

Quality of Life, Return to Duty, and Combat Readiness in Military Personnel with Neck and Back Pain: A Scoping Review



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Introduction

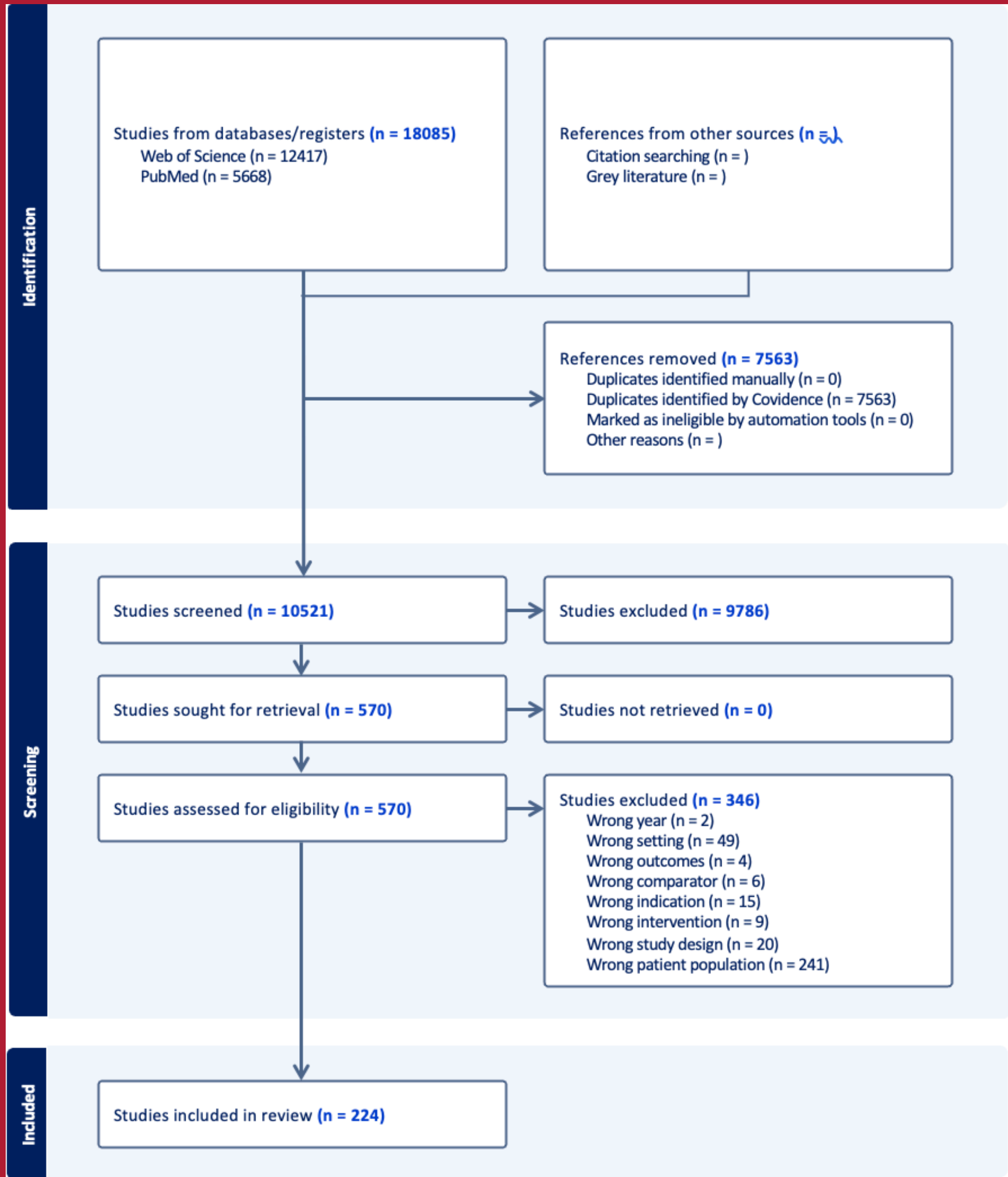
- Neck and chronic low back pain (cLBP) are a leading causes of disability that undermine *combat readiness and return to duty (RTD)* in military personnel.
- **Obesity (BMI >30) and Military Occupational Specialty (MOS)** are underrecognized risk factors that could be associated with neck pain, cLBP, and other spine disorders.
- Additionally, there seems to be a *lack of the measurement of quality of life (QOL) and patient-reported outcome measurement (PROMs) among active-duty service members as it relates to treatment interventions for these conditions.*
- This scoping review examines the role of obesity and MOS on neck, cLBP and other spine conditions in active-duty service members, with or without surgical intervention and whether QOL or PROMs were reported.

Methods

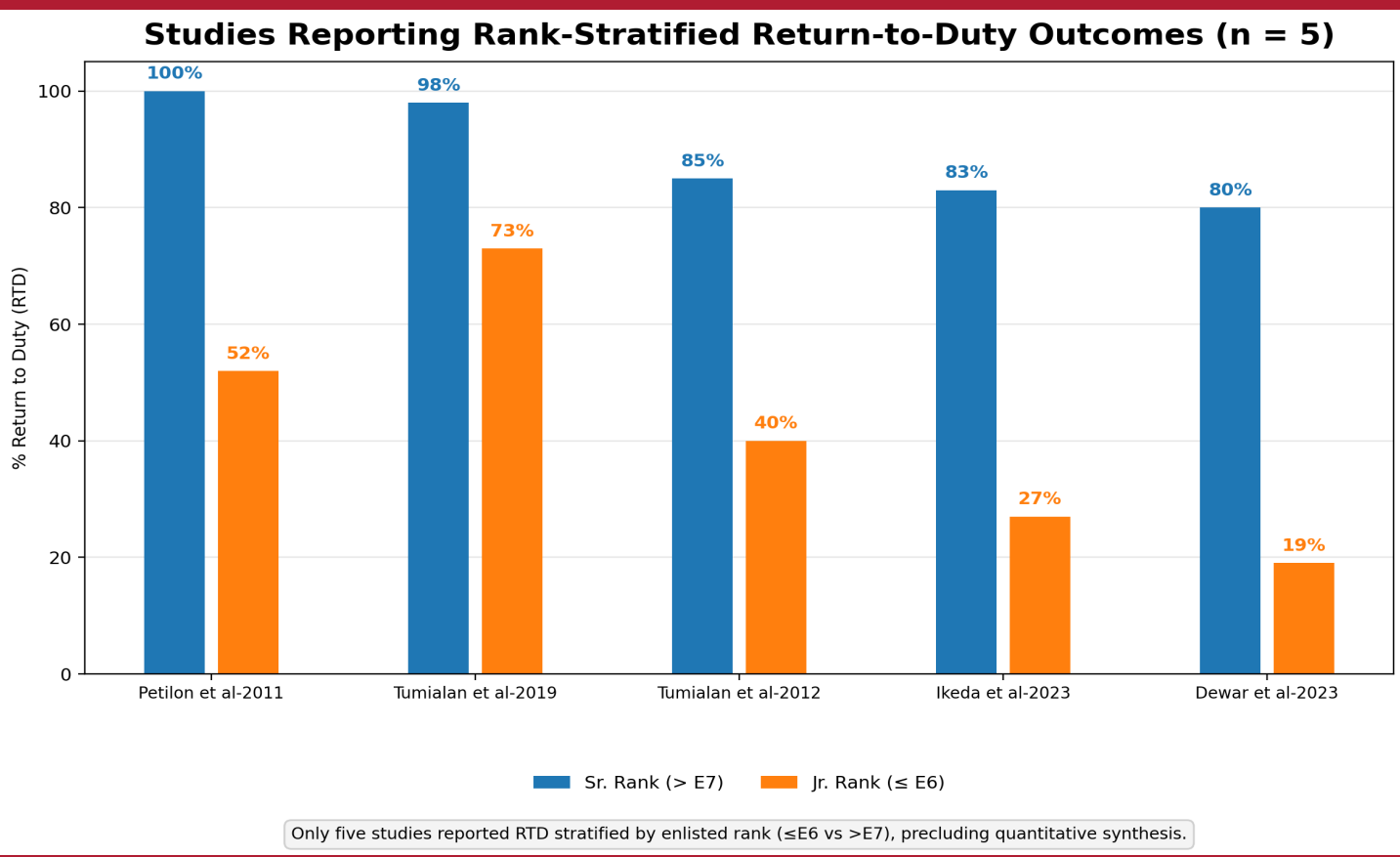
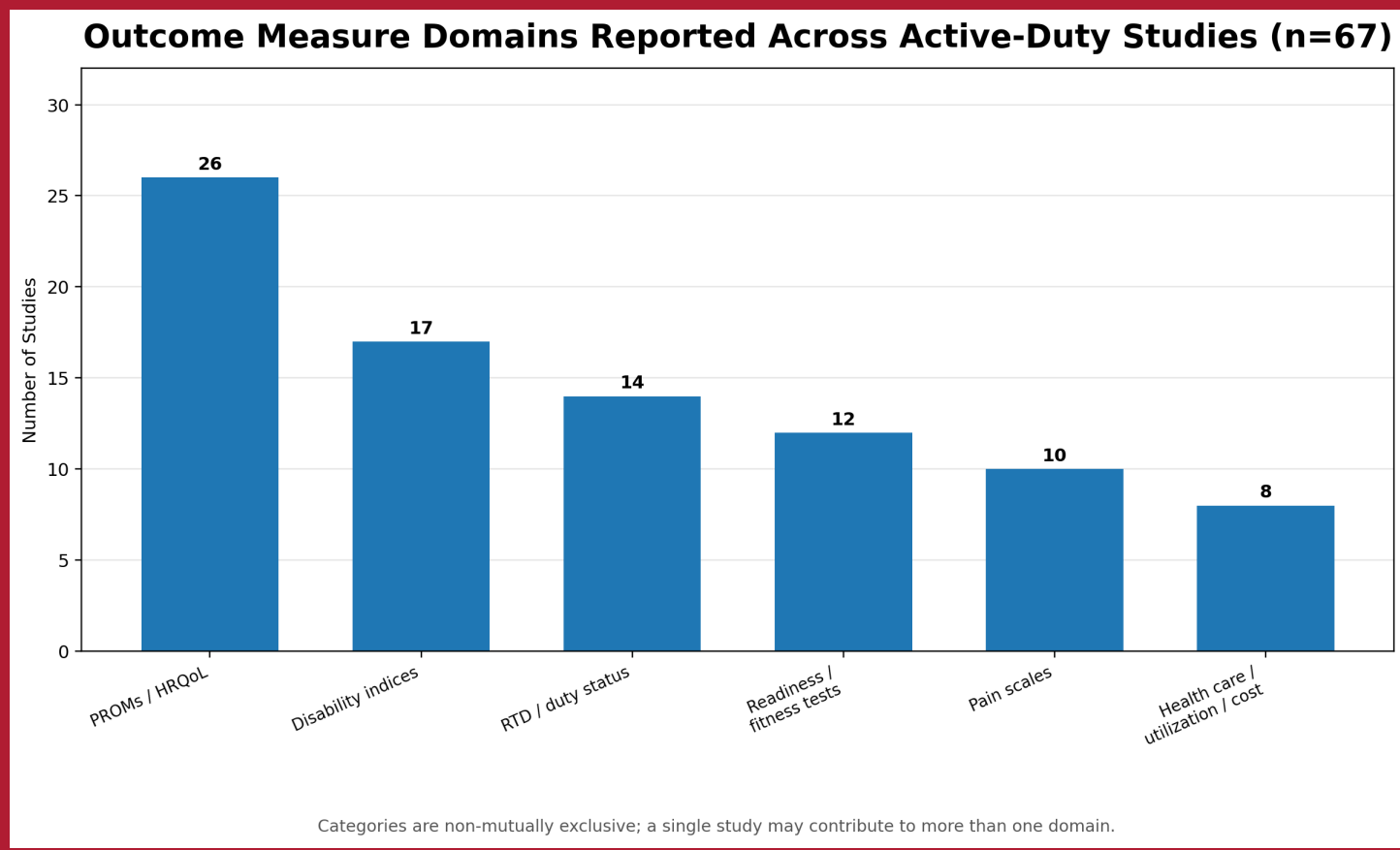
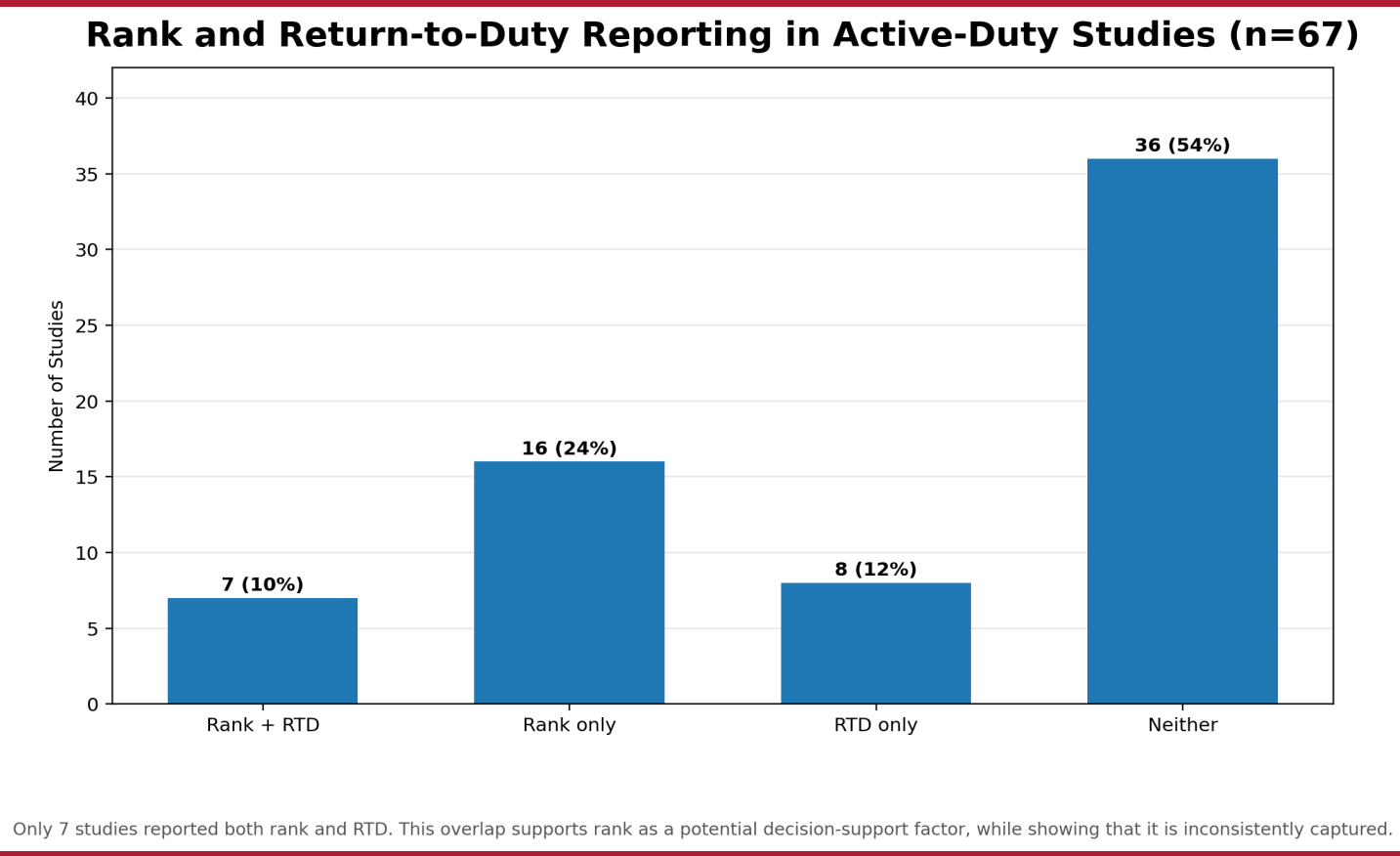
- Scoping review conducted according to the JBI Manual for Evidence Synthesis (2024).
- PubMed, Embase, Web of Science, and Scopus were searched for studies published 2000–2024.
- Inclusion criteria: Active-duty U.S. Service Members with neck pain, low back pain, or other degenerative spine conditions undergoing surgical or non-surgical treatment.

- Data extracted included BMI, MOS, rank, branch of service, RTD, and PROMs
- 79 active-duty studies met inclusion criteria and were included in this analysis.

- Exclusion criteria:
 - Biomechanical papers
 - Foreign military, civilian populations, veteran populations,
 - Trauma, malignancies, spinal cord injuries, and congenital malformations



Return to Duty (RTD) is an endpoint or outcome measured in active-duty neck and spine musculoskeletal studies, but the evidence base is missing key decision-support inputs including: Patient Reported Outcome Measures (PROMs), such as PROMIS, ODI, or other Quality of Life (QOL) measures; Body Mass Index (BMI); and Military Occupational Specialty (MOS).



Proportion of studies reporting (N=67)	Average sample characteristics across studies	
Age (79%)		31 years (20.0 – 51.7)
Sex (78%)	Females	16%
	Males	84%
Rank (34%)	Enlisted	65%
	Officers	70%
Pathology/Diagnosis (87%)	Degenerative Disc Disease	15%
	Low Back Pain	28%
	Spinal Stenosis	15%
	Spondylolisthesis	18%
	Lumbar Disc Herniation	6%
	Cervical	
	Myelopathy/Radiculopathy	6%
Branch (100%)	Air Force	45%
	Army	69%
	Coast Guard	9%
	Marine Corps	48%
	Navy	54%
	Space Force	1%

Implications

Advancing RTD Decision Support

1. Standardize RTD definitions and reporting across military spine studies.
2. Integrate BMI, MOS/rank, and PROMs into RTD outcome assessment to improve decision support.
3. Develop and validate multidisciplinary RTD decision-support tools that optimize rehabilitation, retention, and combat readiness.

Return to Duty (RTD)

The current measure of success

- Return to Duty (RTD) was reported in 15 of 67 active-duty studies (22%).
- RTD was variably defined as unrestricted duty, limited duty, medical separation, or retention, limiting comparisons across studies.
- Only 7 studies reported both RTD and rank, and few incorporated BMI, MOS, or PROMs, highlighting critical gaps for RTD decision-support tools.

Body Mass Index (BMI)

An underreported clinical risk factor

- BMI was reported in only 18 of 67 studies (27%).
- Among studies reporting body composition, overweight and obesity were common, but methods were inconsistent, preventing quantitative synthesis.
- No studies identified in this review reported waist-to-height ratio (WHtR) or other military-relevant body composition measures despite their potential relevance to return-to-duty decision making.

Patient Reported Outcomes Measures (PROMs)

Recovery extends beyond Return to Duty

- Validated PROMs were reported in only 23 of 67 studies (34%).
- Common instruments included ODI, NDI, VAS, SF-36, and PROMIS.
- PROMs were infrequently evaluated alongside RTD outcomes, limiting assessment of patient-centered recovery, function, and quality of life.

Military Occupation (MOS) & Rank

Occupational demands are rarely considered

- Military Occupation (MOS) and rank were each reported in 23 of 67 studies (34%).
- One study found junior enlisted personnel had 6.42-fold greater odds of referral to a Medical Evaluation Board than senior enlisted personnel (OR 6.42; 95% CI 2.20–18.74), despite similar surgical outcomes.
- Routine reporting of MOS and rank could improve occupation-specific rehabilitation planning and development of RTD decision-support tools.