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The Healthy Programmer

Get Fit, Feel Better, and Keep Coding

The Pragmatic Bookshelf

Raleigh, North Carolina

The Pragmatic Programmers

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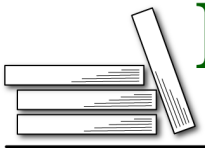

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Standing Up for the Truth

Standing desks have grown in popularity in the last few years, but it's certainly not their first appearance in offices. They were used by clerks, draftsmen, and bankers as far back as the nineteenth century. Some schools at the time even provided them for students.[6]

Many standing-desk-users of old were standing for reasons that we now know to be invalid. They were often concerned about crushing their abdominal organs or developing kyphosis (a hunchback). None of these concerns were based on scientific evidence. Yet most programmers are making the same mistake by not considering the real impact of standing while working.

According to the research of Dr. Alan Hedge, the benefits of standing must be balanced against its potential dangers.[7] Dr. Hedge is a professor of design and environmental analysis at Cornell University and a leading researcher of workplace ergonomics as it affects people's health. Despite doing numerous field studies with standing workstations, he hasn't found any significant evidence to support the widespread benefits to office workers.

To make things worse, Dr. Hedge claims that standing can dramatically increase a person's risk of developing carotid atherosclerosis (constriction of the carotid artery) because of the additional load on the circulatory system. Standing also increases the risk of developing varicose veins and blood clots—the latter of which can be deadly. In fact, if you fall into any of the categories in the following list, then you should avoid standing desks altogether because of the increased risk of developing a blood clot.

- You have high blood pressure
- You have high cholesterol
- You have diabetes
- You use tobacco products
- You're pregnant
- You have a family history of blood clots
- You have hypercoagulability

Dr. Hedge has also found that the performance of many fine motor skills decrease when people are standing. You can test this right now, but you'll need someone to help you.

6. *School Hygiene [WK12]*
7. *Sitting or Standing for Computer Work — Does a Negative-Tilt Keyboard Tray Make a Difference? [HJAR05]*

Once you've found a partner, face each other and stand about one arm's length apart. Then hold your hands up against the other person's hands such that each of your fingers is touching one of your partner's fingers (your left hand to the other person's right hand and visa versa). Have your partner randomly apply pressure to one finger and see how quickly you can press back. Now repeat the test while sitting instead of standing—you'll probably react more quickly this time.

Dr. Hedge's studies have shown that the decrease in dexterity while standing can even lead to pain. That's because most people tend to become tired and lean to one side or the other after standing for an extended period of time. This compromises posture, which increases the pressure on many joints, including the hips, ankles, and even wrists.

That's the bad news. But standing isn't all doom and gloom.

Despite Dr. Hedge's disconcerting findings, many researchers still advocate the use of standing desks. That's because there are studies that show promising signs of the potential benefits of standing. For example, the average person burns an extra fifty calories per hour when standing instead of sitting—that's not a lot, but it's more than inconsequential. In fact, the energy used while standing is considered nonexercise activity thermogenesis (NEAT), which plays a significant role in how our bodies regulate weight gain.

Are you fidgeting while reading this book? Maybe you're bouncing your knee. If so, then you're burning NEAT calories. NEAT is the energy our bodies expend during everyday life (that is, anything that is not exercise or sleep). Some seemingly trivial activities, such as cleaning the house, can increase a person's metabolic rate substantially. An increase in NEAT is unlikely to make a noticeable different on its own, but there is evidence to suggest that it plays a role in how we maintain our bodyweight or develop obesity.[8]

Will standing give you six-pack abs? No, but it might help you regulate your bodyweight after reaching a diet goal.

Another advantage of standing is that it's not sitting. This simple fact means that standing can reduce your risk for many of the diseases we discussed in the previous section. To be specific, standing forces the muscles in your legs and abdomen to contract more often than when you sit. This is important because when those muscles don't contract, your body suppresses the pro-

8. *Non-exercise activity thermogenesis (NEAT) [Lev02]*

duction of an enzyme in the skeletal muscle called lipoprotein lipase (LPL).[9] LPL plays an important role in transporting fats and breaking down fat-carrying molecules in the bloodstream. When the enzyme is not available, fatty materials can build up on the walls of your arteries.

As with everything in life, there are two sides to this coin. Standing has good and bad consequences. Thus, your goal when using a standing desk is to take advantage of the benefits while mitigating the factors that Dr. Hedge warns of. Here are a few guidelines you can follow:

Change Often Dr. Hedge recommends sitting for no longer than twenty minutes, but you shouldn't stand for longer than twenty minutes at a time, either. The key is to keep your body moving—adjust your position often and take many breaks.

Change If It Hurts If you've been standing for a few minutes and your legs or feet are starting to hurt, then sit down. Likewise, if you've been sitting and your back or shoulders start to hurt, then stand up. Neither of these positions should be painful, so the best position is the one in which you are able to hold good posture.

Walk When You Can If at all possible, walk instead of stand. This will eliminate most of the risks associated with standing and burn even more calories (about 100 per hour). In general, the risks associated with standing are related to immobility. If you can find ways of moving while standing, you'll be better off. An excellent time to try this is during phone calls.

Use the Right Footwear Most people will want a sturdy shoe with a solid sole (that is, not flip-flops). This will prevent the arches of your feet from collapsing and inducing pain after standing for a while. You'll also want a soft floor surface. This is often achieved by placing a large gel mat under the standing area of your desk.

Those are great guidelines, but you need to make sure it's feasible to follow them. If it's difficult to switch between sitting and standing then you probably won't do it. After we've discussed your next goal, we'll build a better desk.

9. *Lipoprotein particle distribution and skeletal muscle lipoprotein lipase acitivty after acute exercise [HMZG12]*

Goal 4

Check your blood pressure

If you have high blood pressure, then it is not recommended that you use a standing desk. For that reason, you should get your blood pressure checked before trying one out, but it's not the only reason you should get it checked. Your blood pressure can be an early indicator of many health problems.

Blood pressure is the force of blood against the arteries created by the heart as it pumps blood through the circulatory system. Like all muscles, the heart alternates between contracting and relaxing, and blood pressure varies between these two states. That's why we measure it with two numbers: systolic blood pressure (the pressure when the heart contracts), and diastolic blood pressure (the pressure when the heart relaxes). Overall blood pressure is expressed as systolic over diastolic (for example, 120/85).

Most pharmacies are equipped with machines that allow customers to measure their own blood pressure. This is probably the quickest way to get a reading. You can also buy a device that hooks up to your iPhone if you like tech gadgets.[10] But a trained professional, such as the nurse at your family doctor's office, will usually give you the most reliable reading.

The following table provides an overview of how blood pressure corresponds to risk levels.

Sys.	Dia.	Stage	Health Risk
210	**120**	Hypertension stage 4	Very severe
180	**110**	Hypertension stage 3	Severe
160	**100**	Hypertension stage 2	Moderate
140	**90**	Hypertension stage 1	Mild
130	**90**	Normal	Low
120	**85**	Normal	Low
110	**75**	Low	Low
90	**60**	Low	Moderate
60	**40**	Hypotension	Severe

10. http://www.withings.com/en/bloodpressuremonitor

Sys.	Dia.	Stage	Health Risk
50	**33**	Hypotension	Very severe

Get your blood pressure checked as soon as you can. It's also a good idea to recheck it every now and again. This will alert you to any possible health issues.