Supplemental material

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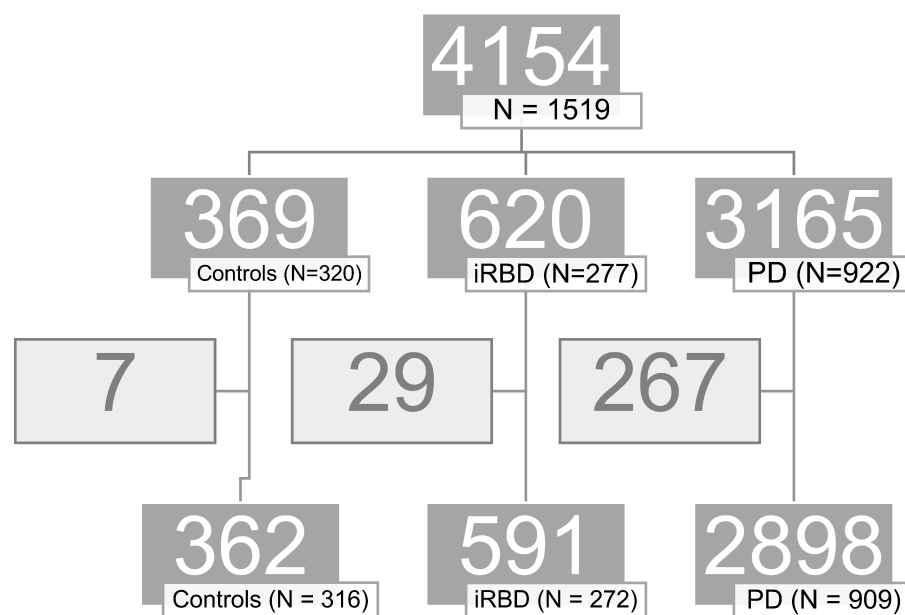*J Neurol Neurosurg Psychiatry*

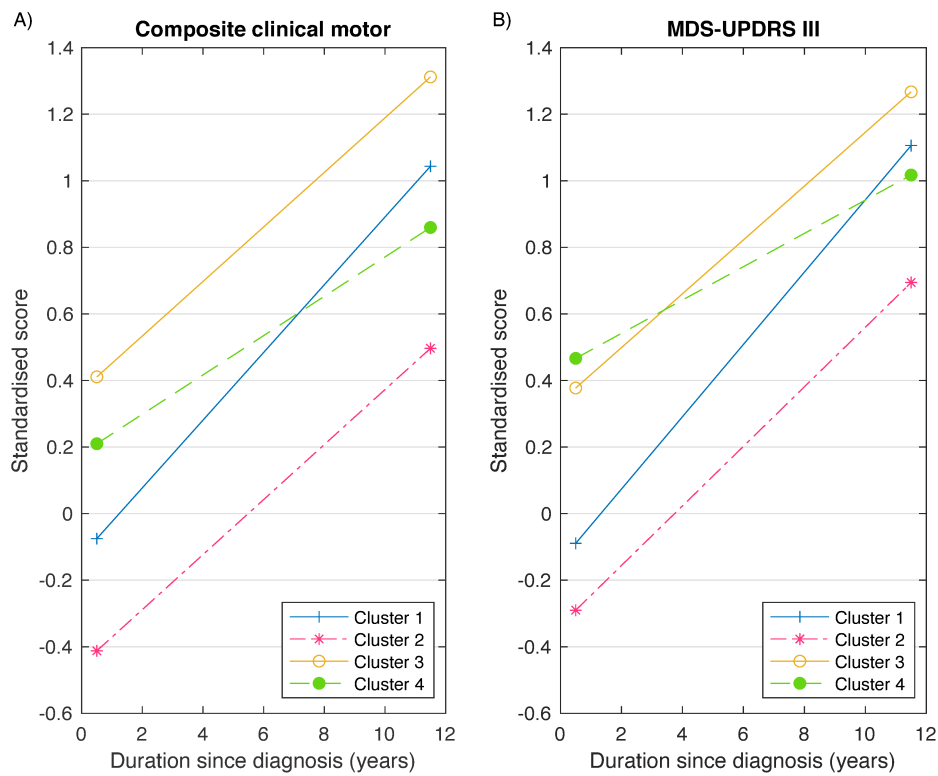## Supplementary Figure 1 | Data included in analyses

The number (N) of controls, individuals with iRBD and PD, and the respective number of sets of data contributed (second row), excluded due to the presence of missing data (pale grey boxes, third row) and included in analyses (final row).

Supplementary Figure 2 | Baseline standardised Composite clinical motor scores and MDS-UPDRS III scores by Hoehn and Yahr stage across disease groups
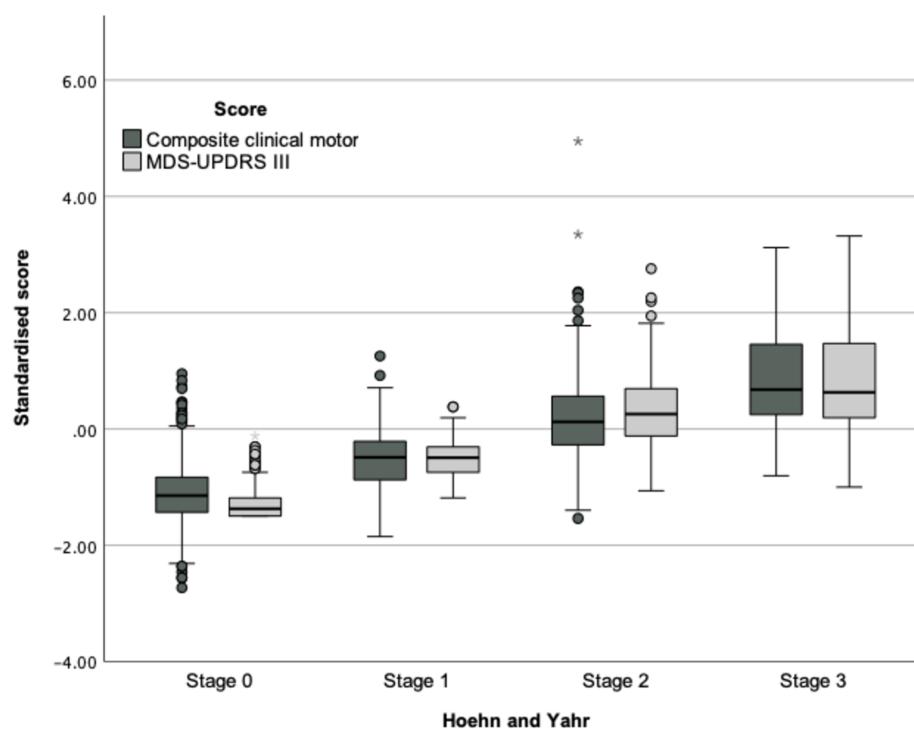

The Composite clinical motor scores (range 0-100) and MDS-UPDRS III (range 0-132) scores were standardised to allow their comparison. Baseline Hoehn and Yahr stages were missing in 2 participants.

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Supplementary Figure 3 | Standardised score trajectories by cluster in individuals with PD

10 individuals with PD did not have a baseline cluster assigned.

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Supplementary Figure 4 | Individualised linear Composite clinical motor (A,B) and MDS-UPDRS III

(C,D) score predictions for individuals with iRBD (A,C) and PD (B,D)
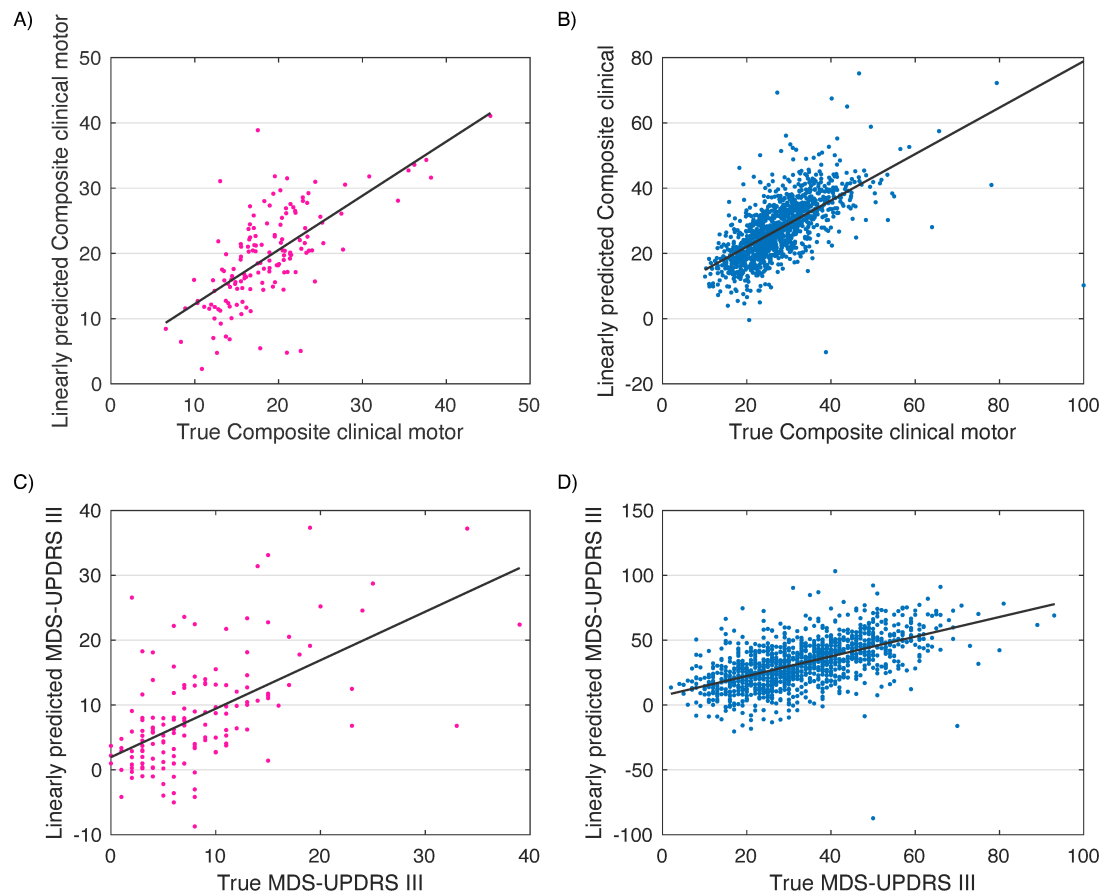
Where n represents the total number of datapoints contributed by each individual, and i represents the number of those datapoints utilised in the linear prediction of their subsequent datapoint (where i ranges from 2 to n-1), each of the n-2 predictions for each individual are shown as a separate datapoint in the plots above. A) rho: 0.66 (p<0.001) adjusted r squared: 0.45, B) rho: 0.71 (p<0.001) adjusted r squared: 0.42, C) rho: 0.57 (p<0.001) adjusted r squared: 0.33, D) rho: 0.61 (p<0.001) adjusted r squared: 0.33.

Supplementary Table 1 | A range of cut-off values in the Composite clinical motor score for distinguishing between groups. Depending on their application, different cut-offs may be chosen to achieve the desired balance between sensitivity and specificity.

iRBD versus controls			PD versus controls			PD versus iRBD		
Cut-off	Sensitivity	Specificity	Cut-off	Sensitivity	Specificity	Cut-off	Sensitivity	Specificity
31.44	0%	100%	31.51	9%	100%	30.50	11%	100%
20.07	12%	95%	20.03	72%	95%	22.31	56%	95%
18.17	21%	90%	18.17	84%	90%	20.53	69%	90%
16.81	31%	85%	16.81	89%	85%	19.36	76%	85%
15.93	38%	80%	15.95	91%	80%	18.20	83%	80%
15.25	43%	75%	15.26	93%	75%	17.51	86%	75%
14.61	50%	70%	14.62	95%	70%	17.04	89%	70%
14.16	55%	65%	14.16	96%	65%	16.20	90%	65%
13.53	63%	60%	13.55	97%	60%	15.70	92%	60%
12.99	67%	55%	13.02	98%	55%	15.10	93%	55%
12.55	70%	50%	12.59	98%	50%	14.62	95%	50%
12.11	74%	45%	12.12	99%	45%	14.21	96%	45%
11.68	77%	40%	11.70	99%	40%	13.85	97%	40%
11.30	80%	35%	11.30	99%	35%	13.08	98%	35%
11.04	82%	30%	11.09	99%	30%	12.57	98%	30%
10.65	84%	25%	10.65	99%	25%	11.99	99%	25%
9.92	88%	20%	9.92	100%	20%	11.18	99%	20%
9.46	89%	15%	9.46	100%	15%	10.34	99%	15%
8.11	92%	10%	8.14	100%	10%	9.42	100%	10%
6.96	94%	5%	6.96	100%	5%	6.75	100%	5%
0.00	100%	0%	1.43	100%	0%	0.00	100%	0%

Supplementary Table 2 | Gradients (and their 95% confidence intervals) of fitted linear trajectories by cluster in individuals with PD

	Standardised Composite clinical motor score			Standardised MDS-UPDRS III		
	Gradient	95% CI		Gradient	95% CI	
Cluster 1	0.10	0.08	0.12	0.11	0.09	0.13
Cluster 2	0.08	0.06	0.11	0.09	0.07	0.11
Cluster 3	0.08	0.05	0.11	0.08	0.06	0.11
Cluster 4	0.06	0.03	0.08	0.05	0.03	0.07

10 individuals with PD did not have a baseline cluster assigned.