Sarcopenia: Not a Normal Age-Related Muscle Mass Loss

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Once we reach age 30, we begin to lose up to 1% of our muscle mass per year. It is a natural part of aging. However, it is not normal when this muscle loss accelerates, resulting in frailty, falls, and increased hospitalizations. This type of excessive, debilitating muscle loss is due to a medical condition called sarcopenia.

Key takeaways:

- Loss of skeletal muscle mass can increase significantly after age 60, leading to frailty, falls, and fractures without proper lifestyle changes.
- If you are 60 or over, tire easily while walking, are experiencing decreased strength in your hands, or are falling, report it to your physician and ask to be screened for sarcopenia.
- Regular exercise and adequate protein intake at each meal, along with the addition of healthy fruits and vegetables, can prevent or decrease the effects of sarcopenia.

What is sarcopenia?

Sarcopenia, or age-related muscle loss, affects the musculoskeletal system by accelerating the thinning and loss of muscle fibers. With sarcopenia, skeletal muscle mass decreases at the rate of 3% to 8% every decade after age 30. Sarcopenia affects about one-third of those over age 60 and more than half of those over age 80. The devastating effects include frailty, falls, and fractures.

Causes of sarcopenia

Sarcopenia decreases the body's ability to repair its skeletal muscle, resulting in decreased strength and independence.

One cause is inadequate dietary intake. **Inadequate protein intake as we age** is often a function of not eating as much due to digestive issues, decreased strength, and a lack of desire to prepare balanced meals. **Dental issues such as missing teeth or ill-fitting dentures** that interfere with the ability to chew various sources of protein may affect proper dietary needs. In addition, with sarcopenia, the rate at which protein is made is diminished. It is believed that this may be related to decreased testosterone levels, IGF-I, and growth hormone levels. The result is that muscles are unable to repair themselves.

More recently, researchers have found that there is a decrease in the stimulation or transmission of nerve signals to skeletal muscle tissue. As a result, the brain may not communicate as effectively with the muscles of older adults with sarcopenia. Inadequate protein intake, loss of adequate hormone production,

and problems with diminished nerve message transmission all contribute to the development of sarcopenia as we age.

Other risk factors include:

- Lack of physical activity and use of muscles;
- Obesity, which contributes to inactivity and poor nutrition;
- Multiple medications that may decrease activity and/or appetite;
- Rheumatoid arthritis which creates inflammation in the body;
- Chronic diseases, such as heart failure, chronic obstructive pulmonary disease, kidney disease, diabetes, and cancer.

Early signs of sarcopenia

The early signs of sarcopenia are vague and can easily be overlooked:

- Decreased hand strength;
- Fatigue with simple physical activities like walking;
- Walking at a slower pace to conserve energy or difficulty climbing stairs;
- Balance issues occur, including difficulty standing on one leg.

The onset of these symptoms can be subtle. However, they **should not be dismissed as "normal" aging**. Instead, such symptoms should be reported to and evaluated by your primary care physician. Early diagnosis and

treatment can decrease the potential loss of muscle mass, strength, and independence as you age.

Effects of untreated sarcopenia

If you have sarcopenia, you are apt to have **poorer surgical and wound healing outcomes, less mobility, chronic illnesses, and decreased ability to handle your normal activities** of daily living. Therefore, those with sarcopenia are twice as likely to be hospitalized — with the annual cost of hospitalizations estimated at $40.4 billion in 2019. Due to an increase in physical disability, functional decline, and health care costs, sarcopenia caught the attention of the CDC. So, sarcopenia was declared a reportable disease by the CDC in 2016. The diagnosis and treatment of the disease increased once it was identified as an actual reportable condition because physicians could be reimbursed for time spent screening for the disease.

Diagnosing sarcopenia

There is **no definitive test** that can be used to diagnose sarcopenia, and it affects both sexes. **Patients often complain that they have difficulty** opening jars or gripping grocery bags due to decreased hand strength or are walking more slowly and tiring very easily. As a result, sarcopenia is often diagnosed simply by the symptoms reported.

A rapid screening test and questionnaire called SARC-F can also help to diagnose sarcopenia. The questionnaire assigns a score in the following categories:

- **Strength** — how much difficulty you have lifting and carrying 10 pounds;
- **Walking** — how much difficulty walking across a room;
- **Rising from a chair** — level of difficulty rising from a chair or bed;
- **Climbing stairs** — difficulty climbing 10 stairs;
- **Falls** — number of falls in last year.

There is another test that has been cited in the research as helpful in diagnosing sarcopenia. A **dynamometer can test the strength** of a person's hand grip. It is used to determine if a person is losing function in their hands, a classic symptom of sarcopenia. In addition, a dual-energy X-ray absorptiometry (DXA) which measures skeletal and soft tissue mass, can also be ordered. When **used in conjunction with a walking speed test**, it can be helpful in making a diagnosis.

Risk of other complications

Sarcopenia is also associated with the development of other chronic conditions like **swallowing disorders (dysphagia), hypertension, heart failure, arterial stiffness, non-alcoholic fatty liver disease, and insulin**

resistance. It can also result in increased difficulty with wound healing and a decrease in immune response, increasing the length of hospital or rehabilitation stays. Those with sarcopenia have a 41% higher mortality rate. There is also a significant risk of losing physical independence if the disease goes untreated.

Treatment of sarcopenia

There are no U.S. Food and Drug Administration-approved medications to treat Sarcopenia. However, researchers are looking at using certain hormones, such as **testosterone or human growth hormones, to increase lean muscle mass.** In addition, to promote the building of skeletal muscle, especially in the elderly, it is recommended that older adults include a moderate serving of plant or animal protein at breakfast, lunch, and dinner.

An average individual requires 60 g of protein per day to stimulate the synthesis of skeletal muscle. Some researchers propose a meal plan with 25 to 30 g of quality animal or plant protein at every meal. In addition, there has been promising research on **the role of other nutrients in preventing the loss of muscle mass.** Among the nutrients that show promise but require further research on dose, frequency, and duration of treatment are Vitamin D, magnesium, selenium, omega-3 fatty acids, vitamin C, Vitamin B6, vitamin B12, vitamin A, and carotenoids. The efficacy of the Mediterranean Diet, with its healthy protein, and high consumption of fruits and vegetables, has

also been discussed by some researchers as it is associated with some protection against muscle loss. However, **no actual randomized controlled studies have shown definitively that the Mediterranean Diet** decreases the incidence of sarcopenia.

Other important lifestyle changes include strength or resistance training to improve muscle size and strength. Even a simple, low-impact activity such as walking is an important preventative measure and treatment for sarcopenia. Although the loss of muscle mass as we age cannot be avoided entirely, you can make lifestyle changes with diet and activity to diminish the risk of developing the debilitating effects of sarcopenia. In addition, requesting a referral from your physician for a nutritionist or physical therapy consult may be appropriate if you are over 60 and are experiencing a decrease in muscle strength, difficulty walking, or have had a fall.

Resources:

1. Dietary protein recommendations and the prevention of sarcopenia.
2. Economic Impact of Hospitalizations in US Adults with Sarcopenia.
3. Systematic review and meta-analysis of lean mass and mortality: Rationale and study description.
4. Sarcopenia Assessment Techniques.
5. Body composition by DXA.

6. SARC-F: a symptom score to predict persons with sarcopenia at risk for poor functional outcomes.