

# The “8-foot Up and Go” Test as a Physical Performance Measurement in Parkinson’s Disease: A Pilot Study.

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## Resumen

**Introducción:** la enfermedad de Parkinson (EP), es un trastorno del movimiento donde la evaluación física debe ser un componente clave en el diagnóstico de las personas que la sufren. Hay una necesidad de analizar la utilidad de algunas pruebas de habilidades motrices para la EP, especialmente aquellas que incluyen la evaluación de caminar en línea recta y girar.

**Objetivo:** Este estudio piloto tuvo como objetivo evaluar la utilidad del test “8 foot up and go” como medida de rendimiento físico en la EP, así como la relación entre la movilidad funcional y la calidad de vida en esta población.

**Material y Métodos:** Veinticuatro pacientes con un diagnóstico de enfermedad de Parkinson idiopática se ofrecieron voluntarios y terminaron el estudio. Realizaron el test “8 foot up and go” y respondieron el cuestionario 9-item Parkinson’s Disease Questionnaire.

**Resultados:** La puntuación total del test correlaciona significativamente con las diferentes sub-escalas del cuestionario 9-item Parkinson’s Disease Questionnaire, especialmente con sub-escala de movilidad y con la puntuación total.

**Conclusiones:** El “8 foot up and go” es un test útil y fácil de realizar por los pacientes con EP y ha resultado ser, un claro indicador de la forma en que la enfermedad afecta a su calidad de vida.

**Palabras clave:** Fitness. Test motor. Enfermedad de Parkinson. Actividad física. Calidad de vida.

## Summary

**Background:** Parkinson disease (PD), is a movement disorder, so physical assessment should be a key component in the diagnosis of individuals suffering from this disease. There is a need to assess the utility of some motor tests in PD, specially those which include assessment of straight line walking and turning.

**Objective:** This pilot study aimed to assess the utility of the “8-foot up and go” test as a physical performance measurement in PD, as well as the relationship between functional mobility and quality of life in this population.

**Material and Methods:** Twenty-four patients with a diagnosis of idiopathic Parkinson’s disease volunteered and finished the study. They performed the “8 foot up-and-go” test and answered the 9-item Parkinson’s Disease Questionnaire.

**Results:** The motor test’s total score correlated significantly with different sub-scales of the 9-item Parkinson’s Disease Questionnaire, especially with the mobility sub-scale and with the total score.

**Conclusions:** The “8 foot up-and-go” test is useful and easy to perform by Parkinson’s disease patients and it has turned out to be a clear indicator of the way the illness affects their quality of life.

**Keywords:** Fitness. Motor Test. Parkinson’s Disease. Physical Activity. Quality of life.

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## Introduction

Parkinson’s disease (PD) is a degenerative disorder of the central nervous system with motor and cognitive symptoms.<sup>1</sup> Physical exercise programs have proved to be a useful strategy to improve quality of life (QoL) in people affected by Parkinson’s disease (PD).<sup>2,3</sup> Generally, in order to assess the results of interventions based on this kind of programs, questionnaires, clinical rating scales<sup>4</sup> or physical performance measures are usually employed.

The semi-quantitative and subjective scoring system remains a general problem of the two first assessment

tools, which may cause insufficient sensitivity, especially in patients with relatively mild dysfunction.<sup>5</sup> Therefore, virtually every study of this kind includes among its assessment tools quantitative motor tests, which have been created to resolve these issues.

These kind of tests have usually been validated in healthy elderly people, and sometimes the extent to which PD patients can carry them out is not known, nor the reliability of the obtained results. Because of that, different studies have sought to evaluate the utility of some motor tests in PD, obtaining positive results.<sup>6,7</sup> The “8-foot

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Up and Go Test” (8 ft up-and-go), which was designed to measure speed, agility and balance while moving in elderly people,<sup>8</sup> stands out in this group of motor tests. Although this test has been advocated as a useful tool for quantifying locomotor performance in aging,<sup>9</sup> its possible utility with PD patients has not been assessed so far.

Thus, the aim of this study was to check whether people affected by PD can fully perform the “8 ft up-and-go” and whether the obtained results correlate with the extent of the illness’s impact on the patients’ QoL.

### Patients and methods

Volunteers who had a diagnosis of idiopathic PD, were able to ambulate independently and had been on the same medication for at least 2 weeks, were included in the study. They were excluded if they presented any comorbidities other than PD, or any acute illness that would interfere with the safe conduct of the testing protocol.

#### Measurements

All assessments took place in one day and were performed by the same clinician. The evaluations were conducted while the patients were in the defined “on” (1-2.5 hours after the last PD medication).

#### Parkinson’s Disease Questionnaire

Patients’ QoL was assessed by means of the Spanish validated version of the 9-item Parkinson’s Disease Questionnaire (PDQ-39).<sup>10</sup> The PDQ-39 is the specific measurement of health status most widely used with Parkinson’s disease patients.<sup>11</sup> It contains thirty-nine questions, covering eight aspects of quality of life. Such profile measurements can be of use in gaining a picture of the disease’s impact on specific areas of functioning and well-being.

#### 8-foot Up and Go Test

The 8 ft up-and-go test, developed by Rikli and Jones,<sup>12</sup> measures power, speed, agility and dynamic balance. The test involves getting out of a chair, walking 8 feet to and around a cone, and returning to the chair in the shortest time possible. The time needed to perform the task measured with 1/10-second accuracy constitutes the test’s result.

#### Data Analysis

Clinical variables were tabulated, and descriptive statistics, including means and standard deviations, were calculated. The non-parametric study correlation was carried out through the Spearman’s rho test. Scatter plots were constructed to show the relationship between the 8 ft up-and-go test and the PDQ-39. Data analysis was carried out with the SPSS 15.0 software package (SPSS, Chicago, IL). A P value of .05 or less was considered statistically significant.

### Results

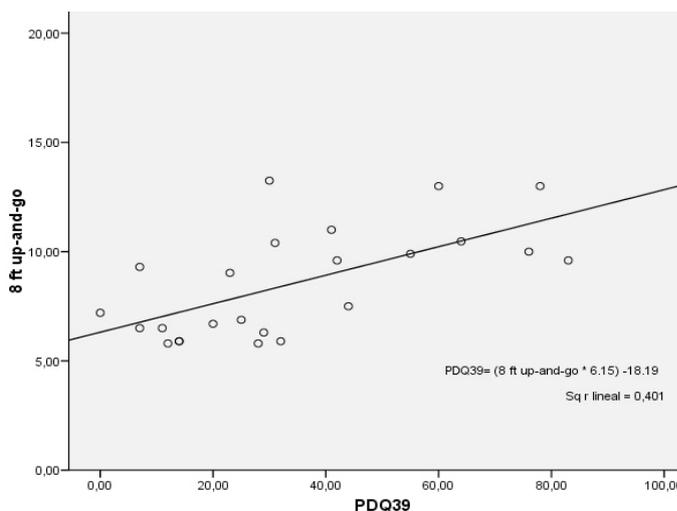
A total of 24 participants volunteered and finished the study. The mean (SD) age of the participants was 69.6 ( $\pm 7.23$ ), and 54% were female. Patients had mild to moderate PD (Hoehn and Yahr stage range. 1-3;  $2.40 \pm 0.74$ ), and mean disease duration was 5.1 years (range 1-14). All participants were taking levodopa and carbidopa.

The scores obtained by the patients in the PDQ-39 and the 8 ft up-and-go test as well as the correlation between both tests are shown in Table I. The motor test’s total score correlates significantly with different sub-scales of the PDQ-39, especially with the mobility sub-scale and with the total score. The existing relation between the studied variables, from the obtained results for each participant, is shown in figure 1.

**Table I.** Scores obtained in the PDQ-39 and in the 8 ft up-and-go test, and the correlation found between both variables.

	Scores	8 ft up-and-go
	Mean $\pm$ SD	Spearman rho
PDQ39 total	40.79 $\pm$ 30.08	.622**
PDQ39-I	10.11 $\pm$ 9.99	.640**
PDQ39-II	6.37 $\pm$ 5.97	.322
PDQ39-III	7.00 $\pm$ 5.79	.598*
PDQ39-IV	3.32 $\pm$ 4.14	.478*
PDQ39-V	1.79 $\pm$ 2.12	.499*
PDQ39-VI	3.32 $\pm$ 2.85	.097
PDQ39-VII	2.89 $\pm$ 2.98	.404*
PDQ39-VIII	5.21 $\pm$ 2.18	.201
8 ft up-and-go (seconds)	9.21 $\pm$ 2.32	-

\*P<0.05; \*\*p<0.001  
PDQ-39: 9-item Parkinson’s Disease Questionnaire



**Figure 1.** Scatter plot of the relationship between the total scores of the PDQ-39 and the 8 ft up-and-go test for the entire sample of the study.

### Conclusion

Parkinson disease is a movement disorder, so physical assessment should be a key component in the diag-

nosis of individuals suffering from this disease. The results of this study show that the 8 ft up-and-go test is a physical performance measurement that can be easily carried out by PD patients. This means that it can be a useful motor test for the assessment of speed, agility and dynamic balance in this kind of populations. Furthermore, it has been pointed out that most of the research about gait velocity and walking patterns in PD is specifically focused on straight line walking, whereas optimal functional locomotion depends on the ability to make turns<sup>13</sup>. Thus, locomotor assessment of straight line walking and turning may be of greater clinical use<sup>14</sup>. In this regard, it seems that the 8 ft up-and-go test perfectly evaluates both tasks and can therefore be included in the group of those test which have proved to be useful to that end, such as the Six-minute walking test<sup>15</sup>, or the Timed “up and go” test<sup>16</sup>.

From our point of view, the strong points of the 8 ft up-and-go test are mainly two. On the one hand, it can be routinely used by clinicians since it requires simple and commonly used material resources. On the other hand, there are normative values obtained in healthy populations<sup>17</sup> that allow the identification of the patient’s functional mobility level and a more specific assessment of the illness’s impact on this aspect. For instance, after the application of this test to our sample, it can be clearly observed how PD affects functional mobility, given the low scores obtained, which may be caused by the disease’s severity and lack of physical fitness.

Another finding that can be considered as relevant in this study is the relationship between functional mobility and QoL in PD. Over the last years research has been focused on the assessment of the existing relationship between the impact that chronic pathologies have on the patients’ QoL and their functional mobility level.<sup>18,19</sup> The present study is oriented in a similar vein and can therefore be added to that same line of research. In fact, the results exposed here reflect a clear correlation between the total scores of the PDQ-39 and the 8 ft up-and-go test, which confirms the idea that poor motor function has a detrimental effect on the QoL of PD patients.<sup>20</sup> Likewise, there is also a strong connection between the test’s total score and the sub-scale I of PDQ-39, which evaluates mobility. This correlation has also been observed in studies which have analyzed other motor tests and specific questionnaires of the illness<sup>21</sup> and which support the inclusion of exercise therapy in PD. Indeed, one of the reasons why physical exercise programs seem to have beneficial effects on the QoL of persons suffering from PD is the improvement that they provoke in the patients’ mobility.<sup>22</sup> Thus, it could be hypothesized that this improvement can lead to enhanced functional autonomy, which would enable patients to tackle daily tasks more easily, that is, with a higher level of self-efficacy. Hence the direct relationship observed in this study between functional mobility and QoL.

Due to the limitations of this pilot study (mainly the small sample size made up of voluntary people diagnosed with mild to moderate PD) it must be taken into account that the obtained results may not be representative of all PD patients.

In closing, the results of this study show some evidence in favour of the utility of the 8 ft up-and-go test as an assessment tool to evaluate functional mobility in PD, given its simplicity and easy performance and the correlation that it keeps with the QoL that this kind of population usually shows.

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