

Sarcopenia and intrinsic capacity in aging: implications for geriatric physiotherapy assessment and care

Melissa Silva Rocha Pereira^a, Wesley Barbosa Sales^{a,*}

^a Department of Physical Therapy, Federal University of Rio Grande do Norte (UFRN), Natal, RN, 59066-800, Brazil.

Abstract

The interplay between sarcopenia and intrinsic capacity represents a critical challenge in geriatric health care. As muscle mass, strength, and performance decline with age, so too does an older adult's overall functional reserve, captured by the concept of intrinsic capacity. This letter addresses the relevance of this relationship for geriatric physiotherapy, emphasizing the need for early detection and comprehensive functional assessment. Physiotherapists play a key role in monitoring domains such as locomotion, cognition, vitality, and psychological well-being—each essential to maintaining independence. Integrating intrinsic capacity assessments into physiotherapy practice enables more person-centered, preventive, and adaptive care strategies. Understanding this connection may guide clinicians in designing interventions that not only address sarcopenia, but also support broader goals of healthy aging and functional resilience.

Keywords: Multidimensional assessment, clinical screening, functional resilience

Introduction

Sarcopenia, a condition characterized by progressive loss of skeletal muscle mass and function, is increasingly recognized as a leading contributor to frailty [1], disability [2], and loss of independence among older adults [2, 3]. Concurrently, the World Health Organization's framework of intrinsic capacity (IC)—encompassing physical and mental abilities across domains such as locomotion, cognition, vitality, psychological well-being, and sensory function—has emerged as a promising tool for guiding clinical decisions in geriatric care [4, 5]. Given this context, it becomes essential to explore how the decline in skeletal muscle mass and strength associated with sarcopenia can affect multiple domains of intrinsic capacity. Understanding this interplay allows clinicians to identify key functional limitations early, enabling more precise and person-centered care planning for older adults.

This letter emphasizes the importance of understanding the relationship between sarcopenia and intrinsic capac-

ity from a physiotherapeutic perspective. As frontline professionals in functional assessment and rehabilitation, physiotherapists are uniquely positioned to identify early declines in IC domains and implement timely interventions aimed at preserving autonomy and quality of life [3, 6].

In clinical practice, muscle strength assessments (*e.g.*, handgrip strength), gait analysis, balance testing, and evaluations of nutritional and cognitive status are core components of physiotherapy that align naturally with IC monitoring. These components not only facilitate comprehensive evaluation but also offer actionable insights into the functional reserve and adaptive capacity of older adults. Their integration within physiotherapy assessments provides a structured pathway for the early recognition of sarcopenia-related impairments and for tailoring interventions accordingly.

Integrating these tools within routine physiotherapy assessments may enhance the early detection of sarcopenia and associated functional impairments, especially in community-dwelling and institutionalized older adults [7]. Moreover, the application of the intrinsic capacity framework can promote more personalized and multidimensional care strategies [1, 3, 7]. By moving beyond isolated disease management to a broader view of functional health, physiotherapists can contribute to a more holistic and proactive model of aging care—one that fosters resilience rather than merely reacting to decline. This paradigm shift is critical in geriatric care, as it supports a transition from reactive, symptom-based treatment mod-

* Corresponding author: Wesley Barbosa Sales

Mailing address: Department of Physical Therapy, Federal University of Rio Grande do Norte (UFRN), Natal, RN, 59066-800, Brazil.

E-mail: wesleysales8@gmail.com

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els to proactive strategies that emphasize the preservation and enhancement of function, thus aligning physiotherapy practice with contemporary concepts of healthy aging. Given the aging global population, incorporating IC-based assessments into geriatric physiotherapy is both timely and necessary. This approach holds promise not only for improving patient outcomes, but also for informing public health strategies focused on active and healthy aging.

Implications for education and clinical training

The integration of intrinsic capacity assessment and sarcopenia management into physiotherapy education and training is a necessary evolution to meet the demands of an aging population. By embedding these concepts into undergraduate and postgraduate curricula, future clinicians can develop a multidimensional view of aging that goes beyond musculoskeletal limitations. Educational programs should incorporate theoretical and practical content that links muscle physiology, aging biomarkers, and IC domains, fostering critical thinking about how these factors interact in clinical scenarios. Training programs should emphasize functional screening tools, early detection strategies, and personalized rehabilitation planning rooted in intrinsic capacity domains.

Furthermore, simulation-based learning, case-based discussions, and interprofessional training models could enhance learners' abilities to apply these concepts in real-world clinical settings. Clinical placements and continuing education must also reflect this shift, enabling physiotherapists to deliver care that is both preventative and person-centered. Such efforts can bridge the gap between academic preparation and practical application, ensuring that future professionals are equipped to address the complex and multidimensional needs of aging populations. This educational reform has the potential to strengthen professional competencies, enhance clinical reasoning, and improve the quality of geriatric physiotherapy practice across diverse care settings.

Barriers and future directions

Despite growing recognition of intrinsic capacity as a valuable framework, several barriers hinder its adoption in routine physiotherapy practice. These include limited clinical time, lack of standardized assessment protocols, insufficient interdisciplinary integration, and the absence of widely implemented screening tools tailored for physiotherapists. Additionally, many professionals may be unfamiliar with the conceptual underpinnings of intrinsic capacity, highlighting the need for awareness campaigns and training workshops aimed at disseminating its relevance and applicability within clinical physiotherapy. To overcome these limitations, it is essential to integrate IC assessments into existing workflows using brief, validated, and reliable tools that are feasible for use across various care environments. Addressing these challenges requires

institutional support, validated instruments for rapid assessment, and targeted clinical guidelines. Future research should focus on developing scalable, pragmatic tools that capture the complexity of aging while remaining feasible in real-world settings. For instance, studies could explore how combining functional tests (e.g., SPPB, gait speed) with self-reported measures of vitality and cognition can form composite IC indices suitable for physiotherapy contexts. Additionally, implementation science approaches may help identify facilitators and barriers to adopting IC-based models in physiotherapy. Longitudinal studies are particularly needed to explore how physiotherapy interventions guided by intrinsic capacity domains can delay sarcopenia progression, maintain autonomy, and reduce healthcare burden over time. Such evidence would not only validate the practical relevance of the IC model but also support its widespread adoption in physiotherapy protocols aimed at promoting longevity with independence.

Declarations

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