

Reference

Wolf, EJ, Everding VQ, Linberg AA, Czerniecki JM, Gambel CJM.

Walter Reed National Military Medical Center, Department of Orthopaedics and Rehabilitation, Bethesda, MD, USA.

Comparison of the Power Knee and C-Leg during step-up and sit-to-stand tasks

Gait Posture 2013; 38(3):397–402.

Products

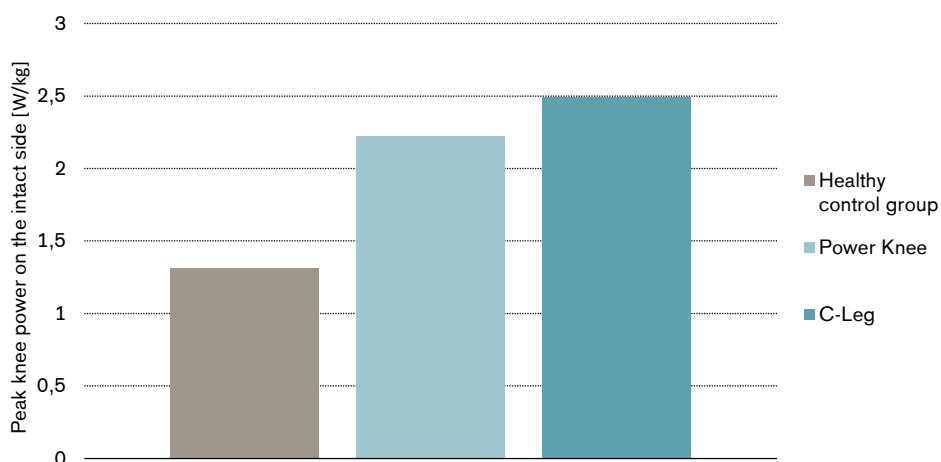
C-Leg vs Power Knee

Major Findings

With MPKs:

→ **Intact knee power generation is not reduced when amputees perform the sit-to-stand task. This results from amputees still preferring to load mainly the healthy side.**

Knee power generation when subjects perform Sit-to-stand task

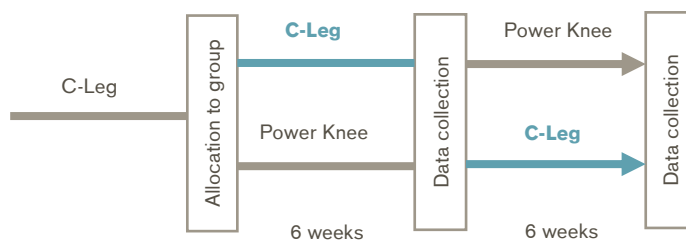


Population

Subjects: 10 unilateral, transfemoral amputees
Previous prosthesis: C-Leg
Amputation causes: not reported
Mean age: 28.4 yrs (\pm 6.6 yrs)
Mean time since amputation: 1.7 yrs (\pm 1.5 yrs)
MFCL: K3 (community ambulators)

Study Design

Interventional, single crossover 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 C-Leg compared to Power Knee	Sig.*
Activity, Mobility, Activities of daily living (ADLs)	Motion Analysis Step-Up Task	No differences	0
	Motion Analysis Sit-to-Stand (STS) Task	No difference in peak knee power development on the intact limb. Decreased peak knee power development on the amputated limb. Increased peak vertical ground reaction force of the intact limb.	0 -- --

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

Author's Conclusion

"Subjects using the PK (Power Knee) generated more knee power than with the C-Leg on their affected side during STS (sit-to-stand) in addition to exhibiting more symmetrical knee power. Peak vertical GRFs (ground reaction forces) were decreased for the intact limb for subjects using the Power Knee when compared to the C-Leg. These results support the second hypothesis that subjects would demonstrate improved limb loading with the PK (Power Knee) versus the C-Leg. The results for the STS task also showed clear differences between the intact and amputated limbs, suggesting that subjects continued to favor the intact limb. In spite of the power generating capacity of the PK (Power Knee) and significantly greater knee power symmetry compared to the C-Leg there was not a significant reduction in intact knee power generation. This indicates that users still heavily favor their intact limb in performing as STS task and may remain at risk for overuse injuries." (Wolf et al. 2013)

© 2014, 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.