

Abstract

"Mindfulness meditation" can reduce stress by manipulating our attention. However, the physiological mechanisms have not yet been clarified. In this study, we examined how mindfulness meditation changes the activities of autonomic nerves and secretion of the stress hormone cortisol. Because mindfulness meditation mainly consists of "focused attention" and "open monitoring" meditation, we developed vocal instructions for each. We measured heart rates and took saliva samples to evaluate the strength of autonomic activities and cortisol levels, respectively. We found that focused attention meditation increased parasympathetic activity, while open monitoring meditation increased sympathetic activity with the reduction of cortisol levels. We hope to reveal the physiological, psychological, and neural mechanisms of mindfulness mediation and develop new types of meditation based on our scientific findings. We think we can contribute to people's well-being through social implementation of new types of meditation in the future.

1. Mindfulness meditation consists of "focused attention" and "open monitoring" meditations.

Mindfulness :

The status of monitoring sensation, emotion and thought with an attitude of acceptance; every momentary experience is accepted as it is.



Focused attention meditation

Paying attention to respiration around the nose



Open monitoring meditation

Observing sensations and emotions as they are.

Combining them



Mindfulness meditation

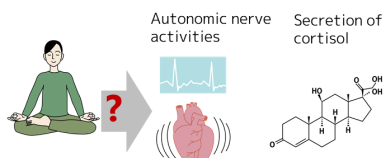
Famous for the effect of "stress reduction". Further, preventing recurrence of depression, or enhancement of well-being

Main Factors of Mindfulness meditation

2. Earlier studies have not revealed the physiological mechanisms of the two meditation styles.

Background:

There has not been consistent thought of the physiological mechanisms, by which mindfulness meditation can reduce stress.



Point to examine:

The physiological mechanism of the effect of focused attention and open monitoring meditation.

No consistency in findings about the effects of mindfulness meditation on stress-related physiological activities, such as autonomic nerve activities and the secretion of stress hormone cortisol.

Solution:

We developed 30-min-long voice instruction for focused attention and open monitoring meditations, respectively. (Fujino et al., 2019 Japan J. Mindfulness)

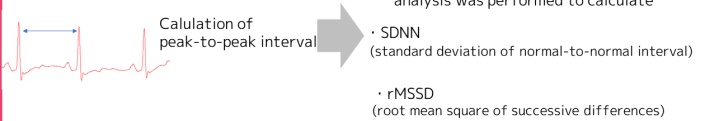
"Now we are starting the exercise for the power of concentration. The power of concentration is ..." the instruction for focused attention meditation explains exercise to help participants maintain attention to respiration around the nose when the mind wanders.



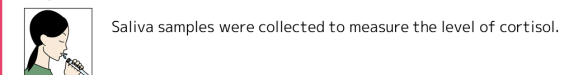
"Now we are starting the exercise for awareness. Awareness is ..." the instruction for open monitoring meditation explains exercise to help participants observe sensations and emotions as they are.

3. We revealed the differential effects of focused attention and open monitoring meditations on autonomic activities and cortisol level.

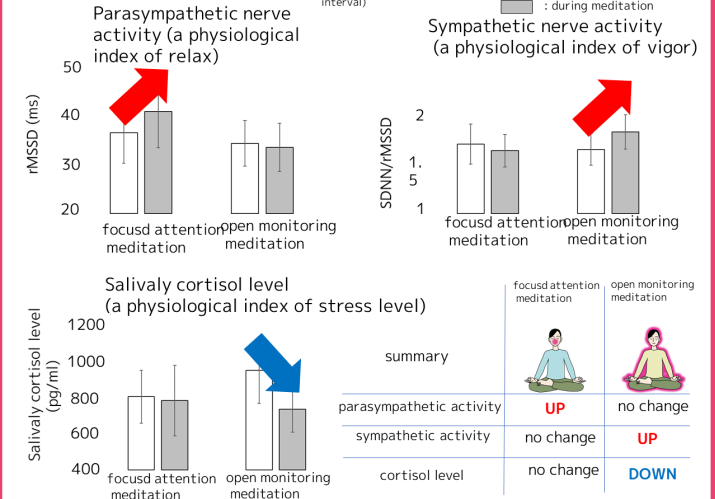
Analysis of autonomic activities:



Analysis of stress hormone level:



Results:



During focused attention meditation

By keeping their focus on respiration, they can relax without any disturbance induced by any information other than respiration.

During open monitoring meditation

Their arousal level can be high because they observe several sensations and emotions, and their stress level can be low because they observe them as they are.

References

[1] Y. Ooishi, M. Fujino, V.Inoue, M. Nomura, N.Kitagawa, "Differential effects of focused attention and open monitoring meditation on autonomic cardiac modulation and cortisol secretion," *Front. Physiol.*, Vol. 12, 675899, 2021.

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