


# This Is Your Brain on Yoga

**We all know that yoga does wonders for the mind.** Even novices of asana, pranayama, and meditation report feeling increased mental stability and clarity during and after practice. Now, thanks to sophisticated brain imaging technologies, neuroscience is proving what teachers and practitioners have known for ages—that yoga and meditation can literally change your brain. But what exactly is going on up there? Take a peek inside—a basic understanding of brain anatomy and function can serve as a handy road map for your inner journey. —*Kathryn Heagberg*

The **frontal lobe** is the hub of higher cognitive functions—including planning, discriminating, abstract thinking, personality, and behavior. The Bihar School refers to the breathing practice of *kapal-abhati* as “frontal brain purification,” due to the rejuvenating effects it has on this area of the brain.

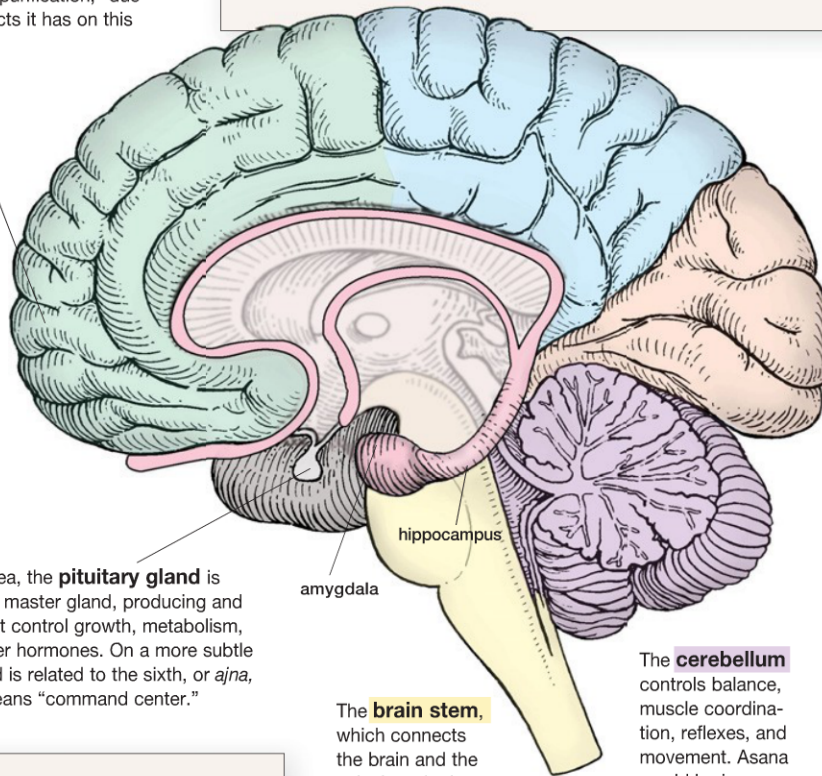
The anterior part of the frontal lobe, the **prefrontal cortex**, is the most evolved part of the brain and is responsible for positive capacities like concentration, happiness, creativity, and rational thinking. Studies using EEG have shown that meditation strengthens communication between the prefrontal cortex and other areas of the brain.

Roughly the size of a pea, the **pituitary gland** is the endocrine system’s master gland, producing and releasing hormones that control growth, metabolism, and the function of other hormones. On a more subtle level, the pituitary gland is related to the sixth, or *ajna*, chakra. *Ajna* literally means “command center.”



**Neurotransmitters** serve as the brain’s chemical messengers, relaying information between nerve cells. Neurological disorders are often the result of a neurotransmitter snafu—for instance, low levels of a neurotransmitter known as GABA are linked to depression and anxiety. Recent studies show an association between regular asana practice and increased GABA levels.

Known as the seat of conscious functioning, the **cerebrum** is the largest part of your brain. It’s divided into right and left hemispheres. On the physical level, the right hemisphere controls the left side of the body, and the left hemisphere controls the right. On the level of the subtle body, *ida nadi* (the lunar energy channel) is connected to the right half of the brain, and *pingala nadi* (the solar energy channel) is connected to the left side of the brain.



The **parietal lobe** is associated with limb movement, understanding speech, and sensing pain. According to a study published in the *Journal of Neuroscience* in April 2011, brain scans of this region demonstrated that mindfulness meditation can dramatically reduce sensitivity to pain—even more so than morphine.

As the primary visual processing center of the brain, the **occipital lobe** helps you follow along visually in yoga class. And you can thank the **temporal lobe** for your ability to process verbal asana cues—it’s responsible for auditory perception.

The **cerebellum** controls balance, muscle coordination, reflexes, and movement. Asana would be impossible without it.

The **brain stem**, which connects the brain and the spinal cord, plays a crucial role in digestion, heart rate, and diaphragmatic breathing. Neurons found in the brain stem send a nerve impulse to the diaphragm, which causes it to contract, thereby initiating inhalation.

The **limbic system** is comprised of structures related to memory and emotion, such as the hippocampus, amygdala, thalamus, and hypothalamus. A 2010 study found that subjects who meditated 30 minutes a day for eight weeks had a reduction of gray matter in the **amygdala**—which is linked to fear and anxiety—and an increase of gray matter in the **hippocampus**, which plays a vital role in memory formation. >>