

Paving the Way for Rapid, Scalable Resolution of Chronic Pain

A large fraction of chronic pain can be resolved through psychophysiological practices.

These practices are safe, effective, and highly scalable. Yet for such solutions to widely disseminate, they need more rigorous validation and explanation. **We propose an independent research organization dedicated to the study and development of practices for chronic pain resolution. We are seeking founding support to establish this research organization.**

We believe the rigorous study of psychophysiological practices for pain relief will facilitate greater public legitimacy, leading to more validation, and unlocking a virtuous feedback loop for the broad spread of highly effective methods for pain resolution, unlocking flourishing for millions of people.

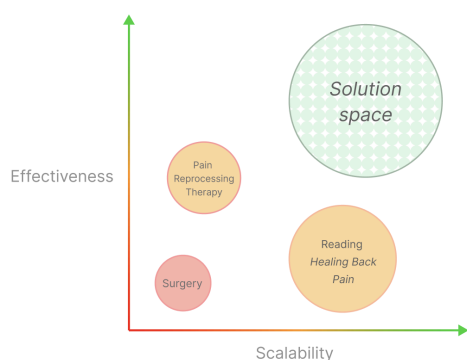


Fig 1. Given the interaction of scale and efficacy, it is unlikely that any of the existing approaches will be able to address a large fraction of the chronic pain population in the near future. By focusing heavily on the two axes of scalability and effectiveness, we can articulate solutions that may address a significant fraction of the world's non-specific chronic pain.

Chronic pain remains one of the largest sources of suffering, affecting roughly one in five adults worldwide¹. What would it take to resolve this pain?

Imagine, for a moment, a treatment for chronic pain that can be delivered virtually, at no material cost, that produces rapid and permanent results. Such a treatment would be limited not by chemical supply chains or licensing agreements, but just by the rate at which information spreads. Former surgeon John

¹ From the World Health Organization: “[low back pain] is the single leading cause of disability worldwide and the condition for which the greatest number of people may benefit from rehabilitation”. Source: [Low back pain factsheet](#)

Sarno's books alone likely helped resolve the pain of over a hundred thousand people². Pain reprocessing therapy, based on Sarno's work, reports that people with chronic back pain (median ~10 years) experienced major reduction from education and sensory recalibration practices (4.1/10 pain to 1.2/10)³. Furthermore, in the case of chronic back pain, we have growing evidence that the vast majority cannot be attributed to structural damage⁴.

Tens of thousands of credible firsthand accounts and multiple clinical trials suggest that such solutions already exist in the form of *psychophysiological practices*⁵. Beyond simple mindfulness, these practices include education on pain, refining interoception, and working with the emotional content of pain. Furthermore, these practices are perfectly coherent with the mainstream neurobiological account of pain, and need not rely on mystical or 'woo' explanations⁶.

However, due to misaligned economic incentives and institutional stagnation⁷, research into mind-based pain relief has been enormously neglected. Many of the most potent practices remain associated with esoteric traditions, illegible to medical science.

There is an abundance of low hanging fruit for chronic pain resolution. We propose an organization to research and develop the most effective mind-based practices for chronic pain resolution.

What we envision:

- **Benchmarking pain resolution.** Systematically study the most promising approaches by analyzing their subprocesses and identifying which are most consistently linked to lasting pain relief.
- **Pain Resolution Research Symposium** — Convene practitioners and researchers from leading institutions to share early findings, compare methods, and build a common language for the study of pain resolution.

² A Fermi estimate of how many people John Sarno's books cured: - 26k reviews of *Healing Back Pain*, *Mindbody Syndrome* across Amazon and Goodreads. Around 4/10 of these report 'life changing cures'. - Assume 1 in 10 people who resolve their pain even bother to write a review. That gives us over 100k people whose pain was cured just by reading his books.

³ Treatment took 4 weeks and effects persisted after the 1 year follow up. (Ashar et al. 2021)

⁴ Schubiner, Howard, et al. "Application of a clinical approach to diagnosing primary pain: prevalence and correlates of primary back and neck pain in a community physiatry clinic." *The Journal of Pain* 25.3 (2024): 672-681.; Brinjikji, Waleed, et al. "Systematic literature review of imaging features of spinal degeneration in asymptomatic populations." *American journal of neuroradiology* 36.4 (2015): 811-816.

⁵ See the collection of anecdotes and studies [here](#)

⁶ As early as 1968, Ronald Melzack had recognized the essentially emotional dimension of pain (Melzack, 1968). Since then dozens of papers have substantiated the link between emotion and persistent pain (Rainville, 1997; Apkarian, 2005; Baliki 2012)

⁷ Knowledge, such as Sarno's *Healing Back Pain*, and practices, such as Pain Reprocessing Therapy or Shinzen Young's *Break Through Pain* meditations, are quasi-public goods. Unlike Prozac, their consumption does not prevent another's consumption, and the practices, once learned can be spread and taught to others. Their shape is distinct from what is usually fundable by biotech labs.

In terms of the stagnation of medical science: medicine has been stuck in a reductionist biomechanical paradigm for the last half century. To borrow from Michael Levin, medicine is where computer science was in the 1940s: all hardware, no software. Although there is lip service paid to the non-physical reductionist components (e.g. Engel's Biopsychosocial model of pain), because the overriding paradigm remains biomechanical, institutions such as the NIH will refuse to give grants even to labs at Harvard for studying long-COVID if there is a subtle indication that their approach is outside the dominant paradigm.

- **Tailored practices.** Using data from interactions, we can precisely alter practices to fit individual needs, experimenting also with the role of Large Language Models.

In 1979, supported by foundations, Jon Kabat-Zinn ran the first mindfulness-based stress reduction (MBSR) course, which led to the first pilot study published in 1983⁸. MBSR is often cited as a core influence on the proliferation of mindfulness⁹. Now there are over a hundred thousand scientific articles on MBSR, and the National Health Interview Survey suggests 60 million people meditate (with the majority most likely practicing some form of mindfulness)¹⁰.

We believe that good science can accelerate the spread of knowledge for pain relief. From the recent developments in jhanas to the studies of advanced meditation study at the Harvard Sacchet Lab, we already witness a wave of cultural openness to psychophysiological practices.

With founding support for the initial research study and symposium, we foresee this organization offering trainings that equip practitioners and patients with pain resolution skills. These trainings will support existing clinics and community programs, meeting the enormous unmet demand for effective approaches to chronic pain while generating revenue to sustain ongoing research.

Projects

1. Benchmarking pain resolution

To rigorously test psychophysiological approaches for chronic pain resolution, benchmarking should not compare therapies as wholes, but rather their **subprocesses** and **microprocesses**, as Gendlin proposed (Gendlin, 1986). Each practice can be decomposed into specific techniques (education, interoceptive access, sensory awareness) and evaluated according to clear markers of success — durable pain reduction, functional improvement, shifts in the body's lived sense.

We can use this lens to examine the most promising approaches:

- Pain Reprocessing Therapy,
- Psychoeducation via John Sarno's Healing Back Pain
- Somatic Experiencing
- Practices from nondual traditions

⁸ "Foundations provided much of the initial funding, and with time this expanded to include federal funding from the NIH, the VA and even the Department of Defense." From [A Brief History of Mindfulness-Based Stress Reduction at UVA](#); original pilot is Kabat-Zinn, Jon. "An outpatient program in behavioral medicine for chronic pain patients based on the practice of mindfulness meditation: Theoretical considerations and preliminary results." *General hospital psychiatry* 4.1 (1982): 33-47.

⁹ See for instance, [this Global Wellness Institute report](#) on mental health, and how the current US Veterans Administration guidelines [explicitly reference MBSR](#).

¹⁰ Davies, Jonathan N., et al. "Prevalence and 20-year trends in meditation, yoga, guided imagery and progressive relaxation use among US adults from 2002 to 2022." *Scientific Reports* 14.1 (2024): 14987.

- Step 1. Establish key microprocesses and outcome markers.
- Step 2. Collect around 10 case studies per approach via recorded sessions.
- Step 3. Clarify consistency and timeline of microprocesses

We envision each step to take around 2 months, and the whole process to take 9 months. We will preregister and publish along the way.

We already have a partnership established with access to thousands of patients with chronic pain. The results of this study will demonstrate:

- How pain therapies should be assessed beyond traditional RCTs
- Which subprocesses are the most helpful for people experiencing pain
- The ingredients for a ‘map’ of pain resolution

2. Case studies to pain resolution

Parallel to the benchmarking process, we will develop and refine procedures for pain resolution that combine different modalities. The goal is to iteratively map what works, when, and for whom.

Drawing from PRT, Somatic Experiencing, nondual practices, and psychoeducation, we will test integrated protocols and refine them in real time. Each case will generate detailed records of lived experience and therapeutic shifts, contributing to a “bottleneck map” of where patients get stuck and how resolution occurs. We will also explore scalable formats such as guided peer groups and LLM-based coaching tools to extend access beyond one-to-one clinical settings.

3. Developing a Computational Model of Pain

This project builds on Max Shen’s independent research using the Active Inference Framework to model how pain is learned, maintained, and potentially reset. The model frames pain not as a direct readout of nociception but as an inference shaped by prior expectations (interoceptive priors) and prediction error signals. This provides a conceptual background in the form of a rigorous, computational account of why chronic pain persists even in the absence of injury, situating mind-body practices within a neuroscience-compatible framework. This can provide a theoretical foundation for interpreting case study data.

People



Max Shen Langenkamp is a scientist and entrepreneur committed to ending chronic pain. He has shaped international biotech safety standards through red-teaming DNA synthesis devices, represented New Zealand as a medalist at the International Biology Olympiad, and personally recovered from debilitating chronic pain through somatic and Tibetan Buddhist practice — an experience that deeply shapes his current research. He has two degrees from MIT, and his research has been featured in venues including NeurIPS, *Cognition*, and the Institute for Progress.



Shamay Agaron is a medical student at Mount Sinai and former healthcare product manager (Evolent, Linus Health) with a background in neuroscience research at Princeton. He brings expertise at the intersection of clinical training, product development, and behavioral science.



Adam Safron (advisor), is a systems neuroscientist with research spanning neuroimaging, computational modeling, and connectomics. He has proposed a novel account of embodied agency and

free will, is conducting research with the Levin Lab at Tufts. He has various appointments including a role as a Senior Research Scientist at the Institute of Advanced Consciousness Studies, a Postdoctorate Research Fellow at the Johns Hopkins Center for Psychedelic and Consciousness Research.



Zoran Josipovic (advisor), is the principal investigator of the Contemplative Science Lab at the NYU Psychology Department and the founding director of the Nonduality Institute. In addition to being the director of Contemplative Science Lab, is a founding member of Margam—metro-area research group on awareness and meditation. In his previous life he also worked as a clinical psychotherapist, a bodyworker and has taught meditation seminars at Esalen Institute for many years.

We are looking for funding to develop this vision. Partial contributions are welcome. If you are interested in supporting, please email mxslk@mit.edu