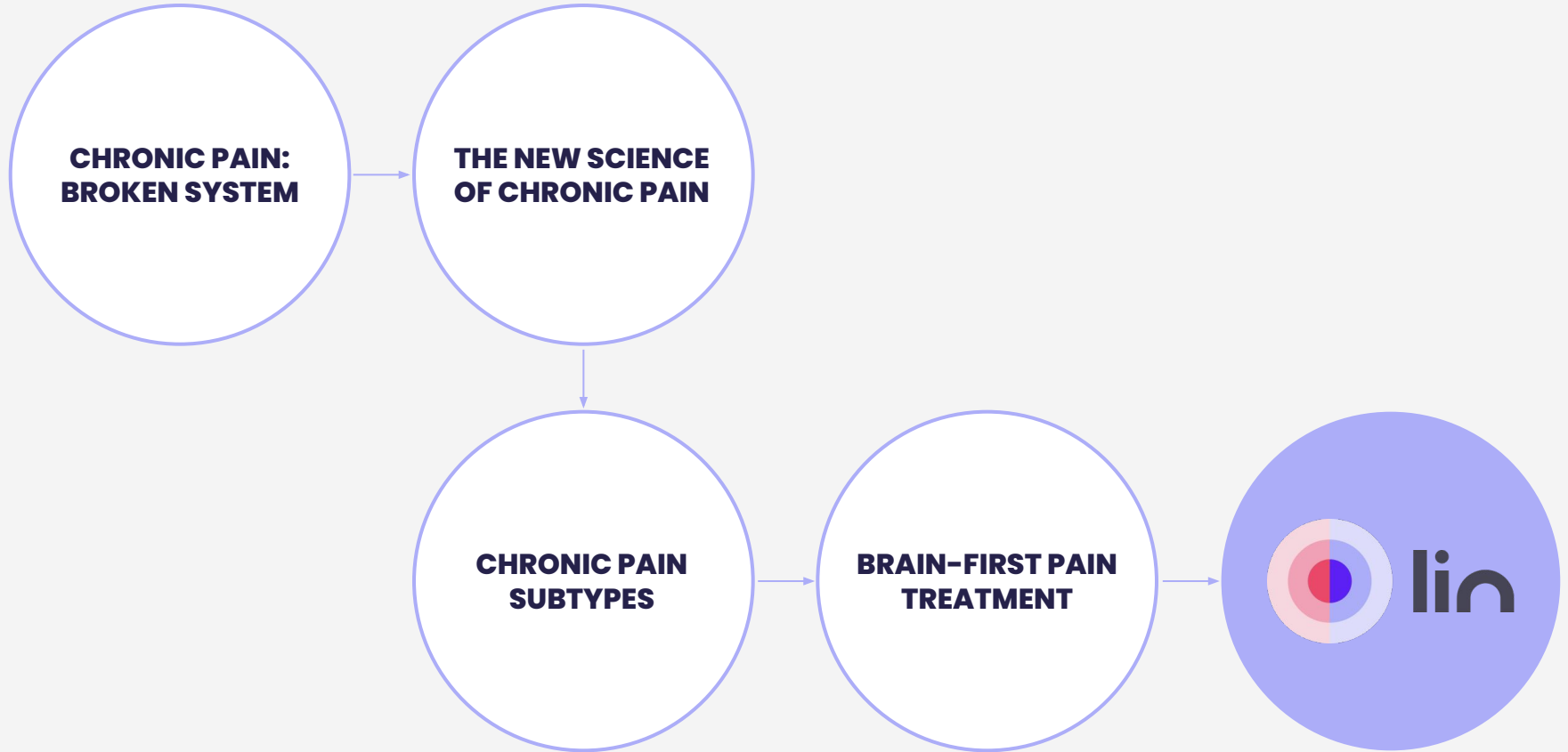




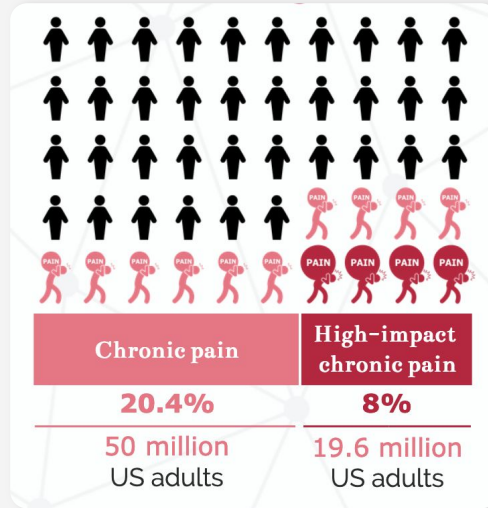
# **BRAIN-FIRST TREATMENT FOR CHRONIC PAIN**

**Yoni Ashar, PhD and Charlie Merrill, MSPT**

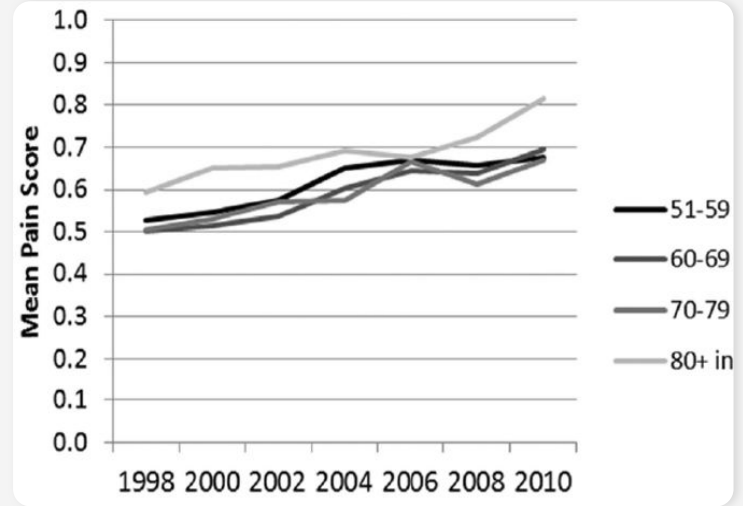




**\$635 BILLION**  
**MORE THAN**  
**HEART DISEASE**  
**AND CANCER**  
**COMBINED**



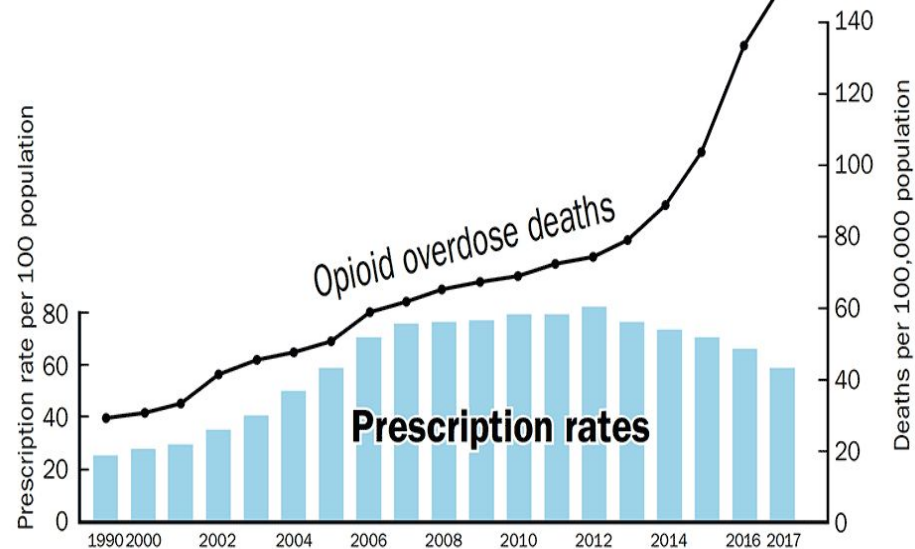
Prevalence is Increasing





# OPIOID CRISIS

- Opioids provide short-term pain relief - but increase long-term pain sensitivity
- Prescriptions are down - but deaths are up





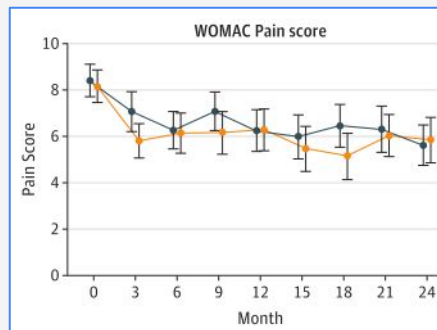
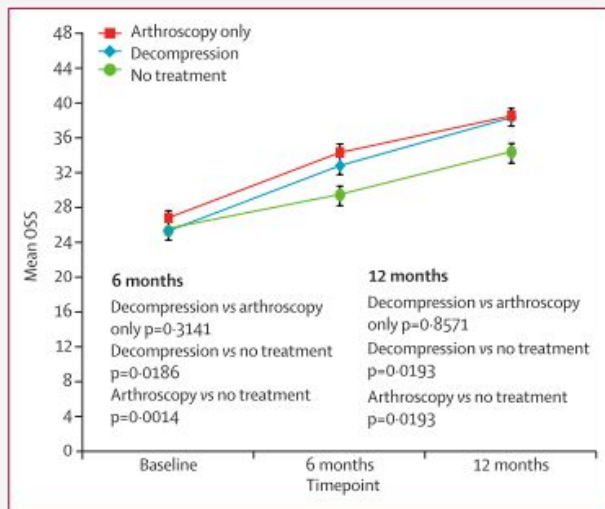
- Pharmaceutical: NSAIDs, opioids, muscle relaxants, anti-depressants, GABAergic agents
- Procedures: injections, spinal fusion, nerve ablations, decompression
- Manual therapies: massage, chiropractic, acupuncture
- Physical therapy, exercise, yoga, tai chi
- Stress reduction techniques
- Occasionally: psychological treatments



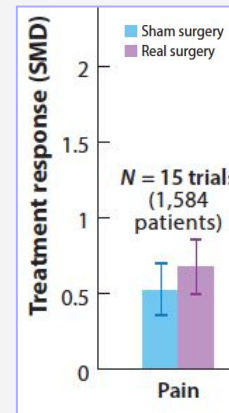
**How effective  
are these  
treatments?**



- N = 313 patients with chronic shoulder pain
  - Real surgery vs. Sham surgery vs. No treatment



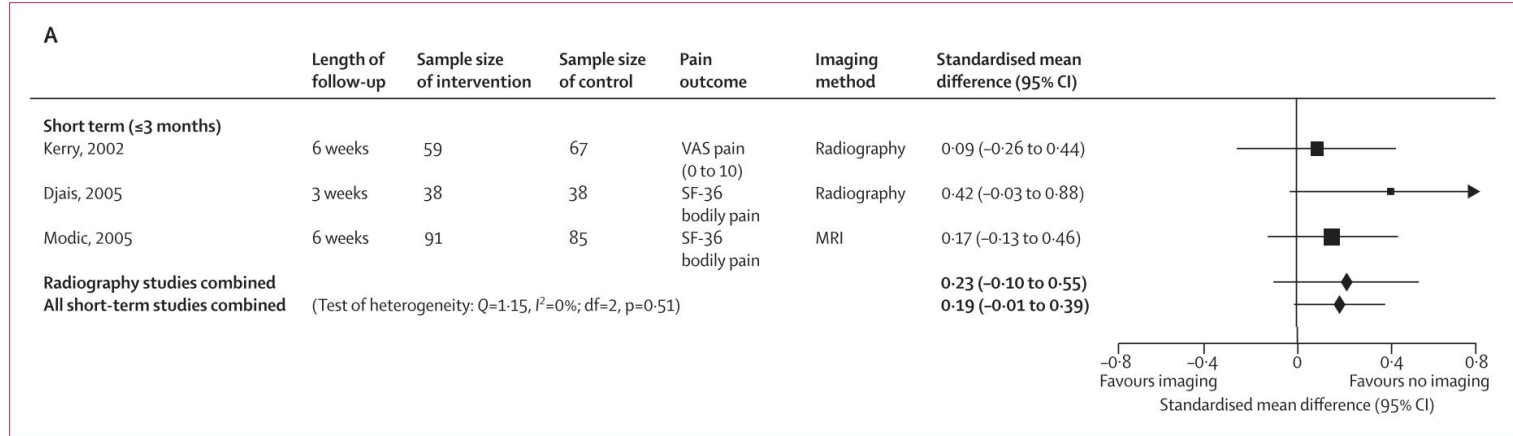
**But loss of knee cartilage in steroid group!**



**SURGERIES WORK BUT NO BETTER THAN SHAM**



## IMAGING vs. NO IMAGING OF BACK PAIN



**Figure 2: Improvement in pain (A) and function (B) for immediate lumbar imaging versus usual clinical care without immediate imaging**

RDQ=Ronald disability questionnaire. VAS=visual analogue scale. The arrow indicates that the upper limit of the confidence interval extends beyond a standardised mean difference of 0.8.

**Radiographic imaging leads to *worse* outcomes  
(And predicts transition from acute to chronic back pain)**

# MRI AND SCANS ARE POOR INDICATORS FOR CAUSE OF PAIN



<b>BODY PART</b>	<b>PREVALENCE IN <u>ASYMPTOMATIC</u> POPULATIONS</b>
<b>Neck</b>	87% have bulging discs
<b>Shoulder</b>	72% have superior labral tears
<b>Hip</b>	69% of adults (and 89% of athletes) have labral tears
<b>Knee</b>	97% of knees show "abnormalities"
<b>Ankle &amp; Foot</b>	63% with Achilles tendon changes 68% of runners have retrocalcaneal changes

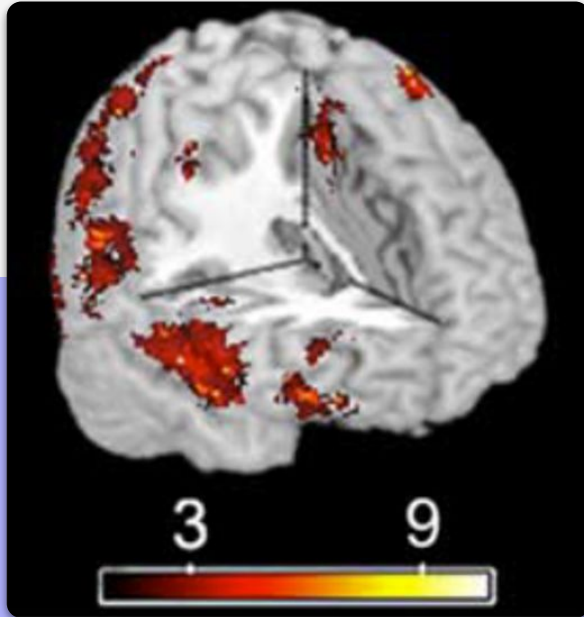


# CHRONIC PAIN IS A LEARNED EXPERIENCE



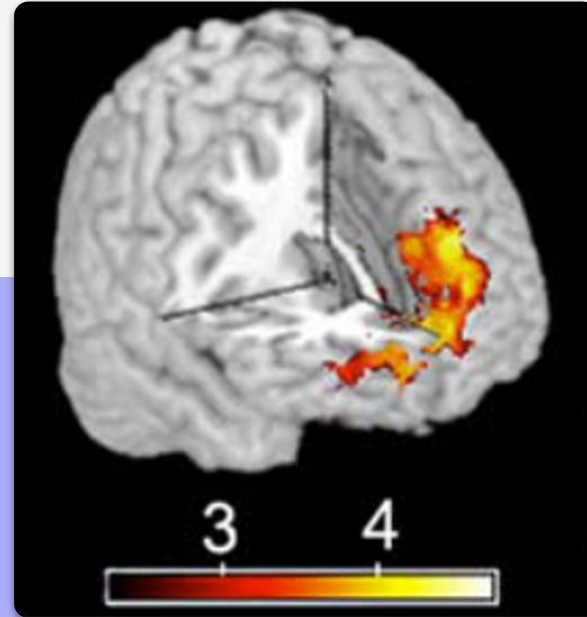
## ACUTE PAIN

Sensory processing regions



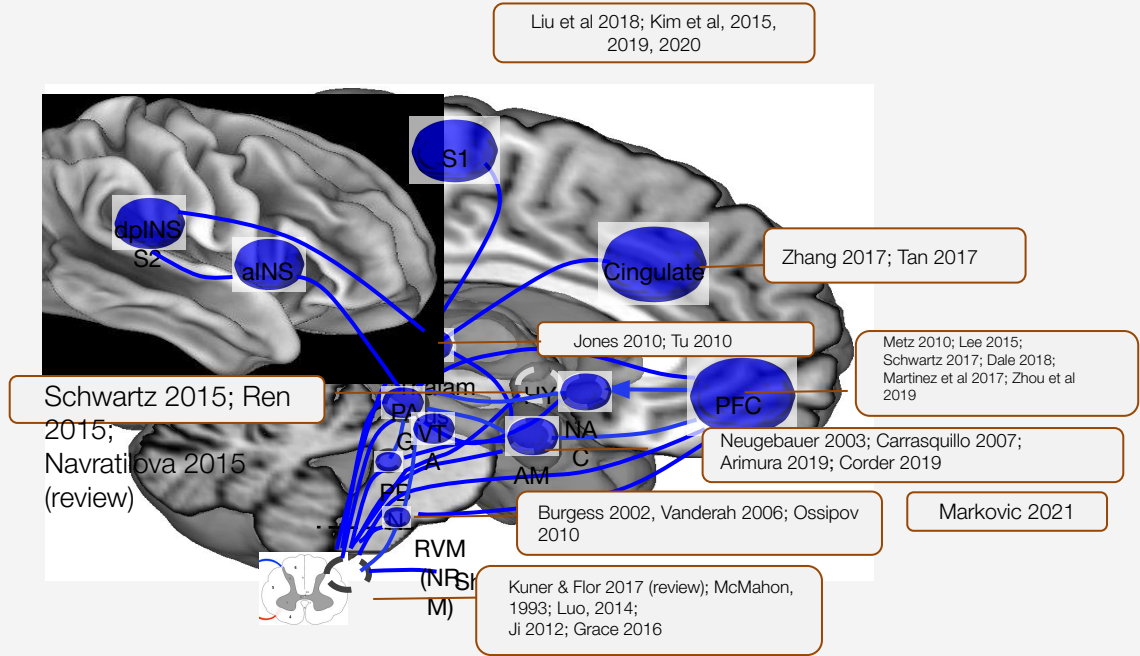
## CHRONIC PAIN

Learning-memory regions



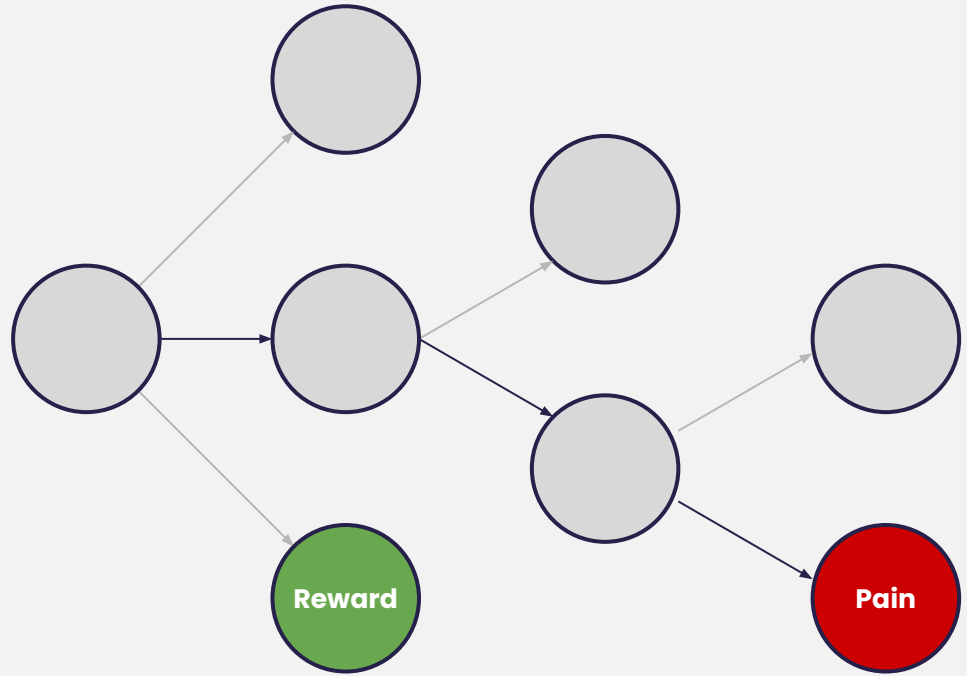


- Heightened responses to aversive stimuli
- Reduced prefrontal inhibition of pain
- Increased DMN, S1, insular connectivity
- Thalamic dysrhythmia
- Reduced DA signaling
- Neuroinflammation
- More



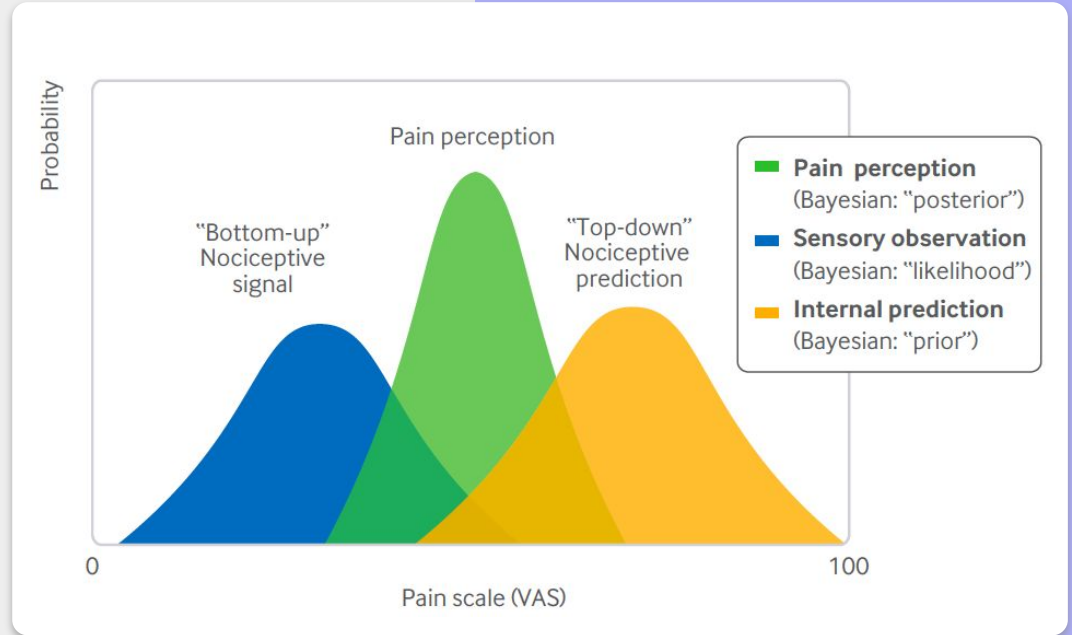


**PAIN IS A LEARNING  
SIGNAL FOR GUIDING  
BEHAVIOR**





## PAIN REFLECTS AN INTEGRATION OF BELIEFS, EMOTIONS & EXPECTATION WITH SENSORY INPUTS



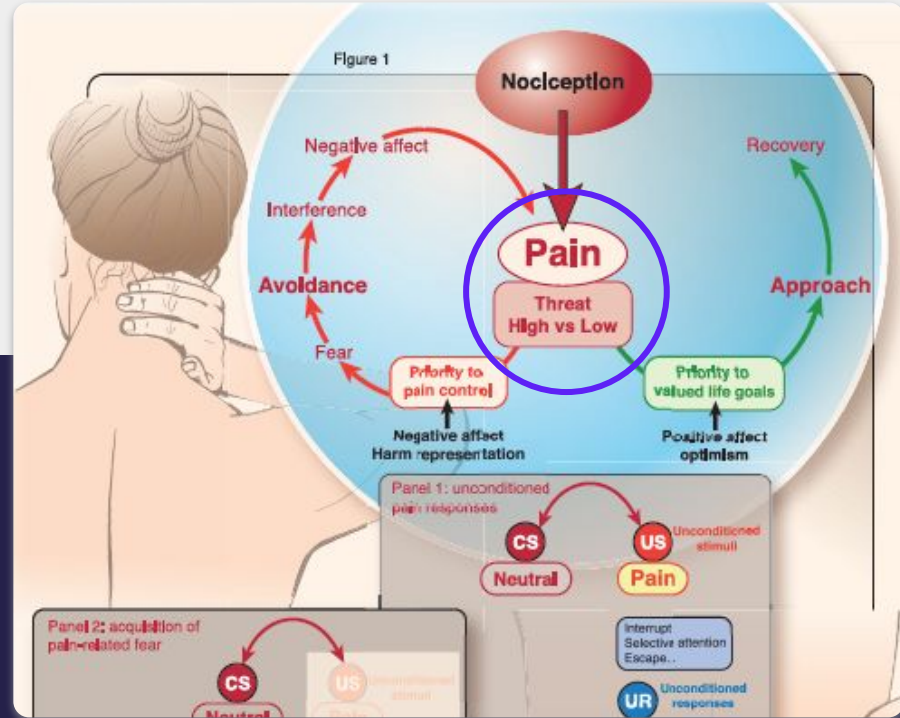
# FEAR-AVOIDANCE MODEL OF CHRONIC PAIN



## PAIN Pictured

### The fear-avoidance model of pain

Johan W.S. Vlaeyen\*, Geert Crombez, Steven J. Linton





# A MASSIVE PARADIGM SHIFT IN UNDERSTANDING PAIN

## ICD-11 INTRODUCES **PRIMARY PAIN** (LIVE AS OF JAN 2022)



**MINIMAL/NO STRUCTURAL  
ETIOLOGY–BIO–PSYCHO–SOCIAL  
CAUSES**



**SIGNIFICANT EMOTIONAL  
DISTRESS**



**FUNCTIONAL DISABILITY**

**Fibromyalgia is 100% Primary Pain**

6.5M Americans (2% of the population)

**Irritable Bowel Syndrome (IBS) is 100% Primary Pain**

36M Americans (11% of the population)

**Chronic lower back pain is 85% Primary Pain**

26M Americans (8% of the population)

<https://icd.who.int/browse11/l-m/en#/http%3a%2f%2fid.who.int%2fcd%2fententy%2f1326332835>

<https://www.nice.org.uk/news/article/nice-recommends-range-of-effective-treatments-for-people-with-chronic-primary-pain-and-calls-on-healthcare-professionals-to-recognise-and-treat-a-person-s-pain-as-valid-and-unique-to-themhttps://www.cdc.gov/arthritis/basics/fibromyalgia.htm#:~:text=Fibromyalgia%20affects%20about%204%20million,2%25%20of%20the%20adult%20population.https://hpi.georgetown.edu/backpain/#:~:text=Back%20problems%20are%20among%20patients,limited%20in%20certain%20everyda>

<https://pubmed.ncbi.nlm.nih.gov/34586357/>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3921083/>

# NOT ALL CHRONIC PAIN IS ALIKE



ICD-11: Primary  
vs. Secondary  
Chronic Pain

Nociplastic vs.  
Nociceptive vs.  
Neuropathic

Peripheral injury contributions

Central nervous system  
contributions



# BEHAVIORAL HEALTH BASED PROTOCOLS ARE EFFECTIVE

SAFE, PROVEN AND COST EFFECTIVE



# JAMA

The Journal of the American Medical Association

# 6X STRONGER EFFECT THAN TREATMENT AS USUAL (RCT)

## JAMA Psychiatry

### RCT: Pain Reprocessing Therapy for Chronic Back Pain

#### POPULATION

70 Men, 81 Women



Adults with primary chronic back pain  
Mean (SD) age, 41.1 (15.6) y

#### SETTINGS / LOCATIONS



1 University  
research setting in  
Boulder, Colorado

#### INTERVENTION

151 Individuals



**50 Pain reprocessing therapy (PRT)** A total of 9 psychological treatment sessions over 4 wk focused on reconceptualization of pain



**51 Open-label placebo injection** A subcutaneous saline injection described as placebo administered to the back



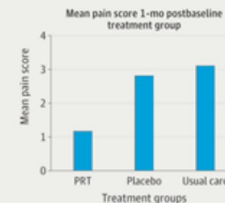
**50 Usual care**  
No additional treatment provided, continue current treatments

#### PRIMARY OUTCOME

Mean pain over last week assessed by the Brief Pain Inventory-Short Form, at 1-mo postbaseline. Score range: 0-10 over the last week (0 = no pain to 10 = most severe pain)

#### FINDINGS

Individuals randomized to PRT reported large reductions in pain compared with individuals randomized to placebo or usual care



**PRT group:** Mean (SD) score, 1.18 (1.24)  
**Placebo group:** (SD) score, 2.84 (1.64) (effect size PRT vs placebo: -1.14;  $P < .001$ )  
**Usual care group:** Mean (SD) score, 3.13 (1.45) (effect size PRT vs usual care: -1.74;  $P < .001$ )

Ashar YK, Gordon A, Schubiner H, et al. Effect of pain reprocessing therapy vs placebo and usual care for patients with chronic back pain: a randomized clinical trial. *JAMA Psychiatry*. Published online September 29, 2021. doi:10.1001/jamapsychiatry.2021.2669



# BEHAVIORAL HEALTH BASED PROTOCOLS ARE EFFECTIVE

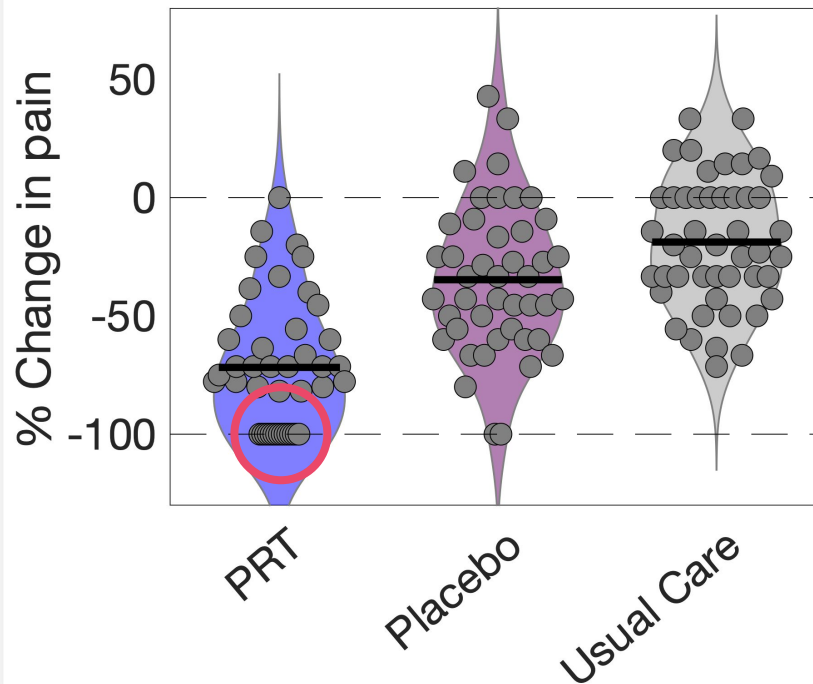
SAFE, PROVEN AND COST EFFECTIVE



**JAMA**  
The Journal of the American Medical Association

**98% OF PRT PARTICIPANTS  
PAIN WENT DOWN.**

**2 OUT OF 3 WERE PAIN FREE  
OR NEARLY PAIN FREE**





**LIN: THE RIGHT  
FRONT-LINE APPROACH  
TO PRIMARY PAIN!**



# THE **FIRST-EVER** INTEGRATED BEHAVIORAL HEALTH SOLUTION FOR CHRONIC PAIN



**Diagnostic  
consultation with an  
MD or APN**



**Personalized  
care plan**



**Licensed BH specialist &  
personal coach**




**Integrative  
consultation team  
(MD, PT, PsyD)**



**Support for pain  
related concerns**  
sleep, weight, movement,  
anxiety, depression, PTSD



← Search members ...
🔍 🔔



**Heather Joe**  
Rep  
Shannon Dougherty

Coach  
Shannon Dougherty

Status  
Full Member

Pain Trend  
3(baseline)

Birthday  
49 (1972-08-05)

Joined  
5 Months ago

Subscription  
Premium(next pament 12.08)

Overview
Feed
Meetings
Check-in
Responses
Files

🔍 Details
⚙️ Config
⬇️ Actions

**Program**

**Focus** 🔍 Details

**Focus**

- Green light to move care kit to prepare for some movement (listen as much as you need)
- Relesing fear - writing exercise we talked about.
- You rocked this last week!!! -> Look for JOY every day and write it down

**Care Kits** Show hidden kits

📅 Schedule ➕ Add Task ⚙️ Manage

**Care kits details** ↕ Reorder

Green Light to Move green\_move current phase 1 of 2

👁 care kit visible

**Phase 1** 🔗 📄 ⚙️ Reorder

Let's start by reviewing why movement is safe and helpful


**Progress**

**Interventions**

- Current skill focus: FEAR REDUCTION
- Live call: Graded exposure for movement
- Chat: Keep focus on the fear she describes. Explore how today she is safe.

**Trends**

How intense was the pain this week?



How often were you able to do the activities you wanted to do this week?

5

**Communication**

**Chat** SMS Email Meetings

Hi there!!! so glad you messaged me. Sent you some hope, encouragement, and a resource I think you'll love! 🥰 Reply in the Lin Message Center: [https://app.lin.health/chat?refrs\\_cd](https://app.lin.health/chat?refrs_cd) 🙌🙌🙌

Saturday

This is so wonderful Heather!!!

Sunday

Hi there!!! so glad you messaged me. Sent you some hope, encouragement, and a resource I think you'll love! 🥰

Enter your message here

**Care team communication**

**Notes** 🔍 Search notes ...

@Deb Malkin this is the member I talked about in supervision @Abigail Hirsch thank you -- I will share that with her. Deb you just messaged with that same link. SO awesome!


1/17/2022, 6:17:23 PM  
shannon.dougherty@lin.health 📄

@Shannon Dougherty I love this movement for all shapes and sizes site - <http://www.joyn.co/>.

1/17/2022, 6:17:23 PM  
abigail@lin.health 📄

Click to write a note ...

08:34
📶 4G 🔋



**Good Morning Alissa,**

This week we're focusing on:

**Evidence building**

- Look for places where your pain changes by location - like work vs home.
- Complete your clinical pain history before your appointment!


**Diagnostic meeting** May 19, 2022  
11:30 PM

👤 Dr. Virgil Pana

✎ Edit Start Session

[See all sessions →](#)

**My Care Kits**



**Personal Kit**

This is where your coach will add helpful

Star

Once y receive

Learn
Home
Message



Good Evening, Alissa

Today we're focusing on:  
**Building Evidence**

- Notice and document the moments where you don't feel pain
- Be extra kind to yourself, and comforting, when the sensation levels start to trend up.
- Walk 30 mins each day

**Care Kits**

**Evidence Building**  
Learn what evidence to look for to support a primary pain presentation.

**What is evidence?**  
Completed

**Circumstantial evidence**  
Start

**Confirmatory evidence:**

Learn Home Message

**Evidence Building**

**Circumstantial evidence**

- Your pain presentation
- Lifetime stressors
- Personality and pain

**Emotions Care Kit**

**Practice**

- Emotions self-reflection
- Somatic Tracking with Emotions
- Insight Writing: Intro
- Insight writing: practice
- Time Traveler
- Noticing
- RAIN

**Care Kits**

**Green Light to Move**  
Take proactive steps to get moving again.

**Why it helps & how to keep it safe**  
Completed

**Get the brain involved**  
5 out of 6

Tell me the evidence that you have that your symptoms are highly unlikely and different than everyone else in that study? 10:25 PM

Why is that a thought you want to believe is true, rather than you have a brain and brain's learn pain and this process can work for you?

- The pain moves around.
- Imagining certain motions can trigger the pain without actually doing the motion.
- Many people my age have bulging discs in their spine

10:29 PM ✓

That is a great start! How many times a day do you do somatic tracking? 10:30 PM

What would you like to do that helps you feel good?

Enter your message here

**Learning Center**

All Favorites

**Understanding neural pathways; do you have them?** 6 MIN

Like Dislike Laugh Cry Heart

**The new guidelines for chronic pain management** 3 MIN

Like Dislike Laugh Cry Heart

Learn Home Message