

# The influence of continuous feedback on EMG activity of the Trapezius muscle in female subjects performing a stress-inducing work-related computer task.

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The primary objective of this study is to explore the influences of continuous feedback on electromyographic activity of the trapezius muscle in female subjects performing a stress-inducing work-related computer task. The secondary objective is to...

<b>Ethical review</b>	Approved WMO
<b>Status</b>	Pending
<b>Health condition type</b>	Other condition
<b>Study type</b>	Interventional

## Summary

### ID

NL-OMON31346

### Source

ToetsingOnline

### Brief title

The influence of feedback on muscle activity

### Condition

- Other condition

### Synonym

burden, strain

### Health condition

stress en aan stress gerelateerde gezondheidsklachten

### Research involving

Human

## Sponsors and support

**Primary sponsor:** Revalidatiecentrum Het Roessingh

**Source(s) of monetary or material Support:** Ministerie van Economische zaken/ Bsik programma

## Intervention

**Keyword:** Biofeedback, Occupational, trapezius muscle

## Outcome measures

### Primary outcome

The primary outcome variable is the parameter Root Mean Square from the EMG signal.

### Secondary outcome

- Heart Rate/ Heart Rate variability

- Self reports: The following five 11-point rating scales will be used to obtain the level of stress and discomfort experienced: stressed, motivated, concentrated, happy, and exhausted.

## Study description

### Background summary

Moderate amounts of stress \* the kind of short term stress \* can help people perform tasks more efficiently and to stay focused and alert. But when it is getting too tough and life's demands exceed the individual's ability to cope, stress becomes a threat to both physical and emotional well-being. Long lasting periods stress, the kind of unfavourable stress, are likely to occur in occupational settings.

In Europe, occupational stress affects 28% of the working population, resulting in a variety of aversive health effects. Costs, associated with aversive

effects of occupational stress are estimated to be at least €20 billion a year in the EU in lost time and health bills.

One of the effective ways to reduce stress is to provide the subject feedback on his physiological manifestations of the stress response, in practice known as biofeedback. By providing feedback on physiological effects that one is normally unaware of, individuals can learn how to alter their physiology in a stress modifying way. One of the physiological manifestations of the stress response is increased muscle tension. Therefore, a practice in which the electrical activity of the muscles is measured and feedbacked to the subject is frequently applied in stress management. This technique is known as myofeedback.

Most myofeedback training sessions are provided on weekly basis with a maximum duration of 20-60 minutes. It is however suggested that a more intensive training approach, i.e. continuous training can further improve outcome as an increase in practice and experience are associated with acquiring better (motor) skills (i.e. muscle relaxation). Therefore, a training consisting of continuous feedback that can be applied during working activities in the future might be of additional value in the prevention and/or reduction of stress related problems.

However, because no research has been performed yet exploring whether and to what extent continuous feedback influences the physiological manifestations of the stress response, the aim of this study is to investigate the influences of continuous feedback on muscle activity during a stress-inducing work-related activity.

## **Study objective**

The primary objective of this study is to explore the influences of continuous feedback on electromyographic activity of the trapezius muscle in female subjects performing a stress-inducing work-related computer task.

The secondary objective is to investigate the generalizability of the influence of continuous feedback on muscle tension to other physiological manifestations of stress, i.e. heart rate.

## **Study design**

Longitudinal study (exploratory study)

## **Intervention**

To obtain the influence of biofeedback on electromyographic activity of the trapezius muscle, feedback about activity of the neck-shoulder muscle is given to the person by using the \*orb\*. The \*orb\* is a ball which changes from

colour depending on the amount of muscle tension (i.e. visual reflection on muscle tension)

### **Study burden and risks**

Based on literature, it can be concluded that the used work-related computer task in this study will not harm the participant in a physical, an economic or a psychological way. It can therefore be concluded that this protocol involves no more than minimal risk: the risks of harm to a participant are not greater than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests.

## **Contacts**

### **Public**

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## **Trial sites**

### **Listed location countries**

Netherlands

## **Eligibility criteria**

### **Age**

Adults (18-64 years)

Elderly (65 years and older)

## Inclusion criteria

The inclusion criteria for all subjects are:

- Healthy females
- Computer workers
- Some typing skills
- Age between 25 and 45 years

## Exclusion criteria

Exclusion criteria are:

- (Chronic) complaints of upper extremities
- Dyslexia
- Excessive weight (BMI >30)

## Study design

### Design

**Study type:** Interventional

Masking: Open (masking not used)

Control: Uncontrolled

Primary purpose: Prevention

### Recruitment

NL

Recruitment status: Pending

Start date (anticipated): 01-09-2007

Enrollment: 33

Type: Anticipated

## Ethics review

Approved WMO

Date: 12-07-2007

Application type: First submission

## 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	NL17377.080.07