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**Fracture Fact:**

Weakness, loss of endurance and poor balance can be symptoms of sarcopenia.

**Remember: You can live well with osteoporosis!**

## Sarcopenia and Osteoporosis: A Worrying Combination

*This article is based on the creative idea and research of Ethan Candler and Shatrice Shareem Whyte.\**

### What is Sarcopenia?

Loss of muscle strength and power is commonly seen with aging. But did you know that there is a documented health disorder called sarcopenia? Sarcopenia is defined as a progressive and generalized skeletal muscle disorder that involves the accelerated loss of muscle mass and function. Sarcopenia is generally diagnosed based on symptoms. These include weakness, loss of endurance, a decrease in muscle size, poor balance and trouble climbing stairs. Currently there is no good screening tool, so it frequently goes undiagnosed. Since muscle loss affects many parts of the body, multiple factors are used to diagnose sarcopenia, including muscle mass, muscle strength and physical performance. In addition, it is important to exclude other conditions associated with reduced muscle mass such as malnutrition, cachexia (weakness and wasting of the body due to severe chronic illness) and frailty.

Sarcopenia and the associated loss of muscle mass can cause reduced strength, instability, fatigue and generally lower physical performance. Complications include falls, functional decline, lack of confidence and inactivity. It is important for people with osteoporosis to be aware of this condition, because individuals with osteoporosis and sarcopenia are at a higher risk of fractures and falls because of reduced activity, fatigue and weakness.

How sarcopenia develops is not well understood, in part because it is such a variable disorder. While there is debate, in the scientific community, it is thought that the body's ability to heal and create muscle cells is affected. Specialized cells called satellite cells help to repair muscle cells, and while a small reduction in satellite cells is normal throughout the aging process, a significantly larger loss of satellite cells is found in individuals with sarcopenia, which may impair the repair and generation of muscle cells that is seen.

## **The causes of sarcopenia are thought to include:**

- sedentary or inactive lifestyle
- nutritional deficiencies
- loss of neuromuscular control
- apoptosis (cell death resulting in smaller muscle size)
- abnormal hormonal function
- physical trauma

## **How Does This Affect You?**

There are limited data on the frequency of sarcopenia in the population, but it is known to increase with age. It is thought to affect around 20% of individuals under the age of 70 and increases to around 50% in individuals 80 years of age or older. Because sarcopenia affects such a large proportion of older adults, it is especially important for individuals with osteoporosis to know about the disorder.

Since sarcopenia can lessen a person's physical strength, this may affect their balance or ability to stop the fall because of a lack of muscle strength or power. Research has looked at the effect of sarcopenia on falls in older adults. In study, people with sarcopenia had three times as many falls as people without sarcopenia. There is also evidence that sarcopenia is associated with higher hospital admission rates, reduced quality of life and increased risk for mortality.

Falls can have very serious consequences for older adults, particularly those living with osteoporosis. Research has investigated the impact of sarcopenia on people with a diagnosis of osteoporosis. The most relevant finding is that someone diagnosed with both sarcopenia and osteoporosis is at a much greater risk for fracture - a magnitude of around three and a half times greater when compared to those who either have a normal bone mineral density or do not have sarcopenia. In addition, scientists have demonstrated a negative compounding effect of sarcopenia and osteoporosis on physical performance and an increase in bone turnover. Increased bone turnover means there is an accelerated loss of bone mineral density, which negatively affects someone diagnosed with osteoporosis.

## **Living and Thriving with Sarcopenia**

At the present time, although several hormonal therapies are being investigated, there are no medications that have been approved for the treatment of sarcopenia. Current recommendations for the prevention and treatment of sarcopenia involve lifestyle measures aimed at preventing muscle loss. Exercise is an important element in everyone's life that helps keep you active and strong and maintain an overall higher level of health. Research on the use of resistance training exercise has focused on the benefits for strengthening bones and muscles. Resistance training has been identified as the most promising treatment for sarcopenia. It increases the number of muscle fibres (functional parts of a muscle) and the cross-sectional area of the muscle, which increases the overall muscle volume. This increases muscle strength, counteracting some effects of sarcopenia. This type of exercise can be done in a gym setting or in the comfort of your own home. In addition to resistance training, balance training and aerobic exercise should be considered to improve other areas of physical performance. Exercise recommendations for each type are as follows:

- Balance training: daily for around 20 minutes
- Resistance exercise: 2-3 rounds per week, doing each exercise 8-12 times
- Aerobic exercise: 4-5 days per week, for around 30 minutes each session.
- In addition to increasing activity levels, don't be a "couch potato." Get up and move around every 30 minutes.

If you are looking for exercise ideas, check out the Too Fit To Fracture Exercise Recommendations at <https://osteoporosis.ca/health-care-professionals/clinical-practice-guidelines/exercise-recommendations/>. These are specifically designed for individuals with osteoporosis. Too Fit to Fracture is a great resource to get inspiration from and motivation for your exercise-related pursuits. Consider speaking to a physical therapist or kinesiologist for advice on exercises that are right for you. Work at your own pace, start small and make gradual changes.

*\*Understanding the functions of the human body, its adaptation to change whether to disease states or the aging process, is fascinating and very important. For this reason, Shatrice Whyte, a 4<sup>th</sup> year Kinesiology student at the University of Waterloo (at the time of researching this article), ventured into research about sarcopenia. Her interest in health care motivated her to learn about the exercise techniques that can be used to remain strong and healthy.*

*\*Ethan Candler is a 4th year Honours Kinesiology student at the University of Waterloo (at the time of researching this article). His passion for wellness and health led him to write about sarcopenia in older adults and pursue a career in medicine or health care. It's very important to understand how exercise can help with many challenging age-associated conditions, such as sarcopenia, and we must make sure we're active throughout life to stay healthy and thriving.*

## Fracture Liaison Service (FLS) Quote Project

The FLS team has identified the need to create a repository of quotes to support the work of FLSs. These quotes would be from health professionals, patients and patients' families and would be used in documents and presentations. We request quotes that show support for FLS in addressing the osteoporosis care gap, the benefits of FLS and the improvement in care due to FLS. The quotes will be in quotation marks, followed by the name (first name only for patients) and location, relationship or profession as appropriate. For example:

- “not another one” (nurse manager reflecting on a 2nd patient admission to hospice with non-operable hip fracture)
- “FLS is the only proven scientific method that provides appropriate secondary fracture care.” (Dr. Theriault, rheumatologist, Dartmouth, NS)
- “The FLS nurse provided me with important information that allowed me to reduce the risk of future broken bones!” (Sarah, hip fracture patient, Cole Harbour, NS)

Please email your submissions (please include your mailing address) to Luanne at [lschenkels@osteoporosis.ca](mailto:lschenkels@osteoporosis.ca). Contributors will be mailed a consent form to be signed and returned that will be kept on file at Osteoporosis Canada.

## FUNNY BONE:

Money won't buy happiness, but it will pay the salaries of a large research staff to study the problem. – Bill Vaughan

# **BONE** *MATTERS*

**Take charge of your bone health**

## **Did You Miss It?**

Dr. Nese Yuksel, Drug-Induced Osteoporosis, September 18, 2019 is now available for viewing on line. Go to <https://osteoporosis.ca/bone-health-osteoporosis/living-with-the-disease/copn/bone-matters-webinars/>

## **Upcoming Bone Matters**

Friday, November 15, 2019, 12:00 PM - 1:00 PM ET

Presenter: Dr. Marla Shapiro C.M.

Moderator: Dr. Famida Jiwa, President and CEO, Osteoporosis Canada

In this webinar, you will

- Become familiar with the patient journey
- Understand the importance of knowing what a fracture can mean to you

Dr. Marla Shapiro is a family physician, health journalist for CTV, Canada AM and The Globe and Mail, author, and Associate Professor at the University of Toronto.

Spots are limited. To register now, go to

<https://attendee.gotowebinar.com/register/7679106158660739852>

## **Feeling inspired to make a difference?**

Our growing team of volunteers strives to make a real difference in the lives of Canadians at risk for and living with osteoporosis. If you are someone looking to make a difference in your community and are passionate about helping to spread the word on preventing fractures, then we need you! With your help, we teach Canadians how to improve their bone health so osteoporosis can never take hold and we support those already diagnosed, working to improve their quality of life.

Take action. Apply today at [osteoporosis.ca/volunteer](https://osteoporosis.ca/volunteer).

Together, we will help **make Canadians unbreakable.**

## **We Welcome Your Feedback**

- Have a question?
- Is there an osteoporosis-related topic that you would like to see featured in the newsletter?
- Looking for a great volunteer opportunity?

Please contact us by calling Osteoporosis Canada's toll-free number **1-800-463-6842** or emailing [copn@osteoporosis.ca](mailto:copn@osteoporosis.ca).