



AALBORG UNIVERSITY  
STUDENT REPORT

# Can mindfulness alter pain sensitivity?

2. Semester project - Spring 2018

Group *number*

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**AALBORG UNIVERSITY**  
STUDENT REPORT

**2<sup>st</sup> Semester, Project**

**School of Medicine and Health**

**Biomedical Engineering and Informatics**

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**Title:**

Can mindfulness alter pain sensitivity?

**Theme:**

Biomedical Signals and Information

**Project period:**

Spring 2018 02/02/2018 - --/2018

**Project group:**

-

**Participants:**

**Supervisors:**

**Pages:** –

**Appendix:** –

**Handed in:** –

**Synopsis**



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# Preface

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# 1 | Background

## 1.1 Alternative methods for pain treatment

Alternative methods for treating pain other than by medication... angelsia... Some alternative methods will be presented in the following.

### 1.1.1 Chiropractor

Adjustment and manipulation of the spinal cord to reduce pressure on the nerves running down the spinal cord. In a study by ... evaluating 506 patients with acute and chronic backpain after 3 month of chiropractic treatment. Patients undergoing chiropractic treatment show improvements in their condition, the effect is ongoing after 3 month.

### 1.1.2 Acupuncture

Acupuncture is a treatment where small sterile needles are inserted into the skin of the patient. The needles are inserted at specific acupuncture points related to the type of pain that the patient is experiencing. In a study by [Junnilla1983] acupuncture has shown promising results in reducing pain in patients with soft tissue round the shoulder joint, headaches, neck and shoulder pain, arthritis/osteoarthritis and low vack pain. A total of 348 patients where evaluated. The mean reduction of the entire patient group where 68 %. Showing best results in soft tissue round the shoulder joint, showin a mean reduction of pain by 79 %. The headache and neck and shoulder patients had a mean reduction by 74 %. Patients with arthritis/osteoarthritis showed a mean reduction by 58 % and the patients with low back pain had a mean reduction by 50 %. In 80 % of the patients the effect of the treatment lasted for more than 3 month and 32 % over one year. [Junnilla1983]

### 1.1.3 Exercise and yoga

...

### 1.1.4 Mindfulness meditation

Enhanced emotion regulation, cognitive control, acceptance and positive mood have been linked with health benefits as well as pain modulation. These mechanisms has been shown to be modulated during mindfulness meditation practice. A study by Perlman et al. (...) shows that practicing meditation could not lower the intensity of pain, but instead lower pain unpleasentness in the participants. The findings on meditation and pain modulation are split, but experiments in controlled settings are still needed to confirm if the effect of

mindfulness meditation works on pain modulation. [Zeidan2012]

When using a placebo analgesia the typical response is increased activation of the dorsolateral prefrontal cortex during anticipation of pain. Effect that predicts reductions in pain perception and activity of pain related brain regions. Mindfulness does not involve DLPFC activation.

## 1.2 Mindfulness meditation

Mindfulness is often defined as being in the mental state of Non-Elaborative, non-judgmental awareness [Zeidan2012, Zeidan2016]. Two popular practices of mindfulness meditation, focused attention (FA) and open monitoring (OM) are of the most well practiced types of meditation. Practicing mindful meditation includes control over sensory, emotional and cognitive happenings. Hereby the ability control these sensations without being distracted by them and also abstract from past and future representations of memory.

Very little mindfulness training can have an effect.. study by... showed an effect examined for 20 min sessions for 4 days of mindfulness meditation.

FA and OM can alter pain in different ways... OM is more effective in reducing pain after extensive meditation training compared to FA. [Varilly2012]

### Focused attention

FA is the training for concentration, where one keeps the focus to an object or specific thing, only focusing on that thing. Often the flow of breath is the focus, when practicing FA meditation. When any disturbance comes by, like a thought, sound or other environmental distractions, which will often lead to a drift in attention, the person should always bring his or her attention back to the focus.

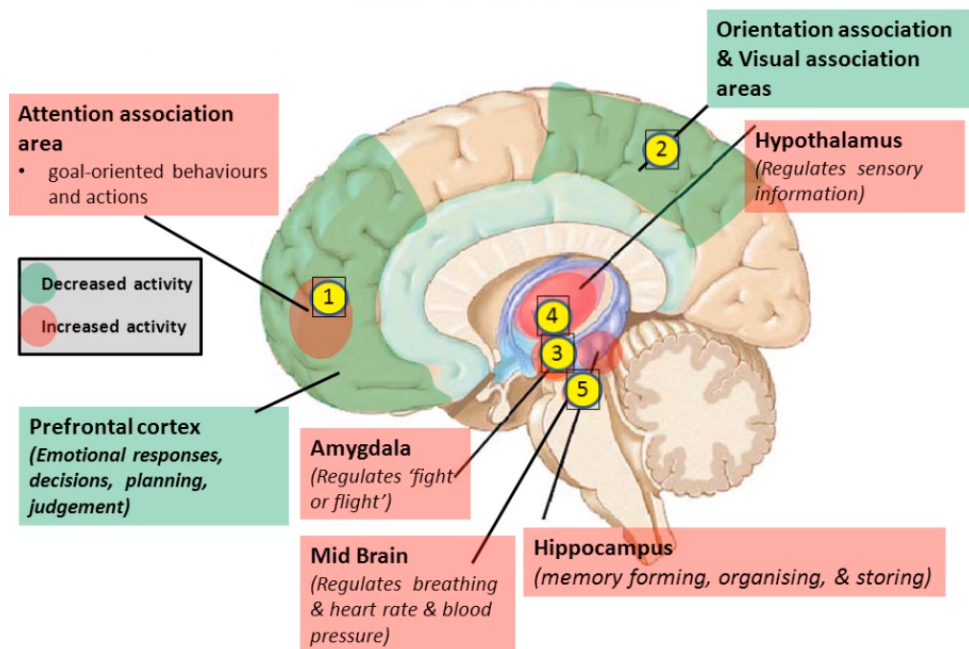
This kind of meditation has shown to enhance focus and concentration. ..

### Open monitoring

OM is the cultivation of open presence, where the mind is open to anything, not focusing on any specific thing, just being in the present. If any thought or disturbance comes by the thought or sensation should be let go without thinking more over it. It is believed that this form of meditation is easier to learn when one master the meditation of FA, whereby the OM meditation form is easier to master.

This kind of meditation has been shown to reduce pain more compared to FA, likely because the areas of the brain affected during this form of meditation is...

[Perlman2010]



**Figure 1.1:** Image of the brain and activation of specific brain regions when practicing meditation

## 2 | Methods

## 3 | Data analysis



## 4 | Results

## 5 | Appendices