

Mi-CCSI

Center for Clinical
Systems Improvement

PHYSICAL THERAPY

A Valuable
Tool for Pain
Management

OBJECTIVES

- Identify evidence based non-pharmacologic interventions for pain.
- Describe the ways in which Physical Therapy can skillfully deliver evidence based interventions for pain.
- Describe how physicians and allied health team members' can address common barriers to referral and participation in Physical Therapy
- Illustrate how primary care providers and allied health team members knowledge of the specific interventions employed in physical therapy can support the patient's recovery.

PT'S CONTRIBUTION TO E.R.A.S.E.

E MOTIONS

- Stress management
- Pleasant activity scheduling
- Resilience

R E F L E C T I O N S

- Reframing
- Relaxation

A C T I O N S

- Exercise
- Pacing
- Problem solving

S L E E P

- Reinforce sleep hygiene

E N V I R O N M E N T

Non-Pharmacological Therapies for Chronic Pain States

Strong Evidence

- Education
- Aerobic exercise
- Cognitive behavior therapy



Modest Evidence

- Strength training
- Hypnotherapy, biofeedback, balneotherapy



Weak Evidence

- Acupuncture, chiropractic, manual and massage therapy, electrotherapy, ultrasound



No Evidence

- Tender (trigger) point injections, flexibility exercise



PAIN & PT

- **Low back pain.** A review of >60 randomized controlled trials (RCTs) evaluating exercise therapy for adults with low back pain found that such treatment can decrease pain, improve function, and help people return to work.¹
- **Before & after surgery.** A review of 35 RCTs (~3,000 THA patients): preoperative exercise and education led to significant reductions in pain, shorter lengths of stay postoperatively and improvements in function.²
- **Arthritis.** PT exercise programs can reduce pain and improve physical function among individuals with hip and knee osteoarthritis.^{3,4}

HOW?

■ Advantages:

■ **Time**

- Assessment
- Treatment
- Education

■ **Experts** in neuromusculoskeletal assessment and treatment

■ **Screen** for red flags, impact of co-morbidities, patient safety

■ **Provides Experiential Learning**

■ Effective **Training** regimens

■ **Timing** of Care

- Secondary Prevention: halt the progression from Acute to Chronic Pain

■ Able to simultaneously treat an acute flare up in the presence of a chronic pain state.

BEST EVIDENCE: AEROBIC EXERCISE

E.R.A.S.E: ACTION

- Physical Therapy can help safely dose patients with aerobic exercise according to their specific needs, co-morbidities, and patient preferences ^{5,6}

Evidence Based Formats:

- Graded exposure
- Rating of Perceived Exertion scale (RPE)
 - 6-7 is the target for effort that produces *optimal results*
 - To foster patient engagement: may start lower... however, too low jeopardizes results.

1	Very Light Activity (anything other than complete rest)
2-3	Light activity (feels like you can maintain for hours, easy to breath and carry on a conversation)
4-5	Moderate Activity (feel like you can exercise for long periods of time, able to talk and hold short conversations)
6-7	Vigorous Activity (on the verge of becoming uncomfortable, short of breath, can speak a sentence)
8-9	Very Hard Activity (difficult to maintain exercise intensity, hard to speak more than a single word)
10	Max Effort (feels impossible to continue, completely out of breath, unable to talk)

MODERATE EVIDENCE: STRENGTH TRAINING

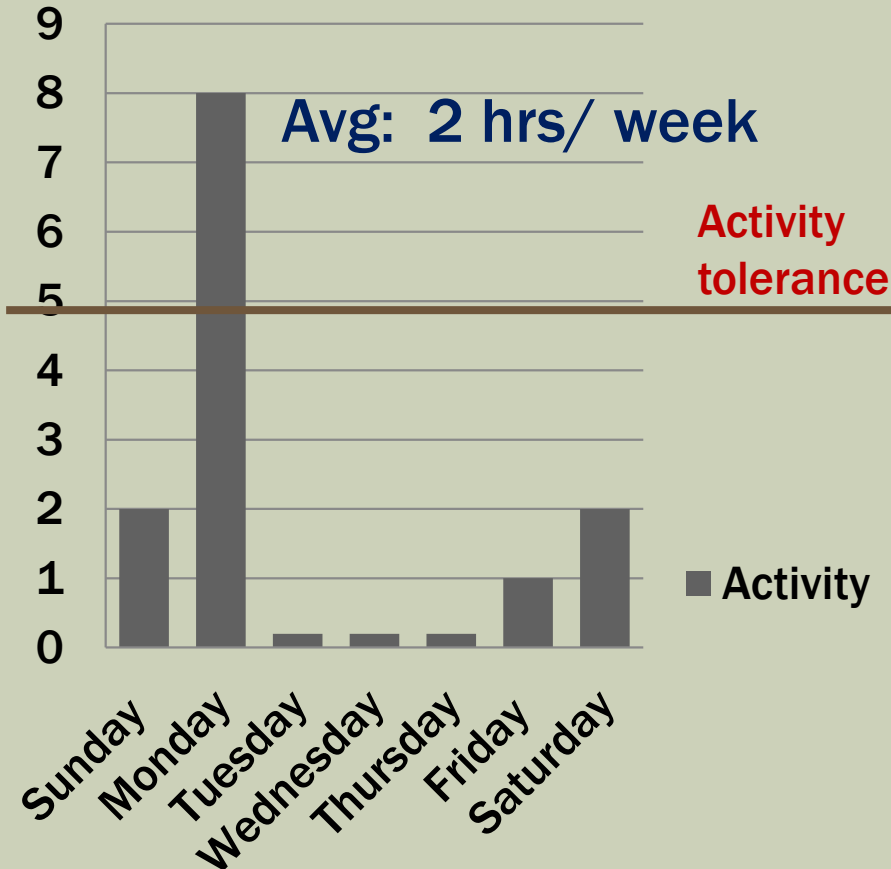
E.R.A.S.E: **ACTION**

- Physical Therapy can evaluate for weakness and deconditioning that is increasing the demand on a patient to complete their ADL's.
 - Sit to stand
 - Stair climbing
 - Lift / push / pull / carry.
- Pro's ^{7,8}
 - Efficient: frequency can be 1-2 times a week
 - Useful when patient has access and a history of strength training
 - Endogenous opiate release
- Con's
 - Dose/response carefully monitored and scripted to not further sensitize patient to becoming active.

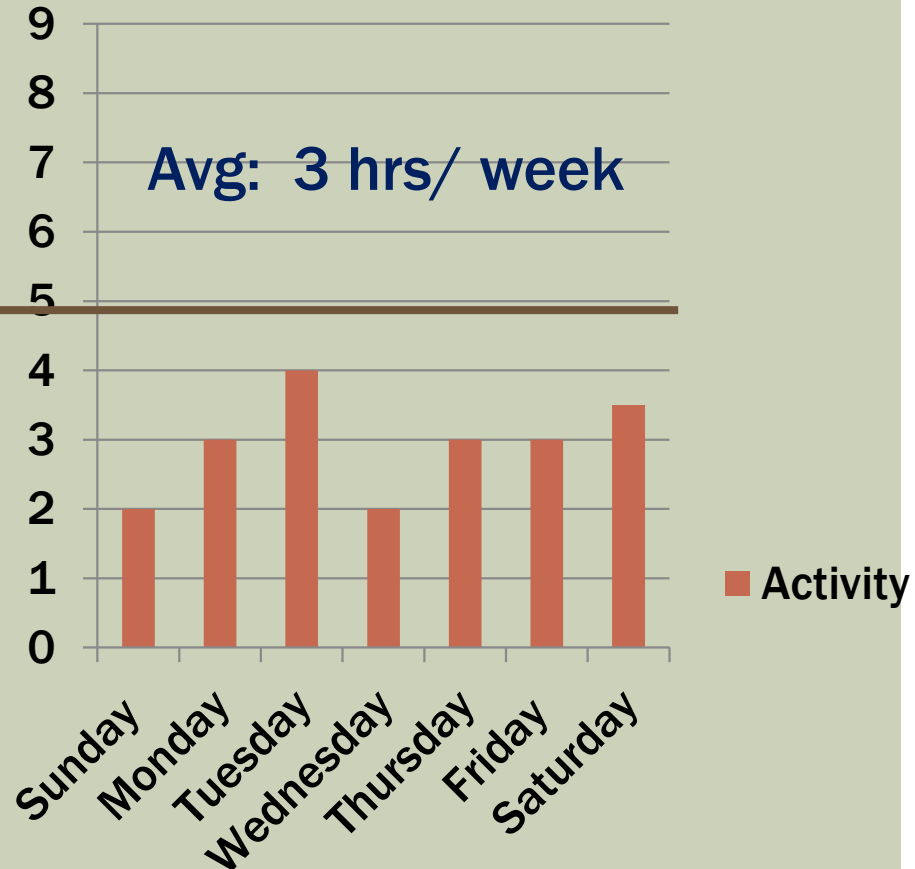
BEST EVIDENCE: EDUCATION

E.R.A.S.E: ACTION

Boom / Bust Cycle



Pacing / Graded Activity^{9,10,11}



PSYCHOLOGICALLY INFORMED CARE

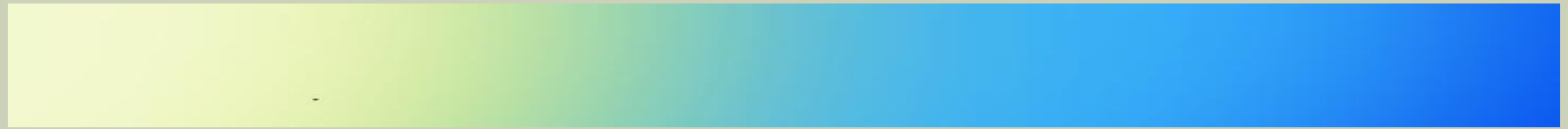
Screen for
modifiable
psychosocial
targets

- Depression
- Fear Avoidance-Kinesiophobia
- Catastrophizing
- Anxiety
- Faulty Beliefs

Interventions-

1. Motivational Interviewing
2. Neuroscience of Pain
3. Behavior Modification
 - CBT
 - ACT
 - Operant Conditioning
 - Graded Exposure

EVIDENCE BASED BUFFET



Traditional
Physical
Therapy

Physical Therapy

+

Psychologically
Informed Care ¹²⁻¹⁶

Behavioral
Health

Psychosocial
factors
addressed by
Placebo

*Intentional Integration of
Behavioral / Motivational
Strategies with
Traditional Biomechanical
Treatments*

**Behavioral /
Motivational
Strategies**

PSYCHOLOGICALLY INFORMED CARE & PT

Sullivan et al.¹⁷

- Patients who participated in the psychosocial intervention in addition to physiotherapy showed significantly greater reductions in ***pain catastrophizing, fear of movement, and depression*** than patients who received only the physiotherapy intervention.
- Reductions in psychosocial risk factors contributed to ***reduced use of the health care system, reduced use of pain medication, and improved return-to-work outcomes.***

PIC PT VS. TRADITIONAL PT

Bodes-Pardo et. al. (2018, RCT)¹⁸

- **Combining pain neurophysiology education (PNE) with exercise (TE) resulted in significantly better results for participants with CLBP, with a large effect size.**

Malfliet, et al. (2018 RCT in *JAMA Neurology*)¹⁹

- **Pain neuroscience education combined with cognition-targeted motor control training appears to be more effective than current best-evidence physiotherapy.**

Vibe-Fersum, et. al. (2013 RCT)²⁰

- The classification-based **cognitive functional therapy group** displayed **significantly superior outcomes** to the manual therapy and exercise group, both statistically ($p < 0.001$) and **clinically.**

BEST EVIDENCE: EDUCATION

E.R.A.S.E: **REFRAMING**

Neuroscience of Pain

Nerves send messages to your brain and your brain decides how much pain you feel—a **lot**, **a little**, or none at all.²¹

- **Pain is always real**, but not always the result of a physical injury.
- **The brain is constantly asking:**
 - **How dangerous is this?**
 - Constantly scanning the body and environment for potential **threats**.
 - The brain notices a threat and reacts with a pain sensation.
- Sometimes the brain continues to send a pain signal long after the injury has healed for several reasons:
- Increased stress and anxiety from:
 - Not knowing the cause of the pain
 - Not knowing how long the pain will last
 - Unsuccessful pain treatments
 - Pain limiting normal activity

BEST EVIDENCE: CBT

E.R.A.S.E: **REFRAMING & ACTION**

HOWEVER,

“Information is to behavioural change as spaghetti is to a brick” William Fordyce

- PIC PT intervention is mostly concerned with changing **actual behavior** *not necessarily cognitions*

BEST EVIDENCE: EDUCATION

E.R.A.S.E: **REFRAMING & ACTION**

Experiential Learning Facilitated in PT

- Exercise or Activities of Daily Living Despite Pain²²
 - Modification of movement: patient is taught strategies to complete common tasks with minimal or no pain
- Pre-determined task termination:²³
- Frequency of exposure is key to changing behavior
 - Schedule activity 3-6 times per day.
 - Change behavior long enough and new belief emerges.

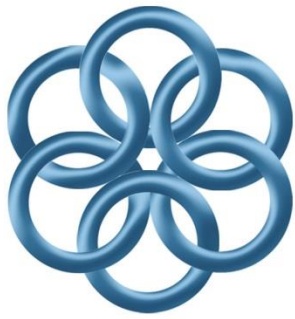
E.R.A.S.E: STRESS MANAGEMENT & RELAXATION

- **Diaphragm breathing**
 - Stop accessory muscles (limbic system activation)
 - Emphasis on slowing respiration rate through increased length of exhalation
 - “Gap” after full exhalation
 - Intentional practice
 - Habits/Mneumonics
- **Concept of total stress (total load on the organism)**
 - Biopsychosocial contributions to pain (SPACE)

E.R.A.S.E: **PROBLEM SOLVING & RESILIENCE**

Tangible Skills

- **Alternative movement strategies**
- **Adaptive equipment**
- **Job Jar**
- **Swipe card at the gym**



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APPLICATION

Allied Health
Teams

DO DIFFERENT - TO GET DIFFERENT

- "I don't believe that either you or I (as a provider) is satisfied with how you are feeling." (*a change is needed*).
- "We have a resource that helps people in pain decrease the amount of suffering that pain brings"
- "Other patients (with chronic pain) report that they are better prepared to deal with pain and they are able to do more of the things in life that they need/want to do."

REFERRAL

■ Motivation:

- Suffering
- Acute on chronic musculoskeletal dx
- Addition of 1 more life stressor

■ Step 1.

- A change is needed: scripting

■ Step 2

- Where do your deficits/ barriers lie? (**SPACE**)

■ Step 3

- Where do you see yourself changing?

■ Step 4

- Self Management, PT, and/or Behavioral Health: **ERASE**

■ Step 5

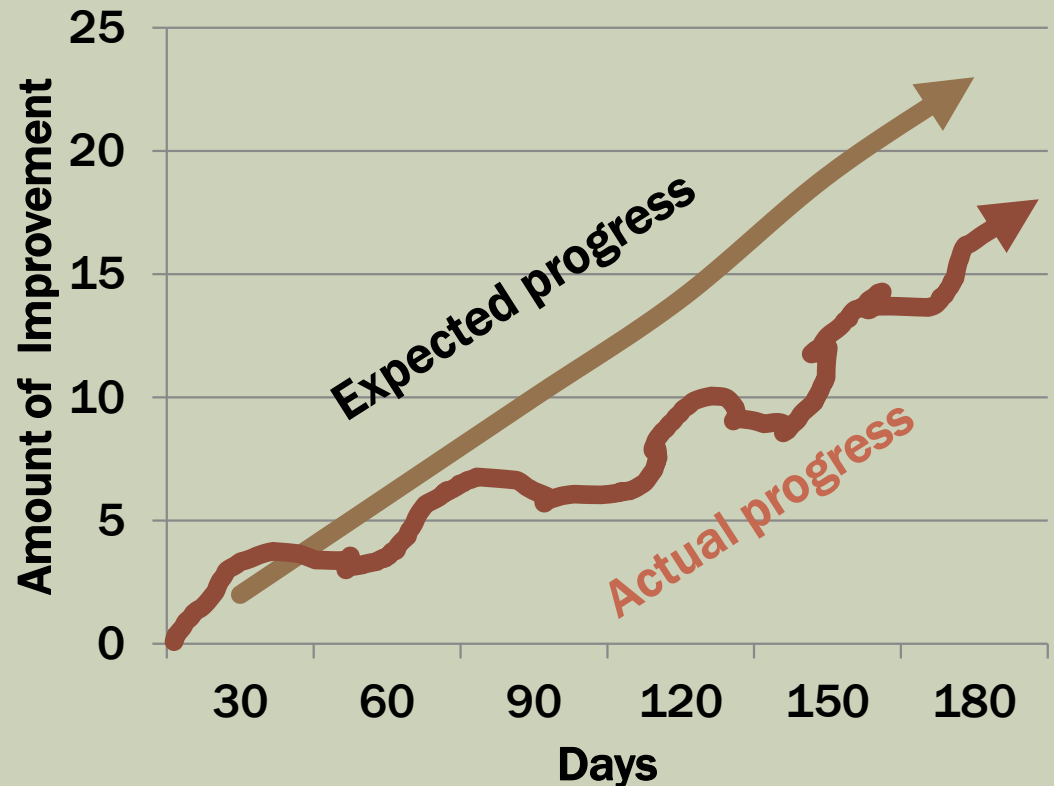
- PDSA

LIFE IS CURVY

Chronic Pain

- Setting Proper Expectations
- Goal is: *Less pain & Increased Activity*
 - Time
 - 6+ months, not 6 visits
 - Neuroplastic changes take time
 - Setbacks are to be expected
 - Focus is on building **Resilience**

Patient Progress



OPTIMIZING HEALTH

■ Sleep Deficits

- Sleep Hygiene: education
- Sleep Apnea: central vs obstructive: referral

■ Comorbid Conditions

- COPD, Asthma, DM II, HTN smoking, etc.
- Medication/Inhaler dosing and compliance
- Psychosocial and Psychiatric health

I'm 80 yrs old



INTERDISCIPLINARY COLLABORATION

What should each team member reinforce about the different disciplines when the patient does not see the benefit?

- **Content:** (Evidence based vs. non- EBP)
 - Passive Tx? Hot pack, US, e-stim, massage, Aquatics, too many patients in the room.
- **Participation:** Effective dosage ever achieved?
- **Practical skills learned?** (transfers, self-soothing, positions of comfort, pacing, sleep hygiene, etc.)
- **Expectations:**
 - Mechanical pain (nociceptive & some neuropathic):
 - quick responses to treatment
 - Neuro Pain (neuropathic and central sensitization):
 - 12 weeks, +12 more weeks once control is established
 - Disruptors: weather, stress, gaps in care, adherence

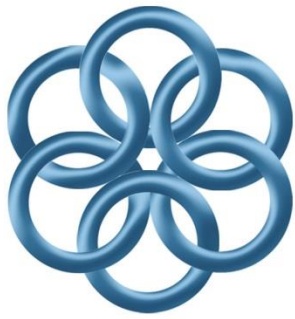
PT MADE ME WORSE!!

During & Post Exercise Sensations

- Any **negative** or **unknown** experience is reason enough to stop activity
- Please explore with your patient:
 - **Activity dosage errors:** too much, too soon, for too long.
 - **Hurt vs. Harm...**
- Post exercise hyperalgesia
 - Malaise after exercise instead of the expected endogenous opiate release
- Normalizing the experience without dismissing it.
- **Forecasting is essential to decreasing anxiety around activity**

REINFORCEMENT

- Failure to progress is not necessarily due to the wrong treatment:
 - Chronic/complex patients need even more reinforcement/encouragement/ reassurance of safety.
 - “I didn’t send you to PT to get fixed, I sent you to PT to get better: whatever, better looks like...”
- prescribe vs. **PRESCRIBE PT!!!**
 - Follow up with the same vigor that you would regarding a medication.
 - Expect Positive outcomes



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CASE STUDIES

CASE STUDIES

- 29 y.o M referred to PT for Neck Pain. Pain has become progressively more intense and frequent over the past year & presents after increased activity (work or ADL's) in the last 4 months he has also been suffering from HA and his right arm is numb and tingling at times.
- Hx of head injury at 15 yrs old, depression, anxiety. He has had neck pain on/off since he was 15 yrs old.
- PT eval:
 - Patient labile at evaluation as he recounts near death experience with head injury.
 - Negative for red flags, radiculopathy
 - + for right thoracic outlet syndrome and increased cervical/thoracic muscle tension
 - Pain is isolating him from social interaction: comes home after work & naps. Declines invitations to socialize

CASE STUDY

PT Treatment

- Diaphragm breathing
- Stretch right pectoral minor
- Neuroscience of pain
 - Explore emotional aspects of pain
- Wean from naps: restore normal sleep cycle.
- Strengthening: tolerance to work demands
- Goals:
 - Perform ADL's on good pain days & bad
 - Start accepting invitations to socialize
 - Increase positional tolerance (sit/stand) to enable social interaction.
 - Independent with self care (diaphragm breathing, stretching)

CASE STUDY

- 56 y.o F referred to PT with chronic LBP on disability for 25 yrs. MRI shows normal age related changes. Patient has difficulty with transferring in/out of bed. Patient reports that once pain starts on a given day: it can't be stopped- patient stops all activity.

PT Eval:

- Negative for red flags, reflexes/sensation: WNL, myotomal strength 5/5
- Poor transfer technique with sit to stand as well as supine to sit. When modified: patient experiences less discomfort and greater ease.
- Patient is skeptical, disengaged at the visit, also shares that she is not sure how PT can help her when her spine is crumbling (MRI findings)

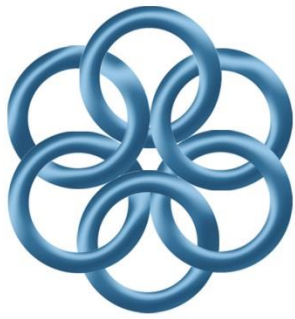
CASE STUDY

PT Treatment

- Transfer training
- HEP: bike riding
- Education: MRI findings
- Very slow progress
 - Barrier: MRI findings

■ PCP

- *“I didn’t send you to PT to get fixed, I sent you to PT to get better: whatever, better looks like...”*
- Renewed effort
 - Added throwing a softball with her grandkids
 - Increased miles on bike.



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SUMMARY

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- PT can utilize evidence based treatments that are highly effective for both Acute and Chronic pain.
- Psychologically Informed Care and Neuroscience education is a growing specialty with PT.
- PT can provide valuable patient education and experiential learning in regard to activity.
- PT can address acute and chronic pain episodes, within the context of other chronic disease burden.
- Physician and Allied Health team play an important role in supporting the patient and PT plan of care through exploring activity dosage, barriers to activity, and forming accurate expectations for progress.

PIC PT

■ How to refer:

- Psychologically Informed Care (PT)
- Therapeutic Neuroscience Education (TNE)
- Pain Science / Neuroscience of Pain
- Therapeutic Pain Specialist (TPS)
- Biopsychosocial Management of Pain
- CBT and PT
- Pain Neuroscience Education (PNE)

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