

# Clinician Abstract | The Rezist App with MindShield Protocol

## Background

Chronic psychosocial stress and anxiety are major drivers of mental distress, depression, autonomic imbalance, HPA axis overactivation, and sustained elevations in cortisol and epinephrine. Clinically, many patients describe these reactions as repeated stress hijacks—disproportionate fight-or-flight responses that are hard to control and out of proportion to the immediate trigger.

Over time, this pattern contributes to hormonal and metabolic dysfunction with unpleasant symptoms such as stubborn weight gain, digestive issues, skin irritations, body ache and pain. If unchecked, this dysfunction creates systemic inflammation and cellular oxidative damage throughout the body, which may cause or contribute to the development of serious noncommunicable diseases like obesity, cancer, cardiovascular disease, autoimmune disease, pulmonary disease, and Alzheimer's disease.

Common stress management tools such as mindfulness and meditations apps, breathwork exercises, yoga and tai chi classes, or vague “stress avoidance” advice typically provide only brief relief and rarely change how often or how hard stress responses are activated.

## What Is Rezist?

Rezist is an app-based stress-resistance training system. It is designed to help physically change the brain so it becomes less reactive to 21st-century stressors. Rezist is not a relaxation, mindfulness, meditation, breathwork, vagal nerve, CBT, or emotional-improvement app, even though it overlaps conceptually with several of these domains.

Rezist includes the MindShield protocol—a structured active-relaxation + focused-attention training sequence intended to lower stress reactivity by strengthening executive-control networks and reducing limbic threat sensitivity over time. MindShield targets two things that repeatedly show up in controlled neuroimaging research: 1. connectivity/white-matter integrity in executive-control circuitry, and 2. limbic threat-system structure/function, especially the amygdala, plus related regions that shape interoception and context/memory.

MindShield trains the brain's executive control system. With consistent practice, it strengthens the prefrontal cortex (PFC) and its connection to the amygdala, giving more top-down control over stress and fear responses. Over time, research shows the amygdala becomes less reactive (and in some studies shows reduced gray-matter density), which lowers baseline arousal and fight-or-flight spikes. (1,2)

Mindshield is presented as skills training (repeatable daily protocol) delivered in two consecutive phases:

- **Phase 1 Stretch (10 – 15 minutes) – Guided movement-based practice:** gentle stretching that calms the body and begin neuroplastic changes in the prefrontal cortex (PFC) and amygdala.
- **Phase 2 Focus (10 – 15 minutes) – Guided mental concentration:** structured attentional quieting that rewires the PFC and amygdala to reduce stress and anxiety level frequency and magnitude.

Both phases target the brain regions associated with the generation of fear and anxiety so stress responses are activated less often and with less intensity, keeping cortisol and epinephrine levels in ranges less likely to drive chronic inflammation and oxidative damage.

### **Phase 1: Movement-based Downshift (“safety signal” + arousal stabilization)**

This phase reduces physiological overactivation and restlessness so patients can sustain attention practice, especially those who “can’t sit still.” RCT-style mind-body movement interventions (e.g., Tai Chi, Yoga) report regional gray-matter volume changes in areas tied to interoception, habit/motor regulation, and memory systems that get distorted under chronic stress. (3) Yoga RCT data also suggests active relaxation practices may protect against short-interval gray-matter loss in at-risk. (4)

### **Phase 2: Guided Neural Quietng (focused practice that trains executive control)**

This phase trains attention regulation and emotion modulation—top-down control that reduces “autonomic hijack.” In controlled trials of active relaxation techniques, diffusion MRI shows increased fractional anisotropy (FA)—a white-matter microstructure metric—in tracts around the anterior cingulate and corona radiata, consistent with improved efficiency of executive-control connectivity. (1, 2)

## Structural Signal: lower gray-matter density in the amygdala

In longitudinal neuroimaging, active relaxation has been associated with measurable change in the amygdala, a key hub in threat detection and fear learning. In an 8-week mindfulness-based stress reduction intervention, reductions in perceived stress correlated with decreases in right basolateral amygdala gray-matter density from pre- to post-intervention. (5,6) With consistent practice, most patients will show neuroplastic change in threat-circuitry consistent with lower baseline threat loading and reduced reactivity, though structural effects are variable across studies and should not be presented as a guaranteed outcome. (7)

## The Intended Role of Rezist with the MindShield Protocol

MindShield is built to align with evidence that structured relaxation practices can induce neuroplastic changes in regulatory circuits, lower amygdala reactivity, and improve physiological stress markers. Rezist organizes these principles in a simple, time-efficient (average 20 minutes daily) format suited to modern, high-load lives.

(1) Tang YY et al. 2010 (PNAS) – white matter changes (ACC/corona radiata) in a controlled trial  
<https://www.pnas.org/doi/10.1073/pnas.1011043107>

(2) Tang YY et al. 2012 (PNAS) – mechanisms of white matter change  
<https://www.pnas.org/doi/10.1073/pnas.1207817109>

(3) Tao J et al. 2017 (J Alzheimers Dis) – Tai Chi/Baduanjin gray matter volume changes  
<https://pmc.ncbi.nlm.nih.gov/articles/PMC5659386/>

(4) Krause-Sorio B et al. 2022 – Yoga prevents gray matter atrophy  
<https://pmc.ncbi.nlm.nih.gov/articles/PMC9198760/>

(5) Hölzel BK et al. 2010 (Soc Cogn Affect Neurosci) – stress reduction correlates with decreased basolateral  
<https://pmc.ncbi.nlm.nih.gov/articles/PMC2840837/>

(6) Pickut BA et al. 2013 (Clin Neurol Neurosurg) – RCT longitudinal MRI changes with mindfulness  
<https://pubmed.ncbi.nlm.nih.gov/24184066/>

(7) Kral TRA et al. 2022 (Science Advances) – no structural brain changes detected in two combined MBSR  
<https://pmc.ncbi.nlm.nih.gov/articles/PMC9122316/>