Validity of strength measurements with the KinCom and Biodex dynamometer in PPS patients

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To investigate the validity the dynamometer the KinCom in comparison to the Biodex dynamometer.

Ethical review	Approved WMO
Status	Pending
Health condition type	Neuromuscular disorders
Study type	Observational non invasive

Summary

ID

NL-OMON34303

Source
ToetsingOnline

Brief title
Muscle Strength measurements in PPS

Condition

- Neuromuscular disorders

Synonym
Postpoliomyelitis Syndrome, PPS

Research involving
Human

Sponsors and support

Primary sponsor: Academisch Medisch Centrum
Source(s) of monetary or material Support: Ministerie van OC&W

Intervention

Keyword: muscle strength, muscle strength dynamometer, postpoliomyelitis syndrome, Reproducibility of Results

Outcome measures

Primary outcome

The peak isometric and isokinetic torque of three repetitions of maximal

voluntary contractions will be used to establish the validity of the KinCom in

comparison to the golden standard, the Biodex dynamometer.

Secondary outcome

not applicable

Study description

Background summary

Years after stable functioning the majority of people who have encountered acute poliomyelitis in the past report a new decline in muscle strength. This new decline in muscle strength is one of the symptoms of the Post Polio Syndrome (PPS). Long term follow-up studies have reported a slow decline in muscle strength, objectified by fixed dynamometry, in patients with PPS.
There are several ways to measure muscle strength, Manual muscle testing (MMT) according to the Medical Research Council (MRC) scale, myometry and fixed dynamometry. MMT is shown to be subjective and dependent on the strength of the researcher. It is also insensitive to change over time, particularly when strength is grade 4 to 5. Hand-held dynamometry provides a more accurate and more sensitive quantative assessment of maximum isometric strength, but the ability to measure maximal strength is limited by the strength of the researcher, especially in the larger muscle groups, like the quadriceps. In previous follow-up studies in PPS-patients the Kinetic Communicator (KINCOM, model 500, Chattecx Corporation, Chattanooga Group, Chattanooga, TN, USA)) has been used to measure quadriceps strength. The Kincom dynamometer will, after more then 25 years of use, be replaced by a Biodex Dynamometer and it is not known whether outcomes are comparable.

To be able to continue the long term follow-up measurements on the Biodex and interpret changes in muscle strength based on measurements performed with

different dynamometers, it has to be demonstrated that Kincom measurements are valid and comparable to the measurement performed with the Biodex dynamometer.

Study objective

To investigate the validity the dynamometer the KinCom in comparison to the Biodex dynamometer.

Study design

validity study.

Study burden and risks

Participants will be asked to visit the AMC once for about one and a half hour. They will be asked to perform three maximal voluntary contractions on two fixed dynamometers. The risks associated with participation are considered minimal (temporary muscle soreness). Participants will have no direct benefit from the study.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)
Elderly (65 years and older)

Inclusion criteria

1) healthy volunteers
2) group of post polio patients with 1) a history of poliomyelitis; 2) paresis of at least one of the quadriceps muscles.

Exclusion criteria

1) inflammatory muscle or joint pathology, pain of muscles or joints of the lower extremity preventing exerting maximal contraction of the quadriceps muscle, cardiac or pulmonary problems, elite athletes.
2) 1) other neuromuscular or orthopaedic disorders, 2) strength of both quadriceps muscles below 30 Nm, 3) decreased range of motion in the lower extremity, 4) pain of muscles or joints of the lower extremity preventing patients from exerting maximal contraction of the quadriceps muscle.

Study design

Design

Study type: Observational non invasive

Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Other

Recruitment

NL

Recruitment status:	Pending
Start date (anticipated):	01-05-2010
Enrollment:	60
Type:	Anticipated

Ethics review

Approved WMO

Application type:	First submission
Review commission:	METC Amsterdam UMC

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
CCMO	NL32023.018.10