



Migraine Through the Lens of The Meditating Brain: Explaining Psychophysiological Distinctions Between Meditation Categories and Their Application for Migraine Management

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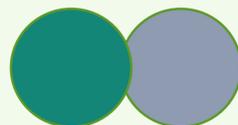
MIGRAINE

Migraine is a prevalent neurovascular disorder with incapacitating neurological characteristics. With a 16.3% worldwide prevalence¹, migraine headaches stand as the second most common global neurological disability and the first cause of disability in young women². The common medicines prescribed for acute treatment of migraine can be costly and may cause long-term side effects. Hence, there is a need for nonpharmacological treatments that can have comparable efficacy on migraine management in the long run. The main focus of this presentation is on the optimization of meditation techniques in the pre-ictal (before attack), ictal (during attack) and interictal (between attack) stages of migraine.

MEDITATION CATEGORIES

Meditation is an umbrella term inclusive of a variety of different mental training techniques that involve both **attention** and **enhanced self-awareness** to self-regulate the body and mind³. There are two separate approaches for categorizing meditation techniques:

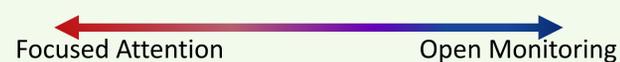
1. Meditation Dichotomy



Focused Attention (Top-down pain processing) Open Monitoring (Bottom-up pain processing)

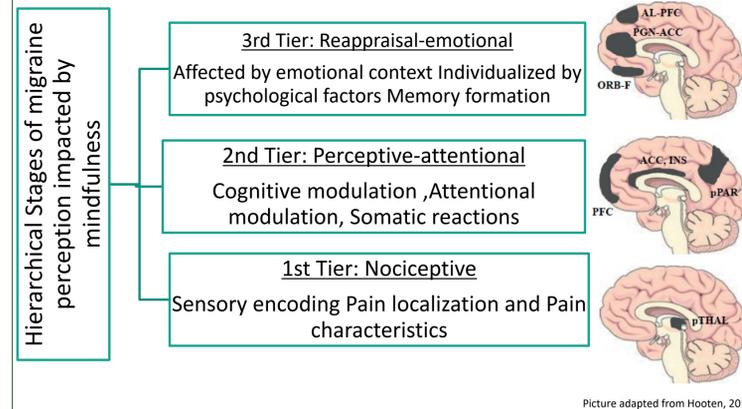
REASON: *Focused Attention* techniques are more involved with **cognitive-perceptive network**, while the *Open Monitoring* techniques spotlight the **affective and sensory networks** of pain to facilitate emotion regulation.

2. Meditation Spectrum



REASON: **Common brain areas** (e.g. Orbitofrontal Cortex, the Thalamus, Dorsolateral Prefrontal Cortex, Insular Cortex etc.) are found to be activated in some *Focused attention* and *Open Monitoring* techniques, yet the level and type of activation could be different for each individual technique.

MEDITATION CATEGORIES AND DIFFERENT IMPACTS ON MIGRAINE EXPERIENCE



Picture adapted from Hooten, 2016⁷

- Both meditation categories can to some extent change three tiers of pain perception^{4,5,6}, especially the sensory level of pain by helping the individuals either stay focused on the source of pain or get defused from it.
- In *Open Monitoring* techniques, migraineurs learn to observe their affective reaction to the pain experience.
- Focused Attention* techniques can have more control on the 1st, and 2nd tiers of pain perception. This is while *Open Monitoring* techniques can have fluid impact on all three levels with the highest impact on the 3rd tier of pain perception.
- Higher levels of attention are found in *Focused Attention* techniques while more emotional self-exploratory context of pain experience is more related to *Open Monitoring* techniques⁸.

HOW TO CHOOSE A PROPER MEDITATION TECHNIQUE FOR MIGRAINEURS

Migraineurs show different reactions to migraine symptoms in their different stages of pain. By studying individual's pain vigilance and awareness, as well as their pain catastrophizing behaviour, their level of mindfulness can be assessed and a better of choice of meditation technique could be suggested.

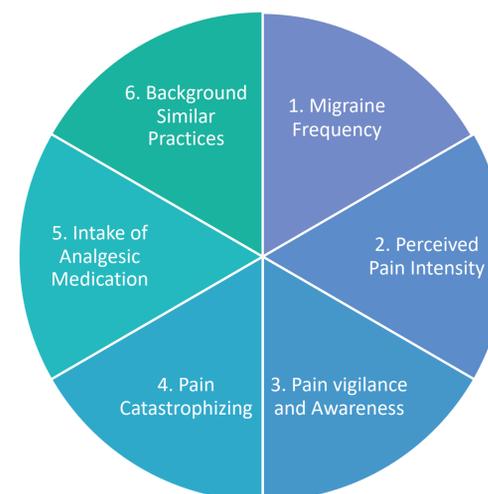
Some proposed mindfulness goals during **pre-ictal stage** can include:

- Gradual postpone of medication intake
- Mindful practice of being alert to/defused from pain symptoms
- Monitoring physiological and mental reactions to the onset of migraine symptoms
- Tracking the changes of symptoms in daily headache diaries

In the **ictal** stage of migraine pain:

- Migraineurs can be assisted to non-judgmentally observe their pain catastrophizing behaviour.
- Based on their personal traits, background experience, and the level of perceived pain, either *Open Monitoring* or *Focused Attention* techniques can be suggested to the migraineur.

In the **inter-ictal** phase of migraine, migraineurs can have practice of more top-down attentional processing through *Focused Attention* techniques. This may help migraineurs manage attentional hyperexcitability caused during the attacks.



A Suggested Checklist Before the Choice of a Meditation Technique

SUGGESTIONS FOR FUTURE STUDIES

Further explorations are required to scrutinize the difference between *Open Monitoring* and *Focused Attention* in more details for each migraine stage depending on migraineurs' personality traits and sex.

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