

Report:

The basics of sarcopenia



For many people, older age is a time to relax, kick back and enjoy the fruits of a life's work and family responsibilities. It can also come with health challenges.

A major bane of aging is loss of muscle mass, which when accelerated can lead to sarcopenia.

Sarcopenia is a debilitating, multifactorial condition afflicting up to one in three older community-dwelling adults with impacts ranging from trouble performing daily activities to untimely death.

The good news is it can be avoided or mitigated with simple lifestyle factors, notably diet, nutrition and muscle strengthening activities.

This guide will explain sarcopenia and look at how nutrition and physical activity can mitigate it so people can empower themselves to enjoy greater independence and quality of life into a ripe old age.

What is sarcopenia?

Sarcopenia is a loss of skeletal muscle mass, muscle function and strength with aging, to the point that it impedes quality of life and can lead to a vicious cycle of falls, chronic illness and hospitalisation.

Muscle mass starts to decline in mid-life, around the 30-40-year mark, as the body's capacity to produce proteins that grow and maintain muscles starts to wane. The average person will start losing 3-8% muscle mass, and this trend continues with each decade.

By the eighth decade of life it can have dropped by up to half. Aging is the major risk factor (not much you do about that!) but genetics, chronic disease, hormonal changes, inflammation and lifestyle also play a role.

People at high risk are older adults who live in nursing homes or have prolonged hospital stays, with inadequate nutrition and minimal activity. This includes up to half of adults over 80 or in aged care and three quarters of older hospital patients.

Those with other conditions such as cancer, type 2 diabetes, chronic kidney disease and chronic obstructive pulmonary disease are

also at higher risk, because many of the drugs used to treat those conditions can interfere with muscle metabolism.

Why are muscles so important?

Lean or skeletal muscle is the body's largest organ, comprising 40% of body weight. It has many more functions than keeping us upright and giving our bodies strength and mobility.

Some people might be aware that lean muscle burns more calories, generates heat and helps maintain healthy bone density.

Other vital roles for muscles relate to protein storage. Body organs like the skin, brain, heart and liver need protein to carry out their unfailing, life-giving duties. In doing so, protein breaks down, so all body tissues rely on a constant supply.

After a meal, blood vessels absorb and deliver amino acids – protein building blocks – to the organs. But between meals, body tissues rely on lean muscle to supply protein.

And to keep the body's energy supply up, the liver uses lean muscle protein to make glucose when its stores are depleted during the fasting state.

This all works well, so long as lean muscle stores are regularly restocked with protein. But when protein stores fall below demand, depleted muscle mass can result in death from critical illness or starvation.

This is amplified if the body is stressed by infection, burns, cancer or injury, when the immune system's demand for protein skyrockets, leading to a vicious cycle.

Sarcopenia therefore becomes a critical risk if muscle mass is already low before illness, trauma or forced bed rest, as the demand for protein can drastically exceed an older person's recovery threshold.

That's why many women over 65 who fall and break their hip, for instance, can never walk again.

Link to other chronic conditions

Sarcopenia also has links to other conditions.

This includes a new syndrome, "osteosarcopenia", so-named because of the underlying biological similarities and common risk factors linking osteoporosis and sarcopenia.

The syndrome compounds each disease's impact, with higher risk of frailty, falls, fractures, hospitalisation and mortality, making early diagnosis and intervention more imperative than ever.

This is especially important in light of the fact that osteoporosis – deteriorating bone tissue that causes porous bones and increased risk of fracture – affects 60% of Australians over 50.

Healthy muscles are also important for the lungs, particularly the diaphragm, to help breathe in life-sustaining oxygen and expel carbon dioxide. And low muscle mass has been linked to higher risk of mortality from metastatic (secondary) breast cancer.

Even heart disease – the Western world's leading cause of death – is associated with waning muscle mass, strength and metabolic function.

Sarcopenia can also lead to type 2 diabetes, which affects one in six Australians over 65 and nearly one in five over 85, as skeletal muscle tissue is sensitive to insulin, a pancreas-secreted hormone that keeps blood sugar levels under control.

The new disease on the block?

Official recognition of sarcopenia has been slow. Australia launched a national sarcopenia day in 2018, yet it was first described and named in 1988 by Irving Rosenberg, the word meaning “poverty of flesh” in Greek.

He said, “no single feature of age-related decline [is] more striking than the decline in body mass”.

Professor Gustavo Duque, from the University of Melbourne, has been advocating for greater recognition of the disease, which can start early in life and go unnoticed.

He told SBS news, “People progressively lose the capacity to do the things that they usually do and they don’t know why.” The disease is “to muscles what osteoporosis is to bones”, but doctors are often unaware of the condition and contributing risk factors.

Indeed, a recent survey of Australian and New Zealand health professionals found that less than one in seven identified sarcopenia as a disease.

Diagnosing sarcopenia

Sarcopenia can be tricky to detect if patients are not visually wasting away; low muscle mass can even coexist with obesity, where muscle is infiltrated by fat.

Because symptoms don’t appear at first, early diagnosis and prevention are critical.

Typically, handgrip strength is used to measure muscle strength and gait to assess physical functioning, but the best way to diagnose sarcopenia and clinical cut-offs is still a subject of debate.

With growing awareness it’s likely that research will improve diagnosis and treatment, and that it will become a routine part of education for health professionals and clinical practice, ideally with interdisciplinary collaboration.

In the meantime, attention to lifestyle habits can go a long way towards prevention – which is always better than cure, as they say.

Preventing sarcopenia

With aging, diet and exercise become increasingly important as the body's ability to repair and regenerate muscle is not what it used to be – these lifestyle factors can make the world of difference between healthy and unhealthy aging.

Diet and nutrition

As far as diet goes, protein and amino acids – protein building blocks – are a key nutritional target for improving muscle mass, strength and physical performance. In one study, adults over 84 years who ate more protein were significantly less likely to suffer disability.

Proteins have countless roles in the body, but maintaining lean muscle mass is arguably one of the most important, along with healthy bone density, two body elements that work in tandem for preventing falls and fractures.

The protein doesn't need to just come from meat and dairy – other quality sources include eggs, nuts, seeds (think quinoa, chia) and hemp.

And the myth that vegetarians don't get enough protein has been well and truly busted – research shows it doesn't matter what type of protein people eat to boost muscle health.

Even though some plant foods don't have all the essential amino acids, the body can store them and join them up to make full proteins as needed.

As people age, protein requirements increase. The recommended intake is 0.8 grams per kilogram of body weight, although evidence suggests that older adults should aim for 1 gram – which would total 57 grams per day for a 57 kilogram person.

That could be met by eating 2 eggs, half a cup of lentils, 1 tablespoon peanut butter, a can of tuna and 100 grams of yoghurt throughout the day.



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Tomato soup with 8g protein per 180g serve

Some easy ways to include protein include quick omelettes, beans added to soups, casseroles or pasta dishes, a tin of tuna or a tub of hummus with salad, yoghurt with fruit or on top of pumpkin soup or adding cheese to meals.

Typically, older adults consume less food due to lack of appetite, loss of taste or smell, less interest in cooking, poor dentition or reduced mobility. If this is the case, there are ways to boost protein intake by having small regular meals that include protein, even fortified with milk powder, and protein-rich shakes between meals.

Some other supplements can help too. Vitamin D – a common nutritional deficiency – could improve muscle strength, especially in adults over 65 with Vitamin D levels below 30 nmol/L.

Supplementation with creatine – a natural component of muscle cells – can increase upper body strength and reduce muscle aging. It is particularly popular with athletes and body builders but can help anyone strengthen muscle when taken in conjunction with exercise.

The amino acid leucine can stimulate muscle protein stimulus and may be of benefit. A review further identified minerals, particularly magnesium, selenium and zinc, that could potentially help prevent and treat sarcopenia.

Omega-3 fats, from fatty fish, algae, dark leafy vegetables, nuts and seeds, have numerous benefits for physical health, and have recently been linked to improved protein metabolism in lean muscle.

But supplements are not a food replacement. Most importantly, a wholesome, healthy diet is the best ticket to good health, and has been linked to lower risk of frailty with aging.

The importance of mobility

Mobility is critical for maintaining muscle mass and strength with aging – even more so now as activity levels are declining around the world.

The World Health Organisation recommends that all adults – include over 65s – should do at least 150 minutes (two and a half hours) of moderate-intensity physical activity each week, or at least 75 minutes of vigorous intensity aerobic exercise, or a combination of both.

This can take many shapes and forms, including walking, dancing, bowling, hiking or swimming. Active transport can boost activity levels, like walking or cycling to the shops, as well as incidental activities like housework and gardening.

Different ways to exercise are only limited by the imagination. For those with gaming inclinations, researchers have devised video games for older adults, finding that it cannot only reduce risk of falls but also memory and other cognitive functions.

To build muscle mass, regular resistance training exercises that improve muscle strength, at least

two or more days a week, are the most powerful place to start.

Ideally, these would be personalised training programs, and people who are just getting started should start small and build up gradually or seek expert guidance if they have any pain or injuries.



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