UPDATED RESEARCH ARTICLES: 2009 – 2018

Lopez, G., et al. (2018). A pragmatic evaluation of symptom distress after group meditation for cancer patients and caregivers: a preliminary report. ***Journal of Pain and Symptom Management (ahead of print).***

Department of Palliative, Rehabilitation, and Integrative Medicine, The University of Texas MD Anderson Cancer Center.

- Investigated the effects of a meditation group class on cancer patient and caregiver self-reported symptoms (n = 142).
- Participants (patients and caregivers) completed various scales measuring their psychological and physical state before and after participation in the meditation classes.
- Significant improvements of individual symptoms of anxiety, fatigue, shortness of breath and well-being were observed following the meditation classes in both cancer patients and caregivers.
- **Abstract: http://www.jpsmjournal.com/article/S0885-3924(18)30038-1/pdf**

Ooi, S.L., et al. (2017). Transcendental meditation for lowering blood pressure: An overview of systematic reviews and meta-analyses. ***Complementary Therapies in Medicine, 34,*** **26-34.**

Centre of Complementary & Alternative Medicine, Singapore

- This paper provides an overview of systematic reviews and meta-analyses on the effects of transcendental meditation on blood pressure. From the papers analysed, there is increasing evidence of the effectiveness of transcendental meditation to reduce blood pressure. This effect is similar to the effect of other lifestyle interventions, such as diet and exercise.
- **Abstract: https://www.sciencedirect.com/science/article/pii/S0965229917302285?via%3Dihub**

Spadaro, K.C., et al. (2017). Effect of mindfulness meditation on short-term weight loss and eating behaviors in overweight and obese adults: A randomized controlled trial. ***Journal of Complementary and Integrative Medicine (ahead of print).***

Nursing Programs, Chatham University

- Investigated the effect of mindfulness meditation on clinical standard weight loss programs (n = 46).
- Participants were randomly assigned to a 6-month weight loss program only or a weight loss program plus mindfulness meditation group.
- Eating behaviours and dietary restraint were significantly improved in the weight loss program plus mindfulness meditation group, compared to the weight loss only group, and mindfulness meditation increased weight loss by 2.8kgs.
- **Abstract: https://www.degruyter.com/view/j/jcim.ahead-of-print/jcim-2016-0048/jcim-2016-0048.xml**

Chaix, R., et al. (2017). Epigenetic clock analysis in long-term meditators. ***Psychoneuroendocrinology, 85,*** **210-214.**

Eco-Anthropologie et Ethnobiologie

- Investigated whether meditation influences the epigenetic clock, which is a strong and reproducible biomarker of biological aging.
- Measured the DNA methylome from blood cells from a group of long-term meditators and a group of non-meditators as an estimate of age acceleration.
- An inverse relationship was found between age acceleration and the number of years of regular meditation practice suggesting that long term meditation could help to slow the epigenetic clock.
- **Abstract:** **http://www.psyneuen-journal.com/article/S0306-4530(17)30403-1/pdf**

Brandmeyer, T., Delorme, A. (2016). Reduced mind wandering in experienced meditators and associated EEG correlates. ***Experimental Brain Research, Nov,*** **1-10.**

Centre National de la Recherche Scientifique (CNRS)

- Investigated the relationship between mind wandering and meditation between meditators with a moderate level of experience (non-expert) and those well advanced in their practice (expert).
- Used a novel paradigm using self-reports of internal mental states during ~1 h of seated concentration meditation to gain insight into the dynamic measures of electroencephalography (EEG).
- Expert meditation practitioners reported a greater depth and frequency of sustained meditation, whereas non-expert practitioners reported a greater depth and frequency of mind wandering episodes.
- These results were reflected in EEG activations where expert meditators demonstrated increases in rhythms often observed during executive functioning, cognitive control and the active monitoring of sensory information during meditation as compared to mind wandering.
- **Abstract:** **https://link.springer.com/article/10.1007%2Fs00221-016-4811-5#citeas**

Zeidan, F., Vago, D.R. (2016). Mindfulness meditation-based pain relief: a mechanistic account. ***Annals of the New York Academy of Sciences, 1373*****(1), 114-127.**

Department of Neurobiology and Anatomy, Wake Forest University School of Medicine

- This paper reviews studies investigating the effects of meditation on pain relief. The studies cited reported that mindfulness meditation significantly attenuates pain through multiple, unique mechanisms.
- **Full text:** **https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4941786/**

Tomasino, B., Fabbro, F. (2015). Increases in the right dorsolateral prefrontal cortex and decreases the rostral prefrontal cortex activation after 8 weeks of focused attention based mindfulness meditation. ***Brain and Cognition, 102,*** **46-54.**

Department of Human Sciences, University of Udine

- Investigated the brain activation changes in response to mindfulness meditation.
- Participants underwent an fMRI pre and post meditation training.
- Mindfulness meditation led to increased activation in areas of the brain involved with focussing attention and corporeal awareness and decreased activation in areas associated with mentalizing.
- **Abstract:** http://www.sciencedirect.com/science/article/pii/S0278262615300439

Zeidan, F., et al. (2015). Mindfulness meditation-based pain relief employs different neural mechanisms than placebo and sham mindfulness meditation-induced analgesia. *The Journal of Neuroscience, 35(46),* 15307-15325.

Department of Neurobiology and Anatomy, Wake Forest School of Medicine

- Investigated whether the analgesic mechanisms of meditation are distinct to that of the placebo effect (n = 75).
- Participants were randomly assigned to one of four conditions: mindfulness meditation, placebo conditioning, sham mindfulness meditation, or book-listening control intervention
- All manipulation conditions (mindfulness meditation, placebo conditioning and sham. mindfulness meditation) led to reductions in pain intensity and pain unpleasantness ratings compared to the control, though mindfulness meditation reduced both of these ratings more than the other two manipulations.
- The analgesia related to mindfulness meditation was associated with greater activation in brain regions associated with the cognitive modulation of pain compared to the other two manipulations suggesting that this intervention operates through unique neural mechanisms.
- **Purchase full text:** http://www.jneurosci.org/content/35/46/15307.long

Quach, D., et al. (2015). A randomized controlled trial examining the effect of mindfulness meditation on working memory capacity in adolescents. *The Journal of Adolescent Health (ahead of print).*

California School of Professional Psychology, Alliant International University

- Assessed the efficacy of a mindfulness mediation program on working memory capacity in adolescents (n = 198).
- Participants were randomly allocated to one of three groups: mindfulness meditation, hatha yoga or a waitlist control.
- Mindfulness meditation led to significant improvements in working memory capacity compared to both the hatha yoga and waitlist control conditions. No differences were found for stress and anxiety as a result of the intervention.
- **Abstract:** http://www.jahonline.org/article/S1054-139X(15)00380-8/abstract

Cash, E., et al. (2015). Mindfulness meditation alleviates fibromyalgia symptoms in women: results of a randomized clinical trial. *Annals of Behavioral Medicine, 49(3),* 319-330.

Department of Surgery, Division of Otolaryngology, University of Louisville School of Medicine

- Assessed the effect of a mindfulness mediation program among female fibromyalgia patients (n = 91).
- The meditation program led to reduced perceived stress, sleep disturbance, and symptom severity comparted to controls. In addition, the above-mentioned improvements were maintained at follow-up.
- **Abstract: http://link.springer.com/article/10.1007%2Fs12160-014-9665-0**

la Cour, P., Peterson, M. (2015). Effects of mindfulness meditation on chronic pain: a randomized controlled trial. *Pain Medicine, 16(4),* 641-652.

Center for Functional Diseases, Mental Health Center, Copenhagen Multidisciplinary Pain Center

- Investigated the effects of mindfulness meditation on chronic pain (n = 109).
- Meditation led to lower general anxiety and depression, better mental quality of life, feeling in control of the pain, and higher pain acceptance.
- **Full text: http://painmedicine.oxfordjournals.org/content/16/4/641.long**

Britton, W.B., et al. (2014). A randomized controlled pilot trial of classroom-based mindfulness meditation compared to an active control condition in sixth-grade children. *Journal of School Psychology, 52(3),* 263-278.

Department of Psychiatry and Human Behavior, Brown University Medical School

- Investigated the effects of a teacher-implemented mindfulness meditation intervention on clinical measures of mental health and affect in school children (n = 101).
- Children in the meditation group had a reduced risk of developing suicidal ideation and thoughts of self-harm compared to an active control group.
- **Full text: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4060047/**

Creswell, J.D., et al. (2014). Brief mindfulness meditation training alters psychological and neuroendocrine responses to social evaluative stress. *Psychoneuroendocrinology, 44,* 1-12.

Carnegie Mellon University

- Investigated the effect of brief mindfulness mediation training on psychological (stress perceptions) and neuroendocrine (salivary cortisol) responses to a social evaluative stress challenge (n = 66).
- Brief mindfulness meditation training reduced psychological stress reactivity but increased salivary cortisol to the stress test.
- **Abstract: http://www.psyneuen-journal.com/article/S0306-4530(14)00058-4/abstract**

Gard, T., Hözel, B.K., & Lazar, S.W. (2014). The potential effects of meditation on age-related cognitive decline: a systematic review. *Annals of the New York Academy of Sciences, 1307,* 89-103.

Massachusetts General Hospital, Harvard Medical School

- This paper reviews studies investigating the effects of meditation on age-related cognitive decline. The studies cited reported positive effects on attention, memory,

executive function, processing speed, and general cognition. The review concluded that preliminary evidence suggests that meditation for older adults can attenuate age-related cognitive decline.
- **Full text:** http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4024457/

Hoge, E.A., et al. (2013). Randomized controlled trial of mindfulness meditation for generalized anxiety disorder: effects on anxiety and stress reactivity. ***The Journal of Clinical Psychiatry, 72(8),*** **786-792.**

Centre for Anxiety and Traumatic Stress Disorders, Massachusetts General Hospital

- Investigated the effectiveness of a mindfulness based meditation practice to improve symptoms of generalized anxiety disorder (GAD), a disorder characterized by excessive or disproportionate anxiety about multiple aspects of life, compared to an active control (n = 93)
- Participants with GAD were randomly assigned to a Mindfulness-Based Stress Reduction (MBSR) program or to an active control group
- MSBR led to a significant reduction of anxiety symptoms and was also associated with greater reductions in anxiety and distress ratings in response to a stress challenge compared to the active control. This latter result suggests an improvement in coping and stress reactivity in response to a stressor.
- **Full text:** http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3772979/

Sedlmeier, P., et al. (2012). The psychological effects of meditation: A meta-analysis. ***Psychological Bulletin, 138*****, 1139–1171.**

Department of Psychology, Chemnitz University of Technology

- This meta-analysis gives a comprehensive overview of the effects of meditation on psychological variables that can be extracted from empirical studies, concentrating on the effects of meditation on nonclinical groups of adult meditators. In general, results were strongest (medium to large) for changes in emotionality and relationship issues, less strong (about medium) for measures of attention, and weakest (small to medium) for more cognitive measures. However, specific findings varied across different approaches to meditation (transcendental meditation, mindfulness meditation, and other meditation techniques).
- **Abstract:** http://psycnet.apa.org/journals/bul/138/6/1139/

Manocha, R., Black, D., Wilson, L. (2012). Quality of life and functional health status of long-term meditators. ***Evidence Based Complementary and Alternative Medicine: eCam,*** **350674.**

Sydney Medical School, University of Sydney

- Compared the quality of life and functional health of long-term meditators (n = 343) to that of the normative Australian population.
- Bodily pain, general health, mental health, social functioning and vitality were significantly better in meditators compared to national norms.

- A significant correlation was found between frequency of mental silence experience and the vitality, general health and mental health subscales, which may imply a causal link.
- **Full text:** http://www.hindawi.com/journals/ecam/2012/350674/

Jacobs, T.L., et al. (2011). Intensive meditation training, immune cell telomerase activity, and psychological meditators. ***Psychoneuroendocrinology, 36(5),*** **664-681.**

Davis Center for Mind and Brain, University of California

- Investigated the effects of a 3-month meditation retreat (meditated for 6 hours daily) on a predictor of long-term cellular viability (telomerase) as well as the appraisal of stress (n = 60).
- Telomerase activity was significantly greater in retreat participants compared to controls.
- Increases in Perceived Control, decreases in Neuroticism and increases in both Mindfulness and Purpose in Life were greater in the retreat group.
- **Abstract:** http://www.psyneuen-journal.com/article/S0306-4530(10)00243-X/abstract

Luders, E., Clark, K., Narr, K.L., Toga, A.W. (2011). Enhanced brain connectivity in long-term meditation practitioners. ***Neuroimage, 57(4),*** **1308-1316**

Department of Neurology, UCLA School of Medicine

- Used a neuroimaging technique to examine the brains of long-term meditators and controls (n = 54).
- Results showed pronounced structural connectivity in meditators compared to controls
- throughout the entire brain.
- **Full text:** http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3176828/

Manocha, R., et al. (2011). A randomized, controlled trail of meditation for work stress, anxiety and depressed mood in full-time workers. ***Evidence Based Complementary and Alternative Medicine: eCam,*** **960583.**

Sydney Medical School, University of Sydney

- Assessed the effect of an 8 week meditation program on work stress, anxiety and mood in full-time workers.
- Used a variety of questionnaires and compared meditators (n = 59), a relaxation active control group (n = 56) and a wait-list control group (n = 63) before and after the 8-week period.
- Meditation was found to significantly reduce psychological strain as well as depressive feelings compared to both the relaxation and wait-list control groups.
- Has specific implications for work stress and therefore occupational health.
- **Full text:** http://www.hindawi.com/journals/ecam/2011/960583/

Brown, C.A., Jones, A.K. (2010). Meditation experience predicts less negative appraisal of pain: electrophyisiological evidence for the involvement of anticipatory neural responses. ***Pain, 150(3),*** **428-438.**

Human Pain Research Group, University of Manchester

- Compared experienced meditators to controls in their appraisal of pain
- Pain induced using laser stimuli.
- More experienced meditators perceived the pain as less unpleasant relative to controls.
- **Abstract:** **http://journals.lww.com/pain/pages/articleviewer.aspx?year=2010&issue=09000&article=00013&type=abstract**

Kaul, P., et al. (2010). Meditation acutely improves psychomotor vigilance, and may decrease sleep need. *Behavioural and Brain Function: BBF, 6,* 47.

Department of Biology, University of Kentucky

- Investigated whether meditation leads to an improvement in a psychomotor vigilance task (n = 10) and also whether long-term meditation alters sleep needs (n = 30).
- All 10 novice meditators improved their psychomotor vigilance.
- Sleep duration in long-term meditators was lower than controls and general population norms.
- **Full text: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2919439/**

Luders, E., et al. (2009). The underlying anatomical correlates of long-term meditation: larger hippocampal and frontal volumes of gray matter. *Neuroimage, 45(3),* 672-678.

Department of Neurology, UCLA School of Medicine

- Investigated the anatomical correlates of long-term meditation (n = 44).
- Used high-resolution magnetic resonance imaging (MRI).
- Meditators were found to have significantly larger volumes of gray matter in two areas of the brain (the orbito-frontal and hippocampal regions) implicated in emotional regulation and response control.
- This may account for meditators abilities to promote positive emotions, retain emotional stability and engage in mindful behaviour.
- **Full text: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3184843/**