

The users expressed specific satisfaction about the ability of the MyHand to adopt to and grip complex objects. All users were very positive to the extra safety, accomplished with the emergency release button on the Hy5. The emergency release button releases all hydraulic pressure on the fingers, which will then open by themselves or may easily be forced open. The emergency button may prevent the hand from breaking when the locked around an object, or the battery is empty, and the hand is forced open by breaking it. None of the users have seen this feature on any other hand prosthesis today. The users were attracted by the simplicity and sturdiness of MyHand promising a reliable product.

DISCUSSION

Analysis of the SHAP testing shows that the grip patterns of the MyHand prosthesis allow recovery of up to 30% of total gripping functionality required for activities of daily life (ADL's) compared to standard grippers. This is an important part of the MyHand value proposition.



Figure 7: MyHand Power Grip and Fist Grip

REFERENCES

- [1] Dr. Grant McGimpsey, Terry C. Bradford: Limb Prosthetics Services and Devices; Critical Unmet Need: Market Analysis.
- [2] Nellie Njambi Mugo: The effects of amputation on body image and well-being. A systematic literature review.
- [3] Joshua Z. Zheng, Sara De La Rosa, Aason M. Dollar: An Investigation of Grasp Type and Frequency in Daily Household and Machine Shop Tasks.
- [4] Qiang Zhan, Chao Zhang,a and Qinhan Xu: Measurement and Description of Human Hand Movement.
- [5] Elaine Biddiss, Dorcas Beaton and Tom Chau: Consumer design priorities for upper limb prosthetics. *Disabil. Rehabil. Assist. Technol.* 2 pp346-357 doi:10.1080/17483100701714733.
- [6] Joseph T. Belter, Jacob L. Segil, Aaron M. Dollar, Richard F. Weir: Mechanical design and performance specifications of anthropomorphic prosthetic hands: A review.
- [7] Dudley S. Childress: Historical Aspects of Powered Limb Prostheses.
- [8] [Josephus M. M. Poirters: A hand-prosthetic.](https://patents.google.com/patent/WO2011072750A1/en) Available at <https://patents.google.com/patent/WO2011072750A1/en>
- [9] [Josephus M. M. Poirters: Palm Unit for Artificial Hand.](https://patents.google.com/patent/US20180133028A1/en) Available at <https://patents.google.com/patent/US20180133028A1/en>
- [10] [Josephus M. M. Poirters: Hydraulic Pump Assembly for Artificial Hand.](https://patents.google.com/patent/US20180133032A1/en) Available at <https://patents.google.com/patent/US20180133032A1/en>
- [11] [Josephus M. M. Poirters: Control of Digits for Artificial Hand.](https://patents.google.com/patent/US20180140441A1/en) Available at <https://patents.google.com/patent/US20180140441A1/en>
- [12] Southampton Hand Assessment Procedure (SHAP). Available at <http://www.shap.ecs.soton.ac.uk/>;
- [13] Ole Lerstøl-Olsen: Hy5 DOC-11030-03-Usability_Results_and_Raw_Data. Company confidential
- [14] Ole Lerstøl-Olsen: Hy5 DOC-11031-03-Usability_Engineering_Report. Company confidential

Further analysis showed that user functionality achieved with the MyHand prosthesis is comparable to that of most advanced bionic-like prosthesis users. Functionality in the advanced bionic-like hand requires significant training, cognitive attention and risk of faulty functionality. Access to MyHand gripping patterns is intuitive with less training and cognitive attention.

One benefit of the MyHand is the simplicity and sturdiness of the hand which supports a reliable product resulting in low life-cycle costs. For users this translates into less time lost to breakage or servicing, minimizing time spent without the use of the hand. Being rugged, the MyHand hand can be employed in activities and environments where other hands will break, improving quality of life by enabling new lifestyles. Whether the user pays for the device personally, or with the use of insurance, low life-cycle cost simply means fewer budget restraints and the ability to service more people.

The MyHand prosthetic hand has received regulatory approval in Europe, US, Australia and Canada.

CONCLUSIONS

Hy5 has designed a prosthesis to fill the gap between standard myoelectric grippers, and premium, bionic-like hand prostheses. This technology offers cost-effective advanced motion control and flexibility with critical functionality. Hy5 will break critical barriers for user comfort, directly addressing the existing needs for lighter and faster hand prostheses. Providing the general public with a wider variety of options allows individuals the best fit to their lifestyle, and an improving quality of life.