Book Review - Explain Pain

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Introduction

Explain Pain explores how pain experiences are created in response to threats and dangers in our body, which can then be altered by our thoughts, beliefs and context ([1]). The book is designed to support health practitioners to explain pain to their patients as part of a multi-disciplinary approach to pain management.

One in five Australians, including children and adolescents, live with pain ([2]). For the majority of those suffering chronic pain (56%), their pain restricts what activities they can perform ([3]).

All pain is real and is complex. Research has shown that pain relies on context and is designed to be a protective instinct that varies significantly depending on the context in which the pain is experienced ([1]).

The meaning attributed to pain often occurs from an early age. In a healing context, the experience of pain may be influenced by how a health practitioner informs their patient about the effect of sensory inputs.

'Unexplained pain' can make the experience of pain worse. The brain has the final decision whether or not you ‘should’ be in pain and this is influenced by several factors.

Quality of life may be improved by combining pain physiology education with movement techniques leading to an increase in physical capacity and reduction in pain ([1]).

Key research studies and case reports are shared to assist in brain retraining for pain management. This book applies to all ages.

Highlights

- Every pain experience is unique. Although consistent patterns can be seen during pain experiences, the exact parts and amount of activity vary between people and even between assessments in the same person.
- Pain involves distributed brain activity.
- The experience of pain doesn't necessarily correlate to the amount of tissue damage or vice versa. Pain is a protective mechanism, rather than an indicator of tissue damage.
- The amount of pain experienced is dependent on its perceived cause. The brain determines the degree of pain based on many sensory cues. Pain depends on the balance of danger and safety.
- Sensory information (sensory cues) are proteins made inside the neuron (nerve cell), directed via the DNA. Any information coming from your sensors is evaluated by your central nervous system. It is important to note that the life of a sensor is short, therefore sensitivity is constantly changing, it is not a fixed experience.
- Evaluation of sensory information is very comprehensive and involves complex memory, emotional and reasoning processes, including the consideration of the potential consequences of a response.
- Pain is one of many protective outputs. When threatened, the body is capable of activating multiple protective systems including respiratory, immune, endocrine, motor, autonomic, cognitive, emotional and pain. Any of these systems can be 'over-protective.'
- Regarding "pain relying on context", research has found that the same minor finger injury "will cause more pain in a professional violinist than in a professional dancer because finger damage poses a greater threat to the violinist. The event plays a greater role in the violinist's livelihood and identity". If you demand more from a body part, that part shall have a greater representation in the brain. Violinists, cellists and guitarists have a bigger "virtual hand" in the brain than non-musicians.
- **Various factors increase the threat of pain**:
  - A lack of understanding/knowledge of chronic pain.
  - Which individuals are in your immediate environment. In pain experiments, 'males have been shown to have higher pain thresholds if tested by females'.
- **Phantom limb pain** may serve as a reminder of the virtual limb in the brain:
  - Neurons that had previously commanded muscles in the phantom (amputated) limb still exist in the brain, and can still send out signals (i.e. a request to move the limb). When these signals are sent, the brain expects signals in return, such as the feeling of movement or touch, to indicate that the command was carried out.
  - In brain imaging studies, phantom pain is associated with comprehensive alterations in the way the brain is organized.
- **Differences in pain experience** may be due to:
  - Socio-demographic factors such as the tendency to under-medicate female pain patients compared to males, which suggests health professionals may "psychologise" the pain of females more than the pain of males.
  - Differences in pain thresholds amongst different cultures. For example, the level of radiant heat found to be painful to Mediterranean peoples is merely regarded as warm to northern Europeans.
- Muscles are very responsive and stretchy with great blood supply and are therefore great healers. Muscles are "windows onto the brain".
- Intervertebral discs are best renamed to "living adaptable force transducers" (LAFT). Using language such as 'crumbling' and 'ruptured' might not be giving a true indication of what is

happening in the LAFT.

- Degeneration is a natural part of aging for all tissues. It does not have to contribute to a pain experience.
- 30% of people with no symptoms of low back pain have LAFTs bulging into their spinal canal.
- Various stress states may contribute to nerve sensitivity.
- Management models that may help identify any cue that contributes to, or maintains pain levels:
    - The orchestra model draws on cellular biology and brain imaging
    - The 'onion skin' model
    - Fear-based model
    - Evolutionary model
    - Clinical decision-making model
- "Coping" aims to reduce the threat value of the stimulus and its associated emotions and altered biology. Active copers manage pain better than passive copers.

Examples of active coping	Examples of in-active coping
Learning about the problem	Avoiding activity
Exploring ways to move	Doing nothing

- There are numerous tools to help manage pain as part of a holistic solution. For example, medication, diet, cognitive therapy, relaxation exercises and skilled attention to unhealthy tissues, to name but a few.
- Movement keeps your system "flushed". Stagnation activates the "acid sensors" and movement is a cheap treatment for "acid tissues".
- Understand pain so you don't fear it. Thought processes are powerful enough to maintain a pain state.
- Hurt does not always equate to harm. Reminding yourself of this via a process known as "self-talking" can help to "reset the system". When you are in pain, it doesn't necessarily mean that you are "damaging yourself".
- A practical exercise to try: When you next feel pain, think of what may have activated the alarm systems. What cues ignited the pain nodes in your brain? Get to know your pain.
- Exercise the "virtual body" along with your "actual body". Imagined movements activate the brain's "neurotags" but don't move the actual body. Research has shown that imagined movements can still be painful, in which case you could imagine performing part of the movement without igniting its accompanying 'pain tag'.

Conclusion

"Learning about pain physiology reduces the threat value of pain".

Pain experiences are normal (to protect and preserve) and are part of your brain's response to judging a threatening situation. Education, knowledge and the ability to act on that knowledge provides the foundation for therapeutic activity. Research has shown that pain neurophysiology

education is ideally included in a holistic pain management approach (4).

References

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3 Pain Australia. The cost of pain in Australia. March 2019. Deloitte access economics. Accessed June 2020. https://www.painaustralia.org.au/static/uploads/files/the-cost-of-pain-in-australia-final-report-12mar-wfxbrfyboams.pdf

4 Moseley GL, Nicholas MK, Hodges PW. A randomized controlled trial of intensive neurophysiology education in chronic low back pain. Clin J Pain. 2004;20(5):324-330.