

3. Global severity assessments

The Hoehn & Yahr Staging Scale (HY) represents the universally accepted system to classify patients based on their motor impairment and functional status. The Clinical Impression of Severity Index for Parkinson's Disease (CISI-PD) scale provides a clinical judgment on Parkinson's disease (PD) severity based on motor symptoms and complications, cognitive status, and disability.

Hoehn & Yahr Staging Scale (HY)	
Original, five-point version [1]	
Modified, seven-point version [2]	
Description of scale	
Overview	<p>It assesses PD severity, with a focus on impairment (objective signs on examination) and disability (functional deficits)</p> <p>Formed by one single item, with five (original) or seven (modified) answer options. A short description is provided for each response option. The response options for the original version range from stages 1.0 to 5.0, and two half-step options were added in modified version: stages 1.5 and 2.5</p> <p>Completion time: about one minute, once the patient's functional and clinical states are known. Health professional-rated</p> <p>Time frame: time of assessment</p> <p>Specific for PD</p>
Copyright?	Public domain
How can the scale be obtained?	The modified version can be found online, and in papers [3]
Clinimetric properties of scale in patients with PD	
Feasibility	<p>Appropriate for PD population</p> <p>Applicable across all PD stages</p>
Dimensionality	Not applicable
Acceptability	There is coincidence between possible and observed score ranges. Floor and ceiling effects are low for the modified version [4]
Reliability	The original HY has moderate inter-rater reliability [3]. No data available on test-retest reliability
Validity	<p>Content validity: inadequate content validity for the HY as a whole, although all scale points except 2.5 were rated as having adequate content validity [5]</p> <p>Convergent validity with the Unified Parkinson's Disease Rating Scale (UPDRS) and Schwab & England Activities of Daily Living Scale (SE) was moderate/high. The HY also shows significant associations with measures of quality of life, objective motor performance, functional disability, and indices of dopaminergic activity [3,5,6]</p>

Responsiveness & Interpretability	In a sample of 87 patients with PD followed for 2.6 years, 68% of patients increased at least 0.5 in HY stage [7]. It shows low sensitivity to change, especially in the lower stages [8] Valid for both sexes and all ages
Cross-cultural Adaptations & Others	Very widely used, and available in many languages
Overall impression	
Advantages	Simple and widely used by researchers and clinicians as the standard staging system; large body of research supporting the HY usefulness
Disadvantages	Dual focus on impairment and disability; it is weighted towards postural instability; low responsiveness, especially in early stages [3,8]

Clinical Impression of Severity Index for Parkinson's Disease (CISI-PD) (Figure 3.1) [9]	
Description of scale	
Overview	A severity index formed by four items (motor signs, disability, motor complications and cognitive status), rated 0 (not at all) to six (very severe or severely disabled). A total score is calculated by summing the item scores Time frame: time of assessment The scale is completed by a clinician. It takes a few seconds to complete [9] once the state of the patient is known Specific for PD
Copyright?	Public domain
How can the scale be obtained?	Available in the original publication [9]
Clinimetric properties of scale in patients with PD	
Feasibility	The CISI-PD items are appropriate for patients with PD. Applicable across all PD stages
Dimensionality	Unidimensional (by exploratory and confirmatory factor analyses) [9,10]
Acceptability	No floor or ceiling effect; satisfactory skewness [9,10]
Reliability	Internal consistency: satisfactory, with high Cronbach's alpha and item homogeneity [9,10]. Adequate test-retest reliability (intraclass correlation coefficient, ICC=0.84) [10]
Validity	Face/content validity is appropriate. Convergent validity with UPDRS, Scales for Outcomes in Parkinson's Disease-Motor (SCOPA-Motor), SCOPA-Cognition (SCOPA-Cog), SCOPA-Psychosocial (SCOPE-PS), Hospital Anxiety and Depression Scale (HADS), HY, SE, and CISI-PD was satisfactory [9,10]. The CISI-PD was used in clinimetric studies for many other PD scales [11–18]. The CISI-PD score is significantly influenced by disease duration, depression, HY stage, and disease duration [9,10]
Responsiveness & Interpretability	Not assessed. Valid for both sexes and all ages
Cross-cultural Adaptations & Others	Available in Spanish and English

Overall impression	
Advantages	Simplicity and easy application; provides a global score, as well as a profile in specific components that are critical in PD
Disadvantages	Further studies should focus on attributes such as inter-rater reliability and responsiveness

Figure 3.1 Clinical Impression of Severity Index (CISI-PD)*

Motor Signs

- 0 Normal
- 1 Very mild
- 2 Mild
- 3 Mild to moderate
- 4 Moderate
- 5 Severe
- 6 Very severe

Disability

- 0 Normal
- 1 Minimal slowness and/ or clumsiness
- 2 Slowness and/ or clumsiness. No limitations
- 3 Limitation for demanding activities
Does not need help, or rarely, for basic activities of daily living (ADL)
- 4 Limitation to perform basic ADL
Help is required for some basic ADL
- 5 Great limitation to perform basic ADL
Help is required for most or all basic ADL
- 6 Severely disabled; helpless
Complete assistance needed

Motor Complications (dyskinesia and fluctuations)

- 0 Not at all
- 1 Very mild
- 2 Mild
- 3 Mild to moderate
- 4 Moderate
- 5 Severe
- 6 Very severe

Cognitive Status

- 0 Normal
 - 1 Minimal cognitive problems
 - 2 Mild cognitive problems. No limitations
 - 3 Mild to moderate cognitive problems. Limitations for demanding activities. Does not need help, or rarely, for basic activities
 - 4 Moderate cognitive problems. Limitations for basic activities. Help is needed for some basic activities
 - 5 Severe cognitive problems. Many limitations for basic activities. Help is needed for most or all basic ADL
 - 6 Severely disabled; helpless. Complete and continued assistance needed
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	Score
<u>Motor signs</u>	_____
Disability	_____
Motor Complications	_____
Cognitive Status	_____

CISI-PD Total score (Sum of the four items (0-24)):

*Validation study published in *Mov Disord.* 2009;24:211-217. Scale reproduced with permission from Martínez-Martin et al [9]. ©2005 Movement Disorder Society

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