

## Nutrition in the Elderly

### Sarcopenia: Muscle Weakness Creeps Up With Age

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If your patients (or you, for that matter) have ever wondered why their strength has decreased as they get older, sarcopenia is probably to blame. Associated with aging, the condition is defined as low muscle mass combined with muscle weakness causing limits in movement that affect function. Sarcopenia restricts mobility, reduces activity, and frailty, falls, and fractures.

Muscle strength wanes as a result of denervation in the muscles' motor units and a transformation from rapid type II muscle fibers to slower type I muscle fibers. Muscle strength declines by 1.5% a year in individuals ages 50 to 60 and then 3% annually from age 60 onward.<sup>1</sup>

"Especially in diseases like diabetes, cardiac [congestive] heart failure, and COPD, if we can fix the muscles early, the chances of the person functioning better, being less likely to go to the hospital, less likely to die, and less likely to develop functional deterioration are becoming very apparent," says sarcopenia researcher John E. Morley, MD, Director, Divisions of Geriatric Medicine and Endocrinology, Saint Louis University, St. Louis, Mo.

#### Treatment guidelines for sarcopenia are being hashed out

Currently, no diagnosis and treatment guidelines are in place for sarcopenia, but scientific data continues to coalesce and evolve. The Foundation for the National Institutes of Health (FNIH) Sarcopenia Project and the European Working Group on Sarcopenia in Older People are working to establish "cut-points" and other criteria for the development of clinical guidelines, notes Cynthia Bens, Executive Director of Aging in Motion, a coalition dedicated to research and innovation in sarcopenia and age-related functional decline. Meanwhile, other centers throughout the world continue their work on effective diagnostic and treatment strategies.

One recent development is the diagnostic tool, SARC-F, which evaluates muscle strength through an assessment and scoring system. Patients report their abilities in 5 components:

- **Strength** (ability to lift and carry 10 pounds)
- **Walking** (ability to walk across the room and any assistance required)
- **Rising from a chair** (with or without assistance)



#### Take Note

Diagnostic tools, from a simple assessment and scoring system to imaging and physical performance measures, can determine the level of muscle weakness in patients.

Each day, persons older than 65 should consume an average of up to 1.0 to 1.2 or more grams of protein per kilogram of body weight, evenly distributed during main meals.

- **Climbing stairs** (ability to climb 10 steps)
  - **Falls** (frequency from 0 times to  $\geq 4$  times within the past year)<sup>2</sup>
- For each component, patients are assessed 0, 1, or 2 points: 0=no difficulty, 1=some, and 2=a lot of difficulty/unable to do. A total SARC-F score is then tallied to determine function, ranging from 0 (the best) to 10 (the worst). Patients scoring  $\geq 4$  meet SARC-F's diagnostic threshold for muscle weakness comprising sarcopenia.<sup>2</sup>

The SARC-F was developed as an alternative to imaging and physical performance tests commonly used to assess muscle mass and strength. "The problem is that these diagnoses [methods] require measuring muscle mass, walking speed, or grip strength, which most physicians don't do," Dr. Morley says. "We've developed the SARC-F, which is a simple, quick screen. On 4 different continents, it [SARC-F] has been shown to be a good way to pick up people early at risk of poor outcomes because of sarcopenia."

### **Diagnostic tests provide a clearer picture of impairment**

Nevertheless, imaging and performance measures (among them computed tomography, magnetic resonance imaging, dual energy X-ray absorptiometry, anthropometry, bioimpedance analysis, gait speed tests, and stair climbing tests) do quantify physiologically the level of muscle mass and strength diagnostic for sarcopenia. The FNIH Sarcopenia Project and the European group relied considerably on these measures.

The FNIH Sarcopenia Project gathered data from more than 26,000 participants (57% of whom were women, with a mean age of 78.6 years; for men, the mean was 75.2 years). From that study, muscle mass and weakness cut-points for sarcopenia were established: grip strength of  $< 26$  kg in men and  $< 16$  kg for women, a low appendicular lean mass adjusted for body mass index (ALMBMI) of  $< .789$  for men and  $< .512$  for women, and a gait speed of  $\leq 0.8$  meters a second.<sup>3</sup>

The European group came to its conclusions by reviewing the medical literature to define sarcopenia and determine cut-points.

"You see different definitions in the literature from the European and FNIH efforts," says Todd Manini, PhD, Associate Professor, Department of Aging and Geriatric Research, University of Florida College of Medicine, Gainesville. "Those things are still evolving. I hope physicians are patient with us working through all of this."

Roger Fielding, PhD, Senior Scientist and Director of the Nutrition, Exercise Physiology, and Sarcopenia Laboratory, Jean Mayer USDA Human Nutrition Research Center on Aging, Tufts University, Boston, offers a straightforward approach for initial sarcopenia detection in patients. "Just consider that one of the reasons they may have exaggerated weakness is because they have low muscle mass, and maybe think about recommending either some nutritional or exercise intervention to help restore some of that [strength]," he says.

### **Using exercise and better nutrition to maintain strength**

Exercise—particularly resistance exercise—builds muscle strength, muscle mass, and physical performance. Dr. Manini recommends the National Institute on Aging's *Exercise & Physical Activity: Your Everyday Guide*, a user-friendly downloadable guide with exercises for seniors that build endurance, strength, balance, and flexibility. Particularly relevant for patients with sarcopenia is the strength section, which presents ways to use weights, resistance bands, and common objects at home to build muscle strength without needing to go to a gym.<sup>5</sup> No exercise regimen is complete, however, without a good nutritional plan to complement it. This is especially important for the elderly, because their lower appetites and stronger feelings of satiety as they age may impede their ability to get enough protein necessary to maintain proper muscle function. Other factors have an impact too, including weakness, functional

decline, cognitive disabilities, lower income, and diminished ability to shop for groceries, cook, and feed themselves.

The PROT-AGE Study Group, which investigated dietary protein needs in the elderly, recommends that those older than 65 consume at least 1.0 to 1.2 grams of protein per kilogram of body weight each day, evenly distributed during main meals. The researchers also found that dietary protein supplementation for at least 3 months may result in positive effects in older individuals who are malnourished and frailer.<sup>6</sup>

"For people who are already taking in enough protein, taking protein alone doesn't really improve a person's muscle strength," Dr. Manini cautions. "You have to couple it with resistance exercise."

Because the elderly also experience vitamin D deficiency, a daily dose of vitamin D3 (cholecalciferol) is recommended to prevent diminished muscle strength and frailty.

Data show that 800 IU/day or more of vitamin D3 appears to improve muscle strength and reduce the risk of falls.<sup>7</sup> "Check the patient's serum vitamin D concentration and hydroxyvitamin D," Dr. Fielding recommends. "It would be important to determine if someone is vitamin D deficient and whether a course of vitamin D therapy is warranted."

Fortunately, there's been greater awareness of sarcopenia in the medical community in recent years. In particular, Dr. Manini credits Aging in Motion's efforts with the Centers for Disease Control and Prevention in rolling out a new ICD-10-CM code for sarcopenia, which takes effect October 1, 2016. The code (M62.84) will enable separate reporting and data collection of the condition.<sup>8</sup>

"The [new] code will allow us to better characterize the affected population," Bens says. "Doing so can open the door to discoveries on new risk factors and methods of treatment. In addition, we believe that more accurate identification and diagnosis of sarcopenia will help distinguish those who have the condition from those individuals who experience normal amounts of age-related muscle loss that doesn't result in weakness or decline."

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References:

1. [von Haehling S, Morley JE, Anker SD. An overview of sarcopenia: facts and numbers on prevalence and clinical impact. \*J Cachexia Sarcopenia Muscle\*. 2010;1:129-133.](#)
2. [Malmstrom TK, Miller DK, Simonsick EM, et al. SARC-F: a symptom score to predict persons with sarcopenia at risk for poor functional outcomes. \*J Cachexia Sarcopenia Muscle\*. 2016;7:28-36.](#)
3. [Studenski SA, Peters KW, Alley DE, et al. The FNIH Sarcopenia Project: rationale, study description, conference recommendations, and final estimates. \*J Gerontol A Biol Sci Med Sci\*. 2014;69:547-558.](#)
4. [Cruz-Jentoft AJ, Baeyens JP, Bauer JM, et al. Sarcopenia: European consensus on definition and diagnosis. \*Age Ageing\*. 2010;39:412-423.](#)
5. [National Institute on Aging \(National Institutes of Health\). \*Exercise & Physical Activity: Your Everyday Guide from the National Institute on Aging at NIH\*. May 2015. NIH-NIA Publication No. 15-4258.](#)
6. [Bauer J, Biolo G, Cederholm T, et al. Evidence-based recommendations for optimal dietary protein intake in older people: a position paper from the PROT-AGE study group. \*J Am Med Dir Assoc\*. 2013;14:542-559.](#)
7. [Bischoff-Ferrari HA, Dawson-Hughes B, Staehelin HB, et al. Fall prevention with supplemental and active forms of vitamin D: a meta-analysis of randomised controlled trials. \*BMJ\*. 2009;339:b3692.](#)
8. [Lloyd N. AIM Coalition announces establishment of ICD-10-CM code for sarcopenia by the Centers for Disease Control and Prevention \[press release\]. April 28, 2016.](#)

<http://www.medpagetoday.com/resource-center/Nutrition-in-the-Elderly/Sarcopenia/a/58559>