**Interventions**

*Articles testing the applied science and implementation of mindfulness-based interventions*

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**de Bruin, E. I., Valentin, S., Baartmans, J.,...Bogels, S. M. (2020).** Mindful2Work the next steps: Effectiveness of a program combining physical exercise, yoga and mindfulness, adding a wait-list period, measurements up to one year later and qualitative interviews. *Complementary Therapies in Clinical Practice.* [link]


**Fabbro, A., Fabbro, F., Capurso, V.,...Crescentini, C. (2020).** Effects of mindfulness training on school teachers’ self-reported personality traits as well as stress and burnout levels. *Perceptual and Motor Skills.* [link]


**Hill, A., Schücker, L., Hagemann, N., Strauß, B. (2020).** The influence of mindfulness training on running economy and perceived flow under different attentional focus conditions-an intervention study. *International Journal of Sport and Exercise Psychology.* [link]

**Holas, P., Krejtz, I., Wisiecka, K.,...Nezlek, J. B. (2020).** Modification of attentional bias to emotional faces following MBCT in people with a current depression. *Mindfulness.* [link]


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**ASSOCIATIONS**

*Articles examining the correlates and mechanisms of mindfulness*


Strohmaier, S. (2020). The relationship between doses of mindfulness-based programs and depression, anxiety, stress,
and mindfulness: A dose-response meta-regression of RCTs. *Mindfulness.* [link]

Sundquist, K., Palmér, K., Memon, A. A.,...Wang, X. (2020). *Macrophage migration inhibitory factor* as a predictor for long-term improvements after mindfulness-based group therapy or treatment as usual for depression, anxiety or stress and adjustment disorders. *Mindfulness.* [link]

Wells, R. E., Collier, J., Posey, G.,...Zeidan, F. (2020). *Attention to breath sensations does not engage endogenous opioids to reduce pain.* *Pain.* [link]

**METHODS**

*Articles developing empirical procedures to advance the measurement and methodology of mindfulness*


Theofanous, A., Ioannou, M., Zacharia, M.,...Karekla, M. (2020). *Gender, age, and time
invariance of the child and adolescent mindfulness measure (CAMM) and psychometric properties in three greek-speaking youth samples. *Mindfulness.* [link]


**REVIEWS**

*Articles reviewing content areas of mindfulness or conducting meta-analyses of published research*

Bigliassi, M., Bertuzzi, R. (2020). *Exploring the use of meditation as a valuable tool to counteract sedentariness.* *Frontiers in Psychology* [link]


**TRIALS**

Research studies newly funded by the National Institutes of Health (MAR 2020)

Texas Tech University (Y.Y. Tang, PI). *Brain mechanisms of reducing poly-substance use following a novel body-mind intervention.* NIH/NCCIH project #5R61AT010138-02. [link]
Highlights

A summary of select studies from the issue, providing a snapshot of some of the latest research

People with major depressive disorder (MDD) show an attentional bias in which they over-attend to negative information while often ignoring positive information. This attentional bias feeds, reinforces, and prolongs depressive thought patterns, and serves as an underlying risk factor for depressive symptom onset and relapse.

Mindfulness-Based Cognitive Therapy (MBCT) is an approach to psychotherapy that combines features of mindfulness meditation and cognitive behavioral therapy. The program has been shown to effectively reduce the odds of depressive relapse among people with MDD. Less is known about the efficacy of the program for alleviating current depressive symptoms. Holas et al. [Mindfulness] conducted a randomized controlled trial to test if MBCT reduces attentional bias and depressive symptoms in patients with current MDD.

The researchers randomly assigned 53 adults with untreated current major depressive episodes (100% Polish Caucasian; 74% female; average age = 35 years) to an 8-week MBCT program or a wait-list control. Participants completed a self-report measure of depressive symptoms (CESD) and were assessed on an eye movement tracking task, measuring attentional bias immediately before and after the intervention period.

In that task, participants viewed slides with sad, angry, happy, and neutral faces in each of the four quadrants of the slide while their eye movements and fixations were recorded in milliseconds. This enabled researchers to calculate the relative amount of time participants spent gazing at each of the different faces.

The results showed that MBCT affected how long participants gazed at the various faces. Participants in the MBCT group significantly increased the amount of time they gazed at happy faces from pretest to posttest ($\eta^2=.23$) and decreased their gaze at sad ($\eta^2=.09$) and angry ($\eta^2=.14$) faces, whereas controls showed no changes on these measures.

At pretest, the MBCT group gazed at the happy faces an average of 2.234 seconds and at posttest they gazed at the them for 2.965 seconds. At pretest MBCT participants spent 27% of their time per slide gazing at happy faces, and at posttest 35% of their time. In addition, the MBCT group gazed significantly longer at happy faces ($\eta^2=.25$) and shorter at sad faces ($\eta^2=.18$) than controls at posttest. MBCT participants also reported significantly fewer depressive symptoms after intervention ($\eta^2=.15$) than controls.

This study finds that MBCT significantly decreases depression-related attentional bias as well as current self-reported depressive symptoms immediately following intervention. These findings are important because attentional bias is thought to be an underlying risk factor in initiating and prolonging recurring depressive states. The eye fixation measure is a particularly good measure of attentional bias because it reflects behavior largely outside of conscious control.

Additionally, the findings support the utility of MBCT in treating people who are currently depressed, extending previous research findings focused on the prevention of depression relapse in people who are already recovered. The study implications are limited by the absence of an active comparator group and longer-term follow-up.

Migraines, marked by intense, throbbing headaches, nausea, vomiting, and sensitivity to light, affect 13% of the adult population and are the sixth most frequent cause of disability. Migraines are known to be accompanied by changes in brain structures involved with cognitive aspects of pain processing including the insula, cingulate, and prefrontal cortices. This is an area of interest because mindfulness training is
thought to work, in part, by altering one's thoughts and attitudes towards pain. **Seminowicz et al. [Pain]** conducted a randomized controlled trial to test if mindfulness training reduces migraines and determine whether it alters brain structure and function in regions related to cognitive aspects of pain processing.

The researchers randomly assigned 98 migraineurs (average age = 36 years; 72% Caucasian; 91% female) who had experienced 4-14 days of headache in the past month to either enhanced Mindfulness-Based Stress Reduction (MBSR) or a stress management program. Both programs met in 2-hour weekly groups for the first 8 weeks, and biweekly for the following 8 weeks. MBSR differed from the conventional standard in its addition of four group sessions after the initial 8 weeks. These additional sessions emphasized developing qualities of self-compassion, gratitude, equanimity, and sympathetic joy, and applying mindfulness skills before, during, and after migraines. The stress management control offered didactic content focused on understanding stress, triggers, pain, sleep hygiene, and medications along with group support and muscle stretching exercises. Attendance to all scheduled groups sessions and/or individual make-up sessions was high (86% in MBSR and 83% in the control group).

All participants completed headache questionnaires at baseline and at week 10, 20, and 52. In addition, they completed fMRI brain scans at baseline and week 10 and 20 at rest, while exposed to painful heat stimuli, and while undergoing a cognitive challenge in order to activate areas of the brain implicated in cognitive aspects of pain perception. The cognitive challenge involved observing sets of three alphanumeric characters and rapidly identifying which of the characters differed from the other two by button press.

The results showed that at week 10 (after 8 MBSR sessions), MBSR participants had significantly fewer mean headache days (5.5) than controls (6.9). At week 20 (2 weeks following intervention completion), the difference remained significant with the MBSR group having an average of 4.6 headache days per month (a decrease of 3.2 days from baseline) compared to 6.0 days for controls (a decrease of 1.7 days from baseline). At week 20, 52% of MBSR participants had at least a 50% improvement in their headaches compared to 23% of controls. At week 20, the MBSR group reported significantly less headache-related disability. Although the MBSR group had fewer headache days per month than controls at week 52 (4.6 vs. 5.6), the group difference did not reach statistical significance.

No treatment group differences were found at any point in time for regions-of-interest in brain gray matter volume, activation during pain or cognitive tasks, or resting state connectivity. Both groups showed significantly decreased anterior midcingulate volume and decreased insula connectivity to the cognitive task network over time. Whole brain analyses showed some significant between-group changes during cognitive activation reflecting decreased activation of a portion of the visual cortex and an area surrounding the insula, and changes in functional connectivity between a portion of the insula and regions in the parietal and occipital cortex. The researchers suggest these changes may reflect increased cognitive efficiency due to either meditative practice or decreased days in pain.

The study shows that a lengthened MBSR intervention reduces the number of days with a headache and headache-related disability in migraine sufferers two weeks following intervention. The observed magnitude of improvement in the short term equals that achieved by first-line prophylactic pharmaceutical interventions such as valproic acid. The beneficial effect was not sustained at one-year follow-up, suggesting a need to actively continue mindfulness practice. MBSR did not impact unique brain activity and structure in the regions of interest related to pain perception. Participants were reportedly highly educated and motivated, and thus might not be representative of the general population with migraines.
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