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# How does training in mindfulness meditation effect the brain structure and cognition?

| Submission date | Recruitment status | [ ] Prospectively registered |
|---|---|---|
| 23/11/2010 | No longer recruiting | [ ] Protocol |
| **Registration date** | **Overall study status** | [ ] Statistical analysis plan |
| 19/05/2011 | Completed | [ ] Results |
| **Last Edited** | **Condition category** | [ ] Individual participant data |
| 19/05/2011 | Other | [ ] Record updated in last year |

**Plain English summary of protocol**
Not provided at time of registration

## Contact information

**Type(s)**
Scientific

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## Additional identifiers

**Protocol serial number**
25931/26960

## Study information

**Scientific Title**
A randomised controlled trial using MRI scans and cognitive testing to determine the effect of meditation on brain structure and cognition

**Study objectives**

We will examine whether there is a causal relationship between meditation practice and the brain anatomy as well as number of physiological and cognitive parameters.
We are testing multiple hypotheses of training novices for 6 weeks, however our main hypotheses are:
1. Signifigant pre-frontal (IFG) and insular cortex density increase for meditation group (MG) measured by MRI.
2. Significant decrease in default mode network connectivity, correlated with increased insular density and improved self-regulation (stop accuracy) and error awareness
3. Signifigantly increased emotional stroop effect, with greater insula response to emotional distractors yet increased stroop accuracy

## Ethics approval required
Old ethics approval format

## Ethics approval(s)
The Local Ethics Committee on clinical research approved on the 23rd of August 2010 (ref: 25931 /26960)

## Study design
Single centre randomised wait list controlled parallel group trial

## Primary study design
Interventional

## Study type(s)
Treatment

## Health condition(s) or problem(s) studied
Meditation practice

## Interventions
1. We studied normal subjects with no prior meditation, or related training undergoing intensive meditation training based on a set of breathing exercises and mindfulness techniques
2. We included 60 university students of which 30 randomly chosen subjects will practice daily 20 minutes for 6 weeks
3. The other 30 subjects (will be the waitlist for meditation training) will act as a control group to check for i.e. training effects in the cognitive tests by being a reading group with same frequency of training and focusing on the narrative content only

## Intervention Type
Other

## Phase
Not Applicable

## Primary outcome(s)
Pre-frontal (IFG) and insular cortex density measured by MRI at baseline and 6 weeks

## Key secondary outcome(s))
Measured at baseline and 6 weeks:
1. Default-mode network connectivity

2. Stop accuracy and error awareness
3. Emotional stroop

### Completion date
01/03/2011

## Eligibility

### Key inclusion criteria
1. Either sex, aged 18-40 years, ethnic Danes
2. Right handed
3. Health subjects with no history of neurological disorders, psychological and/or psychiatric, cardiovascular or respiratory diseases, brain injury, cancer, addiction to drugs/alcohol, severe impediment to limb movement, hearing and vision
4. Normal MRI brain scan

### Participant type(s)
Patient

### Healthy volunteers allowed
No

### Age group
Adult

### Lower age limit
18 years

### Upper age limit
40 years

### Sex
All

### Key exclusion criteria
1. Frequent diving, high altitude climbing or flying or other activities related to the respiratory system
2. Recent biofeedback training, hypnosis and acupuncture (due to the possible modulating of the vagal output)

### Date of first enrolment
03/12/2010

### Date of final enrolment
01/03/2011

## Locations

### Countries of recruitment
Denmark

**Study participating centre**
**Center for Functionally Integrative Neuroscience**
Aarhus
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8000

# Sponsor information

**Organisation**
Aarhus University (Denmark)

**ROR**
https://ror.org/01aj84f44

# Funder(s)

**Funder type**
Government

**Funder Name**
Ministry of Health (Denmark)

# Results and Publications

**Individual participant data (IPD) sharing plan**

**IPD sharing plan summary**
Not provided at time of registration

**Study outputs**

| Output type | Details | Date created | Date added | Peer reviewed? | Patient-facing? |
|---|---|---|---|---|---|
| Participant information sheet | Participant information sheet | 11/11/2025 | 11/11/2025 | No | Yes |