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Designing a new training method for advanced hand prostheses

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Introduction: New prosthetic hands with advanced technology making it possible to perform many different grasps and positions are now available on the market. This new advanced technology is also difficult for users to control, and studies have shown that the new hand functions are not used to the extent expected (1).

The Örebro Centre for Limb Deficiency and Arm Prostheses has a long experience of prosthetic fitting for both children and adults. About 80% of the adults report daily prosthesis use (2). Today, many prosthesis users find the advanced prosthetic hands interesting and wish to have one. However, when introducing a new prosthetic hand with questionable merits, the reasons for these results need to be considered. In light of our experience from fittings in Örebro, we decided that the training programs for the new hand models were not comprehensive enough, and there was a need for the development of a new method for training.

Aim: To design a training method for advanced hand prosthetic hands.

Methods: We performed a review of existing training programs for advanced myoelectric prosthetic hands and combined this with a structured training program, and a treatment philosophy with early fitting and regular follow up used in Örebro.

Results: The training method comprises control training and performance of ADL’s. It follows a structured program based on the 14 steps described in the Skills Index Ranking Scale. The control training focuses on control of all different grasps available with the body in different positions: sitting, standing; with and without support of the arm. The ADL’s are chosen individually through a Canadian Occupational Performance Measure interview. The capacity to use different grasps and integrating the new prosthesis when performing ADL’s is evaluated through the Assessment of Capacity for Myoelectric Control. The method is based on regular support and feedback from an occupational therapist, with follow-ups weekly the first month and then monthly the following 3-6 months. The method has been used on patients with good results.

Conclusion: A new method is designed to fit the new multifunctional prosthetic hands. The method can be applied upon prescription of advanced multifunctional prosthetic hands to enhance the functional use of the hands.