

C-Leg in limited community ambulators

Stairs

Major Findings

With C-Leg and C-Leg Compact compared to NMPKs:

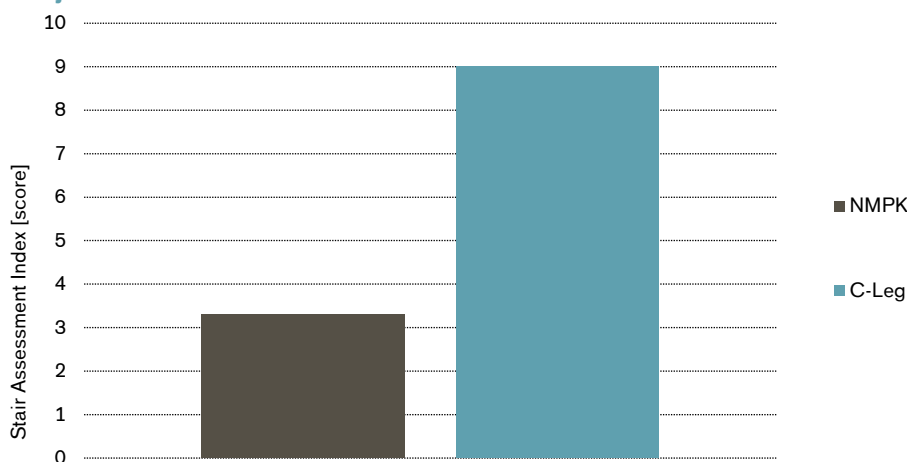
→ **Improvements in stair descent mobility**

Stair Assessment Index (SAI) score improved from 3.3 to 9 (173% increase)

→ **Improvements in walking quality while walking downstairs**

→ **67% of subjects improved in stair descent performance**

Improvements in stair descent mobility with C-Leg in K2 subjects



Stair mobility was assessed by the stair assessment index (SAI). The score ranges from 1-13 depending on the chosen strategy and the hand rail use. 13 points represent the maximum score. (Hafner et al. 2009)

Clinical Relevance

Stair ambulation is an activity that is important for amputees with an activity level ranging from K2 to K4. Being able to ascend and descend stairs is a requirement to participate in daily life. Stair ascent and descent can be assessed by the Stair Assessment Index (SAI) for which subjects are scored for functional independence of assistive device and hand rail as well as for technique using a 14 level scale.

Summary

The Stair Assessment Index (SAI) score for stair descent improved with the transition from NMPKs to C-Leg in K2 subjects by 173% from 3.3 to 9 points. 3 points represent a 'step-to pattern with hand rail use', whereas 9 points represent a 'skipping pattern without rail or assistive device use' (Hafner et al. 2009, Kannenberg et al. 2014).

The improvement in stair descent mobility was additionally confirmed with the Montreal Rehabilitation Performance Profile where 67% of K2 subjects improved their stair descent performance (Kahle et al. 2008, Kannenberg et al. 2014).

References of summarized studies

Hafner, B. J., & Smith, D. G. (2009). Differences in function and safety between Medicare Functional Classification Level-2 and -3 transfemoral amputees and influ-

ence of prosthetic knee joint control. *The Journal of Rehabilitation Research and Development*, 46(3), 417–433.

Kahle, J. T., Highsmith, M. J., & Hubbard, S. L. (2008). Comparison of nonmicro-processor knee mechanism versus C-Leg on Prosthesis Evaluation Questionnaire, stumbles, falls, walking tests, stair descent, and knee preference. *The Journal of Rehabilitation Research and Development*, 45(1), 1–14.

Kannenbergh, Andreas; Zacharias, Britta; Pröbsting, Eva (2014): Benefits of micro-processor-controlled prosthetic knees to limited community ambulators: Systematic review. In: *Journal of Rehabilitation Research & Development* 51 (10), S. 1469–1496. DOI: 10.1682/JRRD.2014.05.0118.

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