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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.

EMOTIONS

- Stress management
- Pleasant activity scheduling
- Resilience

REFLECTIONS

- Reframing
- Relaxation

ACTIONS

- Exercise
- Pacing
- Problem solving

SLEEP

- Reinforce sleep hygiene

ENVIRONMENT

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.**[2]

- **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**.[3]

- **Arthritis.** **PT** exercise programs can **reduce pain and improve physical function** among individuals with hip and knee osteoarthritis.[4,5]

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
  - Able to simultaneously treat an acute flare up in the presence of a chronic pain state.
  - Timing of Care
    - Secondary Prevention: halt the progression from Acute to Chronic Pain

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***[12,13]

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.

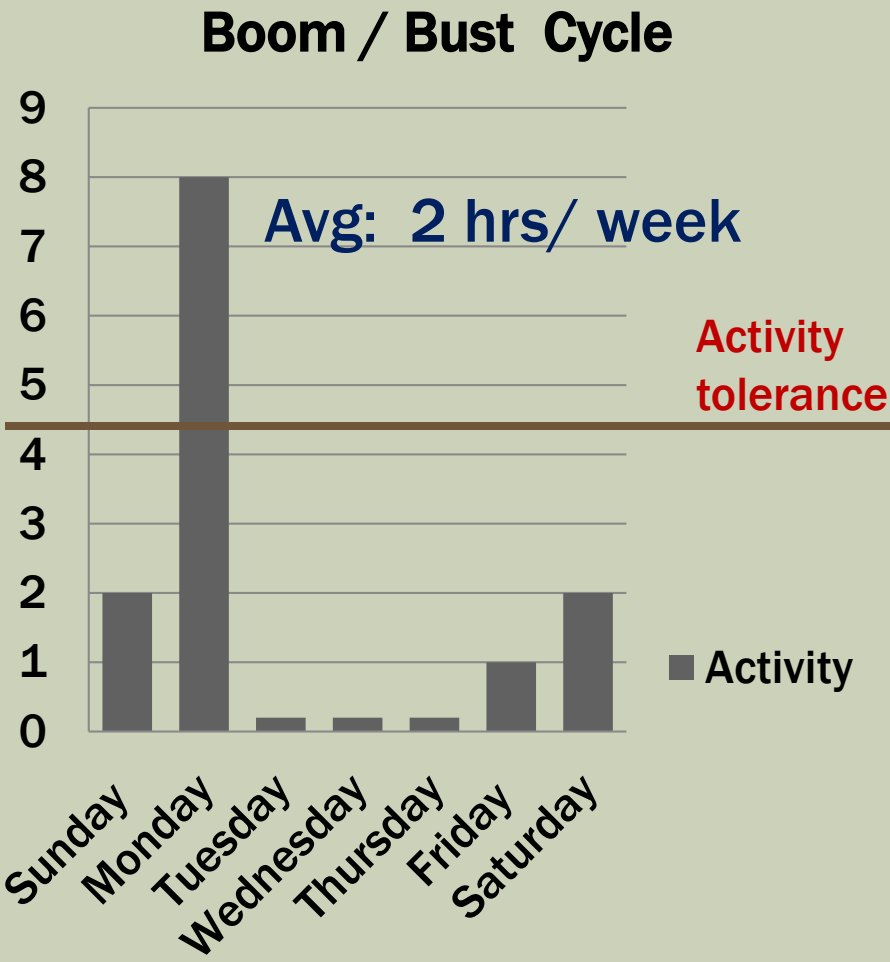
1	**Very Light Activity** (anything other than complete rest)
2-3	**Light activity** (feels like you can maintain for hours, easy to breath and carry on a conversation)
4-5	**Moderate Activity** (feel like you can exercise for long periods of time, able to talk and hold short conversations)
6-7	**Vigorous 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)

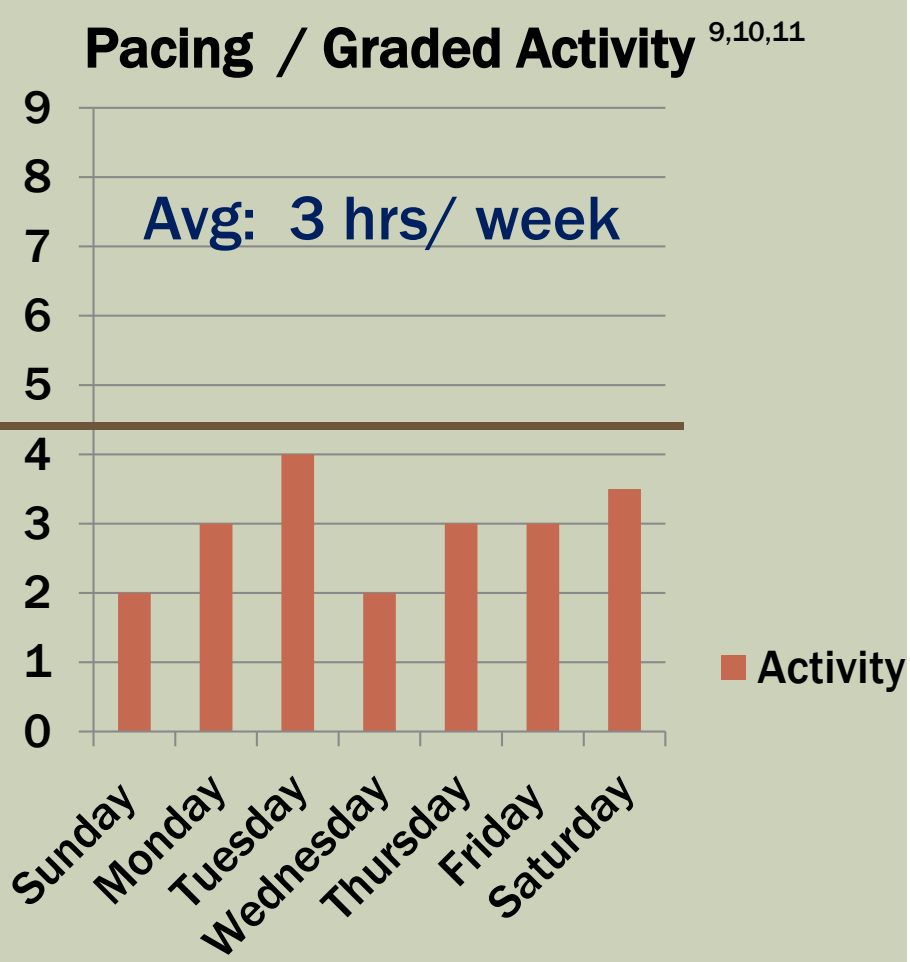
MODERATE EVIDENCE: STRENGTH TRAINING
E.R.A.S.E: ACTION

- 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[18,19]
  - 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





PSYCHOLOGICALLY INFORMED CARE

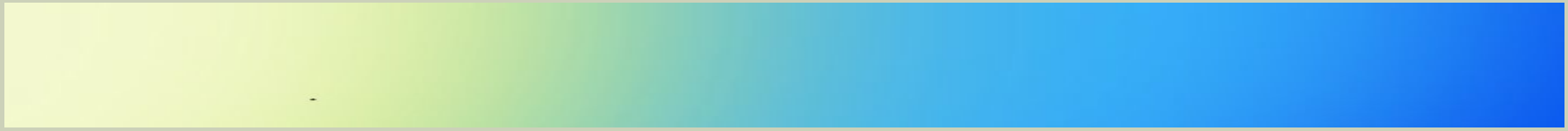
Screen for ***modifiable*** psychosocial targets

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

Pillars-

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	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. (2010)[25]

- 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)[26]

- ***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*)[27]

- ***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)[28]

- **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[6]

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

- ***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 Pain[7]
  - Modification of movement: patient is taught strategies to complete common tasks with minimal or no pain
- Pre-determined task termination:[8]
- 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 increase length of exhalation
  - “Gap” after full exhalation
  - Intentional practice
  - Mneunonics
- 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 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.”

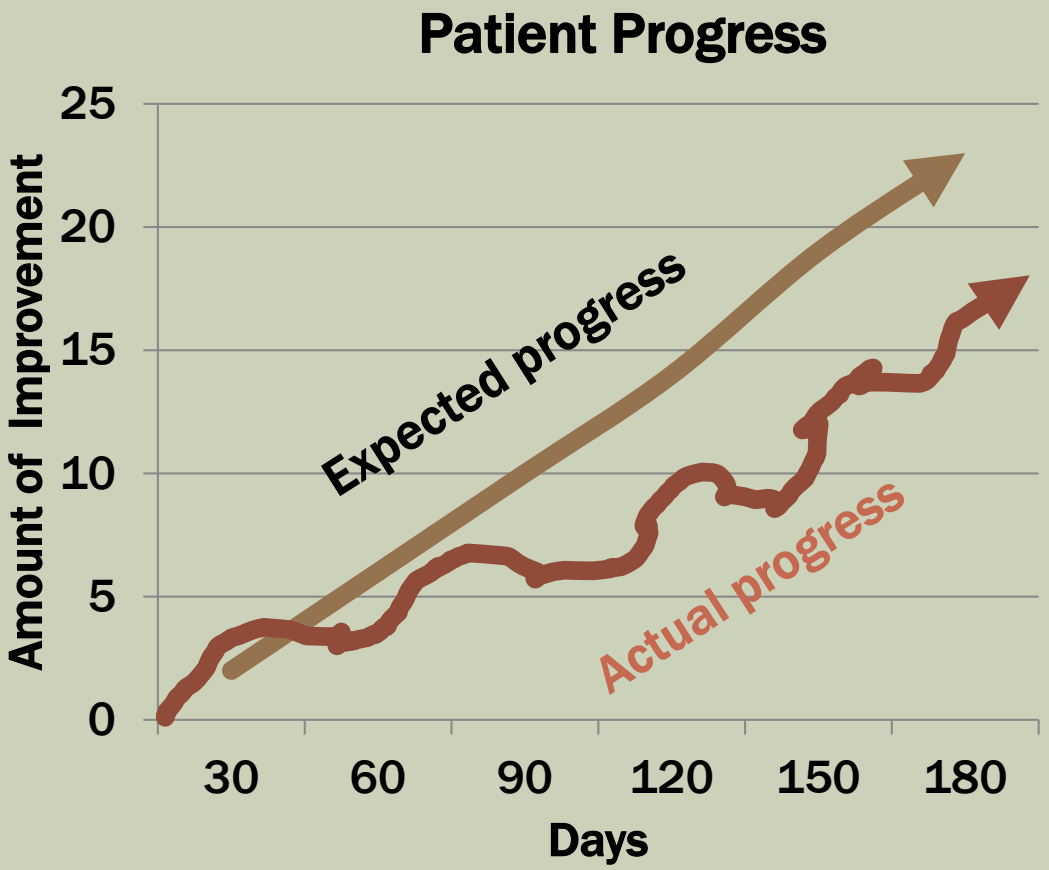
REFERRAL

- Motivation:
  - Suffering
  - Acute on chronic musculoskeletal dx that the patient is concerned about.
  - 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

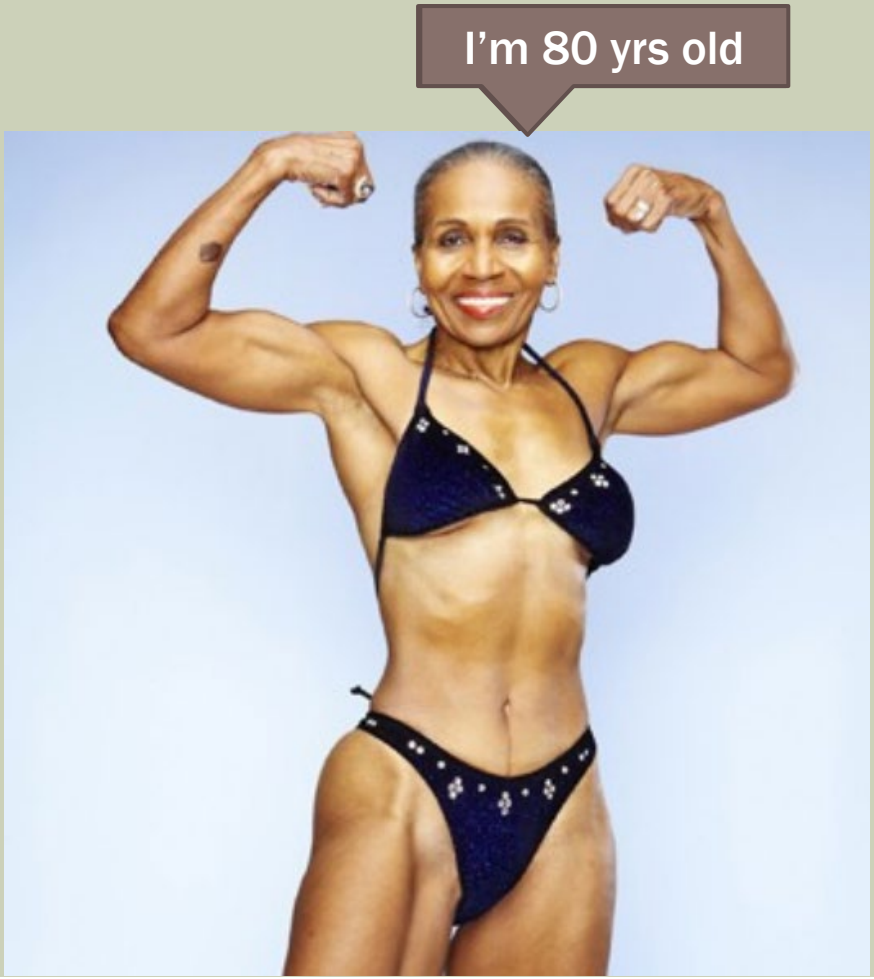
Chronic Pain

- 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***



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



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 she 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 just has to stop 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)

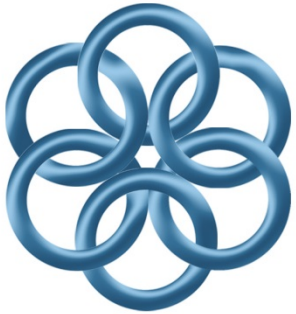
CASE STUDY

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 Neurophysiology Education (PNE)

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