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Low Testosterone Guide

The Link Between Low Testosterone and Diabetes

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Research shows that low testosterone and diabetes are connected. Find out how and learn about treatment options.



The connection might not seem obvious at first, but low testosterone and diabetes often go hand in hand. In fact, men with type 2 diabetes are twice as likely to have low testosterone as men who don't have diabetes.

However, the link between these two conditions does not mean that low testosterone actually causes diabetes. It is possible that some of the lifestyle factors that increase the risk of diabetes also increase the risk of low testosterone.

The good news? In addition to sticking to a heart-healthy diet and exercise, certain treatments may help both low testosterone and diabetes.

Low Testosterone and Diabetes: What's the Link?

Low testosterone levels in men are associated with insulin resistance or reduced insulin sensitivity, says Ahmer Farooq, DO, assistant professor of urology at Loyola University Medical Center in Maywood, Ill.

When you have insulin resistance, your body produces insulin but doesn't use it properly. As a result, glucose builds up in your blood rather than being absorbed by cells. Insulin resistance can lead to type 2 diabetes and increase your risk for a number of health problems, including heart disease.

A study published in 2013 in the journal *BioMed Research International* found that low testosterone levels may help predict if a man will develop insulin resistance or type 2 diabetes in the future. According to the researchers, in a group of more than 300 obese and non-obese men, 44 percent had both type 2 diabetes and low testosterone, compared with 33 percent who had low testosterone but did not have diabetes. The researchers also noted that 25 percent of those with type 2 diabetes and low testosterone were not obese, concluding that low testosterone is linked to insulin resistance regardless of body weight.

Yet, body weight can be a factor. A 2010 study published in the journal *Diabetes Care* found an inverse relationship between body mass index (BMI) and testosterone levels in men with type 2 diabetes. That means that as a man's BMI increases, his testosterone level falls. Obesity may also be a reversible risk factor for low testosterone levels.

Research also suggests that low testosterone could be a complication of type 2 diabetes involving the pituitary gland. A 2004 study published in *The Journal of Clinical Endocrinology & Metabolism* found that one-third of 103 men with type 2 diabetes had low levels of what's called free testosterone, or testosterone circulating in the blood that is not bound to a protein called sex hormone binding globulin. Researchers also found that the pituitary glands of these men were not producing enough luteinizing hormone, the hormone that triggers the production of testosterone in the testes.

Managing Diabetes and Low Testosterone

Low testosterone symptoms can include decrease in sex drive, erectile dysfunction, loss of muscle mass, depression, and a lack of energy, Dr. Farooq says. Low testosterone can also cause a decline in bone mass and osteoporosis as well as an increase in belly fat.

Farooq says a heart-healthy diet and exercise should be part of the overall treatment for both low testosterone and diabetes. In fact, a 2011 study published in the *Journal of Clinical Endocrinology & Metabolism* found that certain lifestyle changes, such as losing weight and getting regular exercise, not only raise testosterone levels but also result in a number of other health benefits for overweight men with low testosterone and type 2 diabetes. Another study published in 2013 in the journal *Hormone and Metabolic Research* showed that overweight men who ate fewer calories each day experienced significant increases in their testosterone levels.

In addition to lifestyle changes, your prescribed diabetes treatment plan may include oral medications and/or insulin therapy. A 2014 study published in the *European Journal of Endocrinology* showed that in people who had just been diagnosed with diabetes, insulin treatment for diabetes also increased levels of sex hormone binding globulin, which translates to more testosterone in the blood stream.

If low testosterone continues to be a problem for you, your doctor may prescribe testosterone replacement therapy, Farooq says. It's important to follow up with your doctor or a certified diabetes educator when you're on these treatments. In some cases, testosterone replacement may increase your insulin sensitivity, and your treatment strategy for type 2 diabetes may need to be adjusted.

But Farooq says that testosterone replacement therapy isn't for everyone. Before being prescribed medication for low testosterone, men must first be diagnosed through a blood test. Men who may not be candidates for testosterone replacement include those with prostate cancer or breast cancer. Although results are mixed, some research has shown that testosterone replacement therapy may stimulate the growth of prostate cancer and breast cancer. Other potential risks of treatment include infertility and sleep apnea.

"Men need to know that there's hope for whatever they have and that they shouldn't feel ashamed," Farooq says. "If they have any worries about their testosterone levels or any sort of medical issue, they should get it checked out."

Continue to work with your doctor, and you can effectively treat and manage both your diabetes and symptoms of low testosterone.

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