

Supplementary Table 1: Parkinson's disease participants' details

Subject ID	Age (years)	Gender	MoCA	TUG ₁ (s)	TUG ₂ (s)	First symptom	Side of first symptom	Disease duration (years)	Levodopa initiation (year)	LEDD (mg/day)	Motor UPDRS ON	Motor UPDRS OFF
PD1	60	M	27	17.9	15.8	Hand tremor	Right	3	NA	100	18	18
PD2	52	M	29	24.5	14.2	Hand slowness	Left	1	NA	100	28	28
PD3	56	F	30	22.4	16.8	Hand tremor	Right	3	NA	150	6	6
PD4	75	M	28	28.4	13.6	Gait slowness	Bilateral	6	NA	150	19	19
PD5	53	M	28	13.8	13.1	Hand tremor	Right	3	NA	175	11	11
PD6	62	F	29	14.5	14.0	Hand slowness	Left	4	NA	180	26	26
PD7	65	M	24	11.6	11.0	Hand tremor	Left	2	NA	200	8	8
PD8	56	F	24	13.5	11.7	Handwriting	Right	3	2017	287.5	30	26
PD9	55	M	24	12.1	18.8	Hand slowness	Left	5	NA	300	15	32
PD10	55	M	28	12.4	14.1	Hand tremor	Right	4	NA	300	16	16
PD11	66	F	25	11.3	10.5	Leg tremor	Left	6	NA	325	19	19
PD12	71	M	25	11.8	11.4	Hand tremor	Right	5	NA	400	38	50
PD13	78	F	26	12.4	14.5	Jaw tremor	Bilateral	2	2016	550	11	11
PD14	67	M	24	11.7	11.8	Hand tremor	Left	4	NA	550	16	13
PD15	71	M	19	11.8	11.5	Hand tremor	Left	8	NA	550	34	34
PD16	66	M	26	12.7	12.6	Hand slowness	Right	3	NA	600	29	29
PD17	71	M	30	12.5	13.4	Hand tremor	Left	13	2012	700	37	40
PD18	72	M	26	15.2	20.5	Hand slowness	Left	11	2014	1048	26	46
PD19	72	F	19	13.2	16.2	Leg tremor	Right	5	2016	1200	20	32
Mean ± SD	64.4 ± 8.0	13M:6F	25.8 ± 3.1	14.9 ± 4.9	14.0 ± 2.7			4.8 ± 3.0		414 ± 311	21.4 ± 9.6	24.4 ± 12.6

MoCA: Montreal cognitive assessment (range 0 to 30, higher scores reflect better cognition); TUG₁: timed up and go, visit 1; TUG₂: timed up and go, visit 2; UPDRS: Unified Parkinson's Disease Rating Scale (motor part, range 0 to 108, higher scores reflects more severe motor symptoms); LEDD: levodopa equivalent daily dose (Tomlinson *et al.*, 2010).

Supplementary Table 2: Age-matched control participants' details

Subject ID	Age (years)	Gender	MoCA	TUG₁ (s)	TUG₂ (s)
AMC1	62	F	25	11.7	10.9
AMC2	49.5	M	26	10.7	11.7
AMC3	64	M	22	11.9	NA
AMC4	65	F	28	10.6	11.4
AMC5	59	F	23	12.2	19.3
AMC6	72	M	22	14.9	13.6
AMC7	70	M	22	13.0	23.7
AMC8	65.5	M	25	15.2	12.7
AMC9	70	F	20	12.8	12.4
AMC10	57	M	27	10.1	9.2
AMC11	65	M	26	9.6	9.8
AMC12	56	F	25	16.7	15.8
AMC13	68	F	24	14.6	14.6
AMC14	68.5	M	26	10.3	11.4
AMC15	63	M	23	9.0	10.5
AMC16	63.5	M	25	12.3	14.0
AMC17	53	M	28	14.6	13.2
AMC18	70	M	25	9.6	10.4
AMC19	66	M	21	11.4	9.2
AMC20	53	F	29	17.6	10.8
AMC21	49	F	25	14.0	11.6
AMC22	64	M	24	13.6	10.7
AMC23	70	M	23	12.8	12.0
Mean ± SD	62.7 ± 6.9	15M:8F	24.5 ± 2.3	12.6 ± 2.3	12.7 ± 3.4

MoCA: Montreal cognitive assessment (range 0 to 30, higher scores reflect better cognition);

TUG₁: timed up and go, visit 1; TUG₂: timed up and go, visit 2; AMC: age-matched control.

Supplementary Table 3: Young control participants' details

Subject ID	Age (years)	Gender	MoCA	TUG (s)
YC1	19	M	29	10.3
YC2	21	F	28	10.4
YC3	29	F	29	8.0
YC4	19	M	25	12.4
YC5	20	F	30	13.2
YC6	24	M	25	12.7
YC7	26	F	27	10.0
YC8	24	M	28	18.2
YC9	25	M	27	12.5
YC10	25	F	27	12.0
YC11	23	F	27	11.6
YC12	23	F	25	13.0
YC13	26	M	27	12.2
YC14	27	F	28	12.3
YC15	28	M	27	9.2
YC16	21	F	30	10.8
YC17	20	M	29	13.8
YC18	24	M	28	13.2
YC19	26	F	27	22.7
YC20	27	M	27	20.8
Mean ± SD	23.9 ± 3.0	10M:10F	27.5 ± 1.5	13.0 ± 3.5

MoCA: Montreal cognitive assessment (range 0 to 30, higher scores reflect better cognition);

TUG: timed up and go; YC: young control.