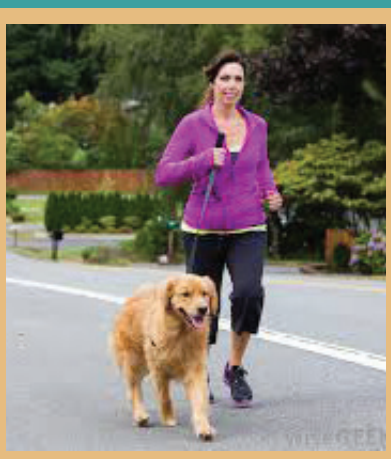
HOW STRESS INCREASES YOUR RISK OF HEART DISEASE



We're all pretty familiar with stress. In the short term, stress can actually be helpful and may even help you survive in the face of danger.

For instance, if you see a large dog running toward you, your body's stress response can help you get out of the way to avoid getting hurt.

However, when stress is ongoing, it can have damaging effects on your physical and mental health. In fact, research has shown that chronic stress may be one of the leading risk factors for heart disease.

In this article, we'll dive into the basics of stress and how chronic stress can raise your risk of heart disease. If you want to know what you can do to manage stress in a healthy way, we have that covered, too.

What is stress?

Stress is your body's response to a physical or psychological trigger that you perceive as challenging or threatening. In broad terms, stress is any change you have to adapt to.

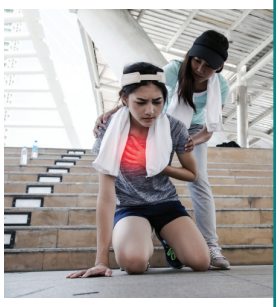
While we often view stress in a negative light, not all stress is bad. In fact, good stress does exist, and it's called *eustress*.

An example of eustress is getting a new project at work. It may feel daunting at first and there may be obstacles along the way. However, it also gives you and your team a chance to shine, learn new skills, and be recognized for the good work you do.

There are also two other types of stress: acute and chronic stress. Both can impact your body and cause specific changes.

Acute stress

Acute stress is short term and identifiable. For instance, you might have acute stress when you:



- **go for a job interview**
- **have to speak in public**
- **pay a visit to the dentist**
- **get stuck in traffic on the way to work**
- **are driving and have to swerve to avoid hitting another car**

When you face acute stress, your body is able to recognize the change it needs to conform to, deals with it, and then returns to a normal state.

Chronic stress

Chronic stress happens when you face a challenge that doesn't have a clear end. As a result, you can stay in a heightened state of readiness to face an ongoing threat.

Chronic stress doesn't give your body a chance to recover and return to a normal state.

When you deal with this type of stress, your breathing and heart rate remain faster, your muscles stay tense, and your digestive system may not work like it should. Also, your immune system may be less effective.

There are many potential causes of chronic stress. Some examples include:

- **dealing with a chronic illness**
- **financial worries**
- **family or relationship issues**
- **caring for a family member**
- **pressure or challenges related to your job**
- **discrimination or racism**

How does stress affect your body?

The stress response is an adaptation that prepares your body to deal with a challenge or threat. The stress response begins in your brain after you've perceived something as stressful or threatening.

Generally speaking, there are two different components to the stress response:

- **Cortisol.** When you detect a stressor, your brain increases its production of *cortisol*, also known as the "stress hormone." One of cortisol's main functions is to increase your energy levels so you can deal with a stressful situation. It does this by helping to move sugars stored in your *liver* into your bloodstream, where the sugars can be used as energy.
- **Epinephrine and norepinephrine.** Another part of your brain signals for the increased production of the hormones *epinephrine and norepinephrine*. This part of the stress response is often cited as the "fight or flight" response. Increases in these hormones strengthen your body to deal with a stressful situation by:
  - raising your heart rate and blood pressure
  - increasing your breathing rate
  - increasing blood flow to your muscles
  - decreasing digestion
  - boosting your energy supplies

How does stress affect your heart?

When stress becomes chronic (long lasting or ongoing), it can have harmful *effects on your body*. The effects of

stress on heart health have long been studied, particularly since the cardiovascular system is a vital part of our stress response.

A *2021 study* that included 118,706 people without existing heart disease across 21 countries. Overall, the researchers found that high stress was associated with an increased risk of:

- *cardiovascular disease*
- *coronary heart disease*
- *stroke*
- **death**

Additionally, according to a *2018 study*, stress may be a risk factor for *cardiomyopathy*, a progressive disease that causes the heart muscle to weaken.

Also in 2021, the American Heart Association released a *scientific statement* regarding the importance of the effect of psychological health on heart health.

The association noted that research has shown that both significant events and the buildup of everyday stresses can increase the risk of cardiovascular disease.

This included:

- **Perceived stress.** Perceived stress is the level of stress you believe you're currently under. High levels of perceived stress, regardless of cause, have been linked to coronary heart disease and coronary heart disease-related deaths.
- **Work-related stress.** Stress related to work or the work-place has been associated with a 40 percent increase in the risk of cardiovascular disease.
- **Social isolation.** Social isolation and experiencing loneliness were linked with cardiovascular disease risk and a 50 percent increase in the risk of cardiovascular events like a *heart attack* or *stroke*.
- **Stress during childhood.** Going through a traumatic and stressful event in childhood was linked to higher levels of inflammation and an increase in certain risk factors for heart disease later in life.

A potential mechanism?

Researchers continue to explore the mechanism in which stress may impact heart health. A *2017 paper* has shed some light on this topic.

Researchers were able to connect cardiovascular disease to activity in an area of the brain called the *amygdala*. The amygdala is involved in processing feelings like stress and fear. It also plays a role in *initiating the stress response*.

Using brain scans from 293 people, researchers found that higher activity in the amygdala was associated with increases in white blood cell production in *bone marrow*, which contributed to inflammation in the *arteries*.

Increases in bone marrow activity and artery inflammation were also associated with increased risk of cardiovascular events like *angina* (chest pain), *heart attack*, and *stroke*.

In a smaller group of 13 people who had a psychological analysis in addition to a brain scan, higher perceived stress was associated with increases in:

- **activity in the amygdala**
- **inflammation in the arteries**
- **levels of *C-reactive protein*, a measure of inflammation in the body**

The link between stress and heart disease

Activity in the amygdala region of your brain increases in response to stress. This finding has been linked with a jump in inflammation that negatively impacts the arteries. These changes appear to increase the risk of cardiovascular disease and potentially serious events.

Stress also increases other risk factors

High levels of stress have also been linked to an increased risk of high blood pressure and diabetes. Both of these conditions can raise your risk of heart disease.

High blood pressure

High blood pressure is when the force of the blood on your artery walls is too high. Chronic stress is a risk factor for high blood pressure, which can cause damage to your heart and blood vessels over time.

A *2021 study* looked at the levels of stress hormones in the urine of 412 participants with no history of high blood pressure. It found that:

- **the risk of developing high blood pressure increased with each doubling of hormones like cortisol, epinephrine, and norepinephrine in the urine**
- **the effect of increased stress hormones on blood pressure was stronger in participants under the age of 60 than in older participants**
- **the risk of experiencing an event like a heart attack or stroke increased with each doubling of cortisol in the urine**

Diabetes

With *diabetes*, your body doesn't make insulin, doesn't use insulin well, or both. This causes glucose (sugar) to build up in your blood, potentially damaging your heart and blood vessels.

Insulin helps control blood sugar levels in your body. After you eat, insulin tells your body to absorb sugar in your blood and use it for energy. When blood sugar levels are too high, insulin tells your body to store the extra sugar for later.

Hormones of the stress response have the opposite effect on insulin. They tell the body to release stored sugar into the blood to be used as energy. As such, chronic stress has been researched as a potential contributing factor for diabetes.

A *2017 study* looked at the link between stress and *type 2 diabetes* in women over a period of 12 years. It found that moderate to high stress was associated with a 2.3-fold increase in the odds of developing type 2 diabetes within 3 years.

Stress affects lifestyle behaviors

We've all heard about *heart-healthy lifestyle choices* like getting regular exercise, maintaining a moderate weight, and eating a balanced diet. But did you know stress can promote behaviors that negatively impact heart health?

A *2014 study* looked at perceived stress and health-related behaviors in 578 students. It found that people with higher perceived stress tended to engage in more unhealthy behaviors than those with lower perceived stress.

Some examples of harmful behaviors that people may turn to in times of stress include:

- **reducing physical activity**
- **changing eating habits, such as** *overeating*
- **increasing** *alcohol consumption*
- *smoking cigarettes*
- **not taking medications, including** *heart medications*, **as prescribed**

A *2012 review* also found that high stress was associated with less healthy dietary choices and a higher body weight. Overweight and obesity are risk factors for high cholesterol, which can contribute to heart disease, too.

How to manage stress and protect your heart

Although you can't completely avoid stress, there are steps you can take to manage stress effectively and to protect your heart health. Let's look at some examples of helpful stress management techniques.

Get regular exercise

Regular exercise is great for heart health. It can also lower stress and lift your mood. Aim to get at least 30 minutes of exercise most days of the week. If you don't know how to start, ask your doctor for some recommendations.

Try relaxation techniques

Relaxation techniques are an effective way to ease stress. They can help lower your blood pressure and heart rate, and make you feel calmer.

There are many types of techniques you can try. You may want to try a few to determine which one works best for you.

Some relaxation techniques you may want to try include:

- *deep breathing exercises*
- *progressive muscle relaxation*
- *guided imagery*
- *body scan*
- *progressive muscle relaxation*
- *meditation*
- *yoga*
- *tai chi*
- *massage*
- *aromatherapy*

Do something you enjoy

Sometimes engaging in an activity you really enjoy can help reduce your stress levels. When you focus on doing something that's fun or that holds your interest, you'll be less likely to dwell on the things that are causing you to feel stressed.

A few ideas include:

- *listening to music*
- *dancing* **to your favorite tunes**
- *curling up with a book*
- **watching a favorite movie or TV show**
- **indulging in a hobby**

Get enough sleep

Good quality sleep is vital for your physical and mental health. Regular, restful sleep can keep you healthy and also plays a vital role in how you manage stress. Feeling tired and not being able to think clearly can make it much harder to deal with stressful situations.

Aim to get *7 to 9 hours* of good quality sleep each night. If you have trouble getting a good night's sleep, *these tips may help* you get the restful sleep you need.

Connect with others

Spending time with supportive family and friends can help you decompress. It can also provide you with *support* when you're going through a particularly stressful period.

If you can't be with your loved ones in person, try to reach out with a phone call, text message, or video chat.

Seek help when necessary

If you're struggling to cope with a stressful situation or event, it may be beneficial to engage with a *mental health professional*, support group, or online therapist. Talk with your doctor about recommendations.

Find what works for you

Keep in mind there's no one way to lower stress levels. You may need to try a few things before you find the stress management techniques that work best for you.

The bottom line

Stress is your body's normal response to something that it considers a threat. However, when your stress levels remain high, it can increase your risk of heart disease.

Recent research has found a link between stress, the brain, and inflammatory changes affecting the arteries. Stress can also increase your risk of developing heart disease risk factors like high blood pressure and diabetes.

However, there are steps you can take now to manage your stress levels and keep your heart healthy well into the future.

Physical activity, relaxation techniques, getting adequate sleep, and connecting with your support network all play a key role in preventing stress from negatively impacting your physical and mental health.