



## How Coherence Affects Stress, Well-Being, and Performance

### ***Reduced Stress***

The system of tools and technologies developed by the Institute of HeartMath is designed to help people learn to activate and sustain the coherence state. Research has shown that shifting into coherence is an effective and powerful strategy for reducing and transforming stress and anxiety. When we are faced with a stressful situation, making a shift into coherence prevents or minimizes the body's normal stress response and its negative repercussions on the brain and body. It also facilitates higher cognitive faculties and emotion regulation abilities that are normally compromised during stress and negative emotional states. This sharpens our discernment, increases creativity, intuition, and resourcefulness, and consequently enables stressful situations to be viewed and dealt with more effectively—from a broader, more emotionally balanced perspective. From this vantage point we're often able to perceive new perspectives and solutions that would not have been accessible to us had we remained in a stressed, disharmonious inner state.

### ***Improved Health and Well-Being***

Learning to generate coherence has many other benefits beyond stress reduction. For one, it's good for our health. Coherence is a state that stimulates and supports the body's own natural regenerative processes. Therefore, both healthy individuals and those with health challenges can benefit by regularly activating and sustaining coherence. Because the body's systems function more efficiently during coherence, generating this state can save us a significant amount of energy. It is not surprising that many people who regularly use coherence-building tools report having more energy at the end of the day—and sleeping better, too.



By reducing the harmful impact of emotional stress on the body, coherence-building tools can facilitate physiological changes that lead to health improvement. For example, studies of people using HeartMath coherence-building techniques have measured significant improvements in hormonal balance and immune system activity and significant reductions in major health risk factors, including cholesterol, triglycerides, and high blood pressure. The tools and techniques are also utilized by hundreds of health care professionals to help patients suffering from a wide range of diseases and medical conditions known to be exacerbated by stress. (See Health Professionals section for more information.)

Our mental and emotional health is equally important and deeply interconnected with our physical well-being. Many individuals and health professionals have found coherence-building techniques to be a powerful and efficient means to release or change ineffective emotional patterns that drain energy and detract from the quality of life. Anxiety, depression, anger, and hostility are examples of emotional patterns that have been shown in scientific studies to improve with practice of the tools of the HeartMath System. Such emotional improvements have been measured in widely diverse populations—ranging from corporate executives, to high school students, to elderly congestive heart failure patients.

### ***Enhanced Performance***

Generating coherence shifts the body into a state of optimal function and is thus a natural performance enhancer. Several research studies have demonstrated significant improvements in specific aspects of cognitive and task performance after subjects maintained a state of psychophysiological coherence. A recent study conducted by researchers in the UK measured a significant improvement in long-term memory in a group who learned and practiced HeartMath coherence-building tools. This improvement was greater than that typically produced by a pharmaceutical memory enhancer. Another study demonstrated significantly improved reaction time on a task requiring focused attention, coordination, and a quick and accurate response among subjects who generated coherence before performing the task as compared to those who entered a nonspecific state of relaxation. Studies of high school students have also linked use of coherence-building tools and technologies with improved academic test scores and passing rates.



By reducing performance-related anxiety, stabilizing nervous system dynamics, and creating system-wide synchronization, coherence-building tools can be an effective aid in optimizing performance in almost any area. Executives and business professionals trained to sustain coherence frequently report benefits such as a notable reduction in extraneous mental “noise,” increased clarity, more effective decision-making, improved work flow, enhanced creativity, and increased intuitive discernment. Workers in the service professions, such as nurses and teachers, are often able to reduce burnout, renew motivation and care, and therefore more effectively perform their jobs. Corresponding large reductions in nurse turnover have been measured in several hospital studies. Many athletes have also significantly improved performance in their sports through coherence training (see the Sports Performance section for more details and examples). Moreover, a recent study demonstrated reductions in performance anxiety and improved music performance in musicians trained in coherence-building tools and the emWave system.

### Repatterning with Coherence-Building Tools

The power of coherence training lies in the fact that this approach not only produces immediate, in-the-moment benefits, but also, over time, facilitates *sustained* changes in health, well-being, and performance that profoundly improve the quality of life. This occurs because, as people consistently use tools to facilitate a shift to coherence, the synchronized, harmonious patterns of psychophysiological activity associated with the coherent state become increasingly familiar to the brain and body. These new, healthy patterns are thus reinforced in the neural architecture, and over time become established as a new baseline or set point, which the system then automatically strives to maintain. It is in this way that HeartMath tools facilitate a *repatterning process*, whereby the patterns that underlie the experience of stress are progressively replaced by healthier physiological, emotional, cognitive, and behavioral patterns as the “automatic” or familiar way of being.



Physiological evidence of this repatterning process is found in electrophysiological recordings, which demonstrate a greater frequency of *spontaneous* periods of coherence (without conscious practice of the tools) in the heart rhythm patterns of individuals practiced in the HeartMath techniques in comparison to the general population. There are also data linking the practice of HeartMath coherence-building tools with favorable changes in hormonal patterns. People who consistently used the tools for 30 days demonstrated significant reductions in the “stress hormone” cortisol, and significant increases in the “vitality hormone,” DHEA. The finding of an increased DHEA/cortisol ratio, which has recently been independently replicated in an international study, is interpreted as evidence of a repatterning process occurring at a fundamental level, given that there is normally little physiological variability in levels of these hormones from month to month.

The physiological changes observed with use of coherence-building tools typically occur in conjunction with significant and enduring changes in psychological patterns. Reductions in measures of emotional distress, including anxiety, depression, anger, hostility, and burnout—and increases in stress resiliency and emotional vitality—have been consistently observed in many different populations with use of the HeartMath tools. In some cases, these improvements occurred after many other interventions were unsuccessful in producing lasting changes. These observations suggest that coherence-building tools are effective in helping people change habitual emotional patterns that are a major source of stress and instate new patterns that support enhanced health and overall well-being.