

C-Leg in limited community ambulators

Uneven ground, Obstacles

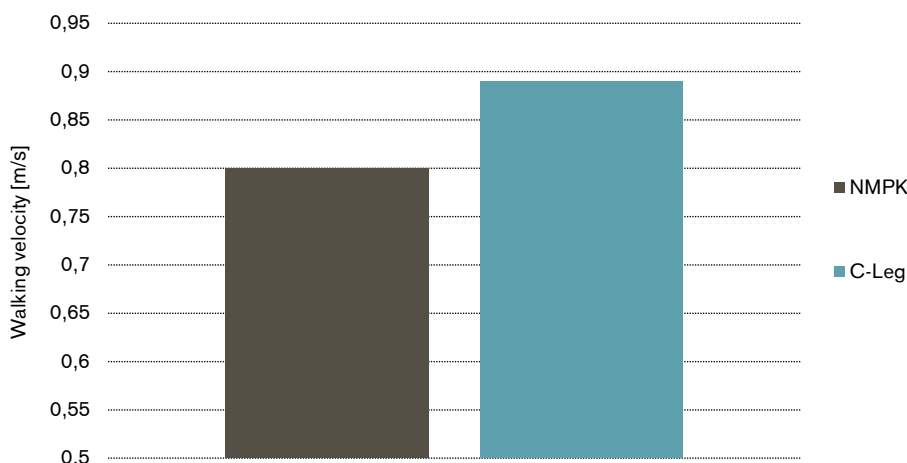
Major Findings

With C-Leg compared to NMPKs:

→ **Walking velocity on obstacle course improved by 11%**

→ **Walking velocity on uneven terrain improved by 20%**

Improved walking velocity during obstacle course with C-Leg in K2 subjects



Walking velocity was measured on an obstacle course over grass, wood chips, sand, a cement ramp, and cement stairs (Hafner et al. 2009).

Clinical Relevance

Walking on uneven ground is needed in daily living when walking over different surface types, such as carpeted, wooden or tiled flooring or different kinds of stairs, ramps or other obstacles and can pose a potential safety risk. In addition, it is also a prerequisite for community ambulators. It requires different gait biomechanics than walking on level ground. A preferred instrument to investigate the ability to walk on uneven ground is measuring the time needed to navigate through an obstacle course and therefore to determine walking velocity.

Summary

The fastest possible walking speed (FPWS) during 38 meters on uneven terrain increased with C-Leg in K2 subjects by 20% compared to NMPKs (Kahle et al. 2008, Kannenberg et al. 2014). These findings were confirmed by results of an obstacle course over grass, wood chips, sand, a cement ramp, and cement stairs. Walking velocity in K2 subjects increased by 11% with C-Leg compared to NMPKs (Hafner et al. 2009, 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 influence 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.

Kannenberg, 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.

© 2023, Otto Bock HealthCare Products GmbH ("Otto Bock"), All Rights Reserved. This article contains copyrighted material. Wherever possible we give full recognition to the authors. We believe this constitutes a 'fair use' of any such copyrighted material according to Title 17 U.S.C. Section 107 of US Copyright Law. If you wish to use copyrighted material from this site for purposes of your own that go beyond 'fair use', you must obtain permission from the copyright owner. All trademarks, copyrights, or other intellectual property used or referenced herein are the property of their respective owners. The information presented here is in summary form only and intended to provide broad knowledge of products offered. You should consult your physician before purchasing any product(s). Otto Bock disclaims any liability related from medical decisions made based on this article summary.