

Diagnosing neck pain: which tests provide useful information? Evidence-based recommendations

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BACKGROUND

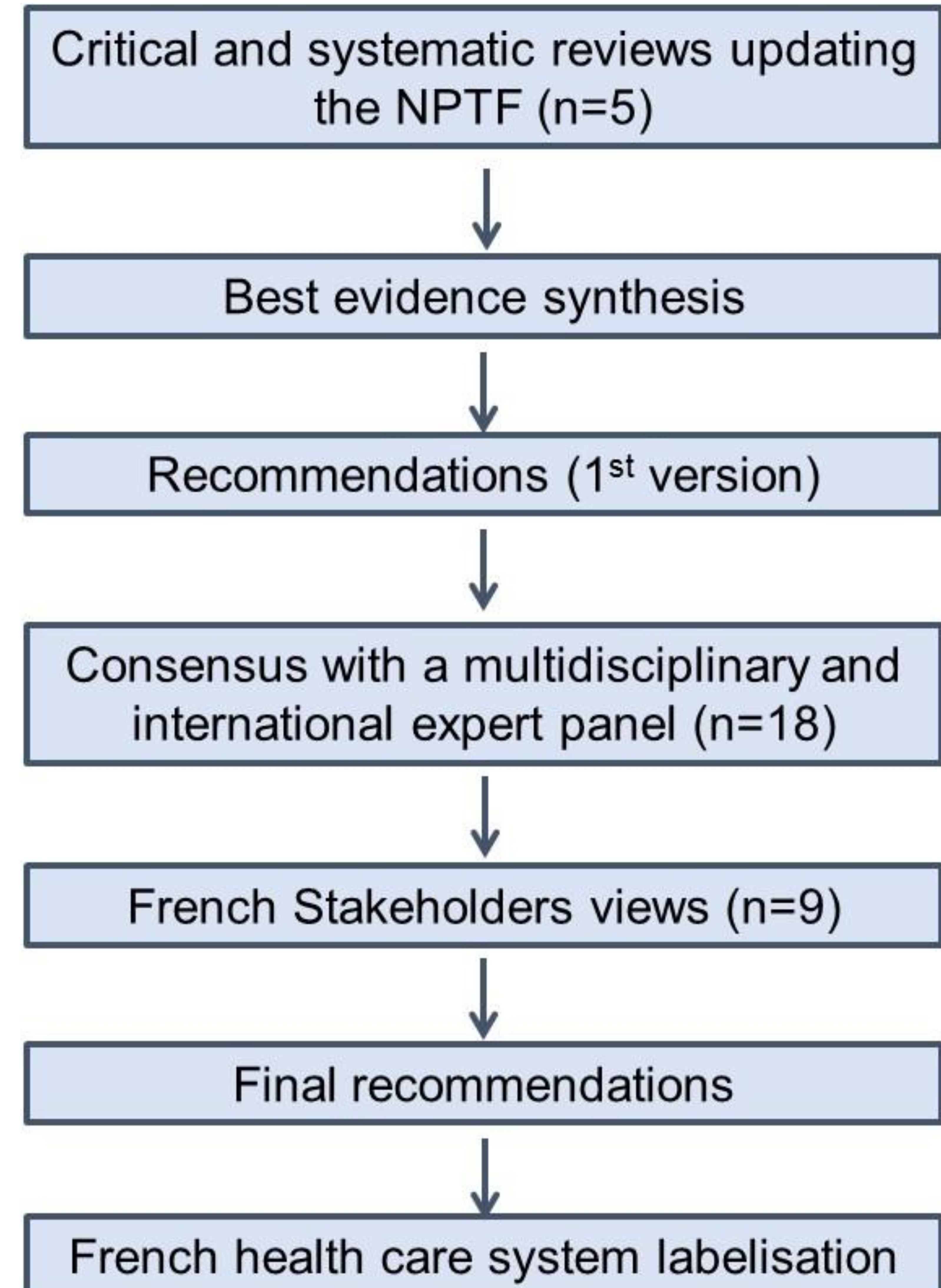
- Neck pain and its Associated Disorders (NAD) are common in the general population.
- More than 80% of individuals experience NAD during their lifetime and 30-50% of the general adult population reports neck pain annually [1-2].
- An accurate diagnosis is necessary to guide patient management and inform prognosis [3].
- Clinicians require an approach that is based on valid and reliable tests.
- Clinical tests that do not have evidence of reliability and validity can lead to misdiagnosis and should not be used in clinical practice.
- However, the clinical utility of some diagnostic tests used in the assessment of NAD patients remains unclear.

PURPOSE

- To develop evidence-based recommendations for the clinical assessment of patients with NAD.
- Clinical tests were divided in five categories:
 1. To assess the anatomical integrity of the cervical spine in adults with NAD
 2. To screen for cervical spine injuries
 3. To measure pain and disability
 4. To assess posture, pain location, and cervical spine mobility
 5. To study cervical functionality

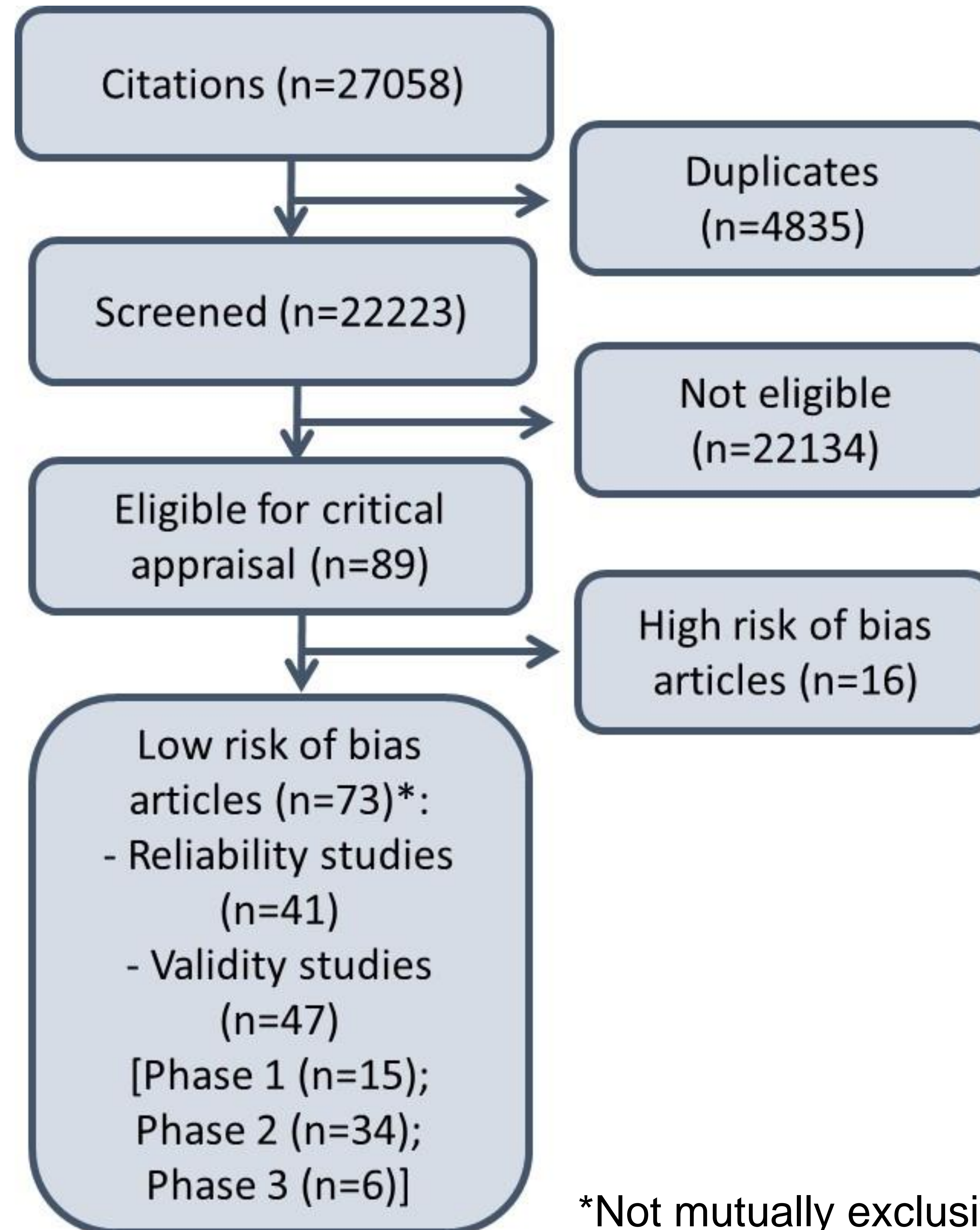
METHOD

- The figure summarizes all steps used to develop the recommendations.
- Diagnostic tests with reliability and validity findings from the systematic reviews were voted on to obtain consensus by the expert panel regarding their clinical utility on the assessment of patients with NAD.
- All the recommendations had to be accepted by $\geq 80\%$ of the expert panel to be reported.
- Recommendations not approved by 80% of the expert panel were modified using group discussion and submitted to another vote.
- If agreement by 80% of the expert panel was not reached after the second vote, recommendations were not accepted.



RESULTS

Figure 1. Flow chart of the identification and selection of articles in the systematic reviews:



RESULTS

- Evidence is at best preliminary for a few tests following Sackett's principle for diagnostic studies dividing validity studies in 4 phases [4].
- Studies classified as phase I and II are exploratory in nature, therefore they cannot confirm validity and require further evaluation.
- In phase III studies, the ability of the test to distinguish between patients with and without the target disorder is assessed and may be compared to a gold standard. Due to their design, the results from phase III studies are hypothesis confirming and form the basis for widespread adoption.
- Phase IV studies measure utility by assessing whether patients undergoing a test have better health outcomes than patients who do not receive the test.
- Diagnostic test utility to assess patients with NAD, based on systematic review findings [5, 6] and expert panel consensus are reported with the following colors:

	Acceptable evidence for reliability and validity in reviews and expert consensus
	Absence of articles in reviews but expert consensus
	Lacking evidence for reliability and validity in reviews but expert consensus
	Acceptable evidence for reliability and validity in reviews but no expert consensus
	Lacking evidence for reliability and validity in reviews and no expert consensus
	Not applicable

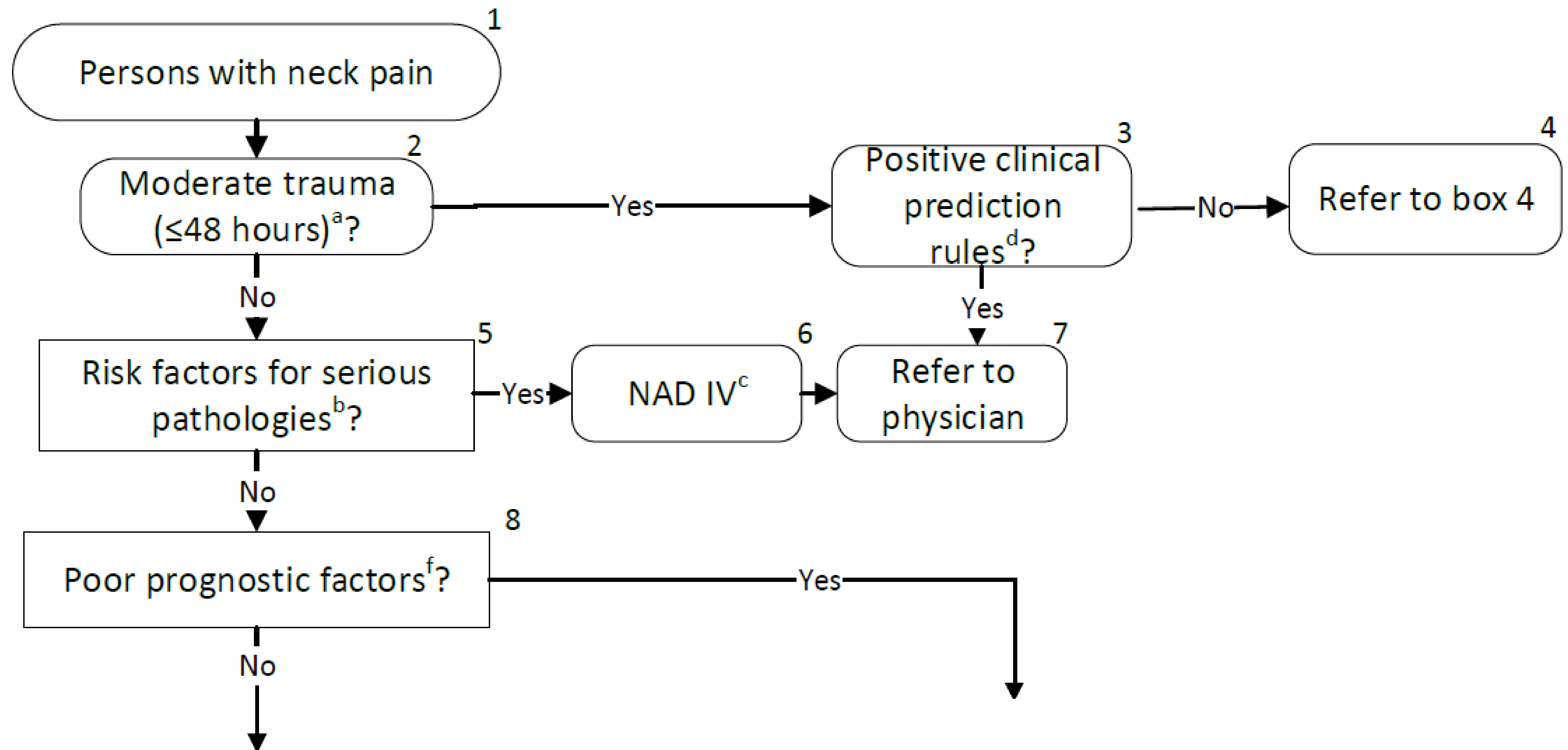
RESULTS

• Table 1. Diagnostic test utility to assess patients with NAD.

Assessment	Diagnostic tests	NAD classification			
		Grade I	Grade II	Grade III	Grade IV
Anatomical integrity of the cervical spine	Cervical Extension Rotation Test				
	Nerve Root provocation tests (Spurling test and ULTT/ULNT)				
	Neurological examination (Motor Testing and dermatomal sensory testing)				
Screening for cervical spine	Canadian C-Spine rules				
	NEXUS criteria				For patients >65 yrs old
Head posture	Visual inspection				
	External devices (goniometer, digital caliper, ...)				
Pain location	Joint static palpation				
	Joint motion palpation				
	Muscle palpation (Trigger and Tender Points)				
Mobility	Cervical Range of Motion				
	Muscle strength and endurance tests				
	Functional tests				
Patient Reported Outcomes	Neck Disability Index				
	Profile Fitness Mapping Neck				
	Whiplash Disability Questionnaire				
	Numerical Rating Scale				
	Visual Analogue Scale				

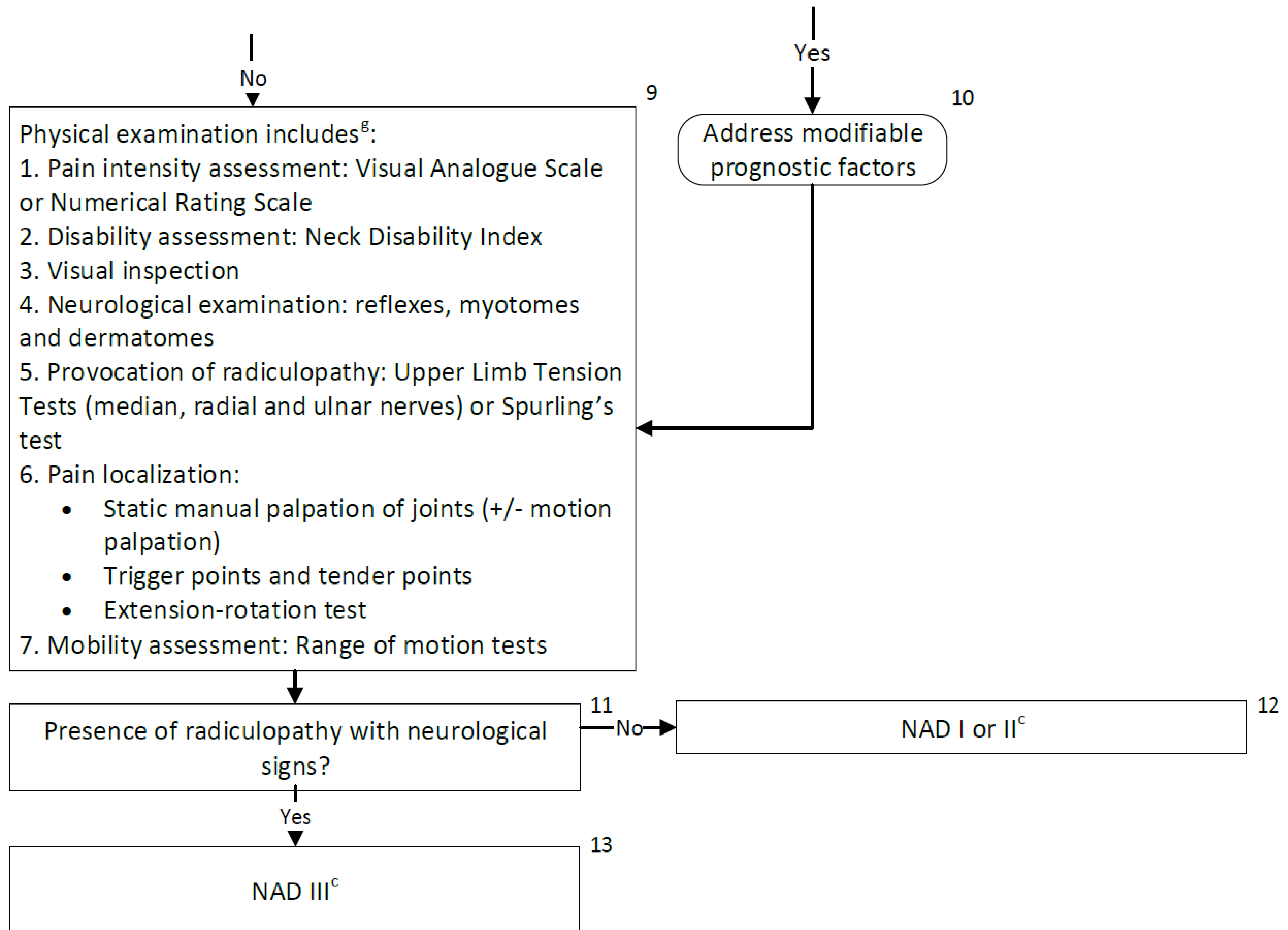
RESULTS

- Figure 2. Recommendations incorporated into a care pathway for the assessment of patients with NAD



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RESULTS

- Clinicians should use the diagnostic tests and tools to classify patients according to the *2000-2010 Bone and Joint Decade Task Force on Neck Pain and its Associated Disorders Classification* [7].

NAD Grades	Neurological signs or symptoms	Limitation in daily activities	Severe pathologies
Grade I	-	Low	-
Grade II	-	Moderate	-
Grade III	+	Severe	-
Grade IV	+/-	+/-	Fracture, vertebral dislocation, spinal cord injury, infection, systemic disease

-: Absence; +: Presence

DISCUSSION

- First large systematic review studying the reliability and validity of diagnostic tests to assess patients with NAD.
- Standardized and rigorous methodology used.
- Current evidence suggests that clinicians must conduct a thorough clinical history and investigate red flags to rule out serious pathology.
- Clinical tests should not be used until their validity has been demonstrated.
- Utility of the tests could be increased with proper training, leading to reduced misclassification error and improved reliability.
- The absence of a true gold standard, and the lack of knowledge about a patho-anatomical source of pain poses an important methodological challenge to the study of diagnostic tests for NAD.
- Future research needs to address this important gap.

CONCLUSION

- Our recommendations provide a useful approach for the assessment of patients with neck pain.
- We recommend that clinicians focus their clinical assessment using tests and tools with reliability and validity findings.
- Our results will help to guide clinicians and standardize the diagnostic approach of patients with neck pain.

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