

Supplementary Material 1. Clinical interview based on the criteria for diagnosis of Parkinson's disease-related fatigue [s1].

At the beginning of this clinical interview, two screening questions corresponding to the core features of the PD-related fatigue diagnosis were presented as follows: 1) 'have you experienced diminished energy levels or increased perception of effort that are disproportionate to attempted activities or general activity level?'; 2) 'have these symptoms been present for most of the day every day or nearly every day during the previous month?'. If these screening questions were not endorsed, no further questions were asked, and the patient was assumed not to have a fatigue diagnosis. If both screening questions were affirmatively answered, the symptoms from section A ('patients must have four or more of the symptoms from section A') as well as criteria in sections B ('the patient experiences clinically significant distress or impairment in social, occupational, or other important areas of function as a result of fatigue'), C ('there is evidence from the history and physical examination suggesting fatigue is a consequence of Parkinson's disease'), and D ('the symptoms are not primarily a consequence of comorbid psychiatric disorders, sleep disorders, or medical conditions') were explored. As for the criteria in section D, we excluded from the diagnosis of fatigue the patients suffering from comorbidities commonly related to secondary fatigue, i.e., major depressive episodes ascertained via the Mini International Neuropsychiatric Inventory (MINI) [s2], apathy (self-rated version of Apathy Evaluation Scale ≥ 41 [s3]), sleep disorders (Parkinson's Disease Sleep Scale Z-score < -2 [s4] and/or Epworth Sleepiness Scale > 10 [s5]) and/or Obstructive Sleep Apnea [s6] as well as heart failure, hypothyroidism, anaemia, or starting a beta-blocker medication; presence of these last conditions was extrapolated from medical records of patients' reports.

If one of the criteria necessary for the PD-related fatigue diagnosis was not met, the patient was deemed not to have a fatigue diagnosis and assigned to the *nf*-PD group.

References

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- s3. Marin RS, Biedrzycki RC, Firinciogullari S. Reliability and validity of the Apathy Evaluation Scale. *Psychiat Res* 1991;38:143-162.
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- s5. Johns MW. A new method for measuring daytime sleepiness: the Epworth sleepiness scale. *Sleep* 1991;14:540-545.
- s6. Epstein LJ, Kristo D, Strollo PJ Jr, Friedman N, Malhotra A, Patil SP, Ramar K, Rogers R, Schwab RJ, Weaver EM, Weinstein MD; Adult Obstructive Sleep Apnea Task Force of the American Academy of Sleep Medicine. Clinical guideline for the evaluation, management and long-term care of obstructive sleep apnea in adults. *J Clin Sleep Med*. 2009;5:263-276.

Supplementary Material 2. Comparison between included and study-refusing patients on demographics and clinical features.

Variable	Included patients (<i>n</i> = 241)	Study-refusing patients (<i>n</i> = 67)	<i>F</i> -test/ χ^2	<i>p</i> -value
<i>Demographics:</i>				
Age	65.36 ± 9.36	66.76 ± 9.04	1.02	0.312
Sex, male ^a	142 (58.9%)	42 (62.7%)	0.30	0.578
<i>Clinical features</i>				
Disease duration, years	3.44 ± 2.91	7.85 ± 4.88	85.50	<0.001
UPDRS-III	24.98 ± 10.60	32.94 ± 12.27	27.20	<0.001
LEDD total (mg/day)	472.86 ± 246.10	549.95 ± 343.70	3.04	0.083
LEDD _{DA} (mg/day)	86.55 ± 117.85	71.36 ± 102.90	0.58	0.445
LEDD _{L-DOPA} (mg/day)	353.52 ± 246.26	311.93 ± 139.08	1.13	0.288

Note. Statistically significant differences are shown in **bold**; a, coded as: 0= male, 1= female; b, UPDRS, Unified Parkinson's Disease Rating Scale; HY, Hoehn and Yahr; LEDD_{DA}, Dopamine Agonists Equivalent Daily Dosage; LEDD_{L-DOPA}, Levodopa Equivalent Daily Dosage.

Supplementary Material 3. Comorbid diseases in 33 patients who were excluded on the basis of section D of PD-related diagnostic criteria.

Patient	Depression MINI	Apathy AES \geq 37	Sleep disorders			Heart failure	Anemia	Hypothyroidism	Beta-blockers
			OSA	PDSS Z-score $<$ -2	ESS $>$ 10				
1		X		X				X	
2								X	
3	X								
4	X	X		X					
5					X			X	
6		X							
7		X			X		X	X	
8		X							
9			X						
10		X							
11		X							
12		X							
13	X				X				
14	X								
15								X	
16					X	X		X	
17					X				
18		X							
19		X							
20		X						X	
21	X				X	X			
22		X			X		X		
23		X							
24				X					
25		X							
26	X								
27	X			X	X				

