

Why is exercise so good for you?

The “how” behind the benefits of being active

by Ginny Smith
photography by Richard Brown

DOCTORS EVERYWHERE have been touting the benefits of physical activity for decades now—even going so far as to cite it as the single most effective action you can take to fend off heart disease, diabetes, chronic depression, obesity, arthritis, osteoporosis—and on and on and on.

But have you ever wondered *why* being active is so good for you, and *how* it actually brings about all those great results inside your body? Let’s follow one man’s evening walk with his dog and discover how the physiological changes brought about by exercising benefit just about every system in the body.

Just thinking about exercise helps

After a busy day at work, Joe comes home, eats dinner, and plops down on the couch. The thought of doing anything active makes him weary, and he’d much rather lounge all evening, watching TV.

But his dog, Hailey, is whining for her walk and the voice of his doctor echoes in the back of Joe’s mind: “When you feel like exercising the least, that’s when you need it the most. Get moving.”

“OK, OK, we’ll go for a walk,” Joe tells Hailey.

Just fighting this inner battle and thinking about exercising has already triggered changes in Joe’s body.

Scientists have found that your heart begins to beat faster even before you start exercising—as your brain anticipates what’s going to happen.

What if Joe never gets off the couch, but just lifts his arms up and down, or rotates his ankles, while he watches TV? “Any movement over and above what you’re already doing will jolt your body’s systems out of their resting state and will lead to health benefits,” says Chris Fordyce, MD, a family physician at Northgate Medical Center. Not any *big* health benefits, mind you, but hey, it’s a start.

Opting for bigger benefits tonight, Joe puts on his exercise shoes, leashes up Hailey, and heads out the front door.

Warming up and stretching

As Joe walks down the sidewalk at a faster-than-a-stroll pace, his heart starts pumping faster and his lungs inhale deeper, circulating more blood, oxygen, and nutrients throughout his body. Stimulated by nerve and chemical signals, the walls of Joe’s arteries relax and widen.

Joe’s muscle temperature gradually increases as he ups his walking pace during the next few minutes. Taking it slow at the start decreases the chance that your muscles will get sore, or that you’ll be injured during your workout. As your joints get more blood flowing through them, an increased amount of synovial fluid is released that lubricates and nourishes them.

After about five minutes of walking, Joe stops for some gentle stretching—giving attention to his neck, shoulders, arms, back, hips, the tendons at the back of his knees (hamstrings), calf muscles, and ankles. “This is the part of exercising that people most often leave out,” says Barb Berry, a physical therapist and orthopedic certified specialist at our Capitol Hill Campus in Seattle.

“They know they need the cardiovascular benefits of aerobic exercise, and that weight training will keep them from being flabby. But stretching is essential, too. It keeps the muscles supple, increases the range of motion of the joints, improves flexibility and coordination, and prevents injuries.”

Moving on to aerobic exercise

As Joe gets moving again, he alternates between a brisk walk and a slow jog—maintaining an aerobic pace. “Most fitness benefits attributed to exercise are achieved with aerobic activity,” says P.Z. Pearce, MD, a Group Health hospitalist in Spokane and an expert in sports medicine. “To be considered aerobic, an exercise must involve the use of large muscle groups in continuous motion, at moderate intensity to keep your heart rate in its aerobic range.” (To find out how to calculate your aerobic range, see the box below.)

What’s your aerobic range?

You get the most cardiovascular benefit from your workout when your heart is operating in its aerobic range. To get a sense of what that range is, let’s use Joe as an example.

Joe, like everyone else, subtracts his age from 220. He’s 38, and 220 minus 38 equals 182. That’s his maximum heart rate. Next, he calculates 60 percent of 182 (109), and 80 percent of 182 (146). That tells him that his heart rate needs to stay between 109 and 146 to be in its aerobic range.

“Once you know your range, you can stop for a few seconds during your workout to check your pulse and adjust your exercise level accordingly,” says P.Z. Pearce, MD, in Spokane. (Using the second hand on your watch, count the number of times your heart beats in 10 seconds and multiply that number by 6.) Slow walking is not enough to get an aerobic workout, and walking to the point of breathlessness is overdoing it. You will need to find a pace that’s comfortable but requires some effort.

“The goal is to increase your heart rate, and keep it up, for at least 30 minutes most days of the week,” says Dr. Fordyce.

“The U.S. Surgeon General says you can break that down into 10 minutes at a time—but remember that you need to keep your heart rate in its aerobic range for the full 10 minutes of each session to get the desired cardiovascular benefit.”

If you make a regular habit of aerobic activity, your heart will become more efficient, supplying oxygen-rich blood to your body with half the effort. The less effort your heart exerts, the less force—or pressure—is exerted on your arteries. With frequent exercise, your arteries will become larger and more elastic. The concentration of “good” cholesterol (HDL) will increase, while “bad” cholesterol (LDL) will decrease. That lowers the build-up of plaque in your arteries.

“If you stress a system, then allow it time to rest and recover, it will adapt to a higher level of function,” says Dr. Pearce.

it. If he doesn’t, he’s less likely to get it.

Weight-bearing exercise stimulates bone-building cells, reducing the risk of osteoporosis, falls, and bone injuries—whether a person is 25 years old or 91 years old.

The muscles that work the bones are strengthened, improving balance and coordination. Regular aerobic activity also replenishes lubrication in the joints, decreasing stiffness and soreness that may be caused by arthritis.

And let’s not forget the digestive system. Scientists believe that physical activity speeds the passage of food through the digestive system, so carcinogens spend less time in the body. That may cut the risk of colon cancer by up to 50 percent.

What about Joe’s mood and memory? Exercising releases endorphins, serotonin, adrenalin, norepinephrine, and dopamine—chemicals that improve Joe’s mood, fight pain, and give him that “feel-good” sensation that makes it more likely that he’ll want to exercise again tomorrow. All that blood flowing into his brain improves his memory and lowers his risk of developing dementia and Alzheimer’s disease by 30 percent to 40 percent.

And how does regular exercise affect Joe’s sex life? A well-conditioned cardiovascular system improves peripheral blood flow throughout his body and decreases his risk of erectile dysfunction. In fact, an all-around healthy and strong body improves sexual function and satisfaction in both men and women.

From aerobic to anaerobic exercise

Joe is walking briskly when suddenly his dog takes off after a cat. Joe sprints down the street after her and, with the increased exertion, his breathing becomes more labored.

He is now exercising in the anaerobic range. That means his heart can no longer supply enough oxygen-rich blood to sustain his level of activity, so his body has switched to burning the energy sources that are stored in his muscles.

While anaerobic exercise has limited cardiovascular and circulatory benefits, it burns more calories than aerobic exercise, strengthens muscles, builds muscle mass, and improves endurance.

Incorporating short bursts of anaerobic exercise into your workout increases your metabolism so that your body keeps burning calories for nearly 18 hours after exercising. Compare that with just two hours of increased metabolism after aerobic exercise.

Cool-down and strength training

Getting fit has head-to-toe benefits



BRAIN is bombarded with chemicals that enhance mood, fight pain, improve sleep cycles, and contribute to a feel-good sensation. Increased blood flow improves memory and lowers risk of dementia and Alzheimer’s disease.

ARTERIES become larger and increasingly elastic. HDL (good cholesterol) increases, LDL (bad cholesterol) decreases, and buildup of plaque is reduced.

HEART can pump blood with half the effort.

LUNGS move more air with fewer breaths. Can better diffuse oxygen into the blood.

BLOOD PRESSURE can be reduced by 4 to 9 points—without using antihypertensive medications.

BLOOD SUGAR levels decrease. Contracting muscles use sugar for energy and help the body use insulin more effectively. Helps fend off or manage diabetes.

FAT is burned when aerobic exercise lasts at least 30 minutes.

DIGESTION speeds up, shortening the time carcinogens stay in the body. This may lower the risk of colon cancer.

SEXUAL FUNCTION and satisfaction improve in both men and women.

MUSCLES become more efficient at doing more work with less energy. Exercise strengthens muscles and builds muscle mass.

JOINTS are lubricated and nourished by synovial fluid, reducing stiffness and soreness. Range of motion and flexibility increase, and coordination improves.

BONES get stronger, decreasing the risk of osteoporosis, bone injuries, and falls.

HAILEY is healthier and happier, too.

Scientists believe that physical activity speeds the passage of food through the digestive system, so carcinogens spend less time in the body. That may cut the risk of colon cancer by up to 50 percent.

All this adds up to healthy blood flow and improved blood pressure. Becoming more active can lower your blood pressure by as much as 4 to 9 points. That’s about the same reduction you might expect to get from taking some antihypertensive medications, but without the side effects.

Your lungs gradually circulate more air with fewer breaths. Slower, deeper breaths are more efficient and better able to diffuse oxygen into the blood.

“Even people who have severe COPD (chronic obstructive pulmonary disease) and are on oxygen can increase their lung capacity, become able to take much deeper breaths, and improve the efficiency of their hearts,” says Dr. Fordyce.

Joe’s contracting muscles use sugar (glucose) for energy, naturally lowering his blood sugar level and allowing his body to use available insulin more efficiently. If he’s got diabetes, he’s better able to control

How to get moving and keep at it

Choose exercises you enjoy. “All kinds of activities count as exercise—from tai chi to cycling to gardening to jogging,” says Bill Huff, MD, a Group Health family physician with expertise in sports and musculoskeletal medicine. “Choose an activity that’s fun and relaxing. Something that uses the large muscles of the body in a continuous, rhythmical fashion, and that is relatively easy to maintain at a consistent intensity.”

“While everyone knows that being active is good for their health,” says family physician John Gayman, MD, an avid bicyclist, “it’s whether or not you enjoy the activity that is the biggest predictor of whether you’ll continue doing it.”

Reserve a time for exercising—and be realistic. “If you usually have 75 things to do after work, don’t count on exercising then,” says Group Health physical therapist Barb Berry. “And getting up at 4 a.m. to exercise is probably not sustainable either.” Once you make a commitment to yourself to exercise at a certain time, stick to it. If you have to miss an exercise session, reschedule it.

Start slowly. If you’ve led a fairly sedentary life, you need to start very slowly—even as slowly as a minute or two a day. Then gradually increase the time. “Appreciate the incremental

nature of getting in shape,” says Dr. Gayman. “It doesn’t happen in one week.”

On the other hand, if you’re already getting in 30 minutes of physical activity a day, try to gradually increase to 60 minutes or, if your doctor has approved it, increase the intensity of your workouts.

“Never increase more than 10 percent a week,” says Dr.

Huff. “And, if an injury makes you stop doing one kind of exercise for a while, find something else you can do instead. Stay active.”

Set a goal and a deadline for reaching it. “Staying motivated is one of the biggest hurdles when it comes to regular exercise,” says P.Z. Pearce, MD, a Group Health hospitalist. “I’ve participated in the Ironman competition nine times, and I’m still tempted to sit at home rather than exercise. I motivate myself by entering athletic events—something I know will make me



After the cat disappears under a fence, Joe and his dog settle back into a brisk walk, slowing down as they near the block where they live. Joe stops to do more stretching, then continues on to his front door.

Cool-down activities give time for all that blood that’s been rushing through Joe’s body to smoothly redistribute, rather than pooling in his muscles. It allows his heart rate and blood pressure time to slow down gradually, and for the lactic acid to be cleared from his muscles, reducing post-exercise soreness.

Once home, with his dog unleashed, Joe is feeling so energized from his outing that going back to the couch and the TV is out of the question. Instead, he decides to go down to his basement and do a little weight-lifting.

Strength and resistance training is an important part of an all-around workout—whether Joe chooses to combine it with his cardiovascular workout or do cardio one day and strength training the next.

In addition to increasing muscle strength and mass, resistance training builds bone strength by placing more strain on muscles and bones than they’re used to. When Joe lifts weights, his muscles are forced to meet the challenge by distributing more force-generating proteins to feed the “fibers” that grow during exercise.

And the benefits keep going and going

Even after Joe completes his workout and sits down at his computer to check e-mail, he’s still reaping the benefits of his workout. His body continues to burn calories as it regenerates nutrients that were used while he was exercising, and repairs any damaged muscles. The more intensely Joe exercises, the more calories he’ll burn afterward.

At what point does Joe’s exercising body start burning the fat that’s stored around his middle? That depends, agree Dr. Pearce and Bill Huff, MD, a family physician who sees patients at the Capitol Hill Campus in Seattle.

“If Joe wants to burn fat, he needs to exercise for at least 30 minutes at a time. It takes that long to crank up the machinery to burn appreciable fat,” says Dr. Pearce. “But if he increases his food intake,” says Dr. Huff, “because he knows he’s going to be exercising, he’ll just burn those extra calories. He may never get around to burning fat.”

Brisk walking is the best form of exercise for weight loss, the doctors agree, and the longer the duration of the activity, the greater the use of fat for energy.

Long walks? Did someone say long walks? Joe’s dog, Hailey, thinks that’s the greatest news ever.