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HEALTH

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How the Parasympathetic Nervous System Can Lower Stress

Learn how your sympathetic and parasympathetic nervous systems work together to regulate heart rate, breathing and stress levels in the body.

When your body is under stress, whether it's because you're late for a meeting, behind on your bills or trying to run an 8-minute mile, several systems kick into action. One of these is the parasympathetic nervous system. With time and practice, you can actually improve how this system works to reduce your stress and make you feel more relaxed.



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[Chelsea Long, MS, CSCS](#), an exercise physiologist at the HSS Tisch Sports Performance Center and HSS Sports Rehabilitation and Performance – West Side, explains how the parasympathetic nervous system works, why it's important and how you can tell if yours is functioning properly.

What is the parasympathetic nervous system?

The parasympathetic nervous system is part of the body's autonomic nervous system. Its partner is the sympathetic nervous system, which controls the body's fight or flight response.

The parasympathetic nervous system controls the body's ability to relax. It's sometimes called the "rest and digest" state. It helps maintain daily functions like your resting heart rate, which is your heart rate while your body is at rest; your metabolism; and your resting bronchial constriction, which affects your breathing rate. It essentially keeps you in a relaxed state.

What role does the parasympathetic nervous system play in stress response?

Right now, there are many things causing people stress that are neurological or psychological in nature, that are making the body feel like it's fight-or-flight time. Standing up in front of a room for a presentation, missing a Zoom call, a late train that makes you late for work—all of that creates chaos in your sympathetic nervous system, causing the body to feel like it's in danger. That high level of stress keeps your heart rate elevated, dilates your pupils, raises your blood pressure and keeps everything in your body on high alert.

The parasympathetic nervous system does something called downregulating. It mainly functions using a nerve called the vagus nerve, which sends impulses from the brain to the body but also back from the body to the brain. In essence, your parasympathetic nervous system tells your brain what's happening, instead of your brain telling your body what to do.

If this system is functioning well, it reduces your risk of cardiac heart disease and stroke; increases your digestive metabolism, so it's better for your gut; and decreases migraines. It will also give you better emotional and overall physical health, and possibly even a longer life span.

How do you know if your parasympathetic nervous system is working properly?

One good test can be done if you have a heart rate monitor handy. Look at your resting heart rate, take a deep breath in and hold it, and note how high your heart rate increases—say, 20 beats per minute. When you exhale, if your heart rate drops back down to your resting heart rate pretty quickly, then your parasympathetic nervous system is working very well. If you inhale and your heart rate jumps and stays high, that means your body is in a higher state of stress and your parasympathetic nervous system is not jumping in to downregulate.

You could be overly fatigued or experiencing a high level of stress at work or at home. You could be overtraining when you're exercising. Your body is on go-go-go mode, and your parasympathetic nervous system doesn't know how to stop that stress.

Can you improve how your parasympathetic nervous system functions?

There are many ways to practice using your parasympathetic nervous system. These include mild exercise, meditation, yoga, deep breathing from your diaphragm, even nature walks.

For some people, traditional meditation isn't their thing. It's about finding your body's way of meditating, what helps you to decompress. Maybe you need a bath or to book a massage. If you like reading, read a book. Playing music can be a good way of relaxing and tuning in to shut off most of your other senses. Whatever it is, it shouldn't involve anything that stresses you out. Even a 5-minute comedy video that gives you a deep belly laugh—whatever makes you feel positive energy reinforces the parasympathetic nervous system. Hopefully it's in a calming environment that can help your body decompress and relax.

How does exercise affect the parasympathetic nervous system?

Exercise increases endorphins, the happy hormones. Those happy hormones signal your body that you're not in physical danger. When you're exercising, the sympathetic nervous system is working and helping to elevate your heart rate, but the parasympathetic nervous system is regulating how high your heart rate goes.

If you exercise at a high intensity, you don't want your heart rate jumping uncontrollably. There should be a gradual increase, along with a gradual increase in blood pressure, sweat rate and breathing rate. All of that is maintained by the parasympathetic nervous system. If you're not warming up correctly, or if you're in a constant state of stress outside of exercising, then the sympathetic nervous system is going to take over and continually keep that heart rate high. That's when you see people with high resting heart rates, high blood pressure and an increased risk of heart disease and stroke.

It's also important to make sure you're doing a [cooldown](#), because that's your body's ability to prepare for what's next. If you don't have a cooldown and your heartbeat is still at, say, 95 beats per minute, and you go jump in the shower, your heart rate is going to stay up there. It doesn't have the time to come down and tell your body that your workout is over, and now it's on to the next thing. That it's not the same stress. Your body needs to realize that, but it can only do that if you tell it to.

What if your heart rate or blood pressure stays high even after a cooldown?

If someone's resting heart rate and blood pressure are constantly elevated, then seeing a doctor would probably be important to make sure that nothing requires medical attention or medication. You may also need to get a physical or a stress test prior to starting an intense exercise routine.

You should also see a doctor if your resting heart rate is above 100 beats per minute, unless you've already been diagnosed with a high resting heart rate. You don't want your heart working overtime when you're just sitting down.

What can you do if you don't have time for mild exercise or meditation every day?

Starting small really does help. You don't have to spend a ton of time on it—even 5 to 10 minutes a day can make a huge difference. The most important thing is to do something that brings your sensory and neurological input to a minimum. Try incorporating it throughout the day in small increments if you can. That will help you incorporate relaxation but not feel like you're losing a ton of time from your day like you would if you took an hourlong yoga class or exercise class. If it's a choice between exercise and relaxation, try to gauge what would benefit your body more in that moment.

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About the Expert



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