論 文 要 旨

Intra-rater and inter-rater reliability of gait analysis using Portable gait rhythmogram for post-stroke hemiparetic patients

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[Purpose] Gait analysis, such as portable gait rhythmogram (PGR) provides objective information that helps in the quantitative evaluation of human locomotion. The purpose of this study was to assess the reliability of PGR in post- stroke patients.

[Subjects and Methods] Two raters (A and B) examined 44 post-stroke patients. To assess intra-rater reliability, rater A tested subjects on three separate occasions (Days 1, 2, and 3). To assess inter-rater reliability, raters A and B independently tested participants on the same occasion (Day 3). The PGR procedure was first explained and demonstrated by the rater, and then subjects performed one bout of the PGR protocol (two practice trials, followed by four recorded trials). There was a 1-minute break between trials for data collection to avoid fatigue. Next, subjects performed one bout of the PGR protocol on Day 2. Finally, subjects performed two bouts of the PGR protocol, with one administered by rater A and one by rater B, on Day 3. While wearing the PGR device, each patient performed the 10-m walk test twice at a comfortable speed followed by two timed trials at a maximum speed. Changes in walking time, gait cadence, and the peak absolute value of acceleration vectors were examined during the 10-m walk test. Data from the two trials at each speed were averaged for statistical analysis.

[Results] There was no significant systematic bias between test occasions or raters. Intraclass correlation coefficient values were 0.93-0.97 for intra-rater reliability at both the comfortable speed and maximum speed, and 0.97-0.98 (comfortable speed) and 0.87-0.99 (maximum speed) for inter-rater reliability. The standard error was 1.25-1.49 (comfortable speed) and 1.62-1.77 (maximum speed) for intra-rater investigation, and 1.04-1.32 (comfortable speed) and 0.91-1.26 (maximum speed) for inter-rater investigation. At the 90% confidence level, the minimum detectable change ranged from 2.9-4.1%, and the error of an individual's score at a given time point ranged from ±2.1-2.9%.

[Conclusion] Based on this excellent reliability of the PGR in post-stroke patients, it can be recommended as a simple test of gait analysis in this population.