Development of a New Scale to Assess Physical Performance in a Standing Position and During Ambulation Related to the Activities of Daily Living of Stroke Patients: Scale Development Based on the Rasch Model

Kentaro TOKUHISA, PT, PhD, Kayo TSURUTA, PT, Kosuke KOJIMA, PT
Department of Rehabilitation Medicine, Nishiyamato Rehabilitation Hospital

Yamato KANEMATSU, PT, Takuhiro MIYOSHI, PT
Department of Rehabilitation Medicine, Ishinkai Yao Rehabilitation Hospital

Katsuhiko TAKATORI, PT, PhD, Koji SHOMOTO, PT, PhD
Department of Physical Therapy, Faculty of Health Science, Kio University

Tomoaki SHIMADA, PT, PhD
Department of Rehabilitation Science, Kobe University Graduate School of Health Sciences

Purpose: The purpose of this study was to develop a new scale, the Stroke Physical Performance Scale (SPPS), based on the Rasch model. The SPPS evaluates physical performance in a standing position and during ambulation related to the activities of daily living (ADL) of stroke patients.

Methods: A preliminary scale was developed that consisted of 25 items representing physical performance selected by observation of the ADL. This scale was tested for stroke patients (N = 102) in 2 rehabilitation hospitals using 5-level rating categories. Their responses were analyzed using the Rasch model to select rating categories and items. After the development of the SPPS, we investigated its unidimensionality and reliability.

Results: The rating category analysis integrated the category of “supervision” into “light assistance”, so that rating involved 4-level categories. The item selection analysis excluded 9 items, the SPPS therefore became a 16-item scale, which fitted the Rasch model. The SPPS demonstrated good unidimensionality and reliability.

Conclusion: The SPPS was constructed as a scale to evaluate physical performance in a standing position and during ambulation related to the ADL of stroke patients. It may be valuable to evaluate changes in physical performance using an interval scale both in a clinical setting and for clinical research.