

February 2021 Understanding Insulin Resistance

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When reading about obesity, cardiovascular disease, metabolic syndrome, prediabetes and Type 2 diabetes, you may find these conditions are linked to *insulin resistance*.

What exactly is insulin resistance?

Normally, the beta cells of the pancreas produce insulin in response to a rise in blood glucose (sugar) levels. The insulin acts as a key to help glucose go from the blood into cells. If cells do not allow enough glucose to enter, insulin and glucose levels in the bloodstream go higher than normal. *This lack of response by the cells to insulin is called insulin resistance.*

The pancreas responds by making more insulin, so it can take the extra glucose to the liver and muscle cells. In addition, the extra glucose is stored in fat cells (*as fat, often around the abdominal area*), and may contribute to higher than normal fat levels in the blood.

If we were to check insulin and glucose levels, we might see a normal glucose and higher than normal insulin level. This is insulin resistance. Over time, we may find higher than normal glucose levels in addition to higher than normal insulin levels. If fasting glucose is between 100-125 mg/dL, prediabetes exists. If untreated, eventually glucose may rise to greater than 126 mg/dL, and the diagnosis is diabetes. *Insulin resistance and lack of sensitivity to insulin occurs in all three of the above scenarios.*

What are the symptoms?

Often there are no symptoms that a person has insulin resistance. It may go undiagnosed for years or until diabetes develops. However, some people notice difficulty concentrating, feelings of hunger, even after eating, food cravings, bloating and lethargy.

What causes insulin resistance?

Some of the conditions and risk factors associated with insulin resistance include:

- Excess weight, especially abdominal obesity
- Lack of physical activity
- High fat diet, particularly unhealthy saturated and trans fats
- Chronic inflammation
- Use of steroids
- Family history of prediabetes or type 2 diabetes
- High blood pressure
- High triglyceride levels and low HDL (good) cholesterol levels
- Polycystic ovary syndrome
- Past gestational diabetes

Prevention and Treatment

Major studies on insulin resistance and prediabetes show that the condition improves with weight loss, exercise and, in some cases, medication. The goal for weight loss is a 7% loss of body weight. Moderate intensity physical activity with at least 150 minutes/week is shown to improve insulin sensitivity and may reduce abdominal fat. *Resistance training and breaking up prolonged sitting time also helps treat insulin resistance.*

As for dietary measures, increased fiber may improve insulin sensitivity. Avoid pro-inflammatory foods like those that are high in sugar and fat or highly processed to help reduce inflammation associated with insulin resistance. Increase intake of anti-inflammatory, high antioxidant foods like fruits, vegetables, nuts, whole grains and high omega-3 fish like salmon and tuna.

Becoming aware of your risk factors and ways to prevent or treat insulin resistance may help prevent progression to chronic diseases like diabetes and cardiovascular disease. Plus, you may find you have more energy as you incorporate more balanced habits!

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