Reference

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Mobility analysis of AmpuTees (MAAT 5): Impact of five common prosthetic ankle-foot categories for individuals with diabetic/dysvascular amputation

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Products

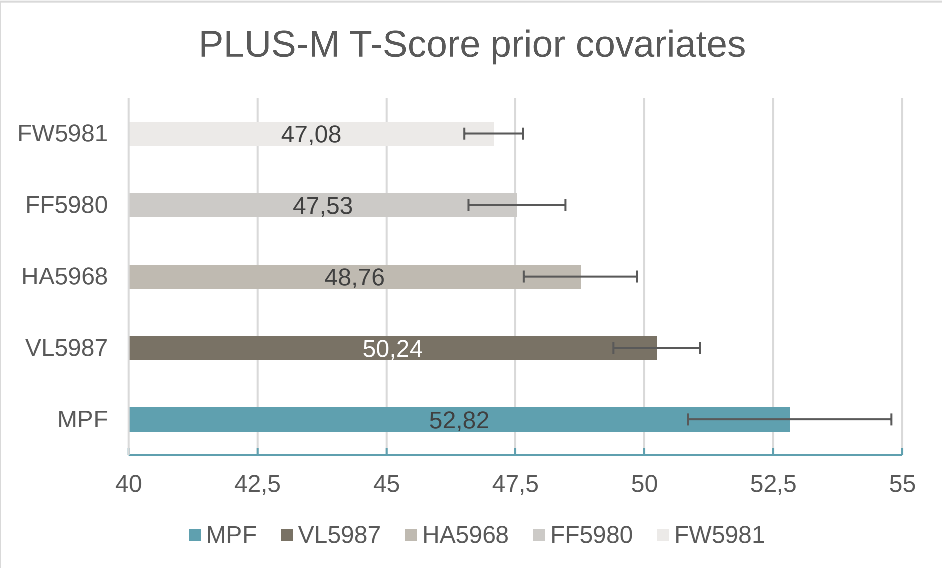
K3-level prosthetic ankles [MPF vs. non-MPF]

Major Findings

With MPF (=microprocessor controlled feet12) compared to non-MPF (divided in 4 categories):

The non-MPF were divided in the following categories: VL5987 (=shank-foot system with vertical loading pylon), FW5981 (=flex-walk system), FF5980 (=flex-foot system) and HA5968 (=ankle-foot mechanism with hydraulic ankle)

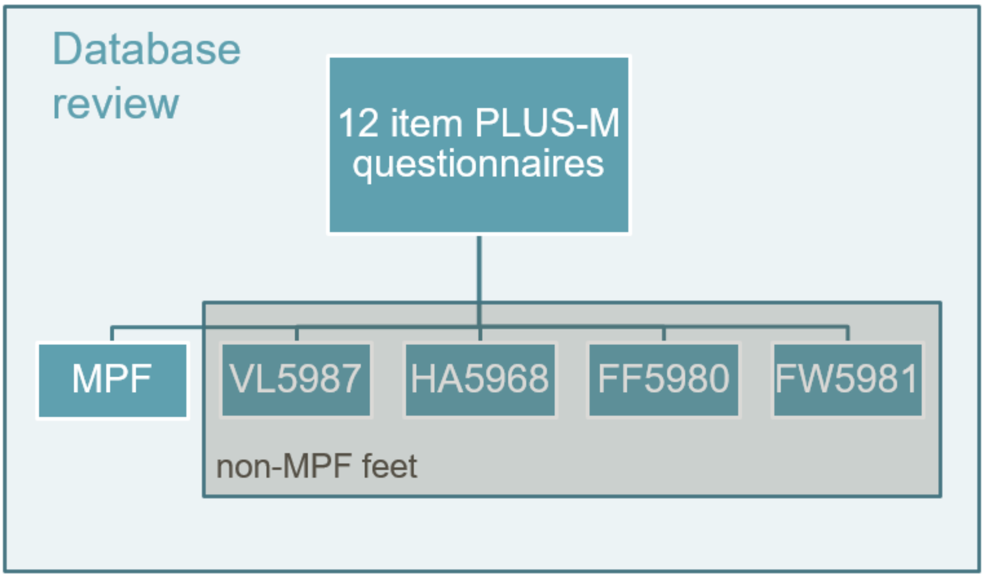
→ **Individuals with MPF had the greatest mobility compared to individuals with non-MPF (regardless of the consideration of covariates)**



Population

Subjects:	738 (588 males, 150 females)
Previous prosthetic ankle:	n.a.
Amputation causes:	diabetes/dysvascular disease
Mean age:	58.75 years; STD: n.a.
Mean time since amputation:	94.55 years; STD: n.a.
MFCL:	K3

Study Design — Retrospective cohort review of a multi-centre outcomes database



A database review searching for 12-item PLUS-M questionnaires (=survey of mobility), which were filled out by subjects with amputations due to diabetes/dysvascular disease during routine standards of care in multiple clinics in the USA, was performed. For each subject only the greatest value of mobility was considered. The database review was done in accordance with the STROBE (=Strengthening the Reporting of Observational Studies in Epidemiology).

The data regarding mobility, gathered via a 12-item PLUS-M questionnaire was analyzed with and without consideration of confounding covariates like age, body morphology, comorbid health, prosthetic experience and mechanical lever arm.

Results

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

Category	Outcomes	Results	Sig.*
Activity, Mobility, Activities of Daily Living (ADLs)	PLUS-M T-Score for mobility **MPF>**	**52.82±1.97**	
	• VL5987	50.24±0.84	+
	• HA5968	48.76±1.10	+
	• FF5980	47.53±0.94	++
	• FW5981	47.08±0.57	++
	PLUS-M T-Score for mobility with consideration of confounding factors **MPF>**	**52.06±1.95**	
	• VL5987	50.20±0.83	+
	• HA5968	49.08±1.10	+
	• FF5980	47.13±0.93	++
	• FW5981	47.14±0.56	++

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

Author's Conclusion

"The most common cause of lower limb amputation is diabetes with or without vascular disease.[1] The prosthetic ankle-foot mechanism represents a significant advancement in engineering and arguably the most crucial assistive technology for patients undergoing prosthetic rehabilitation. This study investigated the impact of five of the most common categories of prosthetic ankle-foot mechanisms on patients' functional mobility. The results found that the MPF yielded the greatest level of mobility, and this was after controlling for numerous factors that may confound the results such as age, BMI, comorbid health status, time since amputation, and even amputation level.The second highest mobility was found with the shank-foot system with vertical loading pylon. Importantly, the shank-foot system with vertical loading pylon resulted in highest mobility of any non-MPF ankle-foot mechanism (i.e. not requiring electric energy source to operate). When considering these results for purposes of prosthetic rehabilitation, it is important to note that there may be factors that were not captured within the analysis such as patient preference and willingness to charge a device, or physical space requirements for a taller ankle-foot mechanism, that should be accounted for in the clinical decision process." (Wurdeman, 2019)