# Losing Weight Helps Immune System

**By LiveScience Staff**
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Excess fat around the abs can turn the body's defense system against you, leading to heart and other diseases. Australian researchers found that for obese individuals, shedding just 10 pounds could straighten out an off-balance immune system.

The immune system is made up of many different kinds of cells that protect the body from germs, viruses and other invaders. These cells need to co-exist in a certain balance for good health to be maintained. Many factors, including diet and excess body fat, can tip this balance, creating immune cells that can harm, rather than protect, our bodies.

Scientists have known for some time that excess body fat, particularly abdominal fat, triggers the production of so-called "pro-inflammatory" immune cells, which circulate in the blood and promote inflammation in our bodies. Such chronic inflammation has been linked with coronary artery disease and other health problems. In addition, other inflammatory immune cells, known as macrophages, are also turned on within fat tissue.

The study looked at obese people with Type 2 diabetes or prediabetes who were limited to a diet of between 1,000 and 1,600 calories a day for 24 weeks. (Prediabetes is a condition in which people have high glucose levels, but not high enough to be considered full-blown diabetes). Gastric banding — a procedure in which a band is placed around the upper part of the stomach so that it can only hold a small amount of food — was performed at 12 weeks to help restrict food intake further. The results show an 80-percent reduction in the number of pro-inflammatory immune cells, as well as decreased activation of macrophages in the participants' fat tissues.

"Excess weight disorders now affect 50 percent of adult Australians, with obesity being the major cause of Type 2 diabetes and some cancers," said study researcher Katherine Samaras, a professor at the Garvan Institute of Medical Research in Sydney. In the United States, one-third of the population is considered obese.

"The situation has reached crisis point, and people must be made aware that excess fat will affect their immune systems and therefore their survival," Samaras said.

A weight loss of about 13 pounds (6 kilograms) was enough to bring the levels of pro-inflammatory cells down to that found in lean people, according to Samaras.

The scientists could also predict about how much weight people would lose after surgery based on how active the immune cells in their fat were.

"It’s the first time this has been described, and is important because it helps us understand why some people lose weight more easily than others, and that inflammation is involved in regulating the response to [gastric banding] surgery," Samaras said.

More work is needed to tease the exact role of these immune cells in obesity and Type 2 diabetes, the researchers say.

The results were published April 7 in the Journal of Clinical Endocrinology Metabolism.