

# Yoga and Brain Correlation Studies for Humming Bee Sound during Bhramari Pranayama

Practicing Yoga has been in our customs and traditions for several centuries. It has played a vital role in improving the health and well-being of individuals who are regularly employing it for their physical and mental well-being. Past studies have enumerated the positive effects of Yoga practice on human cognitive functions, including attention, memory, balance, processing speed, and executive functions such as planning and impulse control. The article “Investigating the brain activity correlates of humming bee sound during Bhramari pranayama” divides the Yoga practice into various subcategories including posture holding exercise (asana), breathing (pranayama), and meditation (dhyana).<sup>[1,2]</sup> The authors try to understand the dynamics of cortical activity in connection with the Bhramari sound. They investigated cortical correlates in 30 participants before, during, and after they perform Bhramari pranayama through Electroencephalography (EEG). The humming sound was analyzed with a custom-made nasal device consisting of a MAX4466 sensor as a microphone with built-in amplifier, which was time synchronized with the EEG setup. They observed the modulation of cortical activity with the humming sound (either of long or short durations) that leaves its effects after the Pranayama, which helps to understand the positive impacts of Bhramari pranayama. Their findings suggest that *Bhramari pranayama*, when performed with shorter durations of humming (less than or equal to 9 seconds), leads to a positive effect on brain wave activity, particularly in the theta band.<sup>[3]</sup> The theta band is typically associated with deep relaxation, and improvements in cognition, memory, mood, and anxiety. Therefore, the positive effect observed in this band implies that *Bhramari pranayama* with short humming durations can potentially induce a relaxed and focused mental state. Hence, the implementation of Bhramari training into the clinical treatment of certain neurological and psychosocial disorders might be beneficial because of its neuroplastic effects. Their finding concludes that *Bhramari pranayama* has the potential to facilitate relaxation, enhance mental clarity, and foster a meditative state characterized by increased theta oscillations.<sup>[4]</sup> They further state that future studies should compare various other yoga practices and evaluate the extent to which populations with neurological

disorders are affected by neurocognitive and neuroanatomical impacts. Additionally, a wearable sound recording system can be developed in future as a feedback system, which provide a biofeedback to the user so that a constant humming duration can be maintained during the practice. Hence, the study helps to understand the dynamics of cortical activity in connection with Bhramari sound which was not studied previously.<sup>[5]</sup>

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