
Reference

Pröbsting E, Kannenberg A, Zacharias B.

Otto Bock HealthCare, Department of Clinical Research and Services, Duderstadt, Germany.

Safety and walking ability of KAFO users with the C-Brace® Orthotronic Mobility System, a new microprocessor stance and swing control orthosis

Prosthetics and Orthotics International 2016. Epub ahead of print.

Products

C-Brace vs. KAFO (locked or SCO)

Major Claims

With C-Brace compared to KAFO (locked or SCO):

→ Improvement in perceived orthotic function and Quality of life

Compared to all previous orthoses combined, the results of the OEQ demonstrated significant improvements by C-Brace use in the total score.

→ ADLs become easier

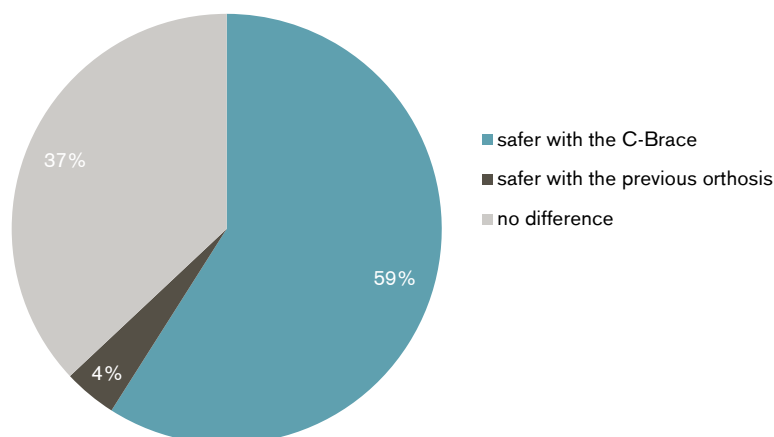
With C-Brace the patients rated the activities in the domains of family and social life (+24%), mobility and transportation (+41%), sports (+35%) and other activities (+24%) significantly easier than with other KAFOs

Of the responses for perceived comparative difficulty, 54% showed a greater ease of ADL execution with C-Brace.

→ ADLs become safer

Of the responses for perceived comparative safety, 59% demonstrated a safer execution of ADLs with the C-Brace.

Distribution of the answers for the comparison of perceived safety of the 45 activities of the Orthotic ADLs Questionnaire between the C-Brace and the previous orthoses

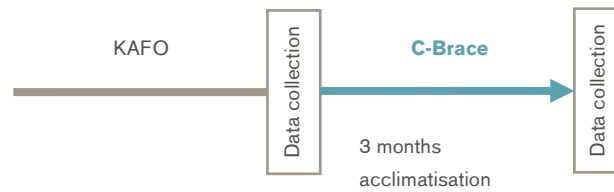


Population

Subjects:	13 subjects (12 unilateral, 1 bilateral)
Previous orthosis:	SCO (8), locked KAFO (5)
Underlying condition:	Poliomyelitis (8), incomplete spinal cord injury (3), peripheral lesion of the femoral nerve (1), stroke (1)
Mean age:	57.4 ± 14.4 years

Study Design

Interventional, pre- to post-test design:



Results

Functions and Activities						Participation
Biomechanics – Static measures	Biomechanics – Gait analysis	X-Ray	EMG	Functional tests	Clinical effects	Satisfaction

Category	Outcomes	Results for C-Brace compared to KAFO	Sig.*
Satisfaction OEQ (scale 0 to 100)	Ambulation	all KAFOs: Improved by 38%	++
		SCO: Improved by 32%	++
		Locked: Improved from 45%	++
Appearance		all KAFOs: Improved by 3%	+
		SCO: Declined by -8%	-
		Locked: Improved by 27%	+
Frustration		all KAFOs: Improved by 11%	+
		SCO: Declined by -4%	-
		Locked: Improved by 42%	+
Perceived Response		all KAFOs: Declined by -5%	-
		SCO: Declined by -4%	-
		Locked: Declined by -8%	-
Paretic Limb Health		all KAFOs: Improved by 21%	++
		SCO: Improved by 17%	++
		Locked: Improved by 29%	+
Social Burden		all KAFOs: Improved by 6%	+
		SCO: Improved by 1%	+
		Locked: Improved by 13%	+
Sounds		all KAFOs: Improved by 52%	++
		SCO: Improved by 53%	+
		Locked: Improved from 44%	+
Utility		all KAFOs: Improved by 8%	+
		SCO: Improved by 3%	+
		Locked: Improved by 16%	+
Well-Being		all KAFOs: Improved from 73 to 88	++
		SCO: Improved by 21%	+
		Locked: Improved by 29%	+

Category	Outcomes	Results for C-Brace compared to KAFO	Sig.*
Satisfaction Orthotic ADLs Questionnaire (scale from 1 [very difficult] to 6 [very easy])	Personal Hygiene and Dressing	all KAFOs: Improved by 7%	+
		SCO: Improved by 2%	+
		Locked: Improved by 8%	+
	Family and Social Life	all KAFOs: Improved by 24%	++
		SCO: Improved by 17%	+
		Locked: Improved by 42%	++
	Mobility and Transportation	all KAFOs: Improved by 41%	++
		SCO: Improved by 26%	++
		Locked: Improved by 67%	++
	Sports and Leisure Activities	all KAFOs: Improved by 35%	++
		SCO: Improved by 24%	+
		Locked: Improved by 57%	+
Other Activities	all KAFOs: Improved by 24%	++	
	SCO: Improved by 8%	+	
	Locked: Improved by 63%	++	

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

Author's Conclusion

"The MP-SSCO* may facilitate an easier, more physiological, and safer execution of many ADLs compared to traditional leg orthosis technologies. As the MP-SSCO allows for knee flexion during weight bearing, it enables leg orthosis users to perform many important ADLs such as descending ramps and stairs in a nearly physiologic and naturally reciprocal manner. Moreover, its control of knee flexion and extension during swing supports walking with a wide variety of gait speeds. The results of this study suggest that users of LKAFOs and SCOs may benefit from MP-SSCO use in terms of perceived safer and easier execution of many ADLs." (Pröbsting et al. 2016)

* C-Brace

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