

BEYOND THE DEVICE: IMPROVING CONFIDENCE, MOBILITY AND QUALITY OF LIFE WITH A MICROPROCESSOR-CONTROLLED KAFO

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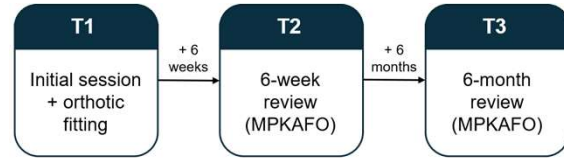
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Introduction

Microprocessor-controlled knee-ankle-foot orthoses (MPKAFO) have been shown to improve stability, balance, and quality of life compared with conventional orthoses [1,2]. However, evidence remains limited to a few commercially available devices.

AIM: This study explored the impact of the Tectus® MPKAFO on patient-reported outcomes.

Methods



Measures at all timepoints:

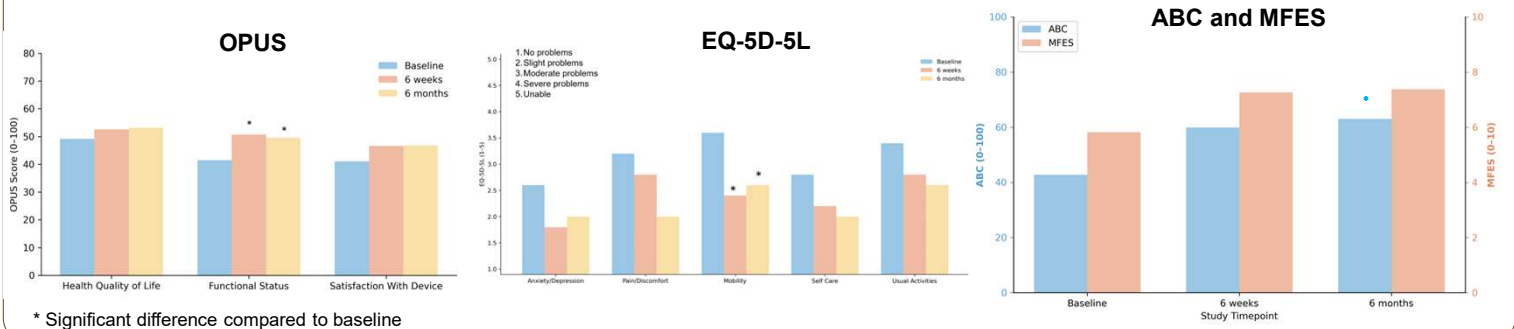
- OPUS
- EQ-5D-5L
- ABC
- MFES
- Berg Balance Scale
- 10 metre Walk Test
- 6 min Walk Test with Metabolic Mask
- TUG



- 5 participants (2 ♀; 3 ♂)
- Age: 55±11 years
- Mass: 93±10 kg
- Height: 172±15 cm



Questionnaires



10 m Walk Test

- Every wearer walked faster at six months than in their previous orthosis.
- Group mean 0.82 → 1.43 m/s.

Participant ID	10MWT Speed in m/s		
	Baseline	6 Week	6 Month
01	1.07	1.71	1.80
02	0.80	1.26	1.86
03	0.60	0.63	0.67
04	0.59	1.17	1.50
05	1.06	1.15	1.33

Berg Balance Scale

- Improved in all 5 participants; group mean 40.0 → 43.8 (6 week) → 49.8 (6 months).
- Using the common BBS <45 fall-risk cut-off: 5/5 below at baseline → 0/5 below at six months.

Participant ID	Berg Balance Scores (Max = 56)		
	Baseline	6 Week	6 Month
01	44	54	54
02	42	44	55
03	28	30	47
04	44	48	48
05	42	43	45

Discussion

- ❖ Improved lower-limb function within 6 weeks
- ❖ Increased balance confidence over 6 months
- ❖ Better mobility-related quality of life
- ❖ Improved satisfaction with orthotic intervention
- ❖ Benefits extend beyond walking performance to everyday participation and independence

Conclusion

Tectus® is associated with early improvements in patient-reported outcomes which are largely sustained over 6 months, supporting short-term effectiveness and longer-term retention of functional and psychosocial gains.

References

- [1] Ruetz, A. et al. (2024). Disability and Rehabilitation, 46(17): 4019–4032.
- [2] Schmalz, T. (2016). Prosthetics and Orthotics International, 40(2): 277–286.