
Sarcopenia during COVID-19: Long and Short Term effects on Bone and Muscle Health

Sarcopenia is loss of muscle mass and strength and is a major cause of poor overall health and disability in older adults. This progressive loss of muscle mass is often associated with medical conditions like type 2 diabetes, cardiovascular disease, increased risk of falls and fractures, depression, lower quality of life and loss of independence. Reduction in physical activity and inadequate nutrition greatly add to the problem.

The covid-19 pandemic has been a global emergency with 299,033,643 confirmed cases worldwide as of Jan 6, 2022. One of the main earliest strategies to fight the pandemic and reduce the risk of infections was lockdowns and social distancing. We are now learning about the short and long-term effects of lack of physical activity on muscle mass, bone mass and overall health of individuals during the height of the pandemic.

Inactivity, sedentary lifestyle and muscle loss

The World Health Organization recommends 150 minutes of moderate intensity aerobic exercise per week and moderate intensity strengthening exercises twice a week, to improve overall well-being, maintain independence in older adults and reduce the risk of falls.

About 1.7% of muscle volume can be lost because of as little as two days of immobilization/ physical inactivity. Research data have shown that above recommendations were not being fully met worldwide prior to the pandemic. Needless to mention, social isolation and lockdowns added to this problem.

Access to Food and Eating habits

Changes in food choices and diet quality can result from temporary shortages, panic buying or simply due to less frequent visits to the grocery store for fear of possible infection. These changes in food consumption can lead to two possible scenarios- weight gain or obesity, and excessive weight loss or malnutrition.

A Covid-19 related survey conducted in the UK showed that 30% of its respondents reported weight gain and 18% reported weight loss. Subjects over the age of 36, who were overweight or obese, gained more weight, whereas underweight participants tended to lose weight in confinement and inactivity during the pandemic.

Impaired sleep, stress & anxiety

Eating is recognized as a coping mechanism for dealing with stress and emotions. With people experiencing negative emotions and stress during lockdowns, likelihood of overconsumption is high. Due to buying and storing extra amounts of snacks in anticipation of food shortages, overeating becomes a highly probable consequence. Reduced sleep time due to stress and anxiety leads to changes in appetite and hunger.

Recent study data from populations in confinement during the pandemic indicate that 57.1% of individuals experienced poor sleep quality and as many as 46.1% consumed more high-calorie foods. Intake of high calorie foods leads to obesity, hence an increase in fat content and loss of lean muscle mass.

The problem of weight gain and lean muscle loss was exacerbated due to poor sleep during the pandemic. People with frequent sleep disturbances are also, more likely to engage in adverse health behaviors like smoking and drinking.



Reduced sun exposure and Vitamin D

Vitamin D is not only needed for good bone health, but also for regulation of the immune system. Vitamin D deficiency is associated with loss of bone mass, loss of muscle mass and inflammation in the body. People with reduced mobility/muscle function due to sedentary lifestyle in general, or due to the pandemic are at a greater risk for vitamin –d deficiency, and hence at an increased risk for Covid-19.

Osteoporosis, risk of falls and fractures

Low muscle mass and strength are associated with loss of bone quality and quantity. Sarcopenia and osteoporosis are both linked to increased fracture risk, loss of balance and falls. Reduced physical stimulus to muscles resulting from social isolation due to the pandemic has increased the rate of disease progression in people with osteoporosis. Osteoblasts, or bone forming cells react to physical stimuli from exercise. Sedentary lifestyle behaviors reduce osteoblast activity and the rate of bone formation. On the other hand, lower muscle mass results in muscle weakness. Weak muscles lead to unsteady joints, reduced balance and increased risk of falls and fractures.

Diabetes and Cardiovascular Disease

One of the highly effective ways to reduce the risk of and treat diabetes and cardiovascular disease is physical activity/exercise. The pandemic definitely reduced the amount of activity most adults performed in 2020-21. This potentially increased conditions of hypertension, high cholesterol, obesity, loss of muscle mass, diabetes and risky social behaviors like smoking and alcohol abuse. A recent study showed up to 31% higher occurrence of Covid-19 in people with high blood pressure and 15% higher occurrence in people with diagnosed cardiovascular disease.



Cognitive decline and depression

Sarcopenia or loss of muscle mass and strength are directly related to depression, social withdrawal and lack of interaction. This leads to loss of coordination of movements and cognitive function.

Immune function and risk of Covid-19 infection

Large muscles in human body secrete 'cytokines' which keep inflammation under control and also regulate the function of immune system. Reduced physical activity means weakened immune system and a pro-inflammatory status, increasing the risk of Covid-19 in older adults.

Measures to prevent Sarcopenia, improve bone health, immunity and general well-being

1. Engage in at least 150 minutes of light to moderate physical activity every week. This includes housework and activities of daily living.
2. Aerobic activity is particularly helpful in maintaining heart health and regulating blood sugar. Examples: walking, use of a step-count watch/device, stationary bicycle, treadmill or elliptical machine at home or gym.
3. Resistance exercises are particularly helpful in building muscle and bone mass. Examples: resistance bands, free-weights, gym equipment like leg press and leg curl machines. A physical therapist can show you how to perform these exercises correctly.



-
4. Perform aerobic activity of your choice 5-7 days a week, for at least 20-30 minutes at a time.
 5. Perform resistance exercises 2-3 times a week, 20-30 minutes at a time.
 6. Eat a nutrient-rich diet including plenty of fruits and vegetables.
 7. Stay at a healthy weight. Avoiding rapid weight loss and dieting to achieve excessive thinness.
 8. Choose foods to get the calcium you need and add a supplement only when necessary to get the recommended amount of calcium each day.
 9. Get the recommended amount of vitamin D every day.
 10. Limit your alcohol intake and quit smoking.

Sarcopenia prevention during Covid-19

