

**IMPORTANT: INFORMATION EMBARGOED UNTIL MONDAY
OCTOBER 10, 2022 03:00 A.M (PARIS TIME)**

Paris, 7 October 2022

Press information

Preventing dementia in seniors: meditation still under investigation



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Meditation as a tool to prevent dementia and improve the mental health and well-being of elderly people is one of the avenues explored by the European Medit-Ageing research program, coordinated by Inserm. As part of this program, researchers from Inserm and Université de Caen Normandie, in collaboration with French and European teams, observed the impact of 18 months of meditation training on certain brain structures involved in regulating attention and emotions in healthy people over 65. While their findings, to be published in [JAMA Neurology](#), show a positive impact on attentional and socio-emotional regulation capacities, they do not show any significant benefits of meditation on

the volume and functioning of the brain structures studied, in comparison to control groups. However, they do call for further research to study the brain as a whole, over longer time periods, and with more participants.

In order to prevent the onset of dementia in elderly people, recent intervention strategies have been multidisciplinary and focused on lifestyle improvements. These include cognitive stimulation, physical activity, a healthy diet, and cardiovascular recommendations. However, there are no dedicated preventive interventions for psycho-affective factors such as depression, stress, and anxiety.

Mental training aimed at regulating stress and attention, such as mindful meditation, has proven to be beneficial in managing the cognitive and emotional aspects of aging, particularly to reduce stress, anxiety, and depression.

Recent research has reported that the insula and anterior cingulate cortex are brain regions particularly sensitive to meditation training. These interconnected regions are involved in self-awareness and in the processing and regulation of attention, emotions, and empathy. In young adults, meditation has already shown its capacity to structurally (e.g. in terms of volume) and functionally modify these structures, particularly in the brain of meditation experts with several thousand hours of practice under their belts.

The insula and anterior cingulate cortex are particularly sensitive to aging. It has been shown that in elderly people who are experts in meditation, gray matter volume and glucose metabolism (a physiological process essential for good brain function) were higher than in people who do not meditate.

Meditation could therefore be an interesting approach to preserve brain structures, functions, and cognitive capacities, and by extension, prevent dementia.

A team of researchers from the European Medit-Ageing research group, led by Inserm Research Director Gaël Chételat from the Physiopathology and Imaging of Neurological Disorders laboratory (Inserm/Université de Caen Normandy), in collaboration with teams from Lyon Neuroscience Research Center (Inserm/CNRS/Université Claude Bernard Lyon 1/Université Jean-Monnet-Saint-Etienne), University College London, University of Liège and University of Geneva, looked at the potential physiological, cognitive, and emotional benefit of meditation in elderly individuals.

In the Age-Well clinical trial involving 136 participants aged 65 or older with no known diseases, the researchers measured the impact of an 18-month meditation intervention on tissue volume and perfusion (physiological process of supplying an organ with nutrients and oxygen necessary for its metabolism) of the insula and anterior cingulate cortex. They also looked at specific cognitive and socio-affective parameters.

The participants were assigned to three groups in order to compare the potential benefit of meditation with different types of interventions. The first group followed the meditation intervention protocol (mindfulness meditation and loving kindness and compassion meditation), the second group (the "active control" group) followed a period of English-language training, and the third group (the "passive control" group) did not follow any intervention.

After 18 months of intervention, the researchers saw no significant changes in volume or perfusion of the cingulate cortex or insula in the meditation group compared to the control groups.

"The fact that no anatomical differences were observed between these two groups could indicate that while meditation can modify the volume of younger and more plastic brains, 18 months of meditation training are not enough to modify the effects of aging," analyzes Chételat. *"In addition, while the results of the volume measurement are strictly negative, those of the perfusion show a trend in favor of meditation that could be interesting to explore over a longer intervention time and/or with a larger population sample,"* specifies the researcher.

The research team will therefore conduct a 4-year follow-up of the participants, to investigate potential long-term effects.

In contrast, significant differences were observed in behavioral measures between the meditation group and the English-learning group, with improved regulation of attention and socio-emotional capacities in the meditation group participants. *"Here the practice of meditation is showing its real benefit on the mental health of elderly people, with a significant improvement in parameters specific to well-being and fulfilment, but also to the maintenance of attentional and socio-emotional capacities, as reported by participants,"* adds Antoine Lutz, responsible for the study's meditation component.

More specific measurements and analyses will be conducted within the Age-Well trial to improve the understanding of these mechanisms. These analyses could be used to identify the measures which are most sensitive to meditation and to study the mechanisms behind its effects.

Sources

Effects of an 18-month meditation training on regional brain volume and perfusion in older adults: The Age-Well randomized, single-blind, controlled trial of the Medit-Ageing European project

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JAMA Neurology: <https://doi.org/10.1001/jamaneurol.2022.3185>

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