CHRONIC PAIN
PHYSICAL THERAPY TREATMENT FUNDAMENTALS
7th Annual Prescription Drug Abuse & Heroine Symposium

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"Pain is a decision by the brain based on perception of threat" (Melzack 2001, Mosely 2003)
Re-conceptualizing pain experience

Pain is an alarm reporting a threat

- Pain intensity does not equal severity
- Tissues heal, even discs. (Autio, Karppinen et al, 2006, Masui, Yukawa, 2005)
- Pain can occur in the absence of tissue injury, or remain well after tissue has healed

- Aprox 40% “normal” have bulging disc on MRI (Viedman, 2003), Alyas et al 2007)
- 40% symptomatic people have RC tears (Reilly, 2006)
- 35% collegiate basketball players without pain in the knee have significant abnormalities on MRI (Major, 2002)
- Little correlation between arthritis on imaging and pain (Taylor, 1986, 1987)
HOW HEALTHCARE PROVIDERS CAN LOWER THE ALARM:

“THE FEAR OF PAIN IS MORE DISABLING THAN THE PAIN ITSELF”

• Reinforcing that there is normality within abnormality
• De-emphasizing pathoanatomical explanations
• Educating on multifactorial aspects of pain (psychosocial/ emotional/ overall health, weight, sleep)
• Encouraging a multidisciplinary approach
Persistence of pain when tissue heals...

**SENSITIVE NERVOUS SYSTEM...**

Body’s alarm system stays in alarm mode and moves to a panic mode even after tissue healed.
Persistence of pain through sensitive nervous system

Alterations in interpretation

Alteration in modulation of pain in the brain and in the periphery at the neurophysiological level
Cortical changes in chronic pain

- Changes in concentration, attention and memory (George et al, 2016)
- Left / right discrimination deficits
- Changes in body representation and tactile acuity

LBP patients perform poorly (twice as long) on tasks in which they are required to judge the direction of spinal movement (Moseley, 2011)
Body representation and cortical reorganization.

• Impaired spatial and proprioceptive acuity
• Indistinct body map
• Changes in body representation can take in as little as 30 minutes

(Stavrinou et al. 2007)
Changes in the brain occurs in common conditions.

**PAIN Practice**

*Influence of Centrally Mediated Symptoms on Postoperative Pain in Osteoarthritis Patients Undergoing Total Knee Arthroplasty: A Prospective Observational Evaluation*

Shin Hyung Kim MD, Kyung Bong Yoon MD, PhD, Duck Mi Yoon MD, PhD, Ji Hyun Yoo MD, Ki Ryang Ahn MD, PhD

First published: 16 May 2015

**EJP**

*European Journal of Pain*

*Evidence for central sensitization in patients with osteoarthritis pain: A systematic literature review*

E. Lluch, R. Torres, J. Nijs, J. Van Oosterwijck

First published: 3 April 2014

**The role of central sensitization in shoulder pain: A systematic literature review**

Marc N. Sanchis, PT, Enrique Lluch, PT, Jo Nijs, PT, PhD, Filip Struyf, PT, PhD, Maija Kangasaperko, PT
CDC Guideline for Prescribing Opioids for Chronic Pain
Recommendations and Reports / March 18, 2016 / 65(1);1–49

- Physical Therapy should be First-Line Treatment for Chronic Pain over opioids treatments.

… nonopioid therapies should be "tried and optimized" before considering an opioid prescription as well as during reassessment of a patient who has received a prescription for opioids.
Hallmarks of PT intervention

- Teaching neuroscience about their pain experience
- Graded exposure, graded motor imagery, neural desensitization. Address fear, stress, anxiety, self efficacy
- Specific or nonspecific exercise therapy, Neural mobilization, Graded exercise, Aerobic conditioning
- Manual interventions and augmented home Ex programs

PAIN NEUROSCIENCE EDUCATION

MOVEMENT THERAPY

MOVEMENT SPECIFIC COGNITIVE BEHAVIOR TRAINING

MANUAL THERAPY

EMPOWERMENT
Explaining pain to patients through neuroscience

- Sensitivity
- Pain mechanisms
- Neuroplasticity

Thoughts
- Expectations
- Beliefs
- Experiences
Effectiveness of Neuroscience education

Immediate, one and 3 month of post op changes in:

- Pain,
- Catastrophization
- Fear avoidance
- Function
- Physical movement
- Beliefs regarding lumbar surgery

The short term effects of preoperative neuroscience education for lumbar radiculopathy: A case series

Adriaan Louw, PT, PhD,1 Ina Diener, PT, PhD,2 Emilio J. Puenteura, PT, DPT, PhD3
1International Spine and Pain Institute, Story City, IA, USA, 2University Stellenbosch and University Western Cape, Stellenbosch, South Africa, 3University of Nevada Las Vegas, School of Allied Health Sciences, Department of Physical Therapy
Widespread brain activity during an abdominal task markedly reduced after pain physiology education: fMRI evaluation of a single patient with chronic low back pain

G Lorimer Moseley

Department of Physiotherapy, Royal Brisbane and Women's Hospital & The University of Queensland, Brisbane
Utilization benefits of NE

- Similar pain ratings and function.
- Increased satisfaction /met expectation with surgery.
- Patients felt better prepared.
- Used 45% less health care services.

HOW WE DELIVER THE MESSAGE
- Metaphors and stories

People learn when they can relate to a story...

Physicians who use more metaphors and analogies elicit better patient ratings of communication (Casarett, 2010)

- Home alarm system to explain sensitivity
- Brain as the CEO role in our bodies, etc
VISUALS AND VIDEOS
EXERCISE AND MOVEMENT THERAPY

- Body representation
- Tactile accuracy
- Endorphin production
- Cardiovascular function
- Sleep, stress and anxiety modulation
- Self efficacy and reassurance
- Endocrine and immune function
- Neuroplastic functions: memory and attention gain
Specificity of exercise program

**SPECIFIC PROGRAMS**

**AEROBIC AND ENDURANCE PROGRAMS**
Treating Nerve and Nerve sensitivity

- Interventions addressing neural dynamics and manual mobilization are helpful in this patient along with the pharmacological approach

Images from Medbridge Education. 2016
Graded exercise

- Exercise and physical activity increase using specific goal setting and quota.
- Exercise sessions consist of flexibility, strength, cardiovascular training.

HURT DOES NOT EQUAL HARM

SORE BUT SAFE

FIRING LEVEL
EXTRA SENSITIVE
CBT
Cognitive Behavioral Therapy
Applied to Movement

Graded Exposure

• Address activities that are fearful to the patient by slowly confronting it within a safe or modified environment.
CORTICAL RETRAINING

• Mirror therapy
• Laterality training
• Body recognition
• Sensory discrimination
COPING STRATEGIES

- Visualization
- Relaxation
- Journaling
- Mindfulness based stress reduction
- Breathing control
- Anxiety and stress
- Sleep hygiene
OTHER STRATEGIES

• Maximize **recovery expectations** and coping behaviors

“Poor recovery expectations, avoidance behavior and endurance behavior are predictive of poor outcome in CLBP population.” (Iles, 2009, Hasenbring and Verbunt, 2010)

• Maximize the **placebo effect** (endogenous pain mechanism)

“Sham surgery in orthopedics is just as effective as actual surgery in reducing pain and disability” (Moseley 2002, Buchbinder, Osborne et al, 2009, Kallmes, Comstock et al, 2009).

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**Sham Surgery in Orthopedics: A Systematic Review of the Literature.**

Louw A¹, Diener I², Fernández-de-Las-Peñas C³, Puentedura EJ⁴.
OTHER STRATEGIES

USE OF HEALING LANGUAGE

• Wrinkles in the inside
• Normal changes
• Pain perception, pain experience
• Recovery
• Sensitive system

“Degenerative terms are associated with poor prognosis”  (Sloan and Walsh 2010)
“Pathological models framework increase fear in patients”  (Morr, Shanti, 2010)

WORDS THAT HARM

• Degeneration
• Bulging
• Osteoarthritis
• Herniation
OTHER STRATEGIES

Motivational Interviewing

• Reflective listening
• Assist them searching and finding the driver/goals and motivations
• Affirmations and Reaffirmation
• Showing empathy
EMPHASIZE FUNCTION, not pain

Despite the pain… your ability to…
EPISODE of CARE

Image from Louw. ISPI TNE Focus on Function.
References

THANK YOU.
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