

How to know if your cells are making GOOD ENERGY

The 6 basic tests everyone needs



How to know if your cells are making **GOOD ENERGY**

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Are you part of the metabolically healthy 12%?

The question you're trying to answer with standard blood tests is whether you are part of the 12% percent of people in the United States who meet the normal criteria for the six basic metabolic biomarkers without medication, and therefore are a step in the right direction to having Good Energy.

To answer this question, you will need to obtain your lab results and vital signs from your most recent annual physical and get a measuring tape.

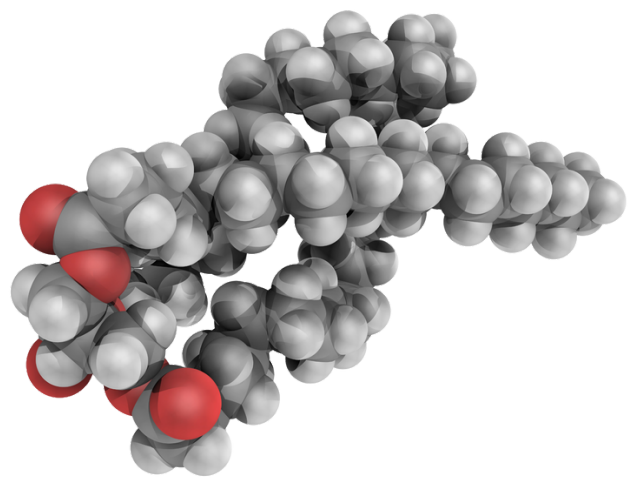
1. **Triglycerides:** Am I overwhelming my cells with glucose?
2. **High-Density Lipoprotein (HDL) Cholesterol:** How well am I clearing cholesterol from my bloodstream?
3. **Fasting Glucose and Hemoglobin A1c:** Do I have insulin resistance blocking glucose from getting into my cells?
4. **Blood Pressure:** Is insulin resistance causing my vessels to not dilate well and making my heart have to to work harder to pump blood through my body?
5. **Waist Circumference:** How much inflammatory visceral fat is stored in my abdomen?

Among your life's top priorities should be making it into that 12 percent. If you don't achieve that goal, you're more likely to experience conditions like depression, acne, headaches, and serious chronic diseases in life. If you're a woman, you'll be more likely to pass metabolic dysfunction on to your child in utero, be infertile, have a miscarriage, experience worse menopausal symptoms, and develop Alzheimer's. We want metabolic health!

We have normalized an environment where 70% of the nation's population will have an overt chronic disease soon. That doesn't have to be you! Let's dive in.



The Six Basic Tests Everyone Needs



Triglycerides:



Am I overwhelming my cells with glucose?

What this measures

When we consume more sugar and carbohydrates than our liver mitochondria can handle, the excess glucose is converted into triglycerides and shipped out into the bloodstream to be stored in tissues and muscles. Triglycerides are a sign of your cells being unable to handle the amount of glucose and carbohydrates coming in.

Ranges

- The triglyceride range that's considered "normal" by standard criteria: <150 mg/dL
- **Optimal range: <80 mg/dL**

What you can do

In terms of what raises triglyceride levels, the simple message is that high triglycerides are almost certainly a warning sign that you are eating too much sugar, refined carbs, and/or alcohol, and probably not engaging in enough physical activity. You need to reduce the amount of carbs that are overwhelming your liver and turning into fat. This means cutting out the soda, sugar-sweetened beverages, juices, added sugar of any kind, candy, products with refined grains and other high glycemic foods. And you need to increase your daily movement to burn the excess. It also means that a focus on the Good Energy pillars (sleep, stress, real foods, toxins, etc) that improve mitochondrial health so that the mitochondria are more capable of processing energy and doing their work. You can do this!

High-Density Lipoprotein (HDL) Cholesterol:

How well am I clearing cholesterol from my vessels?

What this measures

HDL is often referred to as “good” because it helps remove cholesterol from the blood vessels and carries it back to the liver for processing and elimination from the body.



Ranges

- Range considered “normal” by standard criteria: >40 mg/dL for men and >50 mg/dL for women
- Optimal range: There is a U-shaped relationship between HDL levels and development of diseases, with both low and very high levels being associated with increased risk. **The sweet spot for lowest risk appears to be about 50 to 90 mg/dL, although sources vary.**



What you can do

The answers are going to start to feel similar, but the best thing you can do is minimize consumption of refined sugar, refined carbs, and alcohol, and increase fiber rich whole foods as well as healthy fats like fatty fish, avocados, olive oil, and nuts. You also want to increase your physical activity, and high intensity cardiovascular activity appears to be helpful for HDL levels. Avoiding ultra-processed foods can also help here, because ultra-processed foods are often filled with trans fats and saturated fats, which hurt HDL levels.

Fasting Glucose

Do I have insulin resistance blocking glucose from getting into my cells?

What this measures



Fasting glucose measures your blood sugar levels unaffected by a recent meal and should be tested after not eating or drinking any calories for eight hours. A high fasting glucose level is a sign of insulin resistance blocking glucose from getting into our cells. The body initially overcompensates for this insulin block by producing more insulin, which can work for a while in “pushing” the cell to let glucose in. Because of this overcompensation, fasting glucose levels can look normal for a long period while insulin resistance is developing full force (more on fasting insulin later in this guide!)

Ranges

- Range considered “normal” by standard criteria: <100 mg/dL
- **Optimal range:** ~70–85 mg/dL

“**As Dr. Robert Lustig says,** “Once the fasting glucose rises over 100 mg/dL (signifying prediabetes), metabolic syndrome is in full force, and there are no options for prevention anymore; now you’re in full-fledged treatment mode. But in fact, a fasting blood glucose of 90 mg/dL is already questionable.”

What you can do

The best thing you can do to improve glucose levels is to improve mitochondrial function through comprehensive dietary and lifestyle strategies across unprocessed food, quality sleep, regular movement, increased lean muscle mass, stress management, avoidance of synthetic toxins, and other pillars that are explained in *Good Energy*. You also will benefit from learning to keep your blood sugar stable. This means eating meals rich in whole foods, filled with omega-3 fats, antioxidants, protein, probiotics and fiber, and minimizing refined sugars and refined grains. You can also walk after meals, make sure to not eat late at night (when blood sugar spikes can be higher!), and balance meals well with fiber, fat, and protein. A great way to learn to balance your blood sugar is see how your body responds to food and it’s environment in real time through a continuous glucose monitor, available through [Levels](#).

Hemoglobin A1c

Do I have insulin resistance blocking glucose from getting into my cells?

What this measures

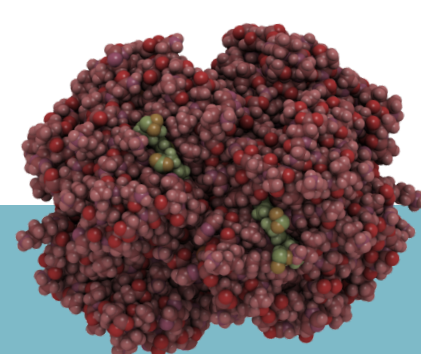


HbA1c represents a longer-term estimate of average blood sugar levels over a few months.

Ranges

- Range considered "normal" by standard criteria: <5.7 percent
- **Optimal range: Research suggests that the lowest risk range for HbA1c is 5.0 to 5.4 percent.**

What you can do



The best thing you can do to improve glucose levels is to improve mitochondrial function through comprehensive dietary and lifestyle strategies across unprocessed food, quality sleep, regular movement, increased lean muscle mass, stress management, avoidance of synthetic toxins, and other pillars that are explained in Good Energy. You also will benefit from learning to keep your blood sugar stable. This means eating meals rich in whole foods, filled with omega-3 fats, antioxidants, protein, probiotics and fiber, and minimizing refined sugars and refined grains. You can also walk after meals, make sure to not eat late at night (when blood sugar spikes can be higher!), and balance meals well with fiber, fat, and protein. A great way to learn to balance your blood sugar is see how your body responds to food and it's environment in real time through a continuous glucose monitor, available through Levels.

Blood Pressure:

Is insulin resistance causing my vessels to not dilate well and making my heart have to work harder to pump blood through my body?

What this measures

High blood pressure is the largest contributor to death and disability in the entire world. It exerts its ill effects on the body by damaging blood vessels and contributing to stiffness and blockages in the vascular system that can cut off critical blood flow in subtle ways over long periods of time. It is in large part caused by the effect of insulin resistance causing a blockage of the blood vessels to dilate.

Ranges

- Range considered "normal" by standard criteria: **<120 systolic and <80 diastolic mmHg**
- Optimal range: Same as "normal"



What you can do

Blood pressure is directly related to insulin resistance. Interestingly, one of the many functions of insulin is to stimulate nitric oxide, which is the chemical that dilates vessels and is released from cells of the blood vessel wall. In insulin resistant bodies, this process is impaired, leading to less dilation of vessels. To lower your blood pressure, it comes back to all of the Good Energy habits: a whole food Good Energy diet that minimizes refined sugars and grains, regular exercise, stress management, and of course limiting alcohol and avoiding tobacco.

Waist Circumference:

How much inflammatory fat is stored around my abdomen?



What this measures

Waist circumference matters because it is a marker of fat in and around your abdominal organs. Excess fat here is a sign of excess energy being deposited in places it is not supposed to be. Waist circumference is a useful—albeit rudimentary—indicator of the level of visceral fat, which expands our midlines. This is measured just above the top of your hip bone, at about the level of your belly button. The amount of visceral fat helps predict metabolic dysfunction, regardless of whether someone is normal weight or obese. We can measure visceral fat in more precise ways, including via imaging studies, such as dual X-ray absorptiometry (DEXA) scans. But knowing your waist circumference is a great place to start.

Ranges

- Range considered “normal” by standard criteria: <102 cm (40 inches) for men and <88 cm (35 inches) for women
- Optimal range: **The International Diabetes Federation has proposed tighter cut points of <80 cm (31.5 inches) for women and <90 cm (35 inches) for men of the following ethnicities: South Asian, Chinese, Japanese, and South and Central Americans. For those of European, Sub-Saharan African, Middle Eastern, and Eastern Mediterranean origin, the cut points are <94 cm (37 inches) in men and <80 cm (31.5 inches) in women.**

What you can do

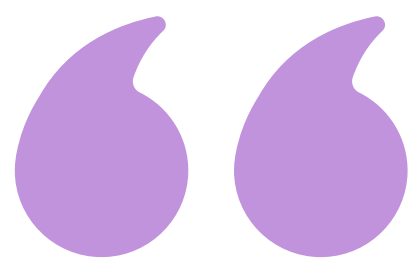
This is the question everyone wants the answer to! If you improve insulin sensitivity through the Good Energy eating principles, exercise regularly, get quality sleep, manage your stress, you should be well on your way to a very healthy waist circumference. Since insulin is the hormone that blocks us from burning fat, and mitochondrial dysfunction leads to insulin resistance, we want to do everything we can to build more mitochondria, improve the function of the mitochondria, and get the mitochondria churning through more substrates. This is done through the Good Energy habits. Step 1, as always, is eat REAL, UNPROCESSED foods.

There is one more thing you should do with the info from these tests..

Calculate your triglyceride-to-HDL ratio to better understand your insulin sensitivity.

How

Simply divide your triglycerides by your HDL.



According to Dr. Mark Hyman, “the triglyceride-to-HDL ratio is the best way to check for insulin resistance other than the insulin response test. According to a paper published in *Circulation*, the most powerful test to predict your risk of a heart attack is the ratio of your triglycerides to HDL. If the ratio is high, your risk for a heart attack increases sixteen-fold—or 1,600 percent! This is because triglycerides go up and HDL (or ‘good cholesterol’) goes down with obesity.”



What this measures

Interestingly, studies have shown that this value correlates well with underlying insulin resistance. So even if you are unable to access a fasting insulin test, the triglyceride-to-HDL ratio can give you a general sense of where you’re at.

Ranges

Range considered “normal” by standard criteria: none specified in standard criteria. Optimal range: Anything above a ratio of 3 is strongly suggestive of insulin resistance. **You want to shoot for less than 1.5, although lower is better. I recommend aiming for less than 1.**

New Study Alert!



A newer study from the Journal of American College of Cardiology showed that only 6.8% of Americans are optimally metabolic healthy used slightly different criteria that are helpful for everyone to calculate, as well. This study defined optimal metabolic health as optimal levels of all the following markers:

1. Body Mass Index $<25 \text{ kg/m}^2$
2. Waist circumference $\leq 88 \text{ cm}$ in women or $\leq 102 \text{ cm}$ in men
3. Fasting glucose less than 100 mg/dL
4. Hemoglobin A1c $<5.7\%$
5. Total cholesterol-to-HDL ratio (note: this is different than triglyceride-to-HDL ratio) $<3.5:1$
6. Systolic blood pressure <120 and diastolic blood pressure $<80 \text{ mmHg}$
7. No history of cardiovascular disease, including prior history of coronary heart disease, heart attack, heart failure, stroke, chest pain (angina), or use of medication for chest-pain (angina).

These are worth looking into as well. If you meeting the criteria of all 7 markers above (and not on medication of blood pressure, cholesterol, or blood sugar), you are part of the 6.8%. **Together, with Good Energy habits, we can make that percentage much higher. The great news is, nearly all of these markers are free (or very cheap) on an annual physical.**

How to get these tests

First, you can ask your primary care doctor to order these labs for you. However, you might encounter some resistance and your doctor suggesting these tests are not necessary to order, or they don't know how to interpret them in a meaningful way.

Fortunately, doctors no longer need to serve as the middlemen for interpreting lab results, and you can order and get interpretations of your lab results through the following companies:



Levels Labs: Tests 5 key markers of metabolic health (Fasting Insulin, ApoB, Triglycerides, Uric Acid, and HbA1c). Labs include sample collection, laboratory analysis, and in-app results display for \$99. Currently if you becoming a Levels member using [my link](#), you can get one set of free labs!



Inside Tracker: Tests up to 48 blood biomarkers, prices range pending on your package.



Function Health: Tests 100+ biomarkers for \$499 per year. Use code GOODENERGY to skip the waitlist.



Next Health: \$299 a month, includes baseline blood work, as well as IV therapy, vitamin shots, and more.

Additionally, I love many of the tests that are offered through Genova Connect. While they don't have a test for these six biomarkers specifically, I love their comprehensive nutritional test to gain insights into what specific nutrients you can incorporate into your diet to maximize your health, as well as the comprehensive gut health test to gain insights into your gut microbiome (which impacts mood, skin, immunity, disease risk and more!) You can use code CASEY10 to get 10% off any Genova Connect products.

*Fees printed are at the time of publishing this, March 2024.

The Good Energy Quiz



Done with the tests and have your lab results ready?

Encircle either "Yes" or "No" for each question to find out if your cells are making good energy!

- | | | | |
|---|---|------------|-----------|
| 1 | Are your triglycerides less than 150 mg/dL? | YES | NO |
| 2 | Is your HDL cholesterol more than or equal to 40 mg/dL (if you're a man) or 50 mg/dL (if you're a woman)? | YES | NO |
| 3 | Is your fasting glucose less than 100 mg/dL? | YES | NO |
| 4 | Is your hemoglobin A1c less than 5.7%? | YES | NO |
| 5 | Is your systolic blood pressure less than 120 mmHg? | YES | NO |
| 6 | Is your diastolic blood pressure less than 80 mmHg? | YES | NO |
| 7 | Is your waist circumference less than 102 cm (or 40 inches if you're a man) or less than 88 cm (or 35 inches if you're a woman)? | YES | NO |

If you answered "Yes" to all of these and are not on any medication for these biomarkers...

Great news! This represents good energy. 🙌🙌🌟



What's next & a note on further lab testing

Congrats, you now have SO much more knowledge on how to use blood test to see inside your body and help you create more good energy.

So, after understanding the 6 basic tests I outlined here, you'll be able to answer whether or not you are part of the 12 percent of people in the United States who meet the normal criteria for the six basic metabolic biomarkers without medication. We have normalized an environment where 70 percent of the nation's population will have an overt chronic disease soon. That doesn't have to be you!

If after those 6 basic tests I've outlined you are interested in learning more, there are deeper layers of lab testing that can give you an even more nuanced picture.

The next 5 tests I'd recommend after those 6 would be as follows:

1. Fasting Insulin and calculation of HOMA-IR
2. High-sensitivity CRP (hsCRP)
3. Uric Acid
4. Liver Enzymes: Aspartate Transaminase (AST), Alanine Transaminase (ALT) and Gamma-Glutamyl Transferase (GGT)
5. Vitamin D

Each of these tests is described in detail in Good Energy.

If you want to dive deeper beyond these tests, options include looking at expanded cholesterol panels, thyroid hormones, sex hormones, kidney function, and micronutrient levels.

At my functional medicine clinic, I often tested over one hundred biomarkers in patients. To receive full blood work to target where Bad Energy is brewing in your body and a specific plan of how to reverse it, I recommend searching the functional medicine doctor database ([https://www .ifm.org/find-a-practitioner/](https://www.ifm.org/find-a-practitioner/)) or utilizing Function Health (a tele-health service that tests over one hundred biomarkers from all body systems for a very affordable price, with detailed interpretations and optimal ranges for each test).

If you are reading this, I know you've taken your health into your own hands, and I'm so proud of you.

Sending you good energy,

XO

Dr. Casey Means