

# Variations in Rest-Activity Rhythm are associated with clinically measured disease severity in Parkinson's Disease

**SUPPLEMENTARY TABLE 1** – Number (%) of valid participant-days with less than 15% missing data\* by H&Y Stage and by day of the week.\*\*

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	All
H&Y Stage 1/2	2 (100%)	0 (0%)	2 (100%)	2 (100%)	2 (100%)	2 (100%)	2 (100%)	12 (85.71%)
H&Y Stage 2	6 (50%)	2 (16.67%)	10 (83.33%)	10 (83.33%)	11 (91.67%)	9 (75%)	7 (58.33%)	55 (65.48%)
H&Y Stage 2/3	5 (83.33%)	0 (0%)	6 (100%)	6 (100%)	6 (100%)	5 (83.33%)	4 (66.67%)	32 (76.19%)
H&Y Stage 3	4 (66.67%)	0 (0%)	4 (66.67%)	5 (83.33%)	5 (83.33%)	4 (66.67%)	3 (50%)	25 (59.52%)
All	17 (65.38%)	2 (7.69%)	22 (84.62%)	23 (88.46%)	24 (92.31%)	20 (76.92%)	16 (61.54%)	124 (68.13%)

\*Participant-days with greater than 15% of the activity data missing were not modelled with cosinors.

\*\*Note that the day of the week specifies the start day of the model (e.g. Sunday tabulates the cosinor models for Sunday 18:00:00 – Monday 17:59:45).

**SUPPLEMENTARY TABLE 2** – Cosinor parameters\*\* of the final analytical cohort and their associations\*\*\* with baseline characteristics.

	Age †	BMI †	MMSE †	ESS †	Levodopa †	Sex †	Handedness †
95% CI	[-2.43, -1.24]	[-2.71, -1.05]	[-5.52, -1.30]	[-1.70, 0.26]	[0.01, 0.03]	[0.93, 0.98]	[0.91, 0.97]
<b>MESOR</b> Coefficient/Odds Ratio	-1.83	-1.88	-3.41	-0.72	0.02	0.95	0.94
p-value	< 0.01*	< 0.01*	< 0.01*	0.15	< 0.01*	< 0.01*	< 0.01*
95% CI	[-2.28, -1.14]	[-2.48, -0.86]	[-6.08, -2.15]	[-1.89, -0.03]	[0.01, 0.03]	[0.92, 0.98]	[0.91, 0.97]
<b>Amplitude</b> Coefficient/Odds Ratio	-1.71	-1.67	-4.11	-0.96	0.02	0.95	0.94
p-value	< 0.01*	< 0.01*	< 0.01*	0.04*	< 0.01*	< 0.01*	< 0.01*
95% CI	[-1:48, 6:22]	[-2:48, 8:03]	[-29:04, -3:09]	[-8:43, 2:59]	[0:02, 0:09]	--	--
<b>Acrophase</b> Coefficient/Odds Ratio	2:17	2:37	-16:07	2:52	00:05		
p-value	0.27	0.34	0.02*	0.33	< 0.01*		

\*\*Note that MESOR and Amplitude are reported in AC, and Acrophase in time (minute:second).

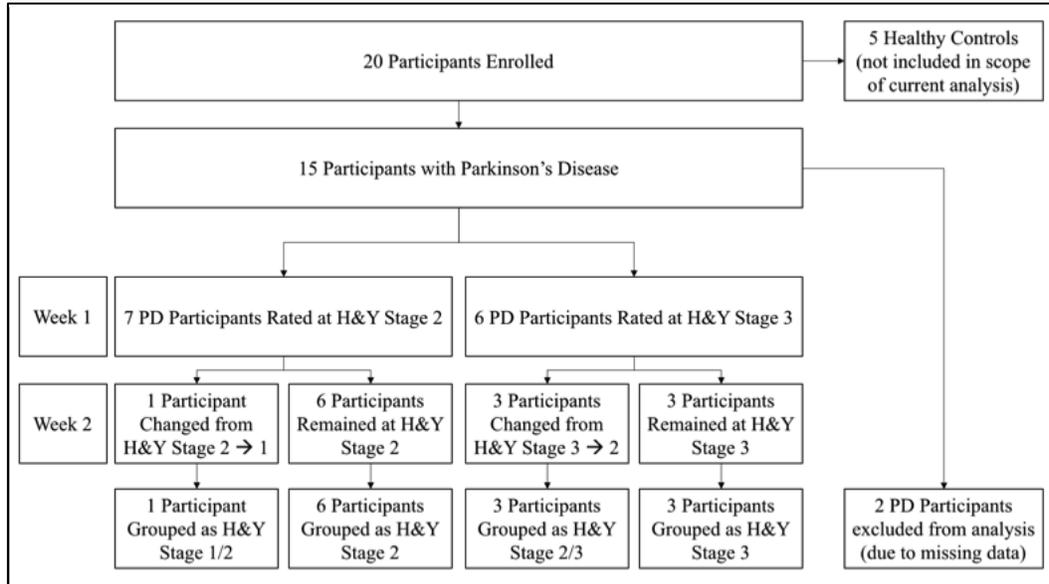
\*\*\*For all regressions, the sample analyzed contained both weeks had a total n = 124, and degrees of freedom of F(1, 122). Coefficients are reported as change in Cosinor Parameter per 1 MDS-UPDRS score.

Abbreviations: AC (Activity Count), CI (Confidence Interval), MESOR (Midline Estimating Statistic Of Rhythm), MDS-UPDRS (Movement Disorder Society's Unified Parkinson's Disease Rating Scale). \* = p < 0.05

† Simple Linear Regression, reporting coefficient

‡ Simple Logistic Regression, reporting odds ratio

## SUPPLEMENTARY FIGURE 1



**SUPPLEMENTARY FIGURE 1** – Flow chart of participant inclusion and assignment to sub-groups based on Hoehn and Yahr (H&Y) Stage. Participants were rated by clinicians during an in-lab visit following each week of in-home recording. The two in-lab visits were an average of 36.31 (standard deviation: 4.80, range: [28 – 49]) days apart for the final analytical cohort (n = 13).