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Editor-in-Chief
David S. Black, Ph.D.

Highlights by
Seth Segall, Ph.D.

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INTERVENTIONS

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

Ahola, S. K., Stinson, J., Jelen, A., Ruskin, D. (2019). **Feasibility and acceptability of a mindfulness-based group intervention for adolescents with inflammatory bowel disease.** *J Clinical Psych Medical Settings.* [\[link\]](#)

An, Y., Huang, Q., Zhou, Y.,...Xu, W. (2019). **Who can get more benefits? Effects of mindfulness training in long-term and short-term male prisoners.** *International J Offender Therapy Compar Criminology.* [\[link\]](#)

Brotto, L. A., Bergeron, S., Zdaniuk, B.,...Basson, R. (2019). **A comparison of MBCT vs cognitive behavioral therapy for the treatment of provoked vestibulodynia in a hospital clinic setting.** *Journal of Sexual Medicine.* [\[link\]](#)

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Corbett, C., Egan, J., Pilch, M. (2019). **A randomised comparison of two 'stress control' programmes: Progressive muscle relaxation versus mindfulness body scan.** *Mental Health & Prevention.* [\[link\]](#)

Davis, J. P., Barr, N., Dworkin, E. R.,...Cahn, B. R. (2019). **Effect of mindfulness-based relapse prevention on impulsivity trajectories among young adults in residential substance use disorder treatment.** *Mindfulness.* [\[link\]](#)

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Frostadottir, A. D., Dorjee, D. (2019). **Effects of MBCT and compassion focused therapy (CFT) on symptom change, mindfulness, self-compassion and rumination in clients with depression, anxiety and stress.** *Frontiers in Psychology.* [\[link\]](#)

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Kang, M., Selzer, R., Gibbs, H.,...Gibbs, J. (2019). **Mindfulness-based intervention to reduce burnout and psychological distress, and improve wellbeing in psychiatry trainees: A pilot study.** *Australasian Psychiatry.* [\[link\]](#)

Karaca, A., Sisman, N. (2019). **Effects of a stress management training program with MBSR.** *Journal of Nursing Education.* [\[link\]](#)

Kohut, S. A., Stinson, J., Jelen, A., Ruskin, D. (2019). **Feasibility and acceptability of a mindfulness-based group intervention for adolescents with inflammatory bowel disease.** *Journal of Clinical Psychology in Medical Settings.* [\[link\]](#)

Kubo, A., Kurtovich, E., McGinnis, M.,...Avins, A. L. (2019). **A RCT of mhealth mindfulness intervention for cancer patients and informal cancer caregivers: A feasibility study within an integrated health care delivery system.** *Integrative Cancer Therapies.* [\[link\]](#)

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Lebares, C. C., Guvva, E. V., Oлару, M.,...Harris, H. W. (2019). **Efficacy of mindfulness-based cognitive training in surgery: Additional analysis of the mindful surgeon pilot RCT.** *JAMA Network Open.* [\[link\]](#)

Le Nguyen, K. D., Lin, J., Algoe, S. B.,...Fredrickson, B. L. (2019). **Loving-kindness meditation slows biological aging in novices: Evidence from a 12-week RCT.** *Psychoneuroendocrinology.* [\[link\]](#)

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Moesgen, D., Ise, K., Dyba, J., Klein, M. (2019). **Evaluation of the mindfulness-augmented "trampoline" programme--a German prevention programme for children from substance-involved families tested in a cluster-randomised trial.** *BMC Public Health.* [\[link\]](#)

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Zhu, X., Hu, P., Fan, Z.,...Gao, H. (2019). **Effects of MBSR on depression, anxiety, and pain in patients with postherpetic neuralgia.** *Journal of Nervous and Mental Disease.* [\[link\]](#)

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Articles examining the correlates and mechanisms of mindfulness

Alexander, K., Kronk, R., Sekula, K.,...Abatemarco, D. (2019). **Implementation of a mindfulness intervention for women in treatment for opioid use disorder and its effects on depression symptoms.** *Issues in Mental Health Nursing.* [\[link\]](#)

Athanas, A. J., McCorrison, J. M., Smalley, S.,...Schork, N. J. (2019). **Association between improvement in baseline mood and long-term use of a mindfulness and meditation app: Observational study.** *JMIR Mental Health.* [\[link\]](#)

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Hayes-Skelton, S. A., Lee, C. S. (2019). **Decentering in mindfulness and cognitive restructuring for social anxiety: An experimental study of a potential common mechanism.** *Behavior Modification.* [\[link\]](#)

Kirk, U., Pagnoni, G., Héту, S., Montague, R. (2019). **Short-term mindfulness practice attenuates reward prediction errors signals in the brain.** *Scientific Reports.* [\[link\]](#)

Kropp, A., Sedlmeier, P. (2019). **What makes mindfulness-based interventions effective? An examination of common components.** *Mindfulness.* [\[link\]](#)

Le, T. N., Alefaio, D. (2019). **Mindfulness training for social service providers in Hawaii: Context and considerations.** *Journal of Social Service Research.* [\[link\]](#)

May, C. J., Ostafin, B. D., Snippe, E. (2019). **Mindfulness meditation is associated with decreases in partner negative affect in daily life.** *European Journal of Social Psychology.* [\[link\]](#)

McClintock, A. S., Brown, R., Coe, C. L.,...Barrett, B. (2019). **Mindfulness practice and stress following MBSR: Examining within-person and between-person associations with latent curve modeling.** *Mindfulness.* [\[link\]](#)

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autism spectrum disorder. *Journal of Contextual Behavioral Science.* [\[link\]](#)

Rupprecht, S., Falke, P., Kohls, N.,...Kersemakers, W. (2019). **Mindful leader development: How leaders experience the effects of mindfulness training on leader capabilities.** *Frontiers in Psychology.* [\[link\]](#)

Schlosser, M., Sparby, T., Vörös, S.,...Marchant, N. L. (2019). **Unpleasant meditation-related experiences in regular meditators: Prevalence, predictors, and conceptual considerations.** *PLoS One.* [\[link\]](#)

Simmons, L. A., Williams, H., Silva, S.,...Tanabe, P. (2019). **Acceptability and feasibility of a mindfulness-based intervention for pain catastrophizing among persons with sickle cell disease.** *Pain Management Nursing.* [\[link\]](#)

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Thakur, V. K., Wong, J. Y., Randall, J. R.,...Diocee, S. (2019). **An evaluation of large group cognitive behaviour therapy with mindfulness (cbtm) classes.** *BMC Psychiatry.* [\[link\]](#)

METHODS

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

Björling, E. A., Stevens, C., Singh, N. B. (2019). **Participatory pilot of an art-based mindfulness intervention for adolescent girls with headache.** *Art Therapy.* [\[link\]](#)

Carlson, L. E., Subnis, U. B., Piedalue, K. -A. L.,...Wolever, R. Q. (2019). **The ONE-MIND study: Rationale and protocol for assessing the effects of online mindfulness-based**

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cancer recovery for the prevention of fatigue and other common side effects during chemotherapy. *European Journal of Cancer Care.* [link]

Hanssen, I., Huijbers, M. J., Lochmann-van Bennekom, M. W. H.,...Speckens, A. E. M. (2019). **Study protocol of a multicenter RCT of MBCT and treatment as usual in bipolar disorder.** *BMC Psychiatry.* [link]

Mezo, P. G., Herc, H. C., Pritchard, K. J., Bullock, W. A. (2019). **Evaluation and a proposed revision of the CAMM among underrepresented elementary school children.** *Assessment for Effective Intervention.* [link]

Pressman, A., Law, H., Stahl, R.,...Avins, A. (2019). **Conducting a pilot RCT of community-based MBSR versus usual care for moderate-to-severe migraine: Protocol for the mindfulness and migraine study (M&M).** *Trials.* [link]

REVIEWS

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

Burgdorf, V. L., Szabo, M., Abbott, M. (2019). **The effect of mindful interventions for parents on parenting stress and youth psychological outcomes: A systematic review and meta-analysis.** *Frontiers in Psychology.* [link]

Ghielen, I., Rutten, S., Boeschoten, R. E.,...Cuijpers, P. (2019). **The effects of cognitive behavioral and mindfulness-based therapies on psychological distress in patients with multiple sclerosis, Parkinson's disease and Huntington's disease: Two meta-analyses.** *Journal of Psychosomatic Research.* [link]

Gliske, K., Richmond, A., Smischney, T., Borden, L. M. (2019). **Mindfulness strategies: Supporting military parents during reintegration.** *Mindfulness.* [link]

Shorey, S., Lina, A. N. G., Cornelia, C. (2019). **A systematic mixed-studies review on mindfulness-based childbirth education programmes and maternal outcomes.** *Nursing Outlook.* [link]

van Laake-Geelen, C. C., Smeets, R. J., Quadflieg, S. P.,...Verbunt, J. A. (2019). **The effect of exercise therapy combined with psychological therapy on physical activity and quality of life in patients with painful diabetic neuropathy: A systematic review.** *Scandinavian Journal of Pain.* [link]

Wharton, E., Kanas, N. (2019). **MBSR for the treatment of anxiety disorders.** *International Journal of Group Psychotherapy.* [link]

TRIALS

Research studies newly funded by the National Institutes of Health (MAY 2019)

Medical University of South Carolina (B. Froeliger, PI). **Neural mechanisms mediating appetitive regulation and smoking in nicotine addiction.** NIH/NIDA project #1R01DA048094-01. [link]

University of California, Irvine (D. Garfin, PI). **Mindfulness intervention to address PTSD in trauma exposed homeless women.** NIH/NIMHHD project #1K01MD013910-01. [link]

Yale University (K Garrison, PI). **Smartband/Smartphone-based automatic smoking detection and real time mindfulness intervention.** NIH/NCCIH project #1R34AT010365-01. [link]

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HIGHLIGHTS

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

Telomeres are repetitive nucleotide sequences at the end of chromosomes that protect coding regions of DNA from deteriorating during cell division. Telomeres shorten not only as we age, but also when we are under stress. Shorter telomeres are linked to an increased incidence of age-related diseases such as cardiovascular disease, and to an increased risk of death. The enzyme telomerase lengthens telomeres through the addition of nucleotide repeats.

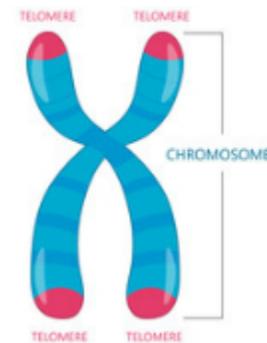
Preliminary studies show that meditation can have a protective effect on telomeres, most likely by increasing telomerase activity. Specific types of meditation may be more effective than others in maintaining telomere length. **Nuygen et al. [Psychoneuroimmunology]** tested whether specific types of meditation practice have a protective effect on telomere length.

The researchers randomly assigned recruits to mindfulness meditation (MM), loving-kindness meditation (LKM), or a wait-list control. Their final sample (excluding dropouts and participants with inadequate DNA samples) consisted of 142 meditation-naïve recruits (average age = 49; 70% female; 81% Caucasian). MM and LKM participants attended six, hour-long, group meditation training workshops held once per week. They also received 20-minute audio-recorded guided meditations to assist in daily home practice.

MM training focused on developing open, non-judgmental attention towards breath, bodily sensations, thoughts, and feelings, as well as choiceless awareness. LKM training focused on cultivating warm feelings towards oneself, a loved one, an acquaintance, a difficult person, and all beings. Two weeks prior to the workshops (and three weeks after) participants donated a blood sample that was used to assess white blood cell (monocyte and lymphocyte) telomere length. Participant moods and extent

of meditation practice were assessed by daily diary.

All groups showed a decrease in telomere length over the course of the study. The mean decrease in telomere length was significantly less for LKM (-0.03) than for the control group (-0.08). The MM group decrease (-0.06) was midway between the other two groups, and not significantly different from either. The average telomere length decrease for all participants combined was equivalent to a loss of 115 DNA base pairs, which is larger than one might expect over a 12-week period. Other studies suggest white blood cell telomeres shorten by an average of 15-50 base pairs per year. Changes in telomere length were unrelated to participants' moods or home practice.



This study provides evidence that, in a sample of middle-aged adults, only loving-kindness meditation significantly decreased the degree of telomere shortening over time compared to a control group. The positive emotions associated with loving-kindness meditation may have a protective function in reducing cellular aging and maintaining wellness. Other factors, however, cannot be ruled out. The fact that this effect was unrelated to mood or home meditation practice makes it hard to specify what it is about LKM training that helped.

The study could not rule out changes in the relative proportion of different white blood cell types present in the blood samples over time that could potentially lead to spurious measures of telomere change. The unexpectedly large magnitude of overall telomere shortening over a relatively brief time span also raises the possibility of unknown collection or assay discrepancies between this study and prior studies.

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Although most cigarette smokers want to quit, only 5% succeed in doing so each year. One reason for this low success rate is that smoking-related cues stimulate strong urges to smoke. Cues include observing someone else smoking, or engaging in activities previously associated with smoking (e.g., work breaks, meals, a cup of coffee, sex). Finding ways to reduce cue-induced urges may help more people quit.

Research shows that a brain area called the posterior cingulate cortex (PCC) becomes activated whenever cigarette smokers are exposed to smoking-related cues. Research also indicates that mindfulness meditation as an intervention reduces PCC activity. **Janes et al.**

[Neuropsychopharmacology] tested whether a smartphone mindfulness app reduced smokers' PCC reactivity to smoking-related cues and their smoking behavior.

The researchers recruited 83 adult smokers who were interested in quitting, 67 of whom completed the study and were included in the final data analysis (average age = 44; 67% female; 91% Caucasian). PCC-reactivity to smoking cues was assessed by functional magnetic resonance imaging (fMRI) and participants were then randomly assigned to either mindfulness training or a control condition. Both conditions used smartphone apps for 4 weeks to help quit smoking. Participants' PCC reactivity to smoking-related cues was re-assessed via fMRI after the intervention.

The mindfulness app consisted of 22 modules that offered daily training videos and on-demand exercises to teach the core elements of mindfulness. The app also helped participants identify triggers, monitor smoking habits, increase awareness of urges, and use mindfulness as a coping mechanism. The control group used the National Cancer Institute's QuitGuide App to help monitor motivation and triggers, as well as offer inspirational messages and tips for dealing with cravings and moods without mindfulness training.

PCC reactivity was measured by having participants view smoking-related and neutral images while undergoing fMRI scanning. The fMRI scans were analyzed for differences in average PCC activation between smoking-related and neutral images.

Results showed that the mindfulness training group decreased average cigarette use by 11 cigarettes ($d = 2.5$) per day, and the control group decreased average use by 9 cigarettes ($d = 1.28$) per day. There was no significant difference in the amount of between-group change on this measure. The mindfulness app group showed a significant correlation ($r=.49$) between cigarette reduction and the number of app modules completed, but the control group ($r=.20$) did not.



Both groups showed high levels of PCC reactivity to smoking-related cues on the fMRI scans at baseline. There were no significant group differences in PCC reactivity change scores over time. Within the mindfulness app group, there was a significant association between decreased PCC cue-related activation ($r=.39$) and decreased smoking. There was no such association between changes in PCC activation and smoking in the control group ($r=.08$).

On further examination, the correlation between PCC change scores and smoking change was significant for females in the mindfulness app group ($r=.49$) but not males ($r=.08$). Not all participants showed heightened PCC activation in response to smoking-related cues. Mindfulness participants who showed the greatest reduction in cue-related PCC activity also showed the greatest reduction in smoking ($d=0.79$), yet there was no such association in the control group. At the end of the study, participants in the mindfulness app group were more likely to recommend their app to a friend ($d=1.5$) as compared to those in the control group.

This study suggests that a mindfulness app can reduce smoking through decreased cue sensitivity and decreased PCC reactivity. However, this effect was dependent on the number of app modules completed, and only significant for female smokers. While the National Cancer Institute's QuitGuide App also reduced smoking, its effect wasn't associated with changes in PCC reactivity. Some smokers may benefit more from a mindfulness app than others; specifically, women who show strong PCC activation in response to smoking-related cues.