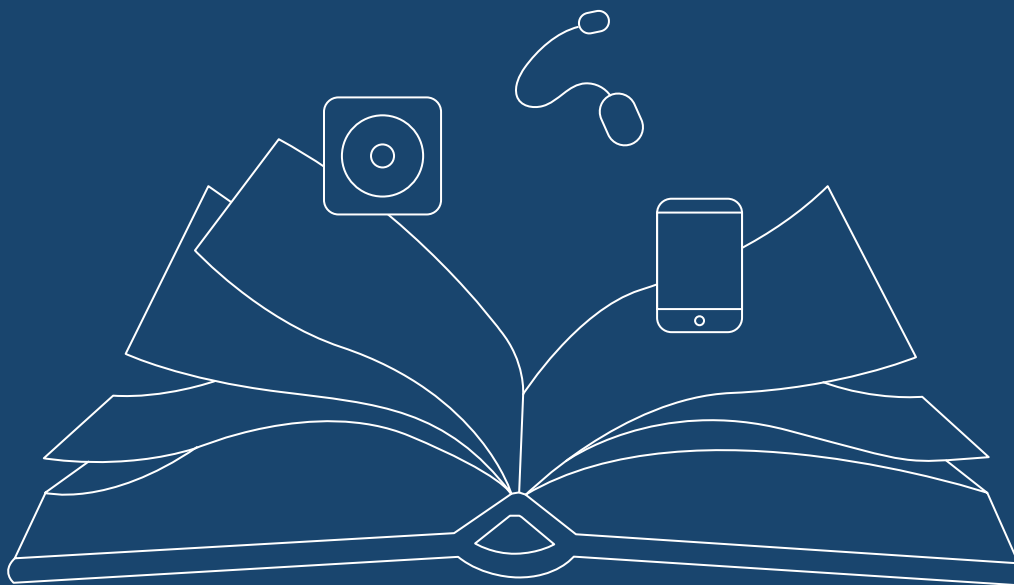




# Biofeedback Implementation Guide

A program guide.





# ROI

## ▶ About

The Rural Opportunity Institute (ROI), based in Tarboro, North Carolina, is a social innovation lab that designs solutions built around the needs of individuals and families in rural Eastern NC.

Our goal is to end generational cycles of trauma and poverty by preventing adverse childhood experiences (ACEs) and toxic stress.

We are working towards creating a system that builds the capacity of rural communities to support people's healing from adversity to achieve health, safety, connection, and self-determination for current and future generations.

To learn more about our work, visit [www.ruralopportunity.org](http://www.ruralopportunity.org)

Click on any of the tabs throughout the guide to jump to different sections.



# Table of Contents

## PART I

### **03 Introduction**

- 04 Who is This Guide For?
- 05 Goals
- 06 The Challenge
- 07 The Solution
- 08 User Archetype
- 09 Long-term Solution

## PART II

### **10 Program Overview**

- 11 Model of the Program
- 12 Objectives
- 13 Resources
- 14 Timelines
- 15 Roles

## PART III

### **17 Preparation Procedures**

- 18 Program Staff Flow
- 19 Staff Education Presentation
- 20 Setting up Inner Balance
- 21 Practice Biofeedback Session
- 24 Data Management
- 25 Eligibility, Recruitment & Schedule
- 26 Consent

## PART IV

### **27 Biofeedback Program**

- 28 Participant Flow
- 29 Intake & Baseline Data
- 30 Preparation for Biofeedback
- 31 Biofeedback Intervention
- 33 Endline Data & Context

## PART V

### **34 Evaluation**

- 35 Guidelines
- 36 Procedure
- 37 Feedback

## PART VI

### **38 Appendices**

- 39 A: Daily Program Log
- 41 B: Checklists
- 44 C: Assessments
- 47 D: Logic Model
- 49 E: Additional Resources
- 51 F: Consent Forms
- 56 G: Recruiting Materials
- 59 H: Educational Materials

### **71 Sources**

### **72 Gratitude & Thanks**

# PART I

## ▶ Introduction

This program guide was created by the Rural Opportunity Institute (ROI), based in Tarboro, NC. The program's main intervention component will be the use of biofeedback breathing to help participants learn how to change their bodies' conditioned responses to stressful situations.



# Who is This Guide For?

## The Doer: Someone ready to get to work!

At ROI, we believe that a community holds the answers for unlocking its greatest potential. Therefore, we are passionate about building a more trauma-informed, resilience-focused rural Eastern NC and welcome others to do the same for their community.

Before you begin, it is important to understand the characteristics needed to successfully implement this program.

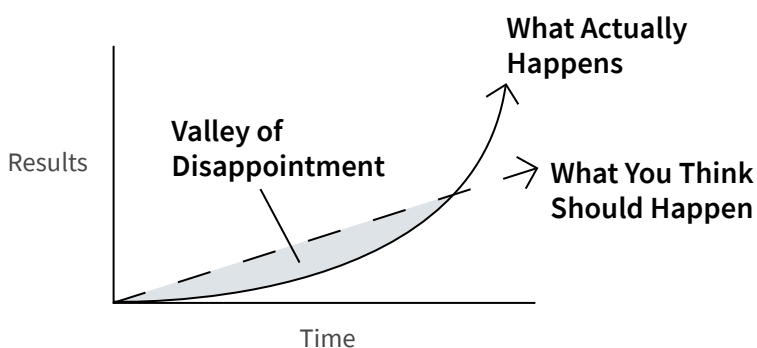
### This guide is for you if:

- You are eager to try new things
- Passionate about improving the well-being of yourself and the people you serve
- Energized by innovation and improving existing practices within your program
- Open to new ideas

### Some things you should know before getting started:

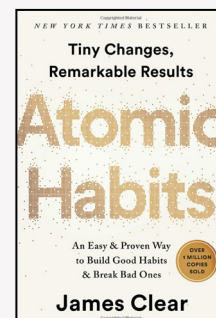
- There is no silver bullet. Small, consistent action, that might seem unimportant, can lead to positive changes over the long-term.
- Don't give up on the program too early. The diagram below shows how it is normal to not see immediate results, and that positive results come from sticking with a program beyond the initial phases of disappointment.

## The Plateau of Latent Potential



► **Tip/More Info:**  
Here you will find informative tips and/or additional materials to help the participants and administrators get the most out of the program.

► **More Info:**  
Adapted from [Atomic Habits](#) by James Clear.



# Goals

## What will you gain?

The main goals of this program are...

**To increase awareness of the causes of stress and how it can lead to negative coping behaviors such as:**

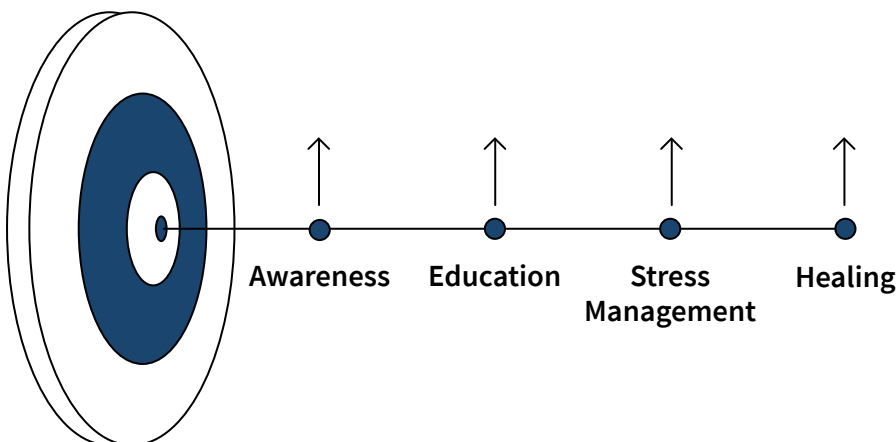
- Aggression
- Depression
- Exhaustion
- Anxiety
- Substance Misuse
- (And more...)

**To equip anyone who serves youth and adults with tools to help people objectively:**

- Improve their ability to manage stress
- Improve the health of their nervous system
- Increase their sense of control over their body and mind
- Decrease negative coping behaviors
- Decrease the feelings of burnout and stress

▶ **Tip:**  
This audience might include principles, teachers, counselors, managers, healthcare workers, and more.

## Target Goals



# The Challenge

## Adverse Childhood Experiences (ACEs)

ROI knows that people are not to blame for the trauma and stress that impacts them and that resilience is an inner strength, regardless of background.

Often when people are coping with stress, society (schools, organizations, family systems) responds with pervasive responses such as punishment, isolation, and silence. This leads to exclusion from supportive services and more exposure to unsafe environments. Punitive and unsupportive environments increase toxic stress and prevent the chance for healing.

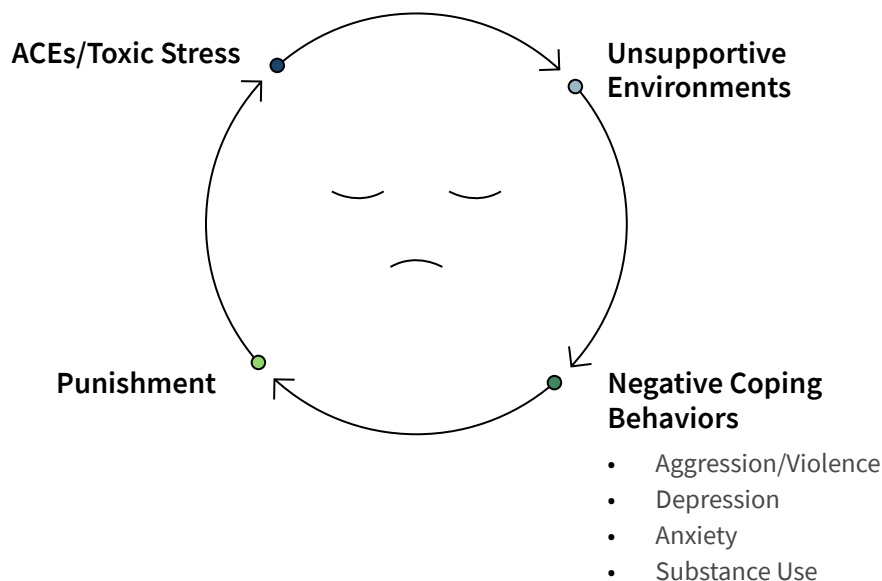
Examples of ACEs include abuse and neglect. These experiences can lead to maladaptive coping strategies, poor impulse control, and/or criminalized behavior.<sup>1</sup> ACEs research found a positive association between the number of ACEs experienced and the likelihood of mental illness, alcoholism, and drug use.<sup>2</sup> Research also suggests that toxic stress affects the development of self-regulation and executive function skills (ie. the ability to plan, focus, remember instructions, and juggle tasks).<sup>3</sup> These skills are fundamental for success in institutions, like schools, and for building relationships.



### More Info:

For real-life stories on the effects on generational trauma and toxic stress, visit ROI's [systems map](#).

## Cycle of Trauma



### More Info:

For additional ACEs visuals, see [Appendix E](#).

# The Solution

## Biofeedback Intervention

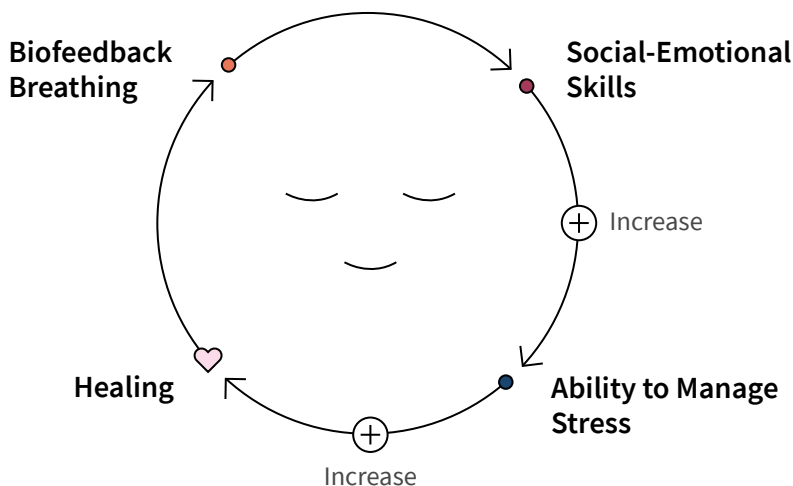
Building resilience is a valuable way to respond to trauma as individuals can be taught skills that assist them to manage emotions, connect with others, and find hope. Through education on the impact of adverse experiences, along with teaching healthy coping skills, health and behavioral outcomes can be improved.<sup>4</sup>

Biofeedback is a practice that can improve people's ability to cope with stress. It is a non-invasive treatment used to teach people how to have more control over their self-regulatory system. Technology, such as the HeartMath Inner Balance App, is used to monitor heartbeat and breathing activity. It allows users to measure their heart rate variability (HRV) and provides feedback on their level of coherence. Higher HRV and coherence scores are associated with better self-regulation and improved ability to cope with stress.<sup>5</sup>

Biofeedback intervention is one of the most accessible ways to teach individuals how to use their breathing patterns to counter the effects of toxic stress. As participants develop their practice, they will increase their ability to sustain mindful breathing techniques without the assistance of devices.

► **More Info:**  
Additional research on biofeedback and HeartMath's Inner Balance App can be found [here](#).

## Effects of Biofeedback





# User Archetype

## Who is Biofeedback for?

As previously stated, biofeedback is a technique that can help a person learn how to control some of their body's functions, such as heart rate. During biofeedback, the user is connected to electrical sensors that help them receive information about their body.

This technology has been around for over 50 years and is deeply researched and evidence-backed. The results have shown significant decreases in stress and improvements in behavioral control.

Some common medical conditions that biofeedback breathing training has shown to have a positive impact on include:

- Anxiety
- ADHD (Attention deficit hyperactivity disorder)
- Depression
- PTSD
- Chronic pain
- Headaches
- Hypertension
- Eating Disorders
- Substance Abuse
- Epilepsy
- Constipation
- Chronic Fatigue Syndrome
- (And many more..)

Therefore, any individual who suffers from one or more of these conditions would be an ideal candidate to take part in a biofeedback breathing program.



### More info:

For more information on the effectiveness of biofeedback, an in-depth meta-study from the National Library of Medicine, National Institutes of Health, and National Center for Biotechnology Information can be found [here](#).

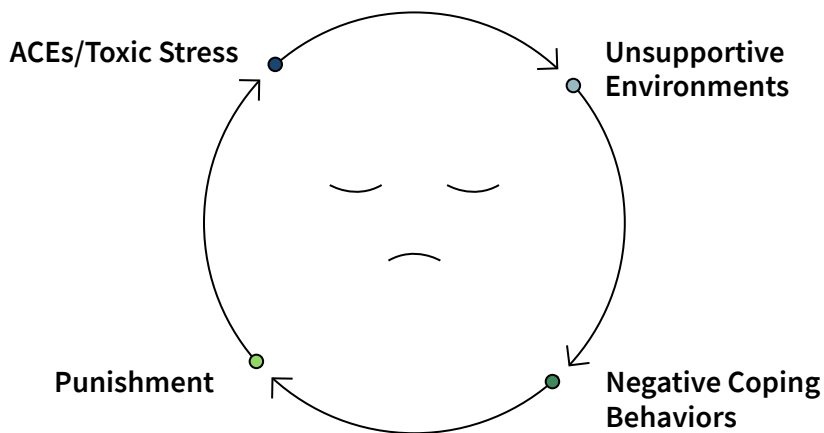
# Long-Term Solution

## End Cycles of Trauma & Toxic Stress

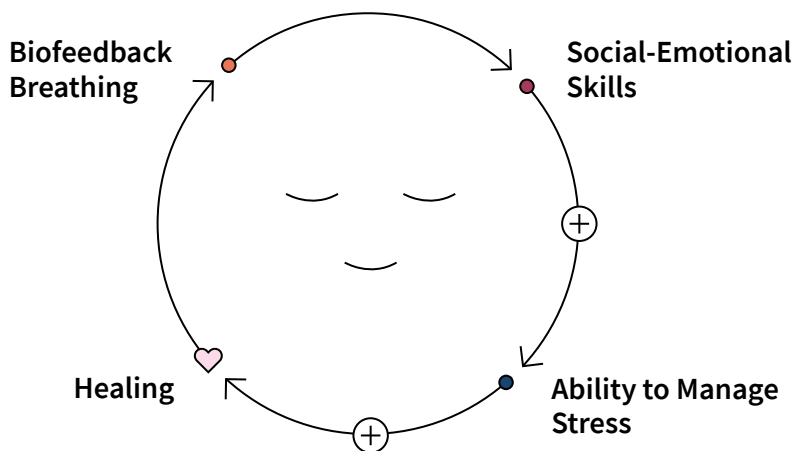
The incorporation of biofeedback will help break the cycle of trauma by decreasing toxic stress in individuals. The goal is to build the capacity of communities and spaces to support healing from adversity to achieve health, safety, connection, and self-determination for current and future generations.

► **More Info:**  
Learn more about ROI's mission to end cycles of stress and trauma at [ruralopportunity.org](http://ruralopportunity.org).

### Before Biofeedback



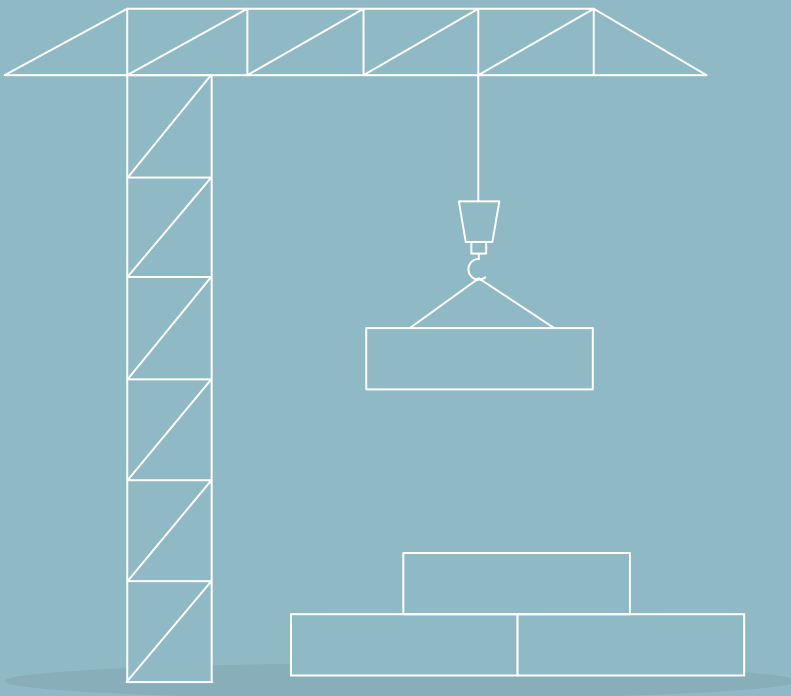
### After Biofeedback



# PART II

## ► Program Overview

This section will introduce the objectives, resources, and roles required to successfully run and complete this program. It will provide the information needed to create a biofeedback breathing program for the group of people that you intend to serve.



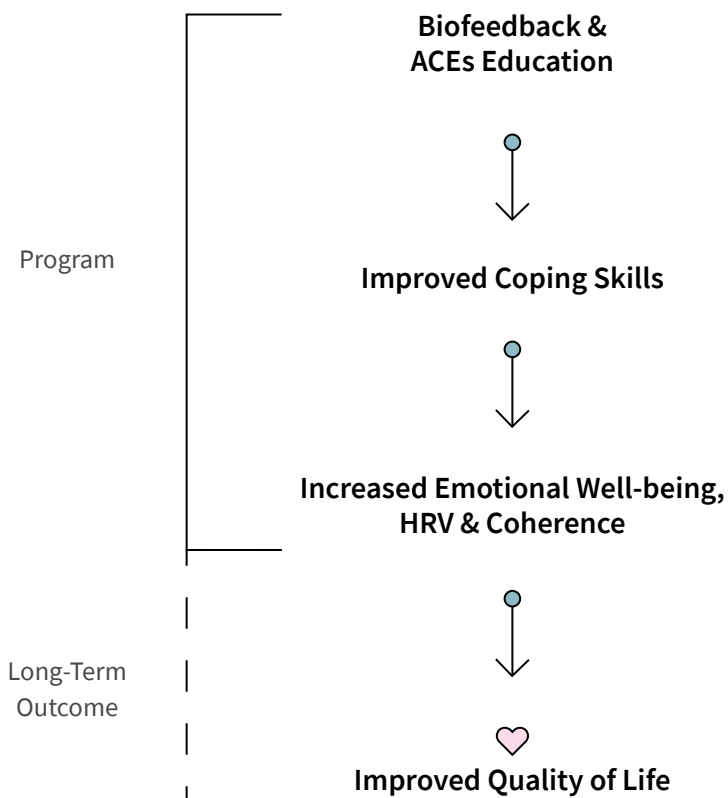
# Model of Program

## Biofeedback with the Inner Balance App

This program involves the implementation of biofeedback training through the HeartMath Inner Balance app. The program will provide education on ACEs, the effects of toxic stress and trauma on health, and information on shifting away from a punitive approach through trauma-informed programming.

Participants will also be advised to practice mindful breathing techniques taught by the Inner Balance mobile app without the devices to further develop self-regulation skills. Learning to practice mindful breathing without the use of biofeedback devices is necessary because participants may not have access to biofeedback devices after participation in this program. It is expected that after structured training using the biofeedback devices, participants will have acquired skills they can utilize at any point without the need for the devices.

### Conceptual Model of the Program



► **More Info:**  
For additional reference, [Appendix D](#) contains the Logic Model, which provides a visualization of the linkages between the resources needed, proposed activities, associated outputs, and desired outcomes.

# Objectives

## Process & Outcome

### Process

During the program...

- All program staff receives educational training in ACEs (the impact of stress and trauma upon your body and brain).
- Program staff enrolls 5-15 users to participate in the program during the recruitment process.
- Program staff introduces all enrolled participants to HRV (heart rate variability), coherence, biofeedback, Inner Balance app/sensor, and mindful breathing techniques before participants begin sessions.
- Participants practice biofeedback with Inner Balance for at least 10 minutes per day, every day during all 4-6 weeks of the intervention. Two times per day is ideal, like practicing a sport or skill, the more you do it, the better you get!
- Program staff document participant consent and participation in the Daily Program Log.
- Optional:** Program staff administers participant assessments at baseline (before the first biofeedback session) and endline (after 4 weeks of participation).

### Outcome

By the end of the program...

- Participants' average coherence score per session will show an upward trend as measured by the Inner Balance devices.
- Optional:** Participants will improve their self-reported emotional well-being (anxiety, depression, and stress) as measured by assessments.

▶ **Tip:**  
The number of enrolled participants will vary based on the capabilities of the program staff.

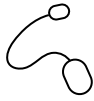


▶ **Tip:**  
No need to stress! We have presentations and educational materials you can use to explain these simple concepts.

▶ **Disclaimer:**  
Results vary based on many different factors. These represent intended outcomes one would hope to see at the end of the program.

# Resources

## Tools & Assets

### Equipment

-  **HeartMath's Bluetooth or wired sensor(s)**  
Purchase your biofeedback sensors [here](#).
-  **Inner Balance App**  
Free at any App Store.
-  **Tablet(s), iPod(s) and/or mobile device(s)**

### Location

-  **Private/quiet area**

### Program Materials

- Daily Program Log**  
[Appendix A](#)
- Staff & Participant Preparation Checklists**  
[Appendix B](#)
- Optional Baseline & Endline Assessments**  
[Appendix C](#)
  - One of the assessment options includes the use of **emWave Pro Plus**, which can be purchased [here](#).
- Biofeedback Presentation & Video**  
[Presentation Slides](#), [Video Presentation](#)
- Consent Forms**  
[Appendix F](#)
- Recruiting Materials**  
[Appendix G](#)
- Educational Materials**  
[Appendix H](#)

▶ **Tip:**  
ROI recommends purchasing one biofeedback sensor for each participant in the program.

For a potential discount, email [ruralopportunity@gmail.com](mailto:ruralopportunity@gmail.com) and request a connection to HeartMath.

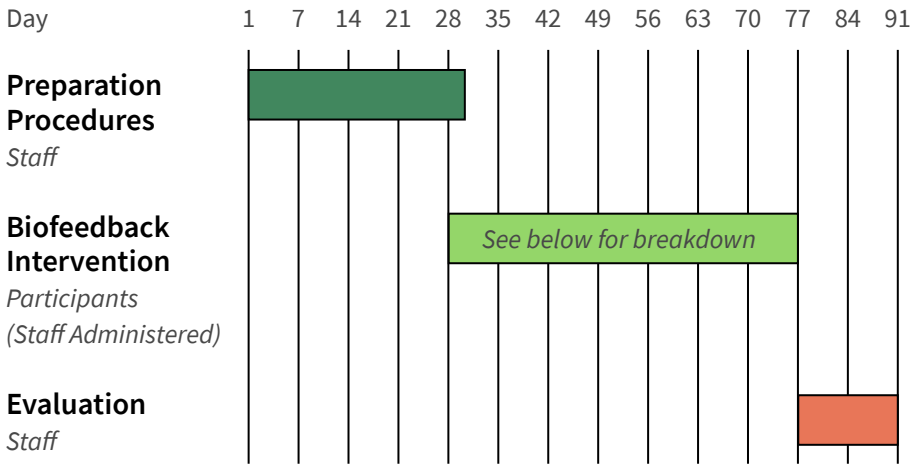
▶ **Tip:**  
Biofeedback sensors can plug into existing devices however, ROI recommends having one device per participant. Therefore additional devices may need to be purchased.

▶ **Tip:**  
For a potential discount, email [ruralopportunity@gmail.com](mailto:ruralopportunity@gmail.com) and request a connection to HeartMath.

# Timelines

## Program Activities

### All Program Requirements

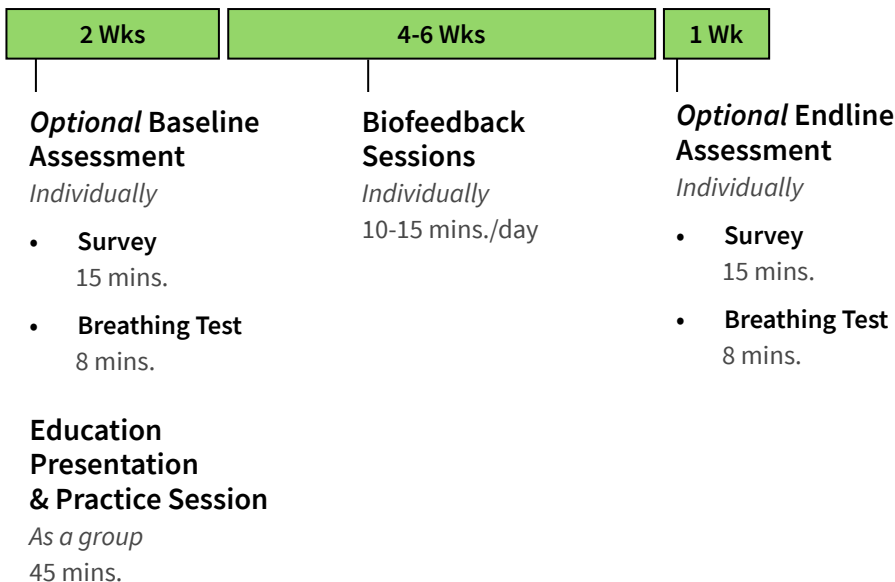


► **Tip:** These are estimates based on an ideal implementation process and could vary depending on the circumstances when implementation begins.

► **Tip:** See the diagram below for a more detailed breakdown of the tasks required during this time.

### Biofeedback Intervention Breakdown

Below is a breakdown of the time required of participants to complete the program as listed above. Though the focus of this section is the participants, staff will be expected to dedicate time towards administering/monitoring each task.



► **Tip:** 4 weeks is the minimum amount of time to start to see positive changes.

Like any habit, the more practice, the greater the chance for seeing positive results.

# Roles

## Required Program Staff: Part 1

The following provides a description of the roles and responsibilities of program staff. Assigning staff to these roles will be at the discretion of whoever assumes the role of Program Coordinator/Implementer.



### Program Champions

- Advocates for the adoption of the program and helps maintain staff and customer buy-in
- Often a senior leader of a team or organization

#### 🕒 Time Estimate

1-3 hours at the start of the program to build buy-in with key leaders.

▶ **Tip:**  
The same individual can take on more than one specific role.

▶ **Tip:**  
All time estimates may vary.

▶ **Tip:**  
This role could be the same person as the Program Coordinator/Implementer if needed.



### Program Recruiter

- Recruits and documents eligible participants for the program
- Obtains consent for participation and administers the completion of consent forms from each participant

#### 🕒 Time Estimate

3-5 hours during the first week of the program.



### Program Coordinator/Implementer

- Assigns roles, sets up educational trainings, and oversees program implementation
- Introduces staff and participants to biofeedback, Inner Balance, breathing techniques, and facilitates the first biofeedback session
- Evaluates effectiveness of the program
- Manages devices/equipment

#### 🕒 Time Estimate

3-5 hours per week during the first and last week of the program.  
1 hour per week for the remaining program weeks.



# Roles

## Required Program Staff: Part 2



### Data Manager

- Documents preparation using the Staff and Participant Preparation Checklists
- Schedules and documents daily participation in Daily Program Log
- Administers optional Baseline and Endline Assessments to participants
- Stores data from Inner Balance app (HeartMath Cloud), Daily Program Log, and optional assessments
- Develops procedures to protect participant confidentiality



### Time Estimate

2-3 hours per week during biofeedback intervention session weeks.



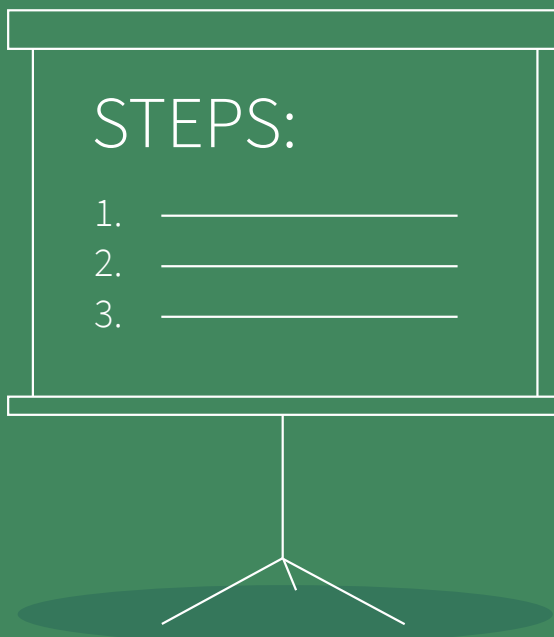
### Tip:

This role could be the same person as the Program Coordinator/Implementor if needed.

# PART III

## ▶ Preparation Procedures

This section will explain the steps to be completed before any participants begin biofeedback sessions. Some of the requirements in each step may vary depending on the availability and capacity of the program staff.



# Program Staff Flow

## Proceeding Program Steps

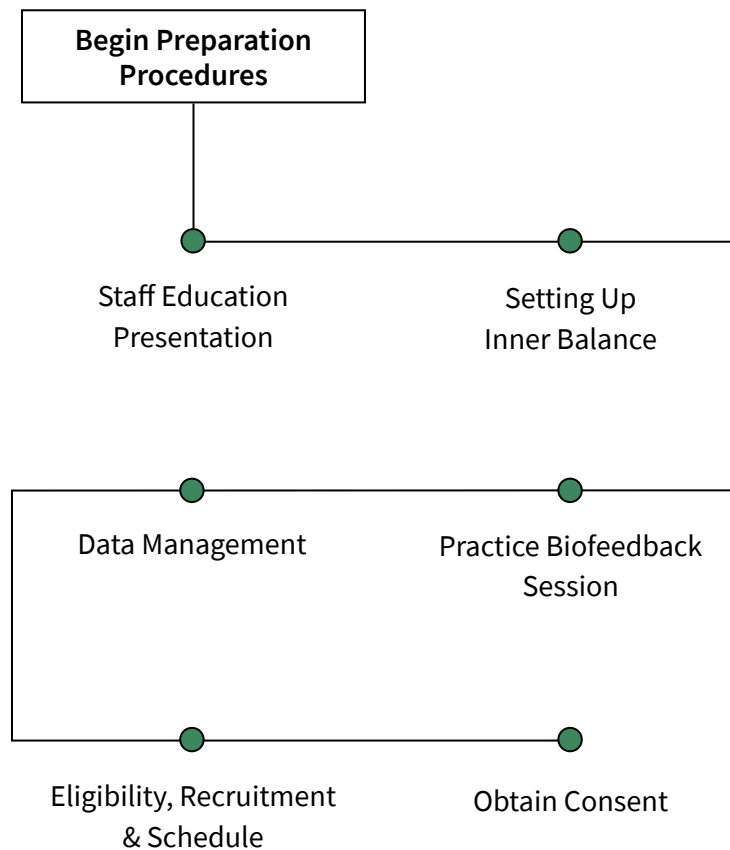
The Program Staff Flow Chart allows you to see an overview of the proceeding program steps within the Preparation Procedures section of this guide.

### Program Staff Flow Chart

#### Steps Completed:

- ✓ Review Program Introduction (Part I)
- ✓ Review Program Overview (Part II)
- ✓ Program Coordinator/Implementer Assigns Remaining Program Roles
- ✓ Obtain/Purchase All Necessary Equipment

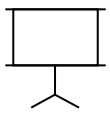
▶ **Tip:**  
Ensure all of these steps are completed before proceeding to the next step.



# Step 1

## Staff Education Presentation

To ensure all aspects of the Biofeedback Introduction are followed, the Data Manager will refer to the [Staff Preparation Checklist](#). The checklist will guide the entire staff of the department or organization on the steps that require completion before biofeedback can begin with participants.



### Review Presentation Slides & Video

Before a participating group can begin the implementation of the biofeedback program, staff must first be introduced to the science behind this approach.

The Program Coordinator/Implementer will watch the [Video Presentation](#) and use the [Biofeedback Presentation Slides](#) to present the content to the rest of the program staff.

The presentation will cover the topics of ACEs, resilience, biofeedback, and trauma-informed approaches. It will also give a sneak peek of the Inner Balance app and how it works. After reviewing the slides, the program staff will be educated on:

- The impact of ACEs and toxic stress on children and young adults
- The basics of self-regulation and executive-functioning
- Basic principles of a trauma-informed approach
- How biofeedback works
- How biofeedback and mindful breathing techniques can help improve self-regulation skills



#### More Info:

For additional visuals of ACE's, refer to [Appendix E](#).



#### More Info:

To learn more about the approach behind the Inner Balance App, watch this [video](#).

# Step 2

## Setting Up Your Inner Balance App

Once the HeartMath biofeedback sensors have been purchased and received, the program staff can begin to familiarize themselves with the Inner Balance app. The goal is to become comfortable with using the device and app so staff can properly assist participants when they begin the program.

The Program Coordinator/Implementer will assist with all app downloads along with the setup and implementation of the sensors.

- Purchase your biofeedback sensors [here](#).
- Download the Inner Balance app by HeartMath for free in any app store



### Enable Bluetooth

When first opening the app, a notification to enable Bluetooth will appear. Allow Bluetooth.



### Create Test Account

The user will be prompted to create a HeartCloud account. This will allow users to keep track of their personal biofeedback data on their assigned device. Therefore, ensure a secure email and password is used.



### Watch Intro Video

A video will appear after the account is created. It will give an overview of the app and how to use it.

Become familiar with the Session, Guides, and HeartCloud tabs on the menu bar as they will be used most frequently throughout the program.



Session



Review



Journal



Guides



HeartCloud



#### Tip/More Info:

It may be beneficial for more than one staff member to receive the HeartMath Interventions Certification Program for Health Professionals. See [Appendix E](#) for more information on HeartMath's official certification program.



#### Tip:

ROI recommends purchasing one sensor for each participant that will be in the program as well as using one tablet/iPod/mobile device per participant.



#### Tip:

The Data Manager will eventually create a HeartCloud account (username/email and password) for each participant.



#### More Info:

For additional instructions and FAQs, refer to HeartMath's [product training tutorials](#).

# Step 3

## Practice Biofeedback Session: Part 1

The steps to completing a biofeedback session are as follows:



### Attach Sensor

Clip the smaller end of the sensor to the user's ear. Attach the other end to their clothing or plug it into the lighting port of the tablet/iPod/mobile device.



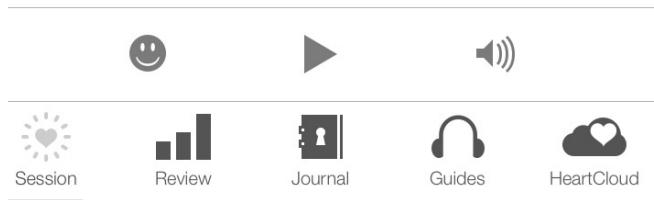
### Activate Sensor

Turn on the sensor by pressing the button or plugging it into the lighting port.

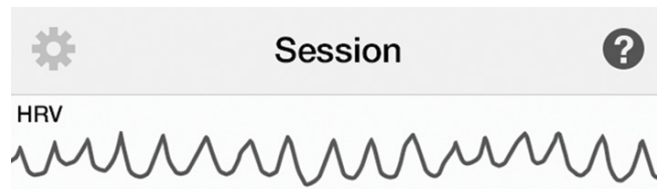


### Activate Inner Balance App

Go to the Session icon and press play.



The Inner Balance app will register the sensor and begin recording the user's HRV, which is shown at the top of the Session screen.



► **More Info:**  
If needed, refer to the information manual included in HeartMath's biofeedback sensor packaging for additional guidance.

► **Tip:**  
This will depend on the type of biofeedback sensor purchased.

► **Tip:**  
If the play button is not there, tap the screen for it to appear.

► **Tip:**  
The app may spend a few moments calibrating before data appears.

# Step 3

## Practice Biofeedback Session: Part 2

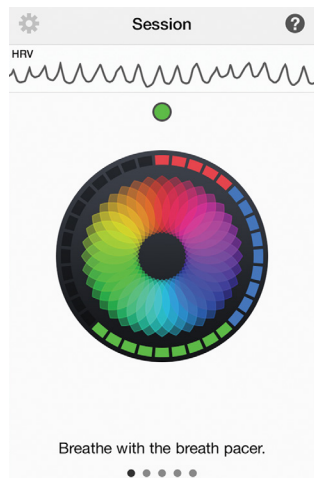


### Begin Biofeedback Session




Follow the breathing instructions provided by the Inner Balance app for 5 minutes.

The Session screen will provide visuals to help guide the breathing along with color-coded cues to ensure the participant is getting the most out of the exercise.

Examples include a multicolored circle that expands and contracts, signaling the participant to inhale and exhale respectively. The goal is to keep the indication light, located above the animated visual, green, which represents positive coherence. If the light turns blue or red, it is an indication that the user should try to refocus their mind and body, to enter a more calming state-of-mind, which will turn the light green again.



### Coherence Level Indicators:

-  **Green**  
High coherence
-  **Blue**  
Medium coherence
-  **Red**  
Low coherence



### Tip/More Info:

When participants first interact with the app, they will be asked to follow the *Quick Coherence Technique*, located under the Guides icon.

There is also a *First Guided Practice Guide* available for any user that might want additional instruction on how to begin.

# Step 3

## Practice Biofeedback Session: Part 3



### End Biofeedback Session

When the user has completed the session, press stop, or double-tap the screen. The data collected during the session will be automatically stored within the app on the device, in the user's HeartCloud account.

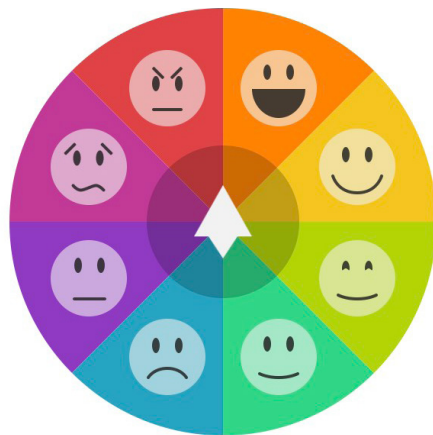


### Report Mood

Once the user has stopped the biofeedback session, they will be prompted to describe their mood using the Inner Balance visual scale.

Report your mood and tap Done.

Once again, the data will be synced and stored within the user's HeartCloud account.



Tap the Face That Matches Your Mood.

Done



#### Tip:

After completion, Inner Balance will display the Results page. At this time, the user can now log out and return the equipment.



# Step 4

## Data Management

Implementing data management procedures will be the responsibility of the Data Manager.



### Establish Data Procedures

The Data Manager must ensure that measures are taken to maintain user privacy before implementing the program. They must also limit and monitor the number of people that have access to participant information.

The Data Manager will also be responsible for moving data from the devices within the Inner Balance app and HeartCloud, conducting and storing participant assessments, program logs, and any other tools.

Data tracked throughout the biofeedback sessions can be found under the HeartCloud tab in the Inner Balance App of each device.



Session



Review



Journal



Guides



HeartCloud

The data that is stored in the Inner Balance app is within the HeartMath ecosystem of software and products. HeartMath, Inc. has created a data policy out of a fundamental respect for people's right to privacy. To learn more: [heartmath.com/about/privacy-policy](https://heartmath.com/about/privacy-policy)



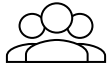
#### Tip:

Specific procedures for data management will be determined by the program staff to ensure all data is accurately and safely managed.

# Step 5

## Eligibility, Recruitment & Schedule

Implementing recruitment procedures will be the responsibility of the Program Recruiter.

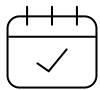


### Enroll Eligible Participants

In order to be eligible to participate in this program, candidates must meet all of the following requirements:

- Have access to a tablet/iPod/mobile device.
- Have access to a biofeedback sensor.
- Be able to use both pieces of equipment 1-2 times/day for a minimum of 10 minutes/day.
- Be available to commit to and complete the sessions for 4-6 weeks.

▶ **Tip:**  
Consider providing incentives for participating in the program.



### Determine Schedule

The Program Recruiter must also collaborate with the Program Coordinator/Implementer and Data Manager to determine a schedule for participation that works for the participant and the program staff.

The participant must be able to participate 1-2 times/day for a minimum of 10 minutes/day for 4-6 weeks. Program staff must also be available during this time to administer/monitor the sessions.

Some examples of what a regularly scheduled time block could look like for the program:

- The first 10-minutes of your daily schedule  
ex: 8:30 am or 9:00 am
- 10-minutes before or after lunch (or a break)  
ex: 11:30 am or 12:30 pm
- The last 10-minutes of your daily schedule  
ex: 4:30 pm or 5:00 pm

▶ **Tip:**  
The Program Coordinator/Implementer will need to be present during the first week to introduce the program.

▶ **Tip:**  
Biofeedback breathing is like practicing a sport or skill - the more you practice, the more likely you are to see measurable improvements.

Consider creating two 10-minute blocks in your daily schedule to allow participants to participate in the breathing program twice a day.

# Step 6

## Obtain Consent

Once eligible candidates are identified, the Program Recruiter will then invite them to participate in the program. At this time, they will briefly explain the basic objectives of the program, how it works, and any incentives offered. If the candidate agrees to become a participant, the Program Recruiter will obtain their informed consent.



### Complete Consent Forms

Participants will read and sign a content form. If the participant is under the age of 18 years old, he/she will be given an alternative consent form to complete, which requires the signed permission of a parent/legal guardian.

The required consent forms are linked below. Print and/or send as many as needed and ensure they are returned and kept on file.

#### Participants 18 Years and Older:

[Adult Consent Form](#)

#### Participants Under 18 Years:

[Youth Consent Form](#)

The consent forms include two parts that will inform the participants about how their confidentiality will be protected, possible benefits and risks of participating, and their autonomy to withdraw from the program at any time without penalty. An additional form will outline how the participant's data will be collected and used throughout the program.



#### Tip:

Each consent form has two parts (Part 1 and Part 2). Ensure each participant completes both parts.



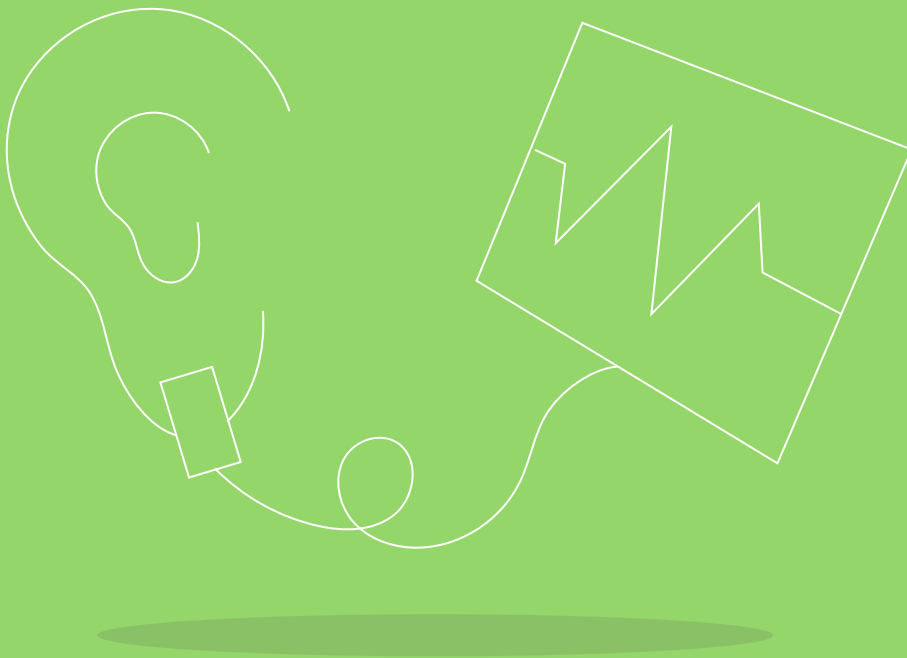
#### Tip:

Once the forms are complete, keep them in a secure location with minimal access.

# PART IV

## ▶ Biofeedback Program

This section will guide staff on the implementation of biofeedback intervention with HeartMath's Inner Balance app for the selected participants. Each step will offer instructions on how and when participants will complete their breathing sessions.



# Participant Flow

## Proceeding Program Steps

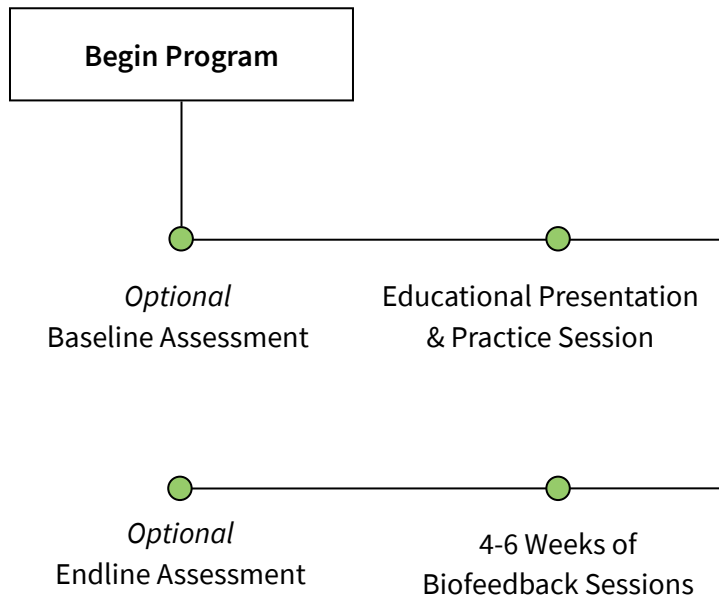
The Participant Flow Chart allows staff to see an overview of the proceeding program steps within the Program section of this guide.

### Participant Flow Chart

#### Steps Completed:

- ✓ Staff Education Presentation
- ✓ Staff Biofeedback Practice
- ✓ Data Management
- ✓ Recruitment
- ✓ Consent

▶ **Tip:**  
Ensure all of these steps are completed before proceeding to the next step.



# Step 1

## Participant Intake & Baseline Data

After consent is obtained from the participant, further intake procedures will be the responsibility of the Data Manager and Program Coordinator/Implementer.



### Log & Create Account

The Data Manager will begin the record in the [Daily Program Log](#), noting the date, time, and names of participants.

They will create a HeartCloud account (username/email and password) for each participant. Account information and passwords will then be given to participants the first time they are introduced to the devices.

▶ **Tip:** Keep all the usernames and passwords written down in a secure location. This will help support program participants who have trouble logging into their account throughout the program.



### Login on Device

The Data Manager will login to the associated HeartCloud account on the tablet/iPod/mobile device assigned to the participant so that the participant can easily access the Inner Balance app and their data can be synced.

▶ **Tip:** These assessments are optional but highly recommended if you are interested in fully analyzing the effectiveness of the program.



### Optional Baseline Assessment

After intake procedures are completed, program staff have the option of requiring participants to complete one or both of the Baseline Assessments available. The two options include:

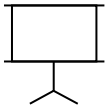
- **Survey:** Measures self-reported levels of anxiety and depression
- **Breathing Test:** Measures actual changes in body, nervous system, and physiology

See [Appendix C](#) for details on which option would be the best fit and links to the assessments.

# Step 2

## Preparation for Biofeedback

To ensure all aspects of the Biofeedback Introduction are followed, the Data Manager will refer to the [Participant Preparation Checklist](#). The checklist will include questions asking whether participants were engaged during the initial biofeedback session.



### Education Presentation

Before the biofeedback begins, the participants must be introduced to the concepts of HRV, coherence, and biofeedback as well as learn how to use the Inner Balance app.

The Program Coordinator/Implementer will use the [Biofeedback Presentation Slides](#) to introduce these concepts to the participants during a 30-minute intervention preparation session.



#### Tip:

These sessions may be conducted with small groups of 2-4 participants or with all participants at once if needed.



### Practice Session

After educating participants on the science behind the approach, the Program Coordinator/Implementer will use the knowledge gained during the Preparation Procedures to guide participants through their first biofeedback session (5 mins.) using the Inner Balance app and biofeedback sensors.

The Program Coordinator/Implementer will also introduce participants to a brief audio session within the Inner Balance app called *Quick Coherence Technique*, which demonstrates how to practice mindful breathing techniques without the use of a biofeedback device.



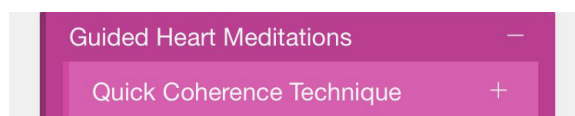
#### More Info:

Refer back to [Step 3](#) of the Preparation Procedures.



#### Tip:

Located under the Guides icon within the Inner Balance app.



# Step 3

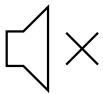
## Biofeedback Intervention: Part 1



### Schedule

Once a participant has been introduced to biofeedback, they will be free to practice with the app during their scheduled time.

Participants will either engage in **2 biofeedback sessions per day of 5-8 minutes** or **1 biofeedback session per day of 10-15 minutes**, every day for the duration of the 4-6 week program.



### Find a Private Space

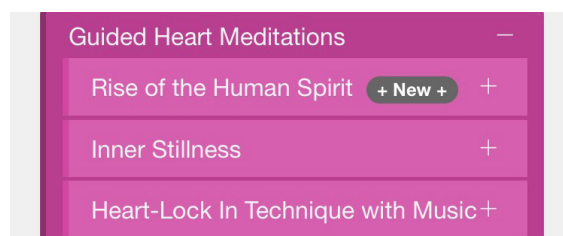
When practicing with Inner Balance, participants should be encouraged and allowed to utilize dedicated spaces that will give them privacy to be able to focus on their breathing without distraction.

The process for using this space will need to be determined by the program staff and clearly communicated to participants.



### Meditations

While completing the sessions, participants can choose to follow the audio sessions for guided meditation, located within the Guides section of the app. It teaches techniques that can be used on their own, without the help of an app or audio file.



▶ **Tip:**  
The Data Manager should log each session in the [Daily Program Log](#).

▶ **Tip:**  
Achieving at least 10-15 minutes of biofeedback practice each day is ideal.

▶ **Tip:**  
This could be a good space to display the educational materials on mindful breathing techniques located in [Appendix H](#).

▶ **Tip:**  
If participants choose to use these features, ensure that they are still recording their session as usual, under the Session icon, so Inner Balance can document the data.



# Step 3

## Biofeedback Intervention: Part 2



### Data Collection

After each session, the Inner Balance app will record the date, length, average coherence score, and an achievement score for the session. This data will be synced to HeartCloud.



Session



Review



Journal



Guides



HeartCloud

The Data Manager will be responsible for ensuring that HeartMath data from each device are successfully transferred to and stored in a central, secure location for future analysis, per the data management procedures developed during preparation.



### Promotion

Information on mindful breathing techniques and reminders to practice them when feeling angry or stressed should be incorporated into the setting of the sessions. This will help to promote and reinforce the techniques learned throughout the program.

Printable posters on mindful breathing can be found in [Appendix H](#).



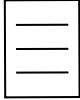
#### Tip:

Place these materials around areas where participants are completing their sessions.

# Step 4

## Endline Data & Context

*After 28-42 days of biofeedback*



### Endline Assessment

After 4-6 weeks of biofeedback sessions, program staff have the option of requiring participants to complete one or both of the Endline Assessments available. The two options include:

- **Survey:** Measures self-reported levels of anxiety and depression
- **Breathing Test:** Measures actual changes in body, nervous system, and physiology

See [Appendix C](#) for details on which option would be the best fit and links to the assessments.

It should be noted that effects may not be seen when only a small subset of the population is practicing. However, if the program is expanded, the chances of seeing a meaningful reduction in stress become more likely.



### Context

After the end of the 4-6 week intervention, the Data Manager should revisit the [Daily Program Log](#). He or she will document any events, changes in policy or organizational structure, or new initiatives started during the course of implementation.

It is also recommended that any behavioral incidents involving a participant that may have occurred during the weeks of biofeedback sessions are recorded.



#### Tip:

If one or both of these assessments were administered during the baseline, it is recommended that the same assessment(s) be given for the endline.

# PART V

## ► Evaluation

This section will explain evaluation procedures, which will determine the effectiveness of the program. An outcome evaluation will assess changes in target health and behavioral outcomes over the course of the program.



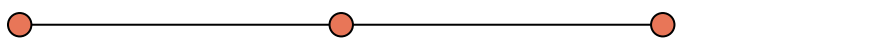
# Guidelines

## Outcome Evaluation

The Program Coordinator/Implementer will use outcome evaluation to determine if this program has produced changes in target health and behavioral outcomes, such as heart rate variability (HRV), emotional wellbeing, and frequency of behavioral incidents.

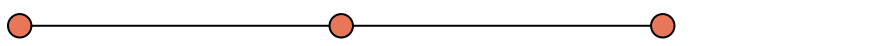
The tables below outline the evaluation indicators and data sources for collecting and evaluating outcome data for this program.

### General Evaluation



Objective	Indicator	Data Source
Improve HRV among participants	Average coherence score per session	Inner Balance App (HeartCloud Data)

### Optional Assessments



Objective	Indicator	Data Source
Improve self-reported emotional well-being among participants	Assessment anxiety & depression scores	Survey via HeartMath (Baseline & Endline Assessments)
Improvements in body, nervous system, & physiology of the participants	Computer analysis of HRV	Breathing Test via emWave Pro Plus (Baseline & Endline Assessments)



#### Tip:

Even if meaningful changes in target outcomes are not observed, it does not necessarily mean that the program. It may mean that participants need a higher dose of biofeedback intervention.

# Procedure

## Evaluation Steps



### Review Inner Balance Data

Review the data in HeartCloud to assess how/if participant's average coherence score improved.



**Tip:**

Located under HeartCloud tab of Inner Balance app within each device.



### Consider Context

Assess any context changes or incidents that may have occurred during the course of the program.



**Tip:**

This should be noted in the [Daily Program Log](#).



### Score *Optional* Surveys

Use the worksheet below to assess the stress management skills of participants using the surveys taken during the Baseline and Endline Assessments. The goal is to see an increase in score from the pre and post surveys, which reflects better stress management and therefore an improvement in emotional well-being.

1. Take the results of each item within each participant's survey from the Baseline Assessment and transfer it to the [Student Survey Worksheet](#).
2. Add up each participant's total score for each section of the sheet and divide by the sum of the number of questions within the section.
3. Repeat the two steps above with the results of the survey from the Endline Assessment.



**Tip:**

The questions are intentionally in a different order than they appear in the survey.



**Tip:**

An example is listed on the worksheet.



### Review *Optional* Breathing Tests

Review the evaluation provided by the HRV Assessment in the emWave Pro Plus software. Compare the results taken from the baseline and endline to determine bodily and/or physiological changes that occurred within participants.

# Feedback

## Optional Questionnaire

In order to continue improving the program for future participants, an additional questionnaire has been created for program staff to share feedback. The survey includes questions relating to the accessibility, feasibility, and outcomes of the program.

The completion of this survey is optional and can be accessed [here](#).

When reporting feedback, please do not share any individually identifying information (e.g., name, address, birth date, etc) with us in any way. The only data ROI is interested in collecting from you is your overall group performance and results.

If there are any questions or concerns regarding the survey or program in general, please reach out to:

**Seth Saeugling**

✉ [ruralopportunity@gmail.com](mailto:ruralopportunity@gmail.com)



**Tip:**

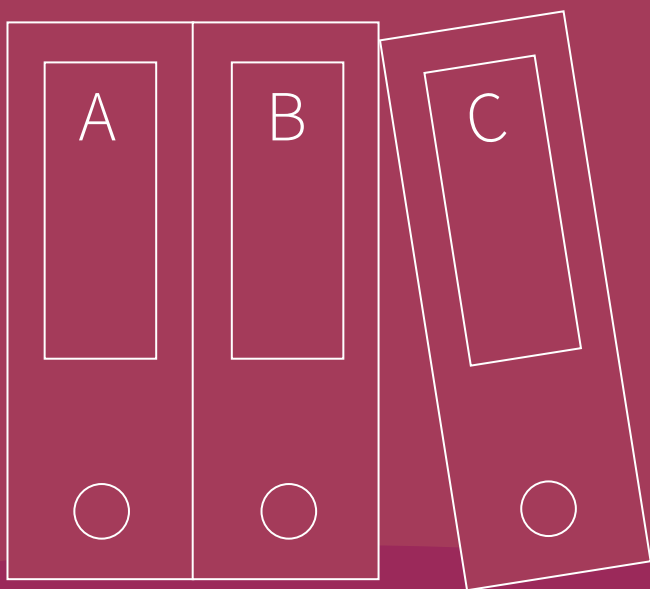
For example, a staff member could submit the following feedback:

“We saw a 22% decrease in stress symptoms in program participants after doing this breathing program for 6 weeks.”

# PART VI

## ▶ Appendices

This section will provide the materials necessary to implement the program. It will also provide supplementary information that can be used to gain a more complete understanding of the program and the educational opportunities available.



# Appendix A

## Daily Program Log



# Daily Program Log

## Biofeedback Sessions

Below is a template for the Daily Program Log that should be used to record each participant biofeedback session.

**Date:**

**Time:**

**Participants:**

Full Name

- |          |           |
|----------|-----------|
| 1. _____ | 6. _____  |
| 2. _____ | 7. _____  |
| 3. _____ | 8. _____  |
| 4. _____ | 9. _____  |
| 5. _____ | 10. _____ |

**Notes:**

Note any context changes and/or behavioral incidents that may have occurred.

---

---

---

---

---

---

---

---

---

---



**Tip:**

This template may be altered as needed and used in digital and/or printed format but must require these basic elements.

If you would like to use this page, print 30 copies (or as many as you need), and record who participates each day the breathing program is offered to your users.

# Appendix B

## Checklists

# Staff Preparation

## Checklist

Below is the Staff Preparation Checklist that the Data Manager can use to document the preparation procedures needed to be completed before program staff can administer participant biofeedback sessions.

- The Program Coordinator/Implementer watched the [Video Presentation](#) and reviewed the [Presentation Slides](#)
- The Program Coordinator/Implementer presented the content to the rest of the staff, introducing them to the concepts of:
  - Toxic stress and the association with negative health
  - Resilience
  - HRV and coherence
  - Biofeedback
  - Heart-focused/mindful breathing
- All program staff became familiar with Inner Balance, learning:
  - How to create a new account
  - How to activate and attach the biofeedback sensor
  - The function of the Sessions and Guides tabs
- All program staff practiced with the Inner Balance app, completing one full (at least 5 minutes) biofeedback session.
- The Data Manager established data procedures and became familiar with accessing the data from HeartCloud
- The Program Recruiter created a list of all eligible participants based on the established criteria
- The Program Recruiter worked with the Program Coordinator/Implementer and Data Manager to schedule participation
- The Program Recruiter invited eligible participants to the program and obtained their official signed consent



**Tip:**

The Data Manager should print this list and check off each box as the topic is introduced.

# Participant Preparation Checklist

Below is the Participant Preparation Checklist that the Data Manager can use to document the education and practice session given to new participants before they begin their daily biofeedback and mindful breathing practice.

- Participant was introduced to the concepts of:
  - Toxic stress and the association of toxic stress with negative health outcomes
  - Resilience
  - HRV and coherence
  - Biofeedback
  - Heart-focused/mindful breathing
  
- Participant was introduced to the Inner Balance app and given a description of the following functions:
  - Session
  - Guided Heart Meditations (Guides)
  
- Participant practiced with the Inner Balance app, completing one full (at least 5 minutes) biofeedback session.
  
- Participant was engaged with biofeedback while practicing (kept eyes on the screen and breathed with the breath pacer).
  
- Participant was given the opportunity to ask questions about the concepts described and the Program Coordinator/Implementer answered the questions appropriately.



**Tip:**

The Data Manager should print this list and check off each box as the topic is introduced.

# Appendix C

## Assessments

# Assessment Options

## Which Assessment is Right for Me?


Before the Data Manager can administer any assessments, program staff must first decide which assessment(s) would be best. The chart below compares the available options.

**Tip:**  
To obtain the most optimal data collection, administer both assessments (Option 2 & 3).

### Assessment Options

 Option 1  
**No Assessment**

 Option 2  
**Survey**

 Option 3  
**Breathing Test**

**This option is for you if...**

“Our goal is to provide a space for de-stressing and building resilience. Implementing this program meets those goals. We don’t need to know more.”

“We’re looking for a basic way to access how the program works for participants by doing a simple pre and post-survey.”

“We want as much data as possible to show the impact of this program. We have the time and resources available for an in-depth evaluation.”

	Option 1 <b>No Assessment</b>	Option 2 <b>Survey</b>	Option 3 <b>Breathing Test</b>
<b>Pros</b>	No extra time spent on evaluation	A quick process that collects individual & group data on the impact of the program	Data is objectively measured directly from participants at the baseline & endline to measure actual changes in their body, nervous system, and physiology
<b>Cons</b>	No additional assessment data to confirm the effectiveness of the program	The data is self-reported through surveys	Time-consuming (Requires individual access to participants using a computer-based breathing test)
<b>Cost</b>	None	None	\$499.00 for emWave Pro Plus (Includes USB module with pulse sensor that attaches to your ear)
<b>Extra Equipment</b>	None	Ability to print paper surveys Pens/pencils to complete	Desktop or laptop computer (Review the compatibility requirements <a href="#">here</a> )
<b>Time Required</b>	None	15 mins. in a group setting (Completed individually)	8 minutes per participant (3 mins. to set up & 5 mins. to take the test)

# Assessments

## Baseline & Endline

Once the assessment method(s) has been determined, the Data Manager can move forward with administering one or both of the optional assessments below.

The same assessment(s) should be given at the baseline and endline in order to create an accurate and true comparison of progress.

### Survey

Download and print as many copies as needed to administer this survey to all participants during the baseline and endline.

#### [Survey](#)

Before the completion of the survey, the Data Manager should remind participants that these are just opinion questions and therefore there is no right or wrong answer.

### Breathing Test

This assessment requires the additional purchase of HeartMath's emWave Pro Plus. The emWave Pro Plus will include the software and equipment needed to administer the HRV Assessment that is included within the Pro Plus package.

1. Purchase the emWave Pro Plus [here](#).
2. Once the software has been installed on a compatible computer, open and navigate to the **HRV Assessment**.
3. Follow the instructions prompted by HeartMath to administer the test at both the baseline and endline for a minimum of 5 minutes.

▶ **More Info:**  
Instructions on how to score the survey can be found in the Evaluation section of this guide.

▶ **More Info:**  
For a preview of the emWave Pro Plus, watch this [video](#).

▶ **Tip:**  
The assessment has a user-selectable time range.

# Appendix D

## Logic Model

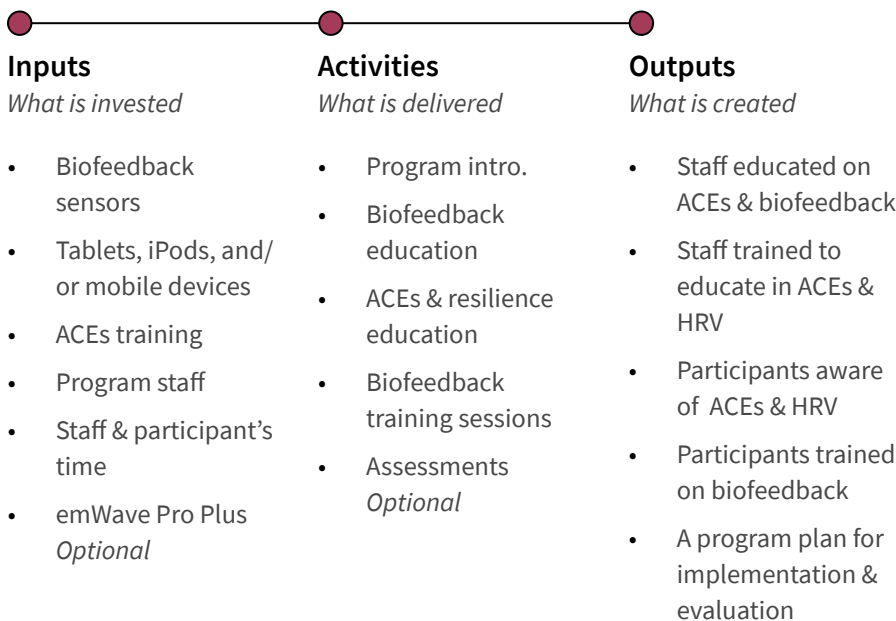


# Logic Model

## Biofeedback Program

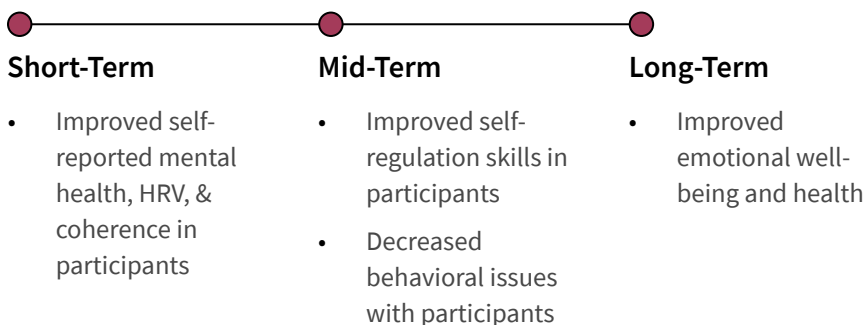
The logic model provides a visualization of the linkages between the resources and the proposed activities, and from the activities to the desired outputs, at the top of the model. The bottom of the model shows the desired outcomes which are associated both to the process and outcome objectives of the program.

### Process Evaluation



**Tip:** This section of the model analyzes how well the implementation of the program has been done and how it can be improved.

### Outcome Evaluation



**Tip:** This section of the model shows how participants may have changed after completing the program.

# Appendix E

Additional Resources

# Additional Resources

## ACEs & HeartMath

### Helpful ACEs Information

Below are supplementary resources that can be used to gain further knowledge on the topic of Adverse Childhood Experiences (ACEs).

**Pair of ACEs Presentation:**

[publichealth.gwu.edu](http://publichealth.gwu.edu)

**10 ACEs Visual:**

[npr.org](http://npr.org)

**Primer Video:**

[vimeo.com](http://vimeo.com)

### HearthMath Certifications & Programs

Below are programs that you can buy directly from HeartMath for further curriculum, guidance, materials, and support.

**Certification Program for Professionals:**

[heartmath.com](http://heartmath.com)

**Program for Ages 9-16 Years Old:**

[heartmath.org](http://heartmath.org)

**Program for Ages 4-6 Years Old:**

[heartsmarts1.heartmathelearning.org](http://heartsmarts1.heartmathelearning.org)



**Tip:**

This is not required to complete the program but it may be beneficial for more than one staff member to receive the practitioner certification.

# Appendix F

## Consent Forms

# Adult Consent Form

## Part 1

The purpose of this form is for you to give your consent to being a part of a breathing program to help manage stress.

If you consent to participate you will use a breath pacer that encourages you to breathe at a specific rate. Science supports the idea that breathing like this can reduce stress and help you feel calmer.

The goal is for you to do at least 10 minutes a day of breathing training, twice daily. This program will be around 4-6 weeks long. The goal of this breathing training program is to help reduce stress and feel calm.

We don't know of any risks associated with this program.

You should report any problems to \_\_\_\_\_ .

This program is completely voluntary. If you do not want to participate in this program there will be no negative consequences. This is a completely voluntary program.

By signing this form you are confirming that:

I have read (or had read to me) all of the above information.

I have had an opportunity to ask questions about this program and have received satisfactory answers.

I know that I do not have to participate and can stop taking part in this program at any time.

Your Full Name: \_\_\_\_\_ Date of Birth: \_\_\_\_\_

---

Signature

Date

# Adult Consent Form

## Part 2

The purpose of this form is to share how the data that is collected from this program will be used.

By participating in this program you may be asked to complete pre (before) and post (after) assessments/surveys. The goal is to document any changes as a result of participating in this program.

By participating in this program the Inner Balance™ software by HeartMath will record a reading from each breathing session. This reading, taken over multiple sessions, can show changes in a person's nervous system.

The information described above will be used only for the purposes of calculating the entire group's outcomes and will not report on or name individual outcomes. By participating in this program, you will not be identified in any individual way.

Again, we don't know of any risks associated with this program.  
You should report any problems to \_\_\_\_\_.

Again, this program is completely voluntary. If you do not want to participate in this program there will be no negative consequences. This is a completely voluntary program.

By signing this form you are confirming that:

I have read (or had read to me) all of the above information.

I have had an opportunity to ask questions and have received satisfactory answers.

I know that I do not have to participate and can stop taking part in this program at any time.

Your Full Name: \_\_\_\_\_

---

Signature

Date

# Youth Consent Form

## Part 1

This is a permission slip to allow your child to do a 10-minute breathing program during their school day. They will use a tablet or mobile device to follow a breath pacer that encourages them to breathe at a specific rate. Science supports the idea that breathing like this can reduce stress and help children focus and behave better in school.

The goal is for students to do at least 10 minutes a day of breathing training, twice daily. This program will be around 4-6 weeks long. The goal of this breathing training program is to help children focus and learn that they are in control of their body, decrease their stress, and subsequently improve their behavior and performance in school.

We don't know of any risks associated with this program.  
You should report any problems to \_\_\_\_\_.

If you or your child does not want to participate in this program they will not be included and there will be no negative consequences. This is a completely voluntary program.

By signing this form you are confirming that:

I have read (or had read to me) all of the above information.  
I have had an opportunity to ask questions about this program and have received satisfactory answers.  
I know my child does not have to participate and can stop taking part in this program at any time.

Child's Full Name: \_\_\_\_\_ Date of Birth: \_\_\_\_\_

ADULT (Parent/Guardian/Caregiver)

---

Guardian/Caregiver Name (PRINT)	Signature	Date
---------------------------------	-----------	------

STUDENT

---

Student Name (PRINT)	Signature	Date
----------------------	-----------	------

# Youth Consent Form

## Part 2

The purpose of this form is to share how the data that is collected from this program will be used.

By participating in this program your child may be asked to complete pre (before) and post (after) assessments/surveys. The goal is to document any changes as a result of participating in this program.

By participating in this program the Inner Balance™ software by HeartMath will record a reading from each breathing session. This reading, taken over multiple sessions, can show changes in a person's nervous system.

The information described above will be used only for the purposes of calculating the entire group's outcomes and will not report on or name individual outcomes. By participating in this program, students will not be identified in any individual way.

Again, we don't know of any risks associated with this program.  
You should report any problems to \_\_\_\_\_.

Again, this program is completely voluntary. If you do not want your child to participate in this program there will be no negative consequences. This is a completely voluntary program.

By signing this form you are confirming that:

I have read (or had read to me) all of the above information.  
I have had an opportunity to ask questions about this program and have received satisfactory answers.  
I know my child does not have to participate and can stop taking part in this program at any time.

Child's Full Name: \_\_\_\_\_ Date of Birth: \_\_\_\_\_

ADULT (Parent/Guardian/Caregiver)

---

Guardian/Caregiver Name (PRINT)

Signature

Date

STUDENT

---

Student Name (PRINT)

Signature

Date



# Appendix G

## Recruiting Materials

# Biofeedback Breathing Program

## Discover The Transforming Effects Of Implementing A Biofeedback Program Within Your Community

### Program Pilot

**LOCATION** Pattillo Middle School  
Tarboro, NC

**DATE** May 2019

In May of 2019, 12 students who were frequently referred to the office for behavior challenges were offered the opportunity to be a part of a biofeedback breathing pilot. Students did 10 minutes of biofeedback to start and end their school day.

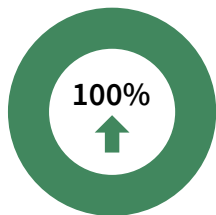
**12**  
Students

**10**  
Minute Sessions

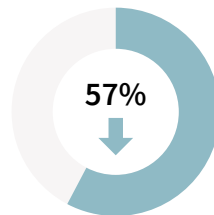
**2**  
Sessions Per Day

### The Results

Students showed measurable **decreases in anxiety** and had **fewer out-of-class referrals**.



Percentage of students who said their **ability to calm down** has **increased** since beginning biofeedback, and want to continue the program.



Reported percent **decrease** in **anxiety symptoms** within students who took part in biofeedback breathing.

“ I was amazed by how quickly our guys got into it. They seemed to enjoy doing biofeedback. I saw it change how they felt.

*Lt. Stokes, Head of Detention Center*

“ Biofeedback was simple and my students loved getting the space and time to do the breathing practice daily.

*Ms. Little, Middle School Teacher*



Our mission is to end generational cycles of trauma & poverty by preventing adverse childhood experiences & toxic stress.

To learn more, visit [ruralopportunity.org](http://ruralopportunity.org)



## What is Biofeedback?

Biofeedback is a mind-body breathing technique that helps train people how to let their body do what it does best: calm down and self-regulate.

### Biofeedback is...



#### Safe

Biofeedback is a safe, non-invasive treatment used to teach people how to have more control over their self-regulatory system.



#### Used by Top Performers

Biofeedback breathing is used by the top performers in society (Olympic athletes, military, NFL quarterbacks, NASA astronauts) to improve how people respond to stress.



#### Accessible

Implementing a biofeedback breathing program is inexpensive to get set up and takes minimal time to participate (only 10-20 minutes of breathing training per day).

# Learn How to Manage Your Stress & Anxiety



## Join The Biofeedback Breathing Program

### Learn How 10 Minutes A Day Can Transform Your Life!

This program will introduce and train participants in biofeedback breathing for a minimum of 10 minutes per day. All equipment will be provided.

The program will also provide education on the effects of stress and trauma as well as techniques that can be used to maintain a healthy and happy life.

### Program Requirements

Below are the requirements for the program that you must meet in order to qualify as a participant.

You must be available to train in biofeedback breathing for:

- ✓ 4-6 weeks
- ✓ 10-15 minutes per day
- ✓ 2 times per day

### What Is Biofeedback?

Biofeedback is a non-invasive, mind-body breathing technique that helps you learn how to control your body's response to anxiety and stress.

Equipment is used to monitor your heartbeat and breathing while offering feedback for improvement. The feedback allows you to develop greater awareness and control over your body. As a result, biofeedback teaches you how to change your reaction to stress, which can help to lessen the symptoms and damage caused by stress.

### Biofeedback Is Used By...



Professional Sports Players



The Military



Olympic Athletes



Astronauts

### Biofeedback Can Help With:

Anxiety  
Depression  
PTSD  
Headaches  
Eating Disorders  
Substance Abuse  
And much more...

# Appendix H

## Educational Materials

# Breathing Techniques

## Video Links

Below is a list of breathing techniques, paired with video links, that can help the body relax and relieve stress. They can be practiced without the use of any equipment and take only minutes. Therefore, participants should be encouraged to practice these techniques on their own time and throughout their biofeedback sessions.

To understand the process of each breathing style, follow the steps outlined in the proceeding pages of posters. Each poster will offer instructions on how and for how long to practice each technique.



### Breathing Technique



### Link to Video Demonstration

Box (Square) Breathing

[Video Demonstration](#)

4-7-8 Breathing

[Video Demonstration](#)

2-to-1 Breathing

[Video Demonstration](#)

Alternate Nostril Breathing

[Video Demonstration](#)

Diaphragmatic Breathing

[Video Demonstration](#)

Quick Coherence Technique

[Video Demonstration](#)

Lion's Breath (Simhasana Pranayama)

[Video Demonstration](#)

Cooling (Sitali) Breath

[Video Demonstration](#)

Humming Bee Breathe (Bhramari Pranayama)

[Video Demonstration](#)

Progressive Muscle Relaxation Exercises

[Video Demonstration](#)

► **Tip:**  
Videos could be shared once a week, or on a regular schedule, to allow participants to learn the different breathing techniques.

► **Tip:**  
Print and place these posters around the location of where participants will be completing their biofeedback sessions.

► **More Info:**  
Box Breathing is also known as Equal Breathing or Sama Vritti Pranayama.

# Box (Square) Breathing

🕒 **Purpose:** To reduce stress and calm nerves.

💖 **Benefits:** Increases mental clarity, energy, focus, and improves future reactions to stress.

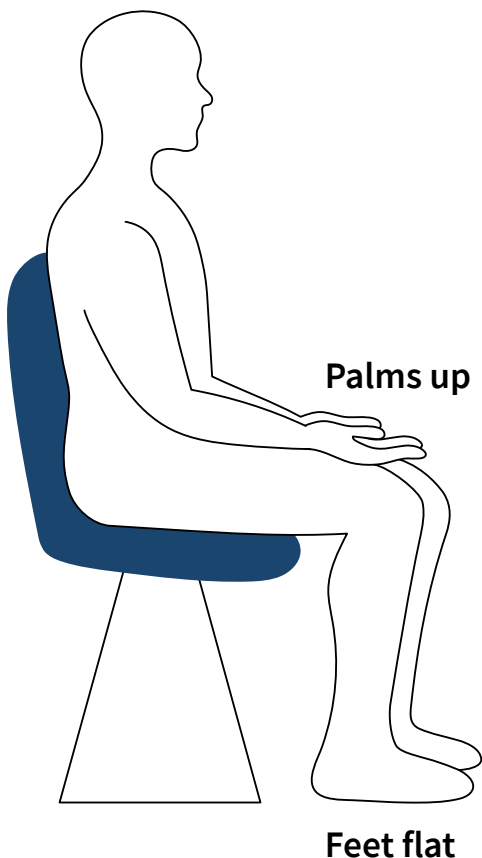
🕒 64 seconds

## STEP 1

### Relax & Position Your Body

1. Sit upright in a comfortable chair with your feet flat on the floor.
2. Place your hands in your lap with your palms facing up.

**Posture when completing exercise:**

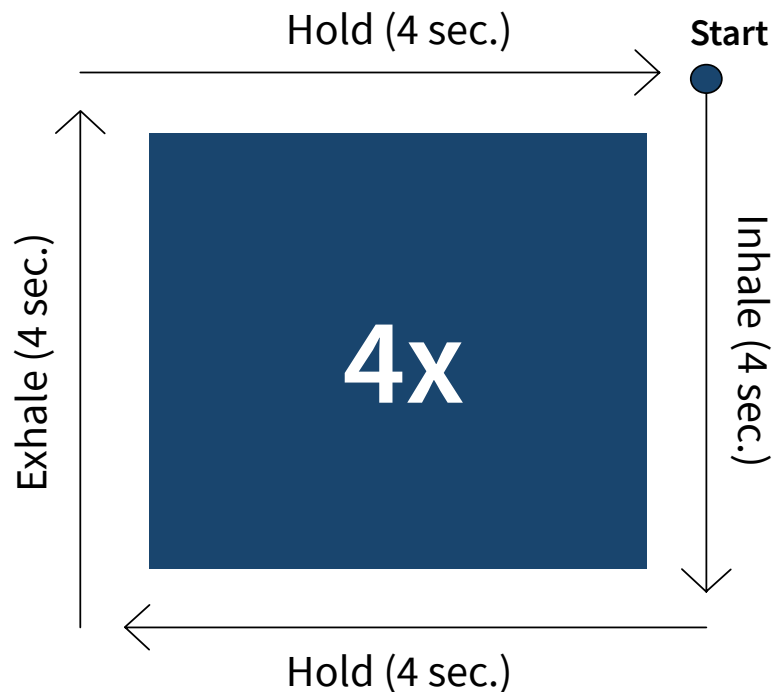


## STEP 2

### Begin the Breathing Cycle

1. Start by exhaling completely through your mouth and/or nose.
2. Follow the instruction cycle below: Inhaling, holding, exhaling, and holding for 4 seconds each.
3. Repeat 3 times.

**Breathing practice to follow:**



# 4-7-8 Breathing

🕒 **Purpose:** To calm the body and provide rest for the mind.

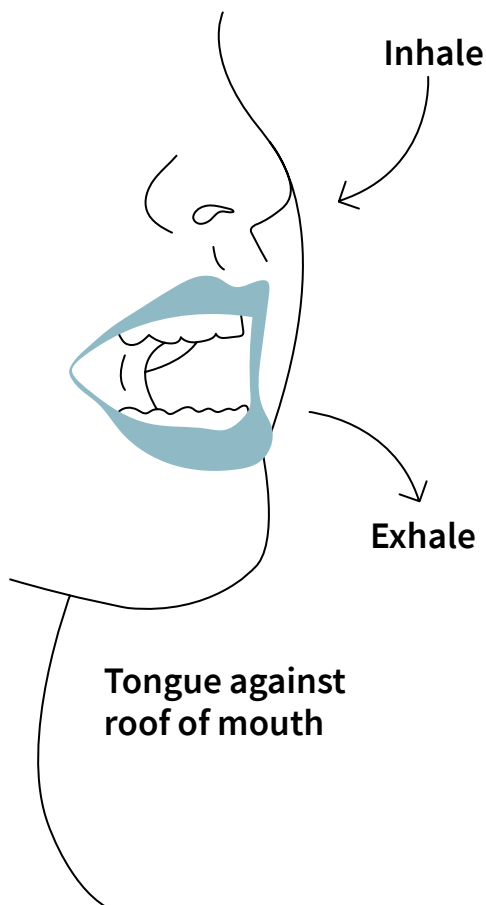
💖 **Benefits:** Decreases anxiety, improves sleep, and builds better control of emotional responses like anger.

🕒 76 seconds

## STEP 1

### Relax & Position Your Body

1. Sit or lie down comfortably.
2. Rest the tip of your tongue against the roof of your mouth, behind your top front teeth.
3. Keep your tongue in place throughout the practice.

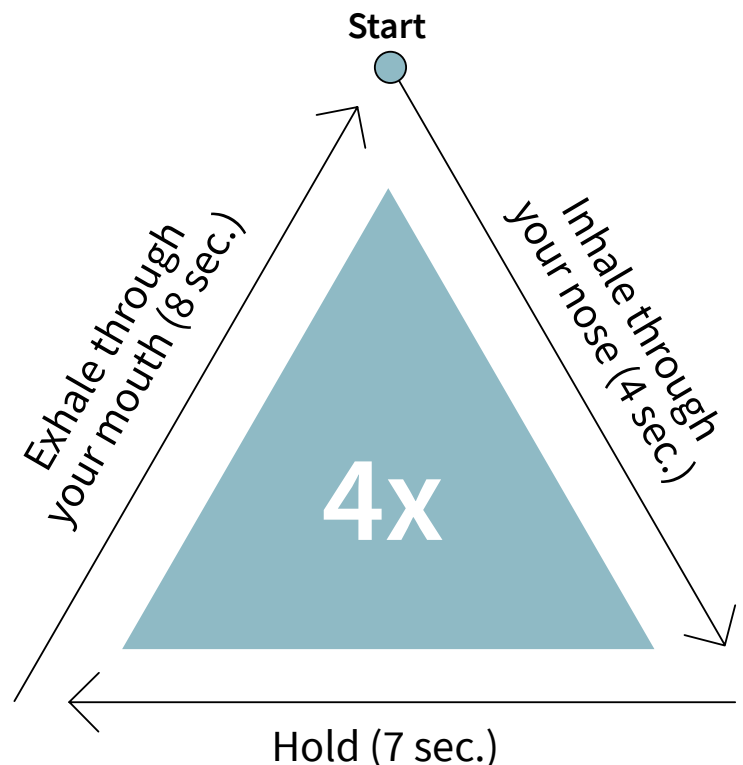


## STEP 2

### Begin the Breathing Cycle

1. Start by exhaling completely through your mouth, making a whoosh sound.
2. Follow the instruction cycle below: Inhale for 4 seconds, hold for 7 seconds, and exhale for 8 seconds.
3. Repeat 3 times.

Breathing practice to follow:



# 2-to-1 Breathing

🕒 **Purpose:** To calm nerves/anxiety and increase creativity.

💚 **Benefits:** Reduces overall stress and anxiety levels.

🕒 1-2 minutes

## STEP 1

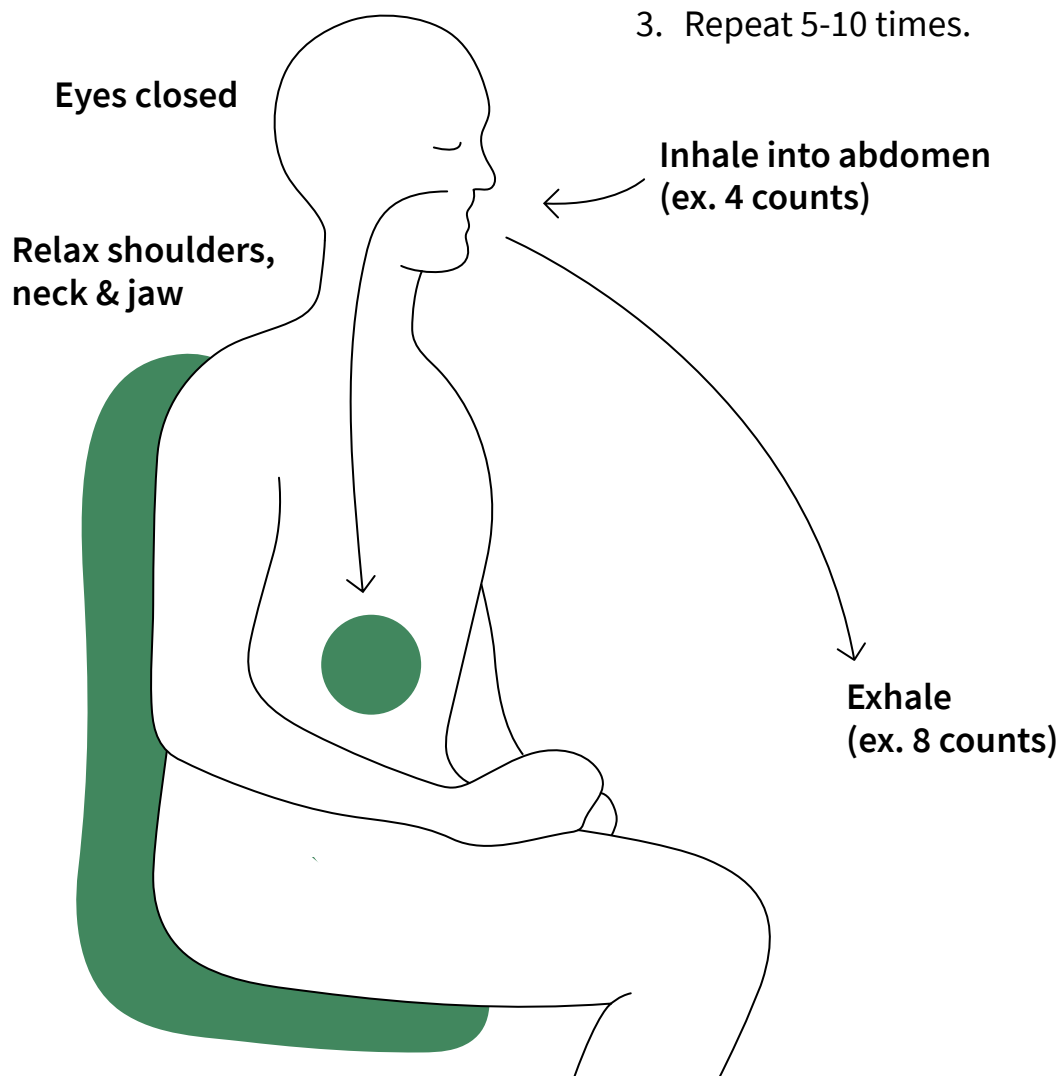
### Relax & Position Your Body

1. Sit comfortably; release your shoulders, neck, and jaw.
2. Close your eyes and allow your spine to lengthen.

## STEP 2

### Breathe at a 2:1 Ratio

1. Inhale through your nose and into your abdomen for 4 counts or however many counts feels normal.
2. Exhale through your mouth for double the count (ex. 8 counts) of your inhale.
3. Repeat 5-10 times.





# Alternate Nostril Breathing

🕒 **Purpose:** To reduce stress and feel grounded.

💚 **Benefits:** Helps to clear the mind. Balances the left and right sides of the brain and body.

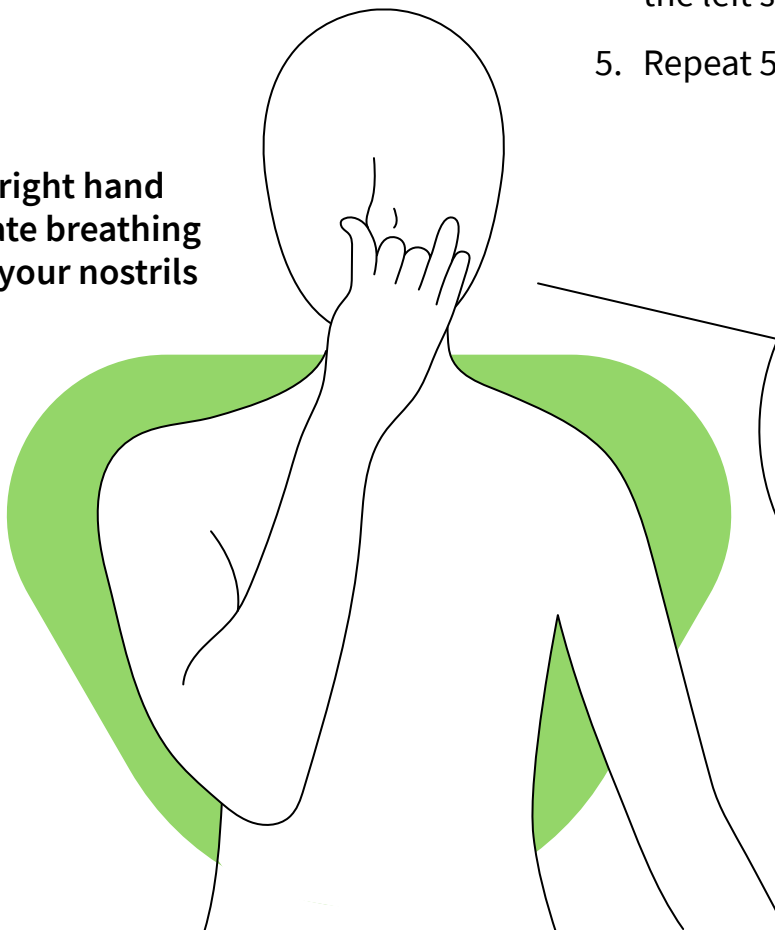
🕒 5 minutes

## STEP 1

### Relax & Position Your Body

1. Sit in a comfortable position.
2. Place your left hand on your left knee.
3. Lift your right hand up toward your nose.
4. Use your right thumb to close your right nostril.

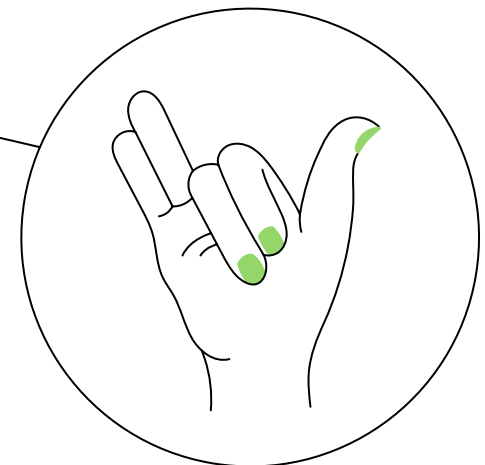
Use your right hand to alternate breathing between your nostrils



## STEP 2

### Breathe Through Nostrils

1. Inhale through your left nostril and then close the left nostril with your fingers.
2. Open the right nostril and exhale through this side.
3. Inhale through the right nostril and then close this nostril.
4. Open the left nostril and exhale through the left side.
5. Repeat 5-10 times.



Position your fingers on your nose

# Diaphragmatic Breathing (Belly Breath)

🕒 **Purpose:** To relax the body and reduce tension.

💖 **Benefits:** Increases the supply of oxygen and nutrients to cells throughout the body.

🕒 5 minutes

## STEP 1

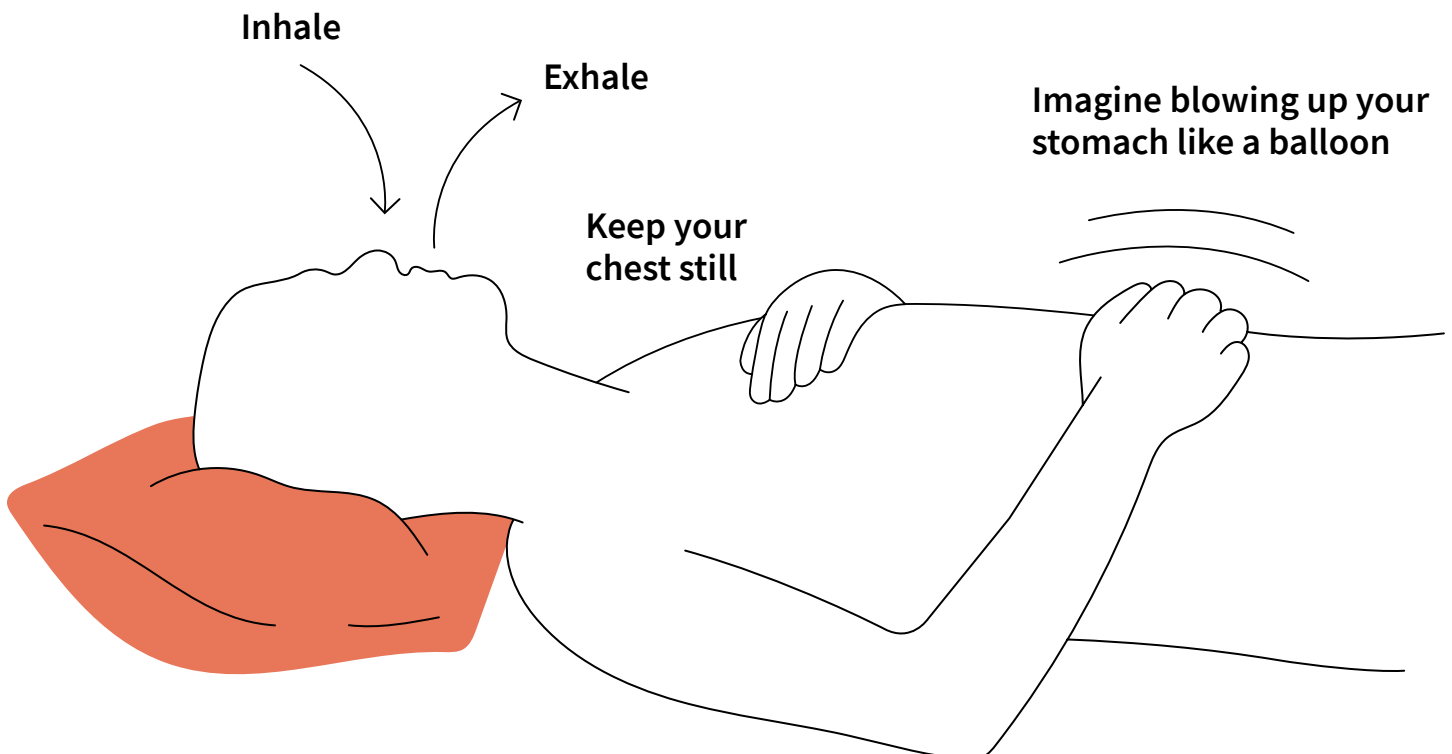
### Relax & Position Your Body

1. Lie flat on the floor or sit in a comfortable position.
2. Relax your shoulders.
3. Put a hand on your chest and a hand on your stomach.

## STEP 2

### Breathe With Your Belly

1. Breathe in slowly through your nose so that your stomach moves out against your hand. The hand on your chest should be as still as possible.
2. Purse your lips, press gently on your stomach, and exhale slowly. The hand on your chest should remain still.
3. Repeat 5-10 times.



# Quick Coherence Technique

🕒 **Purpose:** To quickly balance the body and mind.

💖 **Benefits:** Creates positive changes in your heart rhythms, sending signals to your brain that can improve mood.

🕒 60 seconds

## STEP 1

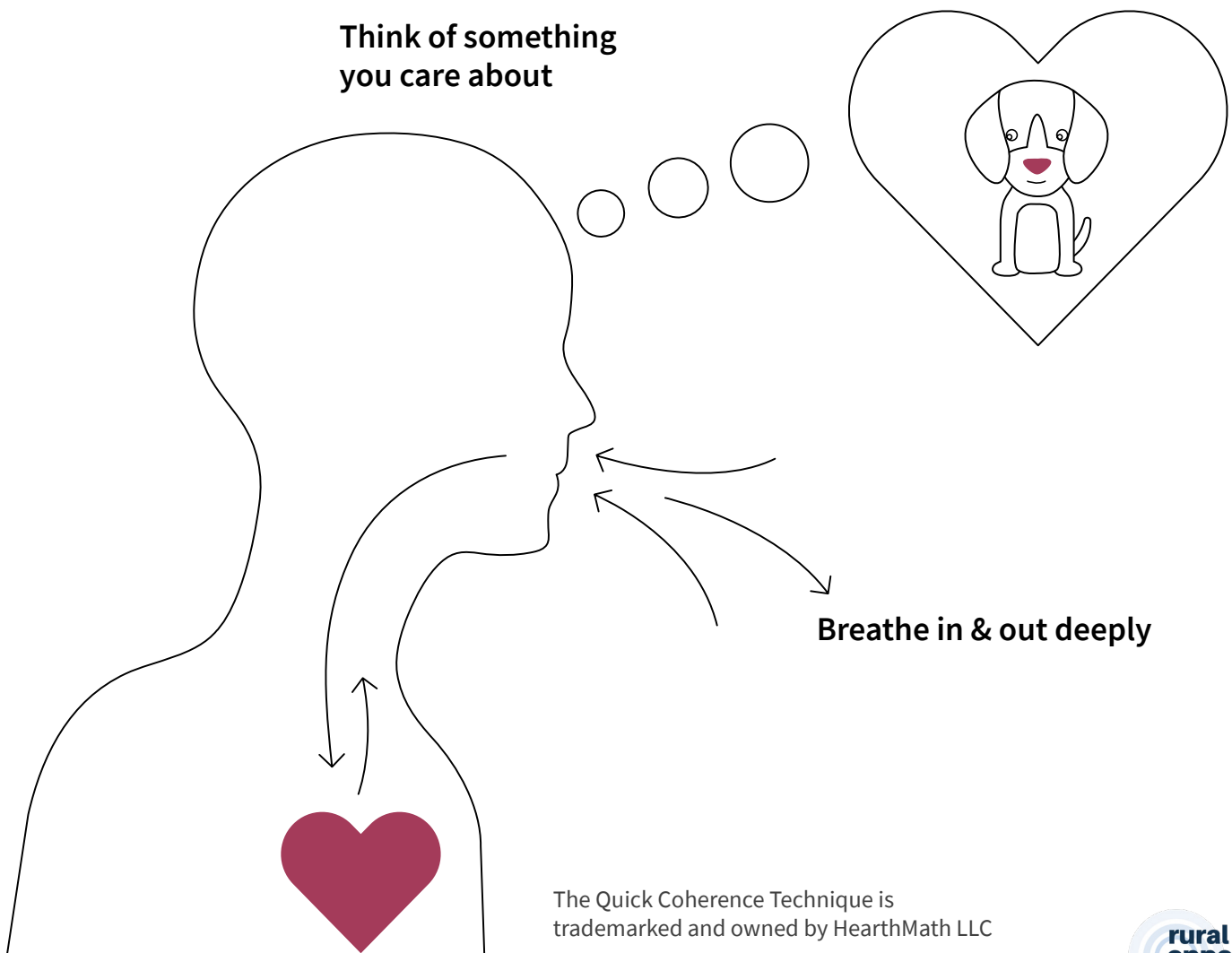
### Relax & Position Your Body

1. Sit or lie down in a comfortable position.
2. Take a moment to center yourself.

## STEP 2

### Positive Heart-Focused Breathing

1. Breathe slow & deep while imagining your breath flowing through your heart.
2. Attempt to experience appreciation or care by thinking about someone or something in your life.



The Quick Coherence Technique is trademarked and owned by HearthMath LLC

# Lion's Breath (Simhasana Pranayama)

🕒 **Purpose:** To reduce stress.

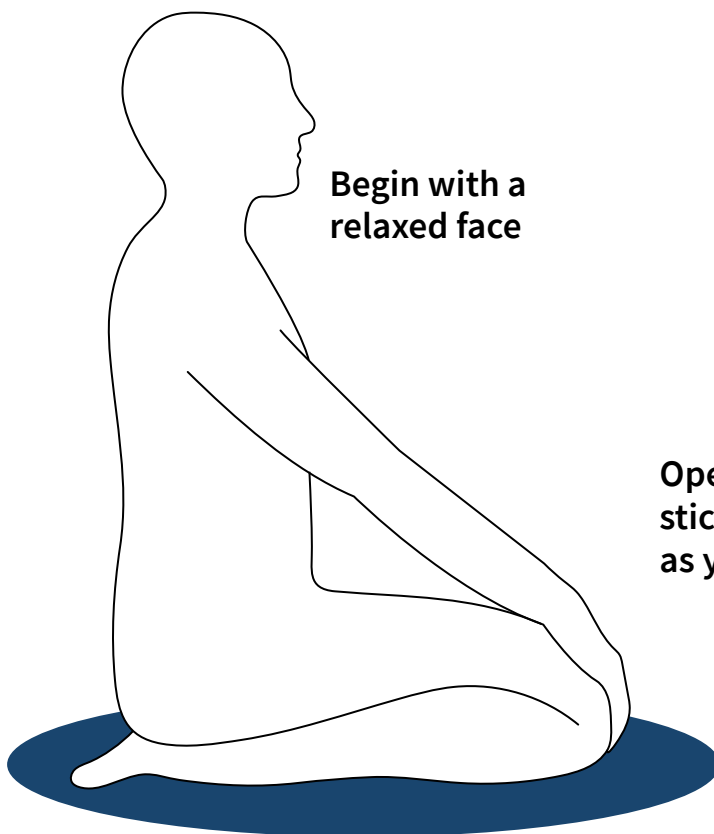
💖 **Benefits:** Relieves tension in the face, chest, and neck.

🕒 5 minutes

## STEP 1

### Relax & Position Your Body

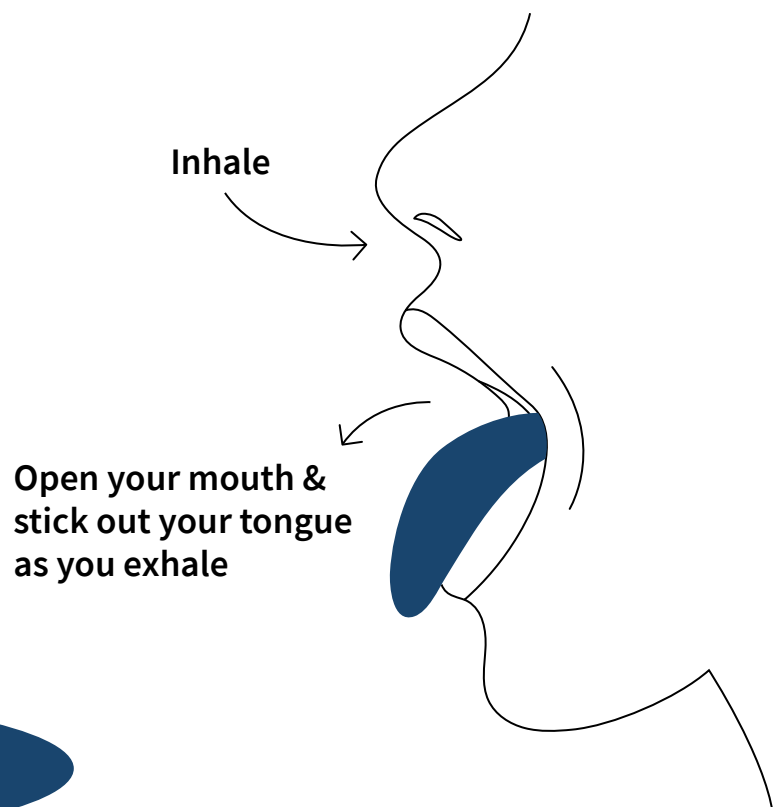
1. Sit on your knees or in a comfortable chair with your ankles crossed.
2. Place your hands on your knees.
3. Straighten your arms and extend your hands and fingers.



## STEP 2

### Exhale Through Your Mouth

1. Inhale through your nose.
2. As you exhale through your mouth, make a 'ha' sound. Throughout the exhale, open your mouth big and stick out your tongue as far as possible.
3. Inhale, returning to a neutral face.
4. Repeat 4-6 times.



# Cooling (Sitali) Breath

🕒 **Purpose:** To lower your body temperature.

💖 **Benefits:** Cools body and mind and relieves thirst.  
Beneficial for halitosis.

🕒 1-2 minutes

## STEP 1

### Relax & Position Your Body

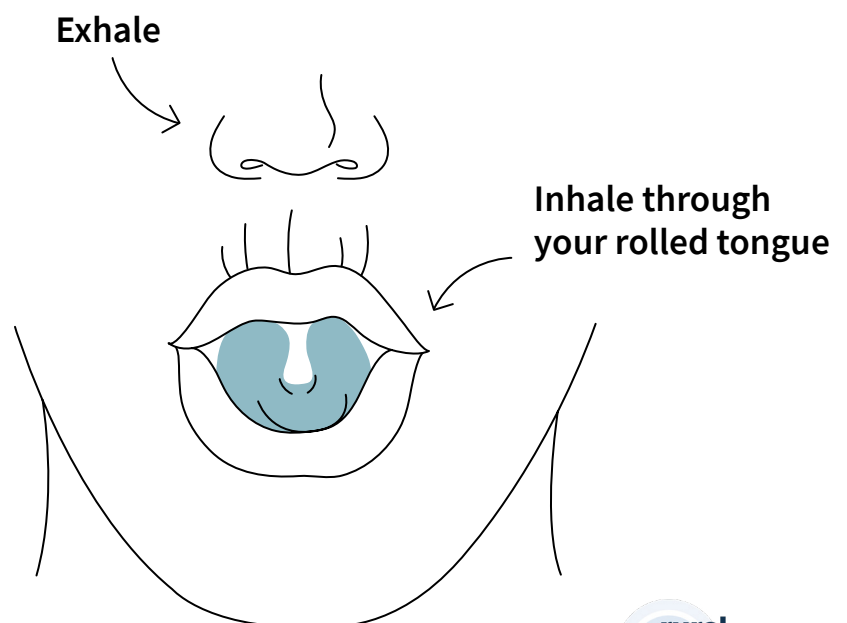
1. Sit upright in a comfortable chair.
2. Relax your shoulders, keep your spine long, and chin parallel to the floor.
3. Take a moment to center yourself.



## STEP 2

### Roll Your Tongue & Breathe

1. Roll your tongue, curling the sides in towards the center to form a tube.
2. Stick your tongue out between pursed lips. If you can't roll your tongue, purse your lips and place your tongue on the roof of the mouth behind your teeth.
3. Inhale through the tube formed by your tongue or through your mouth.
4. Close your mouth and exhale through your nose.
5. Repeat 5-10 times.



# Humming Bee Breath (Bhramari Pranayama)

🕒 **Purpose:** To reduce anxiety, anger, and frustration.

💚 **Benefits:** Lowers blood pressure and soothes the nervous system.

🕒 1-2 minutes

## STEP 1

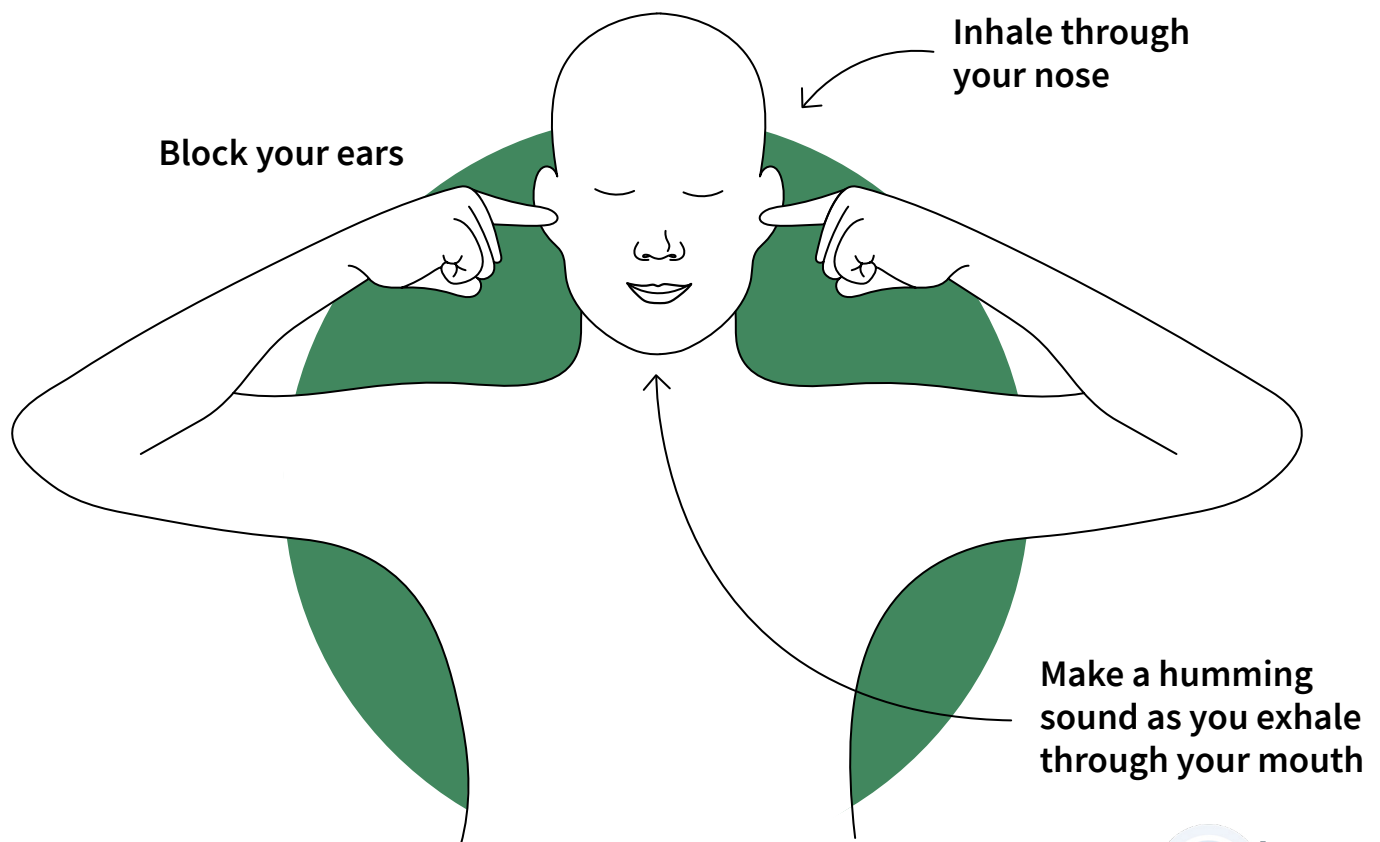
### Relax & Position Your Body

1. Sit up straight in a quiet area.
2. Place your index fingers lightly on the cartilage between your cheek and ear (not directly inside the ear). Press on the cartilage to block both ears and keep them closed throughout the breathing.
3. Close your eyes to minimize visual distractions.

## STEP 2

### Hum as You Exhale

1. Inhale slowly through both nostrils.
2. As you exhale, make an MMMMM (humming) sound with your mouth closed. You should feel the sound being created coming from the soft palate of your mouth.
3. Repeat 5-10 times.



# Progressive Muscle Relaxation Exercises

🕒 **Purpose:** To relieve physical tension in your body.

💚 **Benefits:** Reduces anxiety and promotes relaxation.

🕒 5 minutes

## STEP 1

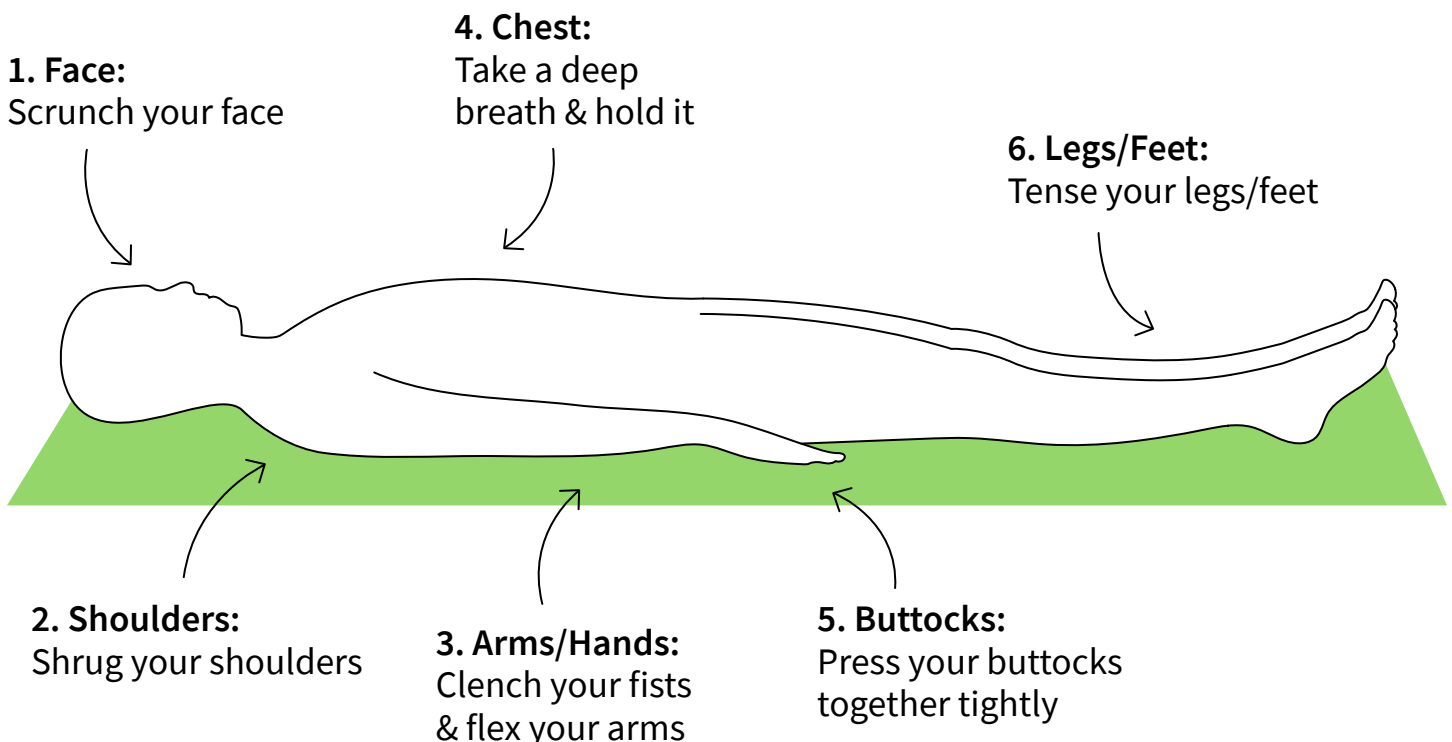
### Relax & Position Your Body

1. Lie down or sit somewhere you can stretch out comfortably.
2. Close your eyes and keep them closed throughout the exercise.
3. Take a moment to center yourself.

## STEP 2

### Contract & Relax Your Muscles

1. Start with the muscle group in your face. Inhale, and gently tense/contract your face muscles for 4 to 10 seconds.
2. Exhale, and relax the muscle group.
3. Relax for 10 to 20 seconds before repeating the process of contracting and relaxing with the next muscle group based on the diagram below. Muscle groups: Face, shoulders, arms/hands, chest, buttocks, legs/feet.



# Sources

## Works Cited

1. Cicchetti, D., & Toth, S. L. (1995). A Developmental Perspective on Child Abuse and Neglect. *Journal of the American Academy of Child & Adolescent Psychiatry*, 34(5).  
<https://doi.org/10.1097/00004583-199505000-00008>
2. Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., ... Marks, J. S. (1998). Relationship of Childhood Abuse and Household Dysfunction to Many of the Leading Causes of Death in Adults: The Adverse Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine*, 14(4), 245–258.  
[https://doi.org/10.1016/S0749-3797\(98\)00017-8](https://doi.org/10.1016/S0749-3797(98)00017-8).
3. Center on the Developing Child. (2012). Executive Function & Self-Regulation. Retrieved January 18, 2019, from <https://developingchild.harvard.edu/science/key-concepts/executive-function/>
4. Center for Integrated Health Solutions. (2019). Trauma. Retrieved from <https://www.integration.sam-hsa.gov/clinical-practice/trauma-informed>
5. Khazan, I. Z. (2013). *The Clinical Handbook of Biofeedback: A Step-by-Step Guide for Training and Practice with Mindfulness*. John Wiley & Sons, Ltd. <https://doi.org/10.1002/9781118485309>



# Gratitude & Thanks

## Acknowledgments

Thank you to the following Masters of Public Health graduate students from the University of North Carolina - Chapel Hill who created the content for this guide, along with program surveys, logic models, and an evaluation plan. Thank you for your contributions and hard work.

Andrew Bradford, MPH  
Rodrigo Costa Liao, MPH  
Julia Ricotta, MPH  
Katherine Flowers, MPH

Thank you to the local leaders of Edgecombe County who are working to create a more trauma-informed environments, to move away from punishments and towards healing/skill-building. Specifically to the people who made the original biofeedback pilots possible through their leadership & actions:

### **Edgecombe County Public Schools**

Dr. Lauren Lampron  
Sheri Little  
Dr. Valerie H. Bridges  
Charlene Pittman  
Erin Swanson  
Sylvia M. Anthony-McGeachy

### **Edgecombe County Sheriff's Office**

Clee Atkinson  
Deborah Stokes  
Wilson Muse  
Matt Johnson

### **East Carolina University**

Dr. Carmen Russoniello  
Alexis Maxwell

### **Project Funders**

Barnhill Family Foundation  
Anonymous Trust  
Jamie Kirk Hahn Foundation  
Luke Garrison Foundation

