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PHYSICAL THERAPY

A Valuable Tool for Pain Management

OBJECTIVES

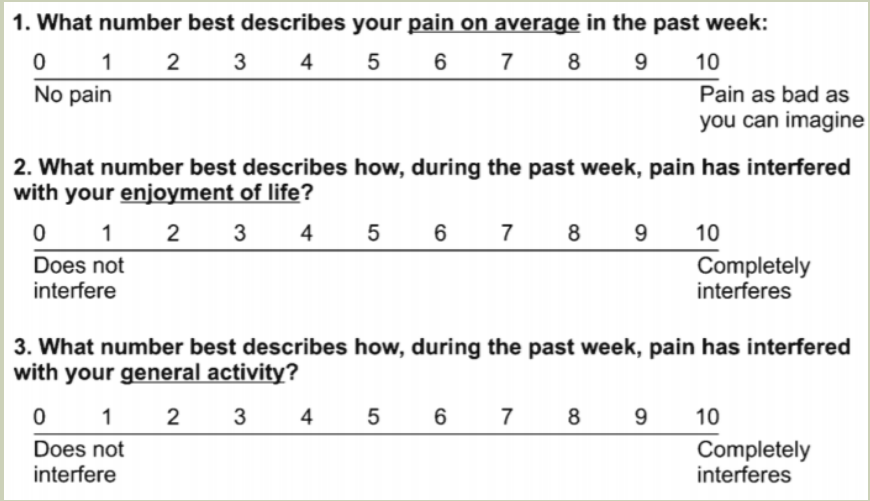
- Identify evidence based non-pharmacologic interventions for chronic pain.
- Describe the ways in which Physical Therapy can skillfully deliver evidence based interventions for pain.
- Describe how care managers can address common barriers to referral and participation in Physical Therapy
- Illustrate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

PAIN SEVERITY / INTENSITY

- 10/10 pain, 20/10 pain, etc
- A key determinant of disability and it can be an obstacle to resuming normal activity
  - Its <u>not just</u> AND <u>not even</u> measuring nociception
  - It reflects suffering, perceived threat, perceived control, distress, fear, context, etc.
    - Makes sense since pain is a PRODUCT of all these & more

SHIFT TOWARD FUNCTION

- PEG Tool[1]
  1. Pain on Average
  2. Pain interference:
     a. **Enjoyment of Life**
  3. Pain interference:
     a. **General Activity**



- Useful for tracking change over time
- 3 point change is valid

[1]Krebs EE, Lorenz KA, Bair MJ, et al. Development and Initial Validation of the PEG, a Three-item Scale Assessing Pain Intensity and Interference. *Journal of General Internal Medicine*. 2009;24(6):733-738. doi:10.1007/s11606-009-0981-1.

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

EVIDENCE BASED PRACTICE

Physical Therapy

- Determines if pain is of mechanical nature or red flag origin

Psychologically Informed Care

Treatment: changes posture, strength, body mechanics in accordance with stages of healing.
eg. Exercise, manual therapy, education, McKenzie

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

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 patients) found that in patients undergoing THA: preoperative exercise and education led to **significant reductions in pain, shorter lengths of stay postoperatively and improvements in function**.[3]
- **Arthritis.** Studies have shown that therapeutic exercise programs can **reduce pain and improve physical function** among individuals with hip and knee osteoarthritis.[4,5]

BEST EVIDENCE: EDUCATION

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

HOWEVER,

"Information is to behavioural change as spaghetti is to a brick" William Fordyce

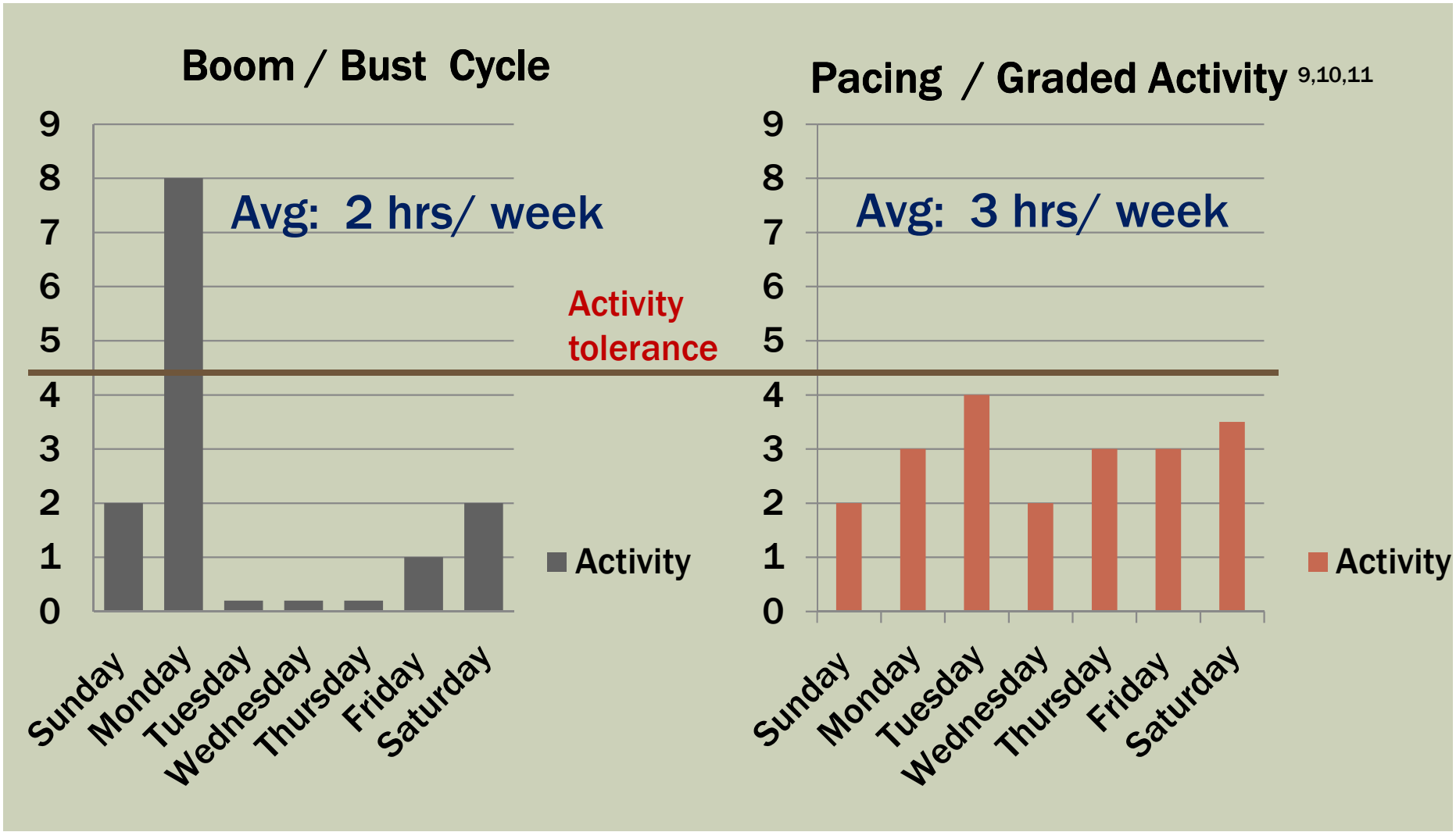
- PT intervention is mostly concerned with changing actual behavior *not necessarily cognitions*

BEST EVIDENCE: EDUCATION

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
  - When Task is completed successfully:
    - Undermines Catastrophic thinking, fear avoidant behaviors
- Pre-determined task termination:[8]
  - If symptomatic (or pain above baseline) at 30 min of activity:
    - Schedule 10 min of that activity throughout the day – so that feared consequence (pain spike) never occurs but they are productive
- Frequency of exposure is key to changing behavior
  - Schedule activity 3-6 times per day.
  - Change behavior long enough and belief emerges.

BEST EVIDENCE: EDUCATION



BEST EVIDENCE: AEROBIC EXERCISE

- Physical Therapy can help safely dose patients with aerobic exercise ***<u>according to their specific needs, co-morbidities, and patient preferences</u>***[12,13]

Evidence Based Formats:

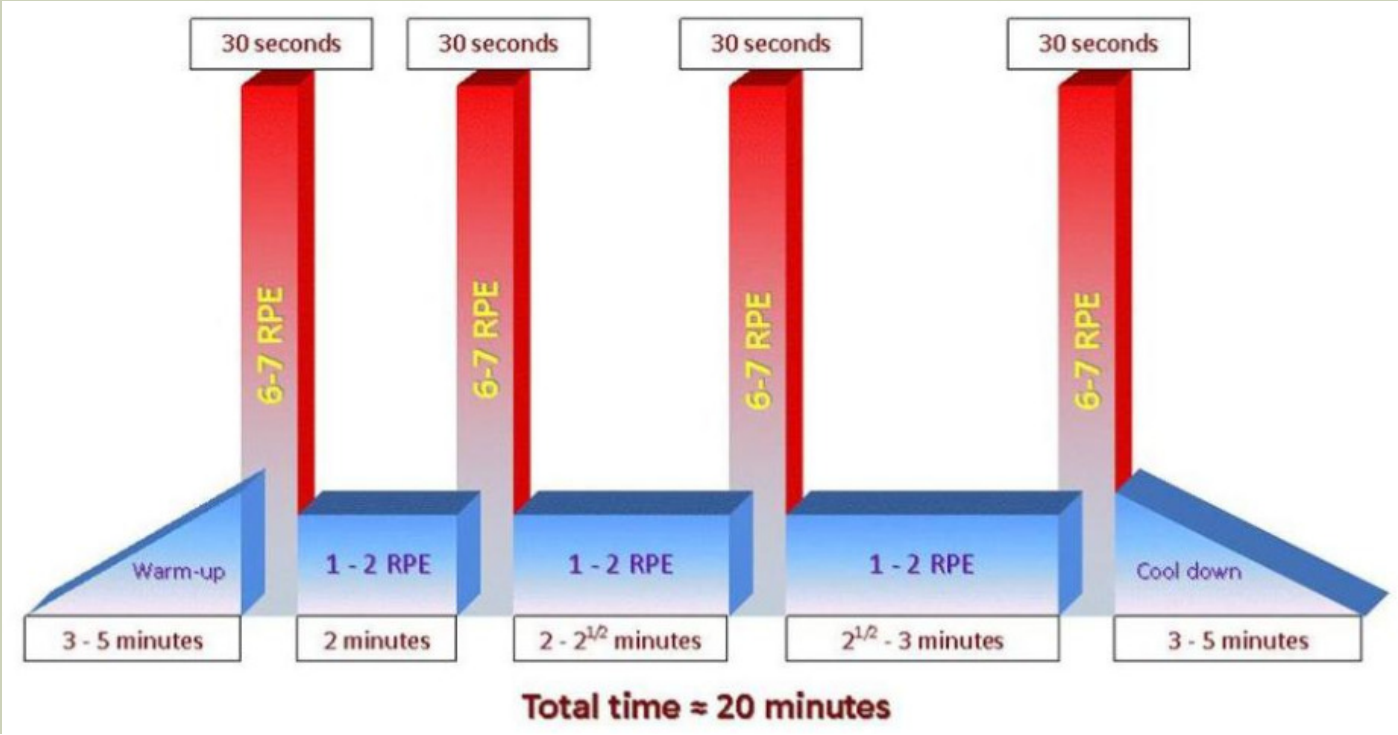
- Graded exposure
- Rating of Perceived Exertion scale (RPE)
  - 6-7 is the target for effort that produces ***optimal results***
  - To foster patient engagement: may start lower… however, too low jeopardizes results.

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)

BEST EVIDENCE: AEROBIC EXERCISE

Evidence Based Formats:

- High Intensity Interval Training (HIIT)[14,15,16]
  - Can start smaller to be palatable to patients

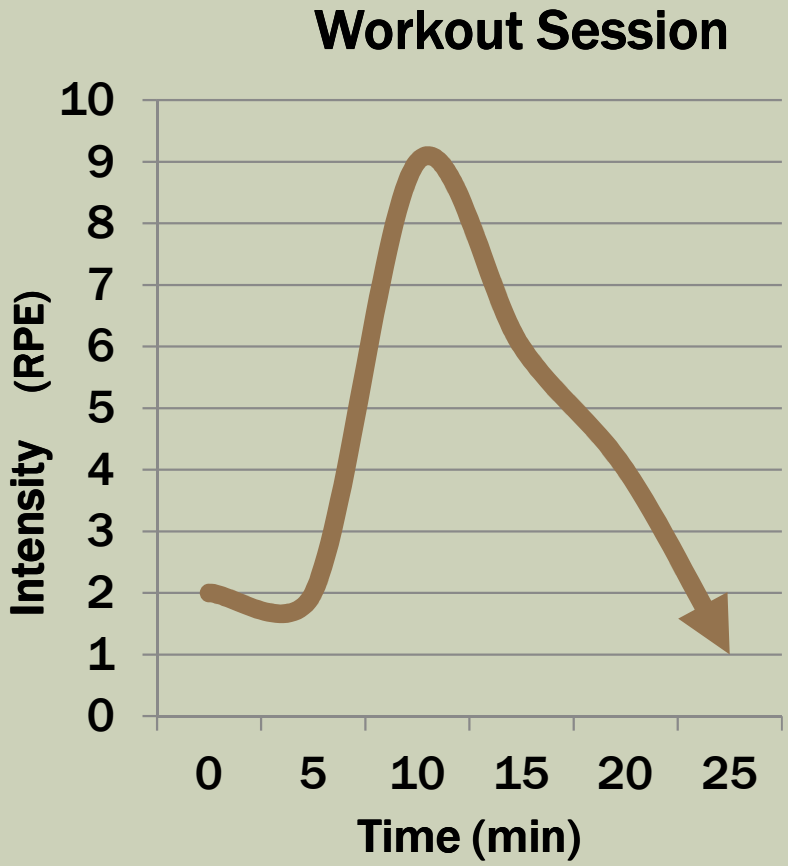


BEST EVIDENCE: AEROBIC EXERCISE

Evidence Based Formats:

Decreasing Intensity[17]

- Warm up
- Most intense effort
- Decreasing over time



MODERATE EVIDENCE: STRENGTH TRAINING

- 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: CBT

Cognitive Behavioral Therapy principles/ strategies (as well as other evidence based psychological/behavioral interventions, eg. ACT) have been successfully blended with the traditional PT skillset over the past years.[20-24]

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,*** compared with TE alone (moderate effect for secondary variables.

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*** for improving pain, symptoms of central sensitization, disability, mental and physical functioning, and pain cognitions in individuals with chronic spinal pain.

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.***
  - **Oswestry Disability Index: *cognitive functional therapy group improved by 13.7 points vs. 5.5 points***
  - **Pain intensity: *cognitive functional therapy improved by 3.2 points vs. 1.5 points.***

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CASE STUDIES

CASE STUDY #1

- Jean, a 73-year-old woman, has been taking Percocet daily for several years after being diagnosed with degenerative changes in her neck, back, knees, and feet.
- She has been seen by PTs several times intermittently in the past, but the prescribed treatments haven't been sustainable, while the pills offered her some immediate—if less than satisfactory—pain relief.
- Jean now presents for an initial visit with a PT with a goal of discontinuing the Percocet.

From APTA White Paper "Beyond Opioids: How Physical Therapy Can Transform Pain Management to Improve Health." June 1, 2018[29]

CASE STUDY #1

- She offers that her granddaughter is a supportive caregiver who can be counted on to assist in her plan of care.
- Upon examination, the PT determines that Jean has generalized weakness, poor balance, poor fitness, fair overall health, and difficulties with performing activities of daily living.
- Jean also has developed some fear of movement and expresses a great deal of stress associated with her longstanding condition.

CASE STUDY #1: TREATMENT FOCUS

- The PT determines that an integrated plan of treatment will be most beneficial to Jean, combining physical therapist interventions with fitness, such as yoga, and behavioral health strategies.
- The PT identifies community resources and works with Jean and her granddaughter to identify beneficial programs at the local senior center that are compatible with their schedules.
- The PT develops a comprehensive pain treatment strategy beginning with an evaluation of how effectively Jean's current use of pain medication addresses her chronic conditions.

CASE STUDY #1: TREATMENT FOCUS

- The approach then is to create a model of sustainability that Jean can achieve through her work with the PT.
- Jean will transition into self-management to avoid sliding back into heavy medication use.
- Steps will include managing Jean's chronic conditions to lessen her periods of active pain, educating her about her pain, and building strength, balance, and endurance to improve her overall health.
- Peer support for behavior changes also are part of the plan.
  - The PT involves Jean's granddaughter in her treatment plan and sessions in order to promote a smooth transition from skilled therapy.

CASE STUDY #1: OUTCOME

- Jean no longer takes pain medication routinely, limiting her use to the occasional situation in which her pain is exacerbated.
- At other times, she self-manages her conditions by participating in gym workouts and group yoga classes, often enjoying those times with her granddaughter, who is pleased to see her grandmother more active and healthy.

CASE STUDY #2

- Cliff is a 63-year-old male with chronic pain resulting from a series of 7 surgeries over the past 8 years, not all of them successful.
  - Cliff's surgeries include a failed meniscal repair of the right knee, a failed implant in the right great toe for arthritis, 3 surgeries to repair traumatic fractures of both ankles, surgical repair of a left elbow fracture, and surgical repair of a left wrist fracture.
- He rates his pain level at 7 out of 10, despite taking 10 325m Vicodin daily.
- He indicates that he has little energy and that loss of appetite and nausea affect his eating habits.

From APTA White Paper "Beyond Opioids: How Physical Therapy Can Transform Pain Management to Improve Health. June 1, 2018

CASE STUDY #2- TREATMENT FOCUS

- As a member of an interprofessional team including an opioid-addiction specialist, the PT works with Cliff to develop a plan of care that will move Cliff from being pain-centric to function-centric as soon as possible.

- With Cliff's long history of pain and resulting dependence on Vicodin, the team works together to address the effects of opioid withdrawal as a component of the overall treatment plan. This includes monitoring and addressing withdrawal symptoms while incorporating techniques that will improve Cliff's function without increasing his pain.

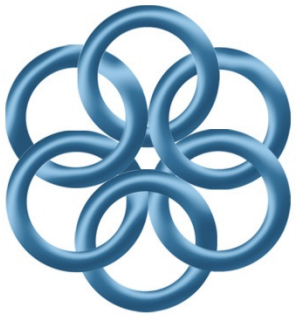
CASE STUDY #2- TREATMENT FOCUS

- For the best chance of success, the team involves Cliff up front in treatment decisions to determine which strategies have worked—and which have failed, gaining his confidence and trust in the plan of care.

- Treatment begins right away, and while the first few weeks are challenging, as Cliff adjusts to being off the Vicodin he is able to better tolerate his exercises and improve his functional performance.

CASE STUDY #2- OUTCOMES

- Cliff states that the results of his treatment are "unbelievable." Following the collaborative plan of care, his pain symptoms have decreased by 80%, he has increased energy, and his appetite has improved.



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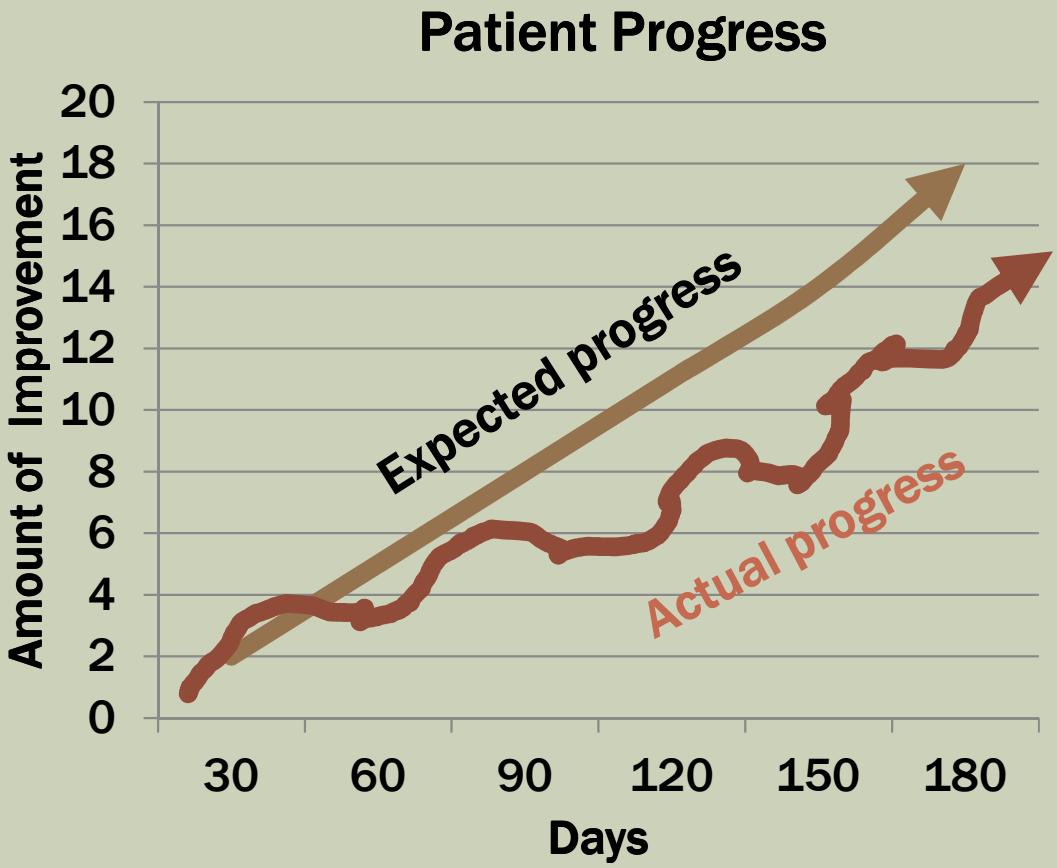
APPLICATION

LIFE IS CURVY

Chronic Pain

- Setting Proper Expectations
  - Time
    - 6+ months not 6 visits
    - Neuroplastic changes take time
  - Setbacks are to be expected
    - Focus is on building Resilience

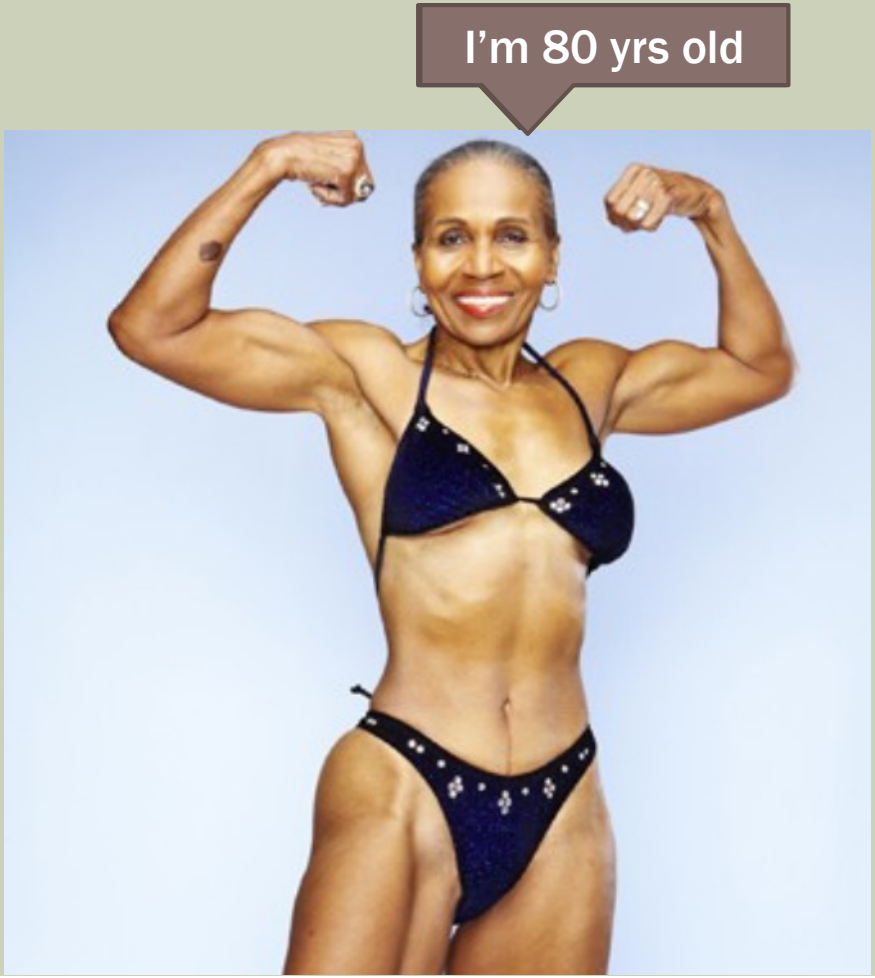


FRAMING

- 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…
      - Specifically: delayed onset muscle soreness (DOMS): lactic acid soreness
  - Post exercise hyperalgesia
    - Common with a sensitized nervous system
    - Malaise after exercise instead of the expected endogenous opiate release
    - Will take ~3 weeks of consistent training to optimize metabolism of cellular waste products: then normal lactic acid soreness emerges.
  - Normalizing the experience without dismissing it.
  - ***Forecasting is essential to decreasing anxiety around activity***

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



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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.
- Care Management plays 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.

ACCESS

- 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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