C-Leg in limited community ambulators

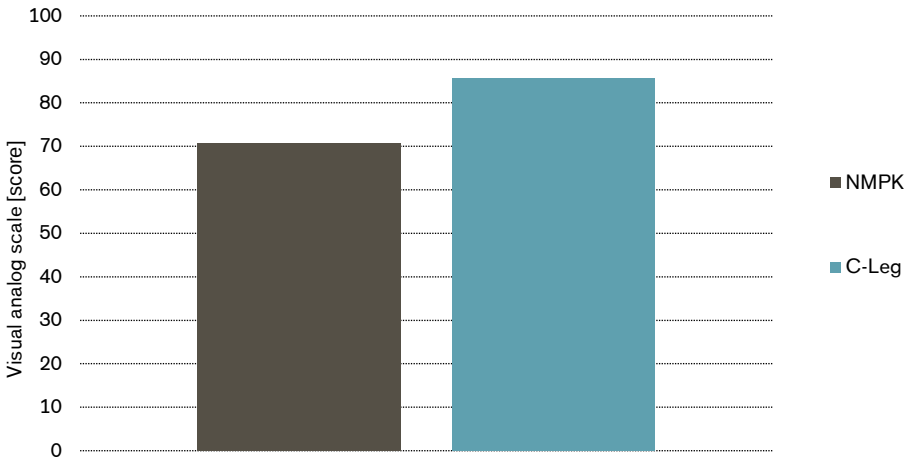
Cognitive demand

Major Findings

With C-Leg compared to NMPKs:

→ Perceived ability of multitasking while walking improved by 21%
→ Walking velocity during ambulation with an attentional demand increased by 12%

Improvements in multitasking while walking with C-Leg in K2 subjects



Multitasking while walking was an outcome of the prosthetic evaluation questionnaire (PEQ) addendum. Subjects rated the perceived difficulty of multitasking while walking with a Visual Analog Scale (VAS) with scores from 0 to 100, where 100 represents the maximum score. (Hafner et al. 2009)

Clinical Relevance

Cognitive demand in walking is investigated in studies to determine how much attention has to be paid on walking. This is important when another activity has to be performed at the same time as it is very common in daily living.

Summary

K2 subjects reported that multitasking while walking improved by 21% with C-Leg compared to NMPKs. Furthermore, due to transition from NMPKs to C-Leg, walking velocity during ambulation with an attentional demand increased by 12%. As an attentional demand, subjects were given a verbal reverse-numbers test as they walked two sides of a busy city block (Hafner et al. 2009, Kannenberg et al. 2014).

Hahn et Lang have also investigated an increased capability to divide attention while walking in 94% of C-Leg users (Hahn et Lang 2015).

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.

Hahn, Andreas; Lang, Michael (2015): Corrigendum - Effects of Mobility Grade, Age, and Etiology on Functional Benefit and Safety of Subjects Evaluated in More Than 1200 C-Leg Trial Fittings in Germany. In: *Journal of Prosthetics and Orthotics* 27 (3), S. 86–94. DOI: 10.1097/JPO.0000000000000064.

Kannenberg, Andreas; Zacharias, Britta; Pröbsting, Eva (2014): Benefits of microprocessor-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.