Intermanual transfer using a mental imagery program in prosthetic training

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Using mental imagery, the intermanual transfer training for prosthetic users can be improved.

Ethische beoordeling	Niet van toepassing
Status	Werving nog niet gestart
Type aandoening	-
Onderzoekstype	Interventie onderzoek

Samenvatting

ID

NL-OMON28197

Bron
NTR

Aandoening

Upper limb amputation
Arm amputatie

Ondersteuning

Primaire sponsor: University Medical Center Groningen (UMCG)
Overige ondersteuning: Revalidatiefonds, Fonds Nuts-Ohra, Stichting Beatrixoord, Stichting OIM

Onderzoeksproduct en/of interventie

Uitkomstmaten

Primaire uitkomstmaten

1. Grip force control: Mean deviation of the asked force in N;
2. Movement time: Time taken to execute the movement in s.

Toelichting onderzoek

Achtergrond van het onderzoek

Rationale: To improve the rate of use of prosthetic devices in adults with an upper limb amputation intermanual transfer might be helpful. Intermanual transfer is the ability to transfer motor skills from one, trained side to the other side (Hicks, 1983). This can be used in upper limb amputees by training the unaffected arm while waiting for the prosthesis to be fitted. Especially because it is assumed that starting to train early after the amputation will lead to better acceptance and improved prosthetic handling (Malone, Fleming et al. 1984). By using intermanual transfer, the prosthetic skills of the affected arm will improve. Intermanual transfer effects were demonstrated to be present in myoelectric (Romkema, Bongers et al. 2013) and body-powered prosthesis use (Weeks, Wallace et al. 2003). To further optimize the effects we compared the effect of training of different test tasks and the spacing over time in recent studies. The (preliminary) findings of these studies show that the intermanual transfer effects are small. We would like to add a mental imagery program to increase the effects of the intermanual transfer.
Objective: 1)To compare the effects of intermanual transfer with and without mental imagery. 2) To find out the effects of intermanual transfer with intermanual transfer in patients.
Study design: 1) experiment 1 is a non-blinded randomized trial, 2) experiment 2 is a case series
Study population: 1) 48 non-amputated adults, 2) two amputees who will start to use the myo-electric prosthesis for the first time.
Intervention (if applicable): 1) Two of three groups of 16 participants train to use a prosthesis simulator, one only using intermanual transfer and one using both intermanual transfer and mental imagery. A third group gets a sham training, without using the prosthesis simulator. In experiment 2, two patients with an amputation train (6 times 30 min) with the prosthetic simulator on the unaffected arm. The prosthesis simulator mimics the functioning of a real prosthesis but can be worn by able-bodied participants and at the sound arm of a patient with an upper limb amputation. The prosthesis simulator places a prosthetic hand in front of the sound hand.
Main study parameters/endpoints:
- Grip force control: mean deviation of the asked force in N.
- Movement time: time taken to execute the movement in s.
Nature and extent of the burden and risks associated with participation, benefit and group relatedness:
The participants will use the prosthesis simulator to execute activities. This simulator mimics a real prosthetic device and can be worn over a sound arm. With the use of this simulator we are able to test more participants than only a few patients with an amputation who will start using a myoelectric prosthesis for the first time. Importantly, all the measurements are non-invasive and the use of a prosthesis simulator is not different from wearing a regular prosthesis. Therefore, the risks associated with participation can be considered negligible and the burden can be considered minimal.

Doel van het onderzoek

Using mental imagery, the intermanual transfer training for prosthetic users can be improved.

Onderzoeksopzet

The first experiment will take place in April, May, June. The patients will be measured inbetween June and December.

Onderzoeksproduct en/of interventie

In experiment 1 , three groups of 12 participants train to use an prosthetic simulator on 5 consecutive days for 45 minutes. One group trains, beside intermanual transfer also mental imagery, where using mirror therapy and motor imagery, movements are learned by imagining these. In experiment 2 patients with an upper limb amputation train the unaffected hand with the prosthetic simulator. The prosthetic simulator mimics a real prosthesis, though can be worn on the sound arm. The prosthetic hand of the simulator is placed in front of the sound hand.

Contactpersonen

Publiek

Hanzeplein 1
S. Romkema
Groningen 9700 RB
The Netherlands
+31 (0)50 3610108

Wetenschappelijk

Hanzeplein 1
S. Romkema
Groningen 9700 RB
The Netherlands
+31 (0)50 3610108

Deelname eisen

Belangrijkste voorwaarden om deel te mogen nemen (Inclusiecriteria)

Able-bodied persons
(1) Normal or corrected to normal sight
(2) Right-handed
(3) Aged 18 till 40

Patients
(1) An unilateral forearm amputation and an indication for a first myo-electric prosthesis

Belangrijkste redenen om niet deel te kunnen nemen (Exclusiecriteria)

Able-bodied persons
(1) Neurological problems concerning upper extremity or torso
(2) Motor problems concerning upper extremity or torso
(3) Earlier experience with a prosthesis simulator
(4) Limited sight despite correction

Patients
(1) An upper limb amputation at a different level than a forearm amputation

Onderzoeksopzet

Opzet

Type:	Interventie onderzoek
Onderzoeksmodel:	Parallel
Toewijzing:	Gerandomiseerd
Blindering:	Enkelblind
Controle:	Placebo

Deelname

Nederland

Status:	Werving nog niet gestart
(Verwachte) startdatum:	01-05-2014
Aantal proefpersonen:	50

Type:	Verwachte startdatum

Ethische beoordeling

Niet van toepassing

Soort:	Niet van toepassing

Registraties

Opgevolgd door onderstaande (mogelijk meer actuele) registratie

Geen registraties gevonden.

Andere (mogelijk minder actuele) registraties in dit register

Geen registraties gevonden.

In overige registers

Register	ID
NTR-new	NL4288
NTR-old	NTR4432
Ander register	: 48028.042.14

Resultaten

Samenvatting resultaten
N/A