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

<table>
<thead>
<tr>
<th>Body Function</th>
<th>Activity</th>
<th>Participation</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanics</td>
<td>Pain</td>
<td>Grip patterns / force</td>
<td>Manual dexterity</td>
</tr>
</tbody>
</table>

**Category**

Activities of daily living

**Outcomes**

Orthotics & Prosthetics User Survey – Upper Extremity Functional Status (OPUS-UEFS questionnaire)

**Results**

Perceived ease to perform tasks of daily living was increased: Total OPUS-UEFS score was 35% higher with Michelangelo prostheses.

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).

Bimanual activities were easier to perform by 31%.

Patients used Michelangelo in more activities than the conventional prosthetic hands.

The Prosthetic Upper Extremity Functional Index (PUFI)

Patients perceive to perform activities of daily life 18% easier.

Participants used prosthesis to actively grasp an object in more bimanual activities.

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* 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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