

SARCOPENIA FACTS AND FIGURES

What is Sarcopenia?

Starting as early as age 30, we all begin to lose muscle mass and strength gradually. Some of us lose it more quickly because of a serious condition called sarcopenia, which becomes more common with age. Sarcopenia is the progressive loss of skeletal muscle mass and strength, which results in functional decline. While the loss of muscle mass and strength are both associated with an increased risk of adverse health outcomes—including loss of independence, increased frailty, risk of falls, and more frequent hospitalization—studies show that strength loss, which occurs two to five times faster than muscle mass loss, more consistently increases the risk of disability and death (Mitchell et al. 2012).

Many different factors can contribute to the development of sarcopenia, including age-related changes, lifestyle factors, and chronic diseases. See below for some of the most common risk factors:

Age-Related Changes	Lifestyle Factors	Chronic Diseases
Lower hormone levels	Inactivity and lack of exercise	Bone and joint diseases
Cellular changes	Prolonged bed rest	Metabolic disorders
Decline in ability to convert protein to muscle	Loss of mobility	Endocrine diseases
	Low protein and calorie intake	Liver and kidney disorders
	Dental and oral problems	Cancer
		Malnourishment
		Cardiovascular disease
		Dementia

Despite being common among older adults, awareness of the condition is low among people of all ages and many clinicians. As a result, it is underdiagnosed and undertreated. In 2016 sarcopenia was officially recognized as an independent condition when it was assigned an ***International Classification of Disease (ICD-10) Code***, allowing healthcare providers to report sarcopenia diagnoses in medical claims. This designation is helping to raise awareness and advance research towards treatments to slow, reverse, and eventually prevent the development of sarcopenia.

Proper nutrition and exercise are currently recommended strategies to prevent and slow the progression of sarcopenia. Physical activity, particularly resistance-based strength training, is recommended for any older adult suspected of having sarcopenia both for secondary prevention and treatment. Adequate daily protein intake (1 to 1.5 grams of protein per 1 kilogram of body weight), as well as adequate calorie consumption, are also important in preventing muscle loss in older adults (Bauer et al. 2019).

There are currently no recommended drug treatments for sarcopenia. Current and future treatments should take into account that patients with sarcopenia report maintenance of mobility and the ability to manage domestic tasks as the outcomes most important to them (Hiligsmann et al. 2020).

To learn more about sarcopenia, visit the Aging in Motion website at www.AgingInMotion.org.

Prevalence & Incidence of Sarcopenia

- The estimated prevalence of sarcopenia in adults ages 60 and older is:
 - 11 percent in men and nine percent in women who are community-dwelling;
 - 23 percent in men and 24 percent in women who are hospitalized; and
 - 51 percent in men and 31 percent in women who are in nursing homes (Papadopoulou et al. 2019).
- Older age, female gender, lower education, lower socioeconomic status, being underweight, and lower birth weight are all associated with a higher likelihood of sarcopenia. (Petermann-Rocha et al. 2020)

Human Burden of Sarcopenia

- On average, individuals with sarcopenia have a 58 percent higher risk of fracture than people without the condition (Yeung et al. 2019).
- The risk of disability is 1.5 to 4.6 times higher in older adults with sarcopenia than in those without the condition (Janssen et al. 2004).
- People with sarcopenia have a 13.8 percent increased risk of dependency in their activities of daily living (ADLs), compared to those of similar age without the condition (Perez-Sousa et al. 2019).

- Several studies found rates of impaired ADLs and limitations in physical function were two to three times higher in individuals with sarcopenic obesity compared to non-obese sarcopenic individuals or individuals with normal body composition (Du et al. 2018).
- At 90 years of age and older, low-muscle mass increases the odds of losing physical independence by 1.65 times, compared to people with normal muscle mass. Low-muscle function increases the odds by 6.19 times. Low-muscle mass AND low-muscle function increase the odds by 12.28 times (dos Santos et al. 2016).
- People with sarcopenia are around twice as likely to be hospitalized as those without the condition (Goates et al. 2019).
- The mortality rate of older adults with sarcopenia is 41 percent higher than those without sarcopenia (Koon Yee-Lee et al. 2021).
- A study of in-hospital patients found that those with sarcopenia had significantly higher in-hospital mortality (six percent versus two percent) and 1-year mortality (26 percent versus 14 percent) than patients of similar age without the condition (Vetrano et al. 2014).
- Sarcopenic dysphagia, defined as a swallowing disorder caused by sarcopenia, is prevalent in 13 to 42 percent of older adult inpatients. The main clinical characteristics of the condition are dehydration, malnutrition, choking, and tracheobronchial aspiration (Shimizu et al. 2021).
- People with sarcopenic obesity have poorer quality of life, longer hospitalization, greater mortality rates than individuals with healthy body compositions, and 23 percent increased risk of cardiovascular diseases (Du et al. 2018).
- Sarcopenia is associated with insulin resistance, increased risk of non-alcoholic fatty liver disease, arterial stiffness, and hypertension (in non-obese men) (Boban et al. 2019).

Cost of Sarcopenia

- In the United States, the estimated cost of hospitalizations in individuals with sarcopenia was estimated at \$40.4 billion (Goates et al. 2019).
- Because individuals with sarcopenia are nearly twice as likely to be hospitalized than those without sarcopenia, on average those with sarcopenia pay \$2,315 more annually on hospital stays than those with normal muscle mass and function (Goates et al. 2019).

Relationship Between Walking Speed and Sarcopenia

- Life expectancy improves by an average of 0.4 years per person for every 0.1 m/s improvement in gait speed in sarcopenic individuals that start with gait speeds under 0.8 m/s (MacEwan et al. 2018).
- Improving walking ability in sarcopenic people with walking difficulties would save an estimated \$787 billion to society between 2010 and 2040 in the United States (MacEwan et al. 2018).

References

- Bauer, Juergen, et al. "Sarcopenia: A Time for Action. An SCWD Position Paper." *Journal of Cachexia, Sarcopenia and Muscle* 10, no. 5, (2019): 956–961. <https://onlinelibrary.wiley.com/doi/full/10.1002/jcsm.12483>.
- Boban, Marko, Nikola Bulj, Matea Kolačević Zeljković, Vjekoslav Radeljić, Tomislav Krcmar, Matias Trbusic, Diana Delić-Brklačić, Tamara Alebic, and Aleksandar Vcev. "Nutritional Considerations of Cardiovascular Diseases and Treatments." *Nutrition and Metabolic Insights* 12 (2019): 1-9. <https://doi.org/10.1177/1178638819833705>.
- dos Santos, Leandro, Edilson S. Cyrino, Melissa Antunes, Diana A. Santos, and Luís B. Sardinha. "Sarcopenia and Physical Independence in Older Adults: the Independent and Synergic Role of Muscle Mass and Muscle Function." *Journal of Cachexia, Sarcopenia and Muscle* 8, no. 2 (2016): 245–50. <https://doi.org/10.1002/jcsm.12160>.
- Du, Kristy, Scott Goates, Mary Beth Arensberg, Suzette Pereira, and Trudy Gaillard. "Prevalence of Sarcopenia and Sarcopenic Obesity Vary with Race/Ethnicity and Advancing Age." *Diversity & Equality in Health and Care* 15, no. 4 (2018). <https://doi.org/10.21767/2049-5471.1000173>.
- Goates, Scott, Kristy Du, Mary Beth Arensberg, Trudy Gaillard, Jack Guralnik, and Suzette L. Pereira. "Economic Impact of Hospitalizations in Us Adults with Sarcopenia." *The Journal of Frailty & Aging* 8, no. 2 (2019): 93-99. <https://doi.org/10.14283/jfa.2019.10>.
- Hiligsman, Mickael, Charlotte Beaudart, Olivier Bruyère, Emmanuel Biver, Jürgen Bauer, Alfonso J. Cruz-Jentoft, Antonella Gesmundo, et al. "Outcome Priorities for Older Persons With Sarcopenia." *Journal of the American Medical Directors Association* 21, no. 2 (2020):267-271.E2. <https://doi.org/10.1016/j.jamda.2019.08.026>.
- Janssen, Ian, Donald S. Shepard, Peter T. Katzmarzyk, and Ronenn Roubenoff. "The Healthcare Costs of Sarcopenia in the United States." *Journal of the American Geriatrics Society* 52, no. 1 (2004): 80–85. <https://doi.org/10.1111/j.1532-5415.2004.52014.x>.
- Koon-Yee Lee, Grace, Philip Chun-Ming Au, Gloria Hoi-Yee Li, Marcus Chan, Hang-Long Li, Bernard Man-Yung Cheung, Ian Chi-Kei Wong, et al. "Sarcopenia and Mortality in Different Clinical Conditions: A Meta-Analysis." *Osteoporosis and Sarcopenia* 7 (2021): S19-S27. <https://doi.org/10.1016/j.afos.2021.02.001>.
- MacEwan, Joanna P., Thomas M. Gill, K. Johnson, Jason Doctor, Jeffrey Sullivan, Jin Joo Shim, and Dana P. Goldman. "Measuring Sarcopenia Severity in Older Adults and the Value of Effective Interventions." *The Journal of Nutrition, Health & Aging* 22, no. 10 (2018): 1253-58. <https://doi.org/10.1007/s12603-018-1104-7>.
- Mitchell, William, Philip Atherton, John Williams, Michael Larvin, Jonathan Lund, and Marco Narici. "Sarcopenia, Dynapenia, and the Impact of Advancing Age on Human Skeletal Muscle Size and Strength;

a Quantitative Review." [In English]. *Frontiers in Physiology* 3, no. 260 (2012): 1-18. <https://doi.org/10.3389/fphys.2012.00260>.

Papadopoulou, Sousana K., Panagiotis Tsintavis, Giota Potsaki, and Dimitrios Papandreou. "Differences in the Prevalence of Sarcopenia in Community-Dwelling, Nursing Home and Hospitalized Individuals. A Systematic Review and Meta-Analysis." *The Journal of Nutrition, Health & Aging* 24, no. 1 (2019): 83–90. <https://doi.org/10.1007/s12603-019-1267-x>.

Perez-Sousa, Miguel A., Luis Carlos Venegas-Sanabria, Diego Andrés Chavarro-Carvajal, Carlos Alberto Cano-Gutierrez, Mikel Izquierdo, Jorge Enrique Correa-Bautista, and Robinson Ramírez-Vélez. "Gait Speed as a Mediator of the Effect of Sarcopenia on Dependency in Activities of Daily Living." *Journal of Cachexia, Sarcopenia and Muscle* 10, no. 5 (2019): 1009–15. <https://doi.org/10.1002/jcsm.12444>.

Petermann-Rocha, Fanny, Minghao Chen, Stuart R. Gray, Frederick K. Ho, Jill P. Pell, and Carlos Celis-Morales. "Factors Associated with Sarcopenia: A Cross-Sectional Analysis Using UK Biobank." *Maturitas* 133 (2020): 60–67. <https://doi.org/10.1016/j.maturitas.2020.01.004>.

Shimizu, Akio, Ichiro Fujishima, Keisuke Maeda, Hidetaka Wakabayashi, Shinta Nishioka, Tomohisa Ohno, Akiko Nomoto, Jun Kayashita, and Naoharu Mori. "Nutritional Management Enhances the Recovery of Swallowing Ability in Older Patients with Sarcopenic Dysphagia." *Nutrients* 13, no. 2 (2021): 596. <https://doi.org/10.3390/nut13020596>.

Vetrano, Davide L., Francesco Landi, Stefano Volpato, Andrea Corsonello, Eleonora Meloni, Roberto Bernabei, and Graziano Onder. "Association of Sarcopenia With Short- and Long-Term Mortality in Older Adults Admitted to Acute Care Wards: Results From the CRIME Study." *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences* 69, no. 9 (2014): 1154–61. <https://doi.org/10.1093/gerona/glu034>.

Yeung, Suey S.Y., Esmee M. Reijntjes, Vivien K. Pham, Marijke C. Trappenburg, Wen Kwang Lim, Carel G.M. Meskers, and Andrea B. Maier. "Sarcopenia and Its Association with Falls and Fractures in Older Adults: A Systematic Review and Meta-Analysis." *Journal of Cachexia, Sarcopenia and Muscle* 10, no. 3 (2019): 485–500. <https://doi.org/10.1002/jcsm.12411>.

This resource was created by Aging in Motion (AIM), a project which seeks to press for greater levels of research and innovation to develop treatments in the area of sarcopenia and age-related functional decline. Our Facts and Figures report is a statistical resource to help answer some of the most commonly asked questions about sarcopenia. If you would like to learn more about AIM, or have additional questions about sarcopenia, please contact Lindsay Clarke at LClarke@AgingResearch.org.

Made possible by support from:

