

It's never too late to start moving, but science is finding you may not catch up to lifelong exercisers

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Seventy-seven-year-old David Pallett, who began exercising seriously about four months ago, started a recent workout by donning a 15-pound

vest and climbing 100 stairs—two at a time.

After that little warm-up, personal trainer Jim Hart, who specializes in working with [older adults](#), led Pallett through an hour of exercises meant to improve strength, balance, power and metabolic health. The semi-retired lawyer gamely worked his abs while perched precariously on a 72-cm ball. Hart combined such movements as punches and lunges so that Pallett was using his arms, abs and legs all at once. That required the kind of whole-body coordination needed to avoid falls or do physically demanding work at home.

They finished at Optimal Sport 1315 in Center City with some upper-body work on weight machines set at about 45 pounds.

Pallett, a trim man with a white beard and silver hair, has increased the weights he's using by about 30% since he began these workouts. Hart thinks his client is still in the "beginning stages of his potential." It will likely be at least eight more months before Pallett plateaus.

Could he catch up to similar men who have exercised their entire lives?

Hart, 61, thinks that is sometimes possible if older exercisers work hard enough and have the right genes, but most experts say people who put off exercising until their retirement years are at a disadvantage. They enter late life—a time when strong muscles and good aerobic capacity can make the difference between independence and disability—with poorer-quality blood vessels, nerves and muscles than peers who have always been fit. New exercisers can repair much of the damage, but, probably, not all of it.

"We can't undo 20 years of terrible living," said Dan Ritchie, co-founder and president of the Functional Aging Institute, where Hart trained to work with elders.

The good news is that you don't have to catch up to the lifelong runners and gym rats to improve your health and quality of life. "You can take really unfit people at 70," Ritchie said, "and get them really fit and doing amazing things." One client started working with him at 78. Now in her late 80s, she can leg press her own body weight, and use 5- to 10-pound dumbbells.

Pallett jokes about looking like Arnold Schwarzenegger and besting his very strong 30-year-old son at arm wrestling. He would like to live longer than his mother, who made it to 97, and avoid the dementia that took his father in his early 80s. For now, he's happy that his posture is improving and that his shirts fit tighter across the chest as he's gained muscle.

A man who came late to fatherhood and loved it, Pallett listened when his son encouraged him to exercise. "I told him I could beat him," Pallett said. "I know I'll never beat him. I'm too old, and he's too young. He wanted me to get healthy because he didn't want me to die."

As Melissa Markofski, an exercise physiologist and aging expert at the University of Houston, says, "Comparison is the root of unhappiness."

But let's start by doing it anyway.

Physical activity is one of the most important things people can do to increase the number of healthy years in their lifespan, and experts say it's better to start young.

"I'm a huge fan of exercise, because, without question, it's the most effective means that we have today to counter the fundamental biology of aging," said Nathan LeBrasseur, a physiologist and physical therapist at the Mayo Clinic in Rochester, Minn., who studies muscle growth and metabolism.

Aging, he said, is the "accumulation of molecular and cellular damage." It drives dysfunction and disease. Exercise can slow it down. Obesity, which often accompanies low activity, accelerates it.

People reach their physical peak about age 30, said Steven Austad, chair of biology at the University of Alabama-Birmingham and senior scientific director of the American Federation for Aging Research.

We lose about 30% of our [muscle mass](#) and 50% of strength in later life. Exercisers sustain higher levels of mass longer, so they start their decline from a higher point than sedentary peers. Although you can still add muscle in your 80s and 90s, it becomes much harder, researchers said.

"You want to walk into your 80s with as much muscle mass as possible," said Kevin Murach, an exercise physiologist and muscle biologist at the University of Arkansas. His recent research—in mice—suggests that people who exercise in early life but take a long break might build muscle more quickly if they start again than never-exercisers. LeBrasseur said that, for most people, the ability to grow bigger or stronger muscles begins declining in their 40s.

Increasing numbers of older Americans have exercised for decades thanks to fitness trends when they were younger, researchers said. That has given physiologists a group of high achievers to compare with lifelong couch potatoes. The exercisers are clearly stronger and healthier. Scott Trappe, director of the Human Performance Laboratory at Ball State University, said that longtime exercisers have a bigger physiologic reserve that helps them bounce back from illness or injuries in their retirement years. "Their tank is bigger," he said.

Lifelong exercisers in their 70s have cardiovascular capacities that are physiologically similar to those of recreationally active people 30 years younger. And, he said, the muscles of the lifelong exercisers have

enzymes involved with aerobic metabolism that are the same as exercisers in their 20s.

There's also evidence that people who change their habits in later life reap significant benefits, but much less data on the upper limits of achievement for, say, someone who retires at 65 and decides to devote hours of newly available time to aerobic and weight-bearing exercise.

Even scientists love to point to rare elder super-achievers who started exercising late: a 100-year-old bicycle racer who was able to improve his aerobic capacity or Charles Eugster, who started a fitness plan at 85 and then won rowing and bodybuilding competitions. Hurofumi Tanaka, an exercise physiologist at the University of Texas-Austin, studies masters athletes, who often have not been lifelong exercisers. Many people who were elite athletes when young no longer compete in their 50s and 60s, he said.

But most experts said there's reason to think you probably won't be a masters champion if you do your first exercising in your 60s or 70s because you're starting so far behind. It's easier to maintain strength and fitness than it is to increase it, said Thomas Buford, director of the University of Alabama-Birmingham's Center for Exercise Medicine. "Most of what we're talking about is preventing decline," he said.

It is true that some fitness fanatics enter their retirement years with bad knees and ACLs or pain from traumatic injuries that limit their activity. Sedentary people who are not obese could have healthier joints and fewer injuries. But the joints of non-exercisers could also have suffered from the lack of strong supportive muscles and from obesity. Sedentary people have more back trouble and more cardiovascular problems that can limit capacity. They are more likely to have fat deposits in their muscles that make contractions less effective.

Whether we exercise or not, we lose muscle mass over time. You don't have to have big muscles to be strong, but experts said mass correlates with strength. There's a limit to how much you can bulk up an old muscle, but you can make it stronger.

The composition of muscle changes, with fewer and shorter fibers. In heavier, more sedentary people, fat deposits can make muscle look like marbled steak. Trappe said the muscle cells become less able to process energy. Paul Coen, an exercise physiologist for AdventHealth in Orlando, said the ability to use protein from food for muscle building is blunted in aging bodies. Older people also have fewer mitochondria, which facilitate muscle contractions.

All of these problems are worse in sedentary people. Some can be improved with exercise.

LeBrasseur said people who study muscles have long been consumed with [age-related decline](#) in muscle mass, but are starting to look at other factors. "Have we oversold the importance of building mass as opposed to building muscle quality?" he wonders.

By that, he means that muscles don't operate independently. They need a good blood supply and well-connected nerves that tell them when to contract and relax. These things decline with age, too, and they decline more in people who haven't exercised.

A healthy brain is key to strong muscles because that's where the signals that control muscles start, said Brian Clark, an Ohio University [exercise physiologist](#) who directs the Ohio Musculoskeletal and Neurological Institute. "The muscles are the puppets of the nervous system," he said. Our brains typically atrophy with age and that affects parts that control motor function as well as thinking. This can make habitual motions like walking more challenging, a reason that older people find it harder to

walk while checking their phones than their grandchildren do. Nerves are also dying, and they become less connected.

The best activity for your brain is aerobic exercise. However, weightlifting can slowly build better connections between nerves and muscles. In fact, much of the improvement that sedentary people experience during the first eight weeks of lifting weights is due to this improved neuromuscular coordination, LeBrasseur said.

Then there's your heart, which supplies your muscles with nutrients and oxygen. Exercisers have more muscle capillaries and more supple arteries than the sedentary.

Neel Chokshi, a cardiologist who is medical director of Penn Medicine's sports cardiology and fitness program, said VO2 max, which measures how much oxygen your body can use during exercise, is a sign of cardiovascular efficiency. It declines over time. Arteries stiffen or develop plaque. This makes it harder for the heart to pump. The heart [muscle](#) itself can also thicken and lose pumping ability. Some of the stiffening of artery walls cannot be reversed.

Chokshi said aerobic exercise is also best for your cardiovascular system.

Most older people, of course, don't start exercising in retirement with the idea that they'll become champions. Some have had a health scare that left them with a stark choice: Change or die early. Some want to have the energy to travel. Some want to keep up with the grandkids. They might not like the way they look or feel. "They literally feel their age," Hart said. "I hear that a lot."

At any age, exercise as simple as walking can help them avoid catastrophic falls and stave off the day when they'll need a walker or

wheelchair. "There's never a time in your life when increasing your [physical activity](#) is not beneficial," Austad said. It also can be pretty gratifying. "The thing about weak flabby muscles," he said, "is if you change them just a little, it can have enormous impact."

Matthew Silvis, division chief of primary care sports medicine at Penn State Milton S. Hershey Medical Center, said the goal in older age is to maximize what you have. "We can't halt the aging process, but we can slow it," he said.

Experts pointed out that you'll do better if you combine exercise with nutritious food and adequate sleep.

Laurie Foote, a 52-year-old professional body builder, is a fitness instructor at Rydal Waters, a retirement community in Jenkintown. In personal training sessions, she has clients who can leg press 250 pounds and work with 45-pound free weights.

In one of Foote's recent classes that combined weight training with other movements, such as lunges and pliés, people used two- to six-pound weights. Their goals were not grand.

Art Mueller, 85, a retired psychology professor, moved to the community at the end of June. He joined the weight class, hoping it would improve his posture. "I just want to straighten up and walk more often," he said.

Fran Schwartz, 82, started exercising for the first time about a year ago and now does multiple classes and personal training. She's pleased that she's gone from using two- to three-pound weights in the strength-training class and from 8 to 14 pounds for chest presses. Schwartz, who has had two hip replacements, says her flexibility, balance and strength have improved. She wants to keep that trend going. "I haven't even

thought about long-term goals," she said. "I'm just taking it gradually and feeling better."

Pallett also has realistic goals. He doesn't care about catching up with lifelong jocks or looking like some of the other guys in the gym. "I want to look good and look physically fit," he said, "and be physically fit."

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