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Eccentric training for the prevention of injuries in the neck-shoulder region

Submission date
11/01/2013

Recruitment status
No longer recruiting

Registration date
13/02/2013

Overall study status
Completed

Last Edited
13/02/2013

Condition category
Musculoskeletal Diseases

[ ] Prospectively registered
[ ] Protocol
[ ] Statistical analysis plan
[ ] Results
[ ] Individual participant data
[ ] Record updated in last year

Plain English summary of protocol

Background and study aims
The purpose of this study is to investigate the effects of a training program based on eccentric exercises of the shoulder and neck muscles. Eccentric exercises are characterized by the following: the muscle that is trained is extended, while it is producing power. Previous studies have shown that exercise can reduce the pain intensity in people with neck/shoulder disorders. However, the effects of this type of exercise on the neuro-muscular system are unclear. Thus, it is necessary to investigate the effects of eccentric exercise. This will in turn enable to define better treatment strategy for the prevention of neck/shoulder disorders.

Who can participate?
Healthy men and women with no previous disorders in the neck-shoulder region.

What does the study involve?
Participants will be randomly allocated to one of two groups: a training group and a control group (no training). Subjects in the training group perform strength training for 5 weeks, twice a week. Each training session will last 30 to 60 minutes and take place at the Center for Sensory-Motor Interaction, Aalborg (Denmark). Both groups will be tested in three sessions: before the start of training, after 3 weeks of training and after completion of the training (approx. 2 hours per session). At these sessions, electrical stimuli are applied to the neck region (not painful). The maximum strength in the neck and shoulder muscles will be also be measured.

What are the possible benefits and risks of participating?
After completion of the training program it is expected that subjects will experience an improvement, which can positively influence their health and wellbeing.
The new knowledge gained which be able to contribute to the treatment and prevention of musculoskeletal disorders.
There are no known serious risks with the methods employed in the present study, which are routinely used at the Center for Sensory-Motor Interaction and at a lot of other research institutions throughout the world.

Where is the study run from?
Center for Sensory-Motor Interaction, Aalborg (Denmark).

When is the study starting and how long is it expected to run for?
The project will run from November 2012 to May 2013.

Who is funding the study?
Aalborg University (Denmark)
Rheumatism Association (Gigtforeningen) (Denmark)
The Ministry of Culture, Committee on Sports Research (Denmark)
The Danish Council for Independent Research, Technology and Production Sciences (Denmark)

Who is the main contact
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Contact information

Type(s)
Scientific

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Additional identifiers

Protocol serial number
N/A

Study information

Scientific Title
Neuromusculuar adaptations after 5 weeks of intensive eccentric neck-shoulder training: A randomised controlled trial

Study objectives
Participants in the training group will have:
1. Increased strength
2. Higher H reflex amplitudes, and
3. Different activation of neck-shoulder muscles compared to a control group after the training intervention.

Ethics approval required

Old ethics approval format

Ethics approval(s)
The North Denmark Region Committee on Health Research Ethics, Denmark, July 2012, ref: N-20120036

Study design
Randomised controlled trial

Primary study design
Interventional

Study type(s)
Prevention

Health condition(s) or problem(s) studied
Musculoskeletal disorders

Interventions
Subjects randomised to the training group will train 2 times per week for 5 weeks of intensive eccentric training for the neck-shoulder muscles.

Participants randomised to the control group will not train.

The intervention will last 5 weeks.

Intervention Type
Other

Phase
Not Applicable

Primary outcome(s)
1. Muscle strength, measured using a dynamometer and assessed three times: before intervention, after 2 weeks, and after the intervention period.
2. H reflex amplitude, elicited by electrical stimulation and measured three times: before intervention, after 2 weeks, and after the intervention period.
3. Muscle activity and coordination, measured by surface electromyography [EMG] and assessed three times: before intervention, after 2 weeks, and after the intervention period.

Key secondary outcome(s))
1. Muscle soreness, measured by visual analogue scale [VAS] and assessed before each training session
2. Compliance, measured at each training session

Completion date
01/05/2013

Eligibility

Key inclusion criteria
Healthy men and women between 18 and 40 years old

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 years

Sex
All

Key exclusion criteria
1. Current or previous pain in the neck/shoulder/arm
2. Regular strength training within 12 months before the study
3. Consumption of alcohol or pain-relieving drugs 24h prior to the experiment
4. Pregnancy
5. Hypertension (>160/>100 mmHg) and heart diseases
6. Addictive or previous addictive behavior defined as the abuse of cannabis, opioids or other drugs
7. Previous neurological or mental disorders
8. Inability to cooperate

Date of first enrolment
01/11/2012

Date of final enrolment
01/05/2013

Locations

Countries of recruitment
Denmark

Study participating centre
Aalborg University
9220
Denmark
9220

Sponsor information

Organisation
Aalborg University (Denmark)

ROR
https://ror.org/04m5j1k67

Funder(s)

Funder type
University/education

Funder Name
Aalborg University (Denmark)

Alternative Name(s)
Aalborg University, AAU

Funding Body Type
Private sector organisation

Funding Body Subtype
Universities (academic only)

Location
Denmark

Funder Name
Rheumatism Association (Gigtforeningen) (Denmark)

Funder Name
The Ministry of Culture, Committee on Sports Research (Denmark)

Funder Name
The Danish Council for Independent Research, Technology and Production Sciences (Denmark) (ref: 10092821)

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Not provided at time of registration