Journal of Clinical Gerontology & Geriatrics
www.e-jcgg.com

Original Article

Sarcopenia: Quality matters more than quantity

*Liang-Kung Chen, MD, PhD[1,2]

[1]Aging and Health Research Center, National Yang Ming University, Taipei, Taiwan
[2]Center for Geriatrics and Gerontology, Taipei Veterans General Hospital, Taipei, Taiwan

Sarcopenia is an age-related condition characterized by diminished muscle mass and strength and/or physical performance.[1] Sarcopenia has become a hot research field internationally, with particular interest in developing interventions based on both lifestyle modification and pharmacotherapy.[2] Despite recent advances, unresolved challenges in diagnosing sarcopenia remain; foremost, all current algorithms (EWGSOP, AWGS or IWGS), entail measuring muscle strength and mass, as well as physical performance.[3-5] Among several modalities recommended for measuring muscle mass, which include computed tomography, magnetic resonance imaging, dual-energy X-ray absorptiometry, and bio-impedance,[5] only bio-impedance can be done in community settings. Moreover, muscle mass is a weaker prognostic indicator of sarcopenia than are muscle strength and physical performance.[6]

Although muscle strength and physical performance have greater prognostic significance, multiple physiological impairments such as neurological or muscle factors may cause their decline; therefore, improvement requires comprehensive approaches and interventions.[7,8] Ideally, sarcopenia diagnosis should focus on strength and performance deficits with muscular etiology-primary sarcopenia-and exclude less relevant etiologies. Until now, the most common intervention programs for sarcopenia have involved nutrition and exercise, either independently or combined.[9] Most studies demonstrated improved muscle strength and physical performance, but not necessarily muscle mass. Although it had been hypothesized that muscle mass diminution preceded loss of strength or reduced physical performance, this sequence was not always observed. Therefore, sarcopenia may result from a nexus of multiple co-existing etiologies, in which case treatment that targets only muscle mass, without exercise, may fail.

We have distinguished a mobility subtype of physical frailty, based on clustered slowness and weakness in frailty components,[10] that is associated with older age, poorer cognitive performance, lower bone mineral density and lower muscle mass, and predicts poorer clinical outcomes. However, fewer than half of people with mobility type frailty meet the diagnostic criteria for sarcopenia. Therefore, muscle quality may be more important than quantity, and intervention programs should cover both aspects.

***Correspondence**
Liang-Kung Chen, MD, PhD
Center for Geriatrics andGerontology, Taipei Veterans General Hospital
E-mail:
lkchen2@vghtpe.gov.tw

DOI: 10.24816/jcgg.2018.v9i2.01

Keywords
sarcopenia
muscle mass
muscle strength
physical performance

REFERENCES

01. Wu YH, Hwang AC, Liu LK, Peng LN, Chen LK. Sex differences of sarcopenia in Asian populations: the implications in diagnosis and management. *J Clin Gerontol Geriatr.* 2016;**7**(2):37-43.

02. Chen LK, Lee WJ, Peng LN, Liu LK, Arai H, Akishita M, Asian Working Group for Sarcopenia. Recent advances of sarcopenia research in Asia: 2016 updates from the Asian Working Group for Sarcopenia. *J Am Med Dir Assoc.* 2016;**17**(8):767.e1-7.

03. Cruz-Jentoft AJ, Baeyens JP, Bauer JM, Boirie Y, Cederholm T, Landi F, et al. Sarcopenia: European consensus on definition and diagnosis: Report of the European Working Group on Sarcopenia in Older

People. *Age Ageing.* 2010;**39**(4):412-23.

04. Fielding RA, Vellas B, Evans WJ, Bhasin S, Morley JE, Newman AB, et al. Sarcopenia: An undiagnosed condition in older adults. Current consensus definition: Prevalence, etiology, and consequences. International Working Group on Sarcopenia. *J Am Med Dir Assoc.* 2011;**12**(4):249-56.

05. Chen LK, Liu LK, Woo J, Assantachai P, Auyeung TW, Bahyan KS, et al. Sarcopenia in Asia: Consensus report of Asian Working Group for Sarcopenia. *J Am Med Dir Assoc.* 2014;**15**(2):95-101.

06. Beaudart C, Zaaria M, Pasleau F, Reginster JY, Bruyere O. Health outcomes of sarcopenia: a systematic review and meta-analysis. *PLoS One.* 2017;**12**(1):e0169548.

07. Liu LK, Chen LY, Yeh KP, Lin MH, Hwang AC, Peng LN, Chen LK. Sarcopenia, but not sarcopenic obesity predicts mortality of older old men: a 3-year prospective cohort study. *J Clin Gerontol Geriatr.* 2014;**5**(2):42-6.

08. Chen LK. Precision geriatrics: comprehensiveness and individualization for frailty intervention. *J Clin Gerontol Geriatr.* 2017;**8**(2):44-6.

09. Lee SY, Tung HH, Liu CY, Chen LK. Physical activity and sarcopenia in the geriatric population: a systematic review. *J Am Med Dir Assoc.* 2018;**19**(5):378-83.

10. Liu LK, Guo CY, Lee WJ, Chen LY, Hwang AC, Lin MH, et al. Subtypes of physical frailty: Latent class analysis and associations with clinical characteristics and outcomes. *Sci Rep.* 2017;**7**:46417.