

Starting Strength

Why You Should Not Be Running

by

Mark Rippetoe

If you are a competitive distance runner or cyclist who is serious about your sport, this article has not been written for you. This highly informative discussion is intended for those people who have taken seriously the advice of doctors, Physical Therapists, exercise physiologists, and the popular media's dutiful reporting on these sources of common misinformation about what kind of physical activity is best for your long-term health and continued ability to participate in the business of living well.

Endurance exercise is the most commonly recommended form of activity for health and "wellness." Every time you see an exercise recommendation denominated in *minutes*, you are seeing a recommendation for long slow distance exercise – LSD, or "cardio" in the modern vernacular. Running, bicycling, rowing, or their health-club analogs on machines at the gym are what they mean when they say "exercise." Depending on who you listen to, 20 *minutes* per day, 3 hours (120 *minutes*) per week, or any permutation thereof as a prescription for fitness/health/wellness is the standard in both the fitness and health care industries, and getting stronger is always of secondary importance.

The endurance exercise approach ignores several basic facts:

1. Strength is the ability to produce force with your muscles against an external resistance, like those with which we interact in our environment as we go through our days, living our lives productively. And endurance exercise is directly antagonistic to strength, because an endurance adaptation occurs at the expense of strength.

The body's basic response to a stress of any type is to *recover* from that stress in a way that makes it less likely to be a stress when next exposed to it. In other words, we *adapt* to stress by becoming better able to withstand it. This means that the adaptation to the stress is *specific* to the type of stress. An endurance stress is low-intensity and highly repetitive, meaning that each of the individual physical efforts that make up the run is easy – none of them are physically difficult from a strength perspective. If they were, you couldn't do them over and over again for an hour. This means that the hard part is the cumulative effects of the run, not the strides themselves, which are easy.

Since the individual efforts that compose the run are easy, they do not depend on, nor are the limited by, the runner's *strength*. Therefore, running cannot make you stronger, since it does not stress your ability to produce increasing amounts of force. Rather, it only depends on your ability to keep producing small amounts of force for an hour.

But more importantly, since running for an hour requires a different adaptation from the muscles, *that* adaptation will be favored by the muscles and will actively compete for precedence over

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a strength adaptation – especially if you're not doing any strength training, or doing it wrong. Quite literally, the more you run, the better you are at running and the worse you are at being strong.

2. Endurance training is directly antagonistic to the creation and retention of muscle mass. The muscles grow stronger by growing larger. Running is not a test of strength, so running does not build or maintain muscle mass. In fact, running/cycling/ellipticalizing directly competes for the muscle resources that maintain their size and strength.

This fundamental fact of physiology explains the typical appearance of the average 80-year-old person: skinny, in the arms and legs anyway. Stooped shoulders, skinny arms, and spindly legs are the norm, whether the belly is fat or not. As we age, we do fewer things that require strength. This is partially a result of the fact that our hormonal profiles change as we age, so we lose muscle mass as a normal consequence of aging, and work that requires strength becomes harder. But it's also a result of the fact that we choose to do fewer things that require strength, and therefore fewer things that maintain the size of our muscles.

And much of the responsibility for the problem of incorrect activity selection lies with the “experts” who tell us that endurance exercise – the kind that is measured in *minutes*, not pounds lifted – is really the most important thing to do to stay healthy. Younger people who retain the hormone profile that helps maintain muscle mass can get away with this endurance approach. But as we age and lose muscle through the normal aging process, this advice becomes more expensive to follow.

3. The reason we're so concerned with “cardio” is that we've become indoctrinated into the belief that activity that elevates the heart rate for an extended period of time is the only way to keep the heart healthy. Despite the fact that a huge amount of data demonstrates that the heart gets sufficient stimulation in the performance of correctly-designed strength training, and that diet is a far more important factor in the prevention of heart disease than exercise, the belief that LSD is the key to octogenarianism is now the dogma. And since More Is Always Better, 10 miles is better than 2, right?

Wrong. Excessive amounts of endurance activity can, and almost always does produce adverse physical effects. Look at competitive marathon runners: the people who win the big races are skinny, just like the typical 80-year-old. High-volume low-intensity work involves the processing of huge amounts of oxygen, which produces lots of metabolic by-products that must be removed from the system – this is what “anti-oxidants” are for. If you're running 75 miles a week, it's hard to take enough Vitamin C.

And as a possibly meaningful aside, a 2012 study in the American Journal of Sports Medicine found a death rate of 0.75 per 100,000 for all known marathon race participants from 2000-2009. That is, one of every 133,333 people who enter a marathon will die. In contrast, the death rate in weightlifting meets is not even measurable.

The cumulative effects of high-volume low-intensity work are *catabolic*, i.e. they produce a metabolic environment that is destructive of lean muscle mass. It's not merely that running does not produce more muscle size and strength; running at high mileages actively destroys muscle mass. This is why elite cyclists and marathoners have a ribcage that is visible through their corporate sponsorship jerseys.

The high-mileage cyclist is always trying to recover from training, but by its very nature high-volume endurance work is extremely difficult to recover from. When you're 25, it's no big deal. When you're 40, it's a bigger deal. When you're 60, it's a potentially very bad deal.

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4. Repetitive motion injuries like tendonitis are quite common in people who engage in high-volume endurance activity. In fact, the term “Sports Medicine” really means the branch of orthopedics that deals with inflamed joints in runners and cyclists. As you tire, your repetitive stride mechanics deteriorate, often to the extent that a joint or several joints are being used improperly, i.e. in a way that is anatomically incorrect. The result is the typical overuse injury suffered by endurance athletes.

Billions of dollars are spent annually on doctor visits that always result in the following words being repeated: “You’ve got tendonitis. Stop running for 2 weeks, take these anti-inflammatories, these pain killers, and these muscle relaxers, and then start back slowly.” Seldom do you hear: “Your legs aren’t really strong enough to retain proper stride mechanics when you get tired at the end of your run. Maybe you should think about running less and getting your squat stronger.”

Strength training, in contrast, is much more beneficial as the basis of a fitness program:

1. Strength training builds strength. Duh, right? But think with me here: since strength is force production against the resistances we encounter in our environment, exercise that stresses the ability to produce higher levels of force has a fundamentally different effect on the body than exercise that takes place far below the level of intensity required to make you stronger. Stresses that depend on strength to overcome them will make you stronger.

2. Strength is the basis of your interaction with the environment – the most fundamental aspect of your physical existence. Your *balance* is a function of your ability to control the weight of your body and your position in space. *Coordination* is similar to balance in that the ability to control your body in space can be developed to a higher level when you’re strong enough to control it better. *Agility* is more of the same. The range of motion around your joints – your “*flexibility*” – is largely a function of your ability to control your bodyweight in that position. *Power* is your ability to express your strength quickly, so as to effectively react to the changing circumstances your environment presents. *Endurance* is the ability to keep repeating sub-maximal efforts for a longer period of time, and the stronger you are, the more sub-maximal (and therefore the more easily repeatable) each effort becomes. Strength is very important indeed.

3. Strength training works in two separate ways, that are actually impossible to separate. First, the exercises teach your nervous system to more efficiently use your muscles. Untrained muscles are reluctant to participate fully when asked to contract, and one of the ways strength training makes you stronger is by teaching your nervous system to call more of your muscle fibers into contraction when you work against a load.

Strength training also builds muscle mass, because a bigger muscle generates more force than a smaller muscle. And muscle mass is the body’s metabolic “bank.” It is the storehouse of protein and amino acids, carbohydrate, and water. Muscle mass is where energy stored as fat is converted to movement and heat. Numerous studies have shown that the loss of strength and muscle mass is a predictor of mortality, not just in an aging population but also as the result of acute loss due to injury or immobilization. For examples:

[Association between body mass index and mortality in an 80-year-old population](#)

[Association between muscular strength and mortality in men: prospective cohort study](#)

[Decreased muscle mass and increased central adiposity are independently related to mortality in older men](#)

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[Muscle strength and body mass index as long-term predictors of mortality in initially healthy men](#)

[Muscular strength and adiposity as predictors of adulthood cancer mortality in men.](#)

It's hard to separate these two effects because the body adapts to a force-production stress by adapting both of these strength mechanisms at the same time. The body adapts to stress by getting better at handling it, and since strength is a function of both muscle size and nervous system efficiency, both improve together.

4. Strength training builds bone density far more efficiently than any other type of exercise. Just like muscles, bones adapt to being loaded by getting stronger. In the case of bone, this means they get both denser and bigger the more they are loaded. For both active athletes and older people, this means that strength training is the best way to injury-proof yourself from the consequences of an impact or a fall.

Running is “weight-bearing exercise” only in the sense that your own bodyweight is borne on each foot with every stride, with a little amplification from the effect of momentum at the foot-strike. But this leaves much to be desired when compared to a weight training program that progressively loads the entire skeleton. There is a lot of evidence indicating that the zero-impact effects of cycling combined with the heavy sweating on warm days are an active depletor of bone mineral in long-distance riders. And swimming has no beneficial effect on bone density. All evidence demonstrates that weight training maintains, and even rebuilds, bone density much better than any other form of exercise, and far better than any medication designed for this purpose, with no deleterious side-effects.

The loss of muscle mass and the associated loss of bone density is the space industry's biggest problem for long-term zero-G survival. It is your body's most important commodity, and your exercise program should reflect this priority.

5. Strength training makes you more “durable,” in the sense that it makes you tougher, harder to hurt, and harder to kill. People associate “endurance” with durability, the ability to “take it”, no matter what “it” is. You endure bad things; you hold on, no matter what happens; you punch the clock, and wait till it's over; you grit your teeth, you *suffer* to “get through” the thing, whether it's a marathon or a bad day; you put one foot in front of the other until the bill is paid. So perhaps there is an inherent passivity to an endurance approach to exercise. This is very different from strength training, which is aggressive in its approach: you don't “endure,” you initiate and you complete – *you lift* the bar, and then next time you lift more.

Strength extends the limits of your abilities in all the areas we commonly associate with a life well-lived. Your physical ability profoundly affects your confidence, your usefulness, and your willingness to participate in the process of life, and strength training as the basis of your fitness program accomplishes this far better than long slow distance. Adjust your approach accordingly.

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