



Developing and Testing Tailored Mobile Pain Self-Management Interventions

Sara S. Johnson, Ph.D.
Co-President & CEO, Pro-Change Behavior Systems, Inc.
Co-Editor, The Art of Health Promotion
sjohnson@prochange.com

AGENDA

Phase I Study Overview

- Background & Purpose
- Formative Work
- HealthRide Overview
- Pilot Test Results

Lessons Learned

Phase II Design: AtEase

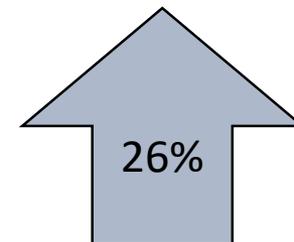
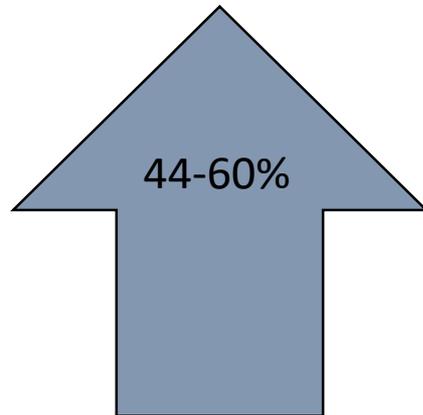
Phase II Recruitment

Discussion/Q&A

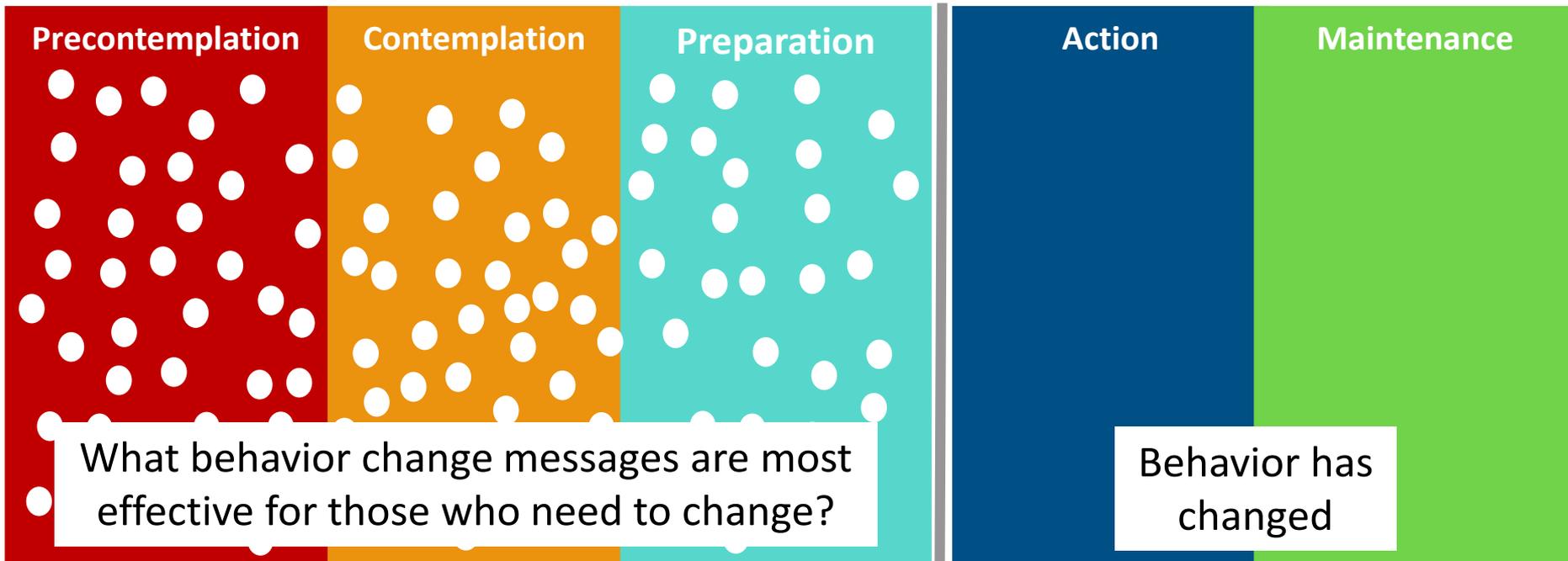


National Pain Strategy

A Comprehensive Population Health-Level Strategy for Pain



Behavior Change

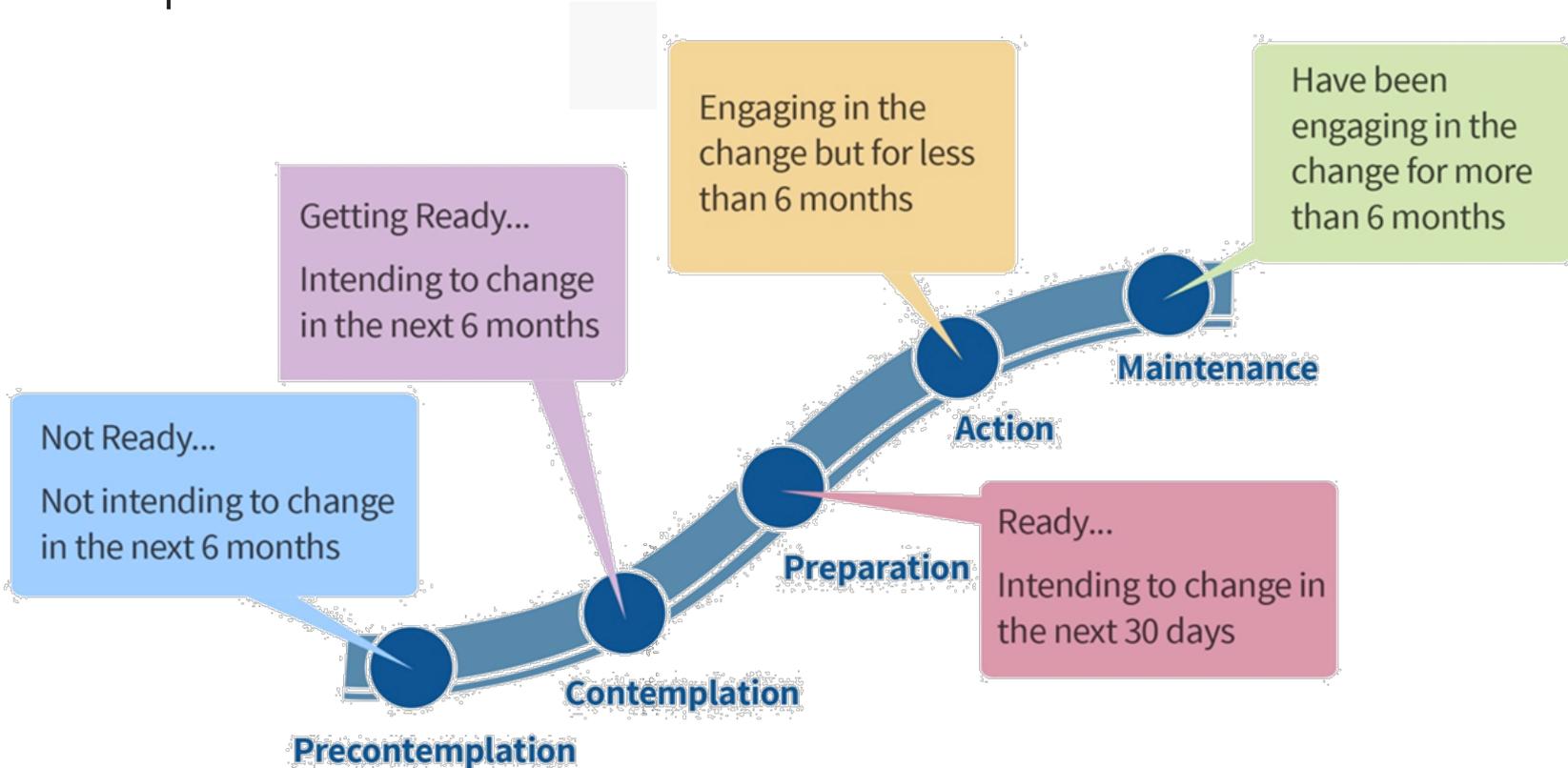


Key concepts

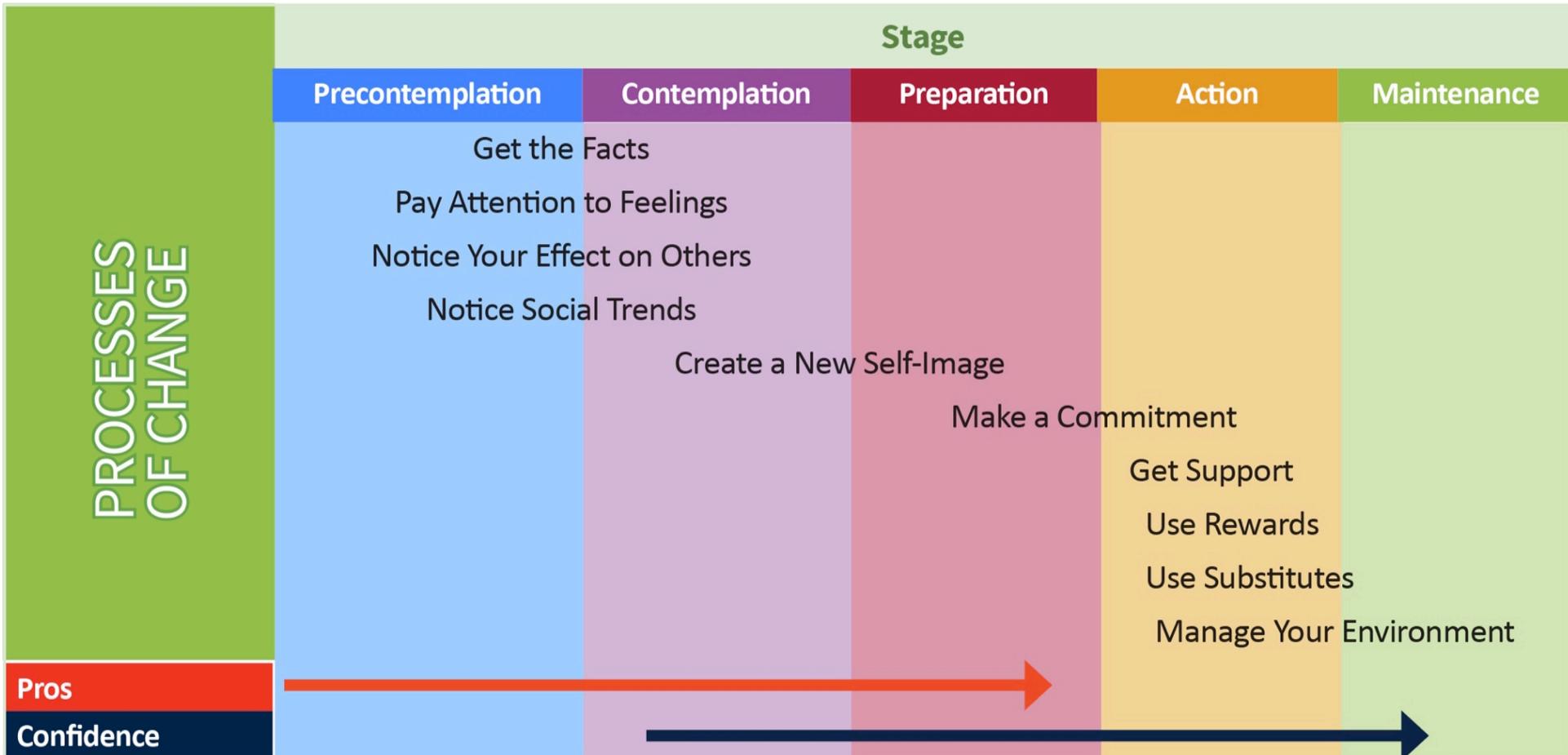
- Behavior change happens along a **continuum**
- Individually **tailored** messages have effects on those who are ready, getting ready, or not ready to change behavior
- Can have an **impact** on all participants – and predict future change

Behavior Change

A process that unfolds over time



Key Dimensions of the TTM

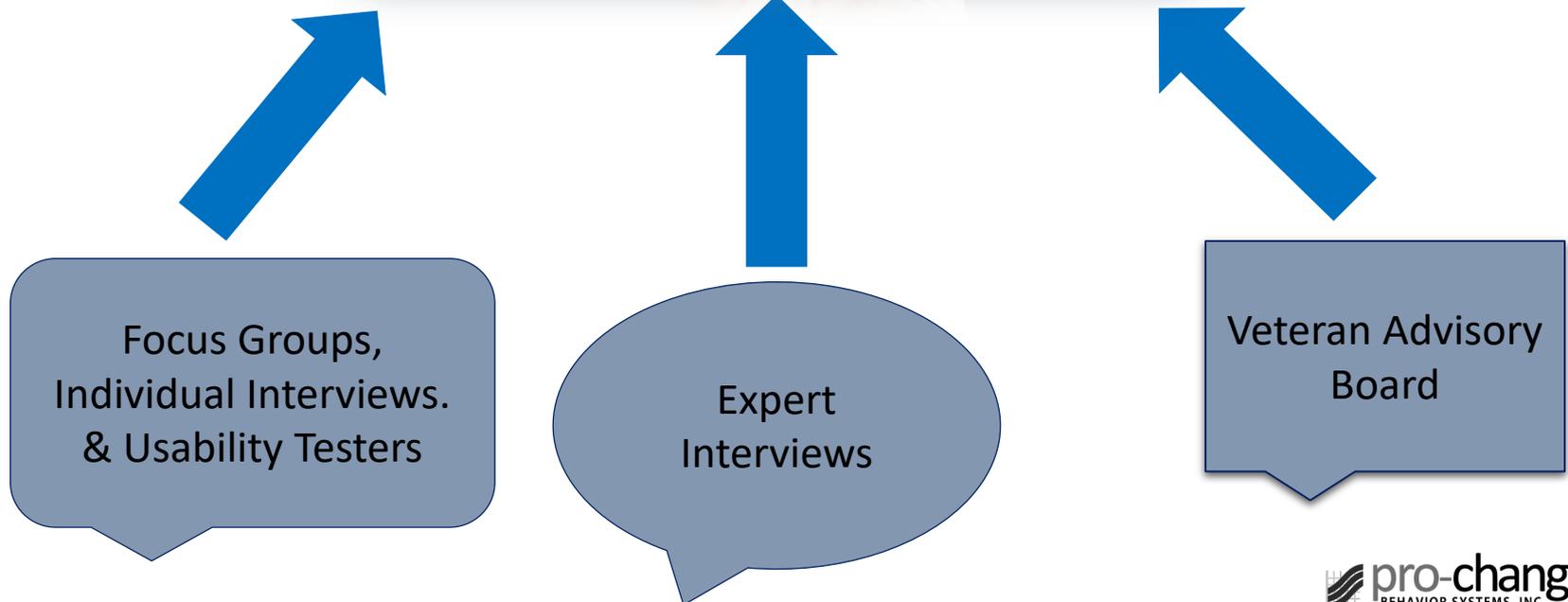


Objective of Phase I Pilot

Design, develop, and establish the feasibility of a theoretically-grounded, mobile-optimized, interactive pain self-management intervention for Veterans that:

- Is appropriate for all Veterans
- Is designed to increase readiness to adopt pain self management strategies
- Is built around Veterans' personal preferences for self-management strategies
- Addresses readiness for other key behaviors
- Leverages social networking and principles of gamification

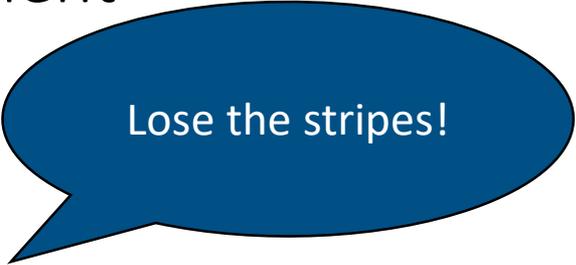
Phase I Prototype Development



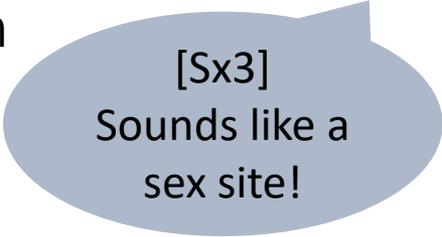
Veteran Advisory Board (N=5)

Branch of Service & Rank	Age (years)	Gender
Air Force (Officer)	40	Male
Army (Senior Enlisted)	29	Male
Army (Enlisted)	24	Female
Marine (Officer)	35	Male
Army (Enlisted)	43	Female

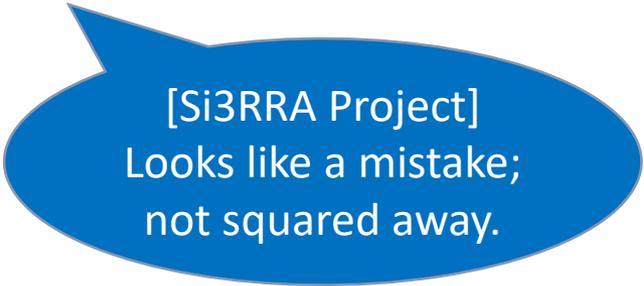
- Interviewed prior to program development
- Provided insight on:
 - Program content
 - Voice and tone of content
 - Look and feel of program
 - Preferences for social media, principles of gamification, and text messaging
 - Name of program



Lose the stripes!



[Sx3]
Sounds like a
sex site!



[Si3RRA Project]
Looks like a mistake;
not squared away.

Focus Groups and Individual Interviews

Focus Group and Individual Interview Participant Demographics (N 24)		
	N (%)	M (SD)
Age:		50.8 (12.8)
Gender		
Male	24 (100)	
Race		
White	15 (62.5)	
Black or African-American	5 (20.8)	
Asian	1 (4.2)	
Native Hawaiian or Pacific Islander		
Two or more Native American or Alaskan Native		
Other	3 (12.5)	
Missing		
Hispanic	3 (12.5)	
Non-Hispanic	20 (83.3)	
Missing	1 (4.2)	
Branch of Service		
Air Force	2 (8.3)	
Army	12 (50)	
Marines	4 (16.7)	
Navy	6 (25.0)	

- Interviewed prior to and during program development
- Provided insight on:
 - Acceptability and readability of program content
 - Voice, tone, and delivery of content
 - Look and feel of program
 - Colors
 - Logo
 - Preferences for social media, principles of gamification, and text messaging
 - Timing of text messages
 - Leaderboard or trophy case
 - Name of program

Focus Groups and Individual Interviews

[Project Triumph vs Operation Triumph]

A little tacky – Triumph is ok – the whole operation thing, people in the military hear operation this, operation that, everything is named that; tune it out after a while— desensitized. It's not bad if it's all you have but it's overused!

...most helpful would be personal video testimonials, put it in the program for everyone to see.

And say you want to do this, but in order to get there, we need to do this. In order to help you reach your ultimate goals and show them the path to help them do these other things and reach the goal they want to get to. So to me, it's like, if you're already setting a path for this person, you've already failed. If you're not listening, you're assuming everyone wants the same outcome, you've already lost the battle. Maybe everyone wants to be pain free, but why do they want to be pain free? What's the light at the end of the tunnel they're trying to get? Is it because they're 25 and were a star athlete and want to get back to being able to do that as best they can?

Or is it like me, I'm 39, I have 2 kids. I was an athlete growing up, I just want to be able to play with my kids. I didn't go to the VA until I was sitting in the rocking chair holding my son when he was an infant and I couldn't get out of the chair while holding him without finding a way to get out of the chair by pushing off of the arms. So my end state could be totally different than somebody else's. Everyone may need to take a similar path, but they need to take a different way to get there. To that same end state."

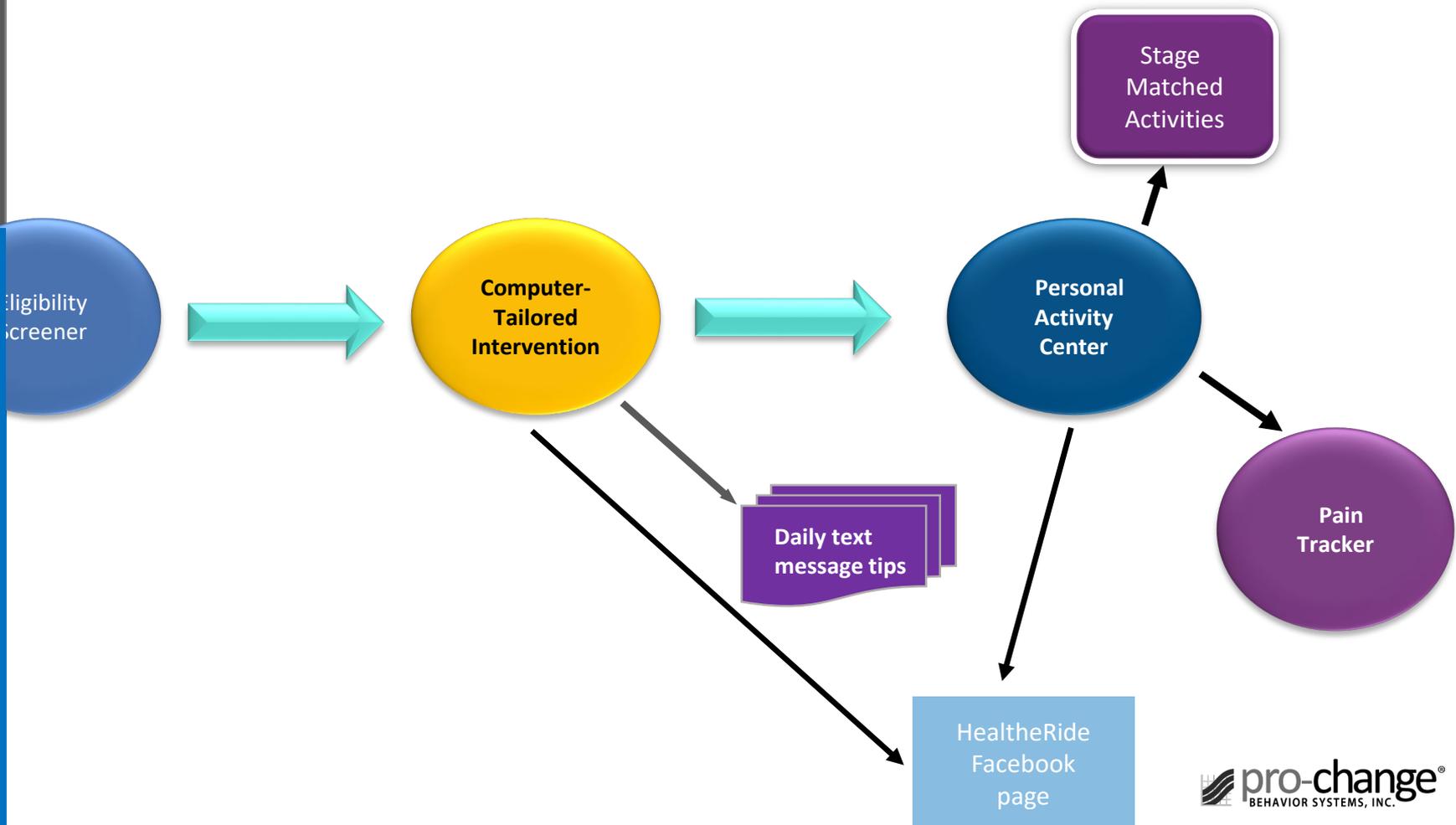
Usability Test Participant Demographics (N=20)		
	N (%)	M (SD)
Age		42.8 (10.3)
Gender		
Male	18 (90)	
Female	2 (10)	
Race		
White	5 (25.0)	
Black or African-American	13 (65.0)	
Asian		
Native Hawaiian or Pacific Islander		
Native American or Alaskan Native	2 (10.0)	
Two or more		
Other		
Missing		
Hispanic	4 (20.0)	
Non-Hispanic	16 (80.0)	
Branch of Service		
Army	8 (40.0)	
Marines	3 (15.0)	
Navy	7 (35.0)	
Missing	2 (10.0)	

- Four rounds of iterative usability testing
- At the conclusion of the interview, participants were asked to rate, on a scale from 1 to 10, the likelihood that they would recommend the program to a friend.
 - Average rating was 8.8
 - One early interviewee declined to give an overall rating

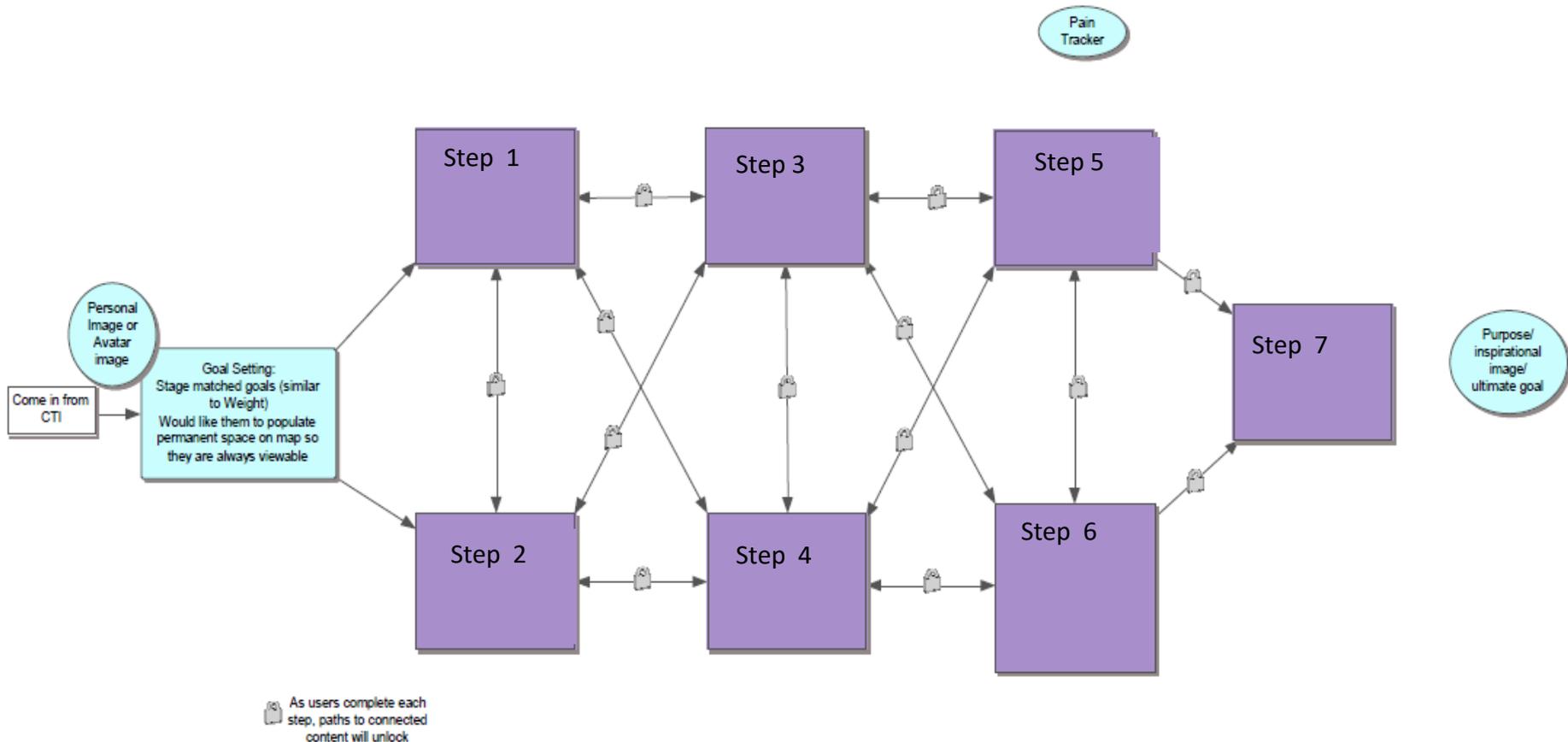
...in its current state it is a 4, but when completed it will be a 10.

health eRIDE

your journey to managing pain



Overall Subway Station Map





your journey to managing pain

Welcome!

If you do not have an account,
registering for one is easy!

or

Register

Login

Forget your password? [Reset it here.](#)

We developed and tested this program with [Chrome](#), [FireFox](#) and [iOS](#) on [iPad](#). Please use one of these browsers for the best experience.



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Welcome to the Health eRIDE Subway where you'll follow a track of your choosing on a journey to managing your pain. We're so glad that you're here.



The Health eRIDE Program is just for you. We know that you've been struggling with chronic pain for quite some time. Though the pain may never go away, we want to show you that there are steps that you can take to manage it.

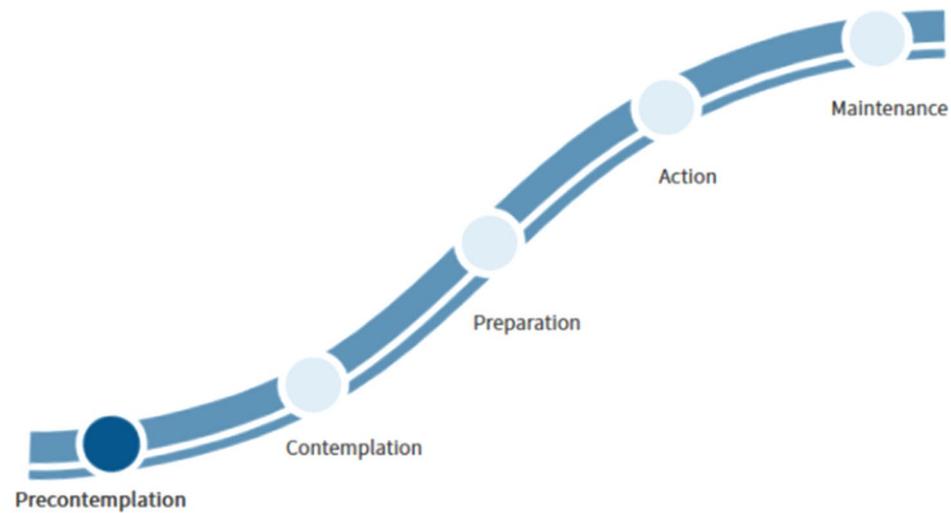
This program is different from others you may have tried. We want to focus on you as a whole person, not just on your pain. We'll ask you to set your own goal and to decide how to get there. Maybe you're like one Veteran we spoke to who wanted to improve his life in spite of the fact that he couldn't do everything he used to do. Or another who said he wanted to manage his pain so he could play more with his children. You'll pick what matters most to you.

Once you know where you're headed, we want to stand beside you on your journey. Along the way, we'll give you ideas and suggestions based on your answers to the questions we ask and the path you take. There are no right or wrong answers. Just tell us what is true for you, so we can give you helpful feedback.

There are 5 stages of change for using healthy strategies for managing pain.

- **Precontemplation: Not Yet Ready**
- **Contemplation: Getting Ready**
- **Preparation: Ready**
- **Action: Already Using Healthy Strategies**
- **Maintenance: Have Been Using Healthy Strategies**

You are Not Yet Ready to use healthy strategies to manage your pain. Maybe you're worried that they won't work, or are afraid that your pain could get worse if you tried them. Maybe you just don't know enough about these strategies. That's okay. The rest of this program can help you think more about how these strategies might fit into your life.



Pain Management



Have you noticed part or all of this cycle in your own life?
Paying more attention to the cycle of pain might help you find ways to break it.



back

done



This page shows how often you're using 9 pain coping skills. If the marker for a skill falls in the red section of the scale, it might be helpful to use that skill more often. If you don't know what a skill means, click on the ? next to it. Please choose at least 2 skills to learn more about or practice more often.

Skill	Your Score	Work On This
Relaxing ?		<input checked="" type="checkbox"/>
Following Through ?		<input type="checkbox"/>
Thinking Positively ?		<input type="checkbox"/>
Breaking Up Activities ?		<input type="checkbox"/>
Scheduling Breaks ?		<input type="checkbox"/>
Being Independent ?		<input type="checkbox"/>
Using Proper Body Mechanics ?		<input checked="" type="checkbox"/>
Exercising ?		<input type="checkbox"/>
Communicating Confidently ?		<input type="checkbox"/>



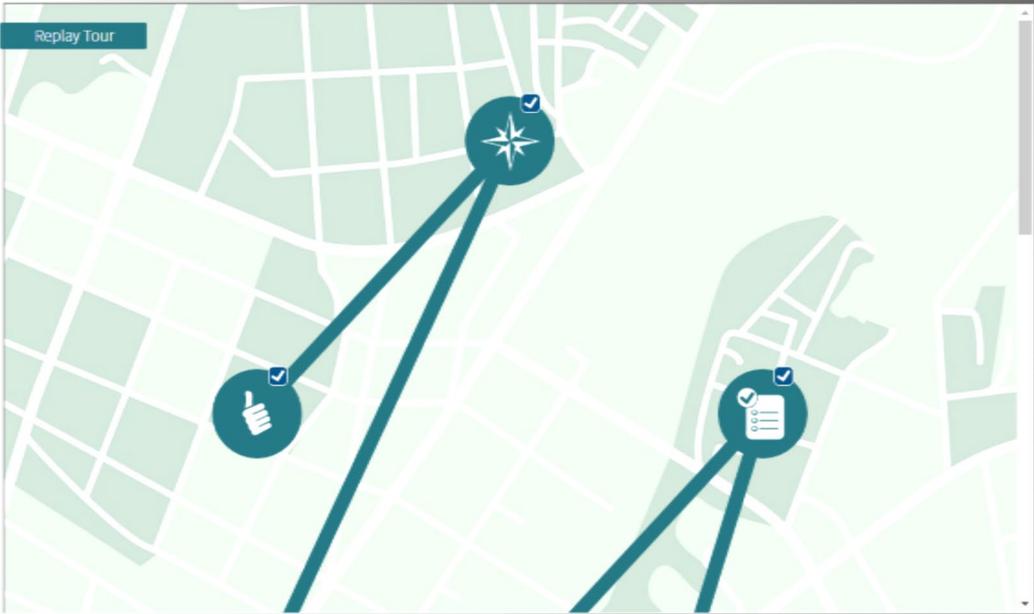
menu



Log Out

Pain Management

A C L





Take Control of Your Room



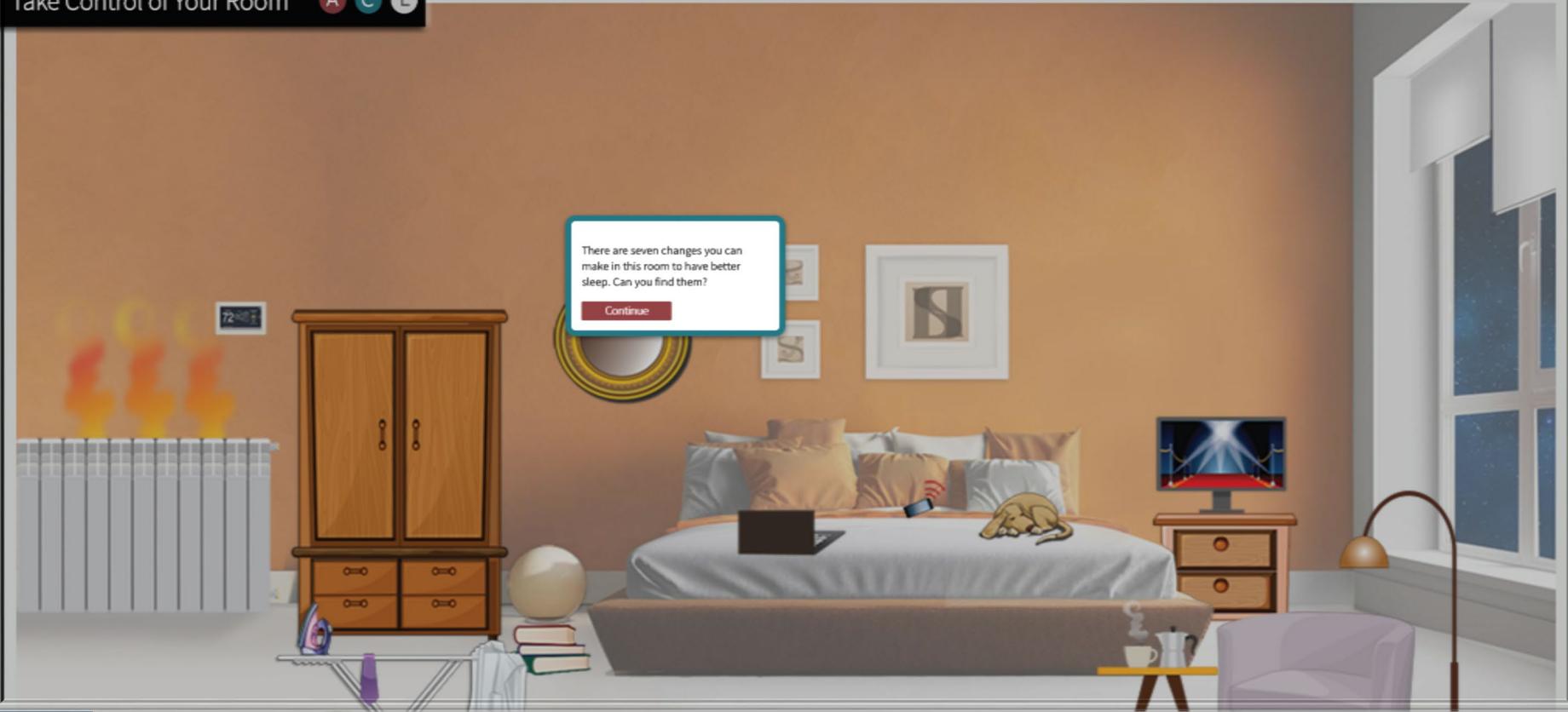
Pain Management



Log Out

There are seven changes you can make in this room to have better sleep. Can you find them?

Continue





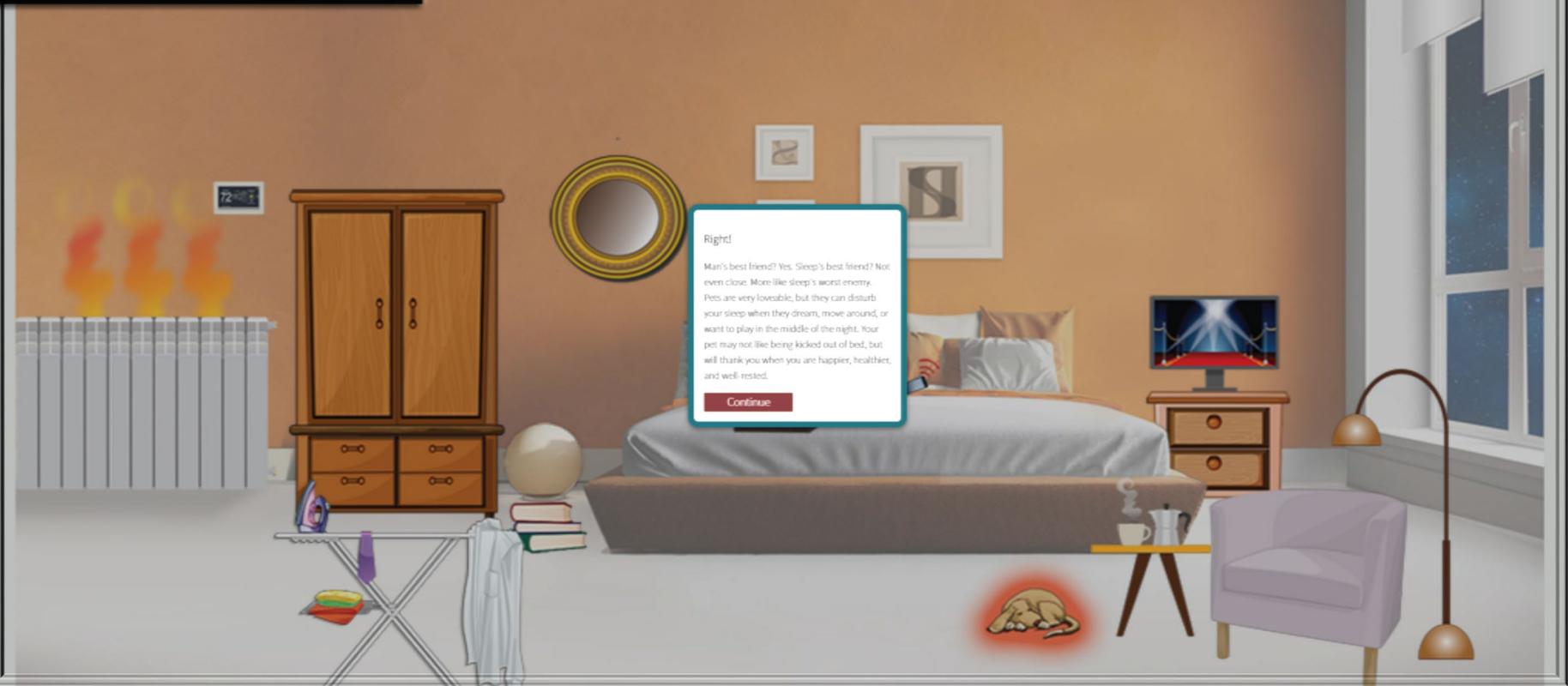
MENU



Take Control of Your Room



You've found 1 item!



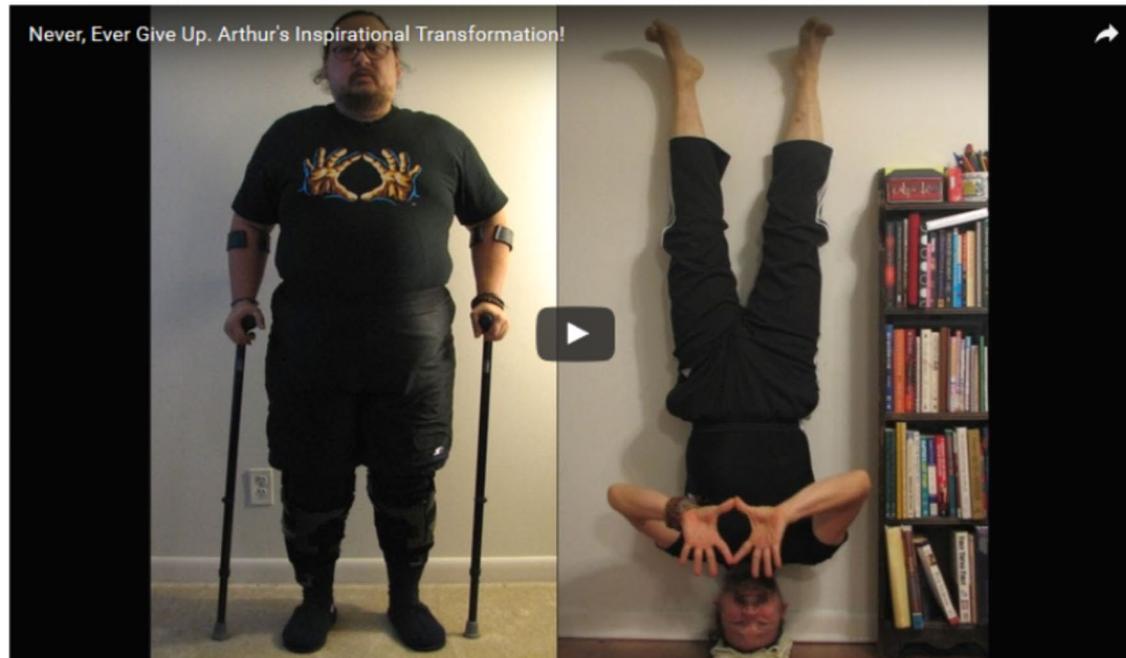
Right!

Man's best friend? Yes. Sleep's best friend? Not even close. More like sleep's worst enemy. Pets are very lovable, but they can disturb your sleep when they dream, move around, or want to play in the middle of the night. Your pet may not like being kicked out of bed, but will thank you when you are happier, healthier, and well-rested.

Continue

Allowing yourself to feel inspired by your own efforts and successes—and by those of others—can help you move forward.

You can find that inspiration in stories others have shared with you or on social media. Check out this example.



The man in this video has arrived at a place in his journey where he is successfully managing his pain. What ideas or statements in his story might help you take the next step on your journey?

What or who else could inspire you to manage pain, have healthy sleep habits, and manage stress?

The Mood Escalator

A C L



Instructions

Our moods go up and down over time. The way we think, feel, and act throughout the day can affect our mood. Check out how the activities you typically do bring your mood up or down...

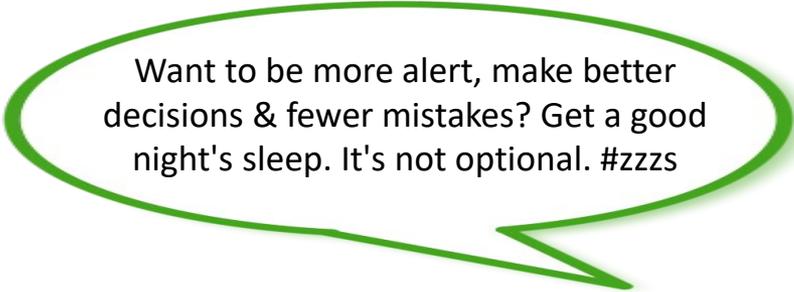
Continue

What will improve your mood?

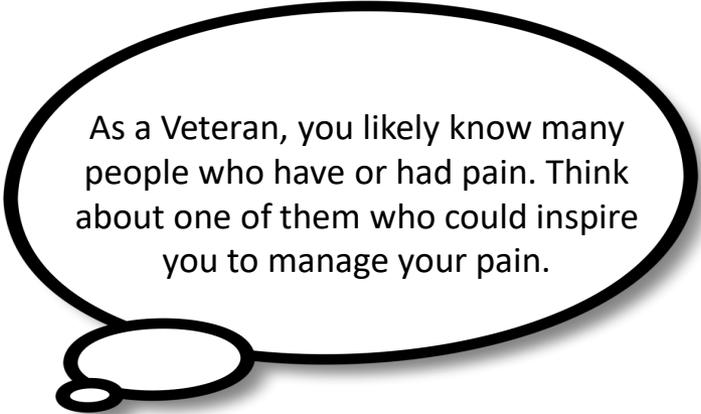
- Exercising
- Spending time with friends and family
- Focusing on three things you are grateful for each day
- Giving in to negative feelings about the pain
- Living in the moment
- Talking to someone
- Giving up activities because the pain is too bad
- Getting enough sleep
- Doing things you enjoy
- Doing a relaxation exercise
- Pacing yourself

← back | done →

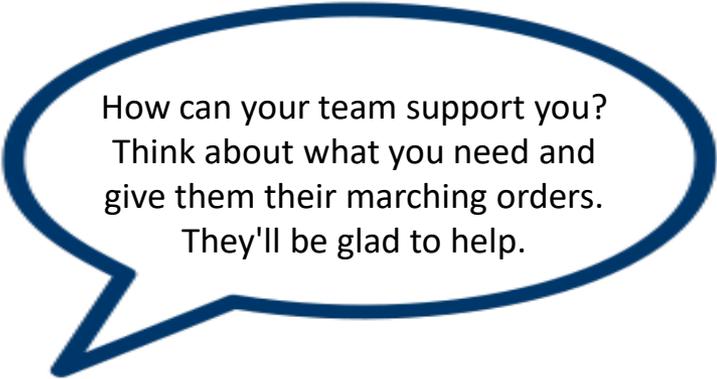
Text Messaging: Sample Messages



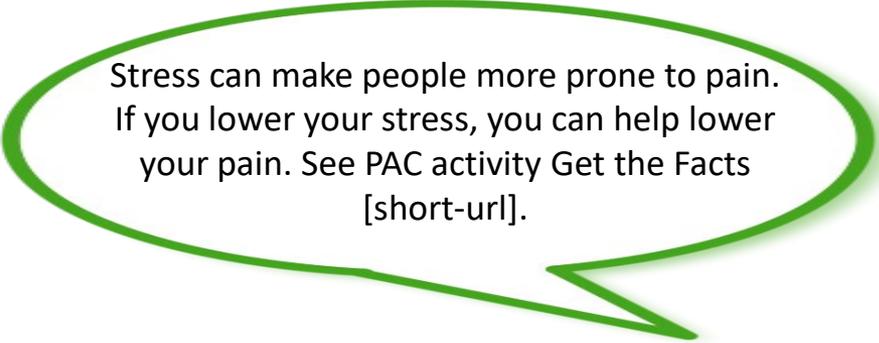
Want to be more alert, make better decisions & fewer mistakes? Get a good night's sleep. It's not optional. #zzzs



As a Veteran, you likely know many people who have or had pain. Think about one of them who could inspire you to manage your pain.



How can your team support you? Think about what you need and give them their marching orders. They'll be glad to help.



Stress can make people more prone to pain. If you lower your stress, you can help lower your pain. See PAC activity Get the Facts [short-url].

Study Design

- Pilot study with a 30-day follow-up to examine the acceptability and preliminary effectiveness of Health eRide
- Participants included 69 Veterans with chronic pain
- Users completed stage of change algorithms, Pain Impact Questionnaire™,1 and pain rating scales at baseline and follow-up
- At follow-up, users also completed a measure of acceptability and the System Usability Scale (SUS), and the Patient Global Impression of Change Scale2.



1. Becker, J., Saris-Baglama, R. N., Kosinski, M., Williams, B., & Bjorner, J. B. (2005). The Pain Impact Questionnaire (PIQ-6™): A user's guide. Lincoln, RI: Quality Metric Incorporated
2. Dworkin, R.H., Turk, D., Wyrwich, K.W., et al. (2008) Interpreting the Clinical Importance of Treatment Outcomes in Chronic Pain Clinical Trials: IMMPACT Recommendations. *The Journal of Pain*, 9(2), 105-121.

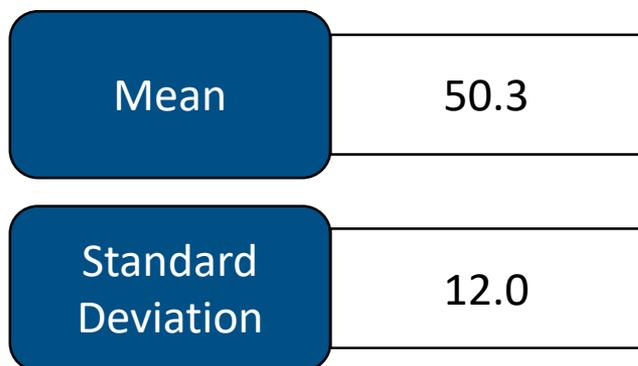
^ There were no significant differences on baseline demographics between those who completed the follow-up assessment and those who did not.

Pilot Test - Participants

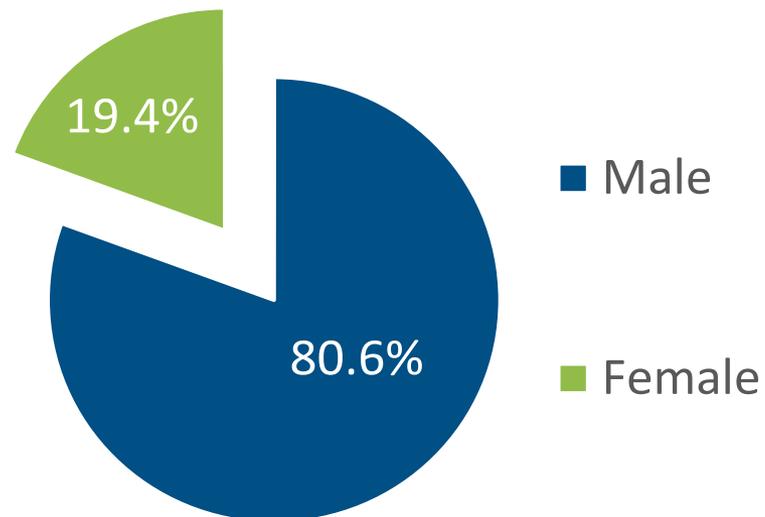
Number of Baseline Participants Recruited by Site (N=69)

VACHS	29
SSI	31
Community	9

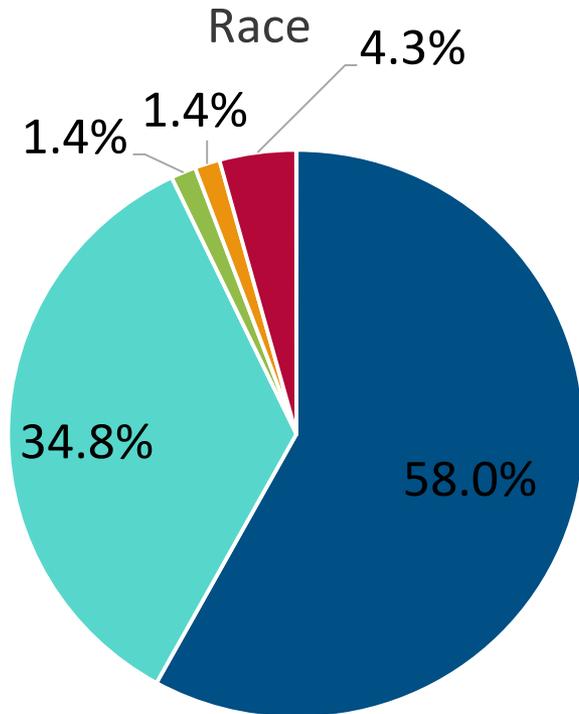
Age



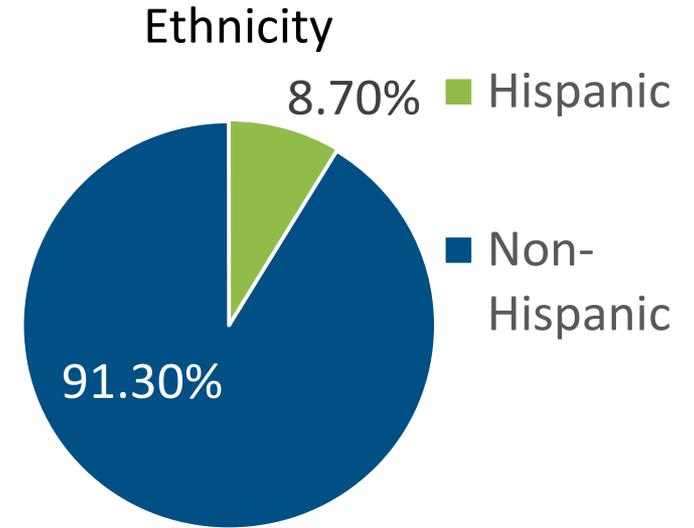
Gender



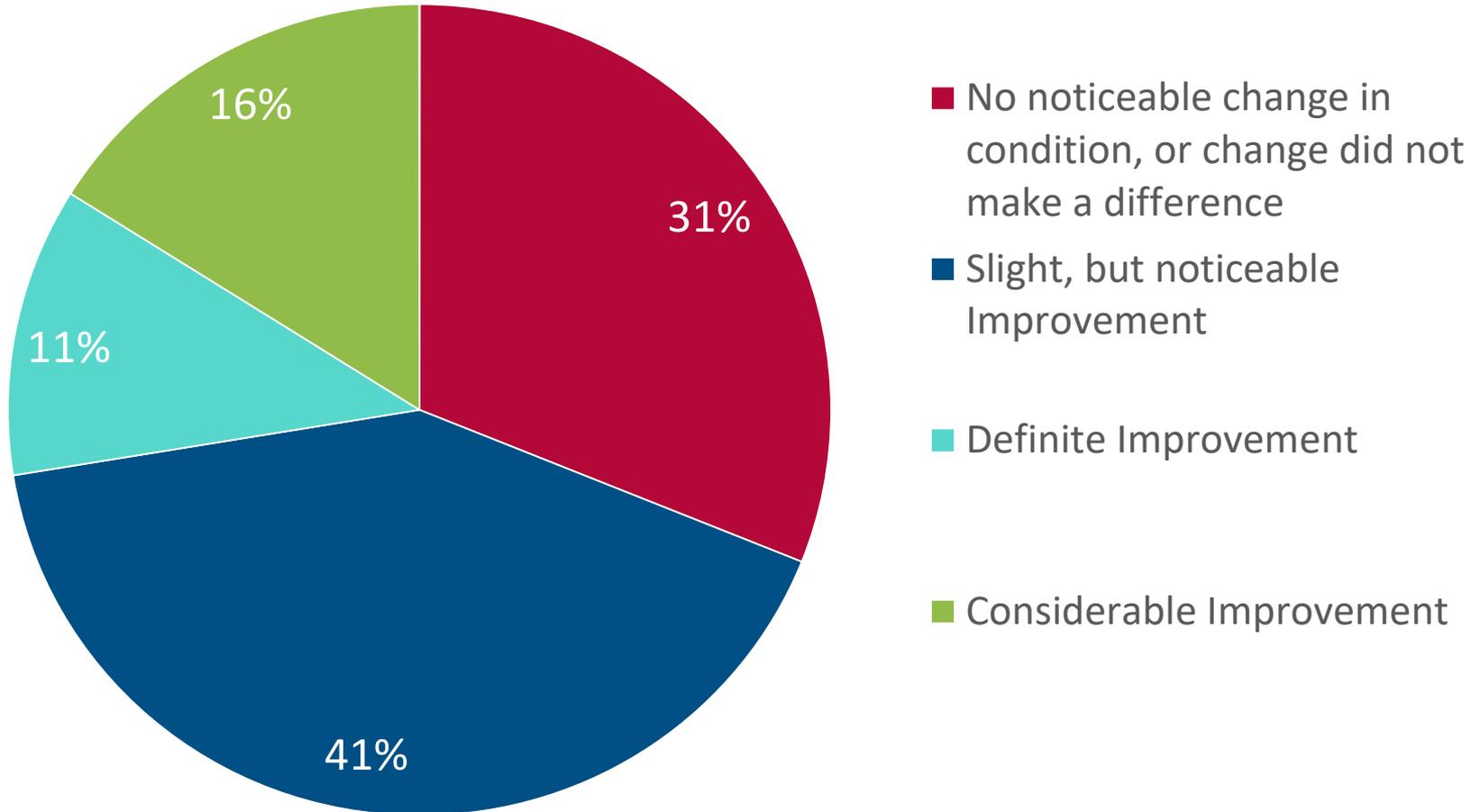
Demographics



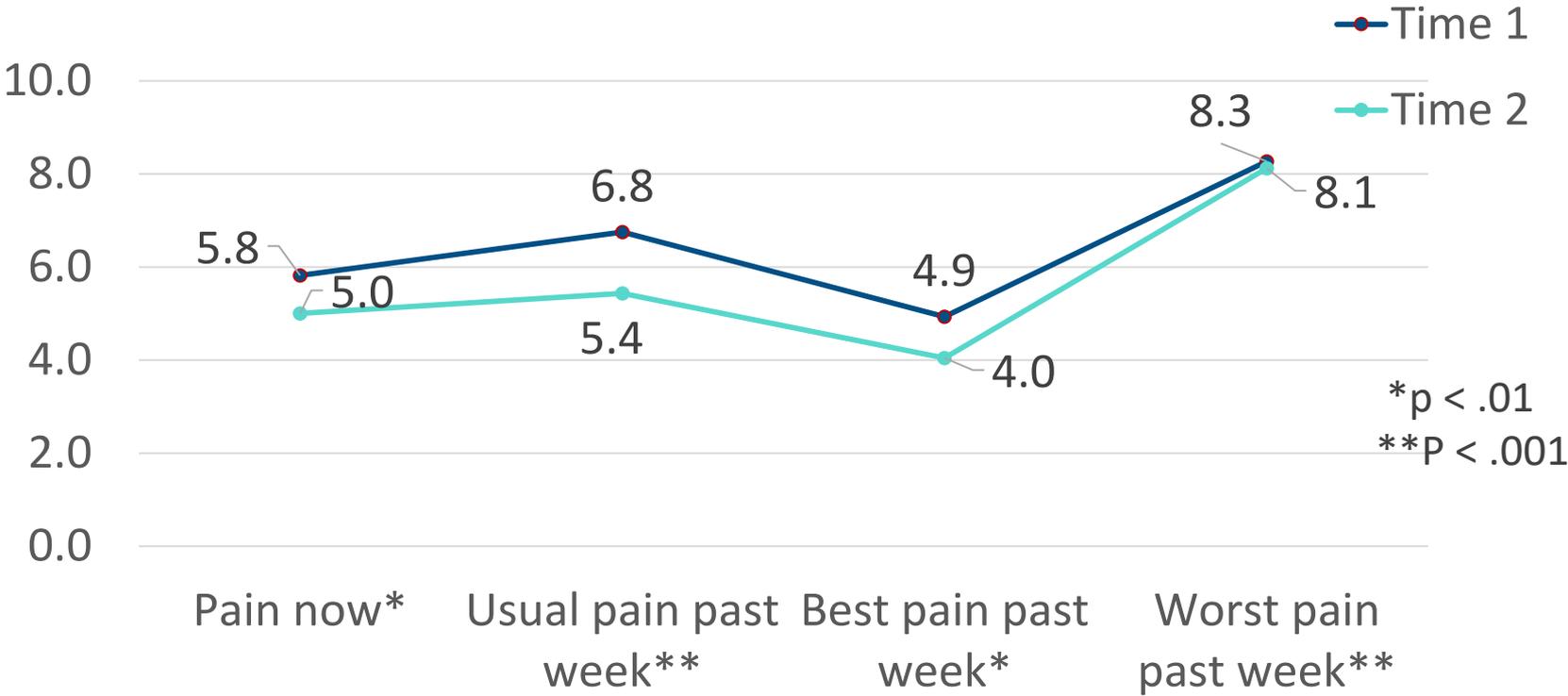
- White
- Black
- Asian
- American Indian or Alaska Native
- Other



Patient Global Impression of Change Scale



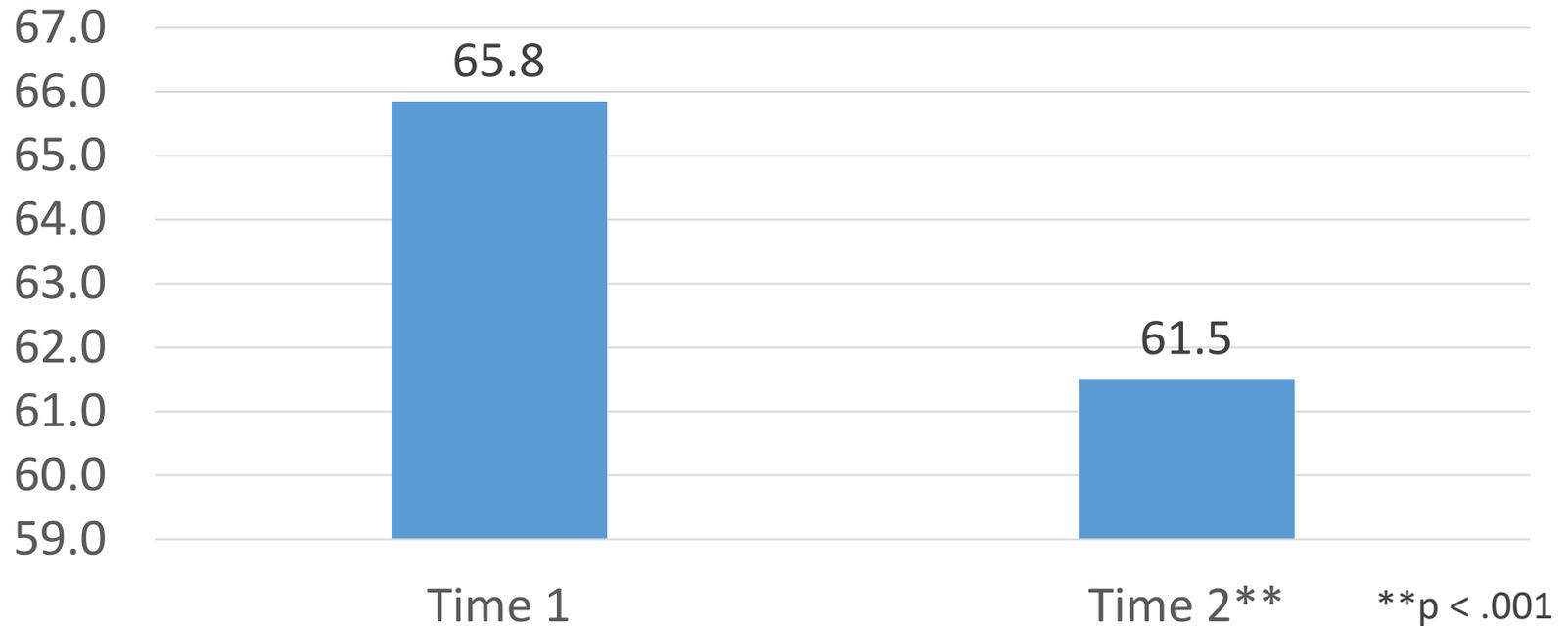
Pain Rating



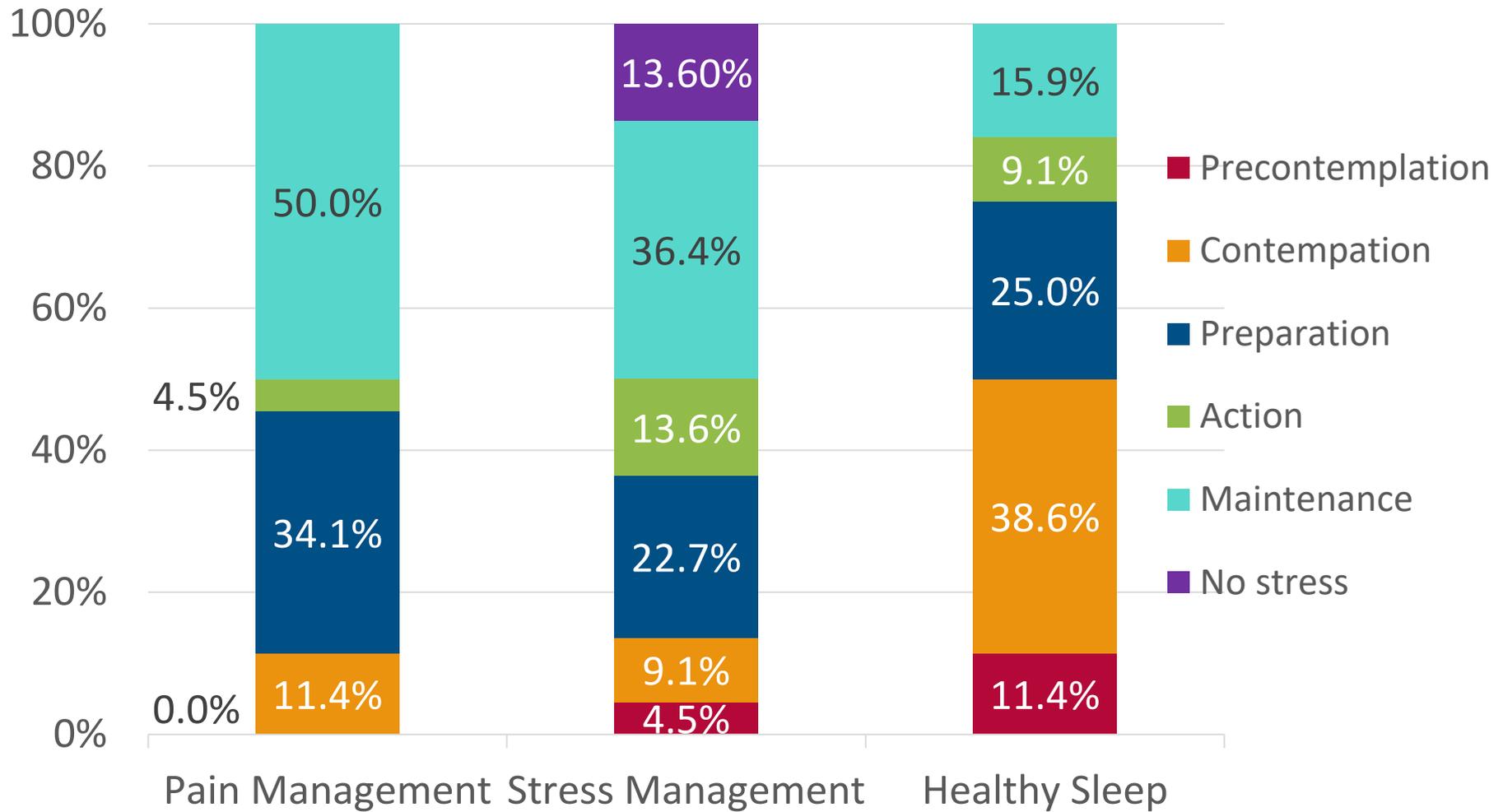
partial $\eta^2 = .20 - .38$

Pain Impact Questionnaire (PIQ-6™)

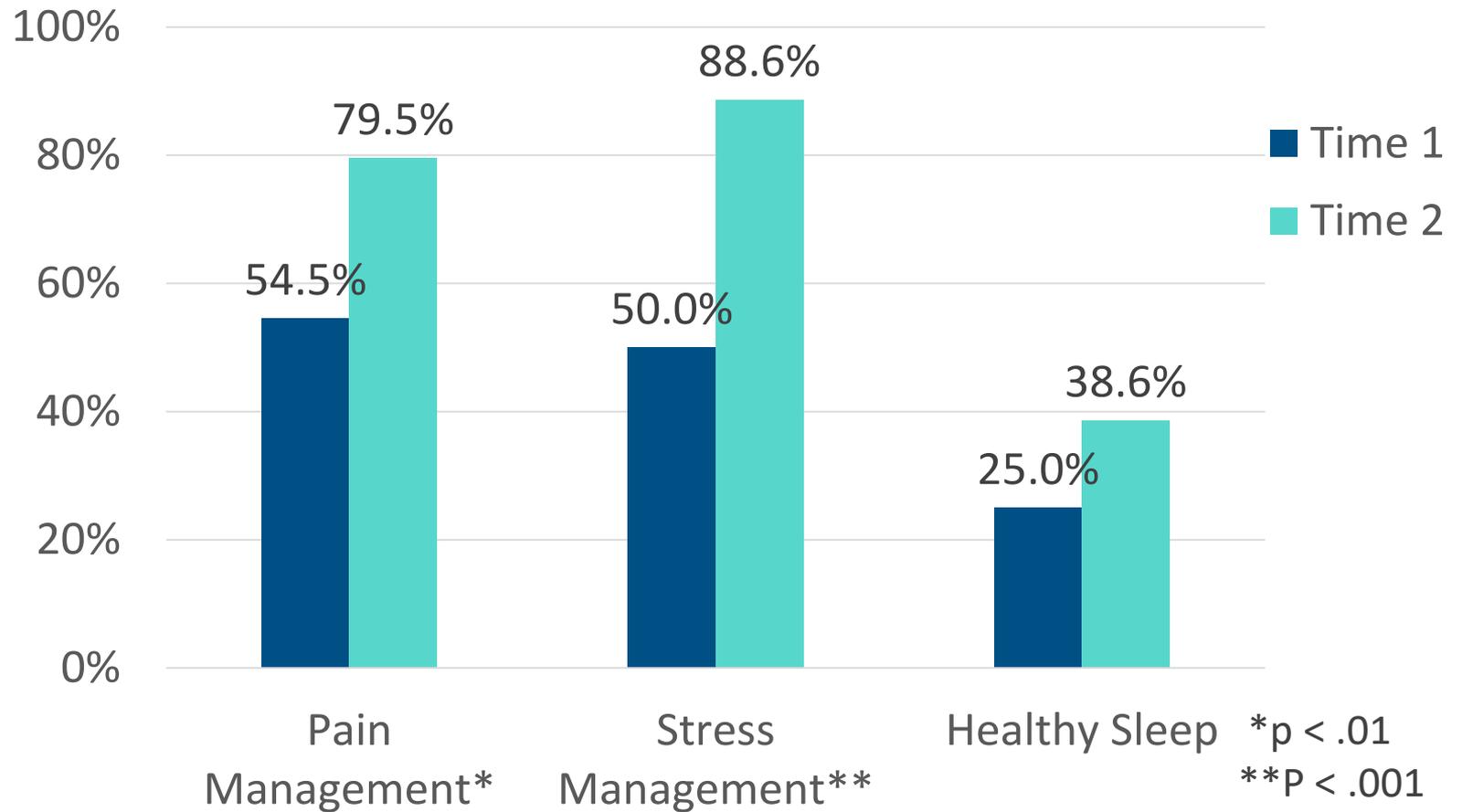
- Six-item measure of pain severity and its impact on health-related quality of life



Baseline Stage of Change (N=44)



Change in Stage of Change: Movement to Action/Maintenance



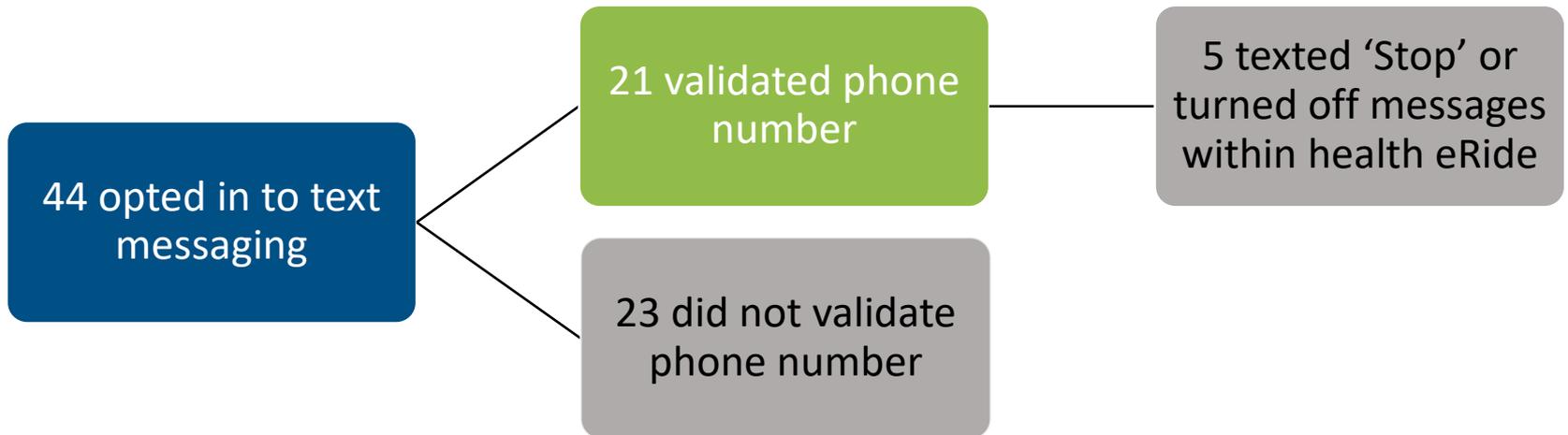
Pilot Test - Outcomes

Stage of Change

A or M – Stress Management	50.0%	88.6%	13.47	<.001	18.000
A or M – Healthy Sleep Habits	25.0%	38.6%	2.50	.113	4.000

Outcome	Time 1 Mean (SD)		Time 2 Mean (SD)		F	p	Partial eta ²
Post Traumatic Stress Disorder	31.4	(21.5)	27.2	(21.8)	4.03	.051	.086

Text Messaging



Pilot Test – Usability and Acceptability

- System Usability Scale = 65.4
 - Score of 65+ indicates usability
- Acceptability = 3.2
 - Score of 3+ indicates acceptability
 - Questions adapted from 2 measures:
 - NCI's Education Materials Review Form
 - A measure used to evaluate tailored, stage-matched intervention manuals
- Potential Opportunity
 - “The program was designed for Veterans” response scores fairly low
 - More customization for Veterans may improve outcomes
 - Could findings generalize to non-Veteran populations?

Qualitative Feedback #1 – What did you like most about the program?

“It made me consider the things I have done to improve my quality of life with pain...exercise, knowing when to take it easy, sleep, eating better.”

“The program is very easy to use, large print, very intuitive, not a cumbersome program.”

“All of it really but the steps the program gives is easy to follow in a pace u control at your own pace they [sic] some methods I used and others I am working on.”

“It not only asked me about my pain and issues, but it also gave me solutions to resolve my issues.”

Qualitative Feedback #2 – What did you like least about the program?

“Some areas were a little confusing...needed to re-read directions, in order to understand what you were looking for.”

“The initial subway hub was confusing and the layout didn't help.”

“There were no new concepts, everything this "system" told me to do I have been told a thousand times by providers and none of it worked.”

“Some of the questions were a little difficult to answer based on the answer choices.”

“It seemed to take a lot of questions to get to a conclusion. After I go through everything I am not really sure how to find a particular piece of information that was provided.”

Qualitative Feedback #3 – How could the program be improved?

“Easier to drill down into the information. [M]ore concise way to get to the root of the problem and give the option for more info. It would also be nice if there was a notebook like feature where you could save parts that interest you for future reference.”

“Videos would be a good tool, seeing reactions of real people and how they manage pain the healthy way.”

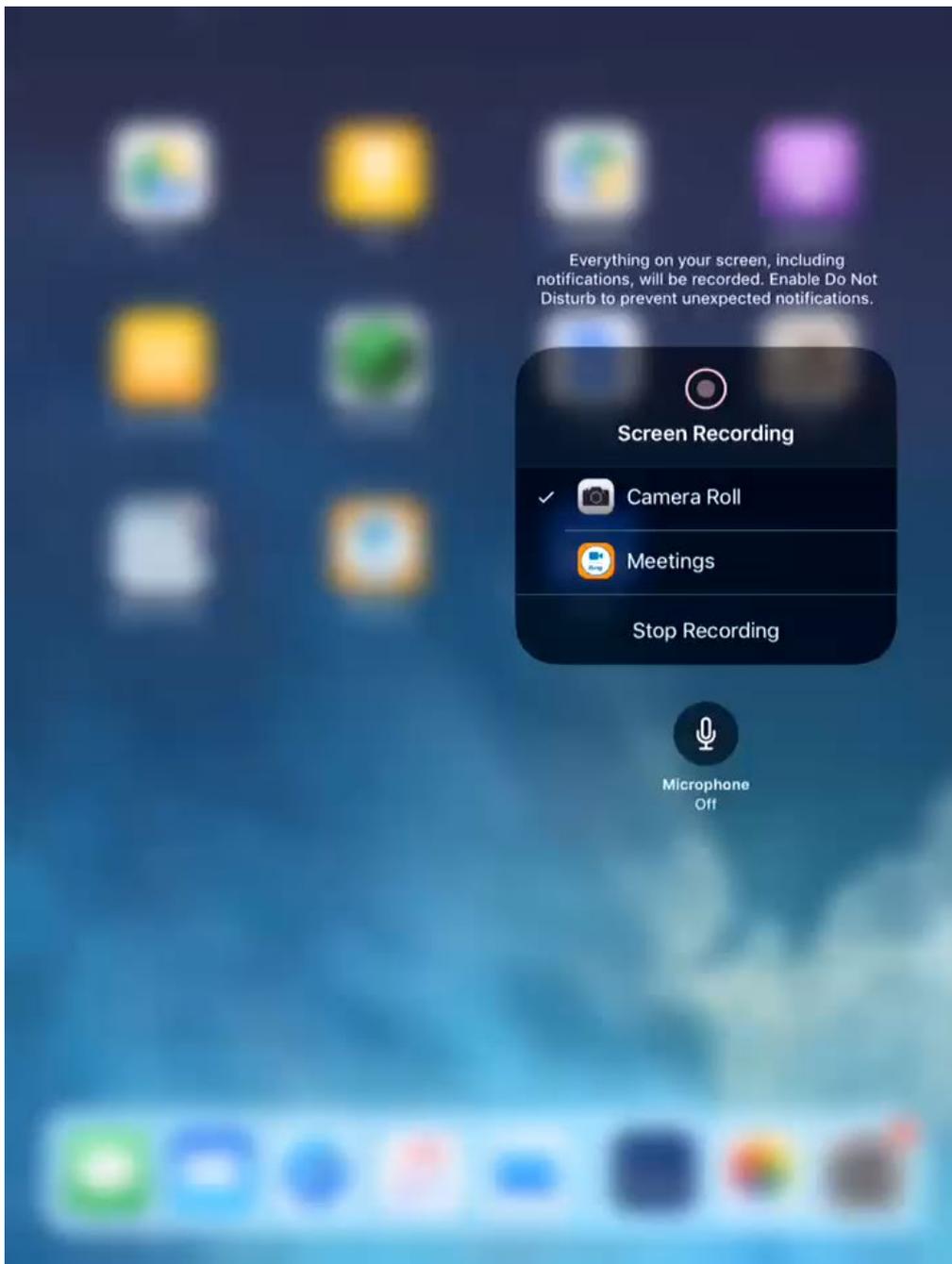
“I didn't notice if there was an audio option for the program. This program was not good for mobile use. Might consider a mobile site.”

Conclusions

- Participants reported clinically and statistically significant reductions in pain, pain impact, and readiness to employ self-management strategies for pain.
- There was a significant increase in readiness to effectively manage stress and to have healthy sleep habits.
- There was also an effect on posttraumatic stress symptoms and an increase in the awareness of the benefits of self-managing pain.

Conclusions

- The input of key stakeholders was critical to the development of Health eRide.
- Initial outcomes clearly demonstrate the impact of end-user input and provide encouraging evidence of the acceptability and effectiveness of incorporating principles of gamification into a theoretically-grounded intervention for Veterans at all levels of readiness for self-managing chronic pain.



Everything on your screen, including notifications, will be recorded. Enable Do Not Disturb to prevent unexpected notifications.

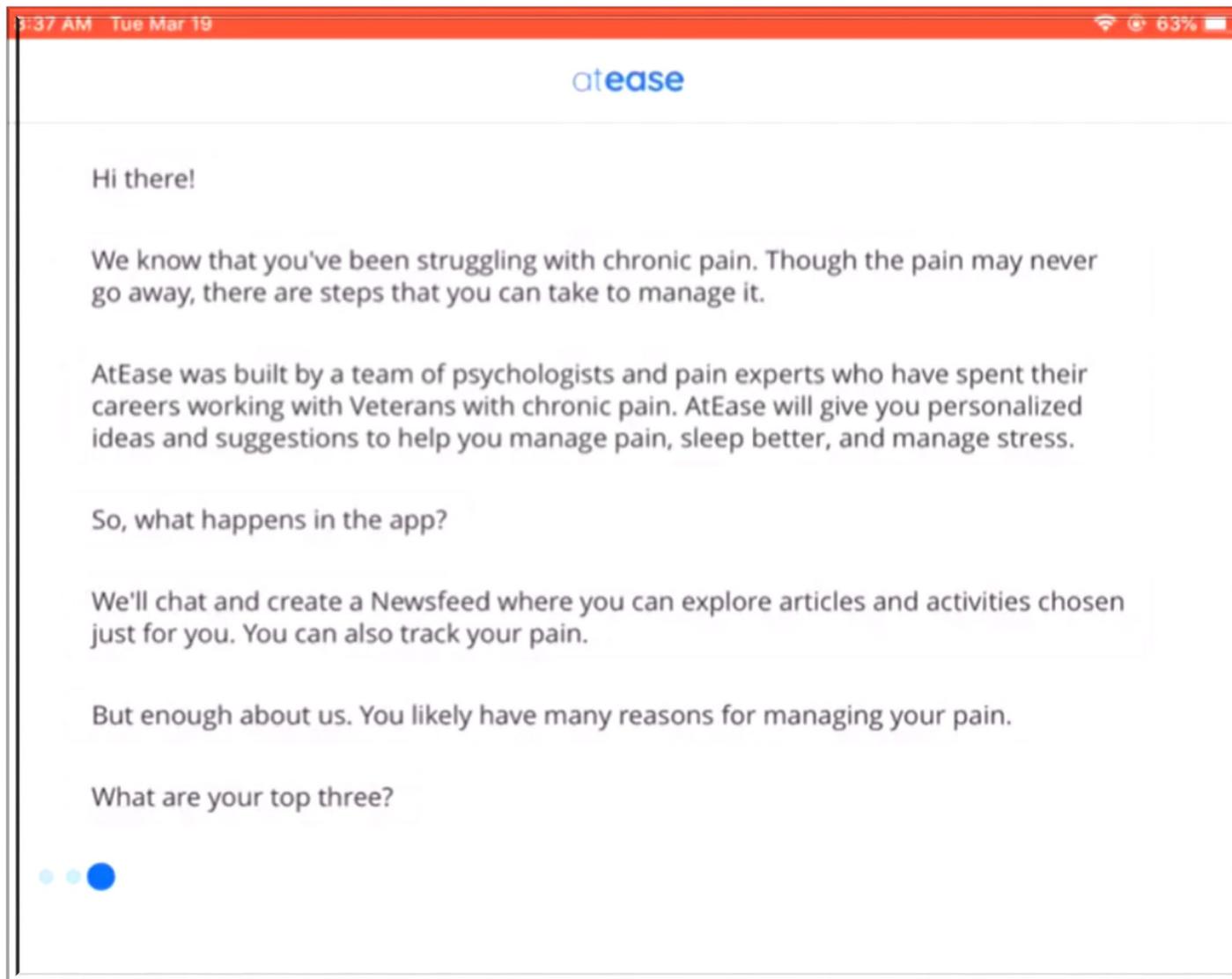
Screen Recording

- Camera Roll
- Meetings

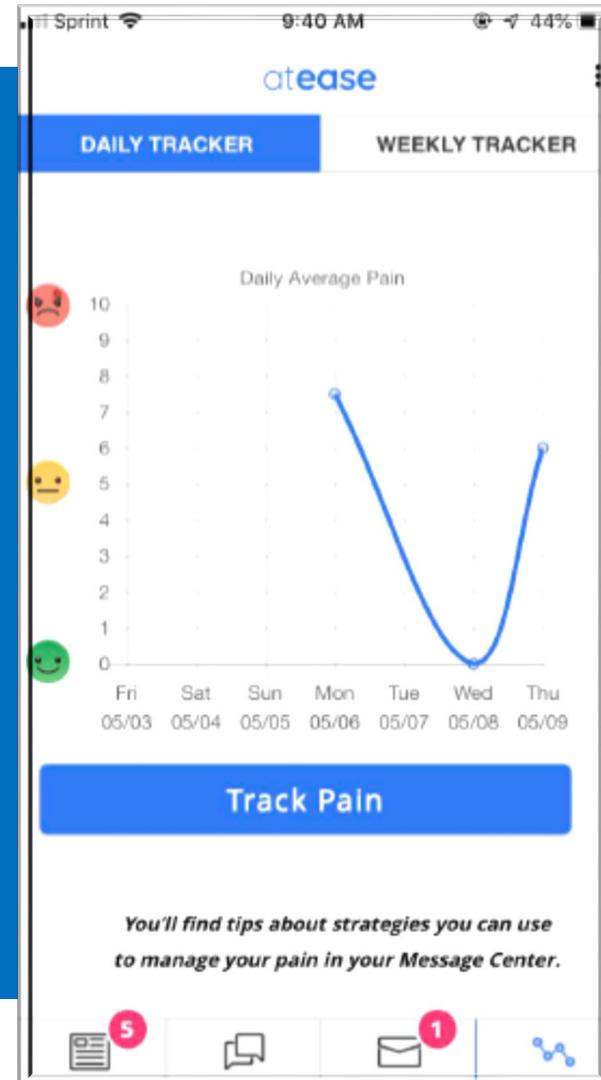
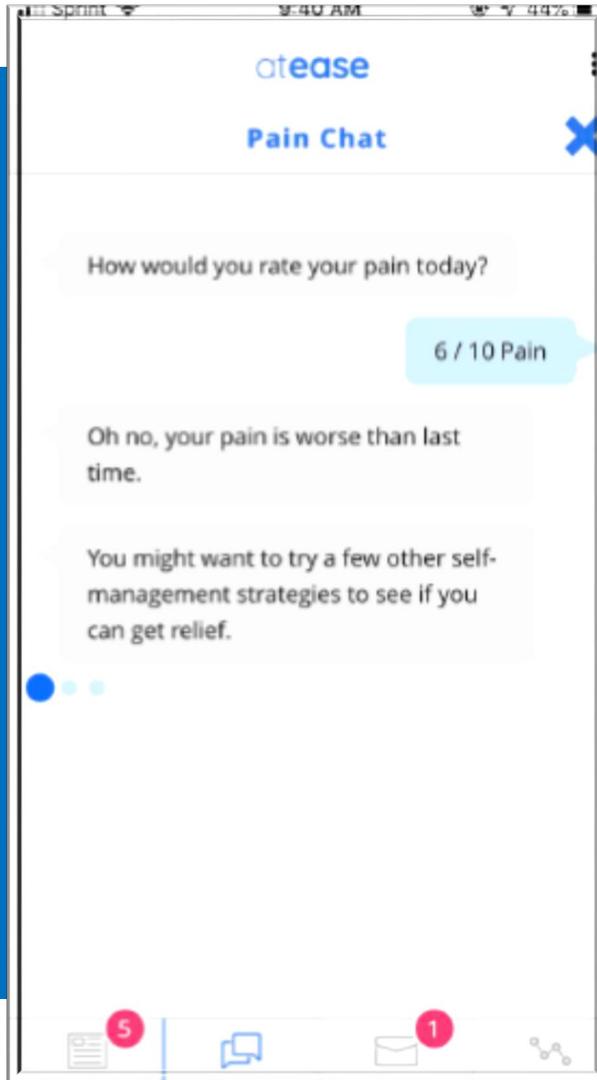
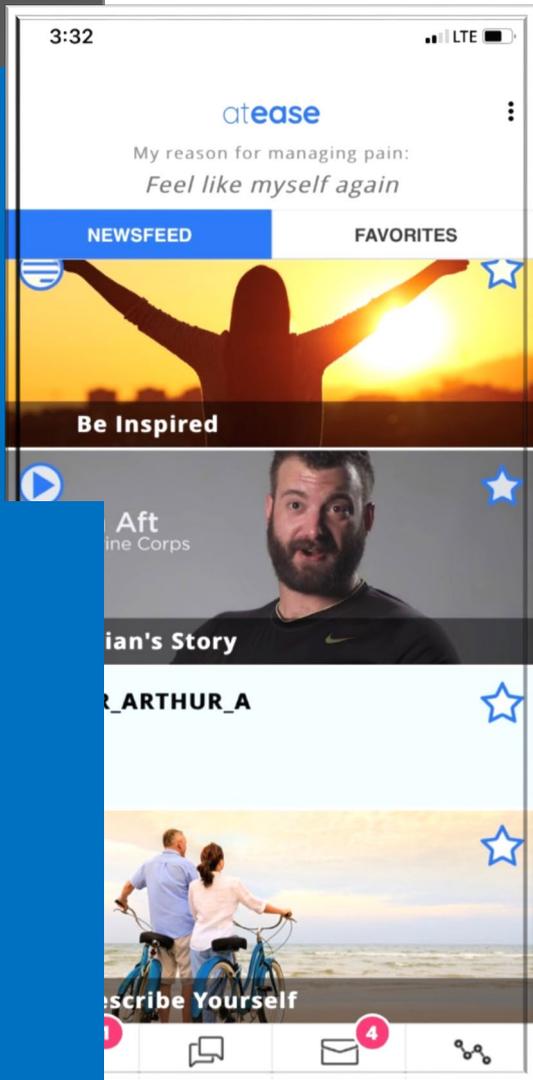
Stop Recording

Microphone
Off

Pain Self-Management



Pain Self-Management



Recruitment Channels

- Military Times
- Student Veterans of America
- University colleague word of mouth
- VA Connecticut Healthcare System (VACHS)
- Providence VA Medical Center
- Veteran's Centers
- Employers
- American Chronic Pain Association Veterans in Pain Events
- Veteran Business Outreach Coordinators
- Social media ads (Facebook, Craigs List, LinkedIn)
- Other community organizations that serve Veterans
- Bus ads (Capital Metro Austin, Providence, RI)
- Veteran resource fairs and community events

DISCUSSION / Q&A

