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Muscle Strengthening Linked to Lower Risk of Dying

Analysis by Dr. Joseph Mercola ✔ Fact Checked

March 18, 2022

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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 l-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?

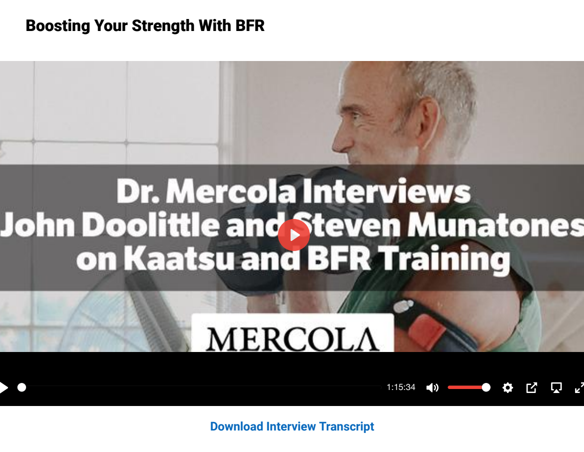
Exercise, especially strength training with blood flow restriction (BFR), is one of the best ways to increase nicotinamide adenine dinucleotide (NAD) levels and energy,[9] because it activates NAMPT, an enzyme that's responsible for NAD biosynthesis.

NAD is a vital signaling molecule[10] 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



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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.

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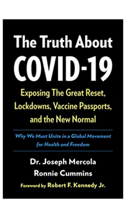

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StarPowerVitD
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Weight training and high vitamin D keeps you young and strong.

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Randyfast
Joined On 5/6/2010 8:42:42 PM
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"lower risk of dying"? We all die, at some point. "lower your risk of premature death"...that is the phrase that should always be used. Accuracy is a good thing! -- Nice dead lift, Dr. Mercola; very impressive. With my useless shoulders, after four surgeries, I'd be lucky if I could deadlift 75lbs. Actually; I wouldn't even attempt it. My left shoulder is really bad. I can't even do push-ups anymore; although, I can still do a few exercises, mostly with cable/pulley systems, EX: Total Gym 1000. Fortunately and thankfully, I'm still able to maintain my musculature in my biceps, triceps and upper back. Now, if I could just gain some weight! Actually; considering all of my infirmities and the fact that getting close to 72 years, I'm very happy that I can still see the 3 distinct triceps muscles.

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LSquare
Joined On 7/13/2019 4:12:39 AM
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Thanks Randyfast! I hate when any article or ad says "lowers your risk of dying (or death)" - without the 'premature' qualification. For better or worse, Life is a terminal condition.

Mark as Spam | Posted On 3/19/2022 9:08:37 AM
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Randyfast
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LSquare; yes, it sounds like something that would come out of the mouth of a "Transhumanist"!

Mark as Spam | Posted On 3/19/2022 9:54:47 AM
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wallguy
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Thanks for the return to non-cov/ NWO/ articles. I appreciate the fitness Guru words you bring. I grew up watching Jack Lalaine as a young child from the living room floor in black and white. This guy was so far ahead of anyone on the planet. And was very true to his Pilgrimage on earth. If you wish to read about the well lived life. Wiki the pages about Jack Lalaine and his wife. Again thanks Dr. Joe for the years of devotion. And cheers to the Mercola TCOYH gang as well.

Reply | Mark as Spam | Posted On 3/18/2022 7:42:56 AM
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AndymAndym
Joined On 4/26/2016 7:07:05 PM
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My trainer asserts that the concentric phase of an exercise should not be slow, only the eccentric phase. So if you're performing a curl, curl up with a one-count, and back down with a longer count. Prolonging the concentric phase is more likely to lead to injuries. He is at https://www.zetlinfitness.com/ If you want to know more. He has done great things with my arthritic hip! At 56 I'm stronger than I've ever been. He is always telling me, "Weight training is an old man's sport."

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Randyfast
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"So if you're performing a curl, curl up with a one-count, and back down with a longer count". That sounds about right. It forces the muscle to grow, without injuring it.

Mark as Spam | Posted On 3/18/2022 6:54:03 AM
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Shannon_Flaherty
Joined On 2/19/2021 6:52:36 AM
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Exactly, Randy. TuT - Time under tension.

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rbo52195
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Wonderful to see the honesty with which Dr. Joe M and these guys carried out this presentation . . .

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dahinton
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Dang! Dr. M is a beast!

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juststeve
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Impressive, kudos Doc, you continue to rock & break through the barriers.

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melaniesnell
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@Dr. Mercola…can you share your thoughts on OsteoStrong? Thank you

Reply | Mark as Spam | Posted On 3/18/2022 7:07:50 AM
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dover
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Love this article. So thankful for all the health info this site has provided over the years; I personally have benefitted greatly! Thank you Dr. Mercola!!! 2 questions: What about combining bfr and super slow hit (I have done this for awhile with good results)? Love using cronometer but have struggled with setting the protein target. Can you provide more clarity on setting the protein target for senors?

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cwc0000
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What about just using BCAA's instead of whey?

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mvoudren
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Are those BFR bands on Dr. Mercola's wrist? I kind of think maybe not, as the amount of weight he is lifting is SIGNIFICANT! Thanks for so many applications based on research!!

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fundamentalassumptions
Joined On 4/1/2009 12:17:58 PM
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Very interesting. Looks like my daughter made the right move from 'healthcare' to nutrition & crossfit w/strong lift & resistance training emphasis. Even as a woman, she's always had her father's Scots heritage upper body strength, even after our ignorance on childhood vaccines, & her 'catching up' the shots all at once schedule to enter early adult ed & college, taking all the ones we managed to miss at once. Still has some lingering asthma & allergy issues, that came on in the toddler years, & migraines with gut & pain issues since mid-teens after the vaccine 'catch up'.

It's my belief that chemical birth control doesn't help these young women either, & I know that the earlier mess w/ Kinsey & the lies we were fed&tempted w/ didn't help my own. Grateful for the Lord's mercy& intervention w/truth there. But anyways, the exercise regime & lifting helps her immensely, & the years of 'take charge of your health' & nutrition ed w/ guard your heart & mindsoul, exercise that mind, etc didn't hurt either, since after taking the rebellion 'hit' w/ the vaccination catching up, which thankfully wasn't worse than it was, wisdom & some healthy distrust kicked in that helped buck the dumbing down & status quo which held her in good stead in several ed& professional based strong-arming, topped off with the covid scamdemic.

We live in a very wicked world that hates truth getting in the way of unhindered lusts, & which preys upon purity. It's like they get a 'high' out of defiling. Took awhile to find the right gym to move on from her homebased lifting & exercise, learning some better technique & more of the science. Many are shallow. Cross-fit seems a good fit for her, though, & it's good to see some of the asthma & bronchitis, & the migraines & pain, becoming more a thing of the past. The Lord knows, if he tarries & this thing drags on, that the young going into it will need all the strength & wisdom they can muster to avoid being 'connected in'....or cut off at the knees.

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steelj
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The wickedness of the world is mostly because of the gullibility of the masses. If people would kick their brains into gear, be skeptical and at least TRY to be rational, all would be well, and the wicked ones would lose their power.

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fundamentalassumptions
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The world is evil because of sin & the denial & self-justification of it. Men following Lucifer, fallen & become Satan, rather than the Lord Jesus Christ, who is the way, the truth & the life. EZ 28, Gen 3, John 14 KJB. Even to the extreme of playing sophist games with their own selves in their hearts & minds, in blind pride, & self-justification, despite all truth, as he. It's a bondage, but does not have to be a permanent one because of providentially preserved conscience & free will choice in man until God who sees hearts gives them over.

Satan is but a mere creature, a beastly angelic cherub & fallen to boot: he didn't foresee God's foresight, great self-sacrificial love & provision in himself when he tempted men to follow him into corruption & death, experiencing/knowing, joining themselves to, evil, by acted upon choice. There is freedom in Christ of the Godhead,& a sure hope, w/ promised vengeance & judgment coming which men, even the redeemed, yet hindered by corruptible flesh can never achieve on their own.

Judgment can only be stayed by true revival, a sufficient number of men repenting to the new birth, new man, creation of God (John1,3&8; 1 Peter 1, & 2 Cor 5 KJB) VOLUNTARILY. It's between men& God, & between men only so far as men allow it, for there can be no peace w/ the wicked, who consume all: the eyes of man are never satisfied apart from God who is all& in all by free will choice& God's power, one on one:& God himself will allow no rest to the wicked. 2Peter3 KJB.

He is longsuffering, not willing that any should perish,but not forcing either. Vengeance is his,& it will come when he deems the situation hopeless. Men making that judgment just make more unrighteousness& suffering, tho we are given the right to use lethal force to protect& defend, attempting to reason 1st& w/ all men having the right to know& face their accuser, w/ a jury trial of their peers in a fair& legitimate court of Law. Anything else is illegit chaos& will be judged of God.

Mark as Spam | Posted On 3/19/2022 7:58:04 AM

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