
Reference

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Activities of Daily Living: Genium Bionic Prosthetic Knee Compared with C-Leg

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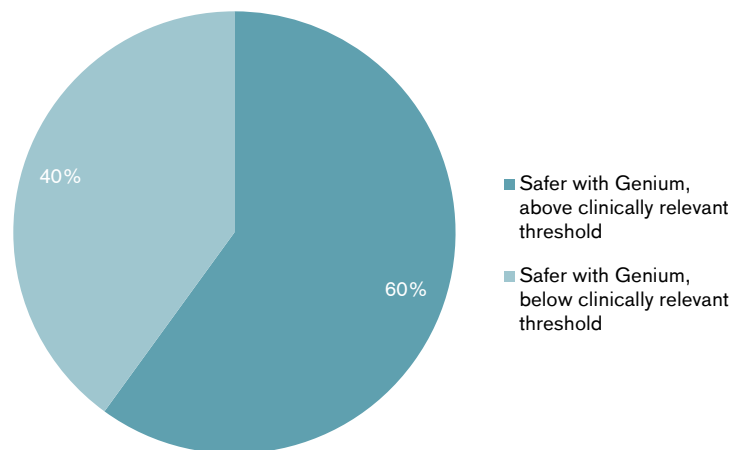
Products**Genium vs C-Leg**

Major Findings

With Genium compared to C-Leg:

- **60% of Activities of Daily Living (ADLs) show a clinically relevant gain in safety**
- **53% of ADLs show a clinically relevant decrease in difficulty.**
- **Ease of ascending and descending stairs is improved by 34% and 10%**
- **Ease of ascending and descending ramps is improved by 24% and 17%**
- **Ease of walking backwards is improved by 26%**

Clinically relevant improvement in safety of activities of daily living with Genium



Safety was assessed for 45 activities.

Population

Subjects:	10 unilateral, transfemoral amputees
Previous prosthesis:	C-Leg
Amputation causes:	trauma
Mean age:	36.7 yrs (± 10.2 yrs)
Mean time since amputation:	12.5 yrs (± 9.6 yrs)
MFCL:	40% K3, 60% K4

Study Design

Interventional, pre- to post-test design:



Results

Activities								Participation	Environment
Level walking	Stairs	Ramps, Hills	Uneven ground, Obstacles	Cognitive demand	Metabolic energy consumption	Safety	Activity, Mobility, ADLs	Preference, Satisfaction, QoL	Health economics

Category	Outcomes	Results for Genium compared to C-Leg	Sig.*
Level Walking	ADL Questionnaire, separate for each MPCK	Difficulty of walking backwards was decreased by 26%. Walking at varying speeds tends to be rated as less difficult.	++ +
Stairs	ADL Questionnaire, separate for each MPCK	Difficulty of ascending and descending stairs was decreased by 34% and 10%.	++
Ramps, Hills	ADL Questionnaire, separate for each MPCK	Difficulty of ascending and descending slopes was decreased by 24% and 17%.	++
Uneven Ground, Obstacle Course	ADL Questionnaire, separate for each MPCK	Walking on uneven and unfamiliar ground tends to be rated as less difficult.	+
Safety	ADL Questionnaire, comparative	60% of ADLs showed a clinically relevant gain in safety. 40% of ADLs showed a trend toward a clinically relevant gain in safety. In the category 'Family and Social Life' 83% of ADLs showed a clinically relevant gain in safety. In the category 'Mobility and Transportation' 63% of ADLs showed a clinically relevant gain in safety.	n.a.
Activity Mobility, Activities of daily living (ADLs)	ADL Questionnaire, comparative	53% of ADLs showed a clinically relevant decrease in perceived difficulty. 47% of ADLs showed a trend towards a clinically relevant decrease in perceived difficulty. In the category 'Family and Social Life' 75% of ADLs showed a clinically relevant decrease in perceived difficulty. In the category 'Mobility and Transportation' 58% of ADLs showed a clinically relevant decrease in perceived difficulty.	n.a.

* no difference (0), positive trend (+), negative trend (-), significant (++/--), not applicable (n.a.)

Author's Conclusion

"This study showed that the new technological functions of the Genium Bionic Prosthetic Knee for transfemoral amputees of MFCL 3 and 4 lead not only to clear biomechanical benefits compared with the C-Leg but also to a further improvement in the subjective perception of safety and perceived difficulty of many ADLs." (Kannenberg et al., 2013)

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