

BASIC NUTRITION 101

To begin with, an understanding of the basic fundamentals of food and nutrition is essential for anyone who wants to maintain a healthful lifestyle or to remedy some bad habits that have resulted in the necessity to make lifestyle changes for health and for a more rewarding life overall. As we age, the body naturally ages along with us and systems that once worked so well when we were younger may encounter difficulties sustaining their vital functions at or near previous levels. Many of these things that affect the efficiency of our bodily functions are caused by us and the 2 biggest culprits are nutrition and fitness. The following is a very surface explanation of some of the most basic concepts of nutrition.

Macro nutrients:

- Carbohydrates: There are 2 types of carbohydrates and 3 if you include fiber; however, since fiber contributes no actual nutrients, it is included for personal understanding.
- Protein:
- Fats: Saturated/ unsaturated/ polyunsaturated

Micro nutrients:

- Vitamins
- Minerals
- Phytonutrients(phytochemical)

Some vocabulary that you should know includes:

- Glycemic index
- BMI
- Insulin resistance
- Blood sugar (glucose)
- Bio-individuality
- Metabolism
- Calorie
- Acid/alkaline (ph) balance
- Pancreas
- Carbohydrate
- Protein
- Fat

To begin with every person is a unique, one of a kind organism. Therefore, no 2 people will experience food or its' benefits and hazards in the same exact way. Some people can drink milk all day long with no adverse effects, while others will experience severe reactions to the sugar in milk. Some children can eat peanut butter every day, while another child can die from an extreme allergic reaction. This is called bio-

individuality and each person must be aware of those foods that benefit them and those that can harm them.

When it comes to food, it is probably the single most unifying experience of our lives. Food is present at every social and cultural gathering where people come together. From the birth of a child to the death of an individual, food is always center stage. So to not understand food and its' effects can have an enormous impact on our lives, positively and negatively.

Amount of energy yielded by foods:

- Carbohydrates: Whether they are simple or complex, nutrient dense or processed with no nutrients, supply 4 calories per gram(weight of measurement).
- Protein: Supplies 4 calories per gram of protein just like carbs do
- Fats: Whether they are good fats or bad fats, supply 9 calories per gram of fat.
- Vitamin/Minerals/Phytonutrients/: provide no energy per weight, but are essential in how the foods we eat are utilized.
- Water: no calories per weight
- Alcohol: 7 calories per gram with zero nutrients

There are 2 types of carbohydrates that yield energy for us. Simple carbohydrates and complex carbohydrates. Without getting technical, it is the simple carbohydrates that provide energy and cause a multitude of health problems. The complex carbohydrates, while supplying the same amount of energy do not possess the same dangers as simple carbs. However, like anything else, excesses will over ride anything that is healthy when it comes to carbohydrates.

SIMPLE CARBOHYDRATES: They are called simple because there really is not much to them. They are 1 or 2 sugars combined chemically that are instantly metabolized and very quickly enter the blood stream as glucose(blood sugar). Simple carbs begin their metabolic breakdown in the mouth and by the time they reach the small intestine they are completely broken down and instantly are injected into the blood stream. Although, glucose is essential to create cellular energy, the constant bombardment of glucose, unrestrictedly, causes the pancreas to secret insulin repeatedly over and over throughout the day. Since simple carbohydrates are an instant form of energy, they get absorbed instantly and used up just as quickly, making us hungry very shortly afterwards. Because we use the energy so quickly and get hungry so quickly afterwards, we enter into a vicious cycle of sugar highs and sugar lows that is repeated over and over. As a result of this sugar cycling, the pancreas is required to release more and more insulin every time to facilitate glucose's entry into the cells for energy. Over time, the pancreas as you would expect gets over worked and over tired, resulting in a condition known as insulin resistance, which is a pre cursor for diabetes type 2. When this occurs, the mechanisms that allow glucose to enter into the cells, begins to mal function and the sugar is denied access to the cells and re-enters the blood stream. Only this time, the insulin takes the excess glucose which has nowhere to go and converts the excess sugar in fat cells, usually being deposited in the belly as " belly fat". Unless this cycle is stopped by changes in your diet, the sequence will be constantly repeated and fat has NO limitations as to how much it can grow and influence other cells to help it grow by sending it more and more fat. At this point,

the belly fat becomes an actual, living, breeding organism that wants to grow and multiply. It sends out messenger cells to convince other systems to send its excesses to it. Combined with that, the belly fat possesses the potential for serious illness such as diabetes, kidney disease, liver disease, heart disease, etc. All that excess fat is pressing on vital organs that lie on the other side of all that fat and cause these vital system to become fatty and eventually fail, resulting in chronic illness and eventual death.

Because the body constantly seeks to be in balance between acidity and alkaline, and because the diet of processed carbohydrates is overwhelmingly acidity in nature, the pH balance is out of balance and causes a condition known as “leaky gut syndrome”. This becomes highly toxic because microscopic bacteria that should be dealt with in the metabolic process, enters the blood stream through tiny pockets created in the intestine from the excess acids.

COMPLEX CARBOHYDRATES: The reason they are called complex is because there is much more to them. These are long chains of sugars that also eventually end up in the blood as blood sugar; however, since the chains are much longer, the breakdown also takes much longer. The result being more of a time-released injection of sugar with an identical time-released, manageable release of insulin from the pancreas. Many complex carbohydrates also contain fiber. Fiber is essential to keeping out entire GI tract healthy and it also makes the stomach feel fuller and causes the breakdown of carbs into glucose to take much longer. The result is you do not get as hungry as quickly and when you do eat the release of sugar and insulin does not result in glucose- insulin rushes.

EXAMPLES OF SIMPLE CARBOHYDRATES:

- All processed foods
- Pizza
- White bread
- White flour
- Candy
- Soda
- Fruit juices
- Breakfast cereals almost exclusively
- Sports drinks

EXAMPLES OF COMPLEX CARBOHYDRATES:

- All green leafy vegetables
- Whole grains
- Organic non processed cereals
- Fruits
- Whole wheat bread (not wheat bread- all bread comes from wheat)
- Vegetables

PROTEIN: Protein provides the same number of calories per gram, 4, as do carbohydrates. Protein is made up of amino acids which are the by-product of protein metabolism. The function of the amino acids is to build and maintain body tissue through their interaction with hormones and enzymes. One of the problems with protein is that it often is piggy-backed with fat. So when looking to include protein in the diet it is always preferable to select protein that is lean and organic, and has as little fat as possible. The fat that accompanies protein is also generally saturated fat and should be limited to small amounts each day. Protein can be used in a pinch to supply energy to cells, but it is not its' primary function. Protein is also essential to the human immune system, coupling with vitamins and minerals and enzymes and hormones to protect the body from outside invasions of harmful bacteria and viruses'.

EXAMPLES OF PROTEINS:

- Lean protein: Fish/ poultry/ meats/ low fat yogurt/ low fat cheeses/beans/legumes.

Of all the available proteins, wild fatty fishes like salmon and mackerel are excellent sources of protein and the essential omega-3 fatty acids. Beans and legumes offer excellent sources of protein while being very low in fat.

FATTY ACIDS: Fats come in many sizes and provide the body with high density energy. Since each gram of fat contains 9 calories per gram, it offers twice the energy potential as carbohydrates. It is important to understand that all fats are not equal. The 3 types of fat are:

- Saturated fat: most commonly associated with hypertension and coronary heart disease.
- Unsaturated fat
- Polyunsaturated fats.

Fat serves as protection to the skeletal system and potentially provides a lot of energy. It is also essential for the absorption of the fat soluble vitamins, A,D,E and K. Without fat to transport these essential vitamins, they would go through the digestive system and perform no function what so ever. When selecting food for your sustainable diet, always look to avoid saturated fat as much as possible.

EXAMPLES OF FAT: Vegetable oils/ cheeses/ milk/ dairy/meats/all processed foods/ all fast foods.

MICRONUTRIENTS: Vitamins/ minerals/ phytochemicals: are all essential to keep body systems balanced and in strong working order. Provide the body with what it needs and the body is engineered and genetically programmed to use these nutrients in a balanced diet without any help from us. The lungs never forget to breath, the heart never forgets to beat; the blood never doesn't go to the right places.

GLYCEMIC INDEX: This is an important concept to understand because it directly affects the blood sugar-insulin balance. Glucose has a glycemic load of 100. That is the highest number, since glucose is blood sugar. Diets should strive to include as many low glycemic loaded foods as possible, and avoid foods with a high glycemic load. The biggest problem food in this regard is processed wheat, including GMO wheat. The glycemic load of white bread, white flour and many processed foods exceeds 70 and higher, while fruits and vegetables come in at levels in the 20's, 30's and 40's. The higher the glycemic load, the more sugar in the blood which causes more insulin to be secreted and once again that dangerous sugar high-insulin high (hyperglycemia) followed by sugar lows(hypoglycemia) and insulin lows cycle gets stimulated and only bad things happen when that repeats itself over and over again over time.

It would not be an easy task to find out the glycemic index of foods or if a food is a GMO, but if you tailor your diet around fresh, organic green leafy vegetables and other vegetables, whole grain wheat products, fresh, organic fruits, and lean sources of protein, it will work itself out correctly in your favor.

In selecting your fruits and vegetables, it is probably a good thing for you to avoid GMO's. There is an awful lot of passion about this issue both for and against, so to avoid a political argument advocating or condemning them is a discussion that is not relevant, other than to say, it is my personal preference to avoid GMO products. The food stores and food manufacturers' will not make this discovery easy for you, because they do have agendas, which transcend whether a product of GMO origins is healthful or unhealthful. Remember this is a multi-billion dollar industry. However if you use the following guide you can be sure of what you are buying.

All fruits and vegetables contain a PLU, which stands for price look-up code. It can be found on the fruit itself and on the vegetables, you will find it on the tie around the vegetables and the tag on fruits. The following is how fruits and vegetables are coded for food sellers:

- Conventional produce: A 4 digit number beginning with either a 3 or a 4.
- Organic produce: A 5 digit number beginning with a 9
- GMO produce: a 5 digit number beginning with an 8

CALORIES: Calories are so minute in their energy output that when someone refers to calories, it is actually a K-calorie, or 1000 tiny energy units comprising the energy output of a calorie. Scientifically, a calorie is a unit of measure of the energy in that food. If a food has 20 calories, that represents a number that enables the consumer to understand if a product is high or low in energy yield. Obviously, the higher the caloric number, the more potential energy it provides. The important thing to understand about calories is whether that food product, yielding that amount of energy, is nutrient dense or nutrient empty, or "empty calories" When a food is nutrient dense, it means that the food yielding that energy, provides a lot of energy with a low caloric intake. For example, a box of raisins contains approximately 250 calories, and you know how quickly you can down that box and even look for another box or additional food. The box of raisins is nutrient empty when compared to 4 cups of grapes which yields about 287 calories. Low calories combined with a higher energy volume equals nutrient dense. You would be hard pressed to sit and eat 4 cups of grapes in one sitting. Vegetables are extremely nutrient dense, as is fruit and most non-processed foods, which fall under the category. Processed foods

for want of a better name are generally “junk food”, high volume, high calories and very little if any nutrient yield.

BASAL METABOLISM: This represents the amount of energy(calories), needed to simply sustain life. If you were to lie in bed all day long you would burn energy to:

- Breath
- Heart pumping blood
- Nervous system sending out millions of messages
- Cellular metabolism
- Thinking
- Any incidental body movement
- Waste removal system working on food previously eaten
- Maintaining body temperature
- Maintaining pH levels

The body does all these things for us without any prompting from us. Our heart never misses a beat, our lungs do not forget to breathe, and blood travels millions of miles transporting energy and messages to every single cell in the body. This accumulation of energy needs is what makes up our basal metabolism. To assess our personal energy requirements you have to factor in your body weight, daily activities of life (functional exercise) and exercise.

BMI: Body Mass Index, is a number used to determine if you are clinically at the correct weight range, over-weight, or obese. To calculate that number for you personally, the following formula needs to be used:

Body weight in kilograms(body weight divided by 2.2), divided by the square of a persons’ height in meters(1 meter=39.3 inches).

- Underweight= BMI of less than 19
- Normal weight= BMI of 19-25
- Overweight= BMI of 26-30
- Mild obesity= BMI of 31-35
- Moderate obesity= BMI of 36-40
- Morbid obesity= BMI of 41-50
- Severe obesity= BMI of 50 plus

In conclusion, a diet can mean many things to many people, however, all diets must be able to be sustainable, or it will fail. It is a shift in attitude to recognize that eating is a life-style activity and that you control whatever it is you eat. If a diet asks you to be a vegan or a South Beach or an Atkins, it really doesn’t matter as long as the diet provides nutrient dense foods, that are low in sugar and low in all processed foods, and, this is the key, foods that you enjoy and that satisfy your likes. Any diet that asks

you to deprive yourself and stresses foods you dislike will fail and probably result in you going off the diet and gaining more weight than you started with. On the other hand, a sensible, life-long system of eating that supplies low calories and high density nutrients, lean protein and unsaturated fats, combined with occasional treats (ice cream, cake, etc.), will satisfy all your health needs and be delicious.

Food is pleasurable and bad food, “comfort foods”:, are even more pleasurable, so you must be able to balance your diet of eating healthy and treating yourself OCCASIONALLY. You can look around at the state of the American weight issues:

- 60,000,000 adults over the age of 20 are obese
- 2,000,000 infants clinically morbidly obese
- 9,000,000 children ages 9-16 overweight
- 20% rate of obesity in every state of the United States
- 30% of U.S. states with obesity levels over 30%

Food can be incredibly delicious, satisfying and promote good health, even possessing the ability to cure many chronic illnesses. However, food can also cause an alarming list of diseases and illnesses and can when taken to the extreme, kill you!