



Differential Health Outcomes across Sarcopenia Phenotypes in Community-dwelling Older Adults

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Background

- **Sarcopenia** defined as the coexistence of **low muscle mass and reduced muscle strength**,
- Recent evidence suggests that **muscle strength may better reflect functional vulnerability in aging populations**.
- **Muscle mass and muscle strength do not decline in parallel with aging**, and muscle strength often decreases earlier and more rapidly than muscle mass.
- This study aimed to classify older adults into four phenotypes based on muscle mass and muscle strength and to compare comprehensive health outcomes across these phenotypes.

Materials and Methods

Study design & participants:

[Inclusion criteria]

Community-dwelling adults ≥50 years

[Exclusion criteria]

Neurologic disorders affecting gait, recent orthopedic surgery, or inability to perform strength testing

Outcome measurements

1) Muscle mass & Strength:

- SMI (BIA)
- Handgrip strength
- Lower-extremity strength (knee extension/flexion dynamometer)

2) Physical performance:

- Gait analysis
- Timed Up and Go
- Five-Times Sit-to-Stand Test

3) Patient-reported outcomes:

- Mental health (PHQ-9)
- Health-related quality of life (EQ-5D-5L)

4) Cognition:

- Korean version of the Montreal Cognitive Assessment (MoCA-K)

Figure 1. Classification of sarcopenic phenotypes based on skeletal muscle mass and muscle strength.

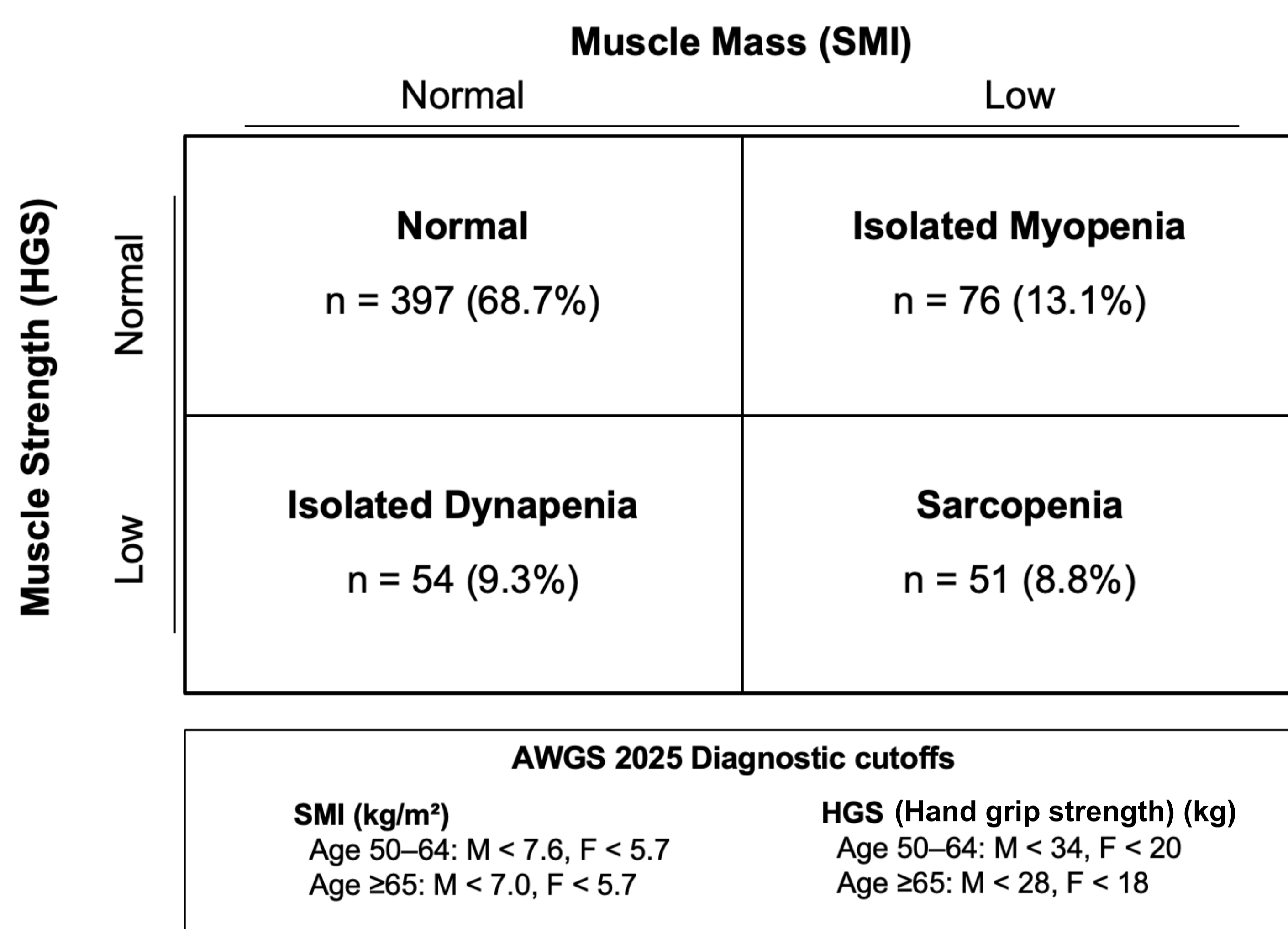
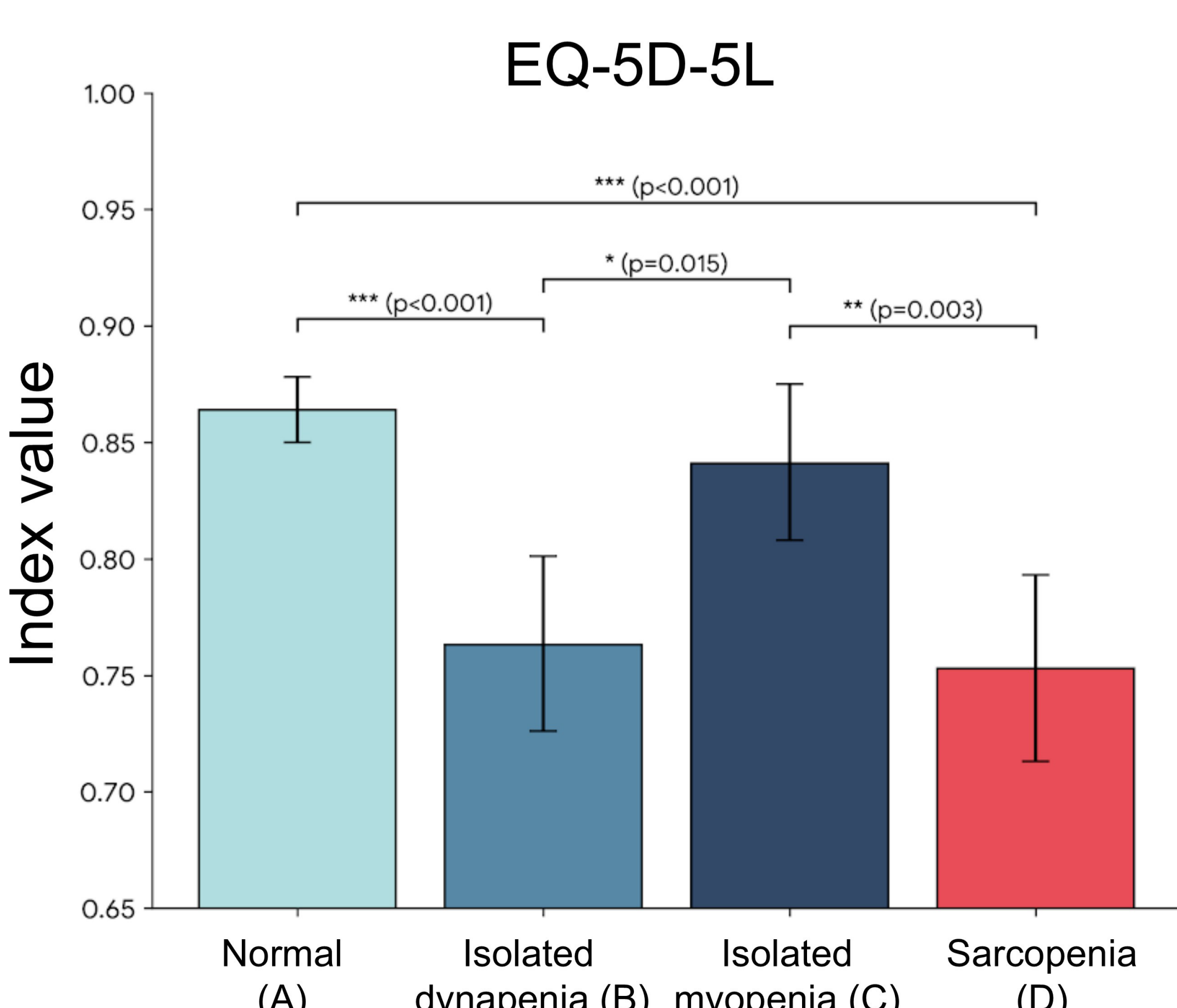
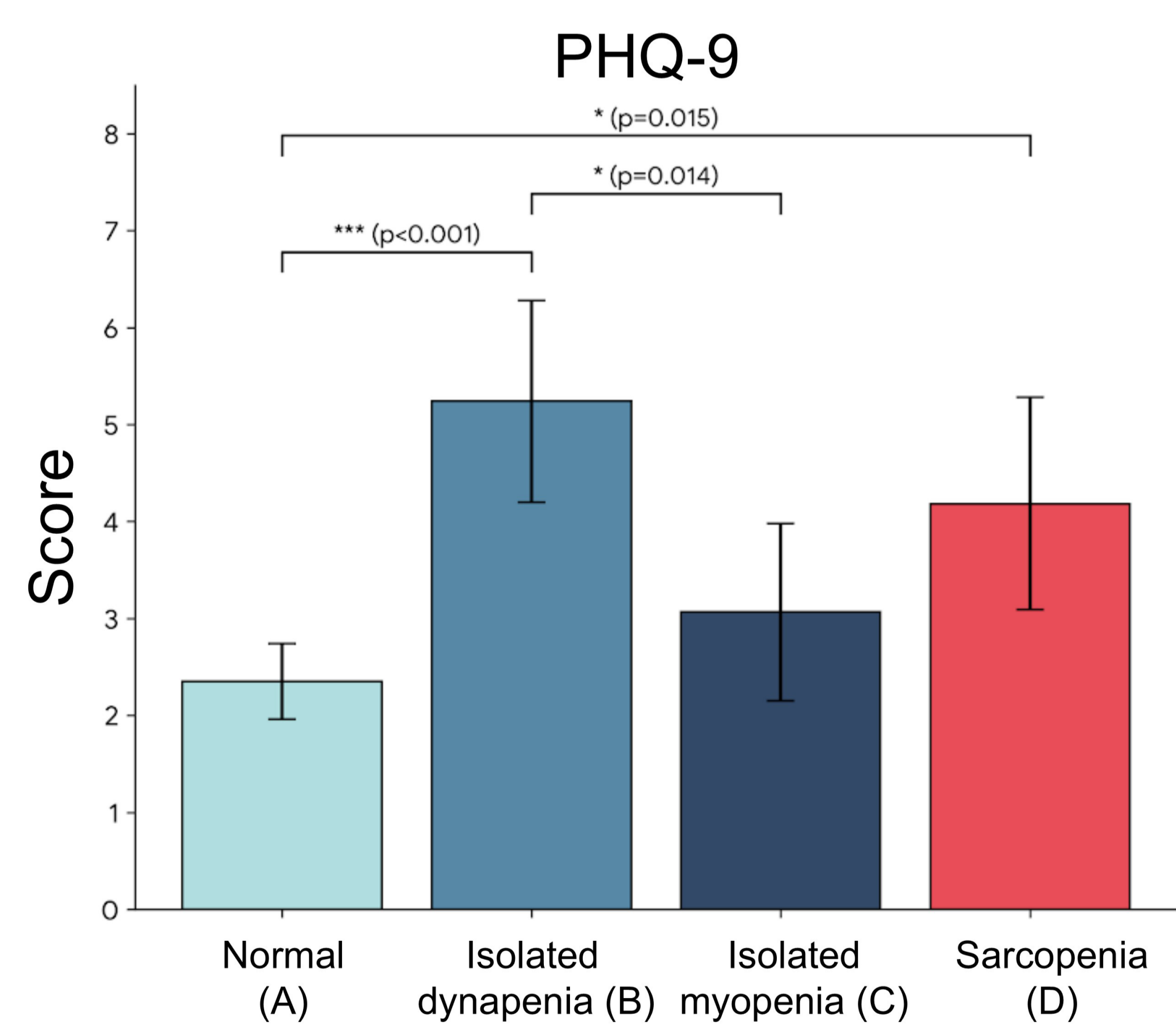


Figure 2. Comparison of Depressive Symptoms (PHQ-9) and Health-Related Quality of Life (EQ-5D-5L) Across Sarcopenic Phenotypes.



Results

- The **sarcopenia group** showed the poorest outcomes in gait speed, TUG, FTST, and lower-extremity strength.
- Mental health outcome and quality of life were most unfavorable in the **dynapenia group**.
- Most group differences remained significant after adjustment for **age and BMI**.

Discussion & Conclusions

- **Muscle strength may be a more sensitive indicator of vulnerability than muscle mass** in community-dwelling older adults.
- **Dynapenia (reduced muscle strength with preserved muscle mass)** was associated with poorer **mental health, cognition, and quality of life**.
- In contrast, **low muscle mass alone showed limited association with adverse outcomes**.
- These findings highlight the **clinical importance of early screening and evaluation of muscle strength** in older adults.

Figure 3. Association Between Sarcopenic Phenotypes and Moderate Depression (PHQ-9 ≥ 10)

