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#### Editor-in-Chief

David S. Black, PhD, MPH

#### Highlights by

Seth Segall, PhD

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## INTERVENTIONS

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

Chesin, M. S., Benjamin-Phillips, C. A., Keilp, J.,...Stanley, B. (2016). **Improvements in executive attention, rumination, cognitive reactivity, and mindfulness among high-suicide risk patients participating in adjunct mindfulness-based cognitive therapy: Preliminary findings.** *The Journal of Alternative and Complementary Medicine.* [\[link\]](#)

Fissler, M., Winnebeck, E., Schroeter, T.,...Barnhofer, T. (2016). **An investigation of the effects of brief mindfulness training on self-reported interoceptive awareness, the ability to decenter, and their role in the reduction of depressive symptoms.** *Mindfulness.* [\[link\]](#)

Gotink, R. A., Hermans, K. S., Geschwind, N.,...Speckens, A. E. (2016). **Mindfulness and mood stimulate each other in an upward spiral: A mindful walking intervention using experience sampling.** *Mindfulness.* [\[link\]](#)

Hölzel, B. K., Brunsch, V., Gard, T.,...Milad, M. R. (2016). **Mindfulness-based stress reduction, fear conditioning, and the uncinat fasciculus: A pilot study.** *Frontiers in Behavioral Neuroscience.* [\[link\]](#)

Johannsen, M., OConnor, M., OToole, M. S.,...Zachariae, R. (2016). **Efficacy of mindfulness-based cognitive therapy on late post-treatment pain in women treated for primary breast cancer: A**

**randomized controlled trial.** *Journal of Clinical Oncology.* [\[link\]](#)

de Jong, M., Lazar, S., Hug, K.,...Gard, T. (2016). **Effects of mindfulness-based cognitive therapy on body awareness in patients with chronic pain and comorbid depression.** *Frontiers in Psychology.* [\[link\]](#)

Lengacher, C. A., Reich, R. R., Paterson, C. L.,...Miladinovic, B. (2016). **Examination of broad symptom improvement resulting from mindfulness-based stress reduction in breast cancer survivors: A randomized controlled trial.** *Journal of Clinical Oncology.* [\[link\]](#)

Martins, M. J., Castilho, P., Santos, V., Gumley, A. (2016). **Schizophrenia: An exploration of an acceptance, mindfulness, and compassion-based group intervention.** *Australian Psychologist.* [\[link\]](#)

May, L. M., Reinka, M. A., Tipsord, J. M.,...Berkman, E. T. (2016). **Parenting an early adolescent: A pilot study examining neural and relationship quality changes of a mindfulness intervention.** *Mindfulness.* [\[link\]](#)

Nikolitch, K., Laliberté, V., Yu, C., Strychowsky, N.,...Rej, S. (2016). **Tolerability and suitability of brief group mindfulness-oriented interventions in psychiatric inpatients: A pilot study.** *International Journal of Psychiatry in Clinical Practice.* [\[link\]](#)

Soto-Vásquez, M. R., Alvarado-García, P. A. (2016). **Aromatherapy with two essential oils from satureja genre and mindfulness meditation to reduce anxiety in humans.**

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*Journal of Traditional and Complementary Medicine.* [\[link\]](#)

Stjernswärd, S., Hansson, L. (2016). **Outcome of a web-based mindfulness intervention for families living with mental illness-a feasibility study.** *Informatics for Health and Social Care.* [\[link\]](#)

van Dongen, J. M., van Berkel, J., Boot, C. R.,...van Wier, M. F. (2016). **Long-term cost-effectiveness and return-on-investment of a mindfulness-based worksite intervention: Results of a randomized controlled trial.** *Journal of Occupational and Environmental Medicine.* [\[link\]](#)

Van Gordon, W., Shonin, E., Griffiths, M. D. (2016). **Meditation awareness training for the treatment of sex addiction: A case study.** *Journal of Behavioral Addictions.* [\[link\]](#)

Van Vliet, K. J., Foskett, A. J., Williams, J. L.,...Vohra, S. (2016). **Impact of a mindfulness-based stress reduction program from the perspective of adolescents with serious mental health concerns.** *Child and Adolescent Mental Health.* [\[link\]](#)

Vesa, N., Liedberg, L., Rönnlund, M. (2016). **Two-week web-based mindfulness training reduces stress, anxiety, and depressive symptoms in individuals with self-reported stress: A randomized control trial.** *International Journal of Neurorehabilitation.* [\[link\]](#)

Walsh, E., Eisenlohr-Moul, T., Baer, R. (2016). **Brief mindfulness training reduces salivary IL-6 and TNF- $\alpha$  in young women with depressive symptomatology.**

*Journal of Consulting and Clinical Psychology.* [\[link\]](#)

## ASSOCIATIONS

Articles examining the correlates and mechanisms of mindfulness

Bergeron, C. M., Almgren-Doré, I., Dandeneau, S. (2016). **Letting go (implicitly): Priming mindfulness mitigates the effects of a moderate social stressor.** *Frontiers in Psychology.* [\[link\]](#)

Bergin, A. J., Pakenham, K. I. (2016). **The stress-buffering role of mindfulness in the relationship between perceived stress and psychological adjustment.** *Mindfulness.* [\[link\]](#)

Bing-Canar, H., Pizzuto, J., Compton, R. J. (2016). **Mindfulness-of-breathing exercise modulates EEG alpha activity during cognitive performance.** *Psychophysiology.* [\[link\]](#)

Bravo, A. J., Pearson, M. R., Stevens, L. E., Henson, J. M. (2016). **Depressive symptoms and alcohol-related problems among college students: A moderated-mediated model of mindfulness and drinking to cope.** *Journal of Studies on Alcohol and Drugs.* [\[link\]](#)

Chamberlain, D., Williams, A., Stanley, D.,...Siegloff, L. (2016). **Dispositional mindfulness and employment status as predictors of resilience in third year nursing students: A quantitative study.** *Nursing Open.* [\[link\]](#)

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Chambers, S. K., Foley, E., Clutton, S.,...Gardiner, R. A. (2016). **The role of mindfulness in distress and quality of life for men with advanced prostate cancer.** *Quality of Life Research.* [link]

Costa, J., Pinto-Gouveia, J., Marôco, J. (2016). **Chronic pain experience on depression and physical disability: The importance of acceptance and mindfulness-based processes in a sample with rheumatoid arthritis.** *Journal of Health Psychology.* [link]

Gaudiano, B. A., Primack, J., Miller, I. W. (2016). **Investigating the role of acceptance, mindfulness and values in patients with psychosis in the context of depression.** *Journal of Psychiatric Intensive Care.* [link]

Harker, R., Pidgeon, A. M., Klaassen, F., King, S. (2016). **Exploring resilience and mindfulness as preventative factors for psychological distress burnout and secondary traumatic stress among human service professionals.** *Work.* [link]

Heath, N. L., Joly, M., Carsley, D. (2016). **Coping self-efficacy and mindfulness in non-suicidal self-injury.** *Mindfulness.* [link]

Hicks, M., Hanes, D., Wahbeh, H. (2016). **Expectancy effect in three mind-body clinical trials.** *Journal of Evidence-based Complementary & Alternative Medicine.* [link]

Lazaridou, A., Pentaris, P. (2016). **Mindfulness and spirituality: Therapeutic perspectives.** *Person-Centered & Experiential Psychotherapies.* [link]

Lee, A. C., Harvey, W. F., Price, L. L.,...Wang, C. (2016). **Mindfulness is associated with**

**psychological health and moderates pain in knee osteoarthritis.** *Osteoarthritis and Cartilage.* [link]

Newcombe, B., Weaver, A. D. (2016). **Mindfulness, cognitive distraction, and sexual well-being in women.** *The Canadian Journal of Human Sexuality.* [link]

Scott-Hamilton, J., Schutte, N. S., Moyle, G. M., Brown, R. F. (2016). **The relationships between mindfulness, sport anxiety, pessimistic attributions and flow in competitive cyclists.** *International Journal of Sport Psychology.* [link]

Tabadkan, B. R., Poor, M. M. (2016). **Relationship between meta-cognitive beliefs and mindfulness with ruminative thoughts in students.** *International Journal of Mental Health and Addiction.* [link]

## METHODS

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

Andrei, F., Vesely, A., Siegling, A. B. (2016). **An examination of concurrent and incremental validity of four mindfulness scales.** *Journal of Psychopathology and Behavioral Assessment.* [link]

Johnson, C., Burke, C., Brinkman, S., Wade, T. (2016). **Development and validation of a multifactor mindfulness scale in youth: The comprehensive inventory of mindfulness experiences-adolescents (CHIME-A).** *Psychological Assessment.* [link]

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Nam, S., Toneatto, T. (2016). **The influence of attrition in evaluating the efficacy and effectiveness of mindfulness-based interventions.** *International Journal of Mental Health and Addiction.* [\[link\]](#)

Wielgosz, J., Schuyler, B. S., Lutz, A., Davidson, R. J. (2016). **Long-term mindfulness training is associated with reliable differences in resting respiration rate.** *Scientific Reports.* [\[link\]](#)

## REVIEWS

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

Brass, E. (2016). **How mindfulness can benefit nursing practice.** *Nursing Times.* [\[link\]](#)

Fish, J., Brimson, J., Lynch, S. (2016). **Mindfulness interventions delivered by technology without facilitator involvement: What research exists and what are the clinical outcomes?** *Mindfulness.* [\[link\]](#)

Forbes, D. (2016). **Modes of mindfulness: Prophetic critique and integral emergence.** *Mindfulness.* [\[link\]](#)

Nilsson, H., Kazemi, A. (2016). **Reconciling and thematizing definitions of mindfulness: The big five of mindfulness.** *Review of General Psychology.* [\[link\]](#)

Petterson, H., Olson, B. L. (2016). **Effects of mindfulness-based interventions in high school and college athletes for reducing**

**stress and injury, and improving quality of life.** *Journal of Sport Rehabilitation.* [\[link\]](#)

Shobbrook-Fisher, Z. (2016). **Passionate about presence-a reflection on the experience of being a person-centered therapist who teaches mainstream mindfulness.** *Person-Centered & Experiential Psychotherapies.* [\[link\]](#)

Tang, Y. Y., Tang, R., Posner, M. I. (2016). **Mindfulness meditation improves emotion regulation and reduces drug abuse.** *Drug and Alcohol Dependence.* [\[link\]](#)

## TRIALS

Research studies newly funded by the National Institutes of Health (JUN 2016)

California Pacific Medical Center Research Institute (A. R. Pressman). **Mindfulness and migraine: A randomized controlled trial.** NIH/NCCIH project #1R01AT009081-01. [\[link\]](#)

Georgia State University (C. A. Spears). **Using mobile technology to understand and encourage mindfulness for smoking cessation.** NIH/NCCIH project # 7K23AT008442-03. [\[link\]](#)

Idaho State University (E. Rasmussen, PI). **Food insecurity, obesity, and impulsive food choice.** NIH/NCCIH project #1R15AT009348-01. [\[link\]](#)

Wake Forest University (A. Adler, PI). **The effects of mindfulness meditation on pain and heart rate variability.** NIH/NCCIH project #1F30AT009165-01. [\[link\]](#)

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## HIGHLIGHTS

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

Up to one-in-five breast cancer survivors experience persistent moderate-to-severe pain five years after treatment. Pain may result from surgery, radiation, or chemotherapy-induced tissue and nerve damage. Since pain can be both exacerbated and modulated by psychological factors, breast cancer survivors with persistent pain may potentially benefit from psychosocial interventions to lessen pain and improve quality of life. **Johannsen et al. [Journal of Clinical Oncology]** conducted a randomized, controlled trial to test the efficacy of Mindfulness-Based Cognitive Therapy (MBCT) on reducing pain and improving quality of life in breast cancer survivors who reported persistent pain.

One hundred and twenty-nine Danish breast cancer survivors (average age = 57) who were at least 3 months post-surgery and had continuing pain ratings  $\geq 3$  on a 0-10 numerical rating scale were randomly assigned to either MBCT or a wait-list control. Self-report measures of pain, quality of life, and psychological distress were completed at baseline, after intervention, and at 3- and 6-month follow-up. The MBCT protocol was the standard 8-week protocol used in treating recurrent depression, but modified to meet the needs of breast cancer survivors: session lengths were cut to 2 hours each, meditations were shortened to  $\leq 30$  minutes each, the yoga was "gentler," and the all-day session was omitted.

MBCT participants showed significantly greater reductions than controls in pain intensity (Cohen's  $d = .61$ ) on a 0-10 numerical rating scale. Average pain intensity ratings decreased from 5.5 at baseline to 4.0 post-intervention, then

dropped further to 3.6 at 3-month follow-up. In contrast, wait-list control pain intensity remained essentially unchanged (5.3 at baseline, 5.3 at post-intervention, 5.0 at 3-month follow-up). MBCT participants improved significantly more on quality of life ( $d = .42$ ), with MBCT participants showing a 10% improvement and controls a 3% improvement. MBCT participants also significantly decreased their use of nonprescription pain medication ( $d = .40$ ) by 20% at post-intervention, while controls showed no change.



The magnitude of improvements in pain intensity and quality of life was associated with the participants' degree of MBCT program participation. Participants who attended more sessions had less pain intensity ( $d = .44$ ) and a better quality of life ( $d = .38$ ). In addition, the more time participants spent practicing meditation at home, the better their quality of life ( $d = .49$ ).

The study findings show that MBCT participation results in clinically meaningful decreases in pain intensity, increases in quality of life, and decreases in non-prescription pain medication use for breast cancer survivors with persistent post-treatment pain. These improvements continue up to 6-months after program completion. The more breast cancer survivors participate in the program and engage in meditation practice at home, the better their outcomes. As the control group was a wait-list control, it is not possible to say whether the observed improvements were due to mindfulness practice or to other factors such as group support, cognitive therapy, or expectancy effects.

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Many forms of meditation include an aspect of increased attention to and focus on the breath. This raises the question of whether breath-focused meditations change the way people breathe over time. This question is of interest because rapid, irregular breathing is associated with stress and anxiety, while slow, deep breathing is often prescribed to overcome negative emotional states. It's possible that slowed respiration rates may account for some of the emotional well-being associated with long-term meditation practice.

Weilgosz et al. [*Scientific Reports*] measured the respiration rates of long-term meditators (LTMs) and meditation-naïve controls on three separate occasions over the course of a little over one year. The authors examined whether greater amounts of long-term practice were associated with greater decreases in respiration rate, and whether an intensive day of meditation practice acutely changed respiration rate.

The study recruited 31 long-term meditators (average age = 51; 55% female) with 3 or more years of mindfulness meditation experience, a daily meditation practice lasting at least 30 minutes, and a history of 3 or more intensive meditation retreats. The LTMs were recruited from meditation centers across the United States and had an average of 4,658 hours of intensive retreat experience (range = 258 to 29,710 hours). The LTMs were contrasted with a group of meditation-naïve controls of roughly similar age and gender (average age = 48; 68% female) recruited from the local Madison, Wisconsin area.

Participants had their respiration rates measured in a laboratory on three separate occasions spaced approximately 4.5 months apart. Their breathing was assessed while they were at rest, but there were no instructions to meditate during these assessment sessions. Prior to two of the laboratory sessions, LTMs completed 8 hours of either intensive open monitoring or lovingkindness meditation. The controls spent an equivalent amount of time engaged in leisure activities (reading, computer games, watching documentaries) prior to one of their laboratory assessments. The researchers

also correlated LTM's lifetime hours of retreat practice and daily home practice with their laboratory-measured respiration rates.



Respiration rates showed a good reliability across laboratory sessions for both LTMs and controls. LTM respiration rates were, on average, 1.6 breaths per minute slower than control rates; this group difference was significant. Engaging in leisure activities, open monitoring meditation, or lovingkindness meditation prior to assessment had no acute effect on laboratory session respiration rates. The extent of meditator's daily home meditation practice was also unrelated to their respiration rates. On the other hand, there was a significant inverse relationship between retreat experience and respiration rate: the greater the number of hours meditators had spent on retreat, the slower their respiration rates. The slope of the relationship was such that a doubling of retreat hours was associated with a decrease of 0.7 breaths per minute.

These findings support the hypothesis that long-term mindfulness practice slows respiration rate in a reliable way, and that this slowing is not associated with either immediate recent practice or daily home practice, but rather with cumulative hours of intensive retreat practice. The results suggest a possible special role for intensive retreat practice in developing certain physiological correlates of mindfulness meditation practice. Additional research is needed to determine whether these decreased respiration rates are correlated with increased physical and mental well-being. One study limitation is that meditators may have spontaneously meditated during their laboratory measurement sessions, even though they hadn't been instructed to do so, thus altering their breathing rates.