

Muscle Strengthening Linked to Lower Risk of Dying

Analysis by [Dr. Joseph Mercola](#)

✓ Fact Checked

March 18, 2022

STORY AT-A-GLANCE

- › Engaging in muscle-strengthening exercises for just 30 to 60 minutes per week is enough to lower your risk of death
- › Muscle-strengthening activities were associated with a 10% to 17% lower risk of all-cause mortality, cardiovascular disease, total cancer, diabetes and lung cancer
- › A systematic review and meta-analysis involving 38 studies and more than 1.9 million participants similarly found that higher levels of upper and lower body muscular strength are associated with a lower risk of mortality
- › Exercise, especially strength training with blood flow restriction (BFR), is one of the best ways to increase nicotinamide adenine dinucleotide (NAD), a vital signaling molecule that's believed to play an important role in longevity

Engaging in weight training and other forms of muscle-strengthening activities is a simple way to protect your health and lower your risk of premature death. A systematic review and meta-analysis revealed that resistance training was associated with 21% lower all-cause mortality, and this rose to 40% when combined with aerobic exercise.¹

A second systematic review and meta-analysis similarly found that muscle-strengthening activities were associated with reduced incidence of kidney cancer and total cancer mortality.² While it's become increasingly clear that weight training benefits overall health, most existing guidelines for physical activity focus mostly on its role in musculoskeletal health.

In order to help determine the optimal amount of weight training that should be recommended for overall health, including the reduction of chronic diseases and premature death, Japanese researchers set out to determine the optimal dose of muscle-strengthening activities – and it turned out to be easily attainable.

Just 30 to 60 Minutes per Week Reduces Risk of Death

Engaging in muscle-strengthening exercises for just 30 to 60 minutes per week is enough to lower your risk of death, according to the meta-analysis.³ It involved 16 studies, which revealed that muscle-strengthening activities were associated with a 10% to 17% lower risk of all-cause mortality, cardiovascular disease (CVD), total cancer, diabetes and lung cancer.

A j-shaped association was found for all-cause mortality, with the maximum risk reduction occurring at about 30 to 60 minutes per week of muscle-strengthening activities, which means there may be no additional benefit once you reach the 60-minute mark.

“The influence of a higher volume of muscle-strengthening activities on all-cause mortality, CVD and total cancer is unclear when considering the observed J-shaped associations,” the researchers noted.⁴ However, for diabetes, an I-shaped association, with a large risk reduction before 60 minutes of muscle-strengthening activities per week, was found.

“[T]he risk of diabetes sharply decreased until 60 min/week of muscle-strengthening activities, followed by a gradual decrease,” according to the study.⁵ Muscle-strengthening activities combined with aerobic activities were also associated with a lower risk of all-cause, CVD and total cancer mortality, with the researchers explaining:

“Joint analysis between muscle-strengthening and aerobic activities showed that a greater benefit for all-cause, CVD and total cancer mortality was obtained when these two types of activities were combined. These results confirm the findings of previous meta-analyses. Therefore, beyond aerobic activities,

muscle-strengthening activities may provide additional benefits for preventing mortality.”

Greater Muscular Strength Predicts Lower Mortality Risk

By building your muscular strength, you can ward off cardiometabolic risks. Previous research has found that a higher level of muscular strength has a protective effect on premature death from any cause and high blood pressure in men. It's also linked to a lower risk of cancer mortality, metabolic syndrome and age-related weight and fat gain.⁶

A systematic review and meta-analysis involving 38 studies and more than 1.9 million participants similarly found that higher levels of upper and lower body muscular strength are associated with a lower risk of mortality.⁷

Specifically, higher levels of handgrip strength were linked to lower all-cause mortality, while adults with greater muscular strength, as tested by a knee extension strength test, had a 14% lower risk of death compared to adults with lower muscular strength. Even among those aged 65 years and over, death and hospitalization were significantly lower among stronger men and women.⁸

Why Is Strength Training so Good for Longevity?

Exercise, especially strength training with blood flow restriction (BFR), is one of the best ways to increase nicotinamide adenine dinucleotide (NAD) levels and energy,⁹ because it activates NAMPT, an enzyme that's responsible for NAD biosynthesis.

NAD is a vital signaling molecule¹⁰ that's believed to play an important role in longevity. This is partly due to its role as an essential substrate for sirtuins,¹¹ which are enzymes related to longevity, as well as its role in DNA repair.

Already, more specialized techniques like BFR training are being adopted by the NFL and other major professional sports organizations for recovery and rehabilitation. BFR training improves strength and builds muscle using very light weights, while,

metabolically, it decreases your risk for sarcopenia and most other age-related diseases, making it particularly useful for the elderly. Researchers explained in *Frontiers in Physiology*:¹²

“Performing exercise with reduced blood flow achieved by restriction of the vasculature proximal to the muscle dates back to Dr. Yoshiaki Sato in Japan, where it was known as “kaatsu training,” meaning “training with added pressure.” Kaatsu training is now performed all over the world and is more commonly referred to as “BFR training” and achieved using a pneumatic tourniquet system.”

Boosting Your Strength With BFR

The World Health Organization recommends engaging in muscle-strengthening activities at least twice a week, which is based primarily on the benefits it can provide to musculoskeletal health. However, the featured meta-analysis suggests that this may also be enough to lower your risk of chronic diseases and premature death:¹³

“Given this result, the current recommendation of at least 2 days/week could be reasonable, although a higher volume may require caution. However, our findings should be interpreted with caution because the number of included studies was small and we could not directly examine the frequency of muscle-strengthening activities ...

Moreover, attention should also be paid to evidence that most programs providing benefits for musculoskeletal health in elderly people are performed ≥ 2 days/week.”

One way to maximize your weight training is by using BFR, which involves partially restricting arterial inflow and modifying venous outflow while you work your limb muscles. In short, BFR replaces the mechanical stress of weight lifting with metabolic stress, leading to benefits that are comparable to high-intensity exercises, making it

especially useful for those unable to lift heavy loads, including the elderly and injured, or people who are just starting out.

With BFR, you can use zero to 30% of your single-rep max weight and still significantly enhance strength and muscle mass, because you're essentially tricking your body into believing you're lifting a heavier weight than you actually are.

During BFR training, the slow twitch Type I muscle fibers become highly fatigued, necessitating the recruitment of fast twitch Type II muscle fibers as the exercise progresses, leading to both short and long-term benefits, including increased strength, muscle thickness and cardiovascular endurance, along with improved physiology of the cardiovascular system.¹⁴

Super Slow Weight Training Is Another Option

Virtually everyone can benefit from muscle-strengthening activities, even if you're older, frail or unable to lift much weight. In the latter case, super-slow weight training can be ideal. By slowing your movements down, it turns your weight-training session into high-intensity exercise.

People of all ages can benefit from super-slow weight training, but this is definitely a method to consider if you're middle-aged or older. I recommend using four or five basic compound movements for your super-slow (high intensity) exercise set. Compound movements are movements that require the coordination of several muscle groups – for example, squats, chest presses and compound rows. Here is my version of the technique.

- Begin by lifting the weight as slowly and gradually as you can, such as a four-second positive and a four-second negative, meaning it takes four seconds, or a slow count to four, to bring the weight up, and another four seconds to lower it. (When pushing, stop about 10 to 15 degrees before your limb is fully straightened; smoothly reverse direction)
- Slowly lower the weight back down to the slow count of four

- Repeat until exhaustion, which should be around four to eight reps. Once you reach exhaustion, don't try to heave or jerk the weight to get one last repetition in. Instead, just keep trying to produce the movement, even if it's not “going” anywhere, for another five seconds or so. If you're using the appropriate amount of weight or resistance, you'll be able to perform eight to 10 reps
- Immediately switch to the next exercise for the next target muscle group and repeat the first three steps

Support Optimal Muscle Synthesis With Whey

Optimal nutrition is important to reap all of the benefits that muscle-strengthening activities have to offer. Amino acids from protein are particularly important in this process, acting as the raw material or “building blocks” of your muscle while also playing a role in new muscle growth. Leucine, in particular, has been established as an amino acid with greater anabolic properties.¹⁵

The richest source of leucine, which helps regulate the turnover of protein in your muscle, is whey protein. Older people not only have accelerated muscle loss but also require greater protein intake to stimulate maximum muscle protein synthesis compared to younger people.¹⁶

For instance, while the muscle protein synthesis rate of healthy young adults increases by about 75% following intake of 20 grams of protein, older adults require about 40 grams of protein to experience a similar increase.¹⁷

Without whey, it can be difficult to achieve enough leucine to maintain body protein from diet alone. Fortunately, whey, in combination with exercise, represents a simple option for older adults looking to maintain and increase their muscle mass.

Sources and References

- ¹ [European Journal of Preventive Cardiology, Volume 26, Issue 15, 1 October 2019, Pages 1647–1665](#)
- ² [International Journal of Behavioral Nutrition and Physical Activity volume 18, Article number: 69 \(2021\)](#)
- ^{3, 4, 5, 13} [British Journal of Sports Medicine February 28, 2022](#)

- ⁶ J Cardiopulm Rehabil Prev. 2012 Nov-Dec;32(6):351-8
- ⁷ Arch Phys Med Rehabil. 2018 Oct;99(10):2100-2113.e5. doi: 10.1016/j.apmr.2018.01.008. Epub 2018 Feb 7
- ⁸ Age Ageing. 2015 Sep;44(5):790-5. doi: 10.1093/ageing/afv080. Epub 2015 Jul 11
- ⁹ Mark Moss, Interview, 35:25
- ^{10, 11} Nat Commun. 2018; 9: 1286
- ¹² Front. Physiol., 15 May 2019
- ¹⁴ Int J Environ Res Public Health. 2022 Feb; 19(3): 1160
- ¹⁵ American Journal of Physiology, Endocrinology and Metabolism September 2019, Volume 317, Issue 3, Pages E473-E482
- ¹⁶ J Gerontol A Biol Sci Med Sci. 2015 Jan;70(1):57-62. doi: 10.1093/gerona/glu103. Epub 2014 Jul 23
- ¹⁷ Front. Nutr., 06 March 2019 Pre Sleep protein and overnight recovery