

*Brief and digital behavioral Innovations
care: Tools for right now*

across the continuum of

**painTRAINER:
Chronic pain self-management program delivering online, self-completed
cognitive-behavioral pain coping skills**

Christine Rini, PhD

Professor of Medical Social Sciences

Northwestern University Feinberg School of Medicine



Christine Rini has documented that she has nothing to disclose.
This presentation contains investigational use of products (painTRAINER)

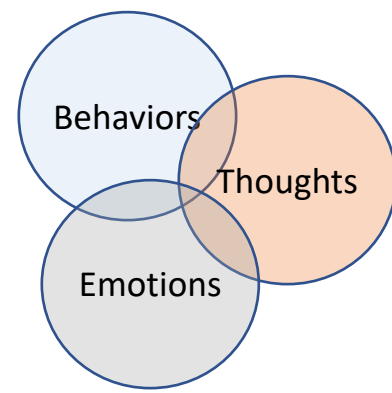
Learning objectives:

1. Describe key features of cognitive-behavioral therapy-informed pain management and pain coping skills training
2. Identify methods for making this treatment more accessible to patients
3. Describe basic features of self-completed, web-based pain coping skills training as delivered in painTRAINER

Literature references:

1. Bennell, K. L. et al. (2018). Effects of internet-based pain coping skills training prior to home exercise for people with hip osteoarthritis (HOPE trial): A randomised controlled trial. *Pain*, 159(9),1833-1842.
2. Rini, C. et al. (2014). Retaining critical therapeutic elements of behavioral interventions translated for delivery via the internet: Recommendations and an example using pain coping skills training. *Journal of Medical Internet Research (JMIR)*, 16(12), e245.
3. Rini, C. et al. (2015). Automated, Internet-based pain coping skills training to manage osteoarthritis pain: a randomized controlled trial. *Pain*, 156(5), 837-848.

Cognitive-behavioral therapy for pain

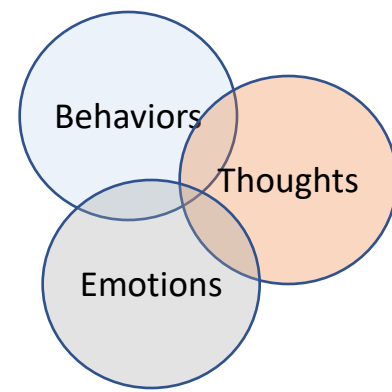


- painTRAINER delivers web-based pain coping skills training (PCST), which applies principles of cognitive-behavioral therapy (CBT) to managing chronic pain¹
- Trains patients to use evidence-based skills to reduce cognitive, behavioral, and emotional responses known to exacerbate pain severity and interference
- PCST can be an adjunct to other pain treatments
- Patients often enjoy using these skills—they feel more actively engaged in their own pain management

1 Keefe et al. 1990

Examples of skills taught in PCST

- **Relaxation:** Progressive muscle relaxation, brief relaxation methods to reduce muscle tension
- **Distraction techniques:** Pleasant imagery, pleasant activities
- **Managing activity:** Using activity/rest cycling to avoid overdoing activities or resting excessively
- **Cognitive restructuring:** Reduces pain catastrophizing
- **Problem solving:** Avoid situations that exacerbate pain and determine which coping skills to use at what time
- **Maintenance:** Methods for maintaining new behaviors



Evidence supports efficacy of PCST

- Meta-analyses and systematic scientific show benefits for various chronic pain conditions, e.g.,
 - Migraine/tension headache¹
 - Low back pain²
 - Osteoarthritis/musculoskeletal pain³
 - Fibromyalgia⁴
 - Mixed chronic pain populations⁵
 - Patients on opioids for clinical pain⁶
 - Cancer pain⁷(and perhaps neuropathic pain⁸)

1 Bae et al, 2021; Probyn et al., 2017

2 Petrucci et al., 2022 ; Richmond et al., 2015 ; Hoffman et al., 2007

3 Fordham et al., 2021; Wang et al., 2021

4 Mascarenhas et al., 2021 Glombiewski et al., 2010

5 Williams et al., 2020 ; Khoo et al., 2019 Niknejad et al., 2019

6 Garland et al., 2019

7 Sheinfeld Corin et al., 2012 ; Tatrow and Montgomery, 2006

8 Cassileth and Keefe, 2010;

It's underused in clinical care—Why?

- Traditional delivery is resource intensive
 - PhD-level clinicians lead 8-12 weekly group sessions of ~60-90 min each
 - Lack of programs in many geographic areas
 - Telemedicine approaches and delivery by other health professionals improves access, but doesn't completely solve problem
- Some patients unwilling to attend sessions (e.g., too busy, too ill, lack transportation, prefer at-home training, privacy concerns)
- Healthcare providers may lack familiarity with this approach, or ability to refer patients to training programs
- Reimbursement difficulties

How to make PCST more accessible to patients?

- Our goal: PCST that is self-completed (no therapist), web-based, free
- Training is standardized and available from home 24/7
- Patients can review sessions as often as desired
- Web-based interventions can have effect sizes that are similar to in-person therapies¹

1 Cavanagh et al., 2004; Proudfoot et al., 2003; Wantland et al., 2004; Webb et al., 2010.

painTRAINER

- Eight 35-45 min. training sessions completed over 8 weeks
- Self-completed for flexible use at home—No therapist
- “Virtual coach” is guide/educator—enhances engagement
- Tailoring and interactive features apply expertise of therapists who deliver traditional PCST to retain key therapeutic features¹
- Minimal reading—Information presented in audio (coach’s voice) with only most important text on screen
- Easy to use—simple navigation

1 Rini, et al., 2014

painTRAINER[✓][®]

What is painTRAINER?

painTRAINER is an interactive, online program based on scientific research. It teaches you coping skills to reduce and manage your pain. They can also help you get back to doing things that are important and meaningful to you.

Who may benefit from painTRAINER?

painTRAINER is for adults over the age of 18 who have pain.

How to access painTRAINER?

Click register on the menu, above. Then complete the registration pages. The information you provide will be securely handled to protect your privacy.

United States version: www.mypaintrainer.org



painTRAINER[®]

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Who may benefit from painTRAINER?

painTRAINER is for adults over the age of 18 who have pain.

- Patients register to use program
- At first log in, they view brief tutorial on program and navigation
- Online workbook can be printed
- Adaptive design allows access from many types of devices

United States version: www.mypaintrainer.org

1 ✓

UNDERSTANDING PAIN AND RELAXATION

TOOLBOX

2 ✓

BRIEF RELAXATION WITH MINI-PRACTICES

TOOLBOX

3 ✓

ACTIVITY/REST CYCLES

TOOLBOX

4 ✓

PLEASANT ACTIVITY SCHEDULING

TOOLBOX

5 ✓

COPING THOUGHTS

TOOLBOX

6 ✓

PLEASANT IMAGERY

TOOLBOX

7 ✓

PROBLEM SOLVING

TOOLBOX

8 ✓

LOOKING BACK AND MOVING FORWARD





Log Practice



Tips



My Profile



Log out

1 ✓

UNDERSTANDING
PAIN AND
RELAXATION

TOOLBOX

2 ✓

BRIEF
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WITH MINI-
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TOOLBOX

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SOLVING

TOOLBOX

8 ✓

LOOKING BACK
AND MOVING
FORWARD

Session toolboxes appear after sessions are completed to allow easy review of useful parts of sessions



Log Practice



Tips



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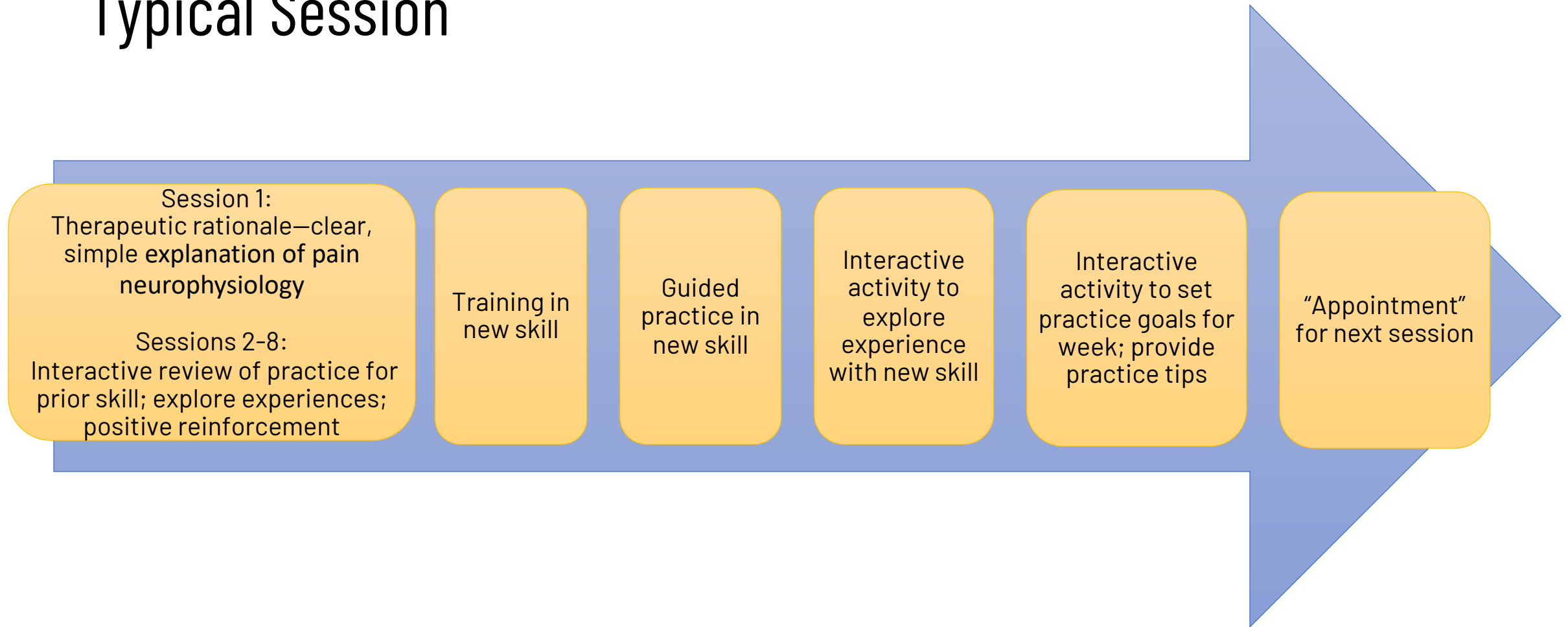
LOOKING BACK AND MOVING FORWARD

Progress Tracker: Revise practice goals, track self-efficacy and practice

The screenshot shows the home screen of the painTRAINER app. At the top, there is a navigation bar with the app logo and four menu items: HOME, SESSIONS, PROGRESS TRACKER, and RESOURCES. Below the navigation bar, there are four utility icons: Log Practice, Tips, My Profile, and Log out. The main content area consists of eight numbered session cards, each with a blue checkmark in the top right corner and a blue 'TOOLBOX' button at the bottom. The sessions are: 1. UNDERSTANDING PAIN AND RELAXATION; 2. BRIEF RELAXATION WITH MINI-PRACTICES; 3. ACTIVITY SCHEDULES; 4. PLEASANT ACTIVITY SCHEDULING; 5. COPING THOUGHTS; 6. PLEASANT IMAGERY; 7. PROBLEM SOLVING; 8. LOOKING BACK AND MOVING FORWARD. A blue arrow originates from the 'My Profile' icon and points towards a text box in the bottom left corner.

Automated reminder emails or text messages can be toggled on or off by user (“on” by default)

Typical Session





Log Practice



Tips



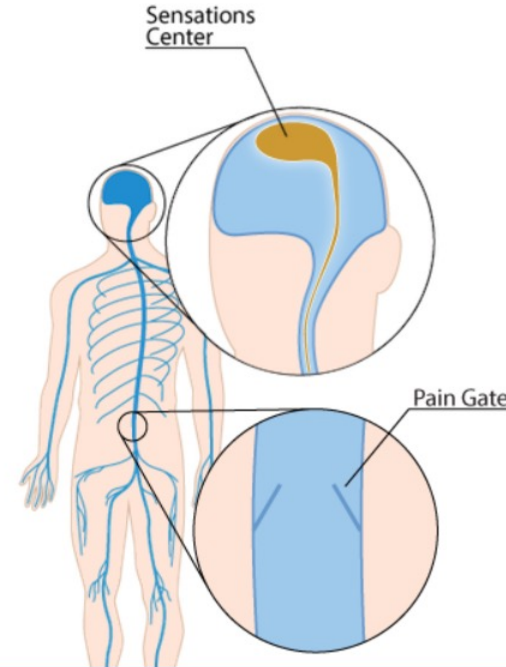
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Log out

UNDERSTANDING PAIN AND RELAXATION > GATE CONTROL THEORY AND ENDORPHINS

Gate Control Theory was exciting because it led to a lot of new discoveries about pain.



00:05



00:34



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Log Practice



Tips

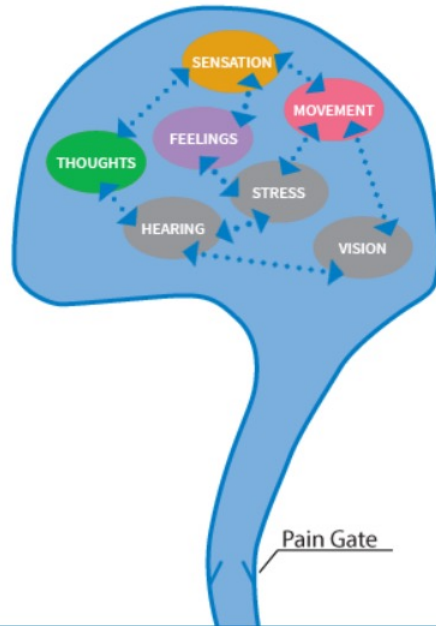


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UNDERSTANDING PAIN AND RELAXATION > NEUROMATRIX THEORY OF PAIN



Scientists call this the "brain pain matrix" or the "pain neuromatrix."



00:13



00:23



2 of 3





Log Practice



Tips



My Profile



Log out

UNDERSTANDING PAIN AND RELAXATION > PROGRESSIVE RELAXATION: HOW DID YOU FEEL?

Press a picture to hear about how progressive relaxation went for William, Linda, or Patricia.



00:15



00:15



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UNDERSTANDING PAIN AND RELAXATION > PROGRESSIVE RELAXATION: HOW DID YOU FEEL?

What did you experience during your progressive muscle relaxation practice?

More

Less

No Change

Relaxed	More	Muscle Tension	Less
Happy		Nervous	Less
Calm		Frustrated	
Clear-headed		Pain	
Energetic		Stiffness	No Change
Warmth		Fidgety	
Heaviness	More	Sleepy	More

Reset

I'm Done



00:50



01:01



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Press on a problem to see a few solutions that might help you practice.

✓ I have muscle cramps or pain	✓ I fidget or can't sit still	✓ I'm distracted by noise
✓ I have muscle spasms and tics	✓ I can't stop my thoughts	✓ I fall asleep
I cough and sneeze	✓ I feel uncomfortable	✓ I feel like I'm not in control



00:21



00:23



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Past, present, and future of painTRAINER

- Initial RCT found clinically significant pain reduction in older women with symptomatic hip/knee osteoarthritis¹
- Studies with collaborator Bennell also show efficacy for osteoarthritis pain²
- Australian version freely available (*paintrainer.org*);
- U.S. version open for research and some patient usage (*mypaintrainer.org*)—undergoing further testing in multiple NIH-funded RCTs (e.g., for cancer pain)
- Soon to begin: SKIP-Arthralgia—Can painTRAINER reduce aromatase-inhibitor associated arthralgia in breast cancer survivors? Might it have secondary benefits for AI adherence, sleep disruption, and vasomotor symptoms?
- Ultimate goal: Make painTRAINER freely and widely available to patients

1 Rini et al, 2015 (PMC4402249)

2 Bennell et al., 2018 (PMID 29794609); Lawford et al., 2018 (PMC5966648);
Bennell et al., 2017 (PMID 28241215)

Thank you!

christine.rini@northwestern.edu

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- NIH/NIA: UG3AG067493 (DeBar)
- NIH/NIAMS UG3AR077360 (Cohen, Campbell, Castillo)
- NIH/NINR:
 - R21NR019047 (Cheatle)
 - UG3NR019196 (Ang, Wake Forest)
 - R01NR019947 (Spiegel)



painTRAINER[✓]

HOME SESSIONS **PROGRESS TRACKER** RESOURCES

My Profile Log out

- WHY PRACTICE?
- LOG PRACTICE
- LOG COPING CONFIDENCE
- VIEW PROGRESS
- EDIT SKILL PRACTICE GOALS

1 ✓

UNDERSTANDING PAIN AND RELAXATION

TOOLBOX

2 ✓

BRIEF RELAXATION WITH MINI-PRACTICES

TOOLBOX

3 ✓

TOOLBOX

4 ✓

PLEASANT ACTIVITY SCHEDULING

TOOLBOX

5 ✓

COPING THOUGHTS

TOOLBOX

6 ✓

PLEASANT IMAGERY

TOOLBOX

7 ✓

PROBLEM SOLVING

TOOLBOX

8 ✓

LOOKING BACK AND MOVING FORWARD



1 ✓
UNDERSTANDING PAIN AND RELAXATION
TOOLBOX

2 ✓
BRIEF RELAXATION WITH MINI-PRACTICES
TOOLBOX

WORKBOOK DOWNLOAD (PDF)
painTRAINER TUTORIAL
ABOUT
PRIVACY POLICY
CONTACT US
TOOLBOX

5 ✓
COPING THOUGHTS
TOOLBOX

6 ✓
PLEASANT IMAGERY
TOOLBOX

7 ✓
PROBLEM SOLVING
TOOLBOX

8 ✓
LOOKING BACK AND MOVING FORWARD



PROGRESS TRACKER > LOG PRACTICE


By logging your practices, you'll be able to view your progress and I'll provide you with more helpful feedback. Enter the number of practices for each skill. When you are finished, click Save.

CHANGE DAY 

SKILL	PRACTICES COMPLETED ON THIS DATE
Progressive Relaxation	<input type="text" value="-"/> 0 <input data-bbox="1510 711 1549 746" type="text" value="+"/>
Mini Practices	<input type="text" value="-"/> 0 <input data-bbox="1510 775 1549 811" type="text" value="+"/>
Activity/Rest Cycles	<input type="text" value="-"/> 0 <input data-bbox="1510 839 1549 875" type="text" value="+"/>
Pleasant Activity Scheduling	<input type="text" value="-"/> 0 <input data-bbox="1510 903 1549 939" type="text" value="+"/>
Coping Thoughts	<input type="text" value="-"/> 0 <input data-bbox="1510 968 1549 1003" type="text" value="+"/>
Pleasant Imagery	<input type="text" value="-"/> 0 <input data-bbox="1510 1032 1549 1068" type="text" value="+"/>
Problem Solving	<input type="text" value="-"/> 0 <input data-bbox="1510 1096 1549 1132" type="text" value="+"/>

 Log Practice

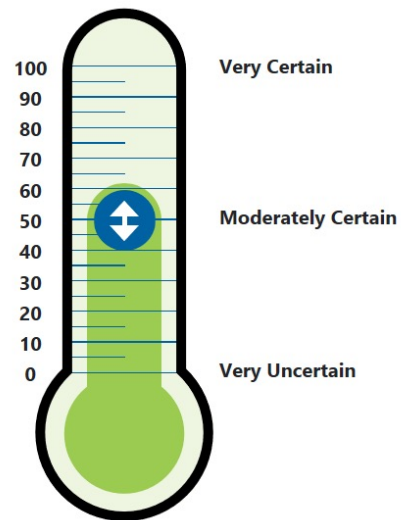
 Tips

 My Profile

 Log out

PROGRESS TRACKER > LOG COPING CONFIDENCE

How certain are you that you can manage your pain and other symptoms so you can do things you enjoy? Press and drag the **Arrows** vertically to move the tension thermometer to the number that best describes your degree of certainty.



RESET

SAVE

PROGRESS TRACKER > VIEW PROGRESS

Skills Practices

Coping Confidence

 Practice Goals Met
  Some Practice Logged
  No Practice Logged

WEEK	1	2	3	4	5	6	7	8
Progressive Relaxation	+	×	×	×	×	×	×	×
Mini Practices		✓	×	×	×	×	×	×
Activity/Rest Cycles			✓	×	×	×	×	×
Pleasant Activity Scheduling				×	×	×	×	×
Coping Thoughts					×	×	×	×
Pleasant Imagery						+	×	×
Problem Solving							×	×



PROGRESS TRACKER > EDIT SKILL PRACTICE GOALS

Touch a skill to review or update your practice goals.

Progressive Relaxation

Here is the goal you previously set for this skill:

I'll do **3** progressive relaxation practices this week.

Don't forget to keep using progressive relaxation. Try increasing your practices. Make sure your goal is challenging, but doable. If you have questions about this skill, try reviewing parts of Session 1.

If you would like to change your goal, press the **Change My Goal** button.

CHANGE MY GOAL

Mini Practices



Activity/Rest Cycles



Pleasant Activity Scheduling



UNDERSTANDING PAIN AND RELAXATION > PROGRESSIVE RELAXATION PRACTICE GOALS

It takes practice to get the full benefit from progressive relaxation.



00:09  01:12   26 of 28 



UNDERSTANDING PAIN AND RELAXATION > LET'S SUMMARIZE

Does the same day work for you next week?

YES

NO



00:37

00:37

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