

Reference

van der Niet O, Reinders-Messelink H, Bongers R, Bouwsma H, van der Sluis C
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The i-LIMB hand and the DMC plus hand compared: A case report

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Products

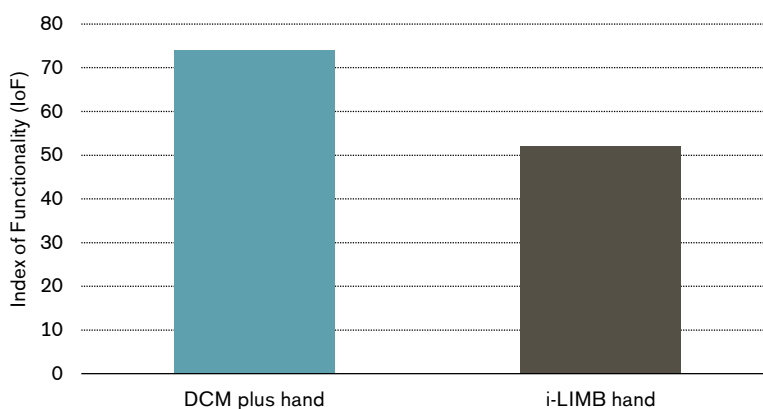
DMC plus hand vs iLIMB

Major Findings

With DMC plus hand compared to i-LIMB (Touch Bionics):

- **Grip strength is higher for DMC plus hand than for i-LIMB hand in all 5 positions measured.**
- **Index of Functionality (SHAP score) was 30% higher for DMC hand.**
- **The DCM plus hand offers more power and robustness, when compared to i-LIMB.**

Index of Functionality (IoF) for DCM plus hand and i-LIMB



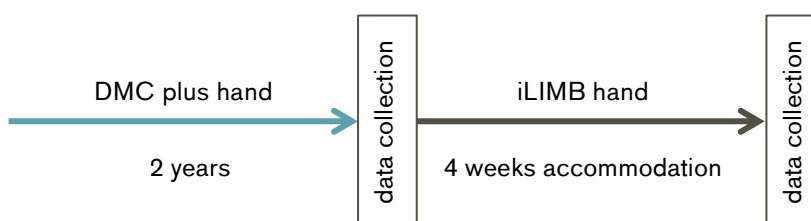
Index of Functionality (IoF) was calculated after Southampton Hand Assessment Procedure (SHAP) test was performed with DCM plus and i-LIMB hand. IoF is a number that provides an overall assessment of hand function.

Population

Subjects: 1 unilateral wrist disarticulation of dominant left side
Previous: Dynamic Mode Control hand (DMC plus hand)
Amputation causes: trauma
Mean age: 45 years
Mean time since amputation: 4 years

Study Design

Case report:



Patient was fitted with DMC plus hand and a passive wrist rotator for two years. Afterwards patient received an i-LIMB hand with a rigid wrist and had 4 weeks of accommodation period. A series of tests were performed with both prosthetic hands.

Results

Body Function		Activity			Participation	Others	
Mechanics	Pain	Grip patterns / force	Manual dexterity	Activities of daily living (ADL)	Satisfaction and Quality of life (QoL)	Training	Technical aspect

Category	Outcomes	Results for DMC plus hand vs iLIMB	Sig.*
Grip patterns /force	Grip and pinch strength (dynamometer and a pinch meter)	Grip strength is higher for DMC plus hand than for i-LIMB hand in all 5 positions measured.	+
		Lateral and tip pinch strength were not applicable for DMC plus hand.	-
		Strength of tripod pinch was higher with DMC plus hand than with i-LIMB hand.	+
	Southampton Hand Assessment Procedure (SHAP)	SHAP score with the DMC plus hand was higher than the score with the i-LIMB.	+
	Visual analogue scale (VAS)	DMC plus hand was less reliable in holding objects.	-
DMC plus hand was valued for its strength.		+	
DMC hand was valued for its robustness.		+	
Activities of daily living	Assessment of Capacity for Myoelectric Control (ACMS)	The Capacity of Myoelectric Control is well above average for both devices: 2.6 logits for the i-LIMB hand and 2.47 logits for the DMC plus hand.	0
Satisfaction	Trinity Amputation and Prosthesis Experience Scales (TAPES)	The patient was less satisfied with DMC plus hand.	-
	Orthotics and Prosthetics Users' Survey (OPUS)	The OPUS functional status was similar for both prosthesis (29 for the i-LIMB hand and 30 for the DMC plus hand, respectively).	0

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

Author's Conclusion

"In this case report we could not establish a clear functional advantage of the i-LIMB compared to the DMC-hand. The i-LIMB hand has a higher reliability when holding objects but has less strength and robustness. Thus, dependent on the users' needs, patients should opt for an i-LIMB hand or a more conventional DMC plus hand. Moreover, future innovations of prosthetic hands should take the limitations of the i-LIMB hand into account." (van der Niet et al. 2010)

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