

Introduction:

**What, When, Water
and WHY**

Energy and weight loss: Fueling muscle not fat

If more of the calories we ate went to lean tissue, there would be fewer calories going to body fat. The concept is simple: You eat a certain amount of food, and the body distributes it to its tissues. If more is sent to one type of tissue, there is less remaining for others. Muscle and fat vary the most in how much they get from one meal to another. How a meal is balanced can double how much goes to muscle, cutting in half how much goes to fat for the same amount of total calories and macronutrients, making the reverse an inherent possibility. Processed carbohydrate and animal fats bring reality to that possibility, making cheap fast tasty foods much worse for us than just an excess of calories.

Since calories are energy units and body fat is energy storage, it is clear from both simple math and simple experience that excess calories are stored as body fat. Less commonly known is that body fat can accumulate *without* over eating because of *what* we are eating. What we eat impacts the health of our cells, and therefore how fast they can absorb and use nutrients. What we eat, and how processed it is, determines how fast it digests and enters the bloodstream. A difference between the rates of entry (from the intestine) and exit (into healthy cells) to and from the bloodstream determines if there is an overload. Overflow goes to either waste or body fat, even if *under*-eating. A candy bar with only a quarter the calories of a healthy meal can make you fatter than the meal because of its process rate.

Before launching into healthier eating, or modifying your unhealthy eating, be clear in your mind what it is you want to get out of the effort. What are your nutritional goals? If you are making changes to what you eat, you should have a reason for doing so. You may want to live as long as possible and your doctor has told you that you need to lose weight to achieve this goal. You may feel tired after lunch and want more mental energy or focus by improving what you eat during the noon hour. You might want to exercise with more energy, or recover from an injury faster. All of these goals are addressed by fueling muscle instead of fat because muscle is fueled when blood sugar is stable, which also provides for your brain and other lean tissues. Telltale signs that you might be excessively fueling your body fat due to the food you are eating include physical and mental fatigue, surprisingly long-lasting illnesses or injuries, and incessant hunger, particularly in the evening hours. On the other hand, if you feel charged with energy, this is because of a steady availability of fuel for your muscle and brain. You have diverted calories away from fat, towards the tissues that increase your quality of life. Quality of life (QOL) means two things: Enjoying life as *long* as possible, and enjoying it as much as possible *each day*. So nutrition is ultimately about your happiness and keeping you alive as long as

possible to increase the happiness of everyone around you. Nutrition providing QOL takes more than just a consideration of where the calories go in your body, but it turns you around in the right direction.

Once turned around, you want to accelerate *into* that new direction. For that, consider the quality of the nutrients you eat. Meta-analysis of dietary-fat studies shows supplementing with omega-3 fats does not provide the cardiovascular benefits of eating omega-3 fats in natural food. Fiber supplements do not lower, and can even increase, colon cancer risk, whereas fiber consumption in natural food drives a reduction. Protein powder does not grow muscle as effectively as food. And vitamins in water turns out to be not as smart as in food either. Anti-oxidant supplementation backfires, reducing exercise benefits, in spite of their obvious theoretical benefits, because they shut down the natural response of our cells to free radicals produced during exercise. These brief examples demonstrate a pattern that is played out repeatedly. Sometimes a processed food or nutrient supplement *does* provide a benefit because it is filling a *gap* in how someone eats, but (like with medications) unintended side effects complicate things. In the end, it is clearly as important what you *do* eat as what you do *not* eat.

A reasonable solution might be having the highest quality foods at home, where food quality is in your control, and then take vegetables with you to slow the digestion of less healthy food out. Or, when eating out you could ask for extra vegetables or a plate of lettuce, even if they are low in nutrients like iceberg. Iceberg lettuce is crunchier and therefore likely slows digestion *more* than spinach or mixed greens. So, ironically, the most common lettuce available at pizza and other fast food restaurants might actually be the most effective at slowing down the heap tasty convenient “food” you are eating.

Healthier meals at home, and slowing the digestion of less healthy meals elsewhere (or at home!) will give you higher mental and physical energy immediately, better health in both the short and long term, and allow you to eat what you want when you want. Doing what you want is inherently sustainable. Managing the digestion rate most of the time and the quality of the ingredients at home allows your body’s physiology to finally change in the direction you need without going on a diet. At that point, cutting calories is almost a moot point because of the satiety that comes with both healthier and slower-digesting meals. Cravings and other excess eating patterns are not eliminated, but become so much more manageable that most people experience it as recovering their ability to choose what and how much they are eating in the mid-afternoon and particularly in the evening. For even greater effect, you can periodically eat really healthy for one or more weeks at a time, but that is not sustainable without your favorite foods, nor is it necessary to get the vast majority of the benefits.

Longevity: As many days as possible

There is a moment in the future when you will take your last breath. Starting from that moment, your loved ones will live on without you, doing the best they can under those trying circumstances, until they themselves join you in a better place. With this in mind, if you knew that every time you ate a meal high in processed fat, sugar and total calories (think of your last fast-food or high-end gourmet meal) you were slicing off one to three hours of your life, what would you do? You might say that eating fatty carb-heavy meals makes you happy so it is worth it, that it is difficult to stop eating such foods, or that healthier food is not available. But living longer will also make you happy, and not only you but everyone that knows you. And no matter how difficult it is to eat healthier, there is little doubt that earlier death is significantly more difficult. As is true with anything in life, if it is important enough to you, you will find a way to make it happen. For example: You could bring salad with you to work each day to slow the digestion of the fast food *and* fill you up so you don't even want all of it, driving more of the calories to your muscle instead of fat whether even if you *do* eat all of it. The beauty of such an approach is that you are still eating the cheap convenient tasty foods you are used to for immediate gratification, but modifying the meal to satisfy your long-term goals.

Quality of Life: As much each day as possible

Quality of life means more than simply living longer. We want to live each day to the fullest. That means having more energy and mental focus, faster recovery from illness and injury, and for those who love to exercise or love the outdoors, having an ability to take one's activity to the next level. We want to live life on *our* terms, doing the things that make *us* happy. Having a body that can keep up with the life we want to live, and achieving our dreams, requires that the body receive fuel and cellular replacement parts. The fuel needs to go to the tissues requiring it, as opposed to storage in fat cells. Cellular replacement parts are mainly essential fats and amino acids, but these are dramatically more effective at improving physiological function when included in the diet as natural food. We do not know why supplements are ineffective at achieving wellness and are only useful for preventing malnutrition; clearly the body is more complex than we give it credit for when we consume supplements. On the other hand, providing the body more fuel or replacement parts than it needs does not result in added benefits, and can actually come with health risks depending on what is being consumed in excess. Thus, finding the balance between meeting all of your nutritional needs without exceeding them is the best way to get the most out of your life today and tomorrow. The fundamental approach for achieving this is to maximize how much of what you eat goes to where you want it to go.

Eat What You Like and Reverse the Effect

If we are going to change what we eat to reduce body fat and improve our health, we should know what the nutrition facts are so that we do not waste our efforts making changes that are not as useful as possible in moving us towards our goals. We should also avoid making excessive changes that do not improve health, may reduce our health, and make our lives more difficult to manage (such as not only lowering saturated fats or carbs in the diet but completely eliminating them). We need nutrition information that is accurate, simple, effective and sustainable.

I like ice cream and pizza. Years ago I could eat them every day for weeks before getting tired of them and switching to hamburgers and fries. “Liking” these foods means that when they are on my tongue there is a reward response in the emotion center of my brain. In our ancient past, such a reward response was critical to survival. Those who recognized foods with sugar or fat in them, such as wild yams, berries and nuts, were more likely to avoid starvation than those who did not. Unfortunately, sugar is no longer scarce and the types of fats most readily available to us have changed dramatically. Berries are sweetened, yams are candied, pecans are in pie, meats are higher in saturated fat, and healthy vegetable oils have been hydrogenated or made rancid by heat. We like (have a greater reward response to) many of these changes. Some changes, such as hydrogenation done to increase the shelf life of foods, we accept as a natural (actually, unnatural) necessity of the trial and error process of mass food production and convenience foods. In short, our nutrition environment (the food most readily available to us because they surround us) is not what it once was. The result is a reduced vitality both today and tomorrow unless we ourselves take charge of what we put into our bodies.

So what should we eat to optimize our lives? Every person is unique and has different needs. However, as humans, we all have the same basic underlying physiology. As a result, what the medical community learns about treating a disease in one person helps doctors treat others with that disease. And what we learn about nutrition in a group of people during a research study helps us to understand human nutrition in general. By reviewing what is known from scientific studies, one can determine what is likely best for the average person, which in turn, is the best starting point for each of us. From that starting point, we find what works best for us as individuals by experimenting in our own kitchens with the foods we like, always keeping in mind what has been shown to be healthy in scientific studies so we can fall back on this knowledge as needed. Managing our nutrition for optimum health is an interplay between using the facts to meet our physiological needs *and* eating the foods we like most.

In summary, here is the 3-step circular process to determine what is the best diet for you:

1. Get the scientific facts
2. Make a plan based on those facts and the foods you like
3. Expand on those steps in your own personal life to find what works best for you as an individual

Step 1 is not trivial. Scientific research rarely gives us clear-cut answers because of the complexity involved with eliminating confounding factors, elements of bias, and other problems associated with data collection, presentation, interpretation and incompleteness. However, by surveying the literature, including the use of surveys already completed by the National Academies of Science, the American Heart Association, and others, one can start to understand what a generalized healthy diet, with or without weight loss, might look like. Issues concerning what nutrients we need, in what amounts, and what is *too* much of any nutrient really address general health, regardless of weight loss. For those interested in weight loss, the scientific literature tells that nutrition, movement, and sleep are all critical for an efficient and sustainable long-term success. The key elements of healthy diet also promote weight loss, and the healthiest components of a good diet promote weight loss most effectively. But depending entirely on nutrition when that might not be the main barrier will increase health more than reduce body fat. Losing body fat by increasing health and therefore metabolic rate clearly avoids the inherently possible health loss with starvation techniques. For those with no interest in reducing body fat, these principles apply to increasing energy and longevity. The bottom line is that fueling muscle instead of body fat, regardless of a person's body fat or nutritional goals, improves quality of life.

Besides what you are (and are not) eating, nutrient *timing* is also important. Vitality is reduced if you eat too much at any one time or go for extended periods without eating, such as skipping breakfast and then over-eating around dinner time. Eating moderate amounts regularly is the ideal. I call this "Caloric Pacing" and it happens naturally when eat breakfast and take veggies with us to add to lunch. The final piece to a healthy diet is proper hydration. In short, the 3 key questions to ask yourself or *check* are these: **What** you are eating, **when** you are eating it, and are you drinking a reasonable amount of **water**? Control groups in nutrition studies that are asked to maintain their normal diets consistently improve their health to the tune of halve of the intervention group. This implies that just paying attention to what you are doing has half of the impact of working hard. So even if you change *nothing*, routinely check your three nutrition W's:

"What, when and water you doing?"