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# Perspectives on *Yoga* Inputs in the Management of Chronic Pain

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continued

## Learning Outcomes

As a result of this course, participants will be able to:

- 1) name 3 aspects of brain function which are altered by chronic pain.
- 2) describe the neuromatrix of pain.
- 3) list 3 yoga treatment options to manage chronic pain.

continued



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## Pain Theory

- **Intensive Theory (Erb, 1874):** Defines pain, not as a unique sensory experience but rather, as an emotion that occurs when a stimulus is stronger than usual.
- **Specificity Theory (Von Frey, 1895):** Specific pain receptors transmit signals to a "pain center" in the brain that produces the perception of pain
- **Strong's Theory (Strong, 1895):** Pain was an experience based on both the noxious stimulus and the psychic reaction or displeasure provoked by the sensation.
- **Pattern Theory (Nafe, 1929):** People feel pain when certain patterns of neural activity occur, such as when appropriate types of activity reach excessively high levels in the brain

continued

- **Central Summation Theory (Livingstone, 1943):**  
Prolonged abnormal activity bombards cells in the spinal cord, and information is projected to the brain for pain perception.
- **The Fourth Theory of Pain (Hardy, Wolff, & Goodell, 1940's):** It stated that pain was composed of two components: the perception of pain and the reaction one has towards it.
- **Sensory Interaction Theory (Noordenbos, 1959)** It describes two systems involving transmission of pain: fast and slow system.
- **Gate Control Theory (Melzack and Wall, 1965)**  
pain stimulation is carried by small, slow fibers that enter the dorsal horn of the spinal cord; then other cells transmit the impulses from the spinal cord up to the brain.

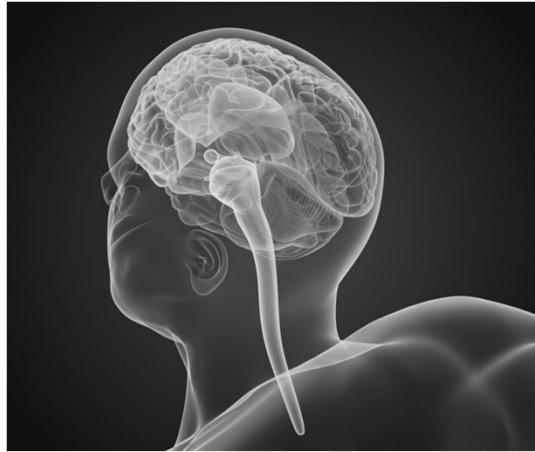
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## The Neuromatrix of Pain

- The notion of a neuromatrix of the brain is a theoretical model that explains the nature of pain, including chronic pain.
- The brain and spinal cord are what produce pain, not tissue damage.
- Various parts of the central nervous system work together to produce pain.

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## Pain Response in the Brain



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## Biopsychosocial Model of Pain

- It states that pain is not simply a neurophysiological phenomenon, but it also involves social and psychological factors. It says that factors like culture, family, nociceptive stimuli, and environment influence pain perception, and thus, ultimately affect a person's emotions, behaviors, and cognition.

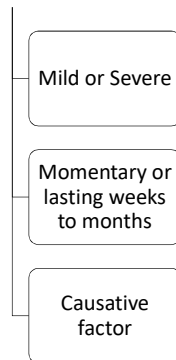
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## Why is pain so complicated?

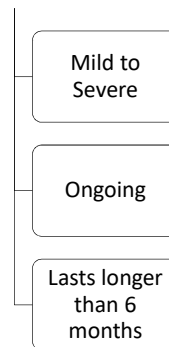
- Pain has been reported by people for whom there is no physiological evidence for feeling pain.
- Environmental factors and individual differences make pain a subjective experience that is difficult to assess.
- Research on pain is limited by ethics restrictions that minimize animal subjects' pain and suffering, and not many humans volunteer for pain studies.

## Acute vs. Chronic Pain

### Acute Pain:



### Chronic Pain:



## Chronic pain

- Chronic pain is multi-dimensional. At the physical level itself, beyond the nociceptive pathway, there is hyper arousal state of the components of the nervous system, which negatively influences the tension component of the muscles, patterns of breathing, energy levels, and mindset, all of which exacerbate the distress and affect the quality of life of the *individual and family*.



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## Unique aspects of chronic pain

- The longer that pain persists, the easier it is to feel it.
- You can feel pain from factors unrelated to physical harm.
- Your central nervous system adjusts the "volume level" of pain signals sent to your brain.
- All pain has a psychological component.
- Significant emotional distress is common in chronic pain.

continued

## Fear of Pain

- People who have chronic pain can have physical effects that are stressful on the body. These include tense muscles, limited ability to move around, a lack of energy, and appetite changes. *Emotional effects of chronic pain include depression, anger, anxiety, and fear of re-injury.* Such a fear might limit a person's ability to return to their regular work or leisure activities.

continued

## Chronic pain impacts:

- Emotional
- Social
  - Interpersonal relations.
  - The loss of role
- Intellectual
- Spiritual

Pain Management means

**YOU**

manage your pain!

continued

continued

## YOGA

- *Yoga* offers various levels and approaches to relax, energize, remodel, and strengthen the body and psyche.
  - Postures (asanas)
  - Breath practice (pranayama)
  - Restorative (environment support)
  - Yoga Nidra (yogic sleep)
  - Meditation

continued

## Chronic pain alters brain structure

- Brain imaging studies have shown that chronic pain leads to changes in gray matter volume and the integrity of white matter connectivity. Gray matter is home to the neurons in specific brain regions, while white matter creates communication lines between your various brain regions.

continued

## Pain and the Brain

- Chronic pain triggers changes in brain structure that are linked to depression, anxiety, and impaired cognitive function.
- New research shows that practicing yoga has the opposite effect on the brain and can relieve chronic pain.

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There are NO  
contraindications for yoga!

Yoga postures may be  
modified as needed

continued

The best way to unlearn chronic stress and pain responses is to give the mind and body healthier responses to practice.

continued

What is yoga therapy, and how does it help with chronic pain?

continued

How does breathing  
contribute to chronic  
pain?

continued

How does Yogic breathing  
(Pranayama) contribute to  
management of chronic pain?

continued

## BREATH PRACTICE



continued

## MEDITATION AND PAIN

continued

continued



continued



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continued

## Restorative Yoga Postures for Chronic Pain

continued





## Conclusion

- The relaxation response unravels the mind-body Samskaras that contribute to pain and provides the foundation for healing habits.

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... to change the responses to these situations as well as to the chronic pain, and (3 ... that the increased sense of personal control over pain following a pain-management program ... The divine hymn sessions (bhakti yoga) were meant to foster an understanding that devotion and ...

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Questions?

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