



# The Biofeedback Certification International Alliance

(formerly the Biofeedback Certification Institute of America)

## Blueprint of Knowledge Statements for A BCIA Certificate in Heart Rate Variability Biofeedback

The provider who earns a BCIA certificate in Heart Rate Variability Biofeedback will have knowledge of:

### I. Cardiac Anatomy & Physiology (1 hour)

- A. How the ECG is generated
- B. Sympathetic and parasympathetic influences
- C. Heart-brain interaction.

### II. Respiratory Anatomy & Physiology (1 hour)

- A. The functions of breathing
- B. The respiratory cycle
- C. Muscle involvement in breathing
- D. The Bohr effect
- E. Functional and dysfunctional breathing behaviors

### III. Autonomic Nervous System Anatomy & Physiology (.5 hour)

- A. Three autonomic branches
- B. The vagus nerve

### IV. Heart Rate Variability (2 hours)

- A. The meaning of HRV
- B. The sources of HRV
- C. Factors that influence HRV
- D. Correlates of low and normal HRV
- E. The benefits of increased HRV

### V. HRV Instrumentation (3 hours)

- A. Blood volume pulse (BVP)
  - 1. Source
  - 2. PPG sensor
  - 3. Signal
  - 4. Placements
  - 5. Tracking test
  - 6. Artifacts
- B. The electrocardiogram (ECG)
  - 1. Source
  - 2. ECG sensor
  - 3. Signal

- 4. Placements
- 5. Tracking test
- 6. Artifacts

### C. Pneumograph

- 1. Source
- 2. Signal
- 3. Placements
- 4. Tracking test
- 5. Artifacts

### VI. HRV Measurements (2 hours)

- A. Time domain measurements and their meaning, properties, and correlates
- B. Frequency domain measurements and their meaning, properties, and correlates
- C. Brief versus 24-hour monitoring
- D. How to interpret HRV measurements

### VII. HRV Biofeedback Strategies (4 hours)

- A. How to explain HRV biofeedback to a client
- B. How to assess breathing
- C. How to measure the resonance frequency
- D. How to teach resonance frequency breathing
- E. How to structure an HRV biofeedback training session
- F. How to augment training with emotional regulation strategies
- G. HRV biofeedback side effects and contraindications
- H. Practice assignments to promote generalization

### VIII. HRV Biofeedback Applications (1.5 hours)

- A. Clinical applications
- B. Optimal performance applications