Ability of Stroke Patients with Different Stepping Patterns to Ascend and Descend Stairs

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Purpose: The purpose of this study was to clarify whether stroke patients with different stepping patterns had the ability to ascend and descend stairs, based on their basic attributes and physical functions.

Methods: Subjects were 64 persons with stroke in whom age, time since stroke, knee extension on non-paretic and paretic sides, leg weight bearing rate (WBR) on non-paretic and paretic sides, leg Brunnstrom recovery stage (Br-stage), presence or absence of disturbance of deep sensibility, and severity of spasms were surveyed or measured.

Results: Subjects were divided into 3 groups for stair ascending and descending: 1 leg-1 step; 2 legs-1 step and unable to use stairs. Significant differences were seen in leg strength on non-paretic side, leg strength on paretic side, WBR on non-paretic side, WBR on paretic side, leg Br-stage, and presence or absence of disturbance of deep sensibility. In a comparison of consecutive data, values for paretic side muscle strength and paretic side WBR were significantly higher in the 1 leg-1 step group than in the 2 legs-1 step group for both ascending and descending. Moreover, values for paretic side muscle strength were significantly higher in the 2 leg-1 step group than in the unable group for both ascending and descending.

Conclusion: In stroke patients, various physical functions contribute in ascending and descending stairs with different ascent/descent patterns. The results suggest that muscle strength and WBR on the paretic side is particularly important when using stairs.