

The Big Body-Building Myth



The myth: to build strong muscles you should eat plenty of protein as this fortifies muscles, provides energy, and prevents muscle loss.

The reality: to build strong muscles you should minimize gluconeogenesis by eating plenty of non-processed carbs. Do not over-eat protein as it does not fortify muscles, or provide energy or prevent muscle loss.

The fact is that dietary protein in whatever form does not provide energy or convert into glucose unless it is processed through gluconeogenesis. In other words, the protein you eat must first end up as amino acids stored inside muscle tissue. And then such protein must be stripped from the muscles and be mixed with other ingredients (using a process known as gluconeogenesis) to form glucose that can be used as energy.

Even then, the amount of glucose that is made available to muscles through gluconeogenesis is negligible because such glucose is mostly used up in more urgent requirements (the brain, the nervous system, etc) before getting to the muscles. "Virtually none of the glucose produced from gluconeogenesis enters into the general blood circulation [for feeding to the muscles, whether or not you are diabetic]". Source: Marion J. Franz, MS, RD, LD, CDE, et al, Protein Controversies in Diabetes, Diabetes Spectrum, Volume 13 Number 3, 2000, Page 132.

So when body builders are told to eat protein for energy they are being deluded, usually by those with an interest in peddling protein supplements. As explained in a previous email regarding "The Protein Myth", the over consumption of protein has been shown to be bad for your liver and kidneys, it promotes vitamin and mineral deficiencies, and it is linked to osteoporosis and some forms of cancer. For optimum health we should, if anything, reduce protein consumption because we need very little.

What about protein preventing muscle loss? The theory is that bedtime snacks should always contain protein as it will be converted to blood glucose more slowly than carbohydrates and will keep blood glucose levels from dropping too low during the night. This is sheer bunkum. Here is why.

As already explained, dietary protein does not convert to blood glucose at all, unless it is through gluconeogenesis. Hence, dietary protein does nothing for keeping blood glucose levels from dropping too low, and it does nothing for minimizing muscle loss.

Gluconeogenesis actually occurs constantly in the background day and night, but it increases in intensity when blood glucose levels drop. So when we talk about minimizing gluconeogenesis, we are in fact talking about minimizing the intensity of gluconeogenesis as this minimizes the intensity of muscle loss. The role of gluconeogenesis is to act as an emergency so as to prevent blood glucose going below the norm.

In medical terms being in a state of gluconeogenesis is sometimes referred to as being in a 'catabolic state'. This is a well-studied subject because of the plague of diabetes in the world and because of the huge body-building and sports industries.

In these industries, the usual advice is to eat a lot of protein and carbohydrates so as to avoid a catabolic state and hence avoid muscle loss. But this is bad advice because a quick carb fix such as a sugary food or a sports drink gives you a glucose & insulin spike, which is bad for health. And as we have seen, eating more protein (in whatever form) can be unhealthy and does little for preventing muscle loss.

But if we can minimize the incidence of gluconeogenesis in our life we have a powerful way of minimizing muscle loss throughout our body. Our objective then is to minimize the incidence of gluconeogenesis in our day-to-day life without causing glucose/insulin spikes and without resorting to unhealthy amounts of protein consumption.



In a previous chapter it was explained that all forms of exercise should be avoided for a variety of reasons. Yet another reason for avoiding exercise is that it triggers gluconeogenesis. Exercise has the effect of quickly draining the muscles of glycogen and hence leaving you drained of energy. When you eventually eat, the lost glycogen will be replenished from the food you eat (not from stored body fat). And if you fail to eat sufficient carbs having drained your muscles of energy, the body will be forced to make its own glucose by triggering gluconeogenesis and stripping protein from your muscles. In fact, the quickest way to weaken your muscles is too fast, to go on a low-carb diet, or to exercise and not eat. "In the absence of adequate carbohydrate for fuel, the body initially uses protein [from] muscle.... the initial phase of muscle depletion is rapid, caused by the use of easily accessed muscle protein for direct metabolism or for conversion to glucose (gluconeogenesis) for fuel. Loss of muscle causes a decrease in your basal metabolic rate (metabolism).

Metabolism happens in the muscle. Less muscle and muscle tone means a slower metabolism which means fewer calories burned 24 hours-a-day. The percentage of people that re-gain the weight they've lost with most methods of weight loss is high. A loss of muscle during the process of losing weight is

almost a guarantee for re-gaining the lost weight, and more" : MaryAnn Koval (Registered Nurse), article on ketosis posted in Feb. 2006 at www.doctorslounge.com.

Another tip for minimizing gluconeogenesis relates to the number of meals consumed each day. It is better to eat, say, six small meals rather than three large meals a day. Grazing is the way our body has evolved to eat. Large meals burden the digestive system, often causing bloating and lowered energy while the body struggles to digest the food.

By eating smaller meals you avoid digestive disorders and loss of energy, and the body functions more efficiently throughout the day. When we eat a big meal, the sugar level in our blood rises, but once that meal is digested that blood sugar level falls below the norm, taking your energy and mood with it (and triggering gluconeogenesis).

The problem is that the bigger the meal, the bigger the blood glucose crash - and the higher your need for sugary snacks to refuel your body. This explains why fewer larger meals rev up the incidence of gluconeogenesis and muscle loss.

The regular influx of food with a little-and-often approach keeps your energy level stable and makes it easier for you to cope with your day-to-day living. Such an eating pattern is less fattening because energy levels are sustained, there is no blood glucose crash, and you are less likely to fall prey to fattening foods. But you do need to plan your meals more carefully so as to avoid junk food, and sometimes eat on the go depending on your job and daily activities. Nutritious and healthy snacks can easily be prepared at home and be stored in the refrigerator or freezer for gradually consuming during the week.

According to the Medical Research Council's Human Nutrition unit, measurements of fatty acids in the blood also remain stable when you eat little and often. This prevents peaks and troughs in blood lipids which in turn reduces the risk of heart disease and stroke.

Finally, done properly, the little-and-often approach makes it easier to get all the nutrients you need, giving you better overall nutrition; and a bonus is that by avoiding a large meal before bedtime you will sleep much better. "When we studied eating patterns, we found that regular grazers actually had healthier diets than those eating the traditional three square meals a day approach. They ate less fat, more carbohydrates and more fruit and vegetables. Other studies have found grazers to have higher levels of vitamin C and other nutrients - they also tend to have lower levels of body fat". Source: Dr. Sandra Drummond, Senior Lecturer in Nutrition, Queen Margaret University, Edinburgh, UK.

Unfortunately, once you lose muscle it is not easily re-gained (if at all). It is easy to lose muscle but not so easy to add muscle. You would need to follow rigorous muscle workout, routines that are strenuous and long-term if you want to strengthen your muscles more than they already are. Those bulging muscles that you see in body builders are not gained just from work-out routines, they are mostly gained with steroids, and you are urged to not follow suit!



The best advice is to minimize muscle loss by minimizing gluconeogenesis. This is much more practical and effective than trying to increase muscle mass through exercise. However, that is not say you shouldn't do muscle-strengthening workouts. Ideally you should do both: minimize gluconeogenesis and be physically active in every way you can without resorting to harmful sweaty/breathless exercise.

As mentioned and to summarize, the body must always maintain a minimum level of glucose circulating in the blood, so gluconeogenesis is an emergency measure to keep glucose available to the brain and the body. It's an emergency because the body cannot immediately start to use fat for fueling our muscles and physical movement.

Fat burning that replaces glucose burning in the muscles takes a long time to slowly ramp up (several days), but the body and brain cannot wait so in the absence of sufficient glucose from food the body is forced to use gluconeogenesis to make new glucose from compounds found inside the body. In effect, the body is forced to cannibalize itself by stripping (consuming) protein from muscles, including heart and organ muscles. Over time this can seriously weaken and damage your muscles and organs. You always want to minimize gluconeogenesis in your life.

Incidentally, you should never contemplate any kind of low-carb or ketogenic diet (or fasting regime) as this greatly increases gluconeogenesis and muscle loss. "A ketogenic diet reduces muscle gain or promotes muscle loss. Studies in children on ketogenic diets have shown that they experience growth impairments in height and mass. Ketogenic dieting is counterproductive. Muscle loss is too high a price to pay for reduced fat". Source: Abridged extract, Team MD, Ketogenic Diets Cause Muscle Loss

How can we minimize the incidence of gluconeogenesis in our lives? We can do it by following a high carbohydrate diet that excludes sugary foods and processed carbs. Put another way, we should eat plenty of high-carb foods that do not cause glucose spikes, and we should avoid those foods that do cause glucose spikes.

Non-processed carb foods such as lentils, yams, sweet potatoes, beans and many other legumes and starchy vegetables offer super-healthy nutrition that provide sustained energy without making you fat. Best of all, these foods trickle-feed glucose into the blood without making glucose or insulin shoot up. These super-foods should form the bulk of your diet. They minimize gluconeogenesis and protect your muscles, and in so doing they protect all your organs.

A diet high in non-processed carbs truly is a principal way to optimize health and extend lifespan. Your last meal at night should include a non-processed carb food so as to minimize gluconeogenesis while

you sleep. And your breakfast should include at least one whole fruit (chewed well) as this stops gluconeogenesis from the night's sleep.

Do not delay breakfast thinking that this is healthy or that it will help you lose weight. When you get up you're in a state of gluconeogenesis, so the sooner you have breakfast the better. Those who promote intermittent fasting by abstaining from breakfast are risking regular and significant muscle loss.

To summarize, you should in general minimize gluconeogenesis in your life so as to minimize muscle loss and protect your organs. This is a principle way of optimizing your health and extending lifespan. You do this as follows:

1. Make non-processed carb foods the bulk of your diet. Include plenty of legumes and starchy vegetables in your meals. They are non-fattening, they provide sustained energy and they minimize gluconeogenesis.
2. In particular, make sure that your last meal of the day is high in non-processed carbs.
3. Your first meal of the day (breakfast) should include fresh whole fruit, eaten in moderation and chewed very well. This provides the body with glucose to halt gluconeogenesis without making your glucose level shoot up. Combine this with a little protein such as an egg, a lump of cheese or some lentils or beans. Protein helps fill you up and stave off hunger.



4. Avoid sugary foods and processed carbs as they make blood glucose shoot up and this triggers an insulin response. This is very unhealthy and increases the risk of diabetes.
5. Avoid low-carb and ketogenic diets (and fasting regimes of any kind) as they are unhealthy for many reasons, and in particular they greatly increase gluconeogenesis and muscle loss.
6. Several small meals/snacks during the day are better than fewer large meals. For example, six small meals will be healthier than three large meals. This is much better for health generally and greatly minimizes gluconeogenesis.

Summary: Minimize gluconeogenesis in your life by following a high carb diet that avoids sugary foods and processed carbs. This greatly protects your muscles and organs.

Source: Science of Longevity by Russell Eaton.

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