe for change at immediate and delayed follow up.

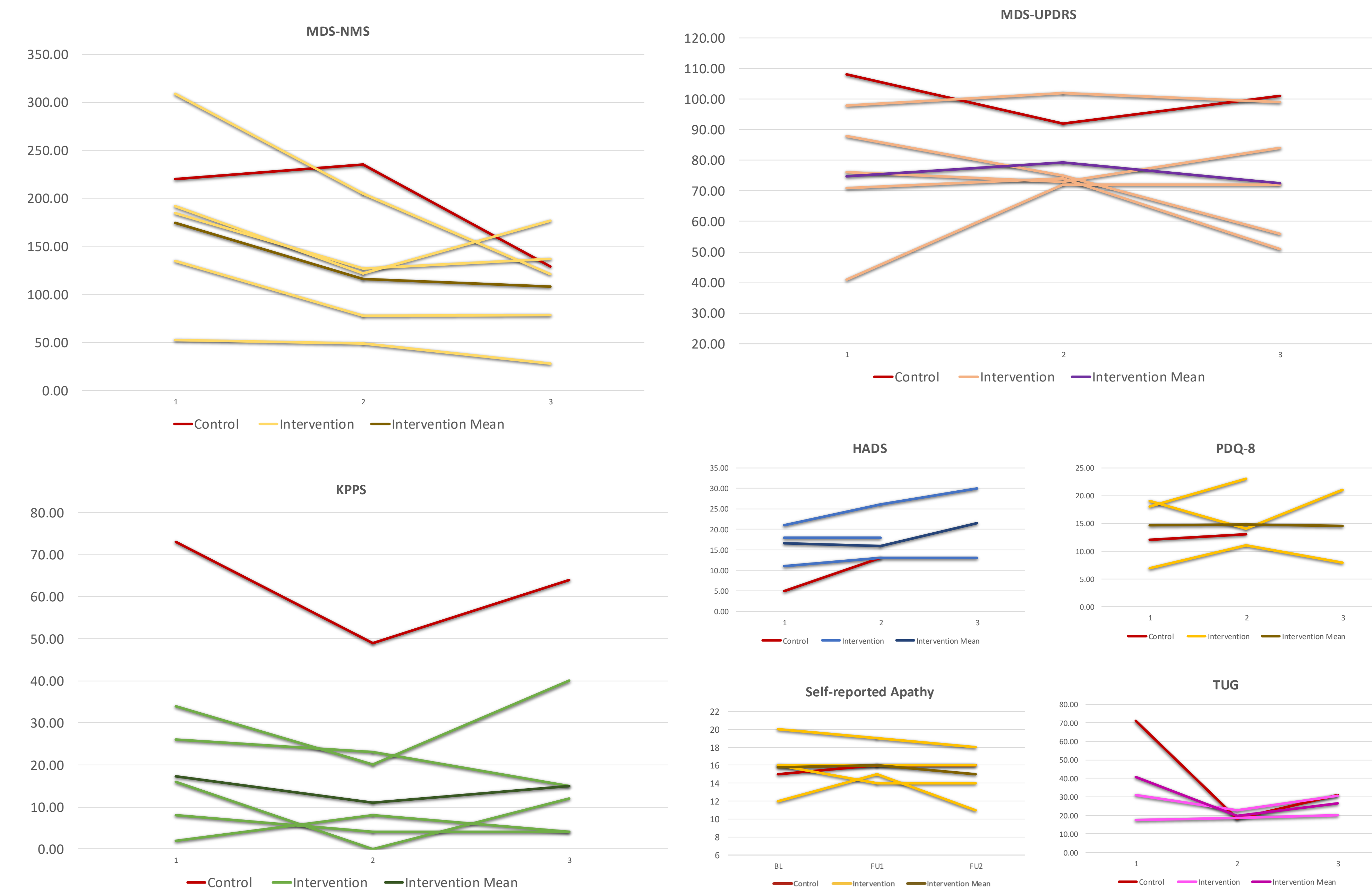
Results

Across the cohort of 5 participants with HY IV or V, mean attendance rate was 93.80%. Mean scores for total MDS-NMS were 174 at baseline, 116 and immediate follow up and 108 points at delayed follow-up. Mean scores for total MDS-UPDRS were 74, 79, and 72 respectively. Mean scores for MDS-UPDRS III were 48, 46 and 42 respectively. Mean scores for Timed Up and Go test were 44s, 20s, and 26s respectively. Mean scores for self-selected walking velocity were 0.7m/s, 0.8m/s, and 0.7m/s respectively. Mean scores for fast walking velocity were 0.7m/s, 1.0m/s, and 0.8m/s respectively. Mean scores for pain as measured by KPPS were 17, 11 and 15 respectively. Mean scores for mood dysfunction as measured by HADS were 17, 16 and 22 respectively. Mean scores for apathy as measured by the Apathy Scale were 16, 12 and 6 respectively. Mean scores for PDQ-8 were 14, 14 and 21 respectively. See Table 1.

Conclusions

This is world's first dataset demonstrating changes across motor and NM symptoms of PD in advanced PwP who undergo a ballet-based dance intervention, demonstrated to be feasible. Larger dataset is needed to perform robust statistical analyses, though the current results suggest that PD-Ballet may improve NM and some motor symptoms and this improvement could be long-lasting.

Table 1. Mean scores	Intervention			Control		
	Baseline M(SD)	Follow-up 1 M(SD)	Follow-up 2 M(SD)	Baseline	Follow-up1	Follow-up 2
MDS-NMS	174.80(93.31)	116.20 (59.18)	108.40 (57.03)	220.00	235.00	129.00
MDS-UPDRS III	48.00 (10.17)	46.00 (13.17)	41.80 (6.57)	54.00	33.00	39.00
MDS-UPDRS Total	74.80 (21.63)	79.20 (12.79)	72.40 (19.81)	108.00	92.00	101.00
Timed Up and Go (sec)	43.83 (26.76)	19.94 (2.47)	26.32 (5.34)	16.70	12.66	8.60
Self-selected walking velocity (m/s)	0.67 (0.20)	0.75 (0.18)	0.69 (0.09)	00.58	00.82	1.15
Fast walking velocity (m/s)	0.72 (0.39)	1.03 (0.22)	0.80 (0.17)	00.82	1.01	1.44
KPPS	17.20 (13.01)	11.00 (10.05)	15.00 (14.80)	73.00	49.00	64.00
HADS	16.67 (5.13)	16.00 (8.04)	21.50 (12.02)	5.00	13.00	-
PDQ-8	14.67 (6.66)	14.75 (5.68)	14.50 (9.19)	12.00	13.00	-
Apathy Scale	16.00 (4.00)	12.00 (8.29)	6.00 (6.98)	7.00	14.00	-



Mean ± SD	Total n=6	Intervention HY IV-V n=5	Control HY IV-V n=1
Age at assessment (y)	72.50 ± 7.89	75.40 ± 3.85	58.00
Disease duration (y)	9.50 ± 6.16	10.80 ± 5.89	3.00
Sex Male (Male %)	4 (66.67%)	3 (60.00%)	1 (100.00%)
LEDD (mg)	1061.10 ± 475.79	1210.12 ± 392.15	465.00
Attendance (%)	-	93.80% (8.56%)	-

References

1.Ernst M, Folkerts AK, Gollan R, Lieker E, Caro-Valenzuela J, Adams A, Cryns N, Monsef I, Dresen A, Roheger M, Eggers C, Skoetz N, Kalbe E. Physical exercise for people with Parkinson's disease: a systematic review and network meta-analysis. Cochrane Database Syst Rev. 2023 Jan 5;1(1):CD013856. Doi: 10.1002/14651858.CD013856.pub2; 2. Podlewska AM, Batzu L, Soukup T, Sevdalis N, Bakolis I, Derbyshire-Fox F, Hartley A, Healey A, Woods A, Crane N, Pariante C, Ray Chaudhuri K. The PD-Ballet study: study protocol for a randomised controlled single-blind hybrid type 2 clinical trial evaluating the effects of ballet dancing on motor and non-motor symptoms in Parkinson's disease. BMC Complement Med Ther. 2024 Jan 17;24(1):41. doi: 10.1186/s12906-023-04296-y.

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