Reference

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Changes in performance over time while learning to use a myoelectric prosthesis

Journal of NeuroEngineering and Rehabilitation 2014, 11:16.

Products

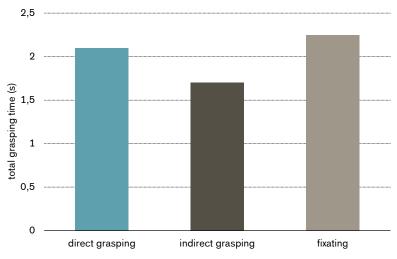
Myoelectric simulator - MyoHand VariPlus Speed

Major Findings

For different types of practice:

- → A training program should spend more time on learning fine control aspects such as grip force control
- → Training should start with the indirect grasping tasks (handing over an object from the unaffected hand to the prosthetic hand)
- → Patients should train in a blocked repeated fashion

Time needed to grasp a low resistance objects



Participant needed the shortest amount of time to hand over an object from the unaffected hand to the prosthetic hand (indirect grasping) than to directly grasp an object or to fix it (e.g. unbutton and buttoning).

Population

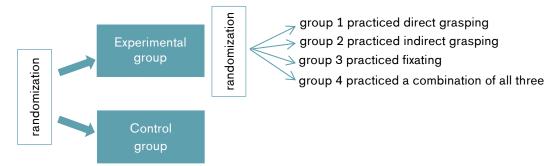
Subjects: 62 healthy, able-bodied participants

Previous: none Amputation causes: none Mean age: 21 ± 2 years

Mean time since amputation: none

Study Design

A randomized study:



Participants in the experimental condition, randomly assigned to one of four groups, practiced with a myoelectric simulator for five sessions in a two-week period. Group 1 practiced direct grasping, Group 2 practiced indirect grasping, Group 3 practiced fixating, and Group 4 practiced a combination of all three tasks. The Southampton Hand Assessment Procedure (SHAP) was assessed in a pretest, posttest, and two retention tests. Participants in the control condition performed SHAP two times, two weeks apart with no practice in between.

Results

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

Category	Outcomes	Results for different types of practice		
Training	Southampton Hand Assessment Procedure (SHAP)	The experimental groups improved more on SHAP than the control group.		
	Compression during grasping	The indirect grasping group had the smallest object compression.	++	
	Grasping time	The indirect grasping group had the smallest grasping time.	++	

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

Author's Conclusion

"Learning processes were examined in participants that learned to use a prosthetic simulator in different goal directed tasks. Results showed that g g force control took longer to learn than positioning of the ect grasping randomiza was beneficial for controlling the grip force ks improved experimental grasping control to the same nan trair e number of group grasping trials in practice were Improve ed even after randomization a period of non-use. Suggesti or clinical practice are to for ecifically on grip force control of the hand, t to train with an indirect grasping task, and to train in a blocked-repeated fasl (Bouwsema et al. 2014)

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