

# Despite frequent use, the Numeric Pain Rating Scale still lacks high-quality evidence to confirm its suitability for measuring pain in clinical trials for people with shoulder disorders

## The Problem

- Pain intensity has been endorsed as a **mandatory domain** to be measured in all clinical trials of shoulder disorders.
- **The Numeric Pain Rating Scale (NPRS)** was 1 of 6 measures that passed the Truth Part 1 and Feasibility components of the OMERACT filter.
- We aimed to systematically synthesize the available evidence on the measurement properties of the NPRS, to determine its suitability to measure pain in clinical trials for people with shoulder disorders.

## Methods

1. Systematic Review (June 2023)
2. Studies assessing any measurement property of the NPRS for shoulder disorders were included
3. COSMIN-OMERACT Good Methods Check
4. Data extraction for studies rated green or amber
5. Evidence synthesized for each measurement property using the OMERACT Filter 2.2 Algorithm

## Key Results

**Table 1: Summary of Measurement Properties (SOMP)**

**Good Methods Check:**

- Good to go
- Proceed with caution
- Stop, do not continue

**Performance assessment:**

- + findings above threshold of performance
- findings below threshold of performance
- ± equivocal findings

a: average or current pain  
 b: background pain i.e., pain at rest  
 c: evoked pain i.e., pain on movement

Source	Conditions of measurement	Truth		Discrimination		
		Construct validity	Test-retest reliability	Longitudinal construct validity	Clinical trial discrimination	Thresholds of meaning
Hummel-Berry, 2001	b, c	±				
Michener, 2011	a			±		+
Mintken, 2009	a		±	-		+
O'Halloran, 2013	a			±		
Riley, 2019	a	±	+			
Riley, 2015	a, b, c	-				
Tubach, 2006	c					±
VanMeeteren, 2006	a			+		
Atkinson, 2008	a				-	
Kardouni, 2015	a				+	
Rhon, 2014	a				+	
Ranagan, 2020	a				±	
<b>Synthesis</b>						
Studies per property		3	2	4	4	3
Used in synthesis		3	2	4	4	3
Synthesis statement per property						

## Additional Results

**12 studies were included contributing to 16 components of evidence.**

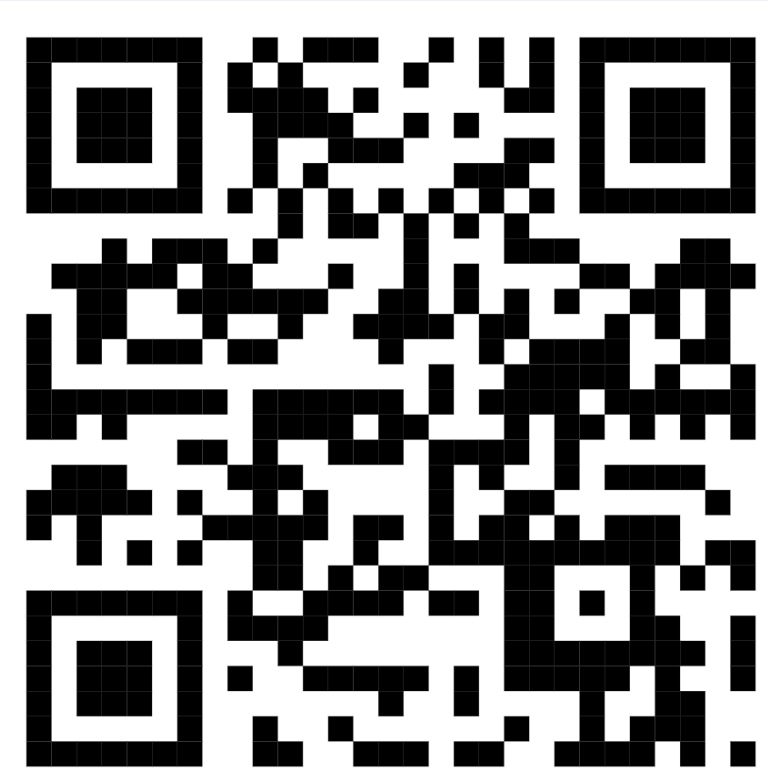
- Construct validity (n=3)
- Test-retest reliability (n=2)
- Longitudinal construct validity (responsiveness) (n=4)
- Clinical trial discrimination (n=4)
- Thresholds of meaning (n=3)

Only 6/16 components of evidence were judged to have good methods (rated green).

## Conclusion

- Additional **high-quality research is required** to confirm the construct validity, test-retest reliability, responsiveness and clinical trial discrimination of the NPRS before it can be endorsed as suitable to measure pain in clinical trials for people with shoulder disorders.

## Measurement Properties of the Numeric Pain Rating Scale People with Shoulder Disorders



Scan here to read the abstract.

**Furtado R, Haas R, Marmura H, Whittle S, Ramiro S, Beaton D, Shea B, Richards P, Verhagen A, Gagnier J, Buchbinder, R**

