



Essential Skills Checklist for BCIA Certification in HRV Biofeedback

A beginning HRV biofeedback practitioner should be able to demonstrate mastery of the following basic skills, as attested by their BCIA-approved Mentor(s) who will initial each item as completed.

Blood volume pulse

- _____ Explain the blood volume pulse signal and biofeedback to a client.
- _____ Explain PPG sensor attachment to a client and obtain permission to monitor her.
- _____ Explain how to select a placement site and demonstrate how to attach a PPG sensor to minimize light and movement artifacts.
- _____ Perform a tracking test by asking your client to raise the monitored hand above the heart and then lower the hand.
- _____ Identify common artifacts in the raw PPG signal, especially movement, and explain how to control for them and remove them from the raw data.
- _____ Explain the major measures of heart rate variability, including HR Max - HR Min, pNN50, SDNN, and SDRR.
- _____ Explain why we train clients to increase power in the low-frequency band of the ECG and how breathing at 5-7 breaths per minute helps them accomplish this.
- _____ Demonstrate how to instruct a client to utilize a feedback display.
- _____ Describe strategies to help clients increase their heart rate variability.
- _____ Demonstrate an HRV biofeedback training session, including record keeping, goal setting, site selection, baseline measurement, display and threshold setting, coaching, and debriefing at the end of the session.
- _____ Demonstrate how to select and assign a practice assignment based on training session results.
- _____ Evaluate and summarize client/patient progress during a training session.

ECG/EKG

- _____ Explain the ECG signal and biofeedback to a client.
- _____ Explain ECG sensor attachment to a client and obtain permission to monitor her.
- _____ Explain how to select a placement site and demonstrate how to attach ECG sensors to minimize movement artifact.
- _____ Demonstrate skin preparation.
- _____ Perform a tracking test by asking your client to inhale slowly and then exhale as you watch the change in heart rate.
- _____ Identify movement artifact in the raw ECG signal and explain how to control movement and remove this artifact from the raw data.
- _____ Explain the major measures of heart rate variability, including HR Max - HR Min, pNN50, SDNN, and SDRR.
- _____ Explain why we train clients to increase power in the low-frequency band of the ECG and how breathing at 5-7 breaths per minute helps them accomplish this.
- _____ Demonstrate how to instruct a client to utilize a feedback display.
- _____ Describe strategies to help clients increase their heart rate variability.
- _____ Demonstrate an HRV biofeedback training session, including record keeping, goal setting, site selection, baseline measurement, display and threshold setting, coaching, and debriefing at the end of the session.
- _____ Demonstrate how to select and assign a practice assignment based on training session results.
- _____ Evaluate and summarize client progress during a training session.

Respiration

- _____ Explain the respiration signal, healthy breathing, and biofeedback to a client.
- _____ Explain sensor attachment to a client and obtain permission to monitor her.
- _____ Explain how to select a placement site and demonstrate how to attach a respiration sensor to the chest and abdomen. Show how to monitor the accessory muscles to measure breathing effort.
- _____ Perform a tracking test asking your client to take a slow deep breath.
- _____ Identify breath holding, gasping, and movement artifact in the respiration signal, and how to remove them from the raw data.

- _____ Explain how to identify clavicular breathing, excessive breathing effort, reverse breathing, and thoracic breathing.
- _____ Explain how posture and clothing can affect breathing.
- _____ Demonstrate how to find your client's resonance frequency and explain why this is important.
- _____ Demonstrate how to instruct a client to utilize a breathing pacer and the feedback display.
- _____ Discuss strategies for slowing down your client's breathing toward 5-7 breaths per minute.
- _____ Demonstrate a respiratory biofeedback training session, including record keeping, goal setting, site selection, baseline measurement, display and threshold setting, coaching, and debriefing at the end of the session.
- _____ Demonstrate how to select and assign a practice assignment based on training session results.
- _____ Evaluate and summarize client progress during a training session.

EMG

- _____ Explain the EMG and biofeedback to a client.
- _____ Explain skin preparation and electrode placement to a client, and obtain permission to monitor her.
- _____ Explain how to protect the client from an infection transmitted by the sensor.
- _____ Identify active- and reference-electrode placements using a marking pencil for accessory muscle sites (trapezius and scalene).
- _____ Demonstrate skin preparation and electrode placement.
- _____ Measure electrode impedance for each active-reference electrode pair and ensure that impedance is sufficiently low and balanced.
- _____ Perform a tracking test for your placement, instructing the client to contract and then relax the monitored muscle.
- _____ Identify common artifacts in the raw EMG signal, including 50/60Hz, bridging, ECG, loose electrode, movement, and radio frequency, and explain how to control for them and remove them from the raw data.
- _____ Demonstrate how to instruct a client to utilize a feedback display.

_____ Demonstrate a surface EMG biofeedback training session, including record keeping, goal setting, site selection, bilateral and unilateral recording, and bandpass selection, baseline measurement, display and threshold setting, coaching, and debriefing at the end of the session.

_____ Demonstrate how to select and assign a practice assignment based on training session results.

_____ Evaluate and summarize client progress during a training session.

Artifacting

_____ Know when a record cannot be interpreted due to excessive artifact.

_____ Identify missed and extra beats in the raw EKG.

_____ Explain how to correct missed beats, extra beats (including ectopic beats).

_____ Explain the purpose of the smoothness priors detrending option and how to use it in programs like Kubios.

_____ Explain why you should never remove part of an epoch and then rejoin the remaining sections.

I attest that this work has been completed for: _____
Name of Candidate for BCIA Certification

Signature of the Mentor: _____

Date: _____

Printed Name of Mentor: _____

BCIA #: _____

If using more than 1 mentor, please make copies of this document for each mentor to complete.