Reference

Fiona Davie-Smith and Bruce Carse

WestMARC, NHS Greater Glasgow and Clyde, Glasgow, United Kingdom

Comparison of patient-reported and functional outcomes following transition from mechanical to microprocessor knee in the low-activity user with a unilateral transfemoral amputation

Prosthetics and Orthotics International: June 2021 - Volume 45 - Issue 3 - p 198-204; https://doi.org/10.1097/pxr.0000000000000017; PMID: 34016872;

Products

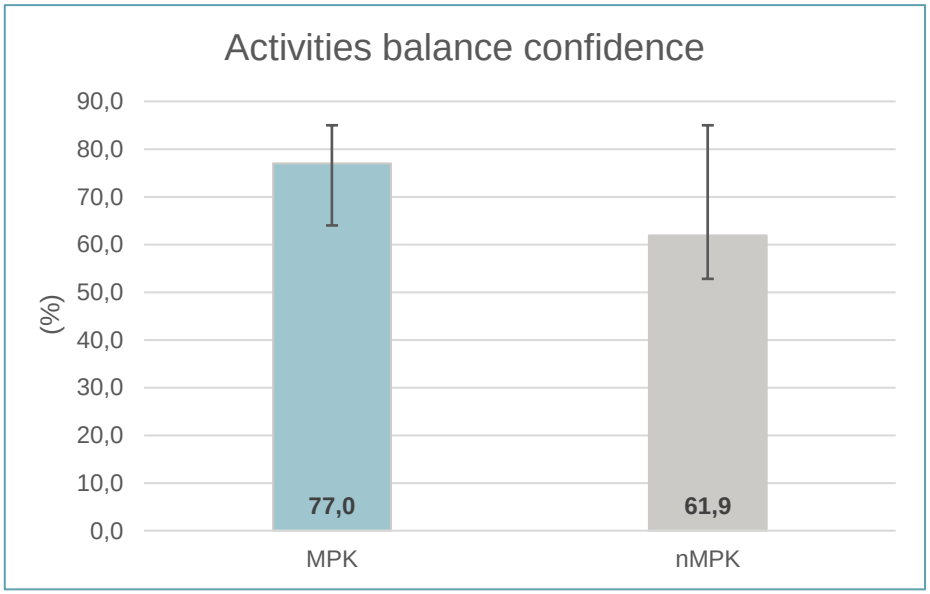
MPKs (Kenevo, C-Leg 4, C-Leg 3, Rheo, Orion, Linx)

Major Findings

MPK compared to nMPK:

→ Improvement in safety

- Significantly increased patients´ confidence (Activities balance confidence score) by 24.4% (p<0.001).
- Significant decrease in number of falls per year by 97.5% from an annual mean of 20 falls to an annual mean of 0.51 falls.



→ Improvement in mobility

- Amputee mobility predictor was significantly higher (11%, p<0.001) MPK compared to nMPK.
  This also corresponds to a potential patient individual increase within the range of the K-3 level
- Time for completing the L-Test was significantly reduced (p<0.001) by 25% from 34.9s to 26.1s
- Significant increase of walking distance by 14% from 99m (pre-MPK) to 113m (post-MPK) measured during the 2-minute walk test. (p<0.001)

Population

Subjects:	31 (32% female, 68% male), unilateral transfemoral amputees
Previous prosthesis:	nMPK
Amputation causes:	trauma, vascular disease
Mean age:	60 ± 11.0 years
Mean time since amputation:	14.9 ± SD 16.5 years
Mobility Grade:	Low mobility defined as <40 in AMP scale (equivalent to low K3/ high K2)

Study Design

retrospective cohort study
(analysing 5 years clinical routine prescriptions of MPKs)

[1] as prescribed in clinical routine

Functions and 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

Results

Category	Outcomes	Results nMPK	Results 6 months post MPK provision	Sig.*
Level Walking	Gait profile score (GPS)(°)	12.7	11.5	0
	2-minute walk test (m)	99	113	(++)
Metabolic Energy Consumption	Net nondimensional normalized (NNN) oxygen cost	0.46	0.52	0
Safety	Falls per annum	mean of 20	mean of 0.51	(––)
	Activities balance confidence (ABC) (%)	61.9	77.0	(++)°
Activity, Mobility, Activities of Daily Living (ADLs)	PLUS-M (t-score)	43.95	48.75	0°
	Amputee mobility predictor (AMP)	37	41	(++)°
	L-test (sec)	34.9	26.1	(––)°
Preference, Satisfaction, Quality of Life (QoL)	EQ-5D (HR-QoL)	0.66	0.74	0°
	Socket Comfort Score (SCS)	7.5	8	0°

* no difference (0), positive trend (+), negative trend (–), significant (++/––), not applicable (n.a.)
° based on the applied Bonferroni adjustment is the significance level in this study p=0.05/18 = 0.003

Author's Conclusion

"There was no statistically significant improvement in HR-QoL and GPS in this retrospective cohort study. Improvements in secondary patient-reported measures of falls frequency and ABC, combined with improvements in functional measures of AMP score, 2MWT and L-test, clearly support the continued provision of MPKs to the lower-activity user." (Davie-Smith F, Carse B., 2021)