

Reference

Chin T, Machida K, Sawamura S, Shiba R, Oyabu H, Nagakura Y, Takase I, Nakagawa A.

Hyogo Rehabilitation Center, Akebono-Cho, Nishi-Ku, Kobe, Japan.

Comparison of different microprocessor controlled knee joints on the energy consumption during walking in trans-femoral amputees: Intelligent Knee Prosthesis (IP) versus C-Leg

Prosthetics and Orthotics International 2006; 30(1):73–80.

Products

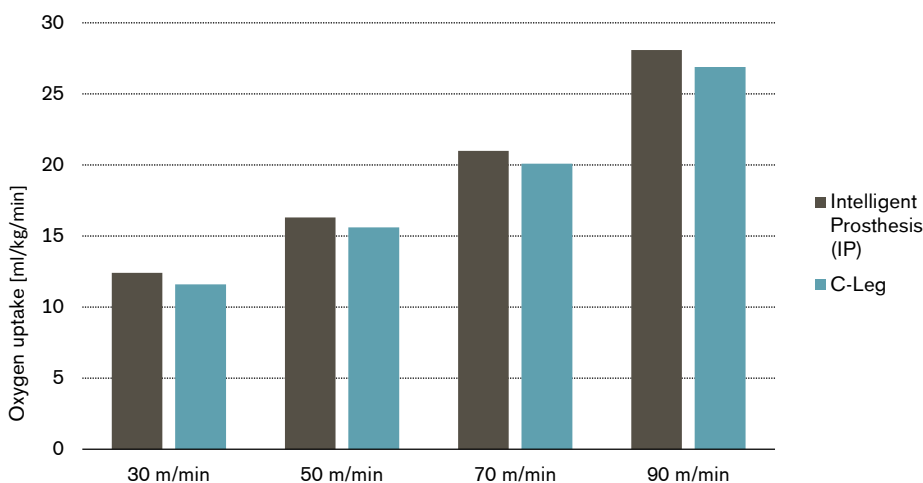
C-Leg vs Intelligent Prosthesis (IP)

Major Findings

With C-Leg compared to Intelligent Prosthesis (IP):

→ **Oxygen uptake tends to be reduced by up to 6.5% while walking at different speeds.**

Reduced oxygen uptake with C-Leg



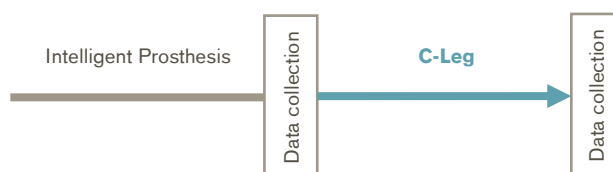
Oxygen uptake measured at different walking speeds (30, 50, 70 and 90 m/min).

Population

Subjects:	4 unilateral, transfemoral amputees
Previous prosthesis:	Intelligent Prosthesis (IP)
Amputation causes:	75% trauma, 25% tumour
Mean age:	24 yrs (\pm 7.6 yrs)
Mean time since amputation:	not reported
MFCL:	K3 (active in society)

Study Design

Interventional, pre- to post-test design:



After fitting with C-Leg, subjects was given acclimatisation time to get familiar with the new prosthesis.

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 IP	Sig.*
Metabolic energy consumption	Oxygen consumption	Trend towards decreased oxygen uptake when walking at different walking velocities: At 30 m/min: 6.5% decrease At 50 m/min: 4.3% decrease At 70 m/min: 4.3% decrease At 90 m/min: 4.3% decrease	+ + + +

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

Author's Conclusion

"The subjects in this study walked with comparable speed and efficiency whether they used the IP or C-Leg and there were no significant differences between the IP and C-Leg. The results may have been influenced by the research setting and training protocols provided. Further detailed studies of gait in amputees using the IP and C-Leg are necessary including comparisons to amputees using non-microprocessor controlled knee joints." (Chin et al. 2006)

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