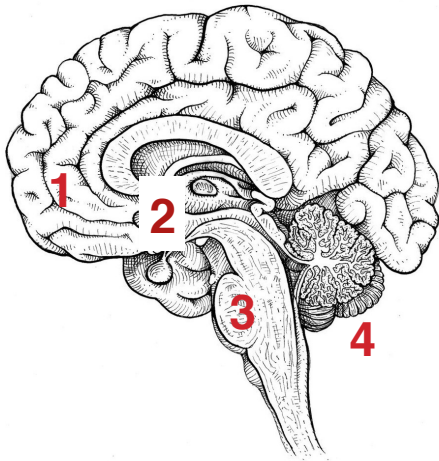


The Four-Part Brain

To describe its functions the brain can be divided into four parts.



1. Prefrontal Cortex -Head Office, *Executive Functioning*

- Impulse control
- Assessment of situations and thoughts
- Decision making and planning
- Empathetic understanding
- Sense of time and consequence
- Governs limbic responses
- Down regulates the stress response
(A strong PFC pathway to amygdala = increased ability to manage strong emotions)

2. Limbic System - Emotional Center

- Detects and reacts to threat- *Warning System* (Amygdala & Hypothalamus)
- Stores implicit memories (Amygdala)
- Memory processing (Hippocampus)
- Regulates the stress response- HPA (Hippocampus)
- Filters the senses (Thalamus & The olfactory bulb)
- Sexual and instinctual behaviors

3. Brainstem - Survival

- Autonomic nervous system
- Controls involuntary bodily functioning
- Controls respiration, heartbeat and digestion
- Maintains homeostasis

4. Cerebellum

- Balances and regulates motor skills
- Regulates body movement related to sense of time and space
- Related to emotional regulation

Facts and functions

The brainstem (3) and cerebellum (4) are formed in the fetal stage. They are often referred to together as the “reptilian brain.”

The limbic system (2) is formed in the fetal stage but develops when we start to relate to our surroundings.

The hippocampus and the amygdala are located here.

Neocortex/new cortex and the frontal lobe (1) are the parts of the brain that develop last. They are also the parts most influenced by our thoughts and actions.

The brain stem (3) and the amygdala (2) are the most active when we are in stress or danger, which for example would lead to quickly jumping away from an oncoming car. This reflects a moment when there is no time for the logical part of the brain to analyze the situation.



ASANA PRACTICES

- Discharge anxiety and traumatic stress by activating muscles that would normally engage when running from danger
- Address muscular tension created by stress
- Reinforce the body-mind connection addressing effects of dissociation
- Stimulate a sense of direction, rhythm, control and purpose
- Strengthen and cleanse the physical body
- Reset the autonomic nervous system
- Activate the vagus nerve and poly vagal expression
- Reduce stress hormones and increases the body's "feel good" hormones
- Increase the production of positive hormones such as Oxytocin & Serotonin.
- Reinforce positive body language and correct posture
- Stretch muscles around the lungs and improve lung capacity
- Improve coordination, body awareness and balance
- Activate areas of the brain that are related to concentration and learning abilities
- Provide therapeutic value related to back pain, anxiety, insomnia and high/low blood pressure
- Engage collective, group physical movement creating a sense of community and belonging

PRANAYAMA PRACTICES

- Increase oxygen intake and balance the Autonomous Nervous System
- Regulate inner wellbeing since our emotions and breathing are closely connected
- Regulate the nervous system and structural brain changes in trauma impacted populations
- Deep belly breathing (slow or calming breath) decreases blood pressure, lowers pulse rate and is relaxing. Creates balance in the different systems in the body, increases concentration, calms the mind and exercises the muscles around the lungs to make breathing more efficient
- Relaxed belly breathing increases GABA levels in the brain
- Extended exhale has a calming and healing effect on the brain and heart. It also has a positive effect on high blood pressure, over activity, stress and tension
- Ujjayi breath decreases blood pressure, increases oxygen uptake and stimulates the vagus nerve
- Three part breath is a more developed form of the yoga breathing where you separate the breathing into the belly, diaphragm and chest to use your whole breathing capacity in a more conscious way
- Alternate nostril breath balances the sympathetic (acceleration) and the parasympathetic (brake) nervous system. Creates a balanced activity in both sides of the brain, increases a sense of calm in body and mind, reduces stress and tensions in the body

In the Service of Life

Rachel Naomi Remen, MD

In recent years the question *how can I help?* has become meaningful to many people. But perhaps there is a deeper question we might consider. Perhaps the real question is not *how can I help?* but *how can I serve?*

Serving is different from helping. Helping is based on inequality; it is not a relationship between equals. When you help you use your own strength to help those of lesser strength. If I'm attentive to what's going on inside of me when I'm helping, I find that I'm always helping someone who's not as strong as I am, who is needier than I am. People feel this inequality. When I help I am very aware of my own strength. But we don't serve with our strength, we serve with ourselves. We draw from all of our experiences. Our limitations serve, our wounds serve, even our darkness can serve. The wholeness in us serves the wholeness in others and the wholeness in life. Service is a relationship between equals.

Helping incurs debt. When you help someone they owe you one. But serving, like healing, is mutual. There is no debt. I am as served as the person I am serving. When I help I have a feeling of satisfaction. When I serve I have a feeling of gratitude. These are very different things.

Serving is also different from fixing. When I fix I perceive a person as broken, and their brokenness requires me to act. When I fix I do not see the wholeness in the other person. There is distance between ourselves and whatever or whomever we are fixing. Fixing is a form of judgment. All judgment creates distance, a disconnection, an experience of difference. We cannot serve at a distance. We can only serve that to which we are profoundly connected, that which we are willing to touch. This is Mother Teresa's basic message. We serve life not because it is broken but because it is holy.

If helping is an experience of strength, fixing is an experience of mastery and expertise. Service, on the other hand, is an experience of mystery, surrender and awe. A server knows that he or she is being used and has a willingness to be used in the service of something greater, something essentially unknown. We fix and help many different things in our lifetimes, but when we serve we are always serving the same thing. Everyone who has ever served through the history of time serves the same thing. We are servers of the wholeness and mystery in life.

The bottom line, of course, is that we can fix without serving. And we can help without serving. And we can serve without fixing or helping. I think I would go so far as to say that fixing and helping may often be the work of the ego, and service the work of the soul. They may look similar if you're watching from the outside, but the inner experience is different. The outcome is often different, too.

Our service serves us as well as others. That which uses us strengthens us. Over time, fixing and helping are draining, depleting. Over time we burn out. Service is renewing. When we serve, our work itself will sustain us. Service rests on the basic premise that the nature of life is sacred, that life is a holy mystery which has an unknown purpose. When we serve, we know that we belong to life and to that purpose. When you help you see life as weak, when you fix, you see life as broken. When you serve, you see life as whole. From the perspective of service, we are all connected: All suffering is like my suffering and all joy is like my joy.

Reprinted from *Noetic Sciences Review*, Spring 1996

Recently published results of a June 2012 study conducted by the preeminent correctional assessment research agency, National Council on Crime and Delinquency (NCCD), reported on the effectiveness of prison-based programs conducted by the Prison Yoga Project's San Quentin sponsor, the Insight Prison Project:

Interviewees in the yoga program established and taught by Prison Yoga Project founder, James Fox, reported exceedingly positive responses about their classes. Among the findings in this study were that participants had experienced:

- A reduction of stress and anxiety
- Calmer temperament
- Emotional control and anger management
- Improved rational decision making
- Reduction of chronic physical pain

The study indicated that Insight Prison Project course offerings at San Quentin Prison, including the program of the Prison Yoga Project, represent promising rehabilitation tools for prisoners that may lead to a reduction in recidivism.

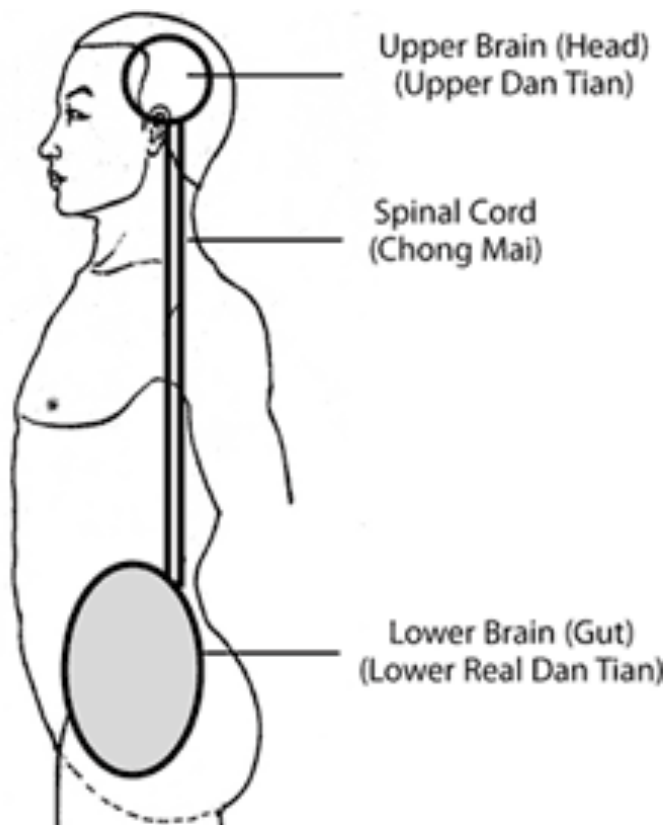


Need and Benefits of Program

Prison Yoga Project's (PYP) "Yoga and Mindfulness Immersion" gives inmates skills to assist in meeting the need for stress management, impulse control, anger management, addiction recovery and chronic pain relief. The program has been shown to increase self-awareness, encourage calmer temperament and emotional control, reduce depression, improve rational decision-making, and relieve chronic pain. It encourages the development of empathy/compassion, pro-social community building, and self-discipline. And it offers a healthy recreational option that helps participants develop self-esteem while improving physical fitness and overall health. Program sessions consist of trauma-informed, mindfulness-based yoga practices (movement, conscious breathing, meditation, and deep relaxation) tailored to the specific needs of inmates. These are reinforced with psycho-educational material related to the neurobiology of stress/trauma and the moral/ethical components of traditional yoga presented in a secular manner.

Prisoners participating in the program will benefit from a calmer temperament resulting in fewer conflicts with staff and other inmates. They will suffer less anxiety, rumination, and will sleep better. They will be more prone to form social bonds, a sense of community, and a pro-social identity as a 'yogi'. They will experience a greater sense of self-esteem and accomplishment as they become more skilled in the practices. They will feel better physically with increased strength, flexibility, and enhanced immune system functioning. They will experience the possibility for personal transformation and a sense of hope for the future.

The program is suitable for a broad range of inmates: General Population, SNY (Sensitive Needs), Non-Designated, and Enhanced Out Patient. It has served CDCR's objective to support an environment of positive programming and non-violence, which is a foundational principle of yoga called *ahimsa*. It is preferable that participants within a cohort have a general level of physical capability, but sessions can be tailored for aging populations and those who are mobility impaired.



SECOND BRAIN

“A lot of the information that the gut sends to the brain affects well-being, and doesn’t even come to consciousness,” says Michael Gershon, M.D. of Columbia University Medical Center who conducted 30 years of research into the “second brain”: the independent nerve mass literally in the gut. Dr. Gershon’s groundbreaking work clearly demonstrates that the human gut actually has a brain of its own. This remarkable scientific breakthrough offers fascinating proof that "gut instinct" is biological - a function of the second brain.

The human body contains a separate nervous system that is so complex it has been dubbed the second brain. Embedded in the wall of the gut, the enteric nervous system (ENS) has long been known to control digestion. But now it seems to play an important role in our physical and mental well-being. It can work independently of and in conjunction with the brain in your head. Although you are not conscious of your gut “thinking,” the ENS helps you sense environmental threats, and then influences your response.

The Second Brain: The Scientific Basis of Gut Instinct and a Groundbreaking New Understanding of Nervous Disorders of the Stomach and Intestines. Michael Gershon, M.D. Harper Collins, 1998.





PYP Standards for Trauma Informed, Mindfulness Based Yoga Instruction

- Attention to physical layout of room
- Engage participants; establish rapport – “Commanding Presence”
- Maximize benefits, minimize harm
- Mindful warm up and attention to bell curve of asana practice
- Teach from mat without moving around; no adjustments
- Employ embodiment (interoception) as a principal focus of the entire practice
- Centering Practice (introduce *anapanasati*)
- Extended exhale (body’s release valve)
- Establish simple asana routines that insure stability of practice and ease of replicating
- No poses with stress on cervical spine; caution regarding back, shoulders and knees
- Engage parasympathetic nervous system: extended exhale, simple inversions, ujjayi breathing
- Assure rhythmic movement to engage neural pathways and stimulate areas of brain
- Moderate asana practices by switching from physical action (SNS) to less active movement or stillness (PNS)
- Teach “effortless effort” in asana practice
- “*The Body Keeps the Score*” introduce the concept of discharge through asana practice and consciously working to release discomfort and pain
- Address the importance of “building resilience” (recovery) as a result of the practice
- Relate yoga practice to the Whole Person: mental, emotional and physical union/balance
- Explain engaging medial pre-frontal cortex for executive functioning, emotional regulation
- Educate how yoga strengthens the nervous system and vagal tone (the vagus nerve) and helps in developing emotional resiliency
- Stress the use of the body’s Second Brain as fundamental to practice of yoga
- Assure all components of traditional yoga are included in the practice: meditation (centering), conscious breathing, movement and relaxation



Transgenerational trauma is trauma that is transferred from the first generation of trauma survivors to the second and further generations of offspring of the survivors via *complex post-traumatic stress disorder* mechanisms. Symptoms of transgenerational trauma have in recent years been identified among Black Americans, in relation to the effects of slavery and racial discrimination. This passing of trauma can be rooted in the family unit itself, or found in society via current discrimination and *oppression*.

Instances of transgenerational trauma where the trauma affects a large population of people and their role in society can be identified as cultural trauma. This form of trauma results in a greater loss of identity and meaning, which in turn affects generations upon generations as the trauma is ingrained into society. This passing of psychological and emotional trauma from slavery has also been identified as Post Traumatic Slave Syndrome (PTSS). According to Dr. Joy DeGruy Leary, PTSS is intergenerational trauma from centuries of psychological and emotional enslavement and continues to face institutionalized oppression and racism. Black Americans who are descendants of former slaves when faced with racism and oppression have reactions that mirror that of PTSD. DeGruy theorizes that PTSS is directly responsible for other dangers and origins of harm in the Black community. The internalized harm caused by PTSS becomes external, allowing the rest of society to use the effects and symptoms of PTSS as stereotypes against Black people, thus exacerbating the racial-trauma and continuing the cycle.

From the years of chattel slavery to Jim Crow laws to the violence that can be seen today – African Americans have endured trauma consistently. It is a reality that did not end with slavery or the civil rights movement, and the results of these systems are still continuously affecting the lives of younger African Americans today.

The phenomenon of children of traumatized parents being affected directly or indirectly by their parents' post-traumatic symptoms has been described by some authors as *secondary traumatization* (in reference to the *second generation*). To include the *third generation*, as well, the term intergenerational transmission of trauma was introduced.

Another example of this is that soon after descriptions of *concentration camp syndrome* (also known as survivor syndrome) appeared, clinicians observed in 1966 that large numbers of children of Holocaust survivors were seeking treatment in clinics in Canada. The grandchildren of Holocaust survivors were overrepresented by 300% among the referrals to a child psychiatry clinic in comparison with their representation in the general population.

https://en.wikipedia.org/wiki/transgenerational_trauma

Transgenerational Transmission of Trauma

- Trauma can be transmitted through physiological, environmental and social pathways.
- Symptoms of historical trauma may be mistaken for other disorders and can include denial, depersonalization, isolation, memory loss, nightmares, psychic numbing, hyper vigilance, substance abuse, identification with death, and unresolved grief.
- Trauma can be passed on through genetic damage and prenatal malnutrition.
- Treating trauma requires culturally specific, not generic, treatment.
- Children experiencing secondary trauma are vulnerable to feelings of depression, guilt and rage.
- Adolescents with substance abuse issues should always be assessed for transgenerational trauma.
- Four means of generational transmission of trauma are:
 - 1) the vicarious identification of children with their parents' suffering
 - 2) the intuitive responsibility assumed by children to compensate in various ways for their parents' suffering
 - 3) the particular patterns of parenting demonstrated by survivors toward their offspring
 - 4) the styles of communication between parents and their children concerning the parents' traumatic experiences

Reference the Zur Institute

