establishing a well-formulated ketogenic diet

Fat, protein, and carbohydrate are the three macronutrients that human beings need for growth and health. A well-formulated ketogenic diet can be thought of as a distribution of these three macronutrients in that order, from high to low. Here is a good breakdown for most people to follow:

fat: 100 g or less

protein: 75 to 100 g

total carbs: 20 g or less

These guidelines are approximate because each person is different. Exactly how much of each macronutrient you can consume and become (or remain) keto-adapted is best pinpointed through testing; see pages 28 to 29.

Broadly speaking, though, a well-formulated ketogenic diet focuses on three steps:

1. Eliminate sugar and high-carbohydrate foods.

2. Hit your protein goal for your lean mass.

3. Remember that fat is a lever: the more fat you eat, the less body fat is used for fuel. The less fat you eat, the more body fat is used for fuel (fat loss).

For a discussion of maintaining a healthy balance of micronutrients (vitamins and minerals) while eating a keto diet, see pages 30 to 32.

step 1: eliminate sugar and high-carbohydrate foods

By now you understand that sugar causes inflammation, and even complex carbohydrates are just glucose molecules hooked together in a long chain that your digestive system breaks down into glucose—sugar. So step 1 of your ketogenic cleanse is to cut out sugar and carbohydrates.

To get your body to start burning fat, focus on making carbs only 5 percent of your total food intake. For diabetics, this level may need to be lowered even further to counteract insulin resistance (see page 21). A good carb intake is about 30 grams per day or less; for a type 1 diabetic, it should be lower still, about 20 grams per day or less.

Even the carbohydrates in vegetables are broken down into sugar in your body, so if you want to enter ketosis, limiting starchy vegetables—along with refined sugars and grains, of course—is essential.

step 2: hit your protein goal each day or at least over the course of a week

Our Paleolithic-era ancestors got about 80 percent of their calories from fat and only about 20 percent from protein. During prolonged periods of starvation or extended physical exertion, the body burns fat to produce ketones, the preferred energy source for highly active tissues, like those found in the heart and muscles.

Clients ask me all the time, "How much protein is too much?" Well, everyone has a different tolerance, just like with carbohydrates. Testing for ketones (see pages 28 to 29) will help you determine your own levels. But in general, it is better to eat too much protein than too little. Not hitting your daily protein goal will result in a loss of lean mass (muscle) over time, which nobody wants. A good goal is 0.8 times your lean body mass in grams of protein. This is your target, and you should try to hit it each day or at least average it out over the course of a week (some days can be lower, some higher). For example, if you weigh 145 pounds and have 30 percent body fat, your lean mass is about 100 pounds (145 x 0.7 is approximately 100). So your protein goal would be 80 grams a day (100 x 0.8).

how much protein do we need?

To answer this question, I think it's important to consider breast-fed babies. I think we all would agree that breast milk is the best food for a growing baby. Since breast milk is 60 percent fat, babies are in a ketogenic state. I think we also would agree that because they are growing so rapidly, babies have the highest protein requirement per kilogram of body weight. So how much protein does a baby get from breast milk? It comes out to about 1 gram of protein per kilogram of body weight per day. This is nature's protein intake at its highest time of need. Fully grown adults need even less.

A ketogenic diet is great for preserving muscle mass. So this is one of those situations in which the traditional thinking based on the Standard American Diet doesn't apply. You require less protein when in nutritional ketosis.

step 3: use fat as a lever

If you cut out sugar and carbohydrates and hit your protein goal, what's left? The f-word—yep, fat. It's a key macronutrient that has been wrongfully demonized for decades. When you are keto-adapted, healthy fat is your fuel source. Fat is also what keeps you feeling full and satisfied and keeps cravings at bay. Once you become keto-adapted, you'll feel full with fewer calories; don't force extra fat into your diet to try to raise your ketone levels—you will burn your own fat to make ketones and you'll lose weight faster.

In the first couple of weeks of switching to keto, you might need to turn up your healthy fat intake to push yourself over the adaptation divide as quickly as possible. But if weight loss is your goal, then reducing your fat intake will force your body to use more body fat as fuel. The amount of fat you need to eat will depend on your caloric needs. To lose weight, you want to consume fewer calories than you burn. Most clients I work with find that 1,000 to 1,400 calories is a good target range once they're keto-adapted. So once you have hit your protein goal, the rest of your calories should come from fat, either from the meat that you're eating or from fat added to your meals. For example, if you're eating 1,400 calories and 80 grams of protein and 20 grams of carbs, that leaves you with 1,000 calories

in the form of fat:

80 grams + 20 grams = 100 grams x 4 calories per gram = 400 calories.

1 gram of fat has 9 calories, so that leaves you with 111 grams of fat:

1,400 calories – 400 calories = 1,000 calories / 9 calories per gram = 111 grams of fat.

When it comes to which fats and oils to consume, the higher the amount of saturated fatty acids (SFAs) they contain, the better. Saturated fats like MCT oil, coconut oil, tallow, and lard are your best choices: they are stable, anti-inflammatory, and less prone to oxidation, which can cause inflammation. Grass-fed and organic sources are best if you can get them.

MCT stands for "medium-chain triglycerides," which are chains of fatty acids. Consuming fats with an abundance of MCTs is particularly beneficial because, unlike long-chain triglycerides, MCTs are used quickly by the body and not stored in the fat cells. A bonus: any MCTs not immediately utilized are converted to ketones, which can be helpful when becoming keto-adapted. Until the body is efficient at generating ketones from body fat, ketones from MCT oil can help feed the brain, which only uses ketones or glucose. MCTs are found naturally in coconut oil and palm oil, as well as butter and ghee. MCT oil is extracted from coconut oil or palm oil and contains a higher amount of MCTs. Unlike coconut oil, MCT oil stays liquid even when refrigerated.

Avoid polyunsaturated fatty acids (PUFAs), which are unstable. PUFAs are found in products like margarine, vegetable oil, and vegetable shortening—all products that you should steer clear of at all times!

Trans fats also should be avoided. They come from adding hydrogen to unsaturated fats (partially hydrogenating them). The food industry uses trans fats because they are less expensive and extend the shelf life of foods. But trans fats are very detrimental to health.

In a study that focused on heart health and fats, scientists studied two groups: one consumed trans fats and the other saturated fats. Not only did saturated fats not cause heart disease, but the trans-fat group gained three times more weight, even though they ate the same number of calories! And that extra weight was visceral fat, the estrogen-dominant fat stored in the abdominal area that puts people at high risk for cancer and cardiovascular disease.

Not all fats are equal. You need to be a detective when it comes to feeding your family! If you buy prepared foods, check the labels for trans fats or partially hydrogenated oils, which are a source of trans fats. But the best way to avoid trans fats and other unhealthy fats is to eat meals that you've made yourself. I encourage my clients to create the foods they crave at home; I've even made chili cheese fries! If you make the dish at home, you are less likely to put on weight, even if it has the same number of calories as a commercially prepared version.

trans fats and aging

We all want to stay youthful, which is why there is a multibillion-dollar industry focused on making people look younger. Food is something we often ignore when it comes to looking youthful, but in many ways, trans fats are a huge age accelerator, from the inside out.

One way that trans fats age cells is by inhibiting neurons' ability to communicate. Neurons, or nerve cells, are coated in a fatty substance called myelin, which allows them to send impulses throughout the body. Trans fats become incorporated into myelin and affect neurons' ability to send those impulses.

Trans fats are also very inflammatory, which leads to aging. We often focus on cutting out sugar and starch in a ketogenic diet in an effort to reduce inflammation, but if you are eating foods filled with trans fats, they too are causing long-lasting inflammation!

If you need help with sleep, start by working to heal your circadian rhythm, as described on page 47. Certain supplements can help, too. If you have trouble falling asleep, try taking the following supplements one hour before bed:

• **400 to 800 milligrams of magnesium glycinate** (not magnesium oxide, which is not absorbed well and will cause diarrhea). Magnesium is a natural muscle relaxant and will help you calm down (though in rare instances it can be energizing).

• **One capsule of bifidobacteria probiotic.** Bifido increases serotonin, which in turn increases melatonin production.

• **750 milligrams of GABA (gamma-aminobutyric acid).** GABA is a nonessential amino acid found mainly in the brain and eyes. It is considered an inhibitory neurotransmitter, which means that it regulates brain and nerve cell activity by inhibiting the number of neurons firing in the brain. By inhibiting overstimulation of the brain, GABA promotes relaxation, eases nervous tension, and increases quality sleep; it is the brain's natural calming agent.

• **200 milligrams of 5-hydroxytryptophan (5-HTP) or 1,000 milligrams of L-tryptophan.** These amino acids increase serotonin, which in turn increases melatonin output. Note: Do not take if on an antidepressant.

Melatonin also can help with sleep, but many people claim that melatonin supplements don't work for them, which is likely due to an absorption issue or leaky gut. I recommend melatonin patches instead. Start with 1 milligram and increase as needed.

If you have a hard time *staying* asleep, the cause is likely low progesterone (unopposed estrogen) leading to estrogen dominance. I suggest that you add a pure progesterone cream to an area of thin skin on certain days of your cycle. I prefer Pro-Gest cream, made by Emerita. Many of my women clients report feeling an immediate sense of calm when I apply this cream to their wrists.

☒ not hitting your protein goal

Not hitting your protein goal can result in a loss of lean mass over time. We don't want to become frail as we age; we want to stay strong. Also, protein has a high thermic effect of food, meaning that about 30 percent of the calories from protein are negated because it takes so much energy to process it in the body; in contrast, only about 3 percent of the calories in fat and 8 percent of the calories in carbs are negated.

☒ eating before bed and/or exercising at the wrong time of day

Weight loss is all about hormone manipulation. Adjusting your pattern of eating gives you a lot of control over not only insulin but also human growth hormone and cortisol. Your natural surge of human growth hormone occurs 30 to 70 minutes after you fall asleep, but its antagonist is insulin. If you eat before bed, insulin rises, and human growth hormone—your fat-burning hormone—will not increase because insulin is more powerful.

Cortisol is naturally high in the morning and should fall throughout the day. This is why morning exercise is awesome! If you wait until after work to exercise, you get another surge of cortisol, which messes with the natural decrease and can cause your body to store belly fat.

☑ detox bad estrogens

Plastics are estrogenic. Avoid putting hot food on plastic plates or hot drinks in plastic cups. Do not microwave foods in plastic containers or drink from plastic water bottles. Eliminate nonorganic foods laced with synthetic estrogens. Eliminate obesogens such as dryer sheets and synthetic fragrances, which increase estrogen levels in women as well as men. Finally, go "number two" every day! If you don't, estrogens will be reabsorbed and locked into fat cells.

☑ benefit from the afterburn effect

Wait a little while to eat after a hard workout. Working out increases human growth hormone, which stimulates ketones. The afterburn effect can burn up to 400 more calories if you wait to eat. I suggest supplementing with BCAAs and L-glutamine to help repair muscles faster, then eat one hour after a hard workout.

☑ do not snack

If you are constantly fueling your body and increasing insulin, you cannot get into fat-burning mode. Do not eat every two hours; stick to regular meals.

☑ do not eat too much protein at one time

If you have diabetes or extreme metabolic damage, you might want to split up your protein into two or three servings a day of 20 to 30 grams per serving.

☑ eat slowly

Eating slowly lowers the insulin response. It also helps register the hormone leptin, which gives you the signal that you are full.

☑ hydrate

Drinking half your body weight in ounces of water helps your kidneys and liver. When your kidneys are dehydrated, the liver stops doing its main jobs and helps out the kidneys instead. When you are well hydrated, your liver can focus on burning fat. Be nice to your liver!

☑ do not drink while eating

Hydration is important, but liquids dilute your digestive enzymes. Stop drinking an hour before a meal and start again an hour or two after a meal.