Shoulder load and daily activities compared between power assisted and manual wheelchair propulsion.

Gepubliceerd: 21-12-2010 Laatst bijgewerkt: 18-08-2022

Because the force needed to propel the wheelchair is partly delivered by a motor, we hypothesized that the forces and moments exerted on the rim will decrease. Consequently, forces and moments at the glenohumeral joint and muscle activation of push...

Ethische beoordeling	Positief advies
Status	Werving nog niet gestart
Type aandoening	-
Onderzoekstype	Interventie onderzoek

Samenvatting

ID

NL-OMON27067

Bron
Nationaal Trial Register

Aandoening

Manual wheelchair users with upper limb impairments or upper limb complaints. Manuele rolstoel gebruikers met beperkte arm-hand functie of aandoeningen aan de bovenste extremiteit.

Ondersteuning

Primaire sponsor: Roessingh Research and Development b.v.
Overige ondersteuning: Supported by INTERREG The Netherlands and Germany (European Regional Development Fund of the European Union), grant 34 Interreg IV A.

Onderzoeksproduct en/of interventie

Uitkomstmaten

Primaire uitkomstmaten

To assess if the forces and moments acting on the shoulder are lower during power assisted wheelchair propulsion compared to manual wheelchair propulsion, related to perceived load of the upper extremity (VAS-score) and objectively measured with the oxygen uptake within six minutes.

Toelichting onderzoek

Achtergrond van het onderzoek

Objective:

The primary objective is to compare forces and moments acting on the shoulder of manual wheelchair users during power assisted wheelchair propulsion and manual wheelchair propulsion.

The secondary objectives are to assess the differences between power assist wheelchair propulsion and manual wheelchair propulsion on (a) the intensity and frequency of shoulder pain, (b) activity during a day, (c) community participation and quality of life.

Study design:

This study is a longitudinal experimental study.

Study population:

20 manual wheelchair users.

Intervention:

The applied intervention is a set of power assist wheels which are placed on participants own manual wheelchair. During one measurement an instrumented wheelchair with a force and torque sensor in the wheel axis is used.

Main study parameters/endpoints:

Main study parameter is shoulder load. Secondary study parameters were intensity and

frequency of shoulder pain; distance, velocity and time daily travelled; wheelchair skills; energy expenditure; community participation, and quality of life; opinion about the power assisted wheelchair.

Doel van het onderzoek

Because the force needed to propel the wheelchair is partly delivered by a motor, we hypothesized that the forces and moments exerted on the rim will decrease. Consequently, forces and moments at the glenohumeral joint and muscle activation of push phase muscles will decrease. Less contact time on the rim will be necessary to generate enough torque to propel the wheelchair, which will result in a lower propulsion frequency and smaller glenohumeral joint angles. In addition wheelchair propulsion requires less effort with power assist which will result in a longer distance travelled and more involvements in social activities.

Onderzoeksopzet

4 weeks of own manual wheelchair use and 4 weeks power assisted wheelchair use:

1. Intensity and frequency of shoulder pain (daily VAS);

2. Daily time and distance travelled (registered by means of a reedcontact);

3. Performed activities (daily questionnaire);
Measurements at Roessingh Research and Development (RRD):

A. Shoulder load;

B. Biomechanical analysis upper extremity; Force and torque sensor at the wheelaxis;

C. Wheelchair skills test;

D. Questionnaires: WUSPI, SEWMS, D-QUEST.

Onderzoeksproduct en/of interventie

The applied intervention is a set of power assist wheels which we place on the participants own manual wheelchair for four weeks.

Contactpersonen

Publiek

Postbus 310
Marieke Kloosterman
Roessingh Research and Development
Enschede 7500 AH
The Netherlands
+31 (0)53 4875777

Wetenschappelijk

Postbus 310
Marieke Kloosterman
Roessingh Research and Development
Enschede 7500 AH
The Netherlands
+31 (0)53 4875777

Deelname eisen

Belangrijkste voorwaarden om deel te mogen nemen (Inclusiecriteria)

1. Manual wheelchair user for at least one year due to a neurological disorder;

2. Medically and physically stable, judged by subjects own physician;

3. The upper limbs might be affected; however, they should be able to propel a manual wheelchair bimanually;

4. Able to maintain posture (trunk stability);

5. Age 18 to 65;

6. Subjects should be able to use their usual mode of transportation with the power assisted wheels;

7. Their wheelchair fitted with power assist wheels.

Belangrijkste redenen om niet deel te kunnen nemen (Exclusiecriteria)

1. Use of any type of power assisted wheelchairs;

2. Extreme shoulder pain, contractures upper extremity and/or spasticity which made manual wheelchair propulsion for the duration of the measurements impossible;

3. Cognitive or communicative impairments which made cooperation with the study protocol compromised.

Onderzoeksopzet

Opzet

Type:	Interventie onderzoek
Onderzoeksmodel:	Parallel
Toewijzing:	N.v.t. / één studie arm
Blindering:	Open / niet geblindeerd
Controle:	Actieve controle groep

Deelname

Nederland

Status:	Werving nog niet gestart
(Verwachte) startdatum:	01-05-2011
Aantal proefpersonen:	20
Type:	Verwachte startdatum

Ethische beoordeling

Positief advies

Datum:	21-12-2010
Soort:	Eerste indiening

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	NL2543
NTR-old	NTR2661
Ander register	Euregio : 7936 MIAS AAD
ISRCTN	ISRCTN wordt niet meer aangevraagd.

Resultaten

Samenvatting resultaten
N/A