

## **InBalance Technology and the Sympathetic Nervous System (SNS)**

Medically scientific research done 2011 and 2012 by Dr. Erickson (Appendix A Medical Credentials and Biographical Summary) at 905 NW 56th Ter # B Gainesville, FL 32605 indicate that:

1. Physiologically the human organism appears to respond to InBalance technology under the conditions of demand and in the most energy efficient and energy-conserving states associated with the relational interactions of the Autonomic Nervous System required for strength, flexibility, balance and temperature modification.
2. The body's response to InBalance technology appears as a likely response that occurs in the Sympathetic Nervous System but may be blended and not necessarily in distinctly separate phases that can begin in the Para Sympathetic Nervous System (See Appendix B).

### **Energy and Mobilization**

Physiologically, InBalance Technology when in proximate contact to the body appears to be affecting activity of the Autonomic Nervous System in the Sympathetic Nervous System (alpha and beta receptors). The Sympathetic Nervous System works from the thoracolumbar area of the spine and functions under demanding and stressful conditions. InBalance Technology appears to support the body's variable demands to sustain energy for muscular strength, flexibility, balance and temperature moderation in concert with the Autonomic Nervous Systems two branches (Parasympathetic (PNS) and Sympathetic Nervous System (SNS)). Corroborating SNS research indicates that, the mobilization response is *demand dependent* for such physical activities as the balance and flexibility necessary to make a change from sitting to standing. In moderately demanding situations, the body elicits local norepinephrine release (Braunwald et al., 2001). During mild exercise, such as a saunter through a park, which can stimulate a decrease in vagal tone, the heart rate can increase without SNS activation. But as increasing levels of activity (running, lifting, throwing, balancing) or activity that is impeded by disease process (osteoarthritis, Reynaud's Syndrome, or Fibromyalgia) SNS is necessary support physiological homeostasis and balance. The following are examples of increased physical performance demands. These are related to endurance needs necessary to sustain a running pace, grip strength, or maintenance of balance or sensation. In these situations, a more SNS global response is necessary to meet physiological energy demands.

Dr. Erickson's data of how InBalance Technology works in the human body through the Sympathetic Nervous system is supported by the following research conclusions and citations. The physiologist Walter Cannon (Ganong, 2001) represents a broad range of mobilization activities that occur in the sympathetic nervous system (SNS). Which is geared towards mobilization and increased circulation of oxygen and glucose to skeletal muscles. Events that stimulate SNS involvement include internal (motivation) and external stimulus such as exercise (Ganong, 2001). SNS also responds to exposure to moderate changes in temperature (Sapolsky, 1998). Motivation or excitement (an internal stimulus) or a long jog (an external stimulus) may stimulate the same level of

sympathetic arousal that is mediated in the face of fight or flight threat (Braunwald et al., 2001). This is an important contextual point. The context in which threat occurs, the perception of the degree of danger, and the ability to successfully escape from a situation all affect the degree of a SNS response. SNS is associated with active coping strategies, such as the energized activity utilized to complete a project, and physical demand, fight a foe, or flee a predator.

NOTE: InBalance Technology has not been studied under the extreme SNS response conditions

Extreme SNS response examples of threats include fight/flight or stress response arising within the internal environment. This includes the need to increase blood sugar, when a global threat to the organism occurs. Sugar (glucose) is the only food used by the brain (Ganong, 2001). Threat may also be perceived in the external environment, such as occurs when someone comes face to face with a bear, is in an accident, or is threatened by extreme environmental conditions such as a fire or hurricane.

A stronger activation of SNS arousal arises following experiences that are emotionally distressing (Goldstein, 2000) such as the perception of threat. In the face of danger, the SNS facilitates changes in the body that promote survival. These changes include elevations in heart rate to facilitate the rapid circulation of oxygen and glucose to muscles that need fuel to flee or fight, pupil dilatation for better vision, water retention to minimize loss in fluid volume, and increases in the clotting of blood that minimize blood loss in the event of wounding.

## Appendix A

Dr. Erickson received his undergraduate degree from Duke University, his M.D. degree from the University of Florida, and did residency training in Radiation Oncology at Shands Teaching Hospital.

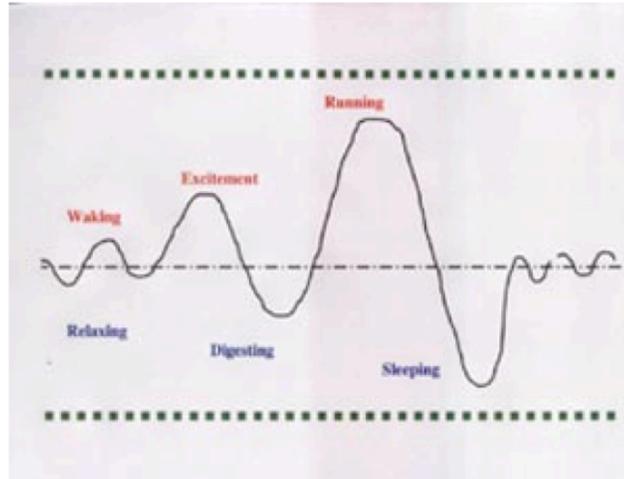
He received his Board Certification in Family Practice in 1979 and was awarded the degree of Fellow of the American Academy of Family Practice in 1986. He is also certified by the National Board of Examiners in Integrated/Alternative Medicine and Natural Health Science and by the American Board of Clinical Metal Toxicology. He is licensed by the State of Florida and by the National Board of Medical Examiners.

Past experience includes receiving an adjunct Faculty appointment at the University of Florida College of Medicine and working as a University Physician in the late 1970's as well as being an assistant Team Physician for the Florida Gator Sports programs. From 1980 to 1995 he was in private practice in Gainesville, Florida. He has served as Chief of Medicine at Alachua General Hospital. In 1995 he took a break from private practice to pursue business interests, travel, spend time with his family, and engage in integrative medical research. In March 2000 he re-entered private practice and opened the doors to the Preventive Medicine Center of Gainesville, Inc.

Dr. Erickson is a member of the Alachua County Medical Society (since 1976), American Board of Clinical Metal Toxicology, the Florida Academy of Family Physicians, the American Academy of Family Physicians, the American College for the Advancement of Medicine (ACAM), the International College of Integrative Medicine (ICIM), and the American Association for Health Freedom. Dr. Erickson has taught medical students from the University of Florida College of Medicine during their clinical rotation in alternative medicine. He also gives presentations on various health topics of interest in the Gainesville community and elsewhere.

## Appendix B

### I. Sympathetic Nervous System Activity Supports Homeostasis and Balance



**Figure 1. Maintaining Homeostasis Across Activities.**

A healthy nervous system maintains homeostasis by balancing input from both branches of the Autonomic Nervous System (ANS) during activities ranging from relaxing, digesting and sleeping, to **waking, walking, feeling excited, and running.**

### II. Activities Regulated by the Sympathetic Nervous System:

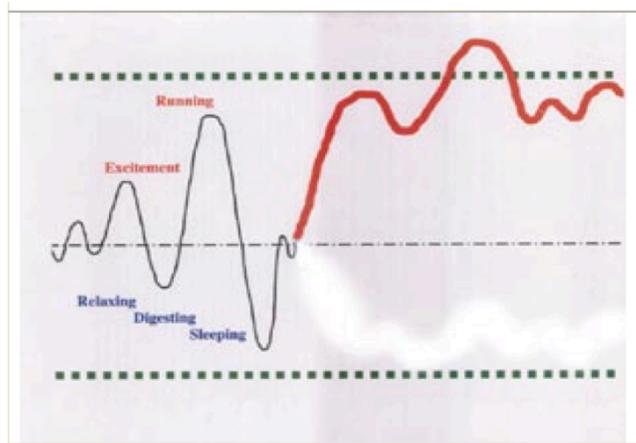
#### **Increases:**

- Blood Pressure
- Heart Rate
- Fuel availability
- Blood flow to muscles
- Adrenaline
- Oxygen circulation to vital organs
- Blood clotting (minimizes loss of blood if wounded)
- Pupil size and peripheral vision (improves vision)

#### **Decreases:**

- Fuel storage (decreases insulin activity to store glucose)
- Digestion
- Salivation

### III. When the Sympathetic Nervous System is in the Dominant State



**Figure 2. Sympathetic Dominance.**  
Dominance of the **Sympathetic** nervous system.

Under Normal Circumstances, the **Sympathetic Nervous System** promotes the ability to be physically active and add in the defense mechanism of fight or flight. It affects the following:

**Increases fuel availability (sugar, fats...)** to the brain, muscles and other organs that need it during exercise and defense. Because insulin promotes food storage, it is inhibited during SNS activity to maximize fuel availability.

**Increases adrenaline** to facilitate changes in blood pressure, heart rate etc.

**Increases oxygen circulation to vital organs** to provide fuel for activity and defense while decreasing circulation to non-vital organs such as skin and the extremities.

**Increases blood clotting**, which minimizes blood loss if wounded during defense such as fight/flight.

**Increases pupil size and peripheral vision** to maximize awareness of sources of potential danger.

## References

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