

EXERCISE: USE IT OR LOSE IT!

Interview with **William Evans**

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It happens as you sit at your desk, on your couch, or in your car. It happens as you stand in line, in an elevator, or on an escalator.

You've been losing muscle and gaining fat every day since sometime in your twenties, says William Evans, director of the *Noll Physiological Research Center* at Pennsylvania State University. You're losing strength so gradually that you probably haven't noticed.

But you will.

As you get older, you may no longer be strong enough to run, go out dancing, or climb a flight of stairs. Eventually, just getting out of a chair could be a struggle.

There's only one way to stop your muscles from wasting away: strength-training. It doesn't matter if you're a 40-year-old runner or a 75-year-old retiree. If you don't build muscle, you'll lose muscle. And you don't have to join a gym to do it.

That's not to say that other kinds of exercise like walking, jogging, or aerobics are a waste of time. On the contrary, they can extend your life.

Q: *As we age, what do we lose most?*

A: The primary thing is muscle mass. The muscle mass of a 30-year-old is less than that of a 20-year-old, so the loss begins early. It contributes to a lower metabolic rate and it leads to an increase in body fat.

Q: *Why?*

A: The less muscle you have, the less energy you burn while you're resting. That's your metabolic rate. As your metabolic rate and your activity level go down, you need fewer and fewer calories to maintain your body weight. But most of us don't decrease our calorie intake exactly to match our declining needs. We eat more calories than we need, so our weight goes up slightly and our body fat goes up a lot.

Q: *Can we avoid losing muscle?*

A: Only by strength-training, which means contracting your muscles a few times against a heavy load. Even regular aerobic exercise - which means contracting your muscles many times with little or no resistance - doesn't prevent loss of muscle mass. Runners still lose muscle mass even if they're highly active.

Q: *Does strength-training have other benefits?*

A: Yes. Like taking estrogen and getting more calcium and vitamin D, strength-training increases bone density in postmenopausal women and prevents bone fractures in women with osteoporosis. But an osteoporotic fracture is caused not just by low bone density, but by poor balance, poor gait, and low strength, all of which lead to falls. Unlike taking estrogen and calcium, strength-training improves those other risk factors.

Q: *Does strength-training help people with arthritis?*

A: Yes. At the *Bowman Gray School of Medicine* in North Carolina they're studying osteoarthritis patients, who are often obese because the disease makes them so inactive. A program including strength-training and walking improves their symptoms, increases their range of motion, and helps them lose weight.

Q: Doesn't pain hinder a person's ability to exercise?

A: Many older people have arthritis, and most can't extend their limbs fully. So we get them to walk and strength-train them in the range of motion that's-pain-free for them. But every single person increases their range of motion, without exception. It's quite amazing.,

Q: How does strength-training help people lose weight?

A: We did a study showing that 12 weeks of strength-training three times a week increases the calories that you burn by about 15 percent or so. And it enables you to lose fat without losing muscle. That was a study of older people, but it's probably true for everybody.

Q: Does strength-training help some people avoid stiff knees and other aches and pains?

A: Yes. An older person is more prone to stiffness and orthopedic injury than a younger person because of a lifetime of inactivity. Muscles are stiffer. Tendons and joints are not as strong and elastic.

If you begin strengthening those joints and muscles, you won't feel as stiff and you'll be able to play tennis and all those other activities that put stress on the joints without getting injured. Strength-training has a more rapid and powerful effect than aerobic exercise.

Q: How much strength-training is enough?

A: In our studies, postmenopausal women did strength-training for only 45 minutes twice a week. Of course, three or four days a week would build more muscle. But some unpublished data show that even one day a week is enough. So it's very different than aerobic exercise, like cycling or running, which you need to perform at least three days a week to improve fitness.

Q: What's the best way for an older person to start exercising?

A: I used to think the first thing you should do is to walk, and that once you were better able to walk, you would be able to do a lot more. But walking doesn't make people stronger, and many of us need to get stronger as we get older.

In every study we've done so far, without exception, when people become stronger, they become more active. They start climbing the stairs more often, they bike more, they walk more. So if you're 65 or 70 and have never exercised, beginning a strengthening exercise program is the first thing you should do (see p. 7).

LIVING LONGER

Q: What kind of exercise lengthens life?

A: If you're a sedentary person, any regular exercise of moderate intensity - even if it's mowing the lawn, housecleaning, or climbing the stairs - will allow you to live longer. That's unequivocal. While the fittest people live the longest, exercise causes the biggest jump in life expectancy for people who go from doing nothing to being moderately active (see box).

Q: What if you're an older person?

A: It's never too late. Even if you're past the age of 60 or 70, exercise will increase your life expectancy.

In fact, exercise exerts such an enormously powerful effect that if you have high blood pressure and you exercise, you'll have a greater life expectancy than if you have normal blood pressure and you don't exercise. It's really quite powerful.

Q: How much is enough?

A: To get that boost in life expectancy, the Centers for Disease Control and the American College of Sports Medicine recommend that you accumulate 30 minutes of exercise a day in addition to your normal daily activities like walking around the house.

Q: Does it have to be 30 minutes in a row?

A: No. Epidemiological studies show that people who have jobs that have intermittent exercise live longer than sedentary people. The classic study was the one comparing London bus drivers, who sat all day, to conductors, who walked up and down the stairs of the buses. The conductors lived longer than the drivers.

Q: *Are you saying that accumulating 30 minutes a day is ideal?*

A: No. That's how to get the biggest improvement in life expectancy. To improve your fitness and quality of life, we know that you need to perform at least 20 minutes of sustained aerobic exercise that significantly increases your heart rate at least three days a week - like brisk walking, running, swimming, or cycling. So we have two different recommendations for two different purposes.

Q: *How does aerobic exercise improve fitness?*

A: It increases HDL ("good") cholesterol, decreases the risk of heart disease, lowers blood pressure, and may reduce the incidence of colon cancer.

Aerobic exercise also prevents adult-onset diabetes, particularly in those at highest risk. In one study, men who were at highest risk - because they were the most overweight - had the greatest protection against diabetes if they exercised. And aerobic exercise also slows down the rate of bone loss.

HOW TO LIVE LONGER

Accumulate 30 minutes or more of moderate-intensity physical activity on most days, say the experts. That means your daily activity should be equal to walking two miles in 30 to 40 minutes.

Here are some "moderate-intensity" activities:

- Brisk walking (2 miles at 3 to 4 mph)
- Cycling
- Swimming or calisthenics
- Racket sports or table tennis
- Golf (if you pull your cart or carry your clubs)
- Housecleaning, general*
- Raking leaves* or dancing*
- Playing actively with children*

*These are "moderate" only if they are performed at an intensity comparable to brisk walking.

Source: Journal of the American Medical Association 273: 402, 1995.

UNEXPLORED BENEFITS

Q: *Can exercise help prevent Alzheimer's?*

A: No one knows. There are just as many studies on either side of the coin. But we do have good data that aerobic exercise helps people with clinical signs of depression.

Q: *What else might exercise do?*

A: As we grow older, our blood glucose levels tend to rise, and that causes glucose to hook on to other proteins. One of the big causes of cataracts is this glycosylation of protein in the lens of the eye. I suspect that exercise - which keeps blood glucose low - may prevent that. But it hasn't been examined. Like a lot of things exercise might prevent, it's only speculation now. Whether exercise benefits the immune system has also yet to be explored.

Q: *Can exercise help people with HIV infection?*

A: Possibly. Strength-training may enable them to hold on to the protein they're eating more efficiently. Because weight-lifting builds muscle, more of the protein you eat is being laid down in muscle, so you're losing less.

We're also about to begin a trial of patients with kidney disease, who have to eat low amounts of protein. We think their ability to hold on to that protein will be improved by strength-training.

EXERCISE TIPS

Q: *Do exercisers need to take vitamins?*

A: At least in older people, who have a reduced immune function, 200 to 400 IU a day of vitamin E enhances the body's response to exercise. To some extent, exercise temporarily damages muscles. And, at least in small studies that looked at the blood of people who took vitamin E, it appears to enhance the immune system's ability to repair - and strengthen - muscles.

I believe the evidence is strong enough that it's worth my taking and to recommend that my mom take it. All the other nutrients I can get from my diet.

Q: *What do you recommend for muscle soreness?*

A: If you want to take something, I would recommend acetaminophen, not aspirin or ibuprofen. Those nonsteroidal anti-inflammatory drugs, or NSAIDs, block the production of prostaglandins in the muscle, which cause some of the pain.

It's our belief that prostaglandins — and the soreness they cause — are a natural consequence of the repair process that ultimately makes the muscle stronger. So by blocking the soreness, you block the repair.

Q: *But what if you're taking aspirin to prevent heart disease or cancer?*

A: Don't stop. And don't stop taking it for arthritis. I'm talking about using aspirin to treat the soreness that comes when you strength-train or play tennis for the first time in months.

Q: *Is water a concern for older people who exercise?*

A: Yes. No one's thirst is adequate to maintain hydration on a hot day. It takes hours to replace the water you lose after exercise. And older people don't get as thirsty. They also have less water to lose because they have less muscle and more fat. And many older people's kidneys don't work so well, so they can't conserve water as well as a younger person can.

So make sure that you drink a lot, whether you're thirsty or not, because if you're exercising, you can lose water and not be aware of it.

Q: *Is it worth buying exercise equipment?*

A: For strength-training, the least-expensive and best equipment you can buy is free weights. Giant rubber bands, like Therabands, are also inexpensive and they work surprisingly well. But once you get strong enough, you'll need weights anyway.

I don't recommend resistance machines like Soloflex. With most of them, you spend a lot of time fidgeting to change the resistance when you want to switch from a leg press to a chest press, for example.

For aerobic exercise, the self-propelled treadmills are difficult to use, especially for older people, and the motorized models are expensive. Station bikes and Nordic Tracks are fine if you enjoy them. My concern is that people have great intentions and end up spending a lot of money for an expensive coat hanger. Walking and cycling outside is less boring.

Q: *How do you get people to start exercising?*

A: I think people start to exercise for one of two reasons. The first is vanity - to lose weight. The other is fear of dying prematurely. That's why many older people are exercising.

There is nothing else you can do that has as great an effect on extending life. It's extraordinarily powerful. To paraphrase Robert Butler, the first director of the National Institute on Aging: if exercise were a drug, it would be the most prescribed pill in the world.

I exercise a lot of days when I don't feel like it, but I want to be around to enjoy my kids and grandchildren. My wife is an absolute addict. She has to exercise every day or she's really grumpy. It's her time for thinking and being alone.