# FAJARDO METHOD OF HOLISTIC BIOMECHANICS®

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## INTRODUCTION

The underlying principle of the Fajardo Method of Holistic Biomechanics® is the creation of an optimal nervous system environment in which the brain can learn. This optimum nervous system environment occurs when all of the systems of the body are coordinating together to maintain the individual system processes of an organism as well as its' functioning as a whole. Balance of cellular chemistry, blood, water, hormones, internal pressure, structural support and muscular excitability must be maintained. When this balance of systems is achieved it is called homeostasis. Internal body changes and external environmental changes trigger the need for the body to coordinate and self-regulate its many systems in order to consistently maintain a state of homeostasis. The Fajardo Method of Holistic Biomechanics® introduces awareness techniques that allow the body to sense both the internal body changes and external environmental changes with greater accuracy and efficiency. This enhanced sensory awareness increases the ability of the brain and nervous system to maintain a state of homeostasis.

Homeostasis in the body is regulated by the brain and the Autonomic branch of the peripheral nervous system. The Autonomic nervous system operates those functions in the body that occur without conscious control. The ANS controls respiration, digestion, circulation, excretion, etc. The ANS is made up of two separate branches. They are the parasympathetic and sympathetic branches. The two branches operate like the "on" and "off" of a light-switch. Either the parasympathetic branch is controlling the body and inhibiting the sympathetic branch or the sympathetic branch is controlling the body and inhibiting the parasympathetic branch. They do not both have functional control at the same time. The parasympathetic branch is commonly known as the "rest and digest" nervous system and this is the branch in which sensory input is absorbed in the brain and learning occurs. The sympathetic branch is commonly known as the "fight, flight, freeze or fright" nervous system and this is the branch in which the body is focused on doing anything necessary for maintaining physical survival. Each branch serves a unique and functional purpose as they regulate the many systems of the body throughout the process of a day in order to maintain a homeostatic body environment.

The sympathetic branch of the ANS is the ideal controlling branch of the ANS when the body encounters a life-threatening situation. Blood flow is increased to the limbs in order for the body to fight or flee. The tendon guard reflex occurs in the wrist and Achilles tendon area to structurally bury the surface blood vessels to prevent an injury from causing the body to lose too much blood. Blood has a greater clotting factor and is only sent to one side of the brain. Blood is taken away from the higher functioning centers of the brain and sent to the lower areas of the brain that control reflexive movement. The lack of blood flow to the higher functioning centers of the brain prevents any new learning from taking place. The body is restricted to motor patterning that it has previously used. This allows reflexive motor patterning to occur rapidly and without hesitation in response to the dangers in the environment.

The parasympathetic branch of the ANS is responsible for the autonomic functioning of the body when the brain senses no immediate physiological danger or harm. Blood is pumped to both sides of the entire brain, including the higher and lower functioning centers. It is in this state that the brain can learn. When the brain can learn the mind can be opened for new thoughts and creativity. The creation of new physical motor patterns to allow for ease of verbal expression, breathing, movement, digestion, etc. is possible. It is in this state that the overall health and well-being of an individual can be positively influenced. The Fajardo Method of Holistic Biomechanics® is a process oriented method that gives individuals the tools they need to allow the parasympathetic nervous system to become their primary operating system of the

ANS. Role reversal of the parasympathetic and sympathetic branches of the ANS can occur if the homeostasis state of the body is in the sympathetic branch of the ANS. If the brain senses danger and it is in a sympathetic state when the "on/off" switch flips it triggers the parasympathetic. The role reversal of the two branches of the ANS creates a less than optimal outcome to the experience at hand.

The first step in the Fajardo Method process is to increase one's ability to sense the external environment through practice and repetition. This will develop the accuracy of the sensory systems. The brain uses nineteen different senses to gather information about changes in the external and internal physiological environment. The accuracy of the brain's perceptions of the sensory stimulus plays a key role in the branch of the ANS that is chose to regulate the body systems. When the brain realizes that it is in a safe environment with no immediate threat of danger it triggers the parasympathetic branch of the ANS. When the brain senses danger, whether real or perceived, the sympathetic branch of the ANS is triggered.

Throughout the day the brain receives sensory stimuli from the body regarding its experiences. The brain receives sensory stimulus from everything around us including computer screens, bright lights, loud noises, people, surprise birthday parties and the smell of food being prepared. When the body experiences a sensory stimulus that is startling, a heightened state of alertness is triggered. It is at this point that the body can gather sensory input from both external and internal sensory receptors to determine if there is a life-threatening situation present which will trigger the sympathetic branch of the ANS. If there is nothing in the external environment that indicates cause for alarm and parasympathetic branch of the ANS is active. In many instances when the body is triggered into the first stage of startle no sensory input is gathered. Instead the frontal brain makes an assumption or forms a judgment based on past similar experiences or emotional stress. When the frontal brain makes an assumption based upon past experiences the sympathetic branch of the ANS will be triggered in the same way when sensory input is gathered accurately and there is an actual present danger. The sympathetic trigger initiates the chemical releases that cause the body to change its structure, blood flow, breath pattern, etc. in order to survive the life-threatening danger.

The second step in the Fajardo Method process is to sense the body's physical structure. Increasing sensory awareness of the skeletal structure and the body's internal pressure allows one to sense and identify what branch of the ANS that the body is currently operating in. Certain skeletal positions are neural motor reflexes that occur with sympathetic ANS activation and other skeletal positions are neural motor reflexes of the parasympathetic branch of the ANS. Once the identification of the branch of the ANS that the body is operating in occurs, the brain can determine if it is appropriate for the moment at hand. This bodily awareness not only plays a huge role in the regulation of the ANS but it also is responsible for the brain creating efficient and appropriate motor patterning. New motor patterning of an area is produced based on the input of new sensory stimulus from the area into the brain. When the brain first receives sensory input from an area the motor pattern that is sent out is different from the previous pattern. As the brain receives more and more sensory input from the area, the accuracy of interpretation of sensory stimulus increases and the resulting motor pattern that is produced is more finely tuned with greater efficiency to accomplish the task at hand.

There are two major pathways that sensory input travels to enter the brain. The first sensory processing pathway option that the brain has is centered around the limbic system. The brain receives sensory input to the cortex and hind brain which is then sent through the thalamus to the higher areas of the brain. The thalamus distributes the input to the amygdale, a part of the limbic system, and neocortex, a part of the cerebrum. "The amygdale and its related structures are considered key emotional centers and storehouses for our emotional memories."[1] "The neocortex is responsible for your IQ, your conscious decisions, your analytical abilities."[2] It is thought that information from the various sensory receptors travel

[1] Carla Hannaford, *Awakening the Child Heart: A Handbook on Global Parenting* (48

[2] Laurence Gonzales, *Deep Survival: Who Lives, Who Dies, and Why :True Stories of Miraculous Endurance and Sudden Death* (New York: W.W. Norton & Company, 2003) 64.

along a two channeled neural pathway. Sensory input first reaches the amygdale and then milliseconds later it reaches the neocortex. The amygdale and neocortex both have ways of screening the sensory input. The amygdale screens the information from the thalamus to determine if there is a threat. "If it detects a hazard, or anything remotely resembling one, before you're even conscious of the stimulus, it initiates a series of emergency reaction."[3] These emergency reactions are the stress responses triggered by the sympathetic ANS. Whether the amygdale perceives a threat or no threat it takes the sensory input of the physical response/emotion which is then combined with a memory which is stored. Every emotional memory we have, started as a physical motor pattern in response to stimuli. "Our emotional memory, developed from past experience, colors our perceptions"[4] Unfortunately this emotional memory can then be used in the future to judge similar incoming sensory input. The "brain is always comparing incoming information to what it already knows or expects or believes."[5] The sensory information that got sent from the hind brain up to the cerebrum then gets input of a belief or prediction. It is then sent back down to the hind brain which has lower levels of sensory processing and is thus not able to interpret all sensory input to determine if the belief or prediction is accurate. This "means your predictions and beliefs can work against you. They do this by interfering with your ability to see things afresh, or even notice major contradictions between your expectations and what is actually present to your senses."[6] This can also lead to a more quickly and unduly initiated sympathetic neural response based on an idea from the past.

The second sensory processing option that the brain has is more present based. The neocortex is believed able to deal with the same sensory input but it digests the stimulus in a four step process. "First, to recognize that there is an emotional response underway. Second, to read reality and perceive circumstances correctly. Third to override or modulate the automatic reaction if it is an inappropriate one, and fourth, to select a correct course of action."[7] Making a conscious choice to be present allows us to experience every situation as new and unique. Ridding ourselves of comparisons, judgments and relationships with the past allows the perception of the current situation to be based in real time and present centered. The neocortex practice of presence allows for the parasympathetic nervous system to override the sympathetic nervous system in the first stage of the startle response.

The sympathetic nervous system moves the body through seven different stages of physical emotional startle responses. These stages encompass the four stages of fight, flight, freeze and fright. The first stage is one of investigation and standing one's ground. We go in and out of this stage hundreds of times per day. This is the stage in which the neocortex can override a faulty amygdale reaction because "The amygdale is wrong a lot of the time: There is no danger."[8] The second stage of startle is the fighting stage. In the third stage of startle the flight occurs. In the fourth stage of startle freeze begins. Stages five and six are varying degrees of freeze and fright culminating in the seventh stage of startle which is frozen terror, shock, rigor and or coma. At each stage of the sympathetic process the body is taken through a number of physiological changes that effect the pressure regulation of the body, breathing, circulation, joint function, skeletal alignment and muscle tonicity. Changes in the brain also occur. Sensory input decreases, blood flow only travels to one side of the brain and blood volume to the brain is limited. If a person has been in a stage of startle for an extended period of time the change in patterning that the body experiences are more permanent. These sympathetic patterns have become the motor patterns of choice. As the nervous system self-calms and returns to the parasympathetic state many of the old motor patterns related to the startle responses still are active. Over time, because of the strong associations with the sympathetic nervous system, these motor patterns will trigger the sympathetic nervous system. Until the motor patterns of the stages of startle can be returned to

[3] Gonzales, 65.
[4] Hannaford,48.
[5] Sandra Blakeslee, Matthew Blakeslee. *The Body Has A Mind Of Its Own.:How Body Maps In Your Brain Help You Do (almost) Everything Better* (New York: Random House Trade Paperbacks, 2008) 41.
[6] Blakeslee, Blakeslee, 41.
[7] Gonzales, 66.
[8] Gonzales, 65.

the motor patterns associated with the parasympathetic nervous system it is likely that movement itself can trigger the sympathetic nervous system.

The third step in the Fajardo Method process is to increase the body's ability to sense itself as it is moving. The body is dynamic and is constantly in a state of motion whether it is still or moving through space. The ability to sense the body's movement is called proprioception. As the autonomic nervous system is brought back to the parasympathetic nervous system and homeostasis of the body is returned, the valve, skeletal, fascia and muscular systems will be returned to homeostasis as well. The brain uses body mapping to determine where these systems are and how they are functioning. "Every point on your body, each internal organ and every point in space out to the end of your fingertips, is mapped inside your brain. Your ability to sense, move and act in the physical world arises from a rich network of flexible body maps distributed throughout your brain – maps that grow, shrink, and morph to suit your needs."[9] Body maps can be accurate or inaccurate, appropriate to the situation at hand or inappropriate. "These body-centered maps are profoundly plastic – capable of significant reorganization in response to damage, experience or practice."[10] The flexible nature of body maps causes the brain and body to always be in a state of flux. It constantly changes and adapts with our ever changing internal cellular matrix and exoskeleton structures including bones, fascia and muscle tissue. Mapping our movements, structure and breath allow the brain to reorganize the body and maintain a homeostatic condition.

Once the body has reached a homeostatic state the underlying principle of the Fajardo Method of Holistic Biomechanics® can be achieved. The brain can now learn. All of the "subtle, invisible transactions among the sensory/emotional/motor areas of the brain allow us to create meaning from our experience."[11] From this beginning point true learning can occur. Whether someone wants to learn a movement system such as Pilates or Gyrotonic® or they want to learn to speak a foreign language or cook, the capacity for learning now exists. This allows the learning endeavor to be one of joy rather than frustration.

[9] Blakeslee, Blakeslee, 5.
[10] Blakeslee, Blakeslee, 11.
[11] Carla Hannaford. *Smart Moves: Why Learning Is Not All In Your Head*. (Salt Lake City: Great River Books, 2005)82.