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Book Review

Can yoga reshape the brain?

Review of the Book *The Neuroscience of Yoga and Meditation* by Brittany Fair, 2023. Handspring Publishing.

Julia Samsel¹

¹Doctoral studies at the Institute of Psychology, Ignatianum University in Cracow

Author Note

Julia Samsel. <https://orcid.org/0009-0006-9643-4330>

Correspondence concerning this article should be addressed to
Julia Samsel, ul. Słomczyńskiego 10/14, 31-234 Kraków, Poland; e-mail: juliaa.samsel@gmail.com

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The intersection between contemplative practices and neuroscience has become one of the most dynamic areas of interdisciplinary inquiry over the past two decades. Yoga and meditation, once framed primarily within spiritual or religious traditions, are now increasingly examined through the lens of brain imaging, psychoneuroendocrinology, and clinical psychology. This shift has produced a burgeoning field often referred to as contemplative science (Davidson & Kaszniak, 2015; Tang et al., 2015).

Brittany Fair's *The Neuroscience of Yoga and Meditation* (2023) positions itself squarely within this discourse. Written by a neurobiologist and yoga instructor, the book seeks to demonstrate the neurological and physiological underpinnings of ancient practices, with the stated goal of making such insights accessible to both practitioners and the general public. This review critically evaluates Fair's contribution, highlighting its strengths as a work of science communication while interrogating its methodological limitations, cultural assumptions, and position within the broader literature on yoga and meditation.

Author Profile

Fair's professional background is emblematic of the interdisciplinary character of contemplative science. With training in philosophy, ecology, and neurobiology, she combines multiple epistemic perspectives. Her role as a science writer at the Salk Institute for Biological Studies and her presidency of the San Diego Science Writers Association further illustrate her orientation toward public engagement (Salk Institute for Biological Studies, n.d.).

Fair's dual identity – as both scientist and practitioner – adds authenticity and accessibility to her writing. However, it also introduces potential tensions. Scholars such as Van Dam et al. (2018) have warned that the enthusiasm of practitioner-scientists can sometimes lead to „hype,” where preliminary or equivocal findings are presented with undue certainty. While Fair's background allows her to bridge communities, it occasionally risks conflating advocacy with critical analysis, a challenge that requires careful navigation.

Scientific Framing of Yoga and Meditation

Fair emphasizes the role of neuroplasticity, presenting yoga and meditation as tools capable of reshaping the brain. She highlights increased prefrontal cortex activity, associated with executive control and emotional regulation, alongside decreased amygdala reactivity, linked to stress responses (Fair, 2023, pp. 56–60).

These claims are consistent with findings from imaging studies (Hölzel et al., 2011; Tang et al., 2015).

The book also explores psychoneuroendocrinological mechanisms, particularly cortisol regulation and parasympathetic nervous system activation through breathing techniques and asanas (Fair, 2023, pp. 78–83). This is supported by evidence that yoga can reduce markers of physiological stress (Pascoe et al., 2017).

Yet the presentation is often more enthusiastic than cautious. Much of the cited literature consists of small-scale trials, often lacking active control groups, with samples skewed toward motivated, healthy participants (Fox et al., 2014; Van Dam et al., 2018). Fair does not consistently clarify these limitations, and her narrative may leave general readers with the impression that causal links are more firmly established than current evidence supports.

Holistic Health and the Question of Universality

A central theme in Fair's book is the holistic integration of body, mind, and spirit – a framing that reflects her dual perspective as scientist and practitioner. She presents yoga and meditation as universally applicable practices that benefit individuals regardless of age, background, or experience (Fair, 2023, pp. 121–128). She describes the downregulation of the brain's default mode network during mindfulness (Brewer et al., 2011), linking this to decreased rumination and improved well-being.

However, the claim of universality is problematic. Research indicates that the reception of mindfulness and yoga varies across cultural and socio-economic contexts (Christopher et al., 2009; Park et al., 2019). Kabat-Zinn (2012) emphasizes the importance of adaptation when introducing mindfulness to diverse populations. Moreover, scholars have noted the risk of cultural appropriation and commercialization when Eastern contemplative practices are transplanted into Western wellness markets (Carrette & King, 2005). Fair briefly acknowledges inclusivity but does not engage deeply with these issues, leaving her portrayal of universality oversimplified.

Practical Orientation and Pedagogical Approach

One of the most appealing aspects of the book is its pedagogical structure. Each chapter includes exercises, accompanied by explanations of their neurological and physiological mechanisms (Fair, 2023, pp. 133–140). This format makes the book especially useful for yoga instructors, therapists, and health professionals seeking to integrate scientific rationales into practice.

Yet the prescriptive tone raises concerns. While providing ready-to-use exercises enhances accessibility, it risks overstating the strength of the evidence base. Systematic reviews and meta-analyses have shown significant variability in outcomes, with effect sizes often moderated by participant expectations, instructor expertise, and cultural context (Khoury et al., 2013). Fair rarely foregrounds these complexities, leaving readers with an impression of consistency that does not reflect the heterogeneity of findings.

Methodological Challenges in Contemplative Science

A more thorough engagement with methodological challenges would have improved the book's critical balance. Research on yoga and meditation faces several recurring issues:

Placebo and expectancy effects – Participants often know they are engaging in stress-reduction practices, which may bias outcomes (Davidson & Kaszniak, 2015).

Heterogeneity of interventions – „Yoga” and „meditation” encompass diverse techniques, making it difficult to generalize findings (Park et al., 2019).

Lack of active controls – Many studies compare yoga or meditation to waitlist controls, limiting the ability to distinguish specific effects (Goyal et al., 2014).

Publication bias – Positive findings are more likely to be published, potentially skewing the literature (Coronado-Montoya et al., 2016).

Fair's narrative rarely acknowledges these limitations, and as a result, her book reads more as advocacy than as a critical synthesis. In contrast, Van Dam et al. (2018) provide a comprehensive evaluation of such pitfalls, offering a corrective to overly optimistic portrayals.

Clinical Implications and Therapeutic Applications

Fair highlights potential clinical benefits of yoga and meditation for stress, anxiety, and depression (Fair, 2023, pp. 145–160). These claims are supported by meta-analyses suggesting moderate efficacy for mindfulness-based interventions in reducing symptoms of anxiety and depression (Hofmann et al., 2010). Similarly, yoga interventions have shown promise for reducing stress-related physiological markers (Pascoe et al., 2017).

However, enthusiasm must be tempered. Goyal et al. (2014) conclude that while meditation programs can produce small to moderate improvements in psychological stress, their effects are comparable to other established interventions. Fair presents yoga and meditation as particularly powerful tools but does not

situate them within the broader landscape of behavioral therapies, where they may function as adjuncts rather than replacements.

Position within Contemporary Literature

Fair's book occupies a hybrid space between popular wellness guides and scholarly syntheses. Compared to Davidson's *The Emotional Life of Your Brain* (2012), Fair's work is more practice-oriented but less conceptually rigorous. In contrast to Goleman and Davidson's *Altered Traits* (2017), which emphasizes longitudinal data and trait-level change, Fair focuses on immediate applications of neuroscience to daily practice.

This positioning enhances accessibility but also reveals limitations. The book neither meets the standards of critical academic reviews nor fully embraces the narrative style of popular wellness literature. Instead, it offers an introductory overview that may inspire practitioners while leaving scholars unsatisfied.

Conclusion

The Neuroscience of Yoga and Meditation (Fair, 2023) is a valuable contribution to science communication, successfully translating complex research into an accessible and practice-oriented format. Its integration of personal practice with scientific explanation makes it a compelling resource for instructors, therapists, and lay readers.

Nevertheless, the book's portrayal of evidence is sometimes overly enthusiastic, its claim of universality risks oversimplification, and its lack of engagement with methodological challenges diminishes its scholarly value. For those seeking an accessible introduction to the neuroscience of contemplative practices, Fair provides a useful starting point. For readers interested in critical or comprehensive analysis, supplementary texts such as Van Dam et al. (2018), Goleman and Davidson (2017), and Davidson (2012) remain essential.

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