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The Oregon Medical Association designates this live activity for a maximum of 8 AMA PRA Category 1 Credit(s)™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.
American Opioid Epidemic

- Chronic pain is an epidemic
  - Pain prevalence 25.3 million adults (Nahin, 2015)
- Opioids are prescribed for pain
  - Median time from 1st opioid prescription to death 2.6 yrs (Kaplovitch, 2015; Freiden, 2016)
  - In 2016, more Americans died from opioid overdose (63,600) than homicide (17,250) and motor vehicle accidents (37,461) (CDC, FBI, USDOT)

Do we have an alternative?

**EDUCATION** as a non-pharmacological treatment for chronic pain
What is Pain?

Pain is an “unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage”

-www.iasp-pain.org

Why do we need to know what pain is?

If you don’t know what you are treating, you don’t know how to treat it (or you treat it incorrectly)
Pain Questionnaire

What do you know about pain?
<table>
<thead>
<tr>
<th></th>
<th>Revised Neurophysiology of Pain Questionnaire</th>
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<td>The brain decides when you will experience pain.</td>
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Old Models of Pain

- “Bottom up” approach
- Painful stimulus \(\rightarrow\) pain
- Amount of tissue damage \(\rightarrow\) intensity of pain

This model does not account for the effect of emotions and cognitions on the pain experience (Butler, 2000)

Illustration of the pain pathway in René Descartes' Traité de l'homme (Treatise of Man) 1664.
Ok, then how do we explain these....

- Painless battle wounds
- Surfers felt a “bump” w/ loss of limb from shark attack
  
  (Butler, 2003; www.sharkattacksurvivors.com)

- Phantom limb pain
- Man with nail in his “foot”


*Hard as Nails, Mind Hacks, 19 Jan. 2010, mindhacks.com/2010/01/19/hard-as-nails/*
Studies on Back pain and Imaging


- Ages <60  20% had disc herniations, 1 had spinal stenosis
- Ages >60  36% had disc herniations, 21% had spinal stenosis
- Disc bulges and degeneration in 35% aged 20-39, in all but one of the 60-80 yr olds


- 1 or more degenerative discs in 34% of women age 21-30, 60% age 31-40, 95% by age 70
Modern Pain Biology

- Pain is normal
- Pain as a protective

- Pain \(\equiv\) Output
- Hurt \(\equiv\) Harm

- Nociception is neither sufficient nor necessary for pain (Butler, 2003)

Pain is 100% of the time in the brain!

The Development of Chronic Pain

- Sensitivity of nociceptors in an area can change as often as every few days (Butler, 2003; Moseley, 2017)

Central Nervous System Sensitization

- Lowering of the resting potential of primary nociceptors
- Increase in efficiency of ion channels in spinal nociceptors
- Increase in density of ion channels in spinal nociceptors

(Moseley, 2017)
Cortical Sensitization

- Repeated activation of a neurotag increases synaptic efficacy (Woolf, 2011)

- Cells that fire together, wire together (Löwel, 1992)

- Activation of a “pain” neurotag can occur through synaptic connections from other neurotags in the brain.

- Emotions, thoughts, beliefs → Pain (Moseley, 2017)
Cortical Sensitization

- Fears and beliefs may provide central input strong enough to activate a “Back Pain” neurotag (Moseley, 2017)
- Reversible
- Education on what modulates pain
Neuroplasticity

- Decreased blood flow and increase histamine reactivity has been shown in the real arm during rubber hand illusion experiments suggesting that cortical representation of the fake hand replaced that of the real hand to some degree (Moseley, 2008; Barnsley, 2012)
Pain Relies on Context

- Descending pathways can be excitatory or inhibitory
  (Moseley, 2012)
Biopsychosocial Model

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What is Physical Therapy

“Physical therapists teach patients how to prevent or manage their condition so that they will achieve long-term health benefits. PTs examine each individual and develop a plan, using treatment techniques to promote the ability to move, reduce pain, restore function, and prevent disability.” -APTA

Reducing pain is a significant reason why people seek physical therapists.

Pt with chronic pain: primary goal is to improve their function vs. just decreasing pain, as it is difficult to objectively see improvement with subjective reporting.
Conventional Physical Therapy Treatment

For patients who don’t fall in the category of having chronic pain the following treatment options can be effective:

- Manual Therapy to improve soft tissue mobility, joint mobility and range of motion (soft tissue mobilization, joint mobilization, myofascial release)

- Therapeutic Exercise to improve muscular flexibility and strength which can address the muscular dysfunction contributing to the pain

- Modalities (Ultrasound, Electrical stimulation, iontophoresis etc.)

- Education: postural education, ergonomics, lifting mechanics etc.
Pain Science Education

-Use of pain science education, in adjunct to conventional physical therapy is effective in improving function.

-Studies show that patients who have better understanding of pain science have decreased pain experiences (Moseley GL 2002, Ryan et al. 2010, Nijs J, Van/ Oosterwijck J 2011, Louw et al. 2011)
Implementation of Pain Science

- Build rapport with patients to get an idea of their belief system and knowledge of pain, as that plays a role in their overall pain experience.

- Can give them questionnaires to fill out during the first session with the patient.

  1) Physical Readiness Activity Questionnaire (PAR-Q) (Daly 2006)
  2) Fear Avoidance Behavior Questionnaire (FABQ) (Waddell 1993)
  3) Pain Science Knowledge Questionnaire (O’Connelly 2013).

- Identify patients with acute pain vs. chronic pain > 3 months (Rolf-Detlef T 2015), as that will impact when and how you want to implement pain science education.
Implementation of Pain Science

- Validate their pain experience and build good rapport with the patient to gain the trust.

- Explained to patient when there is damage to tissues: e.g. tear in ligaments/muscles, fracture in bones, or nerve damage will heal within 1-3 for bones and 3-6 months for soft tissue (Ruedi TP, 2007; Walter J 1987).

- Distinguishing nociception vs. pain. Reinforced that pain doesn’t always equal tissue damage (Nijs J/Van Wilgen PC 2011; National 2009)

- Citing neuroscience research to patients to explain “Smudging effect” and “Central (or Peripheral) Sensitization of Pain” (Moseley GL and Flor 2012; Tsao et al. 2011; Barnsley et al. 2012, National Research 2009).
Implementation of Pain Science

- Give cited examples or stories that tissue damage isn’t a 1:1 correlation w/ pain experience) (e.g. construction worker w/ nail in boot, phantom limb pain).

- Give patients metaphors and stories that relate to the individuals to explain central and peripheral sensitization (e.g. wasp story) (Moseley 2012).

- Inform the patient that he/she has a sensitive nervous system, and that it is much more excitable compared to others.
Pacing

- Implementation of pacing with activities/exercises can be helpful for patients with chronic pain. Inactivity contributes to the decline in function, overactivity can flare-up symptoms, patient back (Andrews NE 2012, 2015).

- Inform the patient that movement helps nourish the nervous system w/ increased blood flow and O2 to the nervous system. This can make it less sensitive. (Butler 2000, Rozamaryn, Dovelle et al. 1998; Coppieters and Butler 2007).

Pacing

- Have patient physically record a baseline of activities/exercises that are tolerable, that don’t exacerbate their symptoms on a daily basis. Instruct the patient to pick activities/exercises that the patient feels most comfortable to do first vs. an activity that triggers great anxiety.

- Instruct the patient to slowly increase the intensity of the activities/exercises. E.g. If it exasperates the symptoms to walk 1 block, cut it to ¼ block. Increase intensity by no more than ~10% every week or 2 weeks. There is a trial an error component.

- Inform Pt that there may be increased pain intensity with these activities/exercises but that there is “NO DAMAGE” being imposed on the body. No bone is being broken, no ligament or muscles are being torn.
Pacing

- The body is trying to acclimate to these activities/exercises, so the body may send signals to the nervous system to “tense the muscles” as a protective mechanism, resulting in the increased “pain experience.”

- Stay at a slow and steady pace. If the patient “works through the pain” at too high of a pain level e.g. 10/10, the Pt would be flared up to do anything, resulting in a setback in their functional mobility. Being in that high level of pain would prevent proper muscular activation and strengthening needed for optimal motion in the body.

- Can start w/ graded motor imagery if subtle movements are too aggravating. Can use mirror to assist or watch videos of another person performing the task that provokes anxiety/pain.
Interdisciplinary Approach

- Help find resources for financial resources, finances is a source of stress which can affect their pain experience.

- Refer to dietician and/or give patient contacts/resources for food if there is scarcity at home.

- Refer to social services if housing is a problem or patient needs public assistance (welfare etc.).

- Refer to mental health specialist but this can be a sensitive topic. Be sensitive to the patient.

- Refer to Occupational Therapy to help with energy conservation or management of their daily activities to help minimize their pain experiences.
Further tools and education

-Can go over meditation with patient and relaxation techniques to help calm the nervous system (use of music, dimmed lights and using calm voice to guide the breathing/meditation).

-Can go over sleep hygiene at home. Having good sleep helps decrease states of inflammation in the body which can contribute to the pain experience.

-Nutrition. We can go over basic nutrition about staying away from foods that cause inflammation. Can refer to a dietician if they want a specific meal plan.

Case example

-Pt is a 59 y/o female who chronic L upper trap/parascapular pain s/p mastectomy after being diagnosed with breast cancer.
OCCUPATIONAL THERAPY

Occupational Therapy

- Occupation is central to human behavior. There is an intrinsic relationship between occupations, health and wellbeing (Activities that “occupy” our lives).
- Gary Kielhofner (The Model of Human Occupation)
- Roles you have in your life: Husband, Mother, Sibling, Grandparent, Worker, Professional, Leader, Coach, Daughter, Artist, Part of a Congregation, etc.

- Those Roles Make us who we are, all the tasks we do promote, improve, strengthen our life and bring quality.

- When our purpose and ability to have meaningful lives are interrupted it affects the core of who we are
OCCUPATIONAL THERAPY: CAN MAKE A DIFFERENCE FOR THOSE IN PERSISTENT PAIN

Pain breaks those down. OT looks at those roles and how Pain interferes with a quality life mind and body.

THE PAIN RESULTS: ANXIETY  ANGER  FRUSTRATION  DEPRESSION  HOPELESS  POOR MOTIVATION  CONFUSION  TIRED
Jerry: k

- Years in a hard labor job
- Care Taker (wife/grandkids)
- Strong Figure as father/husband/brother
- Severe shoulder injury
- Pain for 2 years; off work
- Stopped activities of interest
- Depression
- Felt useless
- OT for FCE/Work Hardening
Kathy: Arthritis

- Married and Adult Children/Grandmother
- Ran her own business
- Loved to garden
- Hip and back pain for over 3 years.
- Standing only 1-2 minutes
- Stopped all activities she enjoyed
- Depression; hopelessness
- Unable to pick up or care for grandkids
Treatment and Tools To Return To Activities

- Activity training
- Education: regarding their injury or issues as well as understanding the pain; Communication Skills (regarding pain)-tracking forms
- Neuromuscular Retraining: relearning how to move your body, learning how of relax muscles, use appropriate muscles, biofeedback, etc.
- Coping Skills: Breathing Techniques; stress management/spiritual practices
- Joint protection/Energy Conservation: to make it a good experience and wanting to get back involved in their activities
- Nutrition and Sleep Hygiene: being in the right mind to handle the pain
- Sensory Processing Programs: Listening Programs, desensitization programs
- Modifications/Adaptive Equipment
- Endurance Training/Strengthening: years of not engaging in activities of interest
Jerry

- Jerry return to work (full time after 2+ years: pain and limitations)
- He started to travel again
- Felt strong at home
- Understood movement and body mechanics; helpful in management of pain
- Lost weight/sleeping better
- Able to help his family with home tasks
Kathy

- She had little to no pain 3 weeks with her basic self care and home tasks.
- She started to go out to lunch with her husband because she could tolerate being in the community for a longer period of time.
- She instituted the journaling and pacing strategies initially and found success.
- She was back working with her husband both on the home and in their business.
- She was enjoying her grandkids.
Occupational Therapy: Summary

Using language that gives them hope

It is providing opportunity: AE, MODIFICATIONS

Giving Possibilities: ACTIVITY ANALYSIS

Empowering our Patients: EDUCATION

A collaborative multidisciplinary approach to help our patients

Pain does not have to rule the patient’s life
IVAN - Personal Experience
Pain without evidence of injury
Onset - 3 days post MVA
Immediately relieved by review of imagery
Words that Harm, Words that Heal

Language is not neutral

How a caregiver delivers education impacts the recovery process

Sometimes words are used to instill a sense of urgency

Language that heals simply explains what is happening
Provide a word you might use in conversing with a person that could slow/prevent recovery.
Provide a word you might use in conversing with a person that could aid in recovery.
References


References


References


McNulty, Susan OTD, OTR/L, CPE. *Pain Assessment And Management: The Role of Occupational Therapy*. Western Schools: Continuing Education, 2015


References


References


Questions