

Editorial

The Potential of Mind-Body Medicine for the Prevention and Treatment of Stress and Trauma

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The significance of psychological and behavioral factors on health becomes particularly pronounced during vulnerable life stages such as childhood and old age (Dinan & Cryan, 2017), as well as in challenging circumstances (Dhabhar, 2014), ranging from extreme conditions such as space travel to traumatic events. Chronic stress, as highlighted in several studies (e.g., Bottaccioli et al., 2019; Nagaraja et al., 2016), is a paramount contributor to health outcomes. Both Mind-Body Medicine (MBM) and stress research draw a clear distinction between the impacts of chronic stress and acute, yet moderate, stress on health (Dhabhar, 2014). Even in situations perceived positively, the dosage and duration of stress are crucial, as prolonged stress, even when viewed positively, can pose health risks (Dhabhar, 2014). Understanding the intricate mechanisms by which stress and trauma affect health is a pivotal goal, and basic research in MBM seeks to unravel these complex relationships (Seifert et al., 2020).

Various MBM interventions, including mindfulness, compassion, yoga, and meditation practices, show potential for reducing stress during or after stressful periods (Black & Slavich, 2016; Kuo, 2015; Pace et al., 2009). Psychological processes, along with psychological and behavioral interventions, have been extensively studied for their influence on the immune system (Black & Slavich, 2016; Bottaccioli et al., 2019; Cruces et al., 2014; Falkenberg et al., 2018), positive

psychological well-being (Boehm & Kubzansky, 2012), physiological functions (Gallegos et al., 2017; Pascoe et al., 2017), and the mind's impact on chronic diseases (Caes et al., 2017).

Notably, MBM therapies such as meditation have demonstrated a positive impact on inflammatory activity and virus-specific immune responses (Morgan et al., 2014). Of particular interest is the possibility of improved antibody response through meditation in individuals experiencing chronic stress, immunocompromised individuals, and older adults (Seifert et al., 2020). Studies that directly measure antibodies reveal intriguing findings, including mindfulness-based stress reduction (MBSR) resulting in significant increases in hemagglutination-inhibition influenza antibody titers (Hayney et al., 2014).

The literature on meditation as a stress-reduction method presents promising applications during or after stressful events (Gallegos et al., 2017; Pascoe et al., 2017). A randomized study indicates that MBSR may serve as a novel treatment approach to reduce social risk factors such as loneliness, along with molecular pro-inflammatory gene expression in older adults (Creswell et al., 2012). Meditation in general holds potential for reducing inflammation, including gene expression, cellular health, and chromosomal health (Esch et al., 2018), demonstrating self-regulatory and self-healing capabilities within the inherent

restorative capabilities of the mind and body (Esch, 2020).

Additionally, other MBM interventions, such as yoga, demonstrate beneficial effects by enhancing immune function (Falkenberg et al., 2018) and mitigating stress-related risk factors, including hypertension, obesity, and cardiovascular risk factors (Cramer, Haller, et al., 2014; Cramer, Lauche, et al., 2014; Lauche et al., 2016). Both yoga and meditation, examined from the perspective of Traditional Indian Medicine, are emerging as potentially effective tools in the context of the current pandemic due to their global popularity (Bushell et al., 2020; Payyappallimana et al., 2020; Tillu et al., 2020).

Qigong, supported by a growing body of scientific evidence (Guo et al., 2019; Zou et al., 2019), has been shown to be effective in improving cardiovascular risk factors in participants with metabolic syndrome according to a meta-analysis (Zou et al., 2019). Comprehensive MBM trainings, encompassing

relaxation, nutritional counseling, and exercise within a multimodal group program (e.g. as described in Esch & Stefano, 2022), positively influence cardiovascular risk factors such as atherosclerosis and systolic blood pressure (Cramer et al., 2015). Some multimodal interventions include spiritual components aimed at enhancing connectedness with oneself, others, nature, or a higher power. Wondering Awe, for instance, has been identified as a crucial resource for psychological well-being during the COVID-19 pandemic (Büssing et al., 2023).

Collectively, MBM offers a range of easily implementable, evidence-based preventive and therapeutic options for stress-related diseases and for enhancing physical and mental resilience, with potential implications for the prevention and treatment of stress and trauma. However, further basic and clinical research, including methodologically rigorous studies, is imperative. Continuous updates to reviews are essential to provide a well-balanced perspective on the evolving data landscape.

References

- Black, D. S., & Slavich, G. M. (2016). Mindfulness meditation and the immune system: A systematic review of randomized controlled trials. *Annals of the New York Academy of Sciences*, 1373(1), 13–24. <https://doi.org/10.1111/nyas.12998>
- Boehm, J. K., & Kubzansky, L. D. (2012). The heart's content: the association between positive psychological well-being and cardiovascular health. *Psychological Bulletin*, 138(4), 655–691. [10.1037/a0027448](https://doi.org/10.1037/a0027448)
- Bottaccioli, A. G., Bottaccioli, F., & Minelli, A. (2019). Stress and the psyche-brain-immune network in psychiatric diseases based on psychoneuroendocrineimmunology: A concise review. *Annals of the New York Academy of Sciences*, 1437(1), 31–42. <https://doi.org/10.1111/nyas.13728>
- Bushell, W., Castle, R., Williams, M. A., Brouwer, K. C., Tanzi, R. E., Chopra, D., & Mills, P. J. (2020). Meditation and Yoga Practices as Potential Adjunctive Treatment of SARS-CoV-2 Infection and COVID-19: A Brief Overview of Key Subjects. *Journal of Alternative and Complementary Medicine*, 26(7), 547–556. <https://doi.org/10.1089/acm.2020.0177>
- Büssing, A., Zini, A., & Vered, Y. (2023). Experience of Wondering Awe and Perception of Nature as a Resource during the COVID-19 Pandemic: Findings from a Cross Sectional Survey of Participants in Jerusalem. *Religions*, 14(2), 1–13. <https://doi.org/10.3390/rel14020276>
- Caes, L., Orchard, A., & Christie, D. (2017). Connecting the Mind-Body Split: Understanding the Relationship between Symptoms and Emotional Well-Being in Chronic Pain and Functional Gastrointestinal Disorders. *Healthcare*, 5(4). <https://doi.org/10.3390/healthcare5040093>
- Cramer, H., Haller, H., Lauche, R., Steckhan, N., Michalsen, A., & Dobos, G. (2014). A systematic review and meta-analysis of yoga for hypertension. *American Journal of Hypertension*, 27(9), 1146–1151. <https://doi.org/10.1093/ajh/hpu078>
- Cramer, H., Lauche, R., Haller, H., Steckhan, N., Michalsen, A., & Dobos, G. (2014). Effects of yoga on cardiovascular disease risk factors: A systematic review and meta-analysis. *International Journal of Cardiology*, 173(2), 170–183. <https://doi.org/10.1016/j.ijcard.2014.02.017>

- Cramer, H., Lauche, R., Paul, A., Langhorst, J., Michalsen, A., & Dobos, G. (2015). Mind-Body Medicine in the Secondary Prevention of Coronary Heart Disease. *Deutsches Arzteblatt International*, *112*(45), 759–767. <https://doi.org/10.3238/arztebl.2015.0759>
- Creswell, J. D., Irwin, M. R., Burklund, L. J., Lieberman, M. D., Arevalo, J. M. G., Ma, J., Breen, E. C., & Cole, S. W. (2012). Mindfulness-Based Stress Reduction training reduces loneliness and pro-inflammatory gene expression in older adults: A small randomized controlled trial. *Brain, Behavior, and Immunity*, *26*(7), 1095–1101. <https://doi.org/10.1016/j.bbi.2012.07.006>
- Cruces, J., Venero, C., Pereda-Pérez, I., & La Fuente, M. de (2014). The effect of psychological stress and social isolation on neuroimmunoendocrine communication. *Current Pharmaceutical Design*, *20*(29), 4608–4628. <https://doi.org/10.2174/1381612820666140130205822>
- Dhabhar, F. S. (2014). Effects of stress on immune function: The good, the bad, and the beautiful. *Immunologic Research*, *58*(2-3), 193–210. <https://doi.org/10.1007/s12026-014-8517-0>
- Dinan, T. G., & Cryan, J. F. (2017). Microbes, Immunity, and Behavior: Psychoneuroimmunology Meets the Microbiome. *Neuropsychopharmacology : Official Publication of the American College of Neuropsychopharmacology*, *42*(1), 178–192. <https://doi.org/10.1038/npp.2016.103>
- Esch, T. (2020). Self-healing in health-care: Using the example of mind-body medicine [Der Nutzen von Selbstheilungspotenzialen in der professionellen Gesundheitsfürsorge am Beispiel der Mind-Body-Medizin]. *Bundesgesundheitsblatt, Gesundheitsforschung, Gesundheitsschutz*, *63*(5), 577–585. <https://doi.org/10.1007/s00103-020-03133-8>
- Esch, T., Kream, R. M., & Stefano, G. B. (2018). Chromosomal Processes in Mind-Body Medicine: Chronic Stress, Cell Aging, and Telomere Length. *Medical Science Monitor Basic Research*, *24*, 134–140. <https://doi.org/10.12659/MSMBR.911786>
- Esch, T., & Stefano, G. B. (2022). The BERN Framework of Mind-Body Medicine: Integrating Self-Care, Health Promotion, Resilience, and Applied Neuroscience. *Frontiers in Integrative Neuroscience*, *16*, 913573. <https://doi.org/10.3389/fnint.2022.913573>
- Falkenberg, R. I., Eising, C., & Peters, M. L. (2018). Yoga and immune system functioning: A systematic review of randomized controlled trials. *Journal of Behavioral Medicine*, *41*(4), 467–482. <https://doi.org/10.1007/s10865-018-9914-y>
- Gallegos, A. M., Crean, H. F., Pigeon, W. R., & Heffner, K. L. (2017). Meditation and yoga for posttraumatic stress disorder: A meta-analytic review of randomized controlled trials. *Clinical Psychology Review*, *58*, 115–124. <https://doi.org/10.1016/j.cpr.2017.10.004>
- Guo, L., Kong, Z., & Zhang, Y. (2019). Qigong-Based Therapy for Treating Adults with Major Depressive Disorder: A Meta-Analysis of Randomized Controlled Trials. *International Journal of Environmental Research and Public Health*, *16*(5). <https://doi.org/10.3390/ijerph16050826>
- Hayney, M. S., Coe, C. L., Muller, D., Obasi, C. N., Backonja, U., Ewers, T., & Barrett, B. (2014). Age and psychological influences on immune responses to trivalent inactivated influenza vaccine in the meditation or exercise for preventing acute respiratory infection (MEPARI) trial. *Human Vaccines & Immunotherapeutics*, *10*(1), 83–91. <https://doi.org/10.4161/hv.26661>
- Kuo, M. (2015). How might contact with nature promote human health? Promising mechanisms and a possible central pathway. *Frontiers in Psychology*, *6*. <https://www.frontiersin.org/articles/10.3389/fpsyg.2015.01093>
- Lauche, R., Langhorst, J., Lee, M. S., Dobos, G., & Cramer, H. (2016). A systematic review and meta-analysis on the effects of yoga on weight-related outcomes. *Preventive Medicine*, *87*, 213–232. <https://doi.org/10.1016/j.ypmed.2016.03.013>
- Morgan, N., Irwin, M. R., Chung, M., & Wang, C. (2014). The effects of mind-body therapies on the immune system: Meta-analysis. *PloS One*, *9*(7), e100903. <https://doi.org/10.1371/journal.pone.0100903>
- Nagaraja, A. S., Sadaoui, N. C., Dorniak, P. L., Lutgendorf, S. K., & Sood, A. K. (2016). Snapshot: Stress and Disease. *Cell Metabolism*, *23*(2), 388–388.e1. <https://doi.org/10.1016/j.cmet.2016.01.015>

- Pace, T. W. W., Negi, L. T., Adame, D. D., Cole, S. P., Sivilli, T. I., Brown, T. D., Issa, M. J., & Raison, C. L. (2009). Effect of compassion meditation on neuroendocrine, innate immune and behavioral responses to psychosocial stress. *Psychoneuroendocrinology*, *34*(1), 87–98. <https://doi.org/10.1016/j.psyneuen.2008.08.011>
- Pascoe, M. C., Thompson, D. R., Jenkins, Z. M., & Ski, C. F. (2017). Mindfulness mediates the physiological markers of stress: Systematic review and meta-analysis. *Journal of Psychiatric Research*, *95*, 156–178. <https://doi.org/10.1016/j.jpsychires.2017.08.004>
- Payyappallimana, U., Patwardhan, K., Mangalath, P., Kessler, C. S., Jayasundar, R., Kizhakkeveetil, A., Morandi, A., & Puthiyedath, R. (2020). The COVID-19 Pandemic and the Relevance of Ayurveda's Whole Systems Approach to Health and Disease Management. *Journal of Alternative and Complementary Medicine*, *26*(12), 1089–1092. <https://doi.org/10.1089/acm.2020.0370>
- Seifert, G., Jeitler, M., Stange, R., Michalsen, A., Cramer, H., Brinkhaus, B., Esch, T., Kerckhoff, A., Paul, A., Teut, M., Ghadjar, P., Langhorst, J., Häupl, T., Murthy, V., & Kessler, C. S. (2020). The Relevance of Complementary and Integrative Medicine in the COVID-19 Pandemic: A Qualitative Review of the Literature. *Frontiers in Medicine*, *7*. <https://www.frontiersin.org/articles/10.3389/fmed.2020.587749>
- Tillu, G., Chaturvedi, S., Chopra, A., & Patwardhan, B. (2020). Public Health Approach of Ayurveda and Yoga for COVID-19 Prophylaxis. *Journal of Alternative and Complementary Medicine*, *26*(5), 360–364. <https://doi.org/10.1089/acm.2020.0129>
- Zou, L., Zhang, Y., Sasaki, J. E., Yeung, A. S., Yang, L., Loprinzi, P. D., Sun, J., Liu, S., Yu, J. J., Sun, S., & Mai, Y. (2019). Wuqinxi Qigong as an Alternative Exercise for Improving Risk Factors Associated with Metabolic Syndrome: A Meta-Analysis of Randomized Controlled Trials. *International Journal of Environmental Research and Public Health*, *16*(8). <https://doi.org/10.3390/ijerph16081396>