

 #CHAIR2019

11TH ANNUAL **CHAIR SUMMIT**

CME
Outfitters 

Master Class for Neuroscience Professional Development

February 7-9, 2019 | The Westin Fort Lauderdale | Florida

Provided by

CME
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Pain Regulation in Health and Disease

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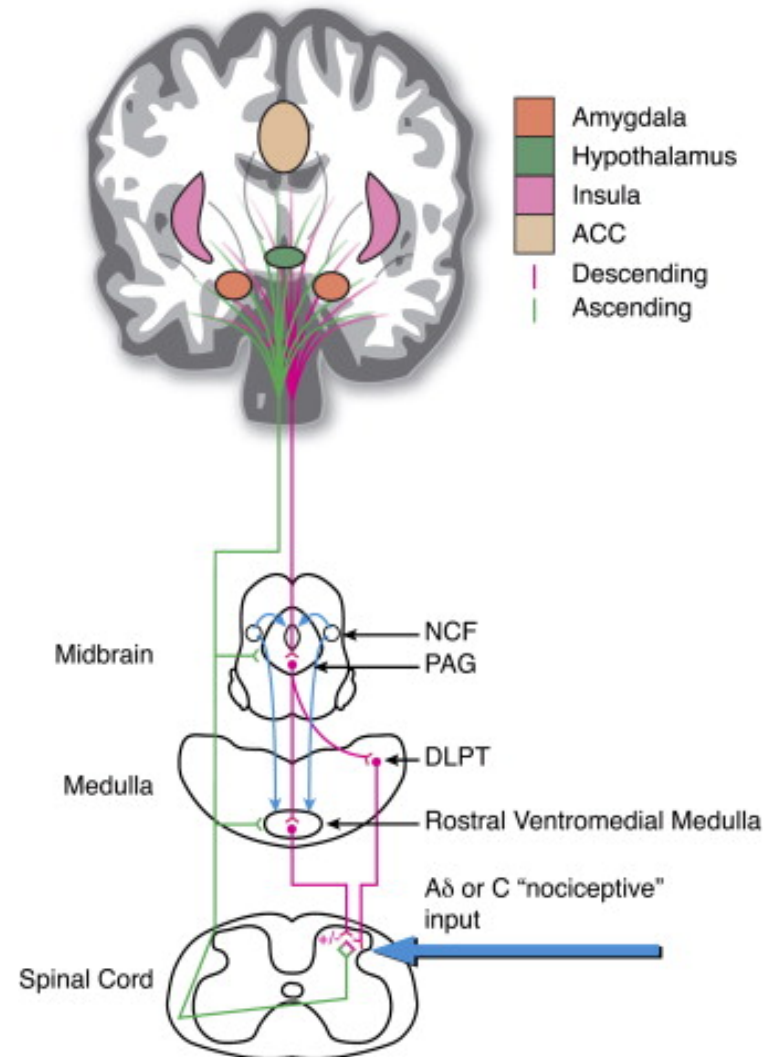


Learning Objective 1

Evaluate the pathophysiological mechanisms that differentiate acute and chronic pain and strategies for their regulation

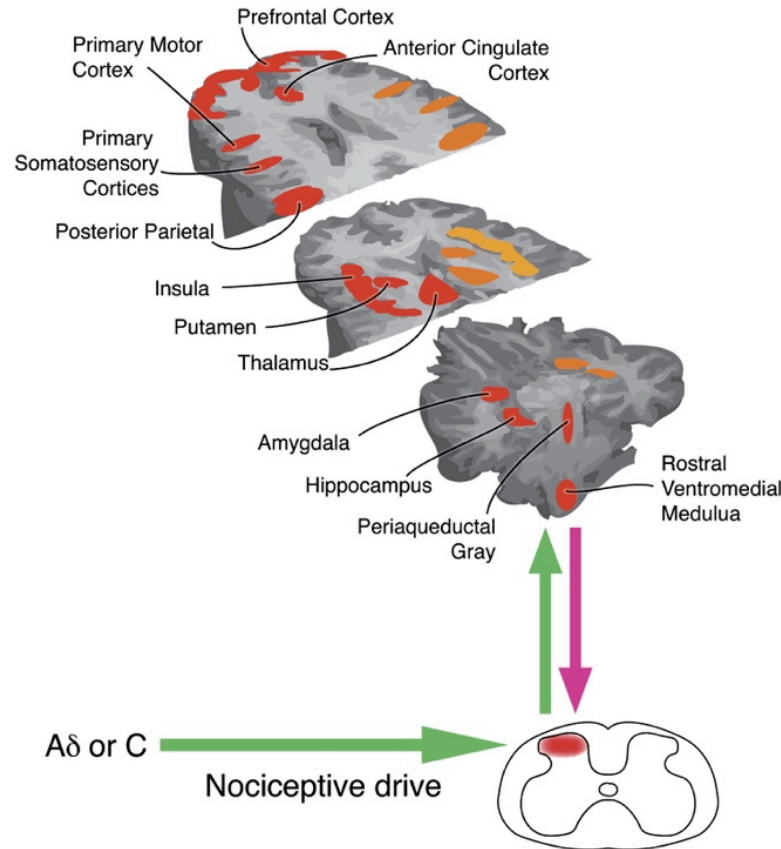


Descending Pain Modulatory System



ACC = anterior cingulate cortex; DLPT = dorsolateral pontine tegmentum; NCF = nucleus cuneiformis; PAG = periaqueductal gray; +/- indicates both pro- and anti- nociceptive influences, respectively.
Tracey I, Mantyh TW. *Neuron*. 2007;55(3):377-391.

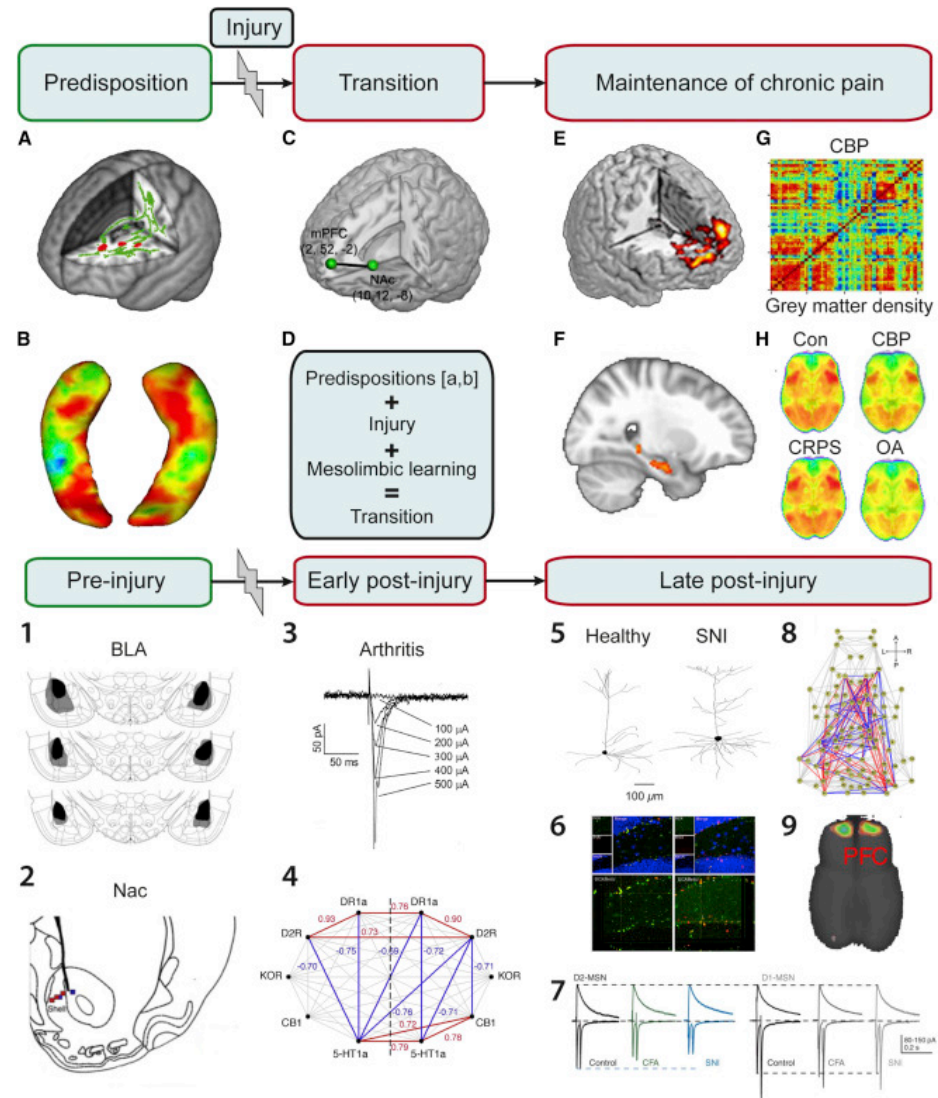
Neuroanatomy of Pain Processing



Brain regions that activate during a painful experience, with bilateral representation (contralateral to the noxious stimulus in orange)

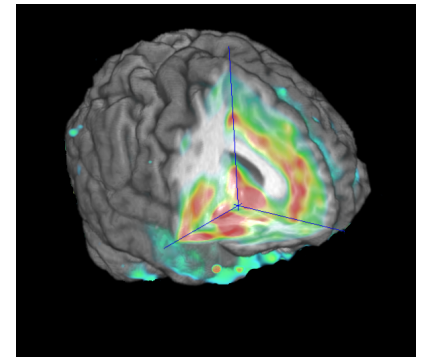
Tracey I, Mantyh TW. *Neuron*. 2007;55(3):377-391.

Neuroanatomy of Pain Processing



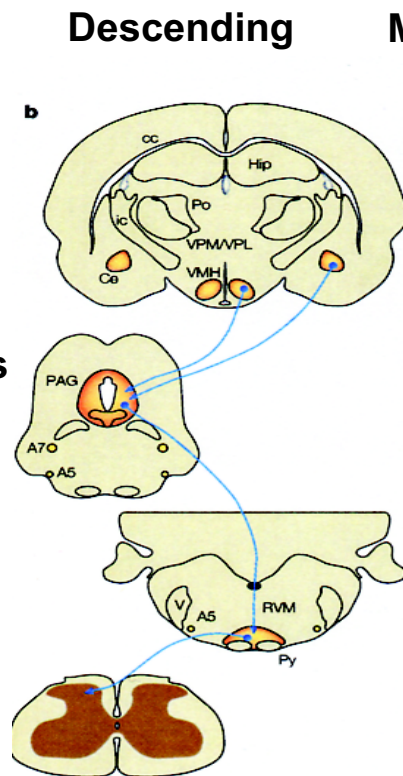
Mu Opioid Neurotransmission

- Experimental evidence (animal models and humans) and transgenic models implicate them in:
 - Endogenous opioid analgesia and effects of opiate analgesics
 - Stress responses and stress-induced analgesia
 - Regulation of affiliative, social behavior
 - Regulation of responses to salient and appetitive stimuli, including food and drugs of abuse
 - Thought to mediate placebo effects during expectation of analgesia
- Direction of modulation is typically suppressive of the relevant response (e.g., pain, stress, anxiety)
- Typically activated by stimuli that threatens the homeostasis of the organism (e.g., unpredictable stress, sustained, more rostral pain)

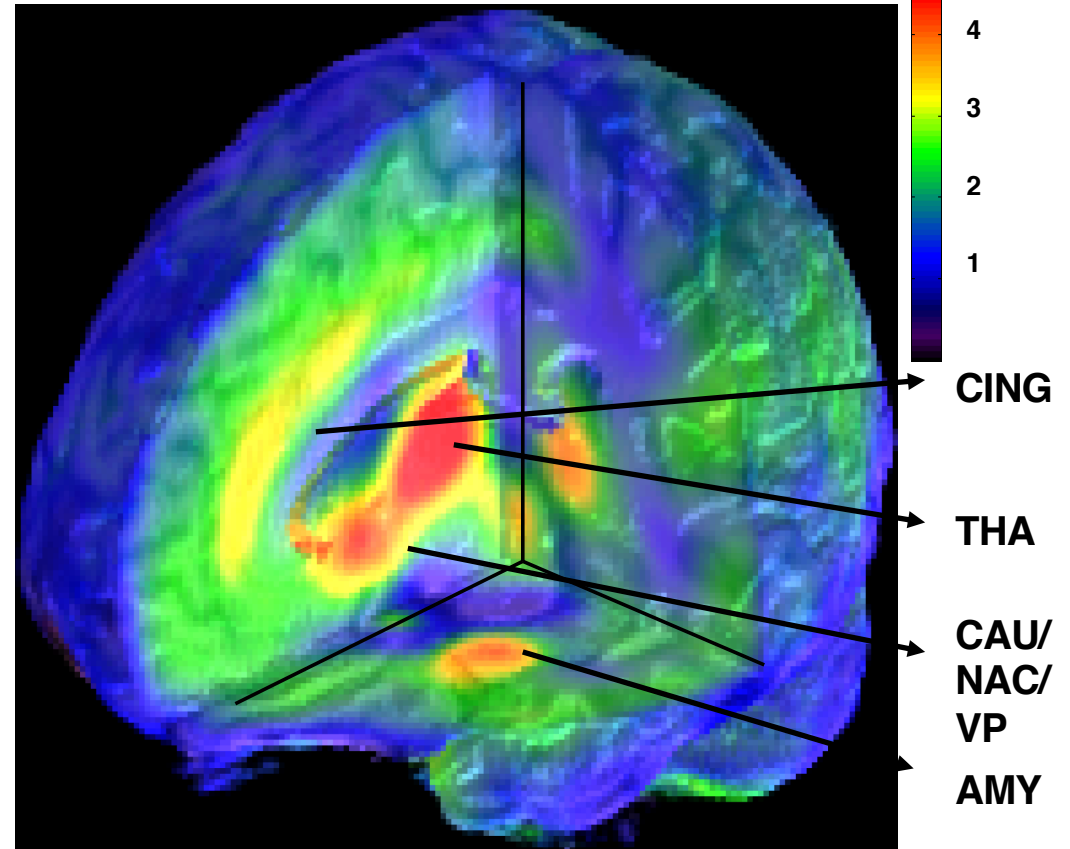


CNS Inhibitory Controls

Distributed in pain regions but also “affective/motivational circuits” - neuronal nuclei involved in the assessment of stimulus salience and cognitive-emotional integration.

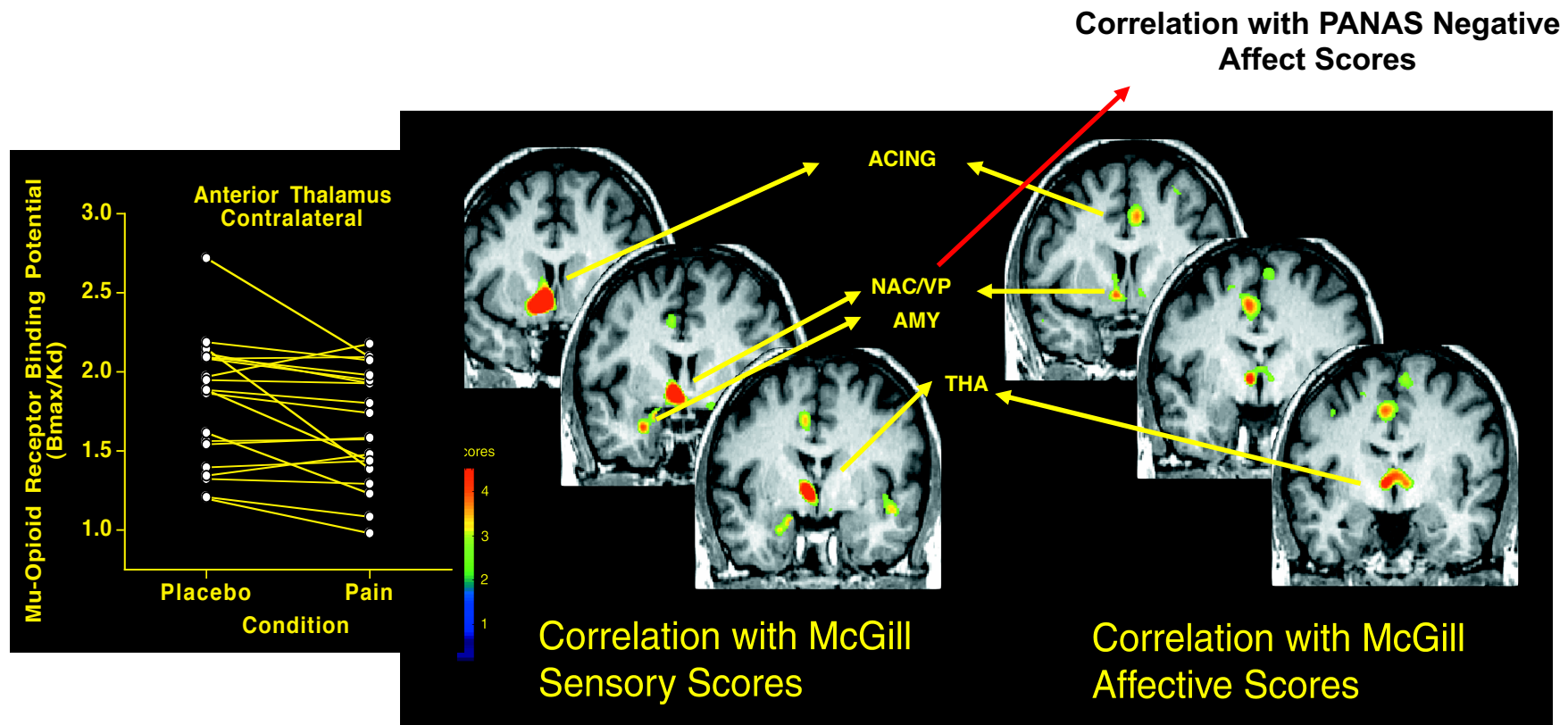


Mu Opioid Receptor-Mediated Neurotransmission **BP**



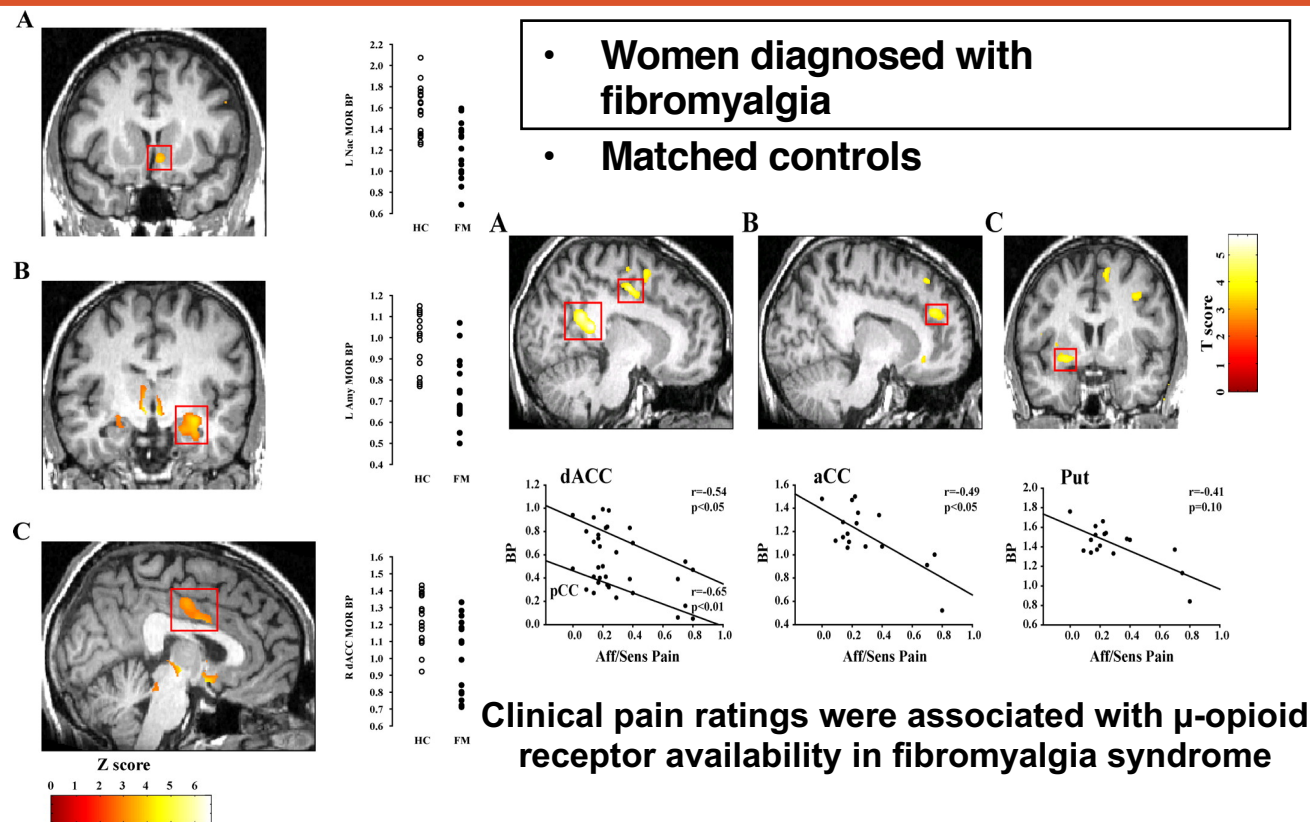
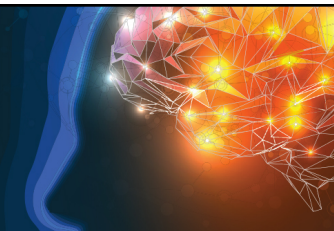
Staud R. *Int J Clin Rheumtol*. 2013;8(6):639-646.

Endogenous Opioid Regulation of the Pain-Stress Experience



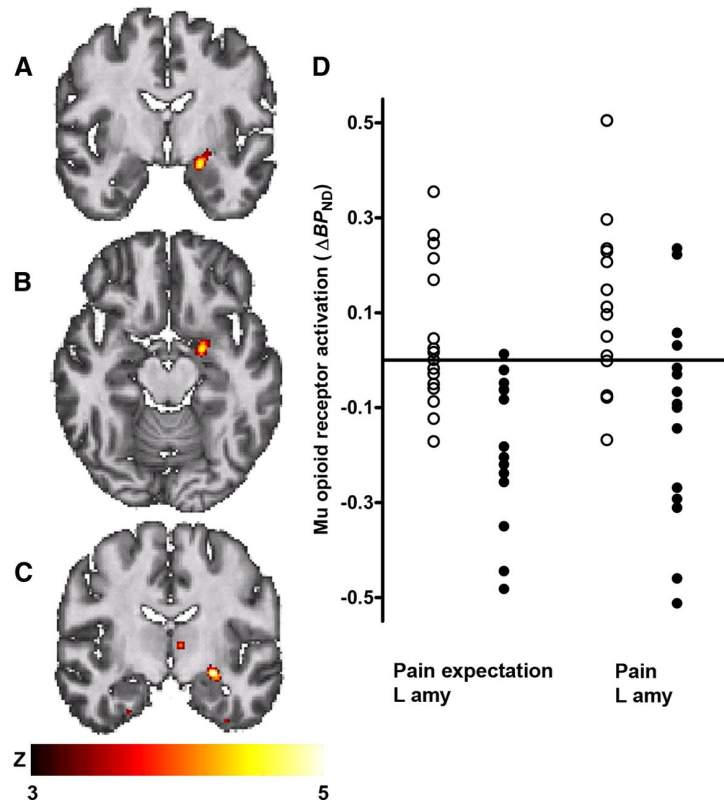
Zubieta JK, et al. Science. 2001;293:311-315

Implications for Chronic Pain Conditions: Fibromyalgia



Harris, et al. *J Neurosci.* 2007; 27(37):10000-10006.

Implications for Chronic Pain Conditions: Chronic Non-Neuropathic Back Pain



Endogenous opioid neurotransmission is reduced during pain expectation and sustained experimental muscle pain in chronic non-neuropathic back pain:

Negative associations with back pain intensity and positive with positive affect

Let's Talk Treatment



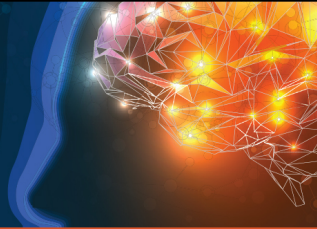
WHAT IS THE ETIOLOGY AND WHAT ARE THE
COMORBIDITIES ???

(neuropathic, non-neuropathic, widespread...)

- Physical therapy – activity (very important)
- Non-steroidals
- Non-selective antidepressants
- Gabapentin
- Pregabalin
- Complementary treatments...

SMART Goals

Specific, Measurable, Attainable, Relevant, Timely



- Improve treatment selection for pain conditions given an understanding of the pathophysiology of pain

Questions & Answers

Don't forget to fill out your evaluations to collect your credit.

