

Effect of mindfulness on EEG brain activity for cognitive and psychological well-being in the elderly

ABSTRACT:

Background

As the worldwide population of older adults is rapidly increasing, effective strategies are needed to maintain cognitive and psychological well-being.

Aims

To evaluate if cognitive and psychological well-being and their neurophysiological correlates may be modulated by mindfulness training (MT) in healthy older adults.

Method

Seventy older adults took part in a standardized MT program consisting of 8 weekly group 2-hour sessions, delivered in-person (n=20) or via web-based videoconference (n=50). A comprehensive cognitive (verbal memory, attention and executive functions) and psychological (anxious and depressive symptoms, dispositional mindfulness, worries, emotion regulation strategies, wellbeing, interoceptive awareness, sleep) evaluation and EEG recording were collected at pre- and post-MT and at 6-month follow-up.

Results

In the online sample (n=50), we found a significant effect of time on verbal memory, attention switching and executive functions, interoceptive awareness, and rumination ($p < .05$). EEG alpha1 significantly decreased ($p = .005$) and alpha2 significantly increased ($p < .0001$) from pre-MT to post-MT and T6. Significant correlations between cognitive measures and EEG variables were found ($p < .05$). In the online and in-person sample (n=52) divided by presence (n=30) or absence (n=22) of subjective cognitive decline (SCD), older adults with SCD improved on cognitive and psychological measures, with a divergent effect on dispositional mindfulness and interoceptive awareness relative to no-SCD ($p < .05$).

Conclusions

Web-based MT improves cognitive and psychological measures in older adults by modulating neural activity in specific brain rhythms. Controlled studies are needed to confirm these results.

Keywords

Mindfulness training, older adults, Web videoconference, Cognitive, Psychological, EEG

Published Work:

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