

## Reference

Pröbsting E, Kannenberg A, Conyers DW, Cutti AG, Miguelez JM, Ryan TA, Shonhowd TP  
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# Ease of Activities of Daily Living with Conventional and Multigrip Myoelectric Hands

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## Products

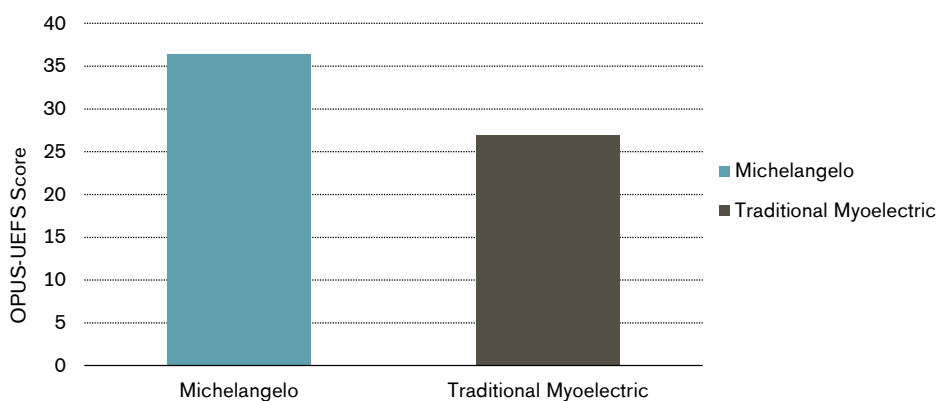
### Michelangelo Hand vs previous myoelectric prostheses

## Major Findings

With Michelangelo Hand compared to previous myoelectric prostheses:

- **Perceived ease of use to perform ADLs increased by 35%**
- **Bimanual activities were easier to perform by 31%**
- **Participants used the prosthesis to actively grasp an object in more bimanual activities**

### Perceived Ease of Performing Activities of Daily Living



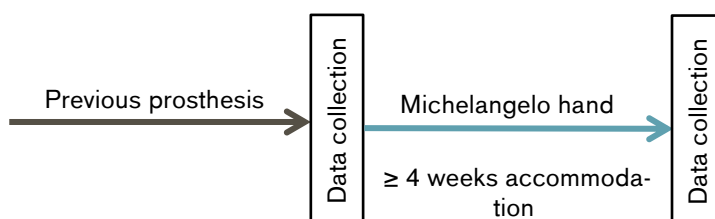
Perceived ease to perform 23 activities of daily living was measured with OPUS-UEFS questionnaire. Total OPUS-UEFS score was 35% higher with Michelangelo prostheses, meaning that tasks were easier to conduct with Michelangelo hand.

## Population

Subjects: 16 subjects  
Previous: 10 Sensor hand speed; 3 Myohand VariPlus Speed; 1 Motion Control Hand, 1 DMC plus Myohand, Elektrogreifer  
Amputation causes: 8 traumas, 6 congenital deformities, 1 cancer and 1 sepsis  
Mean age: 41 ± 14 years  
Mean time since amputation: 12.8 ± 16.1 years

## Study Design

Interventional, pre- to post-test design:



## 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 Michelangelo Hand vs previous myoelectric prostheses	Sig.*
Activities of daily living	Orthotics & Prosthetics User Survey – Upper Extremity Functional Status (OPUS-UEFS questionnaire)	<b>Perceived ease to perform tasks of daily living was increased: Total OPUS-UEFS score was 35% higher with Michelangelo prostheses.</b>	++
		<b>5 activities of daily living (ADLs) were easier to perform with Michelangelo (wash face, put on socks, tie shoe laces, cut meat with knife and fork, carry laundry basket).</b>	++
		<b>Bimanual activities were easier to perform by 31%.</b>	++
		<b>Patients used Michelangelo in more activities than the conventional prosthetic hands.</b>	++
	The Prosthetic Upper Extremity Functional Index (PUFI)	<b>Patients perceive to perform activities of daily life 18% easier.</b>	++
		<b>Participants used prosthesis to actively grasp an object in more bimanual activities.</b>	++

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

## Author's Conclusion

“These results suggest that the Michelangelo hand offering more grip types and functional hand positions as well as a flexible wrist may be used more actively and for more ADLs. These effects seem to be promoted by a reduced perceived difficulty to perform many ADLs as Michelangelo shortens the functional gap between prosthetic and sound human hands.”

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