

CUTTING EDGE NUTRITION - EATING YOUR WAY TO SUCCESS

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Welcome to the 21st Century ... 2006 and Beyond

- 30% of the North American population is obese. That's right - not just fat - but obese
 - There is a 200% increase in fast food restaurants
- Cancer is 500% higher in North America than anywhere else in the world
 - 1 in 3 women will get breast cancer in the next 5 years
 - Diabetes and Heart Disease are at an all time high.
 - 15 Million North Americans have Type II Diabetes
 - 3 Million Youth have high blood pressure.

Today's society is trying to concentrate more and more on healthy living, its development and maintenance. At no other time in our history have so many people been so unfit, overweight and unhealthy. Along with this comes an increase in mental and physical illness. Weight control & weight loss are multi factor problems. It was recently announced that 30% of our population is obese. That's right - not just fat - but obese. We do not put on weight because of lack of will power or by doing too little exercise. Contrary to many beliefs, that we are getting fatter because we eat too much fat, is wrong. Fat alone does not make you fat! Of course there are good fats (monounsaturated) which are absorbed into the body to be utilized as fuel and bad fats (saturated) which are stored in the body as fat, raise cholesterol and contribute to hardening of the arteries. Also, calories in verses calories out regulates body fat. Until we all gain a better understanding and knowledge on how to **balance our food intake** of carbohydrates, protein and fat, we will continue to lose the battle to win back our health, control our body weight and our fight against illness. Furthermore, in the field of sports, we will most certainly fall short of maximizing any of our athletic potential or even come close to that great performance we all seek.

Barry Sears in his excellent book, **THE ZONE**, believes that no athlete will ever reach their maximum athletic potential by eating a high carbohydrate (**CHO**) diet. The main fuels used during exercise are: **(i)** carbohydrates - for high intensity work or anaerobic metabolism; **(ii)** fats-for low intensity work or aerobic metabolism; provides twice the energy per gram aerobically than CHO **(iii)** protein -for the building blocks to repair tissue. The body breaks down glucose (CHO) for its fuel. Glucose is stored as glycogen in the liver & muscles. It has a limited storage capacity. The bodies ability to store fat in the form of a substance called triglycerides is unlimited. For fat to be used as energy, triglycerides must be broken down into free fatty acids and then combines with carnitine which acts as a carrier to enter the mitochondria where energy is then produced. **L-carnitine** (found in red meat) helps to metabolize and inhibits the bodies absorption of (lipids) fat. So, in comparison to the limited amount of energy stored as glycogen, the unlimited supply of energy from fat is the preferred fuel when exercise intensity allows. For maximum performance to be possible, all hormone levels **MUST** be in balance. To achieve success as an elite athlete, an athlete must have natural genetic gifts, correct training, an educated and knowledgeable coach and finally, the **"CORRECT BALANCE OF FUELS"**. High performance or simply proper nutrition requires a change in our eating behaviour.

CARBOHYDRATES AFFECT INSULIN LEVELS

How do we accomplish this change? Eating large amounts of carbohydrates (CHO) (sugar, bread, pasta) immediately prior to exercise causes blood sugar levels to go up, which in turn, causes insulin levels to go even higher to balance the surge of blood sugar into the system. In fact, insulin drives carbohydrates into the cell. This high insulin surge to balance the increase in blood sugar levels, in fact, then lowers blood sugar which is called '**hypoglycemia**' (the state of high insulin and low blood sugar levels). This is why eating a candy bar or other sugars before a workout has proven unsuccessful as an energy source. Now that we have a high insulin level, the body craves to be in balance again and thus to balance that 'hunger craving', eating carbohydrates again simply increases blood sugar levels - repeating the vicious 'yo-yo affect or cycle' known in the medical field as '**reactive hypoglycemia**'. These surges also put your hormone levels out of whack which further disrupts the needed hormonal balance of the entire body.

Hyperglycemia refers to a state of high blood sugar and low insulin levels often associated with diabetes. Finally, it's the high insulin levels which promotes storage of fuel in the adipose tissue and turn carbohydrates into fat. Insulin converts excess glucose into fatty acids. Why do you think cattle are fed low fat and high CHO (grains) to fatten them up for sale? Look at the similarities in **your** diet. Therefore, you must control the rate of entry and timing of CHO into the body by "balancing" your intake of protein, carbohydrate and fat, thus controlling insulin hormone levels.

RESULTS OF EATING HIGH CARBOHYDRATES - LOW FAT - LOW PROTEIN

ELEVATED
BLOOD
SUGAR

WHICH
ACTIVATES
HIGH INSULIN

RESULT = HYPOGLYCEMIA DUE TO LOW BLOOD SUGAR.

Hunger occurs because the brain is telling the body it needs sugar to counter the high insulin in the blood. This cycle is called hypoglycemia

RESULTS OF EATING A BALANCE OF CARBS (40%), FATS (30%) , PROTEIN (30%)

BLOOD
SUGAR

IS BALANCED BY

INSULIN

RESULTS IN A CONSTANT FLOW OF SUGAR TO THE BRAIN = BALANCE

To be in balance means:

- = to have 'your' optimal health
- = optimal training and performance levels
- = blood sugar and insulin in balance
- = eat equal amounts of CHO(40%), protein (30%), fat (30%)

Did you know we can live without carbohydrates in our diet - but we cannot live without protein and fat. Eskimos are the healthiest people in the world and have almost no carbohydrates in their diet for months at a time. Carbohydrates are broken down into: (i) glucose- found in grains, pastas, breads, cereals, vegetables; (ii) fructose - found in fruit; (iii) galactose- found in dairy products. Simple CHO such as sugars are released as glucose directly into the blood stream, increasing insulin immediately. Now, fructose and galactose have to be broken down in the liver first into glucose and then are released at a slower rate into the blood stream, thus slowing down the release and amount of insulin into the blood. Excess glucose is converted in the liver into glycogen while at the cellular (muscle) level it is converted into glycogen or fat.

GLYCEMIC INDEX OF FOOD

You must be careful of what carbohydrates you eat, based on their '**glycemic index**' value - their amount of sugar content. Foods with high glycemic index are rapid insulin inducers.

GLYCEMIC INDEX OF FOOD CHART (From the Zone)

**** RAPID INDUCERS OF INSULIN****

1. GLYCEMIC INDEX GREATER THAN 100%

Grain Based Foods

- puffed rice
- corn flakes
- puffed wheat
- instant rice ,potato

Simple Sugars

- maltose
- glucose

2. GLYCEMIC INDEX AT 100%

* White bread

3. GLYCEMIC INDEX BETWEEN 80 AND 100%

Grain Based Foods

- whole wheat bread
- rolled oats, oat brand
- instant potatoes
- white & brown rice
- muesli
- shredded wheat

Vegetable

- carrots
- parsnip
- corn
- Snacks**
- ice cream (low fat)
- corn chips

Fruit

- bananas
- raisins
- apricots
- mango

****MODERATE INDUCERS OF INSULIN****

4. GLYCEMIC INDEX BETWEEN 50% AND 80%

Grain Based Foods

- spaghetti (white, whole wheat)
- pasta, all brand cereal

Simple Sugars

- lactose, sucrose

Fruit and Vegetables

- oranges, orange juice
- peas, beans (baked, kidney)

Snacks

- candy bar, potato chips

**** REDUCED INSULIN SECRETION****

5. GLYCEMIC INDEX BETWEEN 30% AND 50%

Grain Based Foods

- barley, oatmeal
- whole grain rye bread

Fruit and Vegetables

- apples, pears, grapes, peaches
- kidney beans, lentils, peas

Dairy Products

- ice cream (high fat),milk (skim, whole),yogurt

6. GLYCEMIC INDEX 30% OR LESS

Fruit & Vegetables

- cherries, plums, grapefruit

Snacks

- peanuts

INSULIN INHIBITS HUMAN GROWTH HORMONE

It is insulin which influences **ALL** the human bodies' systems - hormones, growth, thyroid, pituitary gland, blood pressure and **human growth hormone (HGH)**. HGH is produced approximately every five hours in the body or by intense exercise until about the age of 20 (25) and very little after that (once a night). HGH is a natural anabolic hormone used in cell building and repair, which controls metabolism and regulates lean body mass to fat ratio. High insulin levels **inhibits** (blocks) the release of HGH. Eating high amounts of CHO one hour before or immediately after a workout will inhibit the release of this needed HGH. During a hard workout (weight training, running) micro tears occur in the muscle. Immediately, this 'exercise induced release' of HGH goes directly into the muscle to repair and strengthen it. Again, high insulin levels block the HGH from entering the muscle to do needed repair. All athletes must maintain a 'balanced' blood sugar - insulin level to enable the natural release of HGH.

Furthermore, HGH stimulates the release of **IGF (Insulin Growth Factor I and II)** from the liver which interacts at the muscular level with testosterone and other local growth factors to stimulate muscle protein synthesis (growth) and reduce protein degradation (tissue breakdown and cell repair). This process is regulated by exercise and the amount of insulin released from eating within one hour of your workout.

THE ATHLETE AND EATING DISORDERS AND DIET

Today, young people **including athletes** with eating disorders are growing at an alarming rate in North America. In fact in a recent survey of athletes in university showed: 37% females and 14% males suffer from eating disorders. From bulimia alone, the death rate is an alarming 33%, permanent disability 33% and recovery rate 33%. This disorder and its related diseases were relatively unheard of in our society just a few years ago when we all ate a balanced diet. This increase started with a new idea and craze called "carbo loading." The medical profession jumped on the band wagon and guess what: "there was no medical evidence to support the theory of carbo loading and it did not work". With these new rules on nutrition, society watched their bodies increase in weight (fat) and decrease in lean body mass (muscle).

Nobody wants to be fat - especially our youth and athletes. When exercising, eating increased carbs and low fat does not work to lose weight, what are you going to do? When someone looks in the mirror and hates their image and becomes obsessed with becoming thin, an eating disorder now becomes a physical and mental illness. This becomes hard to control because one's brain chemistry changes totally - forever! The same thing happens in other addictions - like alcoholism- where you seek help and master control but you are never really cured. The potential for a relapse is always there! Eating disorders work the same way. You can control the illness but the potential for a dangerous relapse is always present!

The way to treat eating disorders is both psychologically (therapy) and physically (doctor and registered dietician). A relapse can occur because you are told to eat the very thing that makes you fat - carbohydrates! When you look in the mirror and see an increase in fat, you go right back into an anorexic mode ... and the cycle begins all over again. We have to educate people with eating disorders how to eat and remain lean and healthy to prevent any further relapses. This entire process means reeducating medical staff, doctors and registered dietitians to balance the intake of carbo (40%) - fat (30%) - protein (30%) foods. Remember nobody wants to be fat!

OTHER DIETARY AND PHYSIOLOGICAL FACTORS

Cholesterol is manufactured primarily in the liver and in every living cell in the body. Lipoproteins carry cholesterol to the cells, bring food into the cell, eliminates waste and stabilizes cell membranes. **LDL** (low density lipoproteins) is a bad lipoprotein which floats in the blood. When the cells are full of cholesterol and there is excessive LDL in the blood, it attaches to the walls of the arteries. If the cells cannot use this LDL, it usually leads to hardening of the arteries and a high cholesterol reading. **HDL** (high density lipoproteins) is a good lipoprotein which takes the toxic waste in the cell to the liver to dispose & detoxify it. Since each cell goes through a cycle of producing cholesterol, the low ebb of the cycle allows for the cholesterol from the blood to be brought into the cells by the LDL. This lowers the cholesterol levels in the blood which is a good thing. A high insulin level forces the cells to over produce cholesterol, therefore, never needing cholesterol replenishment from the blood stream. The blood now has high LDL cholesterol which is stored by hardening in the arteries resulting in high blood pressure, strokes and heart disease. These problems can be prevented by eliminating elevated insulin levels and a balanced glycemic index.

The Lymph System: All soft tissue cells (skin, lungs, blood and all organs) are covered with a liquid called **lymph**. The function of the lymph system in the body is to bring nutrients into the cells, take out toxins and debris and cleanse the cells. In fact, the dumping grounds for waste products (bacteria, cancer cells, toxins) are called 'lymph nodes' which stops waste products from going into the blood stream. In order for this lymph function to be activated, the body 'must' have daily physical exercise. Without daily exercise all the quality food in the world cannot get into the cells, nor transport the toxins out of the cells. Nutritionally, it appears that micro algae in kelp and seaweed assist the lymph in doing their job. Asians have the lowest lymph cancer in the world.

Alcohol is 'the' killer to any form of 'balance' or absorption of food. It lowers blood sugar and spikes insulin levels worst than sugar causing huge toxic imbalances. It causes you to be hungry and crave food to balance the insulin rush. What is alcohol? Beer is made from grain (hops) (CHO), liquor (barley, rye) and wine (grapes and sugar). All these (alcohols) prevent the liver from doing its normal function (filtering, cleansing all body wastes - garbage, poisons- and free radicals), damages muscles and nerves, prevents HGH release eventually resulting in liver damage.

WHAT IS A HEALTHY AND BALANCED DIET?

How can we achieve a nutritional, healthy and smart diet?

If we set specific daily training times, why not do the same for our nutrition? **Firstly**, eating smaller balanced meals at specific times throughout the day avoids that roller coaster affect of blood sugar surges caused by high CHO intake. Like training, rehearse your eating habits that will open up that "window of opportunity" for maximum health & performance. **Secondly**, one hour before workouts, "**BALANCE**" your diet by eating 'balanced' amounts of low glycemic index CHO (40%), PROTEIN (30%) and FAT (30%). This allows for the slow absorption of CHO and reduces that dangerous sugar - insulin surge. Carbohydrates with a low glycemic index (organic apples, pears, grapefruit, peas) , balanced with protein & fat keeps blood sugar-insulin levels in check. **Thirdly**, eating within one hour after a workout greatly increases recovery (up to four times faster). **THIS DOES NOT MEAN TO CARBO LOAD!** Again, "**BALANCE**" (40-30-30) must prevail and can best be accomplished quite simply by taking a 40-30-30 'meal replacement' or sports nutrient supplement or select an option listed below. It is the quality of the correct foods and micro nutrients that you eat. It could be said: " You are what you absorb". **FOOD IS A DRUG!** Eating the wrong foods and the wrong amounts at the wrong times is dangerous. By having high insulin & blood levels, we increase the risk of diabetes, heart disease, cancer and illness. In sport we have poor quality workouts and often eat ourselves into injury while limiting healing.

What Exactly Can You Eat Before or During a Workout or Competition?

Option 1: Apple (CHO) and Cheese (protein and fat)- contains the amino acid arginine which spikes HGH to higher levels.

Option 2: Whole wheat or rye bread (CHO) and peanut butter (protein and fat). Peanuts also have arginine & are a good fat that will slow down the entry of the sugar from bread into the body.

Option 3: Whole wheat or rye bread (CHO) and chicken or turkey (protein) & butter (fat). In fact, fat releases an enzyme which burns fat.

Option 4: 2% or whole Milk (CHO, protein and fat). Milk has the amino acid tryptopham which induces HGH release. NO skim milk. You need at least 2% fat in order to absorb vitamin D & calcium.

Option 5: Fruit (CHO) and protein (eggs - high in arginine) with NO bread which spikes blood sugar causing the fat in eggs to be converted into bad cholesterol

Option 6: Power bar (40-30-30) or sports drink (40-30-30). Read the label. Know what is in your food!

Option 7: Pure water is #1 in cleaning out waste and poison in the body to aid recovery and peak performance. Water also dilutes acid in the stomach. A loss of 1-2% water hurts performance. Proper hydration is a 24 hour issue.

Remember, this information "**IS**" the newest cutting edge of nutrition. Share the knowledge & nutrition with your competition ...let them load up on those carbs!

RECOMMENDED READINGS AND BIBLIOGRAPHY

1. Sears, Barry (PHD), "**THE ZONE**" - Regan Books, Harper Collins Publishers, Inc., 10 East 53rd Street, New York, NY, 10022,1995
2. Colgan, Dr. Michael, "**OPTIMAL SPORTS NUTRITION**", Advanced Research Press, New York 1993

The views and opinions expressed in this article are those of Victoria and Brent Mc Farlane. Many of the ideas may be considered revolutionary and controversial but supported by research and observation of Canada's top track and field athletes over the past 15 years. Brent Mc Farlane was the Head Coach of Canada's 2000 Olympic Track & Field Team in Sydney with 32 years of coaching experience. He has published 5 books and 500 articles on training for athletics. Vicki Mc Farlane is a registered nurse and consultant to the 2000 Canadian Olympic Team on nutrition.