



— YOUTUBE RESEARCH SUMMARY

Research Summary: Adiponectin and Weight Loss Resistance

As featured in Dr. Kenny Mittelstadt's video: [The Hormone Keeping Your Weight Loss Blocked](#)

— Research Context

Weight loss resistance is about whether your body's fat-burning signal is getting through at all. The research below examines adiponectin, a hormone made by fat tissue, and what the science shows about why it drops, what happens when it does, and why losing weight on the scale does not automatically fix the underlying pattern. Understanding this hormone helps clarify why two people can carry similar amounts of body fat and have dramatically different metabolic outcomes, and why standard approaches to weight loss often leave the deeper signaling terrain unchanged.

— Key Findings from the Research

STUDY 1 • PMID 20570822

Some people carry significant body fat and remain metabolically healthy. Others carry the same amount and develop serious metabolic problems. Researchers found that the single strongest separating factor was the combination of adiponectin levels and immune cell activity inside fat tissue. Together, those two variables explained 98% of the difference in insulin sensitivity between groups. People who stayed metabolically healthy despite higher body fat had meaningfully higher adiponectin and far less of the quiet inflammation that tends to build up in visceral fat. Adiponectin functions as a readout of whether the whole metabolic terrain is functioning or breaking down.

STUDY 2 • PMID 33411633

A 2021 review published in *Circulation Research* examined what happens to adiponectin as body fat increases and what that means for heart and metabolic health. As fat accumulates, adiponectin reliably falls, a pattern called hypoadiponectinemia, which is one of the strongest predictors of metabolic and cardiovascular risk available. The review also highlighted the ratio between adiponectin and leptin: leptin rises as fat increases while adiponectin falls, and that shift in ratio changes the signaling environment in ways that make fat burning harder and inflammation more likely. Looking at either number alone gives an incomplete picture of metabolic signaling.

STUDY 3 • PMID 38959886

A 2024 study tracked adults through active weight loss and then through the maintenance phase. Adiponectin did not reliably increase simply because the scale number went down. The hormonal response depended on the type of intervention used and, critically, whether people were able to keep the weight off. People who regained weight had clearly different adiponectin patterns compared to those who maintained their loss. Losing weight and fixing the fat-burning signal are distinct outcomes. The specific approach to weight loss, and whether the loss is sustained, shapes whether the underlying signaling terrain actually shifts.



— Functional Medicine Connections

Fat tissue functions as an active communication hub, sending signals to your brain, muscles, liver, and immune system. Adiponectin is one of the most important messages it sends, telling those tissues that stored fuel is available and that burning it is appropriate. When adiponectin drops, that message becomes quieter. Muscles and the liver, which would normally respond to it, become less sensitive over time, making the whole system less efficient at using fat for fuel.

Adiponectin's decline connects directly to how insulin functions. Low adiponectin is associated with reduced insulin effectiveness, which prompts the body to produce more insulin. Higher circulating insulin tends to push the body toward storing energy rather than spending it. These two patterns reinforce each other and together make fat loss harder to sustain even when caloric intake is reduced.

The nervous system, testosterone, and muscle mass all operate within this same hormonal environment. Chronic stress, poor sleep, and ongoing physiological overload keep the body in a state that favors holding onto stored energy. Aggressive calorie restriction in that environment can strip muscle without improving the underlying signal. Muscle is one of the primary sites where the fat-burning message lands, so losing it compounds the problem. Testosterone tends to fall alongside adiponectin under metabolic stress, and addressing only one part of this pattern rarely produces lasting results.

— Practical Reflections & Takeaways

Have you ever lost weight on the scale but still felt like something was off, with energy, body composition, or hunger patterns not improving the way you expected? That gap between the number moving and the system actually responding may be worth sitting with.

If you have been told your labs look normal while your body still does not feel like it is cooperating, consider what was specifically checked. Adiponectin is rarely included on a standard panel, and its absence from a normal lab report does not mean the signal is working well.

— References

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