

# The Fallacies of Pain Measurement and How to Avoid the Pitfalls

<sup>1</sup> Dr Dibyendunarayan Dhrubaprasad Bid

MPT (Ortho), Ph.D., FOMT, PGDSPT, PGDHS (Acu)  
Head of the Department & Associate Professor,  
Department of Musculoskeletal Sciences  
The Sarvajanik College of Physiotherapy, Surat-395003.

\*[dnbid71@gmail.com](mailto:dnbid71@gmail.com)

<sup>2</sup> Dr A. Thangamani Ramalingam

Faculty, The Sarvajanik College of Physiotherapy, Surat-395003.

\*[atramalingam@gmail.com](mailto:atramalingam@gmail.com)

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## ABSTRACT

Accurate pain measurement is crucial for effective pain management. However, pain measurement can be fraught with fallacies that can undermine the validity and reliability of pain assessment. This review is intended to examine some of the most common fallacies/pitfalls in pain measurement and their implications for clinical practice. To overcome these fallacies, clinicians and researchers should use multidimensional pain measures that capture the different dimensions of the pain experience and the psychological and social factors that influence pain perception and coping mechanisms. The dynamic nature of pain behest the importance of a comprehensive and multidimensional approach to pain assessment and management that considers pain's physical, psychological, and social aspects, including its underlying mechanisms, intensity, quality, and impact on function and quality of life. Physiotherapists using these strategies can improve the accuracy and reliability of pain evaluation and provide better care for people experiencing pain.

**Keywords:** Fallacy, Pitfalls, Pain, Measurement, physiotherapists

## INTRODUCTION:

Pain is a subjective experience defined as an unpleasant sensory and emotional experience associated with actual or potential tissue damage. It is a complex phenomenon that involves sensory, affective, cognitive, and social dimensions, making it difficult to measure accurately. There are various methods for pain measurement, including self-report measures, behavioural and observational measures, and physiological and neuroimaging techniques.<sup>[1, 2]</sup> However, these methods are not immune to fallacies, which can undermine the validity and

reliability of pain measurement. Nevertheless, accurate pain measurement is crucial for effective pain management and research.

John D. Loeser<sup>[3]</sup>, in his paper titled "Seres' Fallacies: A Critique of Current Thinking About Pain," critiques what he considers to be fallacious assumptions about the pain that was prevalent in the medical community at the time. Specifically, he criticizes pain as solely a physiological experience, separate from the psychological and social factors that can influence it. He

argues that this view is overly reductionist and ignores the complexity of pain as a subjective experience. This review will examine some of the most common fallacies in pain measurement and their implications for clinical practice.

#### **Pain is a unidimensional construct**

One of the most common fallacies in pain measurement is the assumption that pain is a unidimensional construct that can be measured using a single scale or instrument. However, pain is a multidimensional experience involving sensory but also emotional, cognitive, and social components. Therefore, relying on a single measure of pain can lead to incomplete and inaccurate assessments of pain intensity, quality, and impact.<sup>[4, 5]</sup> To overcome this fallacy, clinicians and researchers should use multidimensional pain measures that capture the different dimensions of the pain experience. For example, the McGill Pain Questionnaire and the Brief Pain Inventory are widely used multidimensional pain measures that assess pain intensity, quality, and impact on daily activities. For example, pain intensity, one of the most commonly used measures in pain assessment, only captures the sensory dimension of pain and does not account for the emotional and cognitive aspects. Therefore, additional measures, such as pain quality, pain interference, and pain catastrophizing, may be needed to provide a more comprehensive pain assessment. Moreover, different measures may be more suitable for diverse populations, such as children, older adults, and individuals with communication or cognitive impairments, who may have different pain experiences and needs. Therefore, a comprehensive pain assessment should use multiple measures tailored to the individual's pain experience and characteristics.<sup>[6-8]</sup>

#### **Pain is always proportional to tissue damage**

Another common fallacy is the assumption that pain is always proportional to tissue damage. While pain is often a symptom of tissue damage, it can also occur without identifiable tissue damage or pathology. Moreover, the severity of pain is not always proportional to the severity of tissue damage, as various psychological, cultural, and environmental factors influence pain perception. Clinicians and researchers should use a bio psychosocial pain measurement approach to avoid this fallacy. For example, the bio psychosocial pain model considers psychological and social factors, such as depression, anxiety, and social support, in assessing and managing pain.<sup>[9, 10]</sup>

#### **Pain can be measured objectively**

Another fallacy in pain measurement is the assumption that pain can be measured objectively using physiological or neuroimaging techniques. While these techniques can provide valuable insights into the neural correlates of pain, they do not capture the subjective experience of pain and its emotional and social dimensions. Therefore, relying solely on objective measures of pain can lead to incomplete and inaccurate pain assessments. To overcome this fallacy, clinicians and researchers should use a combination of subjective and objective measures of pain. For example, while self-report measures of pain provide valuable information about the individual's pain experience, physiological measures, such as heart rate variability and skin conductance, can provide objective data about the physiological responses to pain.<sup>[11]</sup>

#### **Self-report measures of pain are always reliable**

Self-report measures of pain, such as the visual analog scale or numeric rating scale, are widely used in clinical practice and research. However, they are not always reliable, as they rely on the individual's

ability to report their pain experience accurately. Factors such as cognitive impairment, language barriers, and cultural differences can affect the validity and reliability of self-report measures of pain. To overcome this fallacy, clinicians and researchers should use a range of self-report measures tailored to the individual's cognitive and linguistic abilities and cultural background. For example, the Faces Pain Scale-Revised is a self-report measure of pain that uses pictures of facial expressions to assess pain in children and individuals with cognitive impairments. [12, 13]

#### **Pain can be eliminated completely**

This fallacy in pain measurement is the assumption that pain can be eliminated. While pain management can reduce pain intensity and improve functional outcomes, it is rarely possible to eliminate pain, especially in chronic pain conditions. Chronic pain is a complex condition involving physical but also psychological and social factors. Pain can become embedded in the nervous system and become a persistent feature of an individual's experience, even without ongoing tissue damage. Therefore, unrealistic expectations for pain relief can lead to dissatisfaction and poor adherence to treatment. Instead, a more realistic goal of pain management is to improve the individual's ability to function and participate in daily activities while minimizing pain and improving their overall quality of life. [14]

#### **Pain is always expressed in the same way**

This fallacy assumes that pain is always expressed in the same way across individuals and cultures. However, the expression of pain can vary widely across different individuals and cultures. For example, some individuals may express pain more stoically, while others may be more expressive. Cultural norms and values can also influence the expression of pain.

Therefore, clinicians and researchers need to be aware of these individual and cultural differences in the expression of pain. [15]

#### **Pain is a static experience**

This fallacy in pain measurement is the assumption that pain is a static experience that remains constant over time. However, pain is a dynamic and fluctuating experience that can vary in intensity, duration, and quality over time. Therefore, pain assessment should include a longitudinal evaluation of pain over time, including pain intensity and quality changes and the effectiveness of pain management interventions. [16]

#### **Pain is always a negative experience**

This fallacy in pain measurement assumes that pain is always a negative experience. While pain is often associated with negative emotions such as anxiety, depression, and frustration, pain can also have positive aspects. For example, pain can be a warning signal to protect the body from further injury or harm. Pain can also provide an opportunity for personal growth and self-discovery. Therefore, a comprehensive pain assessment should include evaluating the positive and negative aspects of the individual's pain experience. [17]

#### **Pain can be accurately measured in all populations**

This fallacy in pain measurement hypothesizes that pain can be accurately measured in all populations, regardless of age, gender, culture, or language. However, different populations may have different pain experiences and use different words or expressions to describe their pain. For example, children may have difficulty accurately describing their pain experience, while older adults may have different pain experiences related to age-related changes in the body. Therefore, pain assessment should be tailored to each population's needs and characteristics. [18]

#### **Pain is always a private experience**

This fallacy assumes that pain is always a private experience only known to the individual experiencing it. However, pain can also be a shared experience influenced by social and cultural factors. For example, pain can be influenced by cultural beliefs and expectations surrounding pain expression and pain management. Therefore, a comprehensive pain assessment should include evaluating the social and cultural factors influencing pain perception and management. <sup>[19]</sup>

#### **Pain is only a sensory experience**

This fallacy assumes that pain is only a sensory experience, meaning it is only related to physical bodily sensations. However, pain is a complex experience involving emotional, cognitive, and behavioural components and social and cultural factors. Psychological factors such as anxiety and depression can exacerbate pain, while social factors such as social support can help alleviate pain. Pain can also be influenced by cognitive factors such as expectations, beliefs, and attitudes. Additionally, cultural beliefs and values can influence pain perception and expression. <sup>[20]</sup>

#### **Pain is always a reliable indicator of tissue damage**

This fallacy assumes that pain is always a reliable indicator of tissue damage. However, this is not always the case, as pain can be influenced by various factors, such as psychological and social factors, that can increase or decrease the pain experience. For example, a person may experience pain without tissue damage, such as in chronic pain syndromes or phantom limb pain. On the other hand, a person may not experience pain even in the presence of tissue damage, such as in cases of painless myocardial infarction. As a result, depending solely on pain as a sign of tissue damage may lead to a false diagnosis and inadequate treatment. <sup>[21, 22]</sup>

#### **Pain is a sign of weakness or moral failure**

This pain measurement fallacy assumes pain is a sign of weakness or moral failure. This misconception is harmful and stigmatizes individuals experiencing pain, discouraging them from seeking help and contributing to their suffering. Research shows that the belief that pain is a sign of weakness or moral failing is associated with negative attitudes towards people experiencing pain, including a lack of empathy and compassion. These negative attitudes can result in inadequate pain management, delayed diagnosis, and increased morbidity and mortality. Therefore, addressing and challenging these stigmatizing beliefs and attitudes toward pain is essential. <sup>[23]</sup>

#### **Pain is always caused by a specific injury or disease**

This fallacy assumes that a specific injury or disease always causes pain. However, pain can be a complex and multifactorial experience that various biological, psychological, and social factors can influence. For example, chronic pain can persist even after the initial injury or disease has healed and may be affected by anxiety, depression, and stress. Similarly, pain in individuals with chronic conditions such as fibromyalgia or irritable bowel syndrome may not have an identifiable underlying cause. Therefore, a comprehensive pain assessment should consider the underlying cause of pain, its multidimensional nature, and the factors that may contribute to its development and persistence. <sup>[9, 24, 25]</sup>

#### **Pain can be objectively measured using behavioural measures**

This fallacy assumes that pain can be objectively measured using behavioural measures alone. While behavioural measures, such as facial expressions, vocalizations, and body movements, can provide helpful information about pain, they do not capture the subjective

experience of pain. Pain is a complex and multifaceted experience that includes sensory, affective, cognitive, and behavioural dimensions, which are inherently subjective and cannot be fully captured by behavioural measures alone. Instead, a comprehensive pain assessment should include objective and subjective measures, such as self-report, physiological, and imaging studies, to provide a more comprehensive understanding of the pain experience. [26-28]

### **Pain is always experienced as a conscious sensation**

This fallacy in pain measurement is the assumption that pain is always experienced as a conscious sensation. However, recent research has suggested that pain can also be experienced unconsciously, without conscious awareness or perception. For example, studies have shown that subliminal pain stimuli can elicit physiological responses, even without conscious awareness of pain. Additionally, patients with certain neurological conditions may experience pain without conscious awareness or perception, such as in anosognosia (-is a neurological condition in which the patient is unaware of their neurological deficit or psychiatric disorder.) or somatoparaphrenia (-is a delusional belief whereby a patient feels that a paralyzed limb does not belong to his body). [29]

### **Pitfalls of measuring pain**

Here are some common pitfalls of measuring pain:

1. *Subjectivity:* Pain is a subjective experience; people may perceive and report pain differently. This can make measuring pain accurately and consistently across different individuals challenging.
2. *Lack of standardization:* Many different pain measurement tools and scales may not be standardized or validated for all types of pain or populations. This can lead to inconsistencies in pain measurement and

make it difficult to compare results across studies.

3. *Timing and context:* Pain can be influenced by many factors, including the timing and context of the pain measurement. For example, a person may report lower pain levels during a distraction or in a positive mood. This can make measuring pain consistently over time or in different contexts challenging.
4. *Bias:* Pain measurement can be influenced by preferences and expectations, both on the part of the person reporting the pain and the person measuring it. For example, a person may be more likely to report higher pain levels if they believe that is what is expected of them.
5. *Lack of specificity:* Pain measurement tools may not be specific enough to capture the nuances and complexities of different types of pain, such as chronic or neuropathic pain. This can lead to inaccurate or incomplete assessments of pain.
6. Considering the individual's perspective and context, it's important to be aware of these pitfalls and to use pain measurement tools and scales appropriately in clinical practice.

### **How can physiotherapists avoid pitfalls in pain measurement?**

As healthcare professionals who work with people experiencing pain, physiotherapists play an important role in accurately assessing and measuring pain. Here are some strategies that physiotherapists can use to avoid deficiencies in pain measurement. [30-33]

1. *Use various measurement tools:* Physiotherapists can use various tools to measure pain, including self-report questionnaires, observation of pain behaviour, and physiological measures such as heart rate and blood pressure. Using multiple measures can provide a more comprehensive assessment of pain.
2. *Tailor measurement to the individual:* It's essential to tailor the pain measurement to



the individual's needs and characteristics. For example, people with chronic pain may require different measurement tools than people with acute pain.

3. *Use standardized measurement tools:* Using standardized measurement tools validated for specific types of pain or populations can improve the accuracy and consistency of pain measurement.
4. *Consider contextual factors:* Pain is influenced by contextual factors such as time of day, activity level, and mood. Physiotherapists should consider these factors when assessing and measuring pain and use consistent measurement protocols to reduce variability.
5. *Be aware of potential biases:* Physiotherapists should be mindful of potential biases that can influence pain measurement, such as expectations or beliefs about pain, and take steps to reduce their impact.
6. *Use a multidisciplinary approach:* Pain is complex and often requires an interdisciplinary approach to treatment. Working collaboratively with other healthcare professionals, such as pain specialists and psychologists, can provide a more comprehensive pain assessment and improve treatment outcomes. By using these strategies, physiotherapists can improve the accuracy and reliability of pain measurement and provide better care for people experiencing pain.

### CONCLUSION

Pain measurement is a complex and multifaceted task that requires a comprehensive and individualized approach. By avoiding the fallacies of pain measurement discussed in this review and adopting a multidimensional and personalized approach to pain assessment and management, clinicians and researchers can improve the validity and reliability of pain assessment and provide more effective pain management strategies.

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