*DELTA LIFE SKILLS*sm

EMOTIONAL FREEDOM IS IN YOUR HANDS with REBsm

Integral Energy Psychology

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PART ONE: THE RADIANT ENERGIES BALANCE (REB)sm PROTOCOL: PHILOSOPHY/RESEARCH/THEORY BACKGROUND©

Section:

17.6. BREATHING AND HEART RATE VARIABILITY (HRV)

In Module 4 of the REBsm protocol, we introduce the practice of deep diaphragmatic breathing through the nose. The impact of breathing patterns on physiological functioning is also now widely acknowledged. Hirsch and Bishop state: "At rest the heart rate increases on inspiration and decreases on expiration... [T]his phenomenon is called the respiratory sinus arrhythmia (RSA)... [I]nvestigators have studied the separate effects of breathing frequency, tidal volume and static lung volume [deep breathing] on the RSA amplitude... and wave form... or phase angle... [W]hen breathing frequency is increased, the amplitude of the heart rate oscillation decreases... and when tidal volume... or static lung volume... is increased [deep breathing], the amplitude of the heart rate modulation increases. (Hirsch and Bishop, 1981, p. H620).

"Three mechanisms are generally proposed to explain the modulation of heart rate associated with respiration: (1) a direct influence of medullary [brain stem] respiratory neurons on cardiomotor neurons... (2) an indirect influence on heart rate of blood pressure changes secondary to respiratory movements that is mediated via arterial barorecptors... or artial stretch receptors... and (3) a reflex response to lung inflation mediated by thoracic stretch receptors..., most likely from the lungs... and chest wall.." (p. H628) (Hirsch and Bishop, 1981). (see also Hainsworth, 1995, p. 12) "Controlled respiration at frequencies within the resting physiological range provides a convenient tool to enhance the vagal [parasympathetic] modulation of heart period... [T]he power of the HF [High Frequency] component [which reflects parasympathetic control] becomes predominant at rest during metronome [paced] breathing... If the frequency of controlled breathing is decreased enough to approach LF [Low Frequency] rhythm, the two components [sympathetic and parasympathetic] merge into one more powerful oscillation. In general, all of the studies that have been performed under controlled respiration in the broad range of 0.20 to 0.30 Hz were likely to be characterized by a sympatho-vagal balance shifted in favor of the vagal [parasympathetic] component." (Malliani, 1995, p. 180-181)

Since the Heart Rate Variability measure is considered an indication of the autonomic nervous systems functioning, it seems useful to include breathing patterns to help the balance described in

Part two (see Pomeranz, Macaulay, Caudill, Kutz, Adam, Gordon, Kinborn, Barger, Shannon, Cohen and Benson, 1985) and (Tiller, McCraty and Atkinson, 1996)

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