



A Mechanism-Based Approach to Physical Therapist Management of Pain

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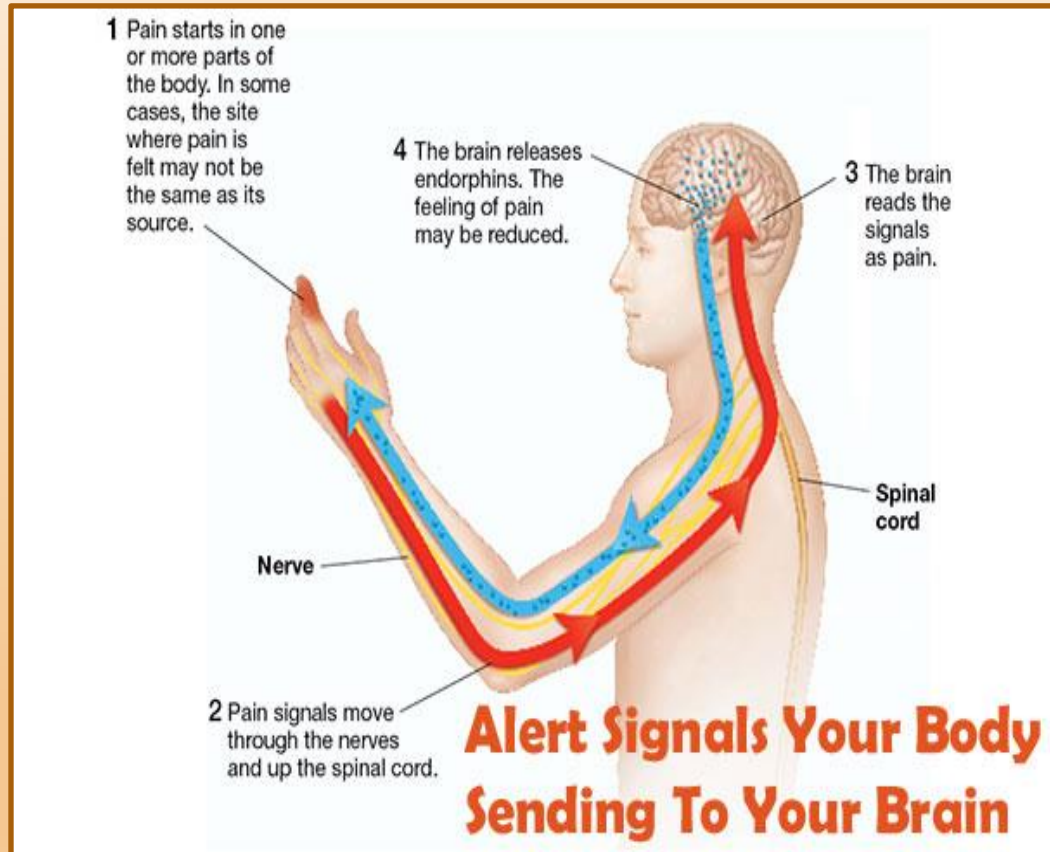
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Introduction

- Pain reduction is a primary goal of physical therapy for patients who present with **persistent pain conditions**
- Our purpose: to describe a mechanism-based approach to **physical therapy pain management**

Understanding Pain Mechanism

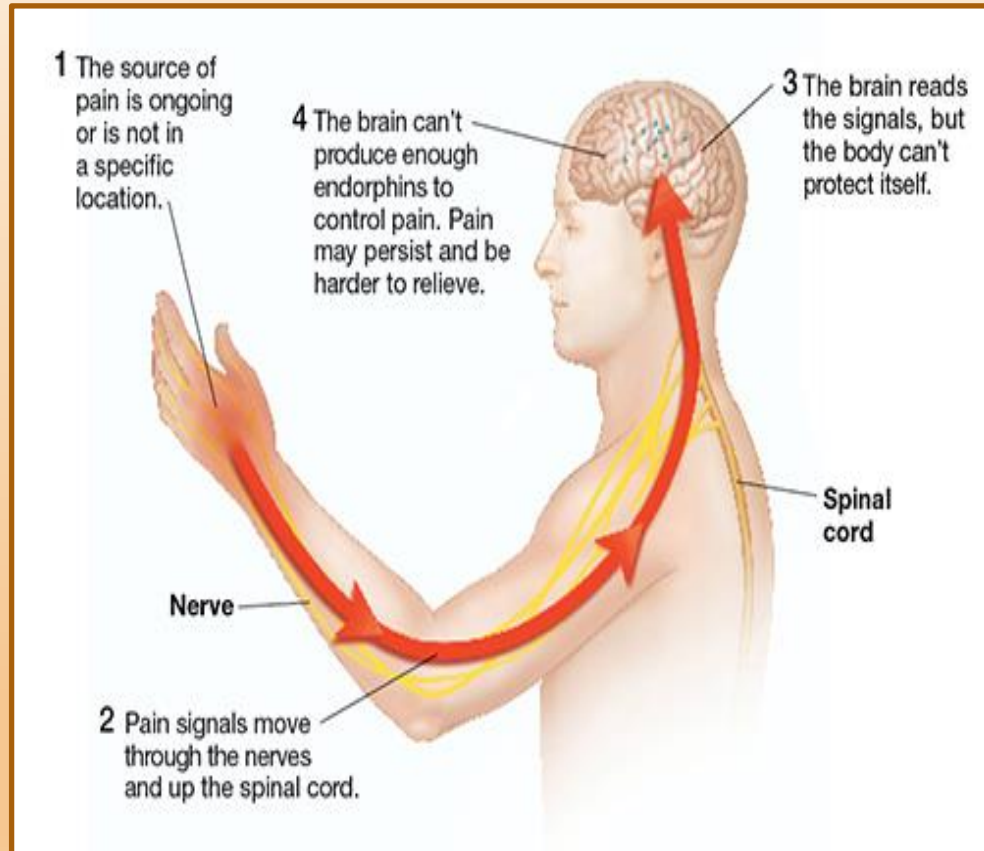
The mechanism of Chronic Pain



Acute Pain:

1. One or more parts of the body
2. Moving through the nerves to the spinal cord
3. Brain reads the signals as pain
4. Release of endomorphins with reduction of pain

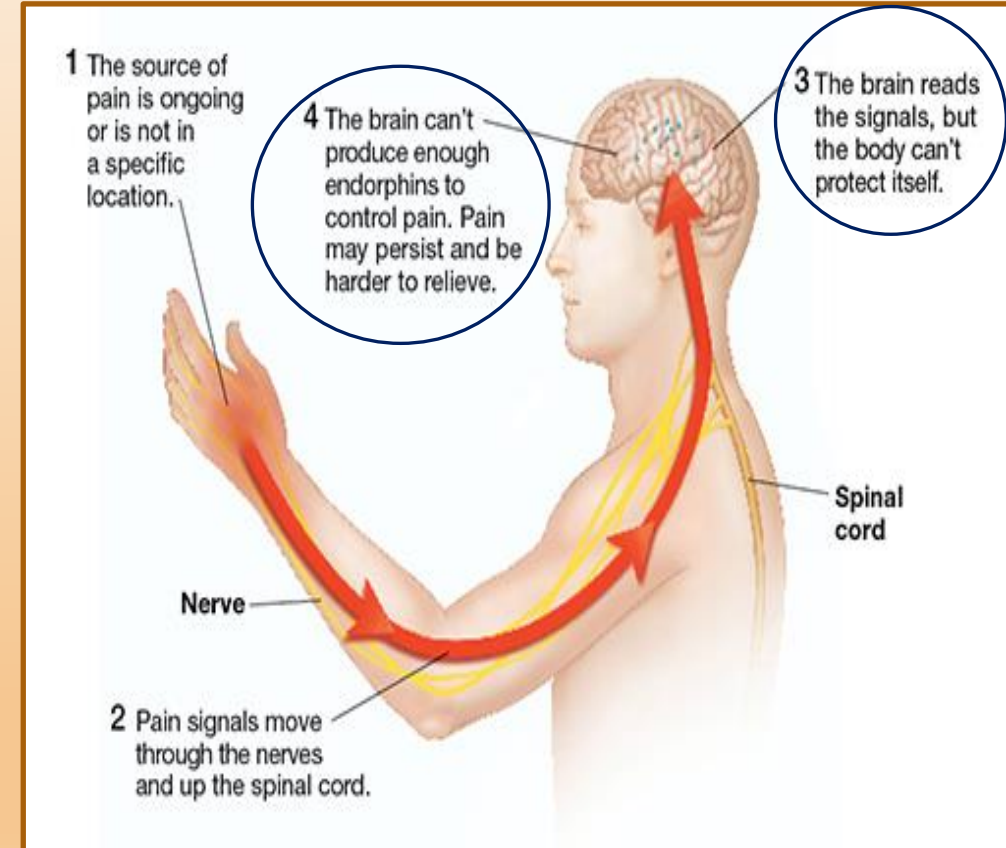
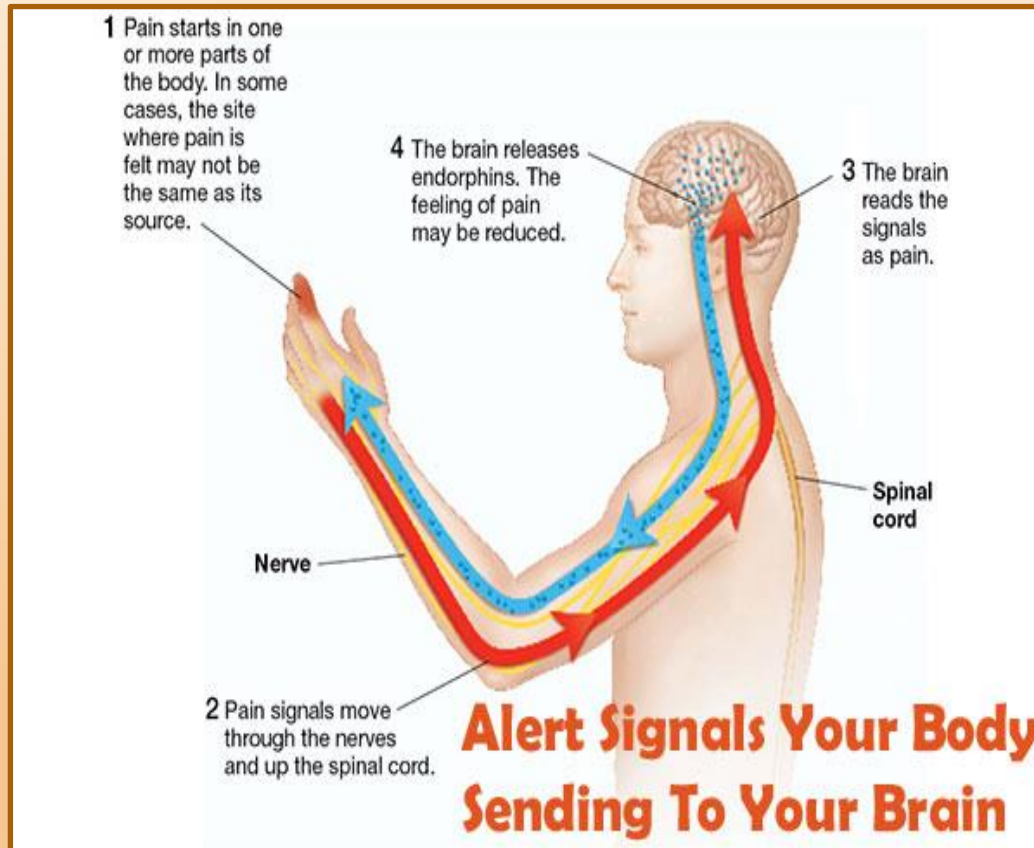
The mechanism of Chronic Pain



Chronic Pain:

1. Source of pain ongoing
2. Moving through the nerves to the spinal cord
3. Brain reads the signals as pain
4. Not enough endomorphins to control pain

The mechanism of Chronic Pain



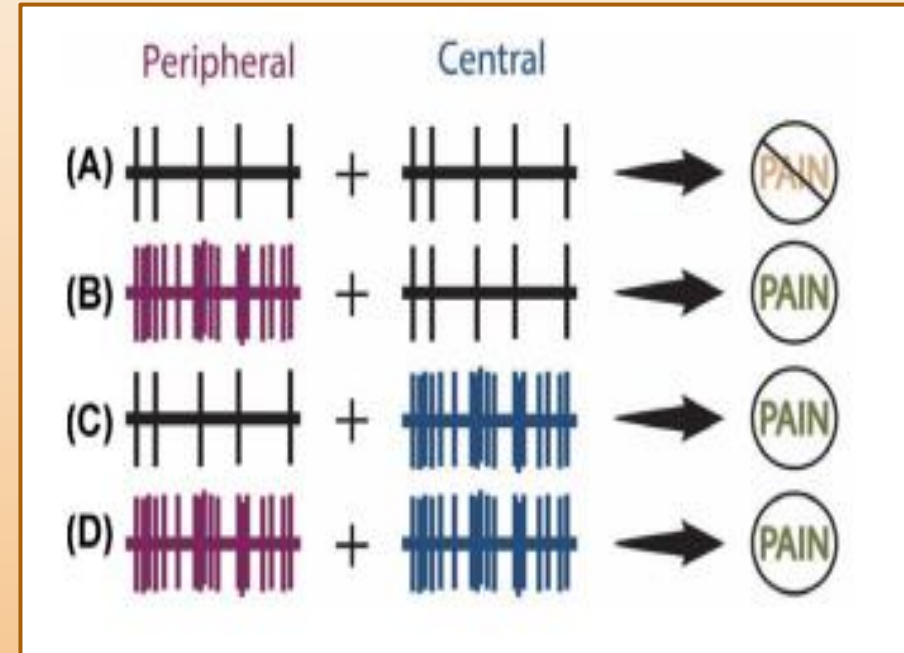
The latest knowledge

❖ Origin of pain:

- ✓ Peripheral sensitization
- ✓ Central sensitization
- ✓ Both

❖ Treatments aimed at peripheral nociceptive input:

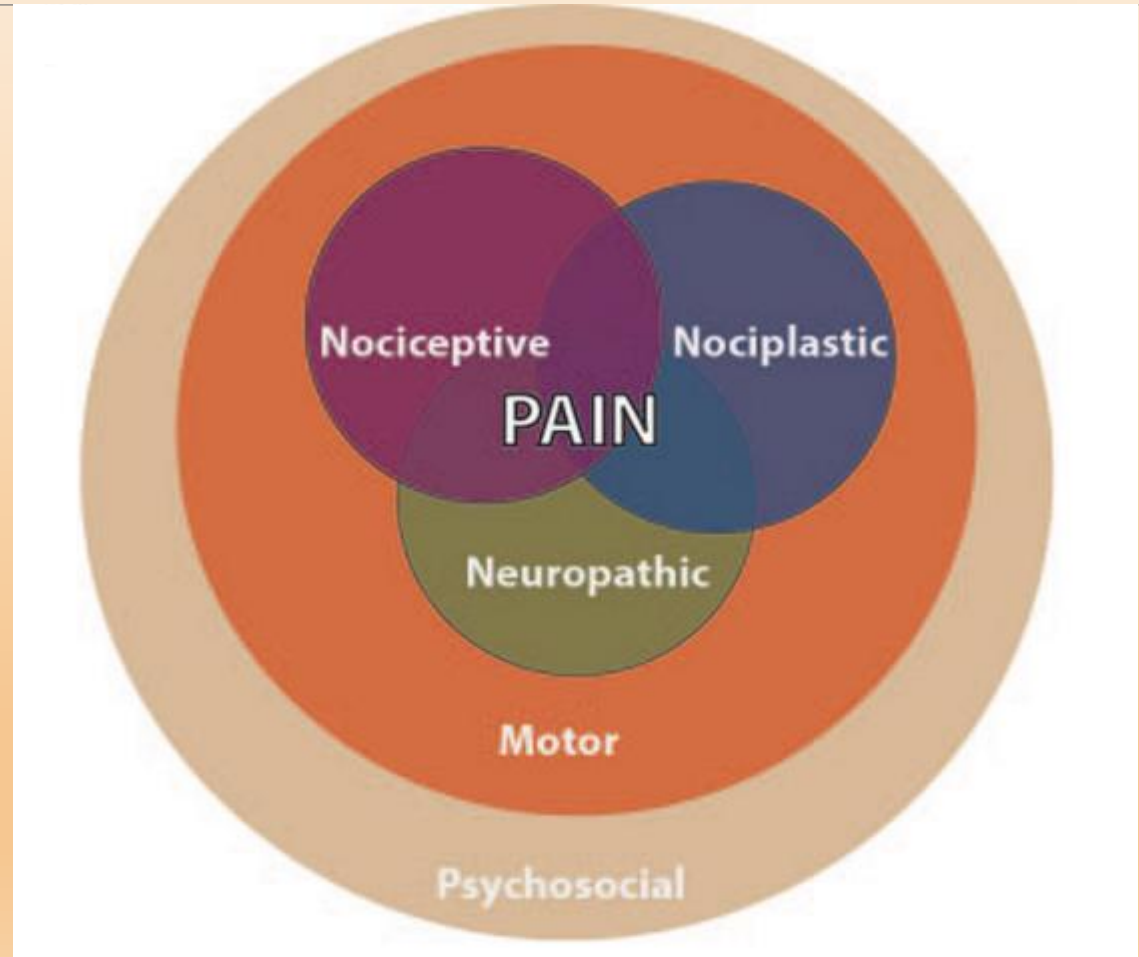
- ✓ effective in people with peripheral sensitization
- ✓ But with minimal effects in people with central sensitization
- ✓ Only partial effects in people with both peripheral sensitization and central sensitization



Peripheral versus Central: no more enough!

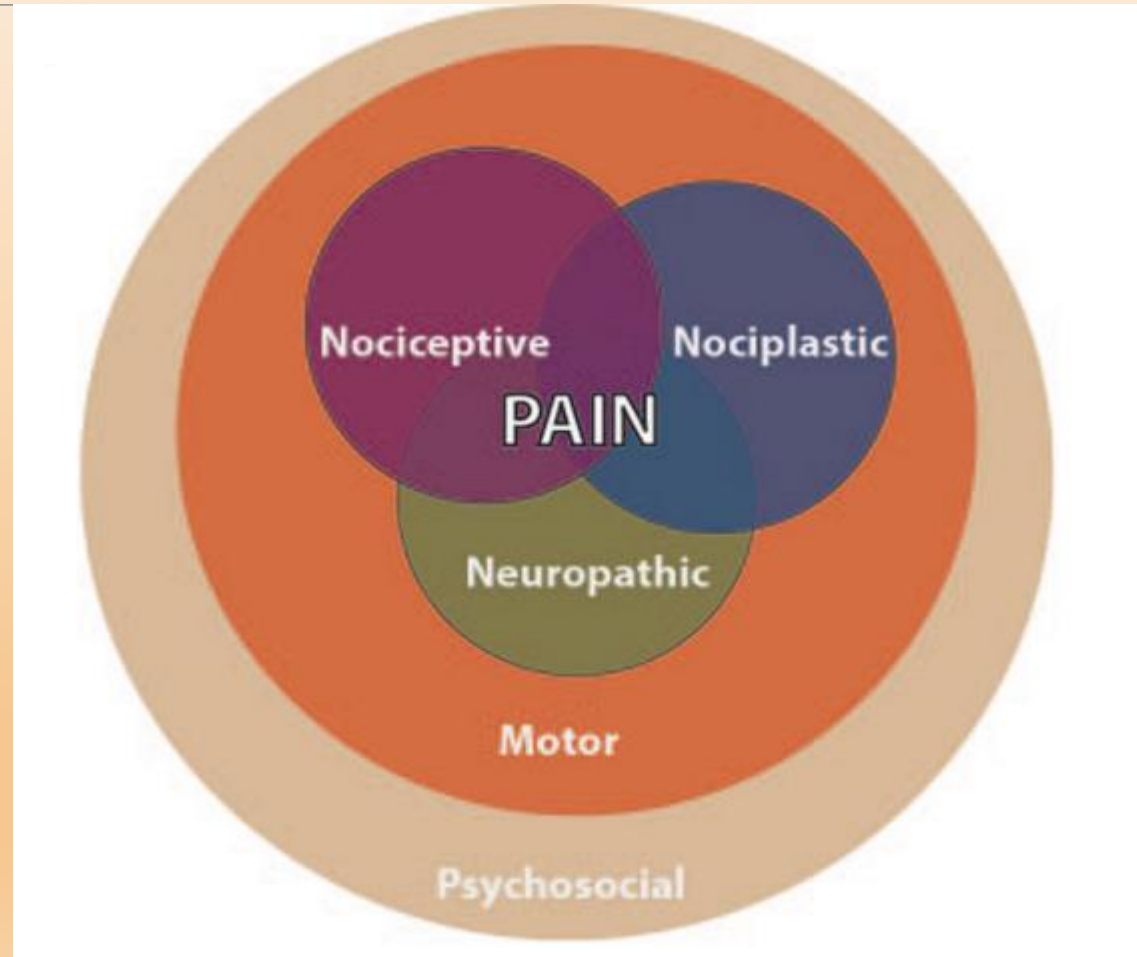
The 5 categories of Pain Mechanisms

1. Nociceptive
2. Central
3. Neuropathic
4. Movement system
5. Psychosocial



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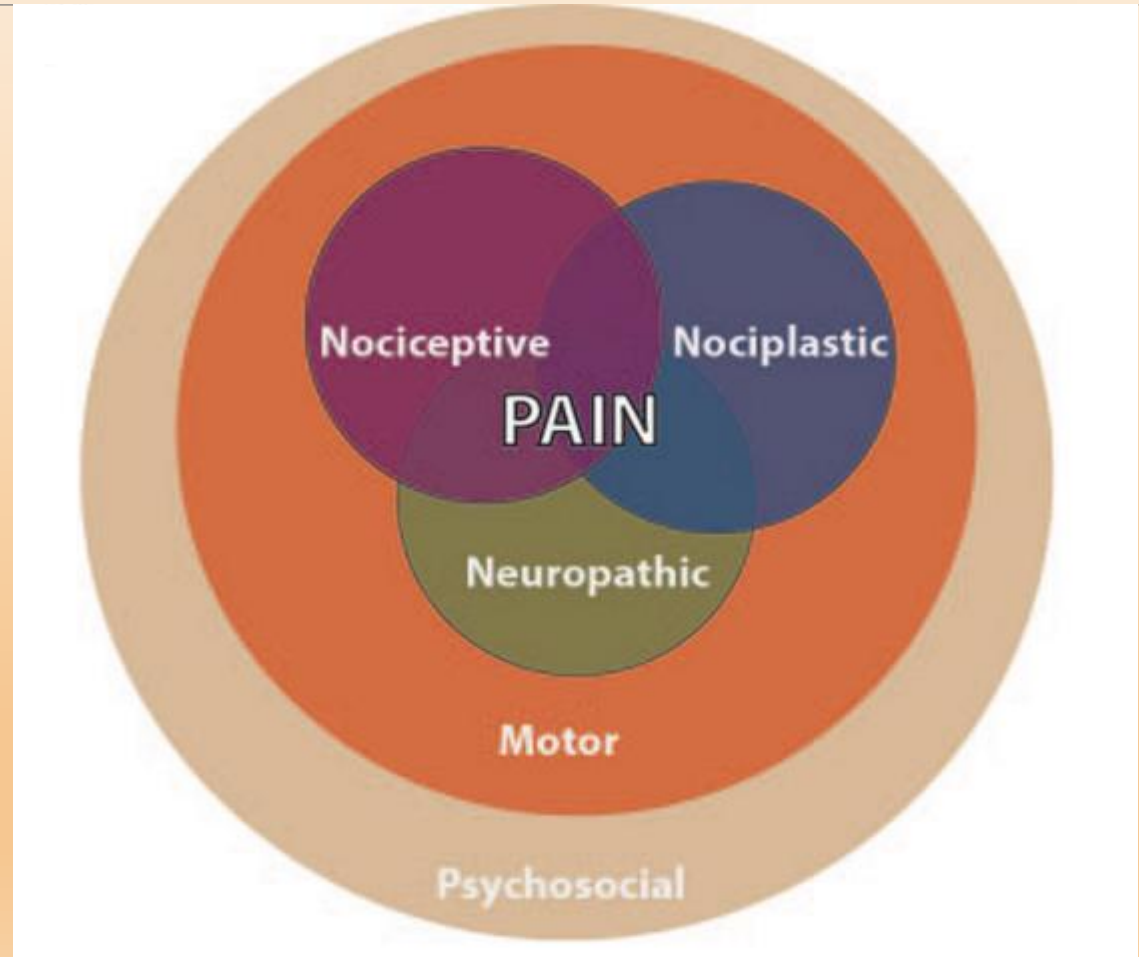
The latest knowledge

It is increasingly clear that patients need to be evaluated for:

- 1. Changes in peripheral tissues and nociceptors**
2. Reduced central inhibition and enhanced central excitability
3. Neuropathic pain signs and symptoms
4. Alterations of the movement system
5. Psychosocial factors

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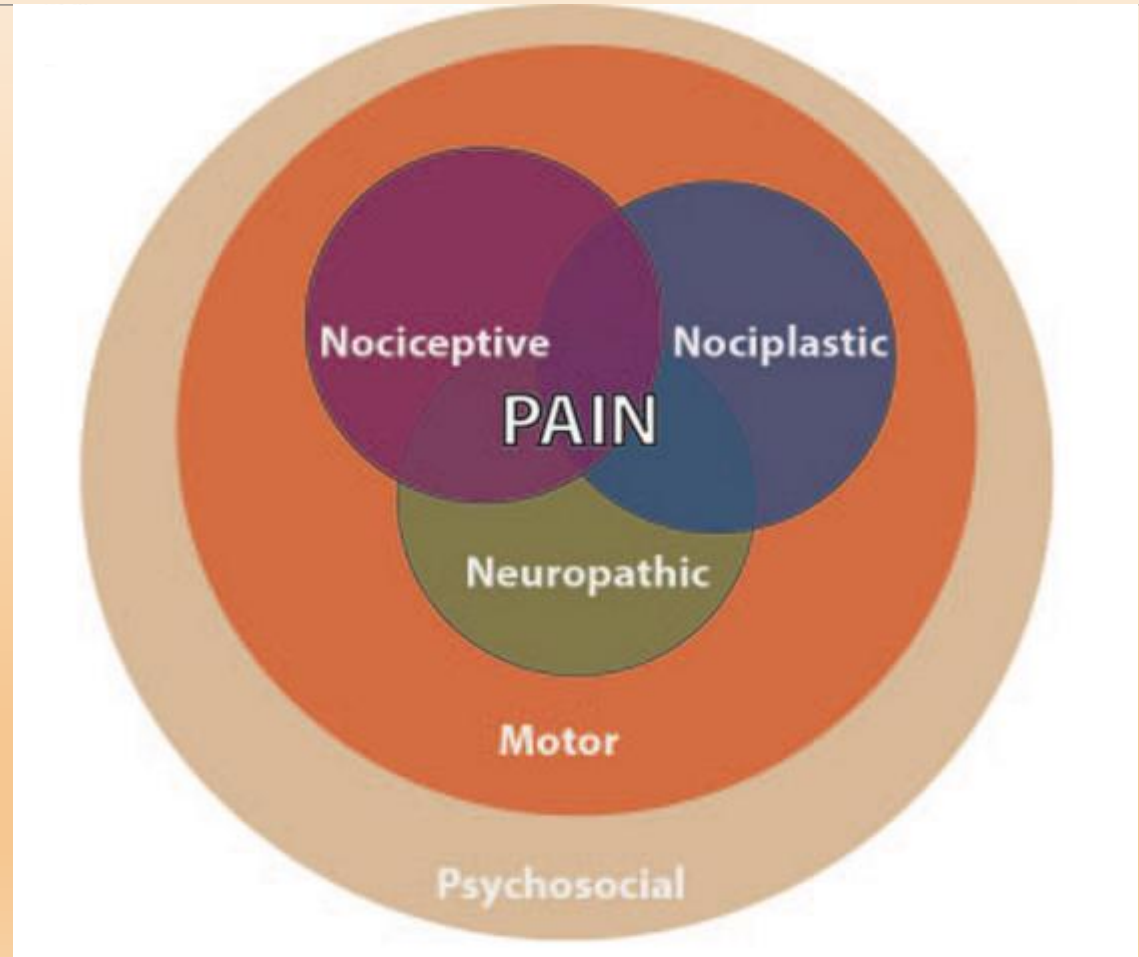
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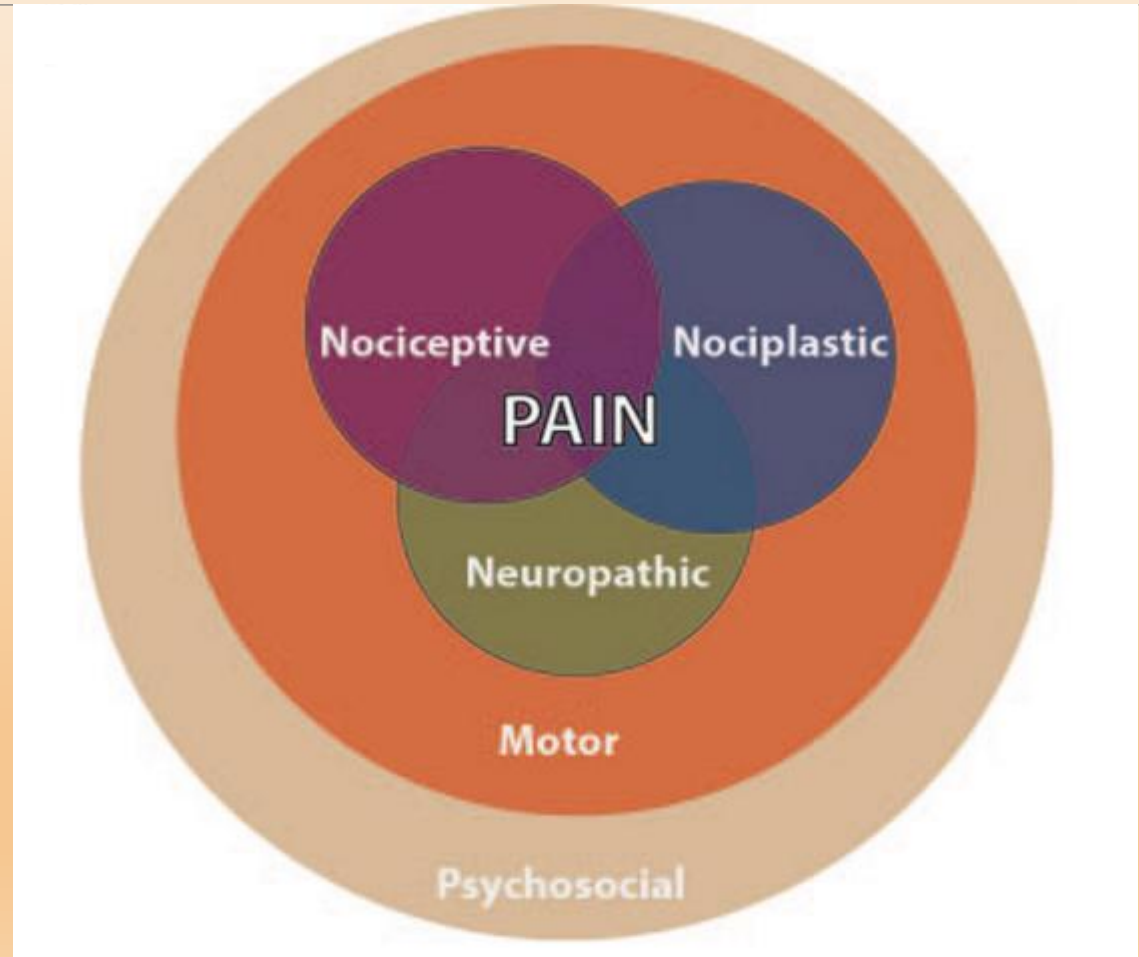
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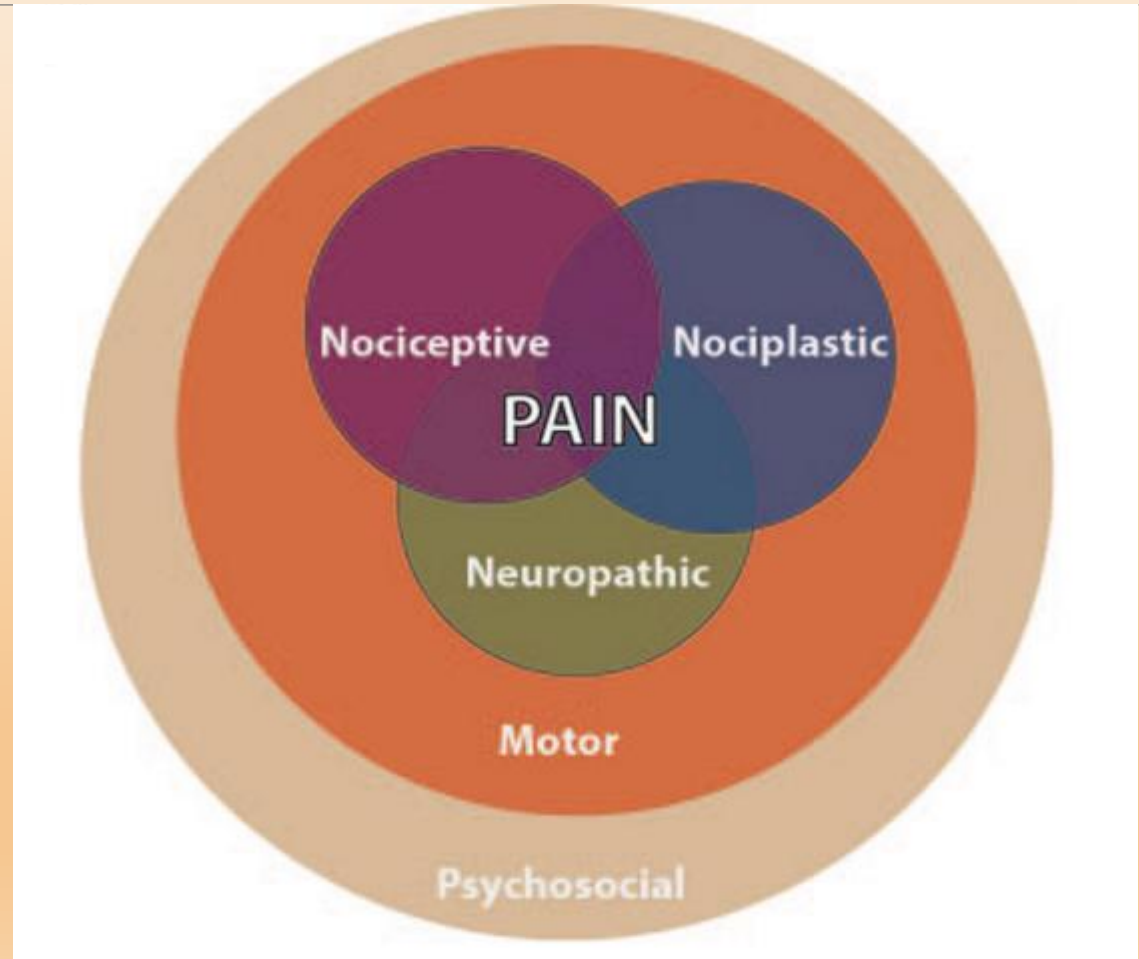
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5. **Psychosocial factors**

The 5 mechanistic categories for pain

NOCICEPTIVE

NOCIPLASTIC

NEUROPATHIC

MOTOR

PSYCO-SOCIAL

Description & Examples of 3 Main Pain Mechanisms

	NOCICEPTIVE	NOCIPLASTIC	NEUROPATHIC
Causes	Activation of nociceptors: <ul style="list-style-type: none"> - Inflammation - Mechanical - Irritant - Injury 	Disturbance in central pain processing: <ul style="list-style-type: none"> - Excitability increased - Inhibition decreased 	Lesion or disease of the somato-sensory system

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Examples	<ul style="list-style-type: none"> ➤ Osteoarthritis ➤ Rheumatoid Arthritis ➤ Ankle sprain 	<ul style="list-style-type: none"> ➤ Fibromyalgia ➤ Low Back Pain ➤ Temporomandibular disorder 	<ul style="list-style-type: none"> ➤ Diabetic Neuropathy ➤ Carpal Tunnel Syndrome ➤ Complex Regional Pain Syndrome

Mechanisms of Pain & Treatments

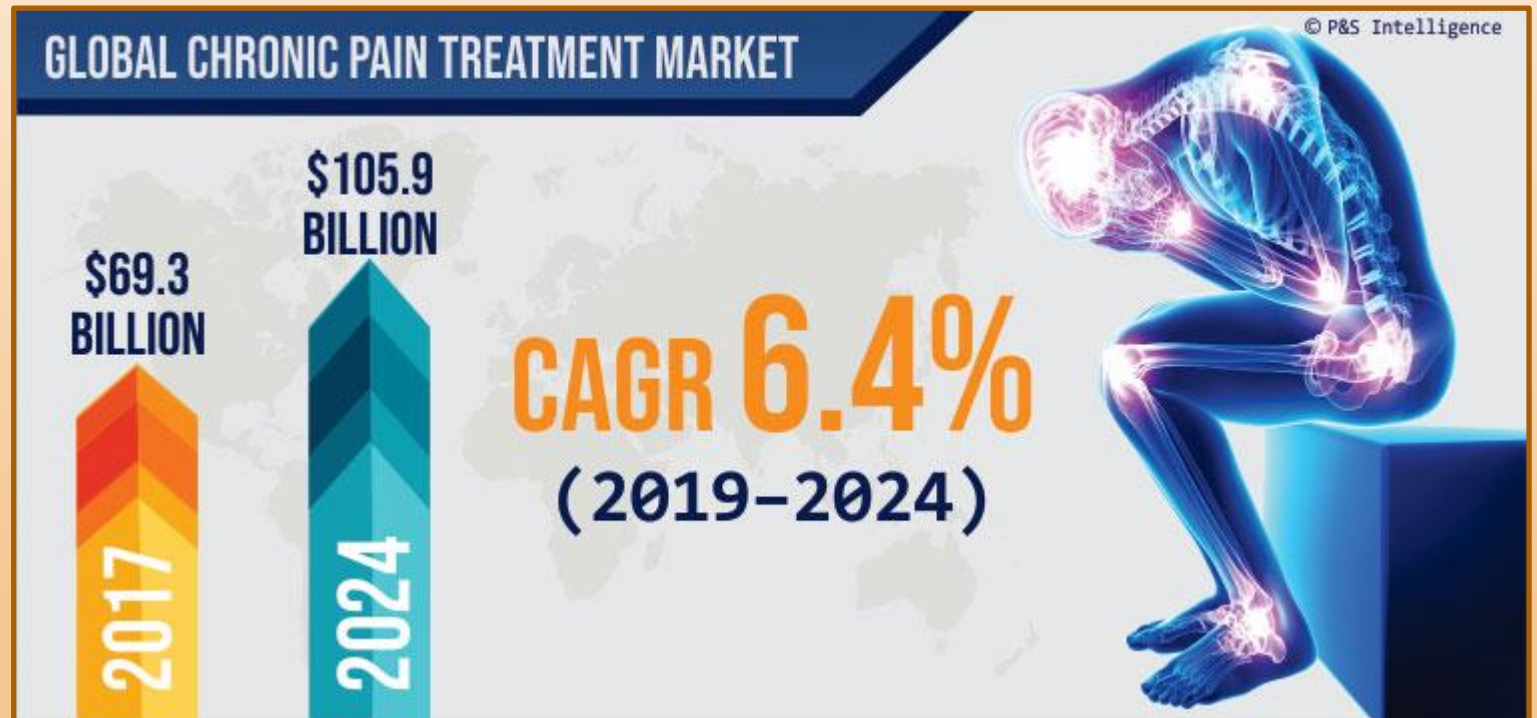
- Several different mechanisms can simultaneously contribute to a patient's pain
- Alternatively, 1 or 2 primary mechanisms may cause a patient's pain
- Adaptation and changes of the body are always present

- Further, within a single pain mechanism, there are likely many possible subgroups

Individualized Care = Personal Medicine

To individualize care, common physical therapist interventions, can be used to target specific pain mechanisms such as:

- education
- exercise
- manual therapy
- and TENS



The 5 mechanistic categories for pain: Medications & Sites of Action

	NOCICEPTIVE	NOCIPLASTIC	NEUROPATHIC	PSYCHO-SOCIAL	MOTOR
Sites of Action	<ul style="list-style-type: none"> ✓ Topical analgesics ✓ NSAIDs ✓ Opioids ✓ Channel blocker 	<ul style="list-style-type: none"> ✓ S-N-A R Inhibitors ✓ Tricyclic anti-depressants 	<ul style="list-style-type: none"> ✓ Gaba-pentinoids 	<ul style="list-style-type: none"> ✓ S-N-A R Inhibitors ✓ Tricyclic anti-depressants 	<ul style="list-style-type: none"> ✓ Muscle relaxants

The 5 mechanistic categories for pain: Common PT Treatments

	NOCICEPTIVE	NOCIPLASTIC	NEUROPATHIC	PSYCHO-SOCIAL	MOTOR
Common treatments	<ul style="list-style-type: none"> ✓ Exercise ✓ Massage ✓ TENS 	<ul style="list-style-type: none"> ✓ Education ✓ Exercise ✓ Massage ✓ Manipulation ✓ TENS 	<ul style="list-style-type: none"> ✓ Exercise 	<ul style="list-style-type: none"> ✓ Education ✓ Exercise ✓ Massage 	<ul style="list-style-type: none"> ✓ Education ✓ Exercise ✓ Manipulation

Psychological Morbidity & Social Consequences

The Burden of Chronic Pain - 2018

FACTS ABOUT CHRONIC PAIN



Individualized Care = Personal Medicine

Although the evidence elucidating these pain mechanisms will continue to evolve, the approach outlined here provides a **conceptual framework** for applying new knowledge as advances are made

We care !

CHRONIC PAIN



ONE OF THE MOST
UNDERESTIMATED
HEALTH CARE
PROBLEMS IN
THE WORLD TODAY

Domains of Chronic Pain

Quality of Life

- Physical functioning
- Ability to perform activities of daily living
- Work
- Recreation

Psychological Morbidity

- Depression
- Anxiety, anger
- Sleep disturbances
- Loss of self-esteem

Social Consequences

- Marital/family relations
- Intimacy/sexual activity
- Social isolation

Socioeconomic Consequences

- Healthcare costs
- Disability
- Lost workdays

Choosing the best for the patient!

Intervention implemented solely by **physical therapists**
(even trained in the biopsychosocial approach)

versus

Multidisciplinary team with a clinical psychologist
(or sometimes a psychiatrist)