Influence of attention on patterns of coordination during gait in patients with chronic low back pain

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What happens to the gait pattern of low back pain patients when attention is manipulated?If these patients perform an attention demanding task during walking will this results in a temporary improvement in the quality of walking, such as larger...

Ethical review	Approved WMO
Status	Pending
Health condition type	Other condition
Study type	Interventional

Summary

ID

NL-OMON29813

Source ToetsingOnline

Brief title Gait and chronic back pain

Condition

- Other condition
- Neuromuscular disorders

Synonym chronic pain, low back pain

Health condition

chronische pijn (rugpijn)

Research involving

Human

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Sponsors and support

Primary sponsor: Vrije Universiteit **Source(s) of monetary or material Support:** Ministerie van OC&W

Intervention

Keyword: Attention, Coordination, Gait, Lower back pain

Outcome measures

Primary outcome

Recording of video markers attached to the feet will permit us to study stride

variables such as step length and step width. We will also calculate the

relative phase (mean and standard deviation) between rotations of thorax and

pelvis in the tranversal and frontal plane.

During the Stroop test teh latency of responding and accuracy will be manually

scored.

Secondary outcome

n.a.

Study description

Background summary

People with chronic low back pain often have a characteristic gait pattern that differs from unaffected controls, such as slower speed and less flexibel coordination between thorax and pelvis. This 'abnormal' gait could be caused by the continuous presence of pain, which demands a lot of attention. This in turn leads to behavior patterns aimed at reducing or preventing pain, such as avoiding certain situations and walking at a slower pace. From earlier research we know that the level of pain can be temporarily reduced by diverting attention away from pain. In this research we study what happens to the gait pattern when attention is incluenced. On the one hand, we expect that the quality of walking will improve when attention is drawn away from the pain. On the other hand, we expect the quality of walking to deteriorate even further when attention is directed toward pain.

Attention will be manipulated with the Stroop task. Subjects are shown words printed in different colors, and subjects have to name aloud the color, and at the same time ignore the meaning of the word. From experimental psychology we know that the word meaning is subconsciously processed after all, and that subjects take more time to name the color of words that are somehow emotionally relevant. In this study we make use of a so called dual task paradigm, wherein we combine a walking activity with the attention task. In one condition, subjects will walk on a tread mill and simultaneously name the colors of so called incongruent Stroop words, such as the word 'RED' shown in blue ink. The words are shown on a screen in front of the subjects. We expect that the attentional cost of this task will temporarily divert attention away from the pain, which will show itself in slightly improved walking, e.g. faster, and more flexible. In another condition, subjects are shown Stroop words that symbolise motor activities that are presumed to be 'threatening' to subjects with chronic low back pain, such as 'LIFTING', or 'BENDING'. It is expected that when subjects perform this Stroop task, attention is directed toward the pain, and walking will slightly deteriorate (slower, more rigid). If our hypothesis is correct, this will provide strong evidence for the role of attention in pain related behavior. If, on the other hand, no effects of our manipulation are found, this will imply that attention plays a weaker role in coordination than has been hitherto assumed. We hope that these results can eventually be used to improve rehabilitation of people with chronic low back pain.

Study objective

What happens to the gait pattern of low back pain patients when attention is manipulated?

If these patients perform an attention demanding task during walking will this results in a temporary improvement in the quality of walking, such as larger steps and improved coordination between thorax and pelvis? Will attention be negatively affected if subjects are in general fearful, and /or suffer from a form of kinesiophobia?

Study design

Subjects (patients & controls) walk on a treadmill, whilst performing a cognitive dual task. Light reflecting markers that are placed on pelvic, trunk, and feet. Movement of the markers are tracked with 3 video camera's (SIMI) placed next to the treadmill.

Stimuli are projected on a screen.

There are 4 experimental conditions:) walking without dual task (= baseline), 2) walking while naming the colors of squares, 3) walking while naming the colors of incongruent Stroop words (e.g., the word BLUE shown in a red font), 4) walking while naming the colors of movement Stroop words. Prior to the walking task all Stroop test are performed seated (reference). Subjects complete the following questionnaires: a) the TAMPA scale for kinesiophobia, b) the Pain Catastrophing Scale, and (c) the Beck Depression Inventory. After the experimental trials patients rate to what extent they expect (or think) that the activities of the Movement Stroop test would lead to pain when actually performed.

Intervention

Manipulation of attention (Stroop-task)

Study burden and risks

De risico*s voor de proefpersonen zijn te vergelijken met het risico van normaal lopen, terwijl een andere taak wordt uitgevoerd die aandacht vergt (bv. lopen en telefoneren). Het risico van vallen is opgevangen door middel van een veiligheidsgordel die is bevestigd aan het plafond. Aan weerszijden van de lopende band is een reling. Bovendien is er een noodknop aanwezig waarmee de band door de proefpersoon of de proefleider kan worden stopgezet. Daarnaast zal altijd een proefleider naast de lopende band staan om de proefpersoon nauwlettend in de gaten te houden en waar nodig in te grijpen.

The level of risk for subjects is comparable to the risk of normal walking and performing another task (e.g. walking an talking to a cell phone). The risk of falling is minimised by a safety belt attacted to the ceiling. The treadmill is flanked on both sides by a hand rail. In case of an emergency the experimentor can shut down the tread mill immediately. The entire procedure will be closely monitored by an experimenter who can take necessary actions.

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

- Subjects are aged between 18 and 65 years, and they have a history of chronic low back pain, for which they have received (or still receive) treatment in the Rehabilitation Center Amsterdam (RCA)

- They have suffered from chronic back pain for at least one year

- They should be able to walk for about 15-20 minutes at a comfortable speed, without assistance of walking aid

- Mastery of the Dutch language

Exclusion criteria

- Spondylosis

- Low back problems related to cancer or infections

- Other (not related to low back problems) orthopaedic and/or neurologic conditions that could affect the gait pattern

- Cognitive or mental disorders that could prevent the patient from accomplishing the task

- Colorr blindness

Study design

Design

Study type: Intervention model: Interventional

Other

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Allocation:	Non-randomized controlled trial
Masking:	Open (masking not used)
Control:	Active
Primary purpose:	Diagnostic

Recruitment

NL	
Recruitment status:	Pending
Start date (anticipated):	07-01-2006
Enrollment:	30
Туре:	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 CCMO **ID** NL12559.029.06