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INPLASY

What is 'muscle health'? A systematic review and conceptual framework

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Corresponding author:
Dustin Oranchuk

dustin.oranchuk@cuanschutz.edu

Author Affiliation:
University of Colorado-Anschutz Medical Campus.

Boncella, KL; Oranchuk, DJ; Gonzalez-Rivera, D; Sawyer, EE; Magnusson, DM; Harris-Love, MO.

ADMINISTRATIVE INFORMATION

Support - NA.

Review Stage at time of this submission - The review has not yet started.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 23 August 2025 and was last updated on 23 August 2025.

INTRODUCTION

Review question / Objective To systematically review the literature on the concept of "muscle health," synthesize existing definitions and operational approaches, and propose a conceptual framework for standardizing the definition and measurement of muscle health across clinical and research settings.

Rationale Muscle health is an emerging but inconsistently defined concept used in research and clinical practice. Without a standardized definition or framework, clinical communication and research design are hindered. This review aims to establish a conceptual model informed by existing literature and the International Classification of Functioning, Disability, and Health (ICF) framework to guide future research and clinical applications.

Condition being studied Not a specific disease; rather, the concept and measurement of skeletal muscle health as it relates to physical performance, morphology, and functional independence across populations.

METHODS

Search strategy A systematic literature search of relevant databases (details not explicitly stated in the manuscript; likely included PubMed, Scopus, and similar platforms) using keywords related to "muscle health," "muscle morphology," "muscle performance," and "functional performance."
From 333 screened articles, 68 met inclusion criteria, and data were extracted regarding operational definitions, measurement categories, and assessment tools.

Participant or population Studies involving diverse populations where muscle health was a primary or secondary outcome, including healthy adults, older adults, and clinical populations with muscle dysfunction.

Intervention N/A — this is a conceptual/ systematic review, not an interventional study.

Comparator N/A — no direct comparator group was used in the review.

Study designs to be included Clinical studies and randomized controlled trials that included definitions, assessments, or measurements related to muscle health.

Eligibility criteria Inclusion: Clinical and randomized controlled trials that referenced “muscle health” in their methodology or results and reported on muscle-related measurements.

Exclusion: Studies that did not reference muscle health directly or lacked relevant measurement data.

Information sources The electronic databases of PubMed, and CINAHL.

Main outcome(s) Identification and categorization of measurement domains and assessment tools used to define and measure muscle health.

Additional outcome(s) Development of a proposed conceptual framework for muscle health grounded in the ICF model.

Data management Data were screened and extracted by three independent reviewers; synthesis involved categorizing studies by type of definition (operational or inferred) and identifying common metrics. Rayyann software was used to assist in the screening and extraction process.

Quality assessment / Risk of bias analysis Not explicitly reported; no formal quality or risk-of-bias assessment appears to have been conducted.

Strategy of data synthesis Narrative synthesis to identify patterns in operational definitions and measurement categories, supported by descriptive statistics on the frequency of various measurement tools and outcomes.

Subgroup analysis N/A — no subgroup or stratified analyses were performed.

Sensitivity analysis N/A — not applicable given the descriptive and narrative synthesis design.

Language restriction English-only peer-reviewed studies.

Country(ies) involved United States.

Other relevant information The conceptual framework aligns with the ICF health-related domains of Body Systems/Structures and Participation, categorizing assessment approaches into muscle morphology/morphometry, functional status, and physical capacity.

Keywords muscle health; skeletal muscle; muscle morphology; muscle performance; functional performance; physical capacity; tissue composition; strength; physiology.

Dissemination plans Submit to the 'Journal of Functional Morphology and Kinesiology', an open-access journal.

Contributions of each author

Author 1 - Katie Boncella.
Email: katie.boncella@cuanschutz.edu
Author 2 - Dustin Oranchuk.
Email: dustin.oranchuk@cuanschutz.edu
Author 3 - Daniela Gonzalez-Rivera.
Email: daniela.gonzalez-rivera@cuanschutz.edu
Author 4 - Eric Sawyer.
Email: eric.sawyer@cuanschutz.edu
Author 5 - Dawn Magnusson.
Email: dawn.magnusson@cuanschutz.edu
Author 6 - Michael Harris-Love.
Email: michael.harrislove@cuanschutz.edu