

# The Carbohydrate Book

By Maik Wiedenbach

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Carbohydrates are truly terra incognita. They had been glorified in the 80s, crucified in the 90's (Atkins diet) and are now constantly being pushed around. In fact, it is fair to say that at this point most people are completely uncertain as to whether or not to consume any carbohydrates and if so what kind and when.

With the following e-Book I am attempting to bring light into the darkness.

Disclaimer: while carbohydrate restricted diets do work for people performing only aerobics, they do work *A LOT* better for people who train with weights.

## **This e-Book contains 6 Chapters:**

1. What are Carbohydrates?
2. How many Carbohydrates do you need?
3. The Atkins Diet ...
4. The targeted *Ketogenic* diet ...
5. Carbohydrate cycling—how to do it properly...
6. Man made carbohydrates I.e., “High Fructose Corn Syrup”, what do labels really mean and do ‘Net’ carbohydrates really exist?

# Chapter 1 —

## What Are Carbohydrates?



Carbohydrates, or as I refer to them periodically ‘Carbs’ are the main source of fuel in the human body and whereby the body breaks down carbs into monosaccharide (simple sugars) and converts them into glucose. Glucose is either used for energy or stored in the muscles and liver. The human brain uses about 100 grams of glucose a day.

Once the glycogen stored in the muscles has been filled, *fat storage begins*. From all three macronutrients (Fat, protein & carbohydrates) carbohydrates are the only one of the three that is not required for survival—since the body can derive glucose from free fatty acids (FFA) via ketosis. This is an important point to keep in mind, since ketosis is the basic concept for ketogenic diets, such as the Atkins diet and similar.

That being said, carbs are not useless as they provide fuel for your Workouts by placing your body in an “anabolic state” or “muscle building state” via the up-regulation of both IGF-1 and T3. Insulin is a peptide (Amino acid based) storage hormone, which is responsible for delivering glucose into tissue such as muscle or fat cells. As you may have guessed, this is a double edged sword. Insulin, when applied properly, can provide your muscles with the energy you need to train or when applied improperly can make you look like a beached whale.

Insulin efficiency basically measures your ability to handle carbs in your diet. The acid test is simple: if a large plate of pasta makes you sleepy, your insulin efficiency is poor. If your body fat is over 20% for males or 25% for females, you most likely do not have great insulin efficiency.

Insulin efficiency can be improved by various approaches:

1. Prescription drugs (Not advisable).
2. Cutting carbs out for a while (Much smarter).
3. Losing body fat (Great idea).
4. Building muscle (Insanely great idea). The more muscle mass you have, the more glycogen you can store. (And no; women simply cannot build a lot of muscle, so you do not have to be afraid to look like the hulk).

Cliff notes (For the FaceBook generation)

- Carbs are the only non-essential macro nutrient, so they can and should be manipulated for fat loss and performance.
- The higher your body fat percentage, the fewer carbs you should eat.
- The more muscle mass you have, the more carbs you can eat.
- Cycle them around when you need them, i e your workout.
- Insulin efficiency tends to drop with age (sad).
- Insulin efficiency can be improved by losing body fat, cutting out carbs for a while and building muscle.

# Chapter 2 —

## How Many Carbohydrates Do I Need & When?



Now that we have a basic understanding of carbohydrates, let's have a look at the two issues a lot of athletes struggle with:

1. Insulin sensitivity (Commonly referred to as 'I.S.')
2. Post workout Glycogen replenishment. *Also known as... Do I need to slam back 100 grams of waxy maize post workout?*

Overall, insulin sensitivity determines the body's ability to handle insulin and therefore carbohydrates. Someone with poor insulin sensitivity will tend to gain more body fat when eating carbohydrates than someone whose insulin sensitivity is better.

Why should you bother? Because insulin is a double edged sword: Used properly, it builds muscle and helps you lose body fat. Used improperly, well let's just say that's how the Pillsbury dough boy got his job. Constantly eating cookies messed up his insulin sensitivity to the point, where most of the calories he ingests are stored as fat.

### **What affects Insulin Sensitivity?**

The amount of muscle mass you carry. More muscle mass means more places to store glycogen.

The amount of body fat – The higher your body fat percentage is the easier it is for insulin to store more body fat.

Insulin Sensitivity also tends to drop with age.

### **So what is do be done?**

First and foremost, you should assess your body fat percentage. If you are over 20% as a male or 25% a female, cut out all carbs for 2-3 weeks, and then re-introduce them gradually. By gradually, I mean start with one carb meal per day for 5 days, if you feel ok add a second one.

If you are over 15% (or 20-25% for girls) I would still go without carbs for a week. Leaner athletes should keep carbohydrates to 2-3 meals a day and have another 2 meals solely consisting of protein and fats.

Certain supplements can help with Insulin Sensitivity: fish oil, cinnamon and chromium come to mind. However, nothing is strong enough to counteract your loading up at the Pancake House, so your diet has to be spot on.

OK, on to point 2. For years we have been told that we ABSOLUTELY NEED to drink a high carb shake post workout in order to “Refuel & Replenish”. Is that true? Depends – If your goal physique is that of a sumo wrestler, have 50 -100 grams of sugar post workout.

The above holds true if you are a performance athlete and have another workout coming up within the same day. In that case you want your glycogen stores refilled ASAP.

What about physique athletes or people who simply want to look fabulous? This is where things get tricky. The goal of post workout nutrition is to stop catabolism or muscle loss. This is determined by nitrogen retention which is determined by mTOR. The amino acid Leucine is the key to flipping the switch from ‘muscle wasting’ to ‘muscle building’ post workout; think 5 grams of BCAAs or 20 grams of whey. Then within one hour, have a regular meal with protein and carbs as well as little fat. This way you can train hard and stay lean.

### **How can one implement carbs into daily eating?**

Basically, there are 3 ways to go about this:

1. Never eat carbs I.e., Go Atkins or standard Ketogenic Diet.
2. Eat carbs around the workout only; which would be a Targeted Ketogenic Diet (TKD).
3. Cycle your carbs during the week or the Cyclical Ketogenic Diet (CKD).



Secondly, people enjoy the simplicity of not having to worry about one macro nutrient and lastly, it is easy to follow the diet plan even when eating out.

### So what are the downsides of Atkins?

Due to the low intake of veggies and starches, you may become deficient with regard to certain vitamins and fiber thereby your requiring supplements. But more importantly, the above scenario inhibits performance when training with weights. Resistance training requires glucose, once blood glucose levels drop below 25 mmol/kg, exhaustion kicks-in. To reverse that process glycogen synthesis is needed aka you have to eat some carbs.

Athletes, seeking to maintain a high performance level for their workouts should not go without carbohydrates for more than 4 days in my personal opinion. Therefore, we will now look at ways to use carbs in an intelligent manner and in order to lose body fat while maintaining performance.

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### 17 - "5 Star Reviews"



*"His writing style is informative and humorous and easy to understand."*

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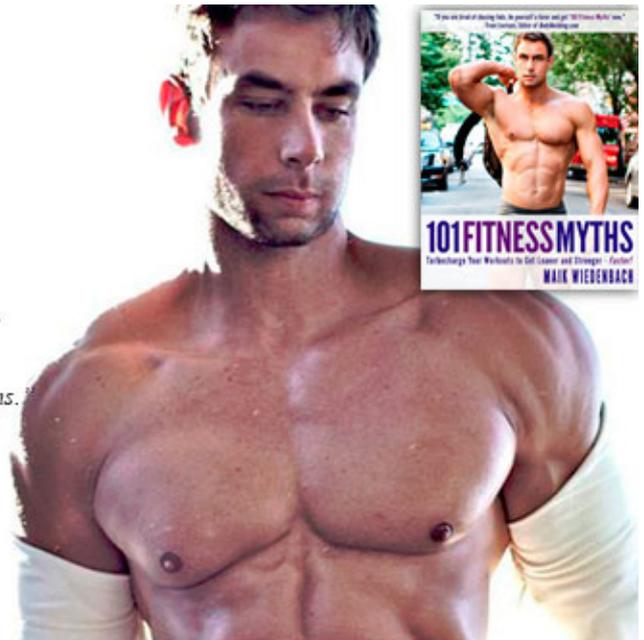
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Trent Lootens Editor of



# Chapter 4 —

## The Targeted Ketogenic Diet



**KETOGENIC DIET:**  
**LOW CARBS,**  
**HIGH FAT**

The intelligent approach for using carbohydrates in your diet, focused around the workout as in before and after.

### **The question is: When & How Much?**

A good rule of thumb is about 5 grams of carbs for every two sets of lifting. If we were to assume a typical workout of about 20 work sets, you are looking at 50 grams of carbs or about one cup of oats. This should be eaten about 90 minutes before training.

If your carb count surpasses 80 grams, I recommend splitting it before and after the workout.

### **Won't that kick me out of ketosis?**

Most likely yes it will, however typically only for the duration of that particular workout.

# Chapter 5—

## Carbohydrate Cycling—How To Do It Properly



My favorite way of using carbs is to cycle them. This basically means that you divide the week into low and high carb days. Doing this has several advantages:

- It will keep you sane. It is simply much easier to follow a very strict diet for 4-5 days than for 16 weeks.
- It gives you the best of both worlds: Fat Loss & Strength Gains.
- The re-feed will enable you to keep or rebuild muscle lost during the diet.
- You get to tell your friends that Capt'n Crunch is part of your diet.

Before we get started, here are some general premises I feel apply to the carbohydrate cycling approach:

- It is not for beginners. If you haven't trained for at least a year, it is not for you.
- Carb cycling works best for people who are already rather lean, (Males under 10% or Females below 16% body fat.) If you are not at that level, a traditional diet will serve you just fine.
- Your appearance and body weight will both fluctuate greatly during the week. This can throw some athletes off, especially around Thursday when they look and feel their worst.

**But why bother with a re-feed at all? Can't I just stick to my regular diet?**

You can, but unfortunately, your body hates you. Actually it loves you so much that it wants to keep you alive and prevent death by starvation. So it makes some adjustments, which were great for the hunters & gatherers but bad for a physique athlete.

## **What are those adjustments?**

After a couple days of dieting, the metabolism slows down, hunger increases, and more and more muscle mass is sacrificed by the body for energy. Sadly, the human body is very efficient at adapting to new conditions.

In short, thyroid hormone T3 levels drop by 30%, conversion from T4 to T3 in the liver is being slowed down, the half-life of Cortisol increases and the production of Insulin like growth factor (IGF-1) is down. Your muscles are so low on Glycogen that they become resistant to growth despite training—in fact you are probably losing muscle.

At this point, we need to talk about Leptin for a second since it is also an important player in the diet scenario. Normally, it is a messenger hormone that inhibits your appetite to prevent you from overeating and gaining weight.

Now when you are dieting, the opposite holds true. With the reduced calories, Leptin levels drop and appetite goes up. This means that a person who lowers their body fat is at an immediate disadvantage: Their metabolism is automatically slowed down by as much as 30% within days, while suffering from hunger pangs.

So during a diet, all of dieters' nightmares come together: higher protein turnover combined with lower levels of T3, IGF-1 (Insulin like growth factor, one of the strongest muscle building hormones), Leptin, and Testosterone. Why is that a nightmare? Because not only will you not lose any more fat, you will actually look worse than before.

The loss of muscle will create a skinny fat version of you, the type you can see on most treadmills in the country. All this happens despite training and after only several days, not months, of dieting. Very soon you'll reach a plateau; no fat is lost and instead lean body mass is sacrificed.

What??? All this work and I look worse while feeling awful? Yes, this is one reason why most diets fail. But the madness can be stopped. We just need to find a way to manipulate the body's hormones for a short time.

This can be achieved with a carbohydrate re-feed. Increasing the calories for a short period of time reverses the process described above. Testosterone, IGF-1, and Leptin levels are brought up; the production of cortisol is slowed down; muscle loss is stopped, even reversed. As a result, the rate of metabolism increases, which then sets the stage for further fat loss. In short the universe smiles upon you once again!

## **How many carbs should I eat?**

About 5 grams of carbs per pound of body weight, over a period of 24 to 36 hours, keep the protein at about 1 gram per lb and fats as low as possible.

Please note: The term "low fat" rules out junk food such as donuts, pizza etc.

## Why should I eat carbohydrates? Won't I get fat by eating so much?

You will not. Adding carbohydrates to a diet at this particular point, as opposed to protein or fats, have several advantages:

- Leptin, Insulin and blood sugar levels are being up-regulated, but due to the temporary lack of enzymes, the body is unable to store body fat.
- The body's first order of business is to refill Glycogen storage, which takes about 24 hours; after that fat storage starts. Imagine owing \$10,000 to some shady characters in Brooklyn. Now, by some good fortune somebody gives you 10,000\$. What will you do? Open a savings account or pay the mob back? Thought so!

The mob is your muscle and liver Glycogen; the savings account your fat cells. Despite eating more carbs, you will still burn fat. Too bad this awesome eating window is only open 24-36 hours.

A cheat day or re-feed can be made more effective if the dieter does a heavy workout after their carbohydrate day. This ensures the glycogen gets taken into the muscle. The re-feed day would be an ideal time to work on a weaker muscle group and use the insulin response for new growth.

So, let me sum up how I would structure a diet and training program for an already lean athlete:

**Monday:** Very low carbohydrates (50 grams or less) high fat/medium protein, train lower body.

**Tuesday:** Same diet, train upper body.

**Wednesday:** Same diet, 20-30 minutes of medium intensity cardio if needed, no weights.

**Thursday:** Whole body workout with low volume, start consuming carbs right after the workout.

**Friday:** No training, re-feed. The rule of thumb would be 10 grams of carbohydrates for every kilogram of lean body mass (or 5 grams of carbs for every pound of lean body mass) within a 24-hour period. Hmmm... Pasta...

**Saturday:** Eat a regular zone diet, no calorie deficit. Train the whole body or weak a.k.a. lagging body parts. You should be able to train heavy, since your energy levels are up. You should also look awesome. If you do not, you either did not consume enough carbs or aren't lean enough yet.

**Sunday:** Back to Monday's diet, cardio if needed. Personally, I feel that a 10 day cycle would be better but the above outline makes it easier for most athletes to live their life and attend social events on the weekend.

# Chapter 6—

## Man Made Carbohydrates & How to Read Labels Properly

| <b>Nutrition Facts</b>       |                       |
|------------------------------|-----------------------|
| Serving Size: 1 Slice (117g) |                       |
| Amount Per Serving           |                       |
| Calories: 270                | Calories from Fat 130 |
|                              | % Daily Value*        |
| Total Fat 14 g               | 22%                   |
| Saturated Fat 4 g            | 20%                   |
| Trans Fat 0 g                |                       |
| Cholesterol 45 mg            | 15%                   |
| Sodium 340 mg                | 14%                   |
| Potassium                    |                       |
| Total carbohydrate 39 g      | 13%                   |
| Dietary Fiber 2 g            | 8%                    |
| Sugars 27 g                  |                       |
| Sugar Alcohols               |                       |
| Protein 4 g                  |                       |
| Vitamin A                    |                       |
| Vitamin C                    |                       |
| Calcium                      |                       |
| Iron                         |                       |

When dealing with carb loads and carb cycling, it pays to understand the labels which are thrown at us by the food industry. Beware: sleazy marketing ahead! Let's dive right in...

**Let's start with my all time favorite:**

1. **“Contains no sugar”**: Usually, products that “contain no sugar” is sweetened with honey, Agave nectar, high fructose corn syrup, or some other form of sweetener. So what's the catch? Sugar, honey and all the others are just different forms of fructose and glucose mixtures. For example, high fructose corn syrup (HFCS) is a liquid fructose-glucose mix, which has been used as a sweetener in foods and soft drinks since the 1970's. High fructose corn syrup is more stable and cheaper than cane sugar, although it is not much different in terms of composition from sucrose (table sugar) or honey. Basically, it's a 45/55% mix of fructose and glucose, two

simple sugars. Very similar to table sugar or honey (which, in all fairness, contains enzymes and vitamins that other sugars do not).

**Here is a basic comparison of all 3 sweeteners:**

**High Fructose Corn Syrup:** 42% Fructose, 53% Glucose

**Sucrose:** 50% Fructose, 50% Glucose

**Honey:** 49% Fructose, 43% Glucose

No earth shattering difference, for sure. The reason that HFCS has a bad rap – is because it's cheap and we consume too much of it – compared to other forms of sweeteners:

**2. “Sweetened with Maltitol” or sugar alcohols instead of sugars:** They do not affect the blood sugar, which is why they are not counted as carbohydrates. They still have 2 calories a gram, which is lower than the 4 calories sugar packs but it is definitely not a zero.

**3. “No Sugar Added”:** This may sound like a good option, but it only means one thing; that is the product already has so much sugar from dried fruit juice or natural sugar that it does not need any more. Most likely not a low calorie food!

**4. “Low Dextrose Equivalent”:** Low Dextrose equivalent is a term used for diabetics as it tells them if they need to inject insulin after eating a certain food. But, it does not make the food a low carb food per se.

**5. “Net Carbs”:** Net carbs is a clever little semantic gem the food industry cooked up. A loophole in the FDA code allows companies to label Maltitol as non-sugars since they do not affect the blood sugar levels; therefore, they miraculously lose their caloric value. Again, if you are not a diabetic, this has no bearing for you. Remember: the only carbohydrates that truly do not count are fiber carbs since they cannot be digested (that's why the quest bars are awesome)!

So make sure to read the labels carefully and stick to eating real food as often as possible!

***This concludes my thoughts on carbs; I hope that you find it helpful. Maik***



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