

Enrollment Packet

InMindOut Military and First Responder Cognitive Performance Course Objectives

Welcome to InMindOut Military & First Responder Course,

Thank you for choosing InMindOut's program for your educational needs. We provide the most up to date research in our course to ensure sufficient knowledge for optimal performance training. By the conclusion of this course, the participants will be able to:

1. Describe the latest empirical Neurofeedback and Biofeedback research;
2. List the definitions, developers, history, and assumptions underlying Neurofeedback and Biofeedback;
3. Explain how learning theory can be applied to Neurofeedback and Biofeedback;
4. Explain basic neurophysiology and neuroanatomy and their connection to EEG/QEEG/Biofeedback;
5. Describe the evolution of HRV protocols for optimal performance;
6. Describe the evolution of Neurofeedback protocols for optimal performance;
7. Describe the instrumentation and electrical terminology involved in EEG/QEEG/HRV;
8. Describe psychopharmacological considerations and their effects on EEG/QEEG/HRV recordings;
9. Explain how to conduct an EEG/QEEG;
10. Explain how to conduct an HRV assessment;
11. Describe how to implement ongoing assessments;
12. Explain measurements associated with EEG/QEEG;
13. Explain measurements associated with HRV;
14. Describe strategies associated with Neurofeedback for optimal performance;
15. Describe strategies associated with HRV;
16. Explain treatment protocols for Neurofeedback;
17. Explain treatment protocols for HRV trainings;
18. Demonstrate treatment protocols and implementation of Neurofeedback labs;
19. Demonstrate treatment protocols and implementation of HRV labs

Again, thank you for choosing InMindOut's Military & First Responder Optimal Performance Course. We look forward to assisting you on your journey as you expand your education!

**InMindOut Military & First Responder Cognitive Performance Course Phase I
Syllabus
(Online)**

Online Session 1a: Orientation to Neurofeedback

HW: Complete 1a. Orientation to Neurofeedback Quiz

Online Session 1b: Orientation to Neurofeedback

Reading:

1. Autonomic and cortical response of soldiers in different combat scenarios

HW: Complete 1b. Orientation to Neurofeedback Quiz

Online Session 2a: Basic Neurophysiology and Neuroanatomy

HW: Complete 2a. Basic Neurophysiology and Neuroanatomy Quiz

Online Session 2b: Basic Neurophysiology and Neuroanatomy

HW: Complete 2b. Basic Neurophysiology and Neuroanatomy Quiz

Online Session 3a: EEG/QEEG/Neurofeedback Instrumentation

HW: Complete 3a. EEG/QEEG/Neurofeedback Instrumentation Quiz

Online Session 3b: EEG/QEEG/Neurofeedback Instrumentation

HW: Complete 3b. EEG/QEEG/Neurofeedback Instrumentation Quiz

Online Session 3c: EEG/QEEG/Neurofeedback Instrumentation

HW: Complete 3c. EEG/QEEG/Neurofeedback Instrumentation Quiz

Online Session 3d: EEG/QEEG/Neurofeedback Instrumentation

HW: Complete 3d. EEG/QEEG/Neurofeedback Instrumentation Quiz

Online Session 4a: EEG/QEEG Assessment

HW: Complete 4a. EEG/QEEG Assessment Quiz

Online Session 4b: EEG/QEEG Assessment

HW: Complete 4b. EEG/QEEG Assessment Quiz

Online Session 4c: EEG/QEEG Assessment

HW: Complete 4c. EEG/QEEG Assessment Quiz

Online Session 5a: Neurofeedback Optimal Performance Protocols

Reading:

1. Psychophysiological stress response in an underwater evacuation training

HW: Complete 5a. Neurofeedback Optimal Performance Protocols Quiz

Online Session 5b: Neurofeedback Optimal Performance Protocols

HW: Complete 5b. Neurofeedback Optimal Performance Protocols Quiz

Online Session 5c: Neurofeedback Optimal Performance Protocols

HW: Complete 5c. Neurofeedback Optimal Performance Protocols Quiz

Online Session 6: HRV Anatomy and Physiology

Reading:

1. Monitoring Stress–Recovery Balance with Heart Rate Variability and Perceptual Load Markers During a Competitive Micro-cycle in Elite Ski Mountaineers

HW: Complete 6. HRV Anatomy and Physiology Quiz

Online Session 7: Heart Rate Variability Meaning and Measurements

HW: Complete 7. Heart Rate Variability Meaning and Measurements Quiz

Online Session 8: HRV Instrumentation

HW: Complete 8. HRV Instrumentation Quiz

Online Session 9: HRV Biofeedback Strategies

Reading:

1. Single bout of yoga practices (Asana) effect on low frequency (LF) of heart rate variability—A pilot study

HW: Complete 9. HRV Biofeedback Strategies Quiz

Online Session 10: HRV Optimal Performance Protocols

Reading:

1. Protocol for heart rate variability biofeedback training

HW: Complete 10. HRV Optimal Performance Protocols Quiz

InMindOut Military & First Responder Cognitive Performance Course Phase II Schedule

(Online)

Labs

Lab 1: HRV Assessment

Lab 2: HRV Training

Lab 3: Single Channel Monopolar Placement Cz-SMR Training Part 1

Lab 4: Single Channel Bipolar Placement at Fz-Pz

Lab 5: 2 Channel Training at P3 P4 Part 1

Lab 6: 2 Channel Training at P3 P4 Part 2

Lab 7: Single Channel 3-site Assessment

Getting Certified in Biofeedback and Neurofeedback

This course is tailored to those wanting education about certain aspects of Biofeedback and Neurofeedback therapies that could be used with the Military and First Responder populations. This course does not meet the BCIA's requirements for Biofeedback or Neurofeedback board certification as it is a combination of both Biofeedback and Neurofeedback techniques and uses. Below, the BCIA's Essential Skills requirements are listed from the BCIA's website. If you are interested in Biofeedback and/or Neurofeedback board certification, please take steps to meet the requirements listed in the links below:

Biofeedback:

<https://www.bcia.org/bf-entry-level>

Neurofeedback:

<https://www.bcia.org/nf-entry-level>

BCIA Biofeedback Essential Skills List

A beginning neurofeedback practitioner should be able to demonstrate mastery of the following basic skills as attested by their BCIA-approved mentor:

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 him or 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

EMG

- Explain the EMG and biofeedback to a client
- Explain skin preparation and electrode placement to a client, and obtain permission to monitor him or her
- Identify active- and reference-electrode placements using a marking pencil for bilateral cervical paraspinal, frontalis, masseter, sternocleidomastoid, and trapezius sites
- 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 training session

Heart Rate

- Explain the ECG signal and biofeedback to a client
- Explain ECG sensor attachment to a client, and obtain permission to monitor him or 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 slowly inhale 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
- 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 the 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 him or 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

Skin Conductance/Skin Potential

- Explain the SC/SP signal and biofeedback to a client
- Explain sensor attachment to a client, and obtain permission to monitor him or her
- Explain how to select a placement site and demonstrate how to attach a sensor to minimize movement artifact
- Explain how to protect the client from infection transmitted by the sensor
- Perform a tracking test by asking your client to take 3 quick breaths
- Identify common artifacts in the raw Sc/SP signal, including movement and respiration, 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 an electrodermal 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

Temperature

- Explain the temperature signal and biofeedback to a client
- Explain thermistor attachment to a client, and obtain permission to monitor him or her
- Explain how to select a placement site and demonstrate how to attach a thermistor to minimize blanketing, movement, and stem artifacts
- Perform tracking test by asking your client to blow on the thermistor bead
- Identify common artifacts in the raw temperature signal, including draft movement, 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
- Describe strategies to help clients with cold hands, who warm very slowly, or who cool when they attempt to warm their hands.
- Demonstrate a temperature biofeedback training session, including record keeping, goal setting, site selection, whether to record bilaterally or unilaterally, 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.

BCIA Neurofeedback Essential Skills List

A beginning neurofeedback practitioner should be able to demonstrate mastery of the following basic skills, as attested by their BCIA-approved Mentor.

Client/Patient Orientation

- In Layman's language, explain to a new client EEG biofeedback, self-regulation concepts, and operant condition of brainwave activity
- Explain the major stages in the neurofeedback treatment/training process, from initial intake and assessment to progress monitoring and reporting
- Explain the client's role and responsibilities in the neurofeedback process..
- At initial session, explain how the neurofeedback session process and equipment works, including:
 - Purpose and steps involved in skin preparation
 - Steps in electrode attachment and selection of site placements; assure client about safety of "sensors"/electrodes
 - Meaning of primary features of the feedback screens and concepts of amplitude and frequency and/or z-scores
 - Relationship between client activity and on-screen feedback changes
 - Session recording and progress monitoring screens
- Obtain written client permission for treatment/training using a thorough informed consent form

Intake, Assessment and Protocol Selection

- Document a thorough client symptom and medication history and gather background information relevant to treatment/training goals
- Provide a thorough EEG baseline assessment using the following skills:
 - Perform correct measurements to name and locate on the scalp each of the International 10/20 System electrode placement sites
 - Properly prepare scalp and ears and attach electrodes to selected assessment sites or attach an electrode cap if doing a full-cap quantitative EEG
 - Correctly perform all steps to collect a qEEG recording or multi-channel EEG assessment: checking impedances, removing artifact, and collecting eyes-open and eyes-closed data
 - Demonstrate basic understanding of a qEEG assessment report, as well as the most commonly reported components of qEEG databases (absolute power, relative power, phase, coherence, z- score comparisons, etc.)
 - Identify recordings indicating spike and wave activity requiring consultation with a neurologist or qEEG expert



- Use all intake, psychometric, and baseline EEG assessment data to select target electrode placement sites and montages for neurofeedback treatment/training
- Select an initial neurofeedback protocol and explain rationale to client

Use and Maintenance of Neurofeedback Equipment

- Demonstrate thorough knowledge of operation of neurofeedback equipment of choice:
 - Make correct hardware connections and start hardware.
 - Make correct electrode connections to the hardware.
 - Identify and remove (or control for) sources of common artifacts in the raw EEG signal.
 - Troubleshoot common equipment failures according to manufacturer's recommendations.
- Demonstrate thorough knowledge of appropriate software for selected equipment:
 - Accurately select, install, and run neurofeedback treatment/training software.
 - Identify components, applications, and limitations of selected software package.

Neurofeedback Session Management and Reporting

- Conduct neurofeedback treatment/training sessions involving the following procedures:
 - Provide initial orientation and instructions to client at first treatment/training session.
 - Prior to subsequent sessions, query client (and/or parent) verbally and/or via pre-session questionnaire on client's positive and negative reactions to previous session.
 - Maintain basic hygiene procedures in attaching (and cleaning) electrodes.
 - Remind client of the training objectives for session and their role in attending to and responding to feedback.
 - Start treatment/training software program, set up selected protocol parameters, and run basic feedback functions.
 - As appropriate, set initial training thresholds and adjust as needed.
 - Identify and remove sources of artifact appearing in session recordings.
 - Monitor session recordings and provide coaching and supplemental verbal feedback to client during sessions, as appropriate.
 - Save session data per equipment guidelines and review session results with client.
 - Assign homework to client that supports and supplements session training goals.
 - Consult with client's prescribing physician and/or providers of other concurrent treatments as necessary to avoid treatment complications and maximize treatment outcomes.
 - Identify as soon as possible in the treatment/training process when neurofeedback is not working for a client; identify cause(s) for lack of progress; make necessary protocol or other training program adjustments; or, when necessary, recommend termination of neurofeedback.



- In collaboration with client, determine when neurofeedback treatment/training goals have been met and mutually plan for treatment termination and follow-up.
- Conduct all aspects of neurofeedback treatment and training in accordance with BCIA, AAPB and ISNR codes of ethical practice.
- Maintain orderly and up-to-date client files, including
 - Session-by-session training records, significant session events and client comments
 - Changes in client medication, significant life changes, allergies, etc. that may impact treatment/training results reports of consultations with other treatment providers, family members, teachers, etc.

Use of Supplemental Therapeutic and Training Modalities

- Demonstrate ability to establish positive, constructive relationships with clients and their family members, using basic counseling and communication skills
- Document adequate training and demonstrate skills required to use appropriate counseling/therapy methods to supplement neurofeedback with clients having mental health diagnoses
- Document adequate training in use of alpha-theta neurofeedback protocols. Demonstrate ability to select appropriate clients for alpha-theta training as well as apply appropriate therapy methods when using these protocols
- Document adequate training in other neuromodulation modalities (such as HRV biofeedback, AVS, CES, etc.) for use in conjunction with neurofeedback, and demonstrate ability to select and use appropriate adjunctive modalities with individual clients