THE ANABOLIC SOLUTION

The Definitive Metabolic Diet, Training, and Nutritional Supplement Book For Recreational and Competitive Bodybuilders

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About The Author

I am presently a licensed physician in Ontario, Canada, specializing in Nutrition and Sports Medicine.

I hold an honors degree in biological science, majoring in molecular biochemistry and genetics (1968), and a medical degree (1971) - both from the University of Toronto. I am certified as a Medical Review Officer (MRO) by the Medical Review Officer Certification Council (MROCC), and as a Master of Fitness Sciences (MFS) by the International Sports Sciences Association (ISSA). I am also a member of the American Academy of Sports Medicine.

I was an assistant professor at the University of Toronto for ten years (1988 to 1998) lecturing and researching on athletic performance, nutritional supplements and drug use in sports.

I was a world-class athlete for over twenty years, winning the world championships in Powerlifting in 1976, and the World Games in the sport of Powerlifting in 1981. I was Canadian champion eight times, Pan American champion twice, and North American champion twice. I was the first Canadian Powerlifter to become a World Champion and first Canadian Powerlifter to total 10 times bodyweight in any weight class and I'm the only Canadian to ever total ten times bodyweight in two weight classes.

Over the last four decades I have had extensive exposure to athletic injuries and disabilities, and ergogenic and nutritional supplement use by athletes. I have been chairman/member of several national and international powerlifting, bodybuilding and Olympic weight lifting sports federation medical committees. Over this period of time I have acted as a consultant, medical advisor, drug testing officer and technical expert on the pharmacology and pathophysiology of sports, nutritional supplement use and drug testing.

I was the Medical Director to the World Wrestling Federation (WWF) and World Bodybuilding Federation (WBF) and the acting MRO for the National Association for Stock Car Auto Racing (NASCAR).

At present I am the President of the International United Powerlifting Federation and the Pan American (North, Central and South America, Bermuda, the Bahamas and the Caribbean Islands) Powerlifting Federation.

I have written several books dealing with diet, nutritional supplements and the use of ergogenic aids by athletes. In 1995 I wrote two books. One of these books, the *Bodybuilding Supplement Review* is a review of nutritional supplements and the other, the Anabolic Diet, was an attempt at setting up a working high fat, low carb diet for bodybuilders.

In 1997 I wrote *Amino Acids and Proteins for the Athlete - The Anabolic Edge* published by CRC Press was released in October 1997. I have also written and am in the process of

writing chapters for several books on nutrition, sports medicine, substance abuse, fitness and weight training. At present I'm working on several other books including a comprehensive nutritional supplement manual.

In the past thirty-five years I have written several hundred articles on training, diet, nutritional supplements, and drug use in sports for many magazines and association journals. I've written for and had regular monthly columns in all the popular bodybuilding and fitness journals including Muscle and Fitness, Flex, Men's Fitness, Shape, Muscle Media, Muscle Mag International, IronMan, Powerlifting USA and many smaller publications.

From 1996 to 1999 I was involved in writing, research and product development for Experimental and Applied Sciences (EAS) and Muscle Media, and was a member of the EAS Scientific Advisory Panel.

I've contributed chapters on diet and nutritional supplements to several fitness, weight and sports medicine books as well as books on anabolic steroids and substance abuse. The latest chapters on nutrition appears in *Energy-Yielding Macronutrients and Energy Metabolism in Sports Nutrition* and in *Nutritional Applications in Exercise and Sport*, both edited by Judy A. Driskell and Ira Wolinsky and published in 2000 and 2001 respectively by CRC Press.

I’m in the process of finishing the nutritional, nutritional supplement and ergogenic aids section (about half the book) in the second edition of *Serious Strength Training* scheduled to be released this coming Spring by Human Kinetics.

In the past three decades I have been on several Editorial Boards for various fitness and strength magazines and was the Editor-in-Chief of a two quarterly international newsletter on sports nutrition and ergogenic aids.

I act as an international consultant for amateur and professional athletes and sports bodies on all aspects of training, nutrition and supplementation. I act as an international consultant and expert witness for amateur and professional athletes and sports bodies, private corporations and companies, and government agencies on legal matters relating to nutritional supplements, and the use and abuse, and drug testing of anabolic steroids, growth hormone and other ergogenic drugs.

I hold seminars and lecture all over the world on diet, nutritional supplements and training. In the past I have lectured and held seminars in dozens of cities in North America, and all over the world. I also formulate engineered, cutting edge, scientifically validated nutritional supplements for various companies that are sold under their specific labels. Most recently I formulated a new group of nutritional supplements meant to combat nighttime post absorptive catabolism and enhance the anabolic and recuperative effects of sleep. I’m now working with several prominent researchers from the US and several other countries. Those in the US include doctors at Harvard Medical School and the Massachusetts College of Pharmacy and Health Sciences.

I formulated a complete nutritional supplement line, which includes over 25 cutting edge products designed to work with the Metabolic Diet and to maximize body composition,

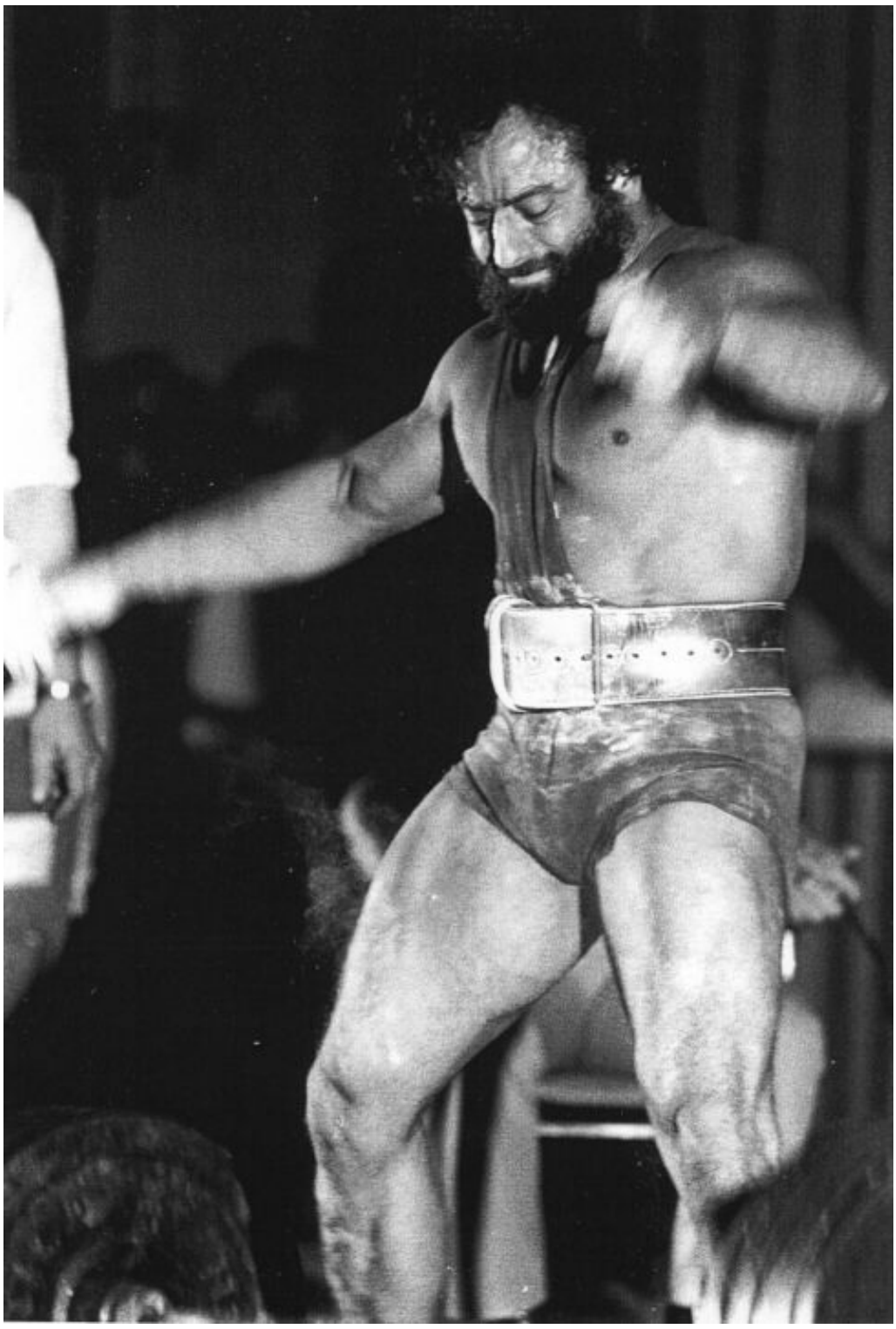
athletic performance and the beneficial effects of exercise. These formulations were done using the latest scientific and medical information, along with the knowledge and expertise I've accumulated in the last four decades. I've tried to use the best ingredients available regardless of costs to form products that are superior to any on the market today. These supplements, plus my latest book, *The Metabolic Diet* along with related books and ebooks (www.MetabolicDiet.com), form the nutritional backbone of some of my new international ventures.

I'm now in the process of releasing new supplement formulations for my new international Signature Series of nutritional supplements and developing my two web sites, www.MetabolicDiet.com and www.CoachSOS.com. The goal of the new sites is to provide specific and detailed training, diet and nutritional supplement schedules for anyone including those who just want to lose some weight and/or body fat, to those who want to train for a specific activity or sport, including recreational sports, team sports, bodybuilding, Olympic events, and all the various other power and endurance sports.

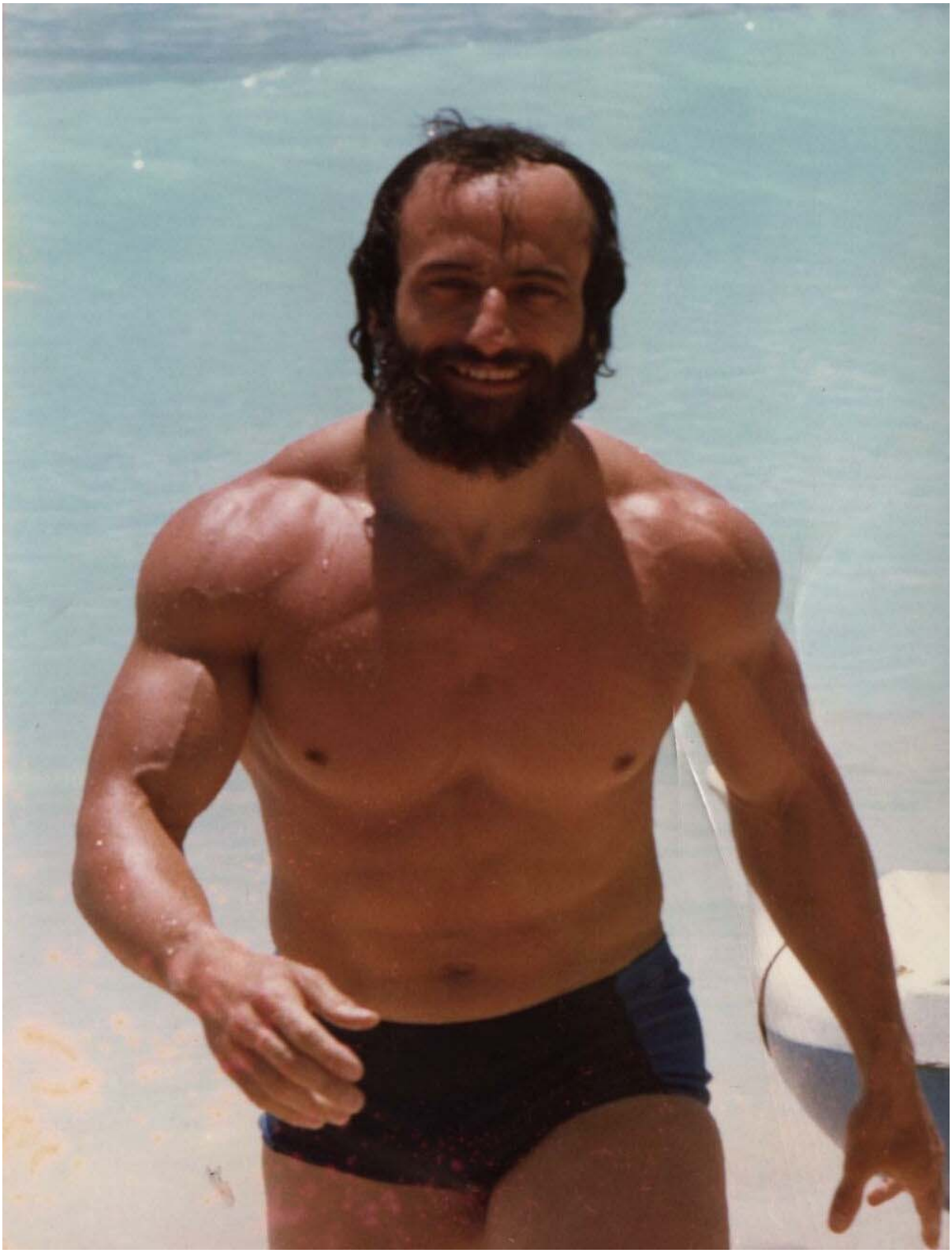
My new book, The Anabolic Solution, written for both recreational and competitive bodybuilders, is an attempt on my part to present the ultimate cutting edge, training specific, diet and nutritional supplement guide geared to maximize muscle mass and minimize body fat. In fact my Anabolic Solution is so effective that it offers the only viable alternative to the dangerous use of muscle building drugs such as anabolic steroids, growth hormone, IGF-I, clenbuterol, thyroid, insulin, and countless others.

Photo Archive

My wild lifting days – picture taken in 1982, weighing around 195 lbs and getting ready to attack a 780 lb deadlift. At that bodyweight I had no neck to speak of. Neck measurement at that time was 19.5 inches.



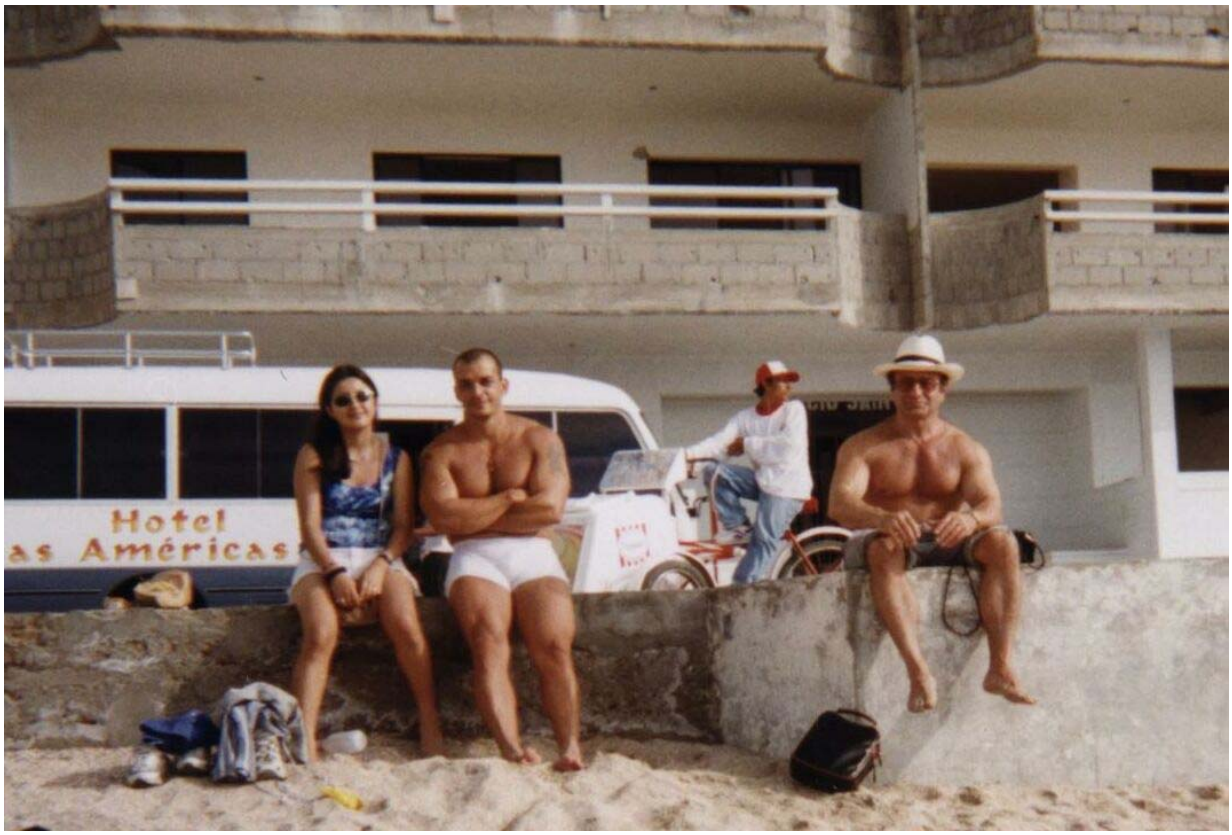
At the Beach in 1986 – weighing about 185 lbs at 7% bodyfat. And still with hair.



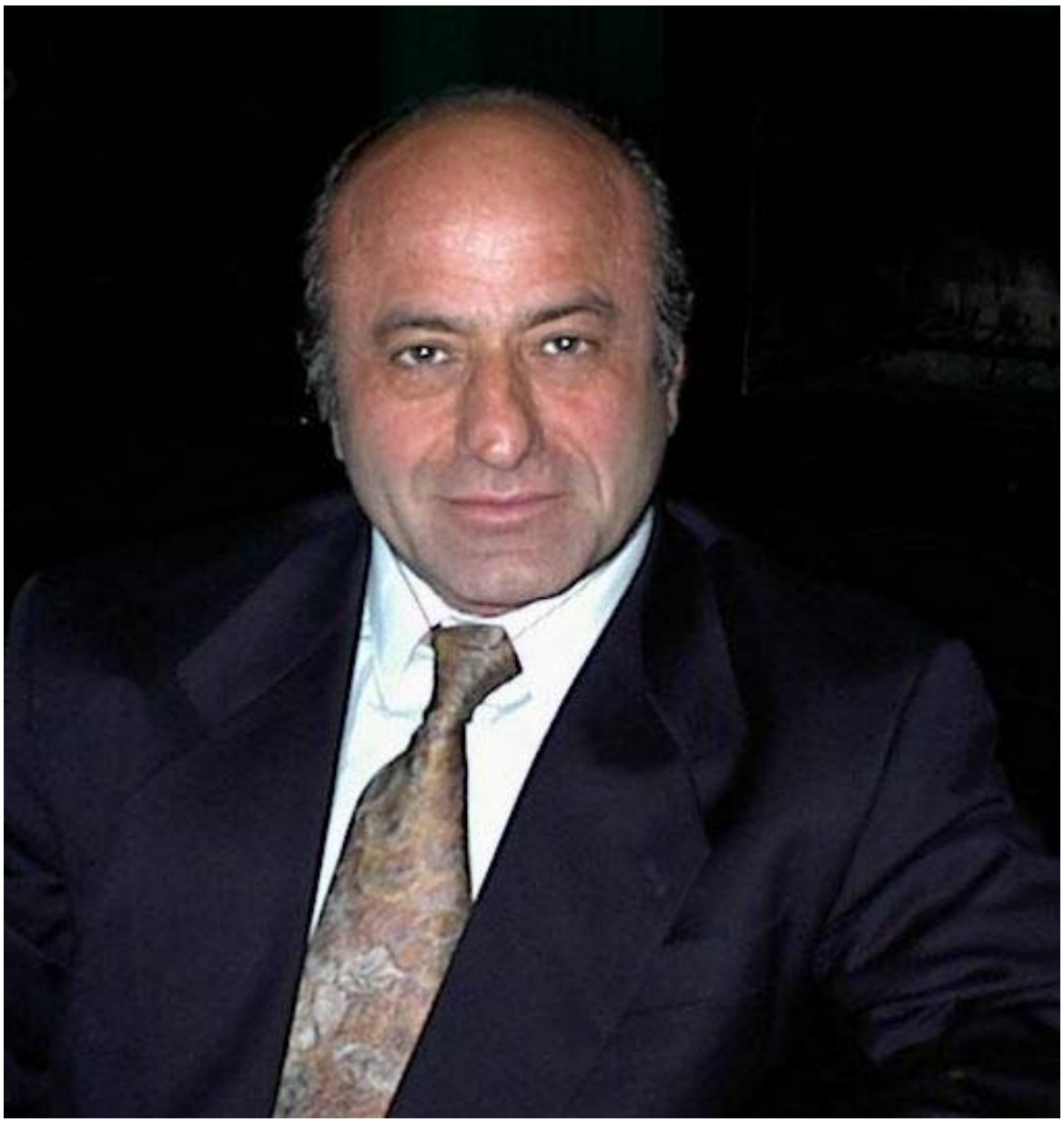
Eddie Robinson and Me in the summer of 1996, outside 10K Fitness – my gym in Cobourg, Ontario, Canada. Bodyweight was just over the 200 lb mark.

Tom Platz and I comparing pipes at my house in Cobourg in the Summer of 1996.

Picture taken in 1999 at the beach in Ecuador with some friends. Part of my South American trip as President of the Pan American Powerlifting Federation.



Formal picture taken in the fall of 2000.



Preface

I meant The Anabolic Solution to be a simple guide for bodybuilders on how to best use the Anabolic/Metabolic Diet to maximize muscle mass and minimize body fat. But it has become much more.

First of all it is a simplified guide on how to use the Metabolic Diet and my targeted line of nutritional supplements in the different training phases. It's also a valuable source of information on nutrition and supplements and on macronutrient metabolism - how macronutrients are used and interconverted by the body. As well, it's an extension of my two major web sites, www.MetabolicDiet.com and www.CoachSOS.com.

I've written this book to make is easy to understand and follow. But parts of this book are also quite technical. I felt it was important to present some of the more technical information so that you can understand how everything fits together and as such make more rational nutrition and training decisions, and make better progress.

So how should you use this book? It all depends on your level of knowledge and expertise. The best way for the uninitiated or less experienced bodybuilders, at least for the first reading, is to just read the instructional parts and leave the technical details for another reading or for referencing down the line.

Since the Metabolic Diet is the cornerstone of my Anabolic Solution, I thought I'd put in some of the basic and starting information for the Metabolic Diet right at the start. Thus the introduction will immediately detail everything you need to get an overview of how and why the diet works, and to get going on the diet ASAP. In fact I have overdone it in some ways in order to get certain points across, to the point where I maybe even repeat myself once or twice.

By doing it this way it gives you the kernel of information you need to get started ASAP or at least to get enthused enough to read anything else you need to know. Later chapters will have more details and explanations on how to best combine the Metabolic Diet with periodized training and the use of nutritional supplements. The more technical information can be read at leisure or on a need to know basis.

Whatever you read and in whatever sequence you read it, just remember that the basic principles behind the Anabolic Solution are easy to understand and follow. Also that the principles espoused in this book are based on solid scientific principles and research, and real world use.

Introduction

Most books have you sift through a lot of introductory, basic and theoretical information before you get to the part you're really interested in. That's not the case here. We're going to tell you what you need to know in this introduction.

The Metabolic Diet is based on three steps and principles that explain how it works and why it's the best diet for maximizing muscle mass and minimizing body fat.

1. **In order to change your metabolism to burning fat as your primary fuel, you replace the carbs you're eating now with protein and fat, without changing the calorie level. The body adapts to the lack of carbs by priming up its fat burning machinery.**

2. **Once you're fat adapted (i.e. your body depends mainly on both dietary and body fat, not carbohydrates or muscle protein, to produce the energy it needs) you can cut calories by cutting the amount of fat in your diet. AS THE AMOUNT OF FAT IN THE DIET NATURALLY DECREASES, THE BODY THEN USES BODY FAT AS ITS PRIMARY FUEL.**

3. **Changing your metabolism to a fat burning one, and cycling from low carbs to a short phase of high carbs, allows you to naturally maximize muscle mass and minimize body fat. This is done by manipulating the major anabolic, anticatabolic, and fat burning hormones including testosterone, growth hormone, insulin, insulin-like growth factor I (IGF-I), cortisol, and thyroid.**

The Three Priorities of the Metabolic Diet.

1. Priority number one in the Metabolic Diet is switching your metabolism to burning fat as its primary fuel. This is done by limiting dietary carbohydrates and providing ample dietary fat. During this adaptation stage you don't really need to change your normal caloric intake. Simply substitute protein and fat for your former carbohydrate calories. An easy way to do this is to stick to mainly meat, chicken, fish, eggs, hard cheeses, salads (watch the carbs in the dressing, and no croutons) and whatever vegetables you want (except for the starchy vegetables like potatoes, carrots and peas). As far as what to drink, that's easy too. Water, diet drinks, coffee and tea (with cream and artificial sweetener only) are about it. That means no juices or any sugared drinks.

2. Once you're fat adapted, the next priority is to vary your calories to suit your goal. To increase muscle mass you increase your daily caloric intake by increasing fat and protein in your diet. It's usually a good idea to do a controlled weight gain first and then to drop that extra bodyfat while maintaining the most of the muscle you packed on while you gained weight.

3. The third priority is to refine your physique so that you're muscular and lean. To lose bodyfat while at the same time maintaining muscle mass, you slowly decrease your caloric intake and at the same time your fat intake. By providing less calories and dietary fat, your body will use its fat stores, not muscle, more and more to make up any energy deficits. In some circumstances, because of lower dietary fat levels, your diet may contain only moderate or even low levels of fat, mainly in the form of the essential and monosaturated fatty acids.

Metabolic Diet – Four Practical Steps for a Quick Start

The Metabolic Diet's Four Practical Steps

1. **Replace the carbs you're eating now with protein and fat – don't drop your calorie level right at the start.**
2. **For the first cycle, stick to the low carb phase for a full 12 days before beginning the high carb phase.**
3. **When you carb up, end carb loading the minute you start smoothing out.**
4. **Once you're fat adapted (usually after the first two weeks, change the calorie level depending on the training phase you're in, i.e. mass, strength or cutting phase.**

The Metabolic Diet Works Because:

- **Your body learns to burn fat instead of carbs.**
- **Your body continues to prefer fats as you drop calories, mainly in dietary fat and, depending on your dietary carb intake, some carbs. Always keeping protein high to spare muscle.**
- **As calories drop, bodyfat becomes the main fuel even if you lower dietary fat dramatically.**

Also

- **Cycling from low carbs, high fat to high carbs and lower fat manipulates the anabolic and fat burning hormones and processes in the body to maintain or increase muscle mass while at the same time decreasing bodyfat.**

Remember

- **You teach the body to burn mainly bodyfat in preference to carbs and protein.**
- **By shifting from a low carb diet on weekdays to a higher carb diet on weekends, you manipulate the muscle building and fat burning processes and hormones.**

Chapter One

Dietary Fat Is Not The Enemy

You've heard it all before. Everybody from the American Medical Association to the media trendsetters to that so-called "expert" at your neighborhood gym has been saying the same thing for the last three decades. Fat is bad. Carbohydrates are good. If you want to get the body you've been working so hard for, you've got to focus on those carbohydrates and keep fat to an absolute minimum.

So you dedicate yourself to living by the percentages the “lowfat experts” give you. 55 percent carbs. No more than 15 percent fat. You load up on turkey and chicken. You separate the egg whites. You surgically remove all visible fat from any piece of meat. You always broil. Never fry.

But you've been living a lie.

Fact is, the high carbohydrate diet favored by so many bodybuilders can actually work against them. They bulk up on all those carbs and end up packing on a tremendous amount of bodyfat. Then, when it's time to cut, too much muscle ends up being left in the gym along with the bodyfat.

Strength levels and personal motivation drops. You can become irritable. Maybe even depressed. By the time that contest you've been working so hard for comes around, you often look no better than you did for the last contest. You may look worse.

And that diet. To say it's inconvenient and strict would be a drastic understatement. In a world where eating makes up a great part of our social life, the regimen of a high carb, low fat diet can quickly make you a social outcast.

Not that you can't make progress toward your goals with a high carb diet. You can. Some. But you can also find yourself plateauing or even losing lean body mass. And if you try and get as lean as you can, you can suffer a dramatic loss in muscle mass. It’s even worse if you’re trying to get contest ready. As you count down toward contest time, panic can set in. You take drastic measures to compensate for the state you're in and end up losing weeks of training.

So, why are you torturing yourself? Especially when there is an alternative that can pack on muscle while keeping bodyfat at a minimum. It's called the Metabolic Diet and, while it flies in the face of what most bodybuilders have been led to believe, it could be the answer to your prayers.

The Metabolic Diet

Unlike the high carb diet that can work against the body's system of growth producing hormones, the Metabolic Diet maximizes the production and utilization of the Big 4 growth

producers - testosterone, growth hormone, insulin-like growth factor I (IGF-I) and insulin - and does it naturally. It also shifts the body's metabolism from that of a sugar burning, fat producing machine to that of a fat burning machine. With the body packing on extra muscle and simultaneously burning both dietary and stored body fat, the bodybuilder finds himself twice blessed.

The Metabolic Diet stresses an initial high fat/high protein/low carbohydrate approach to nutrition. Many in the general public will dismiss it out of hand citing the popular beliefs that fat is a prime component in heart disease, cancer and obesity. Likewise, many bodybuilders have come to assume the dietary fat smoothes the bodybuilder out and blurs definition.

But they couldn't be more wrong. Dietary fat, when utilized properly as in the Metabolic Diet, can be the key to growth and success. And while some will see the Metabolic Diet as a new, revolutionary, even dangerous approach to nutrition its basics actually originated with the dawning of mankind.

The Primitive Diet

First let's clear up a widely held misconception that ancient man was a herbivore who turned his nose up at all meat in favor of the available plant life. Current vegetarians often claim that their diet is the most natural and ancient known to man in an effort to gain converts but it's simply not true.

In fact, archeological evidence shows that man's earliest tools were put to use, at least in part, in the dressing of meat. In many areas, the diet of primitive man was made up almost entirely of animal products. The continued affection for meat demonstrated by the monkeys and apes that are our primate cousins today is also testament to early man's dietary preference.

There's a good reason for all this. It's called survival. Meat is a far superior source of amino acids than plant life. It's also high in vitamins A, E and B complex. Vitamin B12, while plentiful in meat, is not found in vegetable products. Red meat is loaded with iron that is easily absorbed, unlike iron that is present in many plant sources. As well, red meats are excellent sources of potassium, zinc and magnesium.

Fat, whose benefits we will discuss throughout this book, is also readily available in meat and not in plants. Along with many other uses, including the fact that it's tasty and adds to the palatability of food, fat is necessary for proper breakdown and use of vitamins A, D, E and K in the body.

Meat is, indeed, one of the most nutritious substances on earth and it's been held in high esteem by civilizations throughout history. It's even played a big role in religious ceremony. In the early days of recorded history meat was offered to the prevailing Gods through "burnt offerings" and the Bible reports on feasts held in conjunction with these animal sacrifices.

So when we're talking about "natural" or "primitive" diets we're not talking about the eating habits of vegetarians. We're talking about meat eaters who came to understand early the

importance of meat in the daily diet. Man's earliest diet probably consisted mainly of meat supplemented by periodic feedings of carbohydrates. It was only with the development of agriculture a mere 10,000 years ago that any large change was seen.

In the nearly 50 million years of man's existence before that, man was largely carnivorous and lived off animal flesh. At its crudest, this meat diet bears a strong resemblance to the Metabolic Diet we'll be providing you with. All we've done is taken this primitive diet and brought it into the modern age making use of modern science to adapt it and perfect it for maximum health, fitness and development.

In response to this, some people will argue that the domesticated meats available today are fatter than the wild meats consumed by our ancestors and also fatter than the meat from wild animals today. While this is true, it's only a matter of degree. In the Metabolic Diet the quantity of fats is as important as the quality since we use the increased fat intake to shift our metabolism and thus make constructive use of the increased amount of polyunsaturated, monounsaturated and saturated fats without incurring any of the potential bad effects.

The point I want to make here is that meat is not inherently bad. Our ancestors ate meat to some degree for many thousands of years and we're genetically built to make maximum use of all it has to offer. On the other hand, we also have the capabilities to manage and use various kinds of plant food. After all, our evolutionary process has taken us through many dietary phases where both meat and plant foods were in our diet in various proportions in a continuum between the two extremes. The all meat diets to all plant diets.

If we look at the overall picture and take into account the various phases of man's evolution, the one lesson to take home when we discuss our ancestors' eating patterns is that because of varied eating patterns, man has had to undergo a diverse evolutionary process. As a result of this process we have the genetic ability to use fats, including stored body fat, as our main energy source, an ability that is not utilized fully by those of us on today's high carbohydrate diets.

The Establishment Won't Like The Metabolic Diet

But don't expect the Metabolic Diet to be hailed widely by major food industries in our society. Go down the aisles of any supermarket today and all you'll see on the shelves are various fancy ways to package carbohydrates. On the other hand, meat is simple. And while you can package it different ways, it's hard to disguise or to package for big profits.

A similar situation exists with the supplement industry. They won't be happy with this diet because it doesn't require what in many cases are carb-loaded supplements. It also doesn't require the use of many of their rather insipid supplements. Even protein supplements aren't needed most of the time. Except in the cutting and pre-contest phases (if you compete), you're already getting plenty of protein from all the meat, fish, and dairy products you'll be eating.

On the other hand there are supplements that will give you a big boost in achieving your goals. The ones that we'll be suggesting will be of a high tech variety, specially designed for the needs of the bodybuilder dialed into the anabolic lifestyle, and will give you the

edge in maximizing the Metabolic Diet's benefits. They'll be well beyond anything the generalists and the high carb gurus are presently offering.

Most of today's nutrition experts who think that the quality of a diet should be measured in its high carb, low glycemic carb content, won't be pleased with this diet, either. After all it goes against many of their most sacred, but misguided, beliefs.

Also, the Metabolic Diet isn't as nitpicky as most diets out there and so it's easy to follow. You'll be eating meat during the weekdays supplemented by a wide variety of other delicious foods. And when the weekend comes, virtually anything goes.

While you may have to give up that lasagna or ice cream during the week, you can have it during the "carb loading" portion of the diet that comes every weekend. Unlike both the high fat and the permanent low carb diets, you aren't forced to give up your favorite foods forever on the Metabolic Diet.

The History of the Metabolic Diet

Prior to 1990 most bodybuilders and power athletes followed a diet that was high in protein and complex carbs and low in fat practically all year round. The only thing that varied, except when they fell off the diet, was the calories – higher when they were trying to gain muscle mass and lower when they were cutting up. As such the staple power and muscle mass diet, especially among bodybuilders, consisted of a lot of high protein foods such as egg whites (the yolks, as nutritious as they are, were considered verboten as they contained some fat), broiled or baked skinless chicken, tuna packed with water and of course lots of oatmeal and rice.

All that has changed in the past decade. Ever since I introduced my Anabolic Diet to the bodybuilding community in the early 1990s, many power athletes, and especially bodybuilders, have gotten off the high carb/low fat bandwagon and gone on cycling lower carb, higher fat diets, maintaining the high protein edge. These bodybuilders, and their numbers are increasing daily, have found that they can get more massive and ripped on my diet than on the "traditional" bodybuilding diet. Although we'll cover the basics and how-to below, my latest book, the Metabolic Diet (available on www.MetabolicDiet.com), outlines the diet in detail. There is also a lot of supportive material and a ton of articles, not to mention my complete Metabolic Diet Supplement line, on both of my main Internet sites, www.MetabolicDiet.com and www.CoachSOS.com.

The Metabolic Diet is not a new diet. Some of the principles have been in existence for several decades. For example, back in the 1960s a group of bodybuilders used a low carb diet with great success. However, it wasn't well refined at the time, nor did it feature the critical aspects of hormonal manipulation and stimulation I've added. But it concentrated on meat consumption with very few carbs and bodybuilders were pleased to find themselves maintaining maximum muscle with very little bodyfat.

In fact, the diet produced some huge men back in the 60's. They didn't have all the components of the diet perfected and didn't get the "super-ripped" look bodybuilders work for today but, nonetheless, the diet produced some big, big men. Unfortunately, the trendy diets stressing high complex carbs, high protein and low fat swept through the

bodybuilding community so completely that these earlier experiments in a high fat approach were wiped out.

As often happens, the blinders went on to alternatives to the high carb movement and the higher fat, low carb diet was ignored by most people. I was the exception. I began working with the diet as an active powerlifter in the 1970's and used an earlier version of the Metabolic Diet on my way to winning the world championship in powerlifting in 1976 and the World Games in the sport in 1981.

Anabolic Steroids

At the time I was working on and using the Anabolic/Metabolic Diet, the world of professional sports began their campaign against anabolic steroids. Strict drug testing began in the world-class bodybuilding community and the cry went out for some natural alternative to steroids.

By that time steroids had assumed its place as a "wonder drug" among bodybuilders and other athletes. Physically, steroids had been shown to have a remarkable effect on muscle growth and strength. Psychologically, they provided users with an aggressive, contentious mindset very useful in competition and training. The fact that they swept through the bodybuilding and other sport communities where getting a competitive edge was so important to winning was not surprising.

Unfortunately, steroids were found to have some severe side effects. Moodiness and an unhealthy aggression toward others that could extend to violence (known as "'roid rage") were widely reported in sporting journals. Links to heart disease, liver cancer, kidney disease and sterility were also discovered. With the evidence mounting, there was little choice but to shut down their use in the international sporting arena.

Then in the early 1990s, because of some drug allegations against Vince McMahon and his sports federations, I was asked to handle the talent of both the World Wrestling Federation (WWF) and the World Bodybuilding Federation (WBF). Making sure that the athletes didn’t use drugs wasn’t enough however. We had to provide a viable alternative, especially for the professional bodybuilders that were in the WBF.

It was into this void that I stepped with my Anabolic Diet and the new approach to dieting I'd been working on. It was not an easy task. The World Bodybuilding Federation wanted their athletes to get clean but maintain muscle mass and stay cut up and in competition shape. This was a tall order.

One of the major problems was to get the hormonal systems of the bodybuilders back on track producing testosterone naturally. This was very difficult because steroids shut down the testosterone producing system in the body. The hypothalamic, pituitary, testicular axis (HPTA) ceases to function and you may need to go to extreme measures to get your testicles working again. It often takes a long time to recover and, in some cases, a user may never recover and be doomed to treatment with artificial steroids or testosterone for the rest of his life

Steroids can also make the athlete lazy. He'll get growth with marginal training methods but find the road much tougher when he gets off steroids and has to do all the work himself. Metabolic diet or not, it may take him awhile to get back up to speed with proper training methods.

Then there's the diet itself. Like any diet, if you don't follow it you're not going to get results. Some bodybuilders who'd been cruising on steroids for a long time found it difficult to replace the ease of steroids with a diet that required some commitment.

Finally, some people chose to believe that a natural program could replace steroids (and the dozens of other drugs, such as growth hormone, IGF-I, insulin, thyroid hormone, diuretics, etc.) immediately and offer the exact same results. There is no way this can occur. Over a short time period, no diet is going to replace steroids. But over the long term, the Metabolic Diet, coupled with high tech nutritional supplements, has proven to be a very effective alternative to steroids providing the same kind of results without the "Russian Roulette" nature of steroid usage,

By 1990, I'd come out with my book "Beyond Anabolic Steroids" and begun to provide articles for a variety of fitness and bodybuilding publications on the subject. A few years later I started writing on my new diet system and in 1995 wrote the Anabolic Diet. The response to the Anabolic and the newer Metabolic Diet has been remarkable. In a world where steroids are a real gamble, both in terms of competition and health, the Anabolic and Metabolic Diets gave the bodybuilders who used it that natural edge they were looking for.

But I'm no "Just Say No" crusader in this area. Hysteria is not my stock in trade. Anabolic steroids do have their place. In fact, I've been involved in research testing steroids for use in AIDS patients. They could play a role in maintaining body mass and strengthening the immune system in these patients thus allowing them to better resist the opportunistic diseases that are so deadly to them.

I also fully realize that steroids and other artificial means for growth and performance are still used widely in the athletic community. They give the athlete the edge he's looking for and, for many, they'll gladly risk their health and the sanctions that can come from steroid use for the performance benefits they can bring.

It should be pointed out that the Metabolic Diet can be used in concert with steroids. You will get results. Indeed, you can do most anything with steroids and achieve some gains. But, though the Metabolic Diet will help you to some degree, your use of steroids will keep you from maximizing some of the endogenous anabolic hormones the diet seeks to stimulate, particularly endogenous testosterone.

Bottom line, the Metabolic Diet is really meant for the natural athlete who wants to be the best he can be naturally, but it works for anyone, with or without drug use. And, while it's much easier and convenient to stay on than the high carb diet, it will still require some dedication and the will to properly execute it. The key to success in the diet is to make sure you take your body through a "metabolic shift" where you'll begin to use dietary fat and bodyfat instead of carbs and muscle protein as the main fuel for your body. To do this, you'll have to follow the diet very closely, especially at the beginning.

The battle the drug-free athlete engages in is not an easy one. He must face up to drug-using and abusing competition and drug-based competitive standards in every contest. What the Metabolic Diet does is to give him the same kind of benefits the drug user obtains.

By introducing anabolic drugs or agents into his body, the drug user increases the circulating amount of anabolic hormones and other compounds, which in turn produces the desired anabolic effect of muscle growth. The Metabolic Diet does the same thing. Only instead of introducing the anabolic substances from an exogenous source outside the body, the diet stimulates the production of anabolic hormones IN THE BODY. It's LEGAL and it's SAFE.

And, best of all, it's a SURE THING. If you follow the diet, IT WON'T FAIL. It may sound bizarre. It may counter everything you've ever been led to believe about diets, fat and carbohydrates. BUT IT WORKS. It is a biochemical inevitability. YOU WILL get the combination of increased lean body mass with less bodyfat you're looking for if you follow the diet properly.

And you'll get it naturally. Without the dangers of steroids.

Given the trials and tribulations most bodybuilders have experienced with their "diets", what more can you ask from a nutrition program?

Competing Diets

In the last 40 years I've seen a lot of accepted dietary 'truths' come and go. The most important thing I've learned in all this time is that you have to keep an open mind and be flexible enough to adjust your views according to the never-ending parade of new facts and information that comes on the scene.

The high carbohydrate, low fat, low to moderate protein diet is an outdated diet who's time has almost run out. Even though the attitude of those in the know towards these kinds of diets has changed, the new diet information has not reached the kind of critical mass it needs in order to become the logical successor to the diet crown.

So while I, and many others, believe that the Metabolic Diet is the most advanced, scientifically based diet plan on this planet, there's still a vocal majority that hasn't discovered the vital facts and as such still sticks to the high carb, low fat idioms.

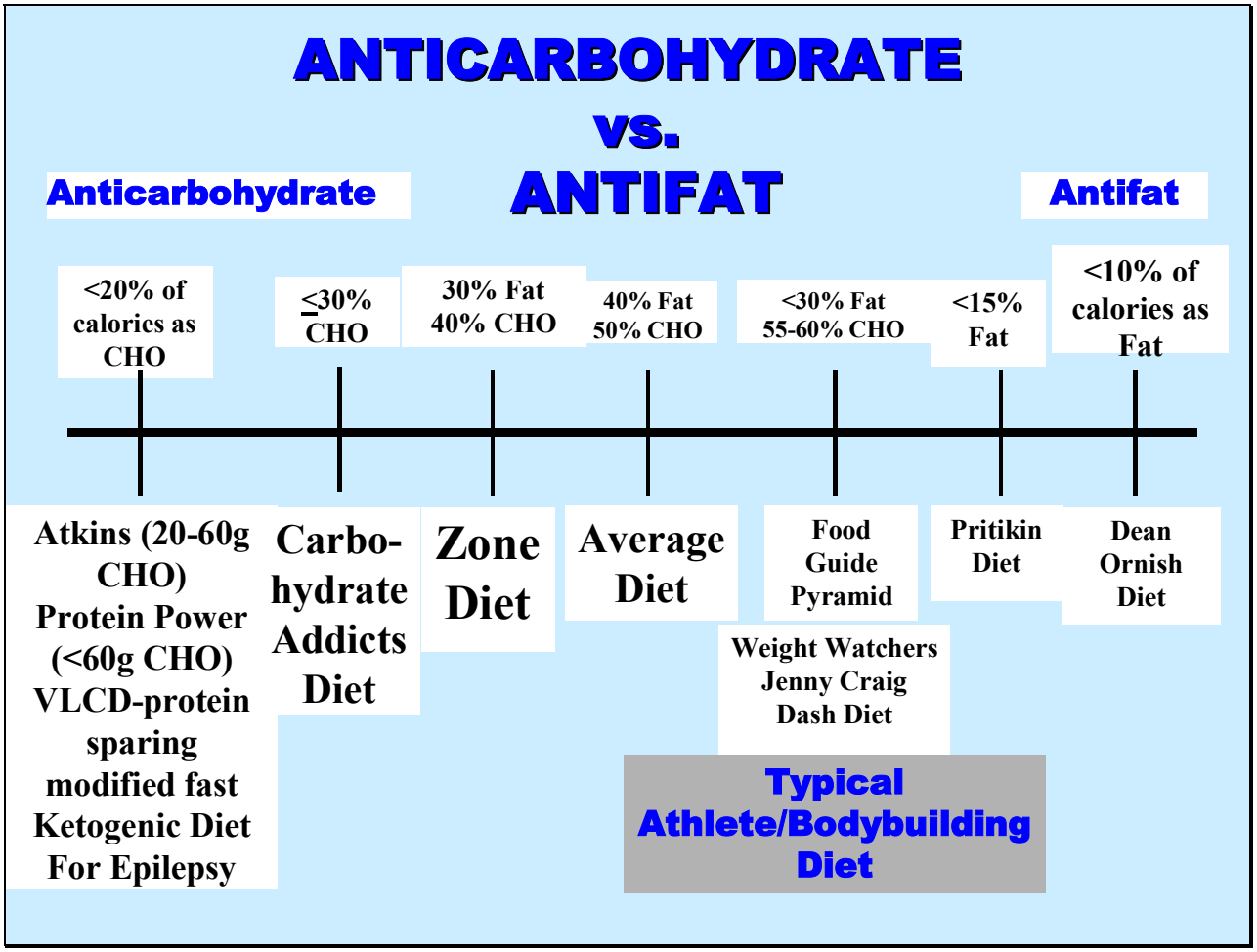
However, I know that a paradigm shift will soon occur as the new dietary information hits the critical mass and becomes accepted by the majority of people as the best diet for those who exercise and want to increase their strength and muscle mass and decrease their bodyfat levels.

The Options

There are all kinds of diets out there. Low fat, high fat, low carb, high carb, low protein, high protein, hospital, vegetarian, limited food, wine lovers diet, and all the mixes and

matches you could imagine. The more popular ones are the high carb, low fat diets, the low carb diets and the high protein diets (see Figure# - anticarbohydrate vs. antifat). All these diets have several subsections that treat the macronutrients differently but for our purposes we can lump them together under the broad categories.

Figure # - anticarbohydrate vs. antifat



The High Carb Low Fat Diet

The high carb, low fat diet is the most popular diet on this planet. That's due in part to the fact that this diet is mostly plant based and thus readily available to people all around the world, especially those in third world countries. It also has been the subject of a lot of research and is espoused by the American Dietetic Association and other health professionals. The premises behind this diet is that by cutting down on fat you cut back on the one macronutrient that provides the most calories and as such you lose more bodyfat. Not only that but the weight of popular opinion is that fat is bad and lowering dietary fat makes for a healthy heart.

Unfortunately both premises are flawed. First of all by cutting down on dietary fat you actually burn less bodyfat and tend to lose more muscle. So by cutting back on calories you'll lose weight but a lot of that will be muscle. The end result isn't pretty since to get in

contest shape, or even to reduce your body fat to acceptable levels, you're going to lose a lot of that hard earned muscle. There are also some health concerns regarding the high carb diets. Recent studies have shown that the high carb diet raises serum triglycerides and lowers HDL and as such can lead to an increase in cardiovascular disease. And if that's not enough, the low fat diets can be too low in the essential fatty acids and may result in a problem with the absorption of the fat soluble vitamins including vitamin A, D, E and K.

High Protein Diets

There are various kinds of high protein diets. Some are based on low fat and low carbs, and more along the ketogenic diets, such as the Atkins' Diet. Others are based on moderate carbs and fats, like the Zone Diet, or high to moderate carbs and low fat, and are just a variant of the high carb, low fat diets mentioned above.

In all cases the high protein levels are useful for those who exercise or are involved in sports. However, those that are low in fats and/or high in carbs run into the same problems as mentioned above with the high carb, low fat diets.

Low carbohydrate diets such as the Atkins' Diet and other strictly ketogenic diets are great for losing body weight and dealing with some health issues such as glucose resistance and diabetes. However, long-term strictly ketogenic diets tend to result in decreased muscle mass. That's because they don't allow alternating periods of lower and higher carb days. These alternating periods allow for favorable changes in the anabolic and fat burning hormones.

The Zone Diet is a good all round diet that stresses lower carb and fat levels and higher protein levels than is found in general diets. It's a good diet for losing weight while at the same time maintaining muscle mass. In fact, it's pretty close to the Moderate Carbohydrate Phase of the Metabolic Diet. Unfortunately, the Zone Diet suffers from the same fatal flaw as all the other diets out there.

None of them are up to snuff because they're all static diets based on fixed macronutrient content. The fact is that the one-diet-for-all approach just doesn't cut it genetically.

The Metabolic Diet on the other hand is a flexible living entity that is able to adjust to your needs, while at the same time finding the optimal carb level for maximum muscle mass and fat burning capability, and peak efficiency. By using the Metabolic Diet you can dial in your metabolism to the kind of diet that's best for you.

Diet Books

Most of the diet books on the market today are so similar that the same person could have written them. This includes books by physicians, PhD's and all the Jenny Craig/Susan Power types. They all offer variations of the diet high in complex carbs and fiber and low in fat. They also push exercise, lifestyle and behavior changes. Regrettably, none of these diets has much chance for success when the novelty has worn off and motivation wanes.

The reason they don't work is that they're basically all the same and usually depend on the personality of the writer rather than any real differences in the diets. Once a dieter has tried one of them they've tried them all, no matter how well they're disguised. None offer the novelty and biochemical advantages of the Metabolic Diet where you can lose bodyfat in even stubborn areas while maintaining or even improving muscle tone and body shape. Unlike the rest, the Metabolic Diet is not a fixed diet and is the first diet that can be adjusted to suit your metabolism.

You also have to remember that a lot of these books were written by people who had weight problems themselves and lost the weight through the use of personalized methods. Because of this, they're wildly evangelical in their praise and biased to flaws in their diets. There's very little, if any, science or research support for many of the claims they make.

Chapter Two

The Metabolic Diet

The Metabolic Diet is the Holy Grail of diets in that it is the first scientifically based diet that can be adjusted to suit your individual and unique metabolism. It is the first diet that understands that each individual has a different genetic make-up and as such needs a personalized diet.

Metabolic Diet

1. Is scientifically based.
2. Not a fixed diet like all the others.
3. It's the first diet that can be adjusted to suit your metabolism.

Benefits Of The Metabolic Diet-More Muscle, Less Bodyfat, And It's All Natural

For more than 20 years the American public has been told to watch its fat intake or suffer the consequences. The national "fat hysteria" got so bad that back in 1989 the National Academy of Sciences advised everybody, regardless of the presence or absence of risk for coronary heart disease, to go on a restricted diet low in fat. The Lords of Lowfat loved this and the food industry proceeded to take advantage of the situation, as they always do, and come out with a whole new line of "lowfat" or "fat free" products, many of which were neither.

Why groups such as premenopausal women and children, who are largely immune to coronary heart disease, should go on such a restricted diet was not explained. Meanwhile, other complex, interlinking causes of coronary heart disease like lack of exercise, obesity, stress, genetics and caloric intake went largely ignored. Fat was the culprit. Any possibility that dietary fat could be utilized in the cause of good health and physical performance was conveniently dismissed.

As a result, people began eating those carbs. They began watching what they ate. Above all, they became aware of the fat they were eating and did their best to avoid it like a plague. And, guess what? As a society we got fatter than ever. We're getting fatter all the time. The heart attack parade hasn't stopped. What's wrong with this picture?

Meanwhile, bodybuilders didn't seem to be getting the kind of growth they were looking for from all those carbs. Sure, they got big. But they also got fat. By contest time, they were most often right about where they'd been before they started the whole diet cycle. The siren song of steroids became ever more inviting.

But now, you've got an alternative. A healthy and effective one. It's called the Metabolic Diet and it's been striking telling blows against the Lords of Lowfat and getting bodybuilders the growth they want without all that added bodyfat. In this chapter we'll outline the many benefits to be gained from the Metabolic Diet and begin to look at the reasons why it works. By its end, I don't think you'll be too tempted to return to the old grind of that high carb diet.

Physical Benefits

Increasing Lean Body Mass WITHOUT Anabolic Steroids: This is one of the real big advantages of the Metabolic Diet. As described in the previous chapter, the diet does many of the same things hormonally that steroids do, only naturally inside the body and without the risks.

Decreasing Bodyfat Without Sacrificing Lean Mass: Unlike the high carb diet, when you gain weight on the Metabolic Diet much less of it is bodyfat and much more of is muscle. We've found that, far from what you've been led to believe, eating fat doesn't lead to getting fat. In fact, high dietary fat is instrumental in increasing lipolysis or the breakdown of fat and the resulting loss of bodyfat. We've also found that the bodybuilder will maintain more lean body mass during the cutting phase of a diet.

On the high carb diet, if you exercise correctly and do everything else right, you'll find that when you lose weight about 60 percent of it is fat and 40 percent muscle. You may get down to your optimum weight and be ripped but you're much smaller than you could be. On the high fat diet, we've found those percentages go way down to 90 percent fat and 10 percent muscle and that's a real boon for the bodybuilder who wants to maintain muscle as he cuts down. With the high fat diet you get down to the weight you want but find yourself maintaining a lot more lean body mass. You're bigger and stronger.

Take two athletes, one on the high carb diet and one on the Metabolic Diet, have them gain 10 pounds and you'll find the one on the Metabolic Diet gaining the larger percentage

of muscle. Likewise, when you lose weight the athlete on the Metabolic Diet will lose far less muscle than the athlete sold on high carbs. Which diet would you rather be on?

Feeling Stronger While Losing Bodyfat: This stands to reason. Strength is proportional to muscle mass. When you're on the high carb diet sacrificing lean mass to get cut, you're obviously going to feel weaker. Because the Metabolic Diet cycles in a carb loading phase every week to stimulate insulin production and trigger growth, you also don't find yourself getting into the psychological doldrums you get following one diet all the way through each week. There's a variety in your diet and this will aid you in being more energetic and committed than you'd be on the high carb diet.

Maximizing The Effects of Endogenous Anabolic Hormones: This diet maximizes the serum levels of testosterone, growth hormone and insulin to promote growth. It basically conditions your hormonal system to create an endogenous (natural) anabolic (growth producing) environment. It tries to maximize the effect of these 3 anabolic hormones 24 hours because, contrary to popular belief, you don't only form muscle after a workout but during a workout as well.

This isn't easy. Many hormones are reactive to others. For instance, as insulin goes up growth hormone may decrease. If insulin decreases, growth hormone will increase. The two substances generally don't work together but they can. If you can increase both substances, you'll get a better anabolic effect than with an increase in one substance alone.

Later we'll provide some supplements that you can use with the Metabolic Diet that will help in increasing insulin, testosterone and growth hormone as needed. You'll find 2 of our formulas to be targeted for use before, during and immediately after your workouts. This is especially important because of the decrease in serum testosterone and growth hormone that can occur during and after a workout.

At the cellular level in the body, you need the anabolic hormones elevated so they'll drive amino acids into the cell for protein formation. That's how you get growth. The Metabolic Diet, the weekly cycling it incorporates and supplements will work to do this before, during and after your workout.

Increase In Strength: People on the Metabolic Diet often find that, as they're losing weight and bodyfat, strength increases. Most bodybuilders find this amazing. They know that when they lose weight they're also losing muscle and strength. But with the Metabolic Diet they're losing far less muscle and that, in combination with the fact that their body is working in an anabolic environment, makes them feel stronger. They can't believe it as the watch the fat melt away while their strength increases at the same time.

Decrease In Catabolic Activity In The Body: The Metabolic Diet results in lower levels of cortisol, a hormone secreted by the adrenal glands that breaks down muscle (catabolism) and uses it for energy. The supplements we'll be adding to the diet will also decrease muscle breakdown during and after the workout while increasing insulin and growth hormone levels at critical times to promote an anabolic effect. Put simply, you'll be breaking down less muscle while adding more.

PHYSICAL BENEFITS OF THE METABOLIC DIET

-Increasing Lean Body Mass Without Steroids

-Decreasing Bodyfat Without Sacrificing Lean Mass

-Maximizing The Effects Of Endogenous Anabolic Hormones

-Increasing Strength While Losing Bodyfat

-Decreasing Catabolic Activity In The Body

-Avoiding The Health Problems Of The High Carbohydrate Diet

-Staying In Shape Year Round Instead Of Peaking Once Or Twice

-Improving Contest-to-Contest And Year-to-Year/No Plateaus

-Endurance Increases

Avoiding General Health Problems Associated With The High Carbohydrate Diet:
Carbohydrates will increase insulin levels and thus produce an anabolic (muscle building) effect when used properly. In the Metabolic Diet, we use a carbohydrate loading phase on the weekends to do just that. But when insulin is chronically high or yo-yos up and down due to a diet consistently high in carbs, it becomes a lipogenic (fat producing) hormone and begins to lay down fat on the body and plenty of it. That's why it must be controlled. You'll note that on the Metabolic Diet the individual will increase carbohydrate consumption on the weekend only to the point when he begins to lay down fat. Then its back to the high fat diet before any damage is done.

This is why you tend to lay down so much more fat on a high carb diet. With insulin uncontrolled, you lay down fat indiscriminately. The chronic elevation of insulin also tends to deposit that fat in the thighs and other fat-plagued areas of the body causing the cellulite buildup that drives women especially crazy.

The increase in plaque buildup in the arteries that leads to heart attacks also appears to be a symptom of the chronically high carb diet. If you stay away from the simple sugars and junk food you can limit the damage, of course. It would be hard to severely criticize someone who eats a lot of vegetables, salads and potatoes.

Still, all those carbs will lead to fat buildup unless you regulate it as we do in this diet. Carbs are only increased to the point that they will have a beneficial effect on lean body

mass. By spiking insulin production through carb loading on the weekends we can speed the movement of nutrients through the bloodstream and into muscle. Amino acids are driven into muscle cells where they can form the building blocks for protein and ultimate muscle growth. But before the insulin levels have been elevated too long and fat begins to be laid down in bulk, the carbohydrates are cut off and insulin brought under control.

Staying In Shape Year Round Instead Of Peaking Once Or Twice A Year: The Metabolic Diet allows you to stay in shape year round. It's not a diet where you bulk up and then cut body fat and the process becomes so painful and difficult that you can't maintain the diet. As such, it's not one of those low-fat diets where you struggle mentally and physically all through the year and can't help but go on and off it out of sheer exhaustion and frustration.

The Metabolic Diet is a lifestyle. One that you can keep up year round. It's very comfortable because it's natural. It punctuates high fat periods with regular carb sessions in much the same manner as our ancient ancestors' diet.

You also don't give up anything on this diet. You can have that meat and cheese on the weekdays and on the weekends load up with your favorite carbs. It's not torture like most other bodybuilder diets. You want to party and have a beer on the weekends? Go ahead. All foods are available, albeit at the right time of the week, on this diet.

Meanwhile, if used properly, this diet will allow you to keep your fat somewhere around the 10 percent level consistently and cut to a 4-5 percent as needed while maintaining lean body mass. There won't be those marathon cutting phases and you'll find yourself getting into competition shape very quickly.

And, if you responsibly follow the diet and stay with it, each time you go through the cycle or complete your pre-contest phase you should come in heavier and at least as cut as you were at the end of your last cycle. Instead of plateauing as so many bodybuilders do, you'll improve contest to contest and year to year.

Endurance Increases: We've also found that for many athletes endurance actually increases on the high fat diet. Again, this runs counter to popular belief that exercise endurance is related to the amount of carbohydrate stored in the muscle and that a low carb diet decreases performance.

In the high carb/low fat diet, the athlete begins training and the glucose in the blood is used almost immediately. At that point, the glycogen or carbohydrate stores in the muscle are used for energy. After 15 minutes or so, they're gone too. At that point your body has to revert to burning fat or muscle for fuel. Unfortunately, when you're on the high carb diet, your body isn't very efficient at burning fat and you end up burning about 50 percent protein (muscle) and 50 percent fat for your energy needs.

Once you've shifted over on the high fat diet, though, your body is primed to use fat for energy. Once the glycogen is gone, it will go primarily to those fat stores. Fat becomes almost like sugar to the body and it will favor utilizing fat stores over muscle stores for energy. In this way, less fat is stored by the body and more of it is used. The body is much

less likely to make fat and more likely to burn it off. A higher percentage of lean body mass is the result.

In one recent study, it was found that rats adapted to a high fat diet do not have a decrease in endurance capacity even after recovery from a previous exhausting work bout. The increased storage and utilization of intramuscular triglycerides (fatty acids) seems to be at the bottom of this condition2.

Maximizing The Effects of Endogenous Anabolic Hormones: This diet maximizes the serum levels of testosterone (even in women[1]), growth hormone and insulin (the Big 3) to help firm up and shape your body as you shed fat. If you're exercising, you'll be surprised at how quickly you'll be able to sculpt the body you want as these hormones work together.

This is one of the most remarkable effects of the Metabolic Diet and it doesn't come easy. Many hormones are reactive to others. For instance, as insulin goes up, growth hormone may decrease. If insulin decreases, growth hormone may increase. The two substances generally don't work together, but they can. If you can increase both substances, you'll get better results shaping your body and keeping it firm than with an increase in one hormone alone.

Later we'll provide some supplements that you can use with the Metabolic Diet that will help in increasing insulin sensitivity, testosterone, growth hormone and IGF-1 as needed. Some of you will be very serious about your goals and may be seeking to take the advanced path a bodybuilder normally takes. Others will just be interested in keeping the body firm and shapely. Your approach to supplements and exercise will be largely determined by how far you want to go in remaking your body.

Whatever your goals, you'll find the Metabolic Diet an effective tool in taking the weight off, keeping it off and making your body look it's best.

Decreases In Catabolic Activity In The Body: By "catabolic" we mean forces that break down muscle and use it for energy. When existing muscle is broken down, your body will lose its tone and may become flabby. The Metabolic Diet, accompanied by proper exercise actually results in the body producing lower levels of cortisol, a hormone secreted by the adrenal glands that leads to catabolism. By lessening catabolism we insure that the body retains important muscle mass and tone while you lose weight.

It has been shown that the carb-loading phase of the diet results in decreased cortisol levels. In one experiment the hormonal effects of muscle carbohydrate loading manipulations followed by a carb poor diet were studied.[2] Carb loading provided decreased levels of cortisol not only during the carb-loading phase but also in the following carb-poor time period.

The Metabolic Advantage

At this point, a little biochemistry lesson may be in order so you can get a better idea of why the Metabolic Diet is superior to the competition. Adenosine triphosphate (ATP) is the source of energy for all metabolic activity in the human body. In order to get the energy the body needs for muscle contraction, breathing, brain cell function and virtually all other activities, ATP must be generated. People have gotten the idea that you must have the glycogen and the glucose that comes from carbohydrates for the body to produce and replenish ATP and survive.

What people don't understand is that the body can produce glucose without taking in carbs (gluconeogenesis) and that protein and fat can be used to provide energy and replenish ATP. It is a misconception that you must have dietary carbs to function. This is likely only true in some cases where a person may be genetically challenged as far as utilizing fats efficiently. And even in these cases it’s unlikely that there will be a need for the extremely high levels of dietary carbs now being called for by various groups and agencies.

When carbohydrates make up the bulk of your diet, you basically burn the glucose from the carbs as energy. Glucose enters the bloodstream and it's either used for immediate energy or stored as glycogen in the liver and muscles (remember our discussion of insulin earlier?). The glucose not stored as glycogen is made into triglycerides (bodyfat). When needed for energy, the stored glycogen is converted back to glucose and used up directly by cells or transported through the bloodstream to other body cells for conversion and use as energy.

When fat and protein make up a greater part of your diet, you don't have those large amounts of glycogen or glucose available for energy anymore. A good part of your energy will come from the breakdown of free fatty acids in your diet or from the fat stored on your body. As we discussed, some of the energy will come from glucose that is produced mainly from glycerol and amino acids. Instead of burning all the stored glycogen or glucose for energy, the body burns free fatty acids or triglycerides (the storage form of the free fatty acids) and the glucose that it makes.

Basically, a diet high in fat activates the lipolytic (fat burning) enzymes in your body and decreases the activity of the lipogenic (fat producing) enzymes. Dietary free fatty acids and triglycerides become the body's main energy source. The triglycerides are broken down to free fatty acids and some of the fatty acids are metabolized to ketones, which in turn can be used for energy by body cells. The use of ketones for energy is especially important to the brain that can only use glucose and ketones for energy. In short, the free fatty acids and ketones take the place of glucose and the triglycerides act like glycogen.

When carbs are the main form of energy to the body, the body produces insulin to process it and store it. This is all well and good but, as we discussed above, one of the problems with insulin is that it activates the lipogenic (fat producing) enzymes on the body and decreases the activity of the lipolytic (fat burning) enzymes. What this leads to is an increased storing of body fat and a decrease in the amount of stored fat that will be burned.

The exact opposite occurs on the higher fat/lower carb diet. After undergoing the "metabolic shift" from being a carb-burning machine to a fat-burner, lipogenesis (the production and laying down of fat on the body) decreases, and lipolysis (the burning of both dietary and bodyfat for energy) increases. You're burning fat as your primary fuel, and instead of using glycogen or breaking down precious protein, you'll burn off the fat on your body for energy as needed.

This can have a big effect on overall bodyfat, and research documents the fact that while on a higher fat lower carb diet, weight loss is due to the almost exclusive loss of bodyfat.[3] In one study of ideal-weight human subjects, it was found that higher fat diets were accompanied by a very strong lipolytic (fat-burning) effect.[4] In another study focusing on obese subjects, it was found that, when offered high-carb/relatively low-fat diets or lower carb/relatively higher fat diets, the subjects on the lower carb diets lost significantly more fat.[5] Though prevailing wisdom would predict that the higher fat diet would simply make people fatter, they actually lost more weight on a high fat diet.

It may sound crazy, but that's the way the body works. Contrary to what most people believe, fat oxidation is regulated primarily by carbohydrate intake rather than by fat intake.[6] Once you've adapted to a higher fat/lower carb diet, fat doesn't beget fat. Despite what you've been told, a properly designed diet higher I fat and lower in carbs doesn’t put fat on. It takes fat off.

Similar results have occurred in animal studies.[7,8] Meanwhile, I've seen the positive effects of a higher-fat diet time and time again in my own practice. The fat melts away. At the same time, as a bonus, body tone can be improved markedly thanks to the "protein protecting" nature of the diet.

Protecting Protein

One important by-product of the "metabolic shift" that takes place when you move from a high carb to a good, higher fat/lower carb diet is that fat protects protein in the body. When you're utilizing carbs as your main source of energy, the body tends to save its bodyfat and will preferentially take muscle protein, break it down and form glucose from it to burn as energy when the immediate energy stores are exhausted. This is why on a high-carb diet a significant amount of muscle catabolism can take place.

Exercise should play a role in any diet. Every doctor or fitness expert will tell you that. If you want to come anywhere close to getting the kind of weight loss you want and shaping up your body, exercise is a necessity. Unfortunately, with the high-carb/low-fat diet, once you've exhausted carb based primary and secondary energy stores you're going to start burning some muscle for fuel when you're working out.

The fact is that anytime you're exercising and the body needs energy it will break down what it needs, including muscle, to supply that energy. One of the ways athletes fight this is to sip glucose drinks during a workout. The body won't need to break down muscle as much for energy because it has an outside source of energy constantly coming in. The problem here is that with the constant glucose ingestion you get chronically elevated levels

of insulin and a decrease in the oxidation of bodyfat. Instead of losing fat by exercising you're actually preserving it.

Fat works in the same way as glucose when you're on the Metabolic Diet. It protects the muscle by serving as an alternative, more available source of energy and it does this without having to take in more calories since the body has learned to oxidize body fat to provide that needed energy. So now when you exercise you don't need to take in carbs to spare your muscles. Your body will burn up your excess bodyfat to provide the energy it needs to exercise at the same time sparing muscle protein.

On the high-carb diet you may find yourself in a gym, happily working away, but you'll be sacrificing muscle in the effort. If you look around you'll find examples of people who seem to be at the gym all the time, working on the treadmill or step machines and doing some weight training, but they just don't look the way they should.

They may be slender, but their bodies lack tone and they're stringy or shapeless. With all the work they're doing they should be looking like one of the covers of the magazines they've got in front of them while they walk the treadmill but they're actually burning off muscle and sacrificing tone. You can bet they're not on a higher fat/lower carb diet.

The Metabolic Diet works against this tendency. Some muscle will be burned, but available fat will serve as an alternative to muscle as an energy source so a minimal amount will be lost.

What we're concerned with here is "catabolism" or the breakdown of muscle tissue. Again, I know it may sound strange, but although most people think that exercise only creates muscle it also breaks it down. Research upholds that the Metabolic Diet could well also be called the "Anti-Catabolic Diet." Along with enabling the body's hormonal system to better burn fat it decreases the amount of muscle that could be lost during a workout or just during day to day activities, by protecting muscle protein. This is very important to someone wanting to shape his or her body for maximum attractiveness and fitness.

Research has shown that the ketone bodies (beta-hydroxybuterate and acetoacetate) burned for energy in a higher fat/low-carb diet, actually decrease protein catabolism.[9] A recent study with laboratory rats also showed that a combined treatment with insulin, testosterone and a high fat/high protein diet led to decreased loss of muscle protein caused by the catabolic hormone corticosterone.[10] Another showed higher protein gains and lower fat gains for rats on a high-fat diet.[11] The implications for similarly decreased catabolism in humans with the higher fat/lower carb diet are obvious.

In my own practice, I've also noticed that bodyfat seems to be more mobile when the Metabolic Diet is being used. As discussed above, when you begin to lose weight you often have a very hard time losing it in problem areas like the thighs, buttocks and stomach. Weight seems much more evenly lost throughout the body on this diet. Problem areas are much more easily attacked.

Recently I've been working with a patient who, throughout her life, has maintained a large store of fat in the buttock, inner thigh and lower abdomen areas. Whenever she diets she gets skinny from the waist up but doesn't lose much from the waist down. No diet has ever

successfully slimmed these areas. But with the Metabolic Diet she's lost fat evenly throughout these areas. Much of the cellulite that has bothered her throughout her life has disappeared and this has only aided in motivating her to take her weight loss and maintenance efforts further.

Fat distribution also seems more evened out with the Metabolic Diet. What fat remains on the body seems to be distributed more equally on the frame. You just don't have those pockets of fat that plague people. Fat is distributed in a more pleasing ratio across the body making any bodyshaping efforts on your part that much easier.

Metabolic Benefits of the Metabolic Diet

1. **Burning Fat Instead Of Glucose Promotes Lipolysis (Fat Breakdown)**

2. **Burning Fat Instead Of Glucose Decreases Lipogenesis (Fat Production)**

3. **Without Dietary Fat, The Body Stores Fat In Excess**

4. **Muscle Protein And Body Tone Are Protected**

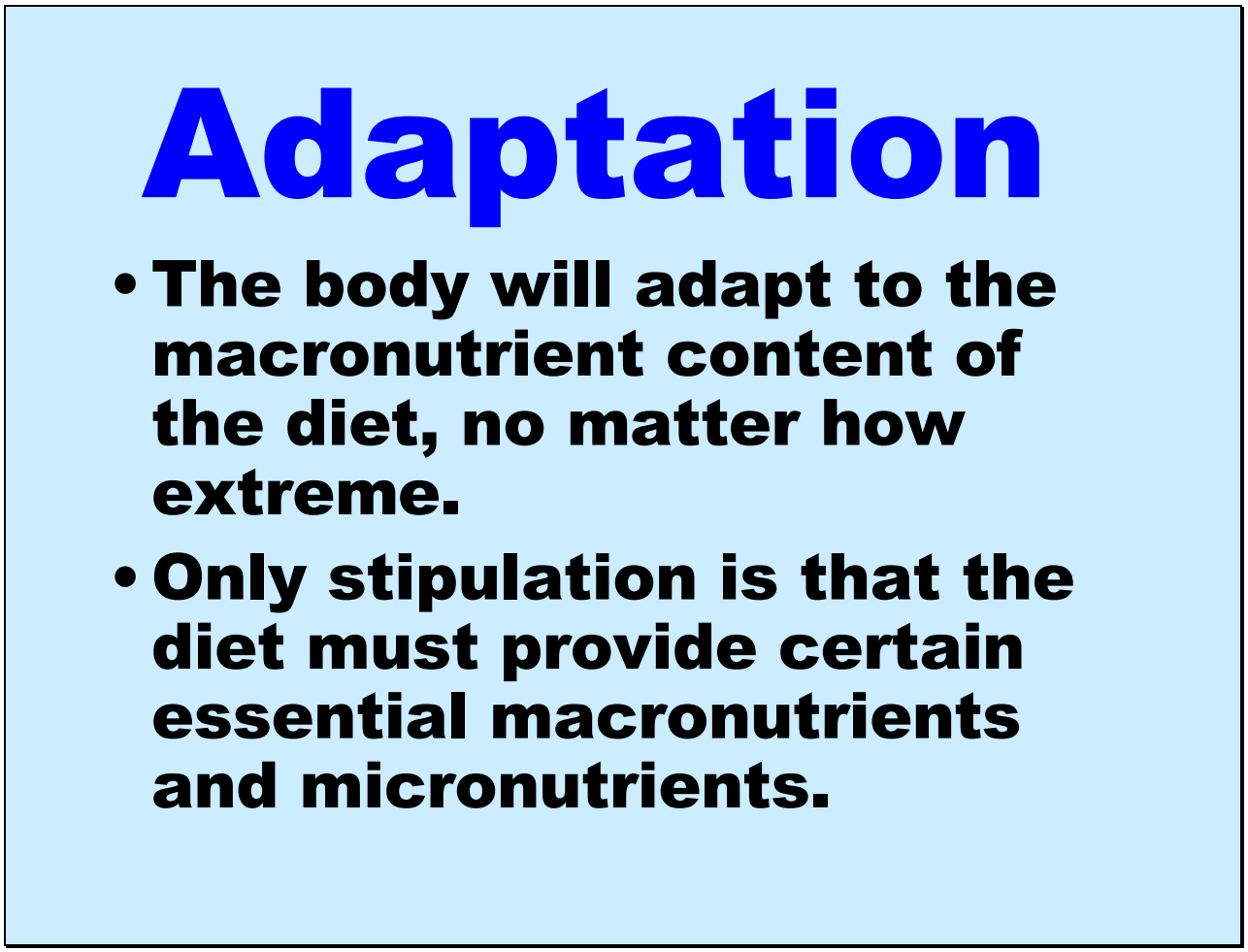
5. **Bodyfat Is More Mobile And Pleasingly Distributed**

Chapter Three

Why It Works

The Metabolic Diet Works because it changes some of the basic metabolism in your body so it becomes a fat burning machine. Cellular metabolic flux (as we'll illustrate) is dramatically altered when we change the dietary macronutrient content. Some pathways become more active than others and some processes dominate in the production of energy.

In all cases, the body will adapt to the macronutrient content of any diet as long as the diet provides certain essential nutrients.



First of all it's important to realize that there are no essential sugars or carbohydrates. Also the reasons given for why we need carbohydrates are faulty. For example one of the main reasons is that the brain depends on them to function properly. In fact lactate is the preferred substrate for neurons and these brain cells can also metabolize ketones effectively. As well, other cells in the central nervous system cater to the main brain cells

and supply them with energy derived from other nutrients. For example it has been shown that astrocytes shuttle nutrients to neurons.[1213]

THERE ARE NO ESSENTIAL SUGARS OR CARBOHYDRATES

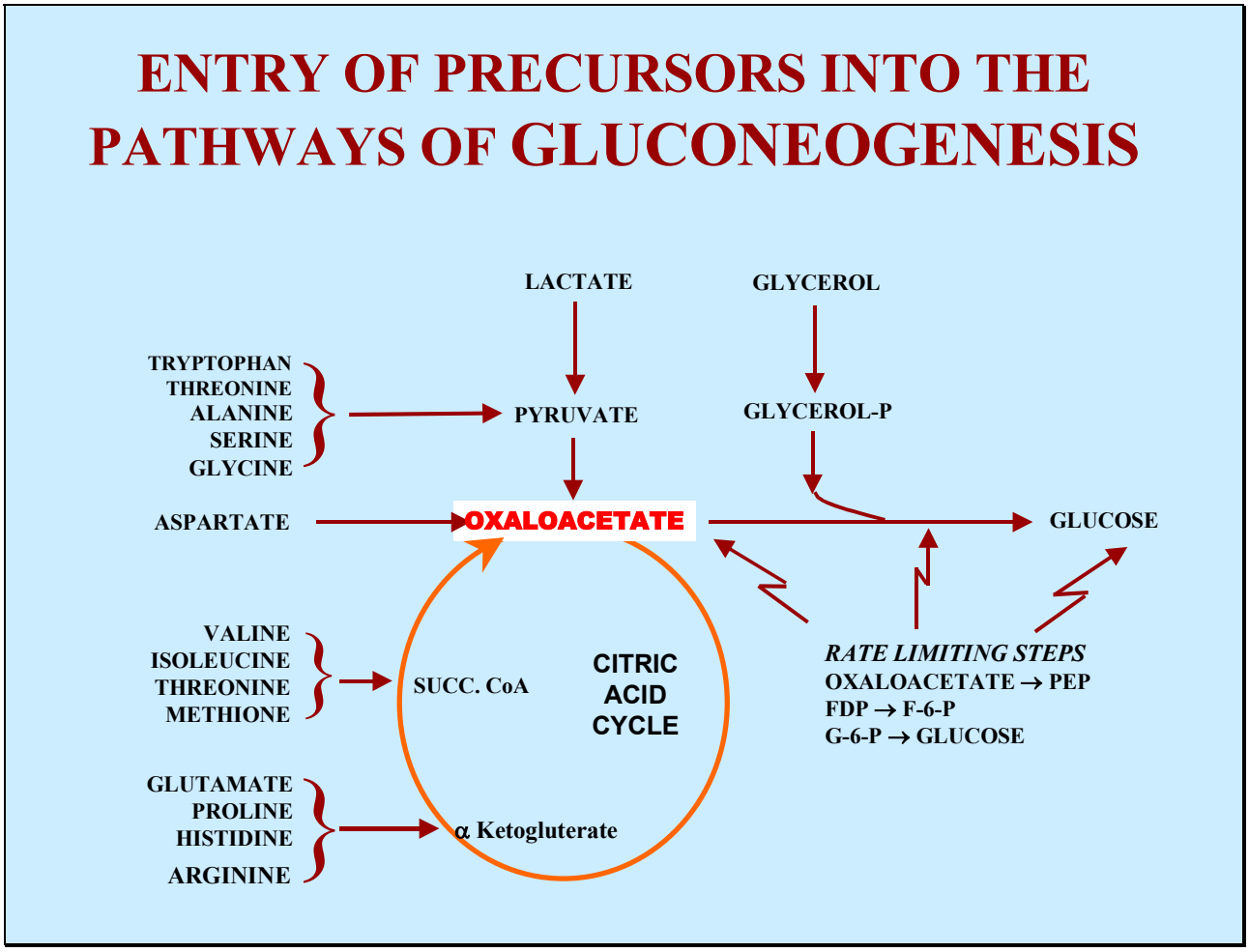
- **There are essential and conditionally essential amino acids and essential fatty acids.**
- **But no essential carbs because like the non-essential amino acids and fats, the body can produce glucose and carbohydrates endogenously.**

So Why Do We Need Carbohydrates?

- Most Common Argument is that they're Necessary for the Brain. **Not So!**
- Brain can metabolize lactate and ketones as well.
- **Lactate (and other nutrients) also shuttle from astrocytes to neurons.**
- Also, glucose can be produced as needed.

Also glucose can be produced as needed by a process called gluconeogenesis. In this process other nutrients, including amino acids and glycerol (the backbone that makes up much of our body fat) can be converted to glucose or used directly as energy.

Although somewhat complicated, the Figure below shows how the body produces glucose internally from other substances including the amino acids, glycerol (source can be from the breakdown of body fat or from the diet), lactate, and pyruvate.

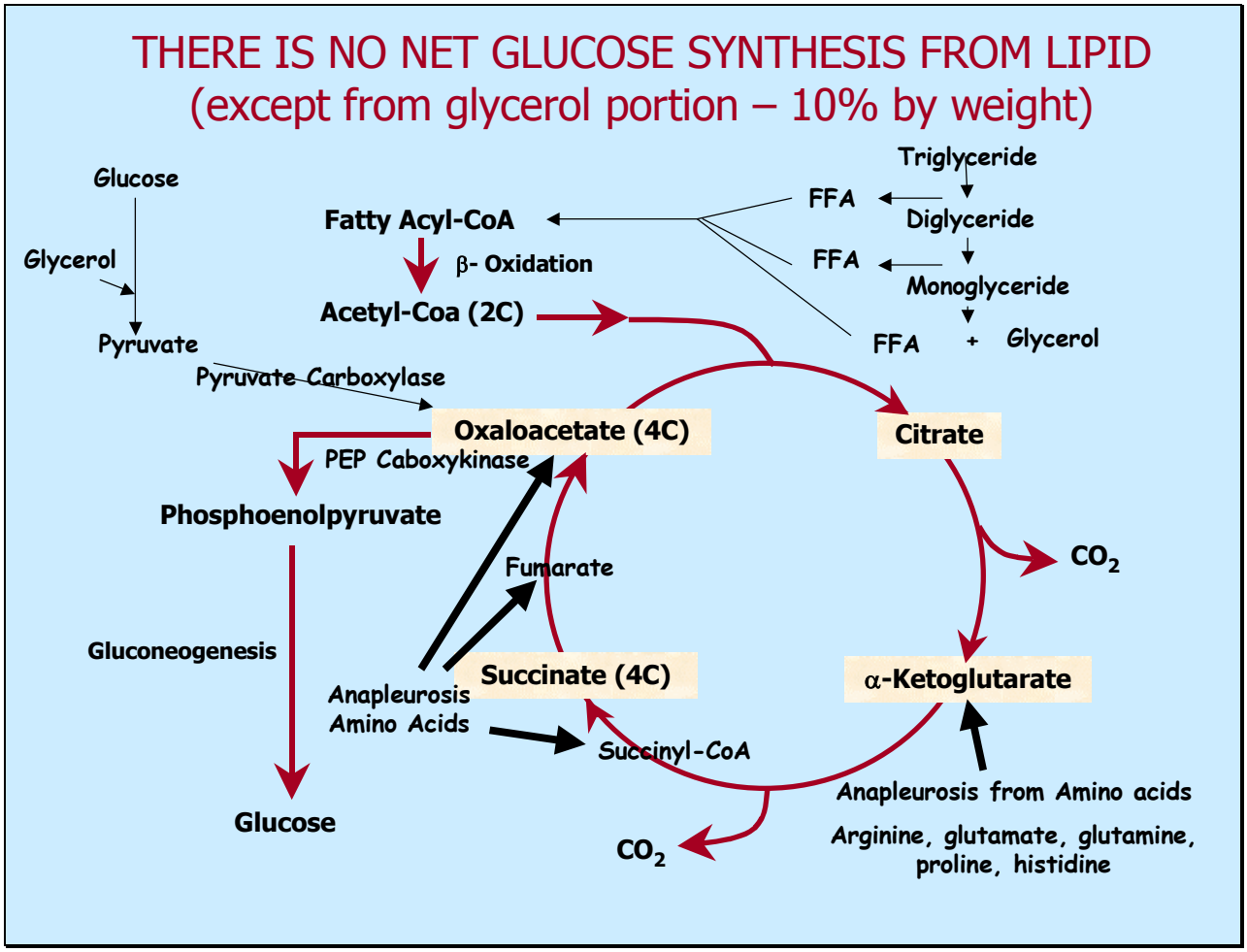


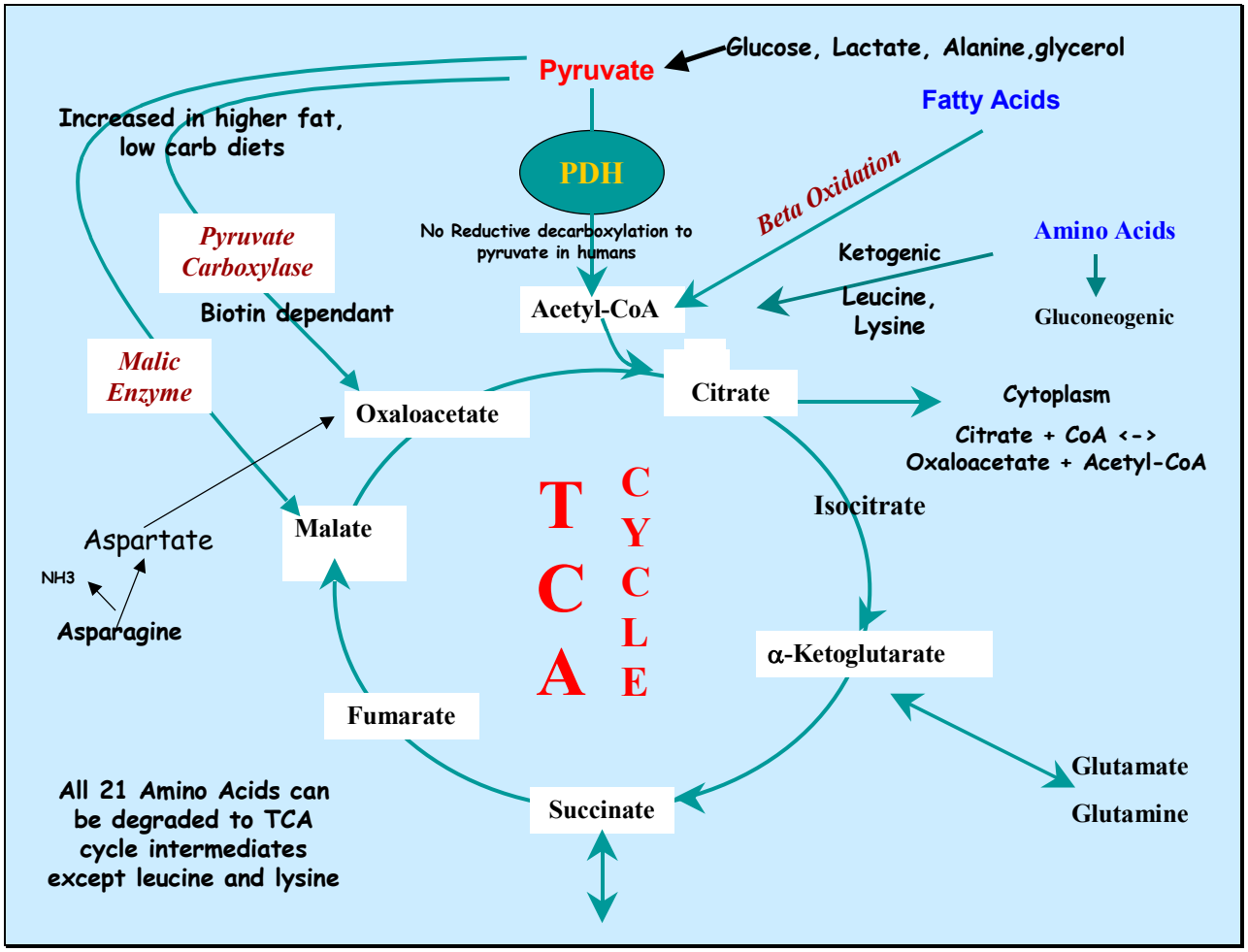
Because there are common pathways for the metabolism of all three macronutrients, variations in the macronutrient content results in adaptations that will allow the efficient production of compounds and substrates for energy production and body maintenance.

Common Pathways for Macronutrient Metabolism

- **Regardless of the macronutrient mix the end results and the final pathways are the same.**
- **Interconversion of macronutrients, usually at some energy cost (conversion of protein to fats), and with some exceptions (inability to produce glucose from free fatty acids – although you can, to a limited extent, with triglycerides and body fat), is ubiquitous.**

These next two diagrams shows how glucose, free fatty acids, glycerol and amino acids are broken down to provide energy.




Glucose, Lactate, Alanine,glycerol
Pyruvate
Fatty Acids
Increased in higher fat, low carb diets
PDH
No Reductive decarboxylation to pyruvate in humans
Beta Oxidation
Pyruvate Carboxylase
Biotin dependant
Amino Acids
Ketogenic
Leucine, Lysine
Gluconeogenic
Acetyl-CoA
Malic Enzyme
Oxaloacetate
Citrate
Cytoplasm
Citrate + CoA <-> Oxaloacetate + Acetyl-CoA
Isocitrate
Aspartate
NH3
Asparagine
Malate
TCA CYCLE
α-Ketoglutarate
Fumarate
Glutamate
Glutamine
Succinate
All 21 Amino Acids can be degraded to TCA cycle intermediates except leucine and lysine

The Metabolic Diet controls the major muscle building and fat burning hormones in the body to maximize muscle mass and minimize body fat.

These hormones include testosterone, growth hormone, IGF-I, insulin, thyroid, and cortisol.

Regulating Lipolytic Activity

Major hormones are:

1. Catecholamines (epinephrine and norepinephrine)
2. Insulin
3. Glucagon (more in forming ketones)
4. Growth Hormone
5. Testosterone

The Metabolic Diet also increases the activity of hormone sensitive lipase (HSL), the enzyme that breaks down body fat (lipolysis).

Hormone Sensitive Lipase (HSL)

Adipose tissue lipolysis is stimulated through a cascade of cellular signals, resulting in activation of HSL.

But controlling the formation (lipogenesis) and breakdown (lipolysis) of body fat isn't enough. We have to insure that the fat that is broken down is also used up by the body for energy (beta oxidation or fat oxidation) rather than used simply to reform body fat.

Beta Oxidation of Fatty Acids

The Other Side of the Fat Equation

Lipolysis is of no use if the fatty acids are not used up. A paradox.

Not only does the Metabolic Diet increase fat breakdown but it also increases the use of fat as fuel for the body's energy needs. It does this in part by increasing GH, IGF-I and testosterone levels and partly by controlling the increase and sensitivity of insulin

Increase in both lipolysis and fat oxidation.

Must have both otherwise may be counter productive.

For example, a recent study shows that ephedrine like compounds increases lipolysis but decreases fat oxidation so that overall effect may be an increase in body fat.

Mora-Rodriguez R, Hodgkinson BJ, Byerley LO, Coyle EF. Effects of beta-adrenergic receptor stimulation and blockade on substrate metabolism during submaximal exercise. Am J Physiol Endocrinol Metab. 2001 May;280(5):E752-60.

The Metabolic Diet also increases the anabolic and anticatabolic hormones in the body including growth hormone, IGF-I and testosterone (including an increase in the androgen receptor and binding).

How It Works

The Metabolic Diet – Fat Burning and Muscle Sparing.

The Metabolic Diet works because it:

- Switches your metabolism to burn fat instead of carbs as its primary fuel.
- Maintains the fat burning as you drop calories so that the energy needed is obtained mainly from body fat not glycogen or muscle protein.

- Spares protein and maintains or allows you to build muscle mass.

The first step in the Metabolic Diet is switching your metabolism to burning fat as its primary fuel. This is done by limiting dietary carbohydrates and providing ample dietary fat. During this adaptation stage you don't really need to change your normal caloric intake. Simply substitute protein and fat for your former carbohydrate calories.

The second step, once you're fat adapted, is to vary your calories to suit your goal.

To increase muscle mass you increase your daily caloric intake by increasing fat and protein in your diet.

To lose bodyfat while at the same time maintaining muscle mass, you slowly decrease your caloric intake and at the same time your fat intake. By providing less calories and dietary fat, your body will use its fat stores, not muscle, more and more to make up any energy deficits. In some circumstances, because of lower dietary fat levels, your diet may contain only moderate or even low levels of fat, mainly in the form of the essential and monosaturated fatty acids.

The Metabolic Diet Works Because

1. **Learn to burn fat instead of carbs.**
2. **Body continues to prefer fats as you drop calories, mainly in dietary fat and some carbs. Always keeping protein high to spare muscle.**
3. **As calories drop, body fat becomes the main fuel even if you lower dietary fat dramatically.**

Also

- Cycling from low carbs, high fat to high carbs and lower fat manipulates the anabolic and fat burning hormones and processes in the body to maintain or increase muscle mass while at the same time decreasing body fat.

Remember

1. You teach the body to burn mainly body fat in preference to carbs and protein.
2. By shifting from a low carb diet on weekdays to a higher carb diet on weekends, you manipulate the muscle building and fat burning processes and hormones.

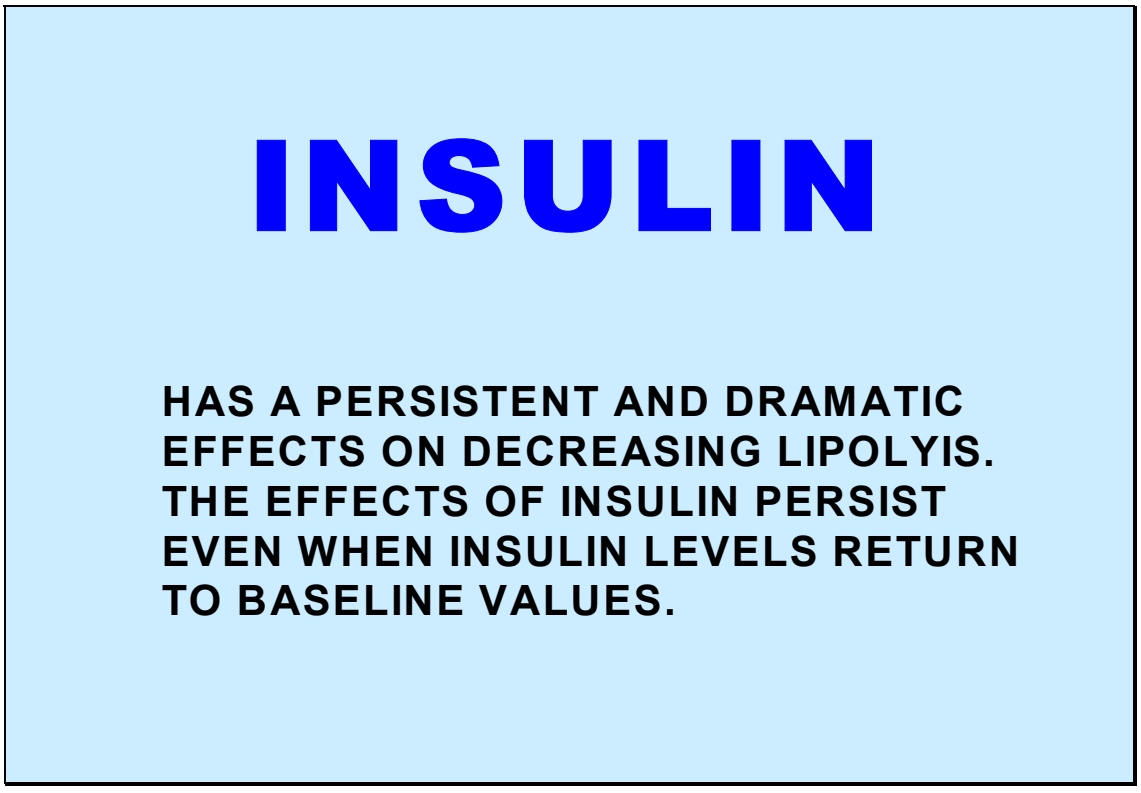
Chapter Four

The Metabolic Diet Plan

In this section, we'll learn how the Metabolic Diet can be used to maximize strength and lean body mass, while in later chapters we'll cover the details on how to use the diet in the various training phases. But first, although we covered how and why the Metabolic Diet works in the previous section, let me clear up a few misconceptions about the diet some people may have.

Insulin

First, let's make it perfectly clear that, unlike other diets that espouse a constant low carb intake and consider it as such, insulin is not the enemy. We're not mounting a campaign against it. In fact, it's only a problem when it's chronically high or yo-yo's such as it does on a carbohydrate-based diet.



In fact in the Metabolic Diet we make use of the anabolic effects of insulin while at the same time avoiding it's bad effects on bodyfat and insulin sensitivity.

Unchecked, insulin adversely effects body fat by decreasing the breakdown and increasing the accumulation of body fat. What you want to do with insulin, and what this diet focuses on, is to increase it at the appropriate time and place so it works to add muscle mass and maximize it's anabolic potential by, among other things, increasing the flow of amino acids into muscle cells.

Insulin Must be Controlled

- **Beneficial effects of insulin on protein synthesis and muscle metabolism.**
- **Beneficial effects of insulin on glycogen supercompensation.**
- **Counter productive effects of decreased lipolysis and increased lipogenesis.**

What we don't want is fat built up at the same time. That's why insulin secretion is controlled and limited. Instead of the chronically elevated insulin levels of the high-carb diet, the Metabolic Diet carefully manages insulin during the dieter's week so you get it’s anabolic benefits without packing on all that unwanted fat.

Controlling the Effects of Insulin

- **Only allowing controlled increases in insulin for the desired effects on protein synthesis.**
- **Attenuating the effects of insulin on lipolysis and lipogenesis.**
- **Accomplished by pulses of insulin and controlled insulin increase at variable times on weekends.**
- **Increasing GH (and testosterone) at the same time as insulin. For example prior, during and after training.**

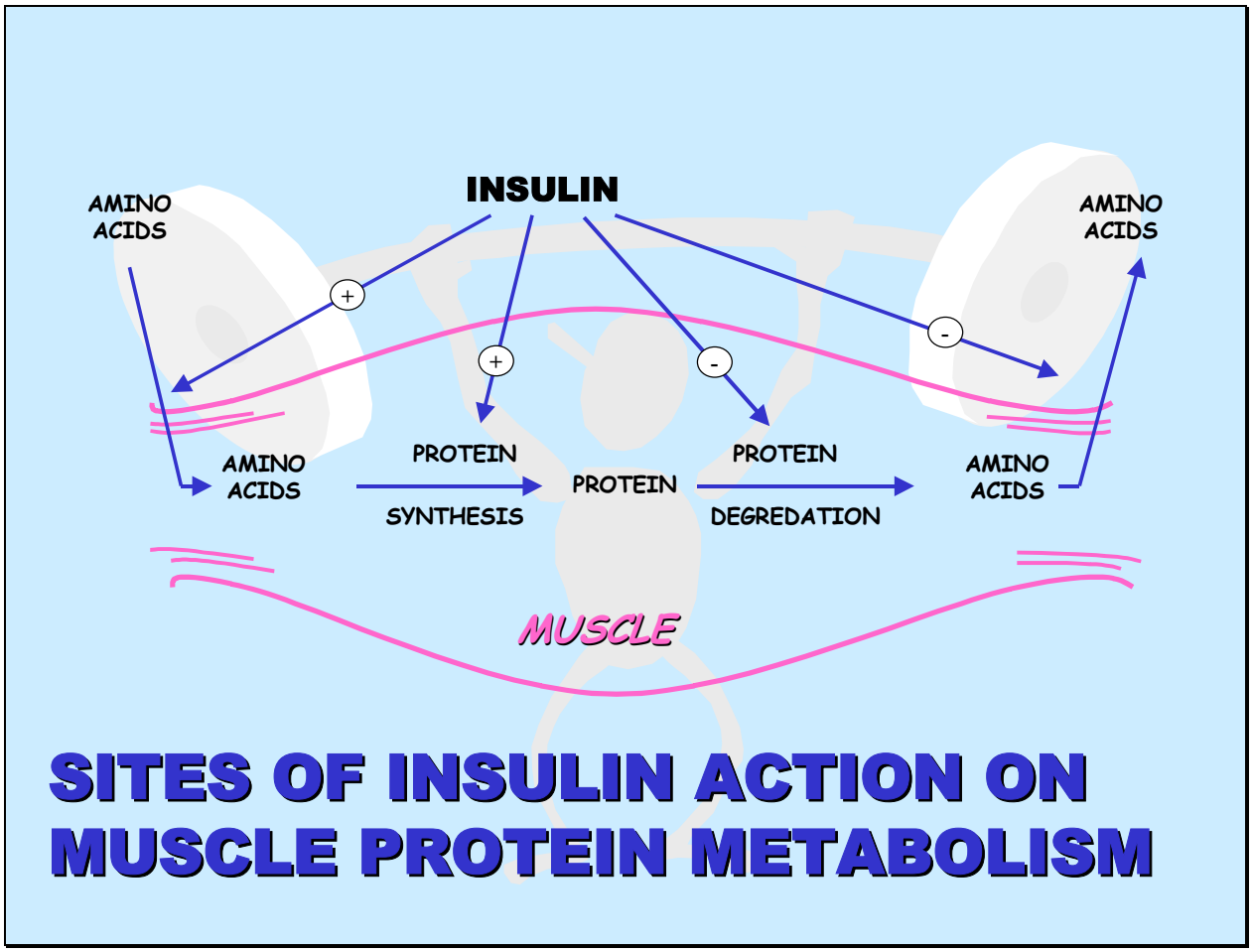
Another plus of the Metabolic Diet is that there is a decreased effect of insulin on fat metabolism even during the carb-up phase.

Effects of Insulin on Fat Metabolism

- After the phase shift on the Metabolic Diet there is a decreased effects of insulin on fat metabolism

EVEN DURING THE CARB-UP PHASE.

Insulin also works its anabolic magic hand in hand with testosterone and growth hormone (GH). GH is very important because of its positive effects on increasing protein synthesis and decreasing muscle breakdown. During the weekdays when you'll be on the higher fat/higher protein/lower carb portion of the diet, insulin levels stay fairly steady and don't fluctuate wildly, and growth hormone secretion increases. Along with stimulating a great environment for body shaping, GH also induces cells to use fat instead of sugar for energy thus increasing the burning off of bodyfat and limiting its production.



Growth hormone acts almost like a "starvation" hormone. When your body's in trouble or when you're threatened or in a dangerous situation, GH kicks in to mobilize stores of energy in the body to deal with stress and increased energy needs. GH levels also increase under the stress of exercise.

Usually insulin works to decrease the secretion of GH, but it appears that the body sees the great increase in carbs and insulin during the weekend portion of the Metabolic Diet as a stressful situation, much like exercise, and GH can actually increase with insulin. In this way, we potentially can get the positive effects of increased growth hormone both during the week and on at least part of the weekends.

Testosterone, Growth Hormone and Insulin-Like Growth Factor I (IGF-I)

Metabolic Diet Increases Growth Hormone, IGF-I and Testosterone

- Increased GH and IGF-1 secondary to decreased carb intake and amino acid effects.
- Increased testosterone due to higher fat, higher protein and lower carb intake.

Testosterone, also critical to increasing muscle mass and strength, responds well to the Metabolic Diet. Preliminary research in this area has found testosterone is positively linked to dietary fat. In one study, premenopausal women placed on low-fat diets experienced decreased levels of both non-protein bound estradiol and testosterone (although postmenopausal women didn't experience the same deficiency).[14] In another promising study, animals fed diets high in cholesterol or fish oil experienced increased testosterone production over those fed a low cholesterol diet containing linseed oil.[15]

Bioavailable Testosterone

- Increased by diets high in fat and protein.
- Decreased in Vegan diets (as is IGF-I)
- Decreased in diets high in carbs.
- Even decreased if soy protein substituted for meat protein. **(Habito RC, Montalto J, Leslie E, Ball MJ. Effects of replacing meat with soyabean in the diet on sex hormone concentrations in healthy adult males. Br J Nutr 2000 Oct;84(4):557-63.)**

A recent study showed that in older men the consumption of a meat-containing diet (like we recommend on the Metabolic Diet) contributed to greater gains in fat-free mass and skeletal muscle mass with resistance training than did an lacto-ovo vegetarian diet.[16]

Overall it has been my experience that there is an acute anabolic effect on muscle when a short-term lower carb diet is alternated with carb loading. Cellular hydration is maximized by the water and carb loading intracellularly, and insulin sensitivity is increased leading to an intense anabolic stimulus. Constant fluctuations make for an anabolic effect unparalleled by any other diet. This anabolic effect allows you to tone and shape your body as you lose weight.

Along with increasing the anabolic process in the body, it's also important to insure that the muscles you've developed aren't broken down. To do this you want to maximize the anabolic hormones such as testosterone and GH, and minimize the production and effects of catabolic hormones, the most critical of which is cortisol (cortisol also promotes fat storage). Much of this is done naturally through the Metabolic Diet. Since bodyfat stimulates cortisol production,[17] less cortisol is secreted, as bodyfat is lost.

Anabolic Action of The Metabolic Diet

- Increases in bioavailable testosterone and in the androgen receptor.
- Increases in GH, IGF-1 and IGFBP-3 and in tissue levels of IGF-1 isoforms.
- Decreased cortisol levels.
- In concert with controlled insulin increases.

Psychological Control

Along with the hormonal control, you'll also find the Metabolic Diet providing for psychological control. The wide mood swings and irritability you can get on a carbohydrate-based diet can also increase cortisone. In fact, psychological stress can be a prime component in its production.

The Metabolic Diet, in part by controlling insulin, can put a stop to the mood swings and irritability that plague the carb diets. It also minimizes the hunger, frustration and social stress created by other diets. Let's face it. Any diet can be difficult. It involves changing lifestyles and any change can be stressful. But the flexibility, convenience and simplicity of the Metabolic Diet go a long way toward getting rid of the stress that normally accompanies a diet.

The Importance Of Exercise

If you want to experience the maximum benefits from following the Metabolic Diet, you will need to exercise. Though it would be great to live in a world where you could go on a diet, spend the day in the living room couch and gain all the muscle and lose all the bodyfat and weight you want, this just isn't possible. And of course that’s what this book is all about.

The Complete Picture

If you're going to give the Metabolic Diet your maximum effort, you'll also need to get your training and nutritional supplements in gear. The diet itself -through the "metabolic shift" of changing the body over to a fat-burning machine instead of a carbohydrate-burning, fat-producing one — will melt away the bodyfat and give you the basics for creating a fit, attractive body. Exercise will give you a leg up on increasing muscle mass and decreasing bodyfat, while providing for good cardiovascular health and protection from heart disease. Supplements will give you that extra edge to help get the maximum anabolic and fat loss effects out of the diet and training.

These three tools used together - the Metabolic Diet, a solid exercise program and a savvy approach to nutritional supplements - provide a "can't miss" scenario for success. And to think it all occurs without the starvation and insanity that comes with the carb-based diets.

Getting Started

Before going on the Metabolic Diet you should get a complete physical from your doctor. You should also have some blood workup including complete a blood count, cholesterol levels (total, LDL, and HDL), TSH (a test for thyroid function), fasting blood sugar, serum uric acid, serum potassium, liver function array and BUN. Your doctor may want to go beyond this but he'll let you know if you should have more done.

Your Cholesterol

As far as the cholesterol issue, because you're burning fat for energy, much of the cholesterol and saturated fats that could cause a problem are used up in the process. Studies have even shown that along with increasing the utilization of fat as an energy source and providing for weight loss, the Metabolic Diet can even reduce serum cholesterol.[18]

In my patients, I've consistently found a reduction in serum cholesterol and an improvement in the cholesterol and triglycerides profile on patients who are on the Metabolic Diet and are losing or have lost weight.

A typical example is one patient who has been on the diet for two years. The table below outlines the changes in his lipid profile before he started the diet and after being on the diet for two years. During this time he has lost over thirty pounds while increasing his muscle mass, and presently weighs a muscular fit 200 lbs.

Table of Lipid Profile

	Nov-96	Normal Range	Nov-98	Normal Range	Comments
Total Cholesterol	236	160-240	220	175-260	Total Cholesterol Is Down
HDL	22	31-59	64	32-60	Good Cholesterol Is Up
LDL	191	90-171	141	104-179	Bad Cholesterol Is Down
Cholesterol/ HDL	10.7	<5	3.4	<5	Total Cholesterol To HDL Is Down
LDL/HDL	8.7	1.52-5.52	2.21	1.73-5.59	Ratio of LDL To HDL Is Down
Triglycerides	123	10-150	72	10-150	Triglycerides Are Down

As you can see his lipid profile improved dramatically while on the higher fat/lower carb diet. His lipid profile taken two years ago would have put him in the high-risk category for coronary artery disease while the recent lipid profile puts him in the very low risk category in all the parameters presently used to assess this risk.

In this case, the patient was not all that careful in the type of fats he ate and did not take any oil supplements. He relied heavily on red meat. While some improvement would be expected from the weight loss and exercise, it's obvious that being on the Metabolic Diet didn't adversely affect his lipid profile.

On the other hand, it never hurts to keep track on your cholesterol level whenever you change diets and even more so if you have or have a tendency toward a cholesterol problem. Cholesterol levels are largely determined by individual metabolism and body chemistry, and genetics play a strong role. If you've had cholesterol problems in your family there's a good chance you may have them, too. And if you have a chronic problem with cholesterol you need to talk to your doctor about how this may be affected by the Metabolic Diet, and what you can do to limit any adverse affects. Frequent monitoring of your lipid status will let you know where you stand and if changes need to be made.

There are a number of adjustments you can make to the Metabolic Diet to control your cholesterol intake if needed. Marine oils, flaxseed oil, olive oil and other nutritional supplements will help. Meat restriction may also be necessary. But, again, this is something you need to work with your physician on. If the Metabolic Diet seems like the answer to you, you'll have to put your heads together to devise a plan where you can benefit from the weight loss and toning advantages the diet provides while keeping cholesterol in check.

Also remember that the Metabolic Diet is as much a moderate to low fat diet as it is a high fat diet. It all depends on where you're at as far as the diet itself.

For example if your serum LDL and/or HDL levels are adversely affected by the diet at the beginning when you're adapting to burning fat as your main fuel, or when you're bulking up and taking in more fat, then the problem may correct itself as you modify the carb level to suit your metabolism or when you are in the process of decreasing your body fat such as when you go into a definition or cutting phase.

The solution to cholesterol levels that are worse on the high fat part of the diet is actually quite simple and is inherent in the way that I set up the Metabolic Diet. Keep in mind that the higher fat levels used initially in the Metabolic Diet are to help bring about the transition from carbs to fats as the main fuel for the body. Once this transition occurs fats are not as important as they once were.

In fact if you do follow a high fat diet to go through the initial fat adaptation or to bulk up, you must then lower the dietary fat levels as you shift gears to burn off that unwanted body fat. To do that you usually have to gradually drop your daily calorie intake, which means dropping your dietary fat intake since you obviously can't decrease carb intake much as it's already low, and you have to keep protein levels high to maintain muscle mass. Thus you have to lower your dietary fat intake progressively until you reach your goal. As such, the Metabolic Diet moves from a high fat diet to a moderate and even a low fat diet depending on how low you drop your daily calorie intake.

I've found that once fat adapted, lowering dietary fat, as long as carbs are kept low, doesn't change the use of fat as the body's primary fuel. The body simply goes from using dietary fat to using endogenous fat as the preferred fuel. And that's one of the primary goals of the Metabolic Diet.

So if you're having cholesterol problems, the solution is obvious. You have to decrease your intake of saturated fats as much as possible and make up any calories that you lack with foods high in polyunsaturated/monosaturated fats (making liberal use of flax and olive oil), and high protein, lower saturated fat foods (for example steaks are OK but you have to take off all visible fat. Cutting back on egg yolk consumption, keeping the egg whites, is also a good idea).

Keeping Track

Along with getting the physical and blood work we also urge you to weigh yourself and get a bodyfat analysis before you begin the diet. Scale weight loss is important but so are inches. You should understand that there are times when, for a variety of reasons, you might not be losing much scale weight but you're subtracting that unsightly bodyfat. It will help keep your enthusiasm high in these moments if you know that progress is being made in other areas and your body is toning up. I've devised the Metabolic Index™ to help you keep track of your progress. By plugging in your weight, height and bodyfat level, you'll get a good idea of whether or not you're losing bodyfat regardless of the changes in body weight.

In addition to keeping track of the Metabolic Index, you might also want to keep track of your body measurements. Especially important are your waist, hips, upper thigh, chest and upper arm. These measurements will give you an idea of how your body is responding to the diet and where you're losing weight the fastest. It will also give you an idea of where your problem areas may be and where you may have to concentrate exercise to get the body you want.

Secondly, measurements will be helpful for motivation when you're retaining fluid or not losing weight for some other reason and will complement the Metabolic Index. If you see those waist and hip measurements going down, despite the lack of weight loss, it'll show you, along with the changes you'll see in the Metabolic Index, that you're making progress.

Finally, you should review the use of any medications you may be on. If you're on diuretics, you may want to use them only as needed due to the higher fat/lower carb diet's ability to help you shed water.

Most Type 1 and Type 2 diabetics will usually have to adjust their insulin or oral diabetic agents, perhaps decreasing them during the low carb portion of the diet, and going back to their normal dosages on weekends.

You should check your glucose levels at various stages of the diet until you become familiar with the effect of the diet on blood glucose. It's important to check with your doctor and keep checking as you continue the diet and lose weight so that you are aware of your status and can make changes where needed.

The Diet – Where to Start

Although you can start the Metabolic Diet from two very different starting points I suggest that those who want to maximize strength and muscle mass and minimize bodyfat take the stricter, less complicated route. The original strict approach will allow you to most efficiently find your unique optimal dietary carb level.

The strict, low carb phase can last anywhere from two to several weeks and allows you to determine if you're an efficient fat user and as such can do quite nicely without too many carbs. If that's true, then you're all set to carry on with the low carb five day, two day phase shift regimen. By carefully monitoring how your body reacts to the carb level you're on and then making any necessary adjustments in carb intake, you'll eventually arrive at that magic dietary carb level that's just right for you. It's important to realize that the Metabolic Diet is not a static process but a dynamic progression in which you have to be actively involved in order for it to work. If you take an interactive part in the process you'll discover enough about yourself and your metabolism to achieve your fondest body weight and fat loss goals.

The initial part of the Metabolic Diet in which we determine just how your body functions under carb deprivation, is meant to be a testing ground for a person's capability for utilizing fat as a primary fuel. Those who are efficient fat oxidizers will do very well in this phase of the diet. Those who aren't may find that they won't be able to cope as well on this strict part of the diet and will do much better as the carb levels are raised in subsequent weeks.

The Metabolic Diet is designed to be a phase shift diet. That is, the weekdays are lower carb, while the weekend is higher carb. However, that's not the way it works in the first two weeks.

The best way by far to approach the first two weeks is to stay low carb for the first 12 days and then carb up on Saturday and/or Sunday. Doing it this way will give your body the incentive to make the shift from burning carbs to burning fat as its primary fuel. It will also tell you very quickly if you're totally unsuited for bottom level low carbing.

The Metabolic Diet - The Basic Steps
1. Replace the carbs you're eating now with protein and fat – don't change the calorie level at first.
2. At first, stick to the low carb phase for a full 12 days before beginning the high carb phase.
3. End carb loading the minute you start smoothing out.
4. Once you're fat adapted, change the calorie level depending on the training phase you're in.

Metabolic Diet
Ongoing

Once you're fat adapted (usually after the first two weeks)

Phase 1

5 Day Low Carbohydrate, High Fat, High Protein Diet.

Phase 2

12-48 Hours High Carb, Lower Fat Diet.

STRICT or ASSESSMENT PHASE

The Number of Grams of Carbs Allowed and the Percentage of Calories to Come From Fat, Protein and Carbs.

	Carbohydrate Intake	% Fat	% Protein	% Carbs
Weekday Maximum	30 Grams	40 - 60%	40 - 50%	4 - 10%
Weekend (12-48	No Real Limit	20 - 40%	15 - 30%	35 - 60%
Hour Carb Load)				

The initial, adaptation phase of the Metabolic Diet is really quite simple. It calls for a dedicated higher fat/high protein/low-carb diet from Monday all the way through to the following Friday (a total of 12 days) before carbing up.

The First Two Weeks

- **The Metabolic Shift Occurs From Lower Carb and Higher Fat Intake.**
- **5 days is enough – as shown in recent research.**
- **12 days is better.**
- **First carb load best on the second weekend.**

During that time, except for those who are exceptionally uncomfortable (fatigue, weakness etc.), you'll be limited to 30 grams of carbohydrates maximum per day. Fat should be set at roughly 50-60 percent and protein set at 30-40 percent. Follow this criteria during the initial 12-day phase of the diet and for the ensuing 5 weekdays of following weeks, assuming you're biochemically suited to this low level of carbs.

Guidelines for the Strict or Assessment Phase:
50—60 % fat
30—40 % protein
30 grams carbohydrates

Then, come the second Saturday and subsequent Saturdays, you perform the big turnaround. You go through a higher carb phase of the diet and do the big carb up anywhere from 12 to 48 hours over the weekend and following weekends. Set your fat intake at 25-40 percent, your protein intake at 5-30 percent and carb intake at 35-55 percent. As we will see further, these levels should be adjusted to match and maximize individual body chemistry and needs.

The whole process is very similar to what athletes call "carbohydrate loading". You hit the carbs relatively heavily and this allows you to be very sociable in the dietary sense. You can eat those foods you've been missing during the week.

Guidelines for the carb-loading period:
25-40 % fat
15-30 % protein
35-55 % carbs

Basically what we're doing here in the initial or adaptation phase is limiting carbs during the first two weeks. Then, all of a sudden, the second weekend hits and you're stuffing yourself with carbohydrates. Insulin levels will rise dramatically. In fact, it's been shown that the higher fat/low-carb diet phase of the diet makes the insulin response to the high carbs even greater than it normally would be.[19,20]

The first thing your body does in response to this exaggerated carb loading is stuff the muscles with glycogen and begin to firm up. This is the portion of the diet that insures you'll have an attractive foundation and not just a softened shell to shape when all that fat comes off. You'll find yourself rather relaxed during this period because all those carbs will be raising serotonin in your body.

But once you get back into your regular routine Monday you'll quickly find yourself energized and ready to take on the world. If you're exercising (and you should be) you'll find yourself feeling especially upbeat, healthy and motivated.

During both Monday and Tuesday your system will be working hard, burning off all the increased glycogen and you gained over the weekend, and continuing to burn fatty acids. Overall you'll experience a rise in fat burning and body shaping potential. Then, Wednesday to Friday, with glycogen limited again you'll depend much more on your primary fat burning metabolism to maximize fat loss and body toning.

Needless to say, your body goes through a big transition weekly with this diet, whether or not you stick to the strict carb levels or increase your dietary carbs to a level where you function best. That's why it's important to know when to stop on the weekend. If you find that you have an unlimited appetite on the weekend, that's OK. You'll kick the insulin into gear that much faster. But you must be careful. Some people will have a tendency to begin laying down bodyfat faster than others.

That's why you have to be aware of the point at which you begin to feel puffy and bloated. This point will vary greatly from person to person. Some people will feel hardly any response in appetite from the increased insulin. Others, however, will experience wide insulin swings and find themselves hungry and eating all the time.

That’s why I list 12-48 hours as the carb load on the weekends. This could be cut back to even less than 12 hours for people whose appetites become insatiable or for people who tend to begin laying down bodyfat relatively early in the carb loading phase. The important thing is knowing when you’ve had enough. When you start feeling puffy and bloated and can even sense the fat coming on, it's time to go back to your weekday high fat/low carb routine.

Short and Long-Term Loading On Weekends

- **Depending on your response might want to load on low glycemic carbs for 48 hours, or perhaps only 12 hours using high glycemic carbs. Or anything in between.**

Granted, it may take you awhile to learn to know your body and realize when it's telling you it's time to change phases. This point will vary widely from person to person and, while it may be easy for one person to interpret body cues, it may be harder for another. If you're having trouble with this, make the change earlier in the weekend and see how you look and feel the next week. As always, patience is the order of the day. Experience will eventually teach you to interpret your body very well and know when you're putting on fat.

Also, keep in mind that the percentages listed in the boxes for fat, protein and carb consumption are optimal numbers. If you've never done any real diet planning before, you may have a bit of trouble reaching them at first. If so, don't worry. By shooting for the 30-gram carbohydrate limitation and 40% minimum fat level in the diet during the early weeks, you'll make the "metabolic shift" necessary for initial success.

The First Month

In fact, we don't want you making a lot of changes in your diet in the early weeks. Any diet, even the strict or assessment part of the Metabolic Diet, is going to be hard enough to adapt to. So don't change the amount of calories you're eating. Don't get into some serious bodyshaping regimen or otherwise make it hard on yourself. In these first weeks, simply concentrate on picking a certain calorie level you'd like to work at and then getting used to replacing the carbohydrates you eat with fat and protein.

Don't Count Calories at First

- It's most important to go through the Metabolic Shift from a primarily carbohydrate burning metabolism to a fat burning one. This involves an activation of the enzymes and mechanisms involved in lipolysis, beta-oxidation of fats, ketone utilization by the CNS and other tissues, and gluconeogenesis.

Starving Yourself Is Counter Productive.

The effects of cutting calories too much exaggerates fatigue and other symptoms that may be blamed on the Metabolic Shift.

If you're having trouble determining if you're at the initial 40% minimum fat level (the level of fat in the usual North American diet), focus your diet on meat dishes. This should insure that you're getting enough fat. Above all, the most important thing in the early days of the diet is to determine if you can make the “metabolic shift” to become a fat-burning machine. Don't do anything fancy until you've gone through the shift.

To insure that you go through the "metabolic shift" as quickly and efficiently as possible, do not carb load during the first weekend. If you can, continue the higher fat/low carb phase during that time.

Let me repeat this because it's important. I want you to begin the higher fat/low carb phase of the diet on a Monday. Then continue that phase, if you can, all the way through the first weekend and second week. On the second Saturday following the beginning of the diet, you'll do your first carb loading. By beginning the diet with 12 days of high fat/low carb consumption, the metabolic shift will occur quickly, and with certainty, in those who are or can become efficient fat oxidizers.

Hypothetically, some dieters may decide to begin the diet on Wednesday and then immediately begin carb loading two days later. This isn't close to enough time to make the metabolic shift. Don't do it.

If you go the first 12 days on the higher fat/low carb cycle before performing a carbohydrate load you'll be fine. It may be a little difficult, but it will get the job done. Doing it this way will ensure that the Assessment Phase accurately assesses whether or not you can function efficiently on dramatically reduced carbs.

However, if you find that going the 12 days is a bit too rough, then shorten it to as little as five days. A recent study has shown that 5 days is enough for most people to fat adapt.[21] The authors of the study concluded that “5 days of exposure to a high-fat, low-CHO diet caused clear changes in fuel substrate utilization during submaximal exercise and that this fat adaptation persisted through a full day carbohydrate load. At least some of these changes were independent of CHO availability because enhanced capacity for fat oxidation persisted despite restoration of muscle glycogen stores.” A follow-up study by the same center confirmed the effects of a high-fat diet and CHO restoration on metabolism.[22] So going 5 days isn’t all that bad as long as you stay steady on the 5 day, 2 day shift for at least a month.

FAT ADAPTATION

THE CRUX OF THE METABOLIC DIET

Study below shows that fat adaptation occurs after five days of being on the Metabolic Diet and persists during one day of carbing up.

Burke L. et al. Effect of fat adaptation and carbohydrate restoration on metabolism and performance during prolonged cycling. J Appl Physiol 89; 2413-2421.

How And When To Increase Dietary Carbohydrates

I've found it usually takes about three to four weeks on the phase shift part of the Metabolic Diet to see if we can survive and thrive on this low level of dietary carbs or if we need more carbs throughout or just at one time or another. However, for the sake of assessing whether or not the strict Metabolic Diet suits you I decided to do it 2 weeks at a time. If, after the first two weeks you feel OK, then you merely carry on with the 5+ days at 30 grams and 1-2 days in the higher carb phase.

If you're mildly to moderately tired and otherwise affected then you go through another 2 week assessment phase to see if things even out. If you're severely affected then you go on to one of the variation diets where you selectively take in more carbs depending on when you're feeling punk.

If you feel good from Saturday to Wednesday and start to get tired and generally unwell by the time Thursday rolls around, then a Wednesday carb-spike day should do the trick. So on Wednesday you should increase your carbs to at least 100 grams and usually more. You might try incorporating between 0.5 to 1 gram per pound of bodyweight of carbohydrates and see how you respond.

If you're OK most of the time but just don't have enough energy for your workouts, then you might try taking in around 50 to 100 grams of carbs after your training. You can vary the amount of carbs you use after exercise by using anywhere from 10 to 150 grams and see what works for you. The type of carbohydrate you use also makes a difference in this case. For various reasons I've found that the use of a combination of high glycemic and low glycemic carbs works best.

One word of caution, don't take any carbs prior to working out. That's because carbs at that time will decrease GH and IGF-1 production and effect, increase insulin and decrease the use of bodyfat as an primary energy source during training. The ideal pre-workout supplement is my Resolve (see below), which has no carbs but is meant, among several other things, to selectively increase growth hormone and insulin simultaneously to maximize their synergistic anabolic effects while minimizing insulin adverse effects on lipolysis and free fatty acid oxidation.

If you're tired and feel bad for most of the low carb weekdays then we can try and double the carb intake to 60 grams per day on the weekdays to see if this helps. If that doesn't help we then increase the carb intake by 30 grams per day once a week for as many weeks as it takes for you to feel normal and function optimally.

Most people who have to increase their daily carbs usually level off between 100 and 200 grams per day. I've found that about one-half to one gram of dietary carbs per pound bodyweight per day is the norm in those who are relatively poor fat oxidizers. In a small number of cases it may be necessary to work up to as much as 3 grams of carbs per pound of body weight, depending on the individual and the activity that he or she is involved in.

When you have to increase the level of carbs in your diet it will take a while before you discover what your carb set point is (see Problem-Solving Guide). I've found that it takes people about two months on the average to find their ideal dietary carb level. Once you discover your Metabolic Set Point, you can fix your diet at that level for several months while you work on changing your body composition.

Varying your daily calories

Some people find it difficult to stick to a daily calorie limit but may find it easier to work on a weekly calorie limit so that on some days they can take in more calories while on others less. If you're strict about your weekly calorie intake there's no reason not to count calories on a weekly rather than a daily level. In fact some bodybuilders find that they make even better progress by keeping the body guessing rather than having it adapt to fixed daily calorie intake.

Varying Calories

- **Work on weekly calorie intake and vary carbs every other day or every third day or whatever suits you.**
- **For example, total weekday calories is set at 3,000*5 = 15,000 calories. Can take 2,000 one day, 3,000 next, 5,000 next, 2,000 next and then on the last weekday take in remaining 3,000.**

Problem-Solving Guide

Steps to take in determining your carbohydrate set point – the ideal level of dietary carbs for your body.

By following this short guide you can determine just how much and when to take the carbs your body needs to function optimally.

If you're feeling fine:

1. I'm starting on a 2-Week Assessment Phase of the Strict Metabolic Diet to see how well I do on the 30g Carb Weekday, 150g+ Carb Weekends.

2. I've been following the 30g Carb Weekday, 150g+ Carb Weekends for 2 weeks now and I'm doing well. What do I do now?

3. You're an efficient fat burner and your system has made the shift successfully. At this point you can start with the weekly 5 day 2 day phase shifts, limiting your carbs during the week and then increasing your carbs over 1 to 2 days of the weekend.

If you're feeling tired:

I'm feeling tired and I need some help with the carbohydrate part of my diet.

1. I only have low to moderate tiredness at this time so I will do another 2-week Assessment Phase to see how well I do?

2. Yes carry on with another assessment phase. In most cases this extra 12 days usually results in a success on the diet and a disappearance of the tiredness.

3. I'm still tired after the second 2 week assessment phase. What do I do now?

4. The next step is to determine when you're tired and increase your carb intake appropriately.

5. I'm tired all the time.

6. Increase your daily carb intake by 30 grams per day until the tiredness disappears. Once you've reached a level of carbs that works for you try to slowly cut back on the daily carbs until the tiredness returns. Then jack the carbs up slightly until you feel normal.

7. I have 'Mid-Late Week' tiredness, so what do I need to do?

8. Try a 'Mid-Week Carb Spike' of an additional 120g+ of carbs just on Wednesday and see how well you do.

9. I did the 'Mid-Week Carb Spike' and/or increased my daily carbs so I'm not tired normally but now I lack energy during training?.

10. You need to take from 30 up to 100g of carbs half an hour after training to combat this lack of energy on training days. This should increase your muscle glycogen levels for subsequent training days and give you all the energy you need to train.

11. I tried increasing my carb intake during training but I'm still lacking energy during training, so what can I do?

12. Increase your daily carbohydrate intake by 30 grams a day until the tiredness disappears.

Trouble Shooting Guide & Experimenting With Foods

- **Increasing carbs:**

1. **Increase daily carb intake by 30 grams or more at a time.**
2. **Midweek Carb Spike – a few hours to all day**
3. **Carbs added after training. Spike in muscle glycogen, intramuscular fatty acids and protein synthesis.**

What To Eat

I'll provide some information on what to eat in this book but for more specifics, and especially for over 175 pages of information on foods, including various tables, comprehensive calorie, protein, carb and fat charts, and extensive example diets at every calorie level you'll need to get a copy of the more than 500 page Metabolic Diet. Some of this information is also available on my site www.MetabolcDiet.com. For example, the two week sample diets can be found at this address: http://www.metabolicdiet.com/mdiet_index.htm.

During the weekdays, there are plenty of options for high fat/high protein/low carb foods available. Virtually any meat is OK, and most of you will focus on steak, hamburger, pork and other red meats on the diet. In addition, venison, fish (of great importance as we'll see later), lamb, shrimp, lobster, chicken, turkey, and other white meats are also OK. So are canned sardines, tuna, shrimp, herring and anchovies.

Almost any kind of cheese is fair game as well. Use the full fat and non-skimmed milk varieties. Keep in mind that cheese spreads, cottage and ricotta cheese are higher in carbohydrates. Brie, Camembert, Muenster, Gruyere and Monterey jack are very low in carbs and good for the diet.

Whole eggs are great. Deviled eggs can be a good snack food to keep in the refrigerator to use. Butter and poly- and monounsaturated oils are fine (subject to certain restrictions outlined below). Nuts and seeds like walnuts and sunflower seeds are also good, but keep track of the carbs. So are condiments such as salt, vinegar, oil, and mayonnaise, although we urge you to use oil (especially olive oil) and vinegar dressing most of the time. Most other commercial salad dressings are in the vicinity of 7 percent carbohydrates.

Sugar is going to be a problem for people with a sweet tooth. You can end up craving it, especially during the assessment phase of the diet. Look to appease any cravings along this line with low carb drinks and desserts with artificial sweeteners. However, avoid sorbitol and fructose – remember sugar free doesn't necessarily mean carb free. Make sure and check the labels. Diet soft drinks are fine.

You can also put sugar free Jell-O (no carbs, uses artificial sweetener) to good use. Topping it with carb-free whipped cream may be just what you're looking for to gain control. It has no carbs and many people on the Metabolic Diet have found it quite successful in appeasing any cravings. Just be sure to check the labels on whipping cream containers to make sure carbs haven't been added.

Another factor to consider is that, even if you have cravings, you're only putting off satisfying them until the weekend. You can eat basically anything then. We're just partitioning or separating foods here. We're not saying you can't have lasagna. You just have to wait for the weekend. That's a lot better than other diets where you're basically stranded on Low-Fat or, in some cases, Low-Carb Island for the rest of your life.

This can also work for you psychologically. Foods you love can give you a goal. Just get to the weekend and you can have that slice of apple pie. You're giving yourself something to look forward to and it can even be fun. This doesn't present the kind of depression and boredom you get eating the same thing over and over, week after week, month after month. You don't have to come up with an elaborate set of recipes to keep yourself sane.

When you get to the weekend, do what you want! Fill up the tank on the foods you want. Satisfy those cravings. Some people will go overboard at the beginning of the diet and eat until they're nearly sick. Most will overdo it to some degree, but this is fine. It gets easier as you go.

Once they've been on the diet awhile, most people won't have that strong desire for ice cream or onion rings anymore. They'll eat them but they won't pig out and, as they start adjusting their diets and dialing them in for maximum progress, they'll begin to see some real improvement and acquire some real knowledge about the way their body works and how adjustments can be made to achieve their goals.

The Metabolic Diet can also be adjusted depending on special circumstances. For example the changes you can make if your serum cholesterol is not where it should be – see section above on Your Cholesterol.

Here's Just A Few Of The High Fat/Low Carb Weekday Foods You Can Eat On the Metabolic Diet

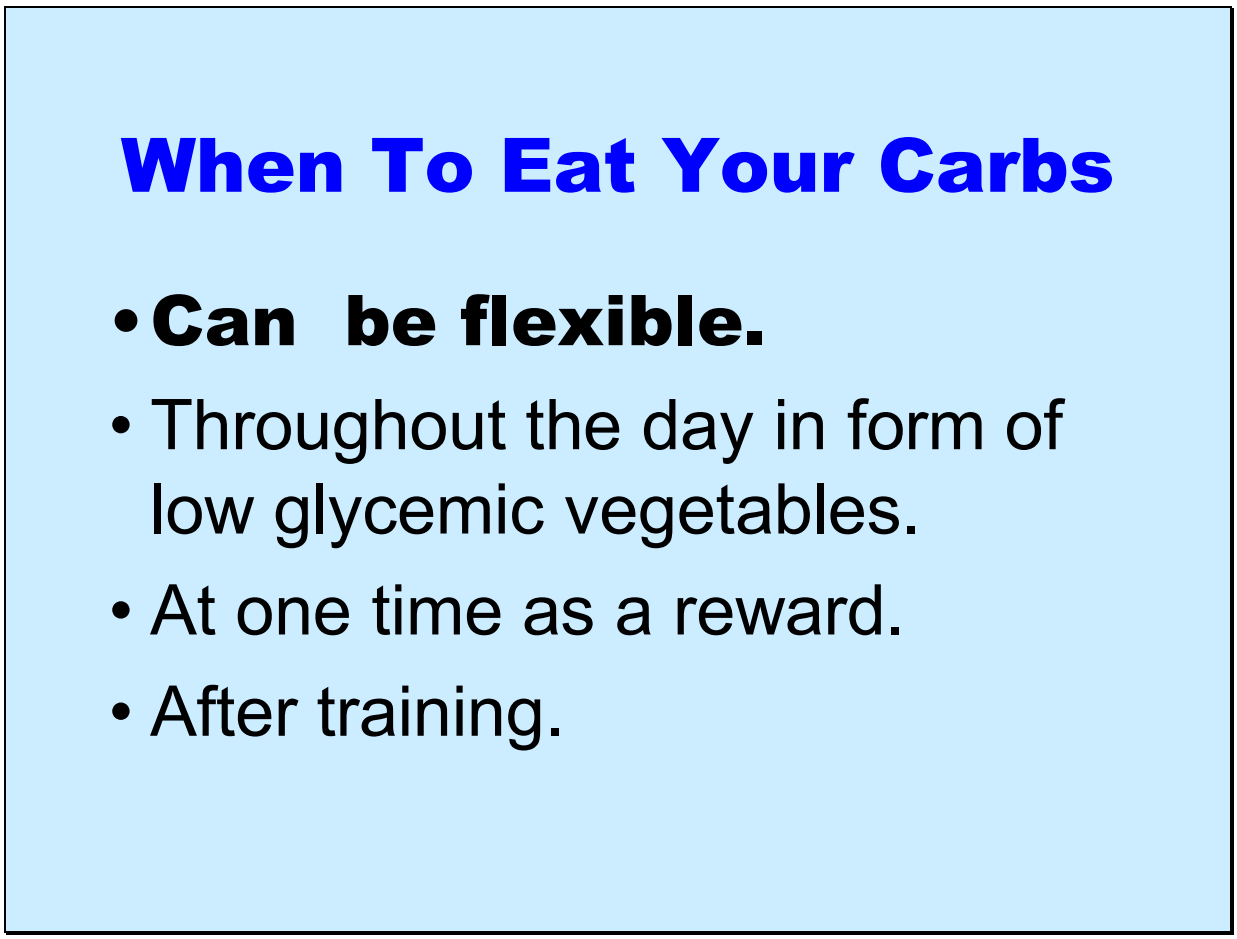
Steak	Hamburger	Sausage	Venison
Salmon	Lamb	Shrimp	Lobster
Chicken	Turkey	Tuna	Herring
Anchovies	Cheese*	Eggs	Butter
Oils**	Walnuts	Pot Roast	Pastrami
Bacon	Mayonnaise	Salt	Diet Soda
Jell-O***	Hamburger	Sunflower Seeds	

*** Full Fat/Low-Carb**
**** Poly and monounsaturated fats such as is found in nuts, olive oil, flax seed oil**
***** Sugar-free**

Keys To Early Diet Success

1. **Don't worry about calories**
2. **Take a fiber supplement**
3. **Watch for hidden carbs**
4. **Don't mix diets**
5. **The first week is the toughest — Stick It Out**

When To Eat Your Carbs



A real question that comes into play on the higher fat/low carb portion of the Metabolic Diet is when to eat your carbs during the day. Some people spread them out. Others get most of them in one meal. Again, the answer has to do with personal preference. You can eat your carbs at any time of day and it won't matter, as long as you don't go above the 30-gram carb limit.

Some people find eating their carbs throughout the day makes them hungrier and lazier. They'll feel sluggish. They get that "turkey dinner syndrome" where they finish and all they feel like doing is laying on the couch. This isn't good, especially for a busy person who needs to feel motivated and energized during the day.

Many people believe that our eating patterns have become counterproductive in modern society. The average American eats a lot of carbs during the day and the insulin and serotonin responses we talked about earlier can become very pronounced. At times of the day when we need to be productive and alert, in the early afternoon for instance, we'll be sleepy and lethargic from all those carbs and the resulting hormone and neurotransmitter rush.

For those people it would be better to save the carbs for later in the day. That's what a lot of people do on the Metabolic Diet. They'll keep the carbs minimum during the day and

find their energy levels much increased as a result. Then they'll come home at night and have the bulk of their carbs with dinner. The carbs at dinner will find them unwinding in the evening hours, relaxing and sleeping like a baby at night.

It's interesting to note that one of the trends in business today is toward a more streamlined lunch. Those huge, three-martini lunches are no longer the norm. Executives and employees are eating and drinking more sensibly in the middle of the day and finding productivity rising as a result. This comes not only from time saved at lunch but also from the improved attitude that comes with getting rid of all those carbs and alcohol at noon.

Another good time to take your carbs is after exercising. For a few hours after exercise there is a window of opportunity when hormonal factors are just right for rebuilding muscle. Taking carbohydrates during this time period spikes insulin levels and increases protein synthesis, thus maximizing the effects exercise has on strengthening and toning your body.

A few carboholics who are on my diet reserve their carbs for the evening. They eat almost no carbs during the day so they can have their 30 or so grams at night in the form of ice cream or a chocolate bar. That's OK as long as you don't go over your daily carb quota.

Experiment

Experiment

- **The Metabolic Diet is all about adjusting the diet to suit your metabolism.**
- **As such, experimenting to see what works best for you is the cornerstone of the Metabolic Diet.**

Personal experience and individual body chemistry will have a great deal to do with how you structure the diet. Different people will have differing responses to the carb-loading portion of the diet. The length of that carb-loading period may vary greatly as a result.

The 30-gram carbohydrate limit is also not written in stone. It serves as a good guide and should be adhered to when beginning the diet, but some people may find that they can later increase carb intake to as high as 50 grams per day and still do fine. Others may find that anything over 20 will make them feel sluggish. I've also found that people on the higher calorie diets, mainly seen in the Mass phase, can take in a tad over 30 grams and still be OK and we've accounted for this in the higher calorie sample diets. Once you've made the "metabolic shift" and made the diet a part of your life, you can experiment to find what works best for you.

Fat levels may also be experimented with to some degree. Some may find optimum results going as low as 30 percent fat on the diet, but you must beware. You can't go too low, especially at first when your body is going through the shift from utilizing fats instead of carbs as its primary fuel.

Taking in a lot of protein helps, but not without the fat. Without enough dietary fat, even if you're limiting your carb intake, your body won't "learn" how to use fat as a primary fuel. Your body basically says, "I'm not going to get rid of this stuff because I may need it down the road." Limit fat in your diet and your body wants to lay it on as a way of keeping it around. You end up cutting dietary fat but adding bodyfat.[23] A bodybuilder recently told me that he tried to make the shift to burning body fat as the main fuel (one of the goals behind the Metabolic Diet) by going on a high protein low-carb, low-fat diet, basically an all protein diet. He began doing the egg whites, boiled chicken breasts and canned tuna in water thing, but with no carbs, and, while he ended up losing fat, his body shriveled up. He looked awful.

The fact is that your body needs the fat to adjust to burning fat while at the same time sparing muscle. Increasing dietary fat intake will increase your body's use of both dietary and body fat as a primary fuel by increasing the levels of enzymes needed for increased fat breakdown and decreasing the enzymes involved in storing body fat. The bottom line is that you're basically losing body fat by increasing the fat in your diet.

So don't worry too much about your overall fat percentages because they usually will take care of themselves unless you mistakenly, at least at first, try to limit your fat intake. Of course you can make some adjustments depending on how you're responding to the diet, but be careful. Remember, if you don't give the body enough fat you won't make the shift to a fat-based metabolism and your body will lose its shape, which is exactly what you don't want.

This may sound like nonsense, but it's not. Give the body fat and it will use that fat and burn off bodyfat. When you're fat adapted the body is into metabolizing fat as a primary fuel so that even if you cut back on dietary fat, your body will still burn fat and spare muscle, only this time it will get the fat it needs from your body fat.

One of the good things about this diet is that you don't have to become paranoid and keep elaborate charts to get that proper amount of fat in your diet. In fact, if you're diligent about eating your red meat and other animal food — bacon, ham, steak, burger, fish, etc., and in using olive oil — you shouldn't have to worry about hitting the 40-60% fat and 40—50% protein ratios listed above. It will naturally happen.

Again, it's important to realize that individual experimentation will play a large role in aspects of the Metabolic Diet. The diet should be varied to provide the optimum level of performance and success for the individual. We're all different to some degree according to body chemistry and needs. No two human beings are alike. No two human beings will implement this diet entirely alike, either. As you make the diet a part of your daily lifestyle, experiment with it to find the best way to execute the diet for you.

Experiment

- On a weekly basis to find out what works best for you.
- Vary protein, fat and carbs and the times you take them.
- Each week can be a learning experience

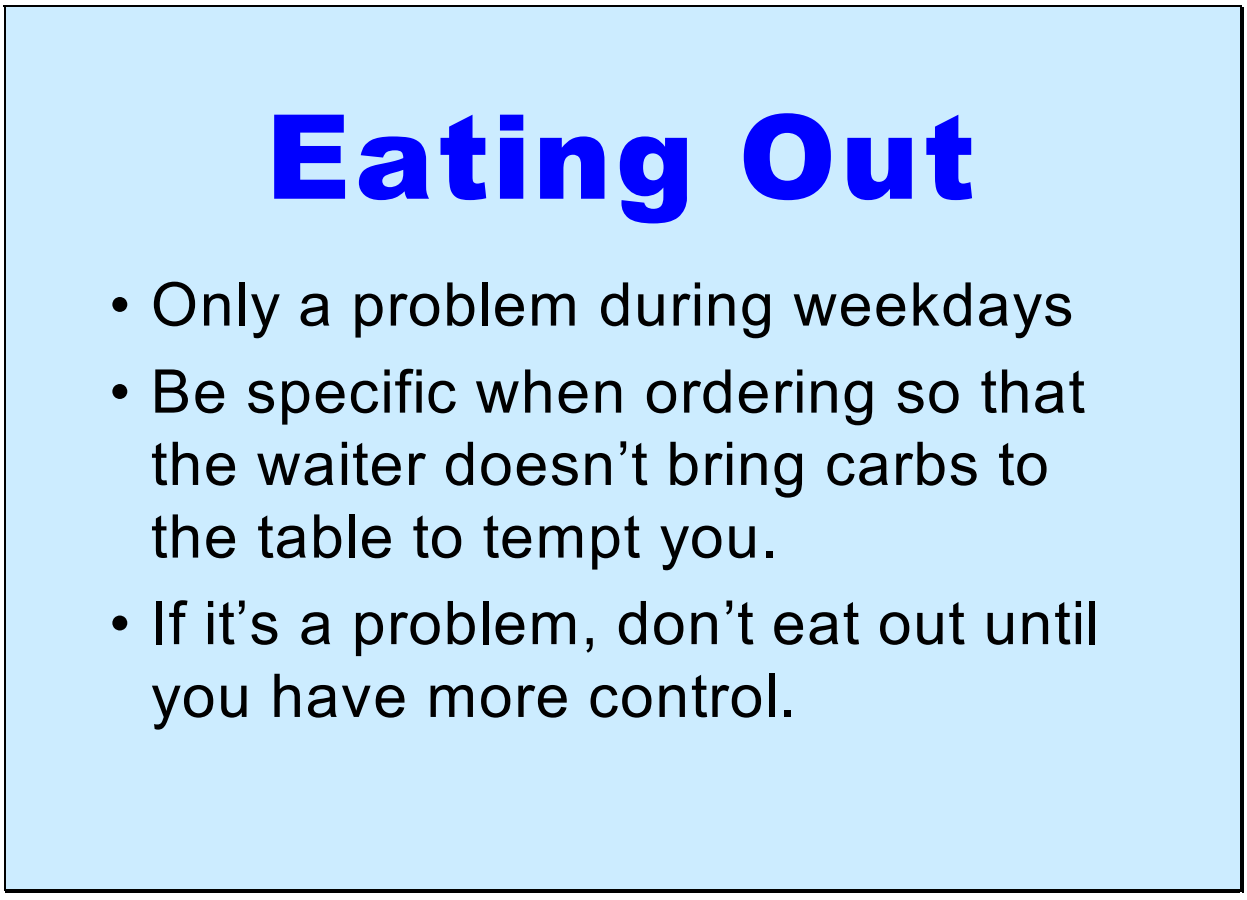
Eating Out

I have a friend who's been on the Metabolic Diet for several years now. Frequently we go out to eat together during the week and he's got the right approach down to a fine art. He looks the waiter in the eye and says "I want a T-bone steak and nothing else!" Most often the waiter will look at him and say, "But you get a baked potato, vegetables, bread . . ." "AND NOTHING ELSE," he breaks in and repeats. Waiters may have a little difficulty understanding this at first but usually, with repetition, the point will sink in.

The fact is that my friend wisely doesn't want the extras on his plate. He doesn't need the temptation. The meat is fine by him. He feels great, sticks to his diet and feels good when he's through. If he eats that potato, bread and coleslaw he won't. Order what you want regardless of what the waiter says. If he tries to tell you that you're wasting your money, tell him he's wasting his time.

During the week, you should be staying away from those carbohydrate foods so keep them out of sight and out of mind. Leave them off your plate; otherwise, you might be tempted to "sample" them.

On the weekend, everything is different. All that bread, potato and salad are fair game. Depending on how you've got your diet structured, you can order them twice. Just keep them off your plate during the week.



Keys to Success On the Metabolic Diet

- Don't seek a weight loss at the beginning
- Caloric intake will vary between individuals
- Try to lose 1.5- 2 pounds weekly
- Keep track of inches as well as pounds
- Use calipers to measure bodyfat
- Weigh/measure no more than once weekly
- Don't pick an ideal weight
- Goals are 18 percent bodyfat for women/10 percent for men
- Rely on the mirror more than the scales
- Don't change your lifestyle or habits once you reach your target weight
- Experiment with caloric intake to find a proper maintenance level
- Experiment with foods

Chapter Five

Good And Bad Fats

Using Your Head

Before we get into the specifics of how best to mentally approach the Metabolic Diet, you'll need to become better acquainted with its basics. Only by "using your head" to intelligently choose foods and keep yourself motivated and committed will you achieve the most progress and success.

One key to your success will be in understanding the difference between "good fats" and "bad fats", maximizing the former, minimizing the latter and eating the different kinds of fat in the proper proportions. While some of the information in this chapter may be somewhat technical, the recommendations and applications will be easy to understand and apply.

What Are Fats?

For many years, most diet gurus have been preaching the ills of dietary fat. The fact is that dietary fat is essential for good health. They are necessary for the proper absorption, transportation and function of the fat-soluble vitamins A, D, E, and K. Lipids (a general term for all types of fats) are used by the body to produce hormones and other substances than can aid good health and protect against degenerative diseases. They're also an excellent energy source, much superior to the fruits, vegetables and other carbs the Experts keep hailing at the expense of other foods.

Components of lipids known as "essential fatty acids" (EFAs) are necessary building blocks for all cell membranes in the body. They also make up many of the more intricate structures inside the cells. The retina (which turns light into nerve impulses in the eye) and nerve synapses (which join the body's individual nerve cells) rely on EFAs for structure. These are the types of fat that are essential to life.

However, there are other fats that can actually destroy good health and lead to serious problems down the road. To understand the difference between these "good fats" and "bad fats" we need to look at the basic chemical structure of fats to see how they vary.

Fats and oils (an animal or plant fat that is liquid at room temperature) are made up of a number of repeating molecular units. One molecule of fat consists of a single molecule of an alcohol called glycerol combined with three molecules of fatty acids. The fatty acids are made up of chains of carbon and hydrogen atoms with a methyl group (3 atoms of hydrogen, one carbon) at one end, chains of carbon and hydrogen atoms in the middle, and a carboxyl group (made up of carbon, oxygen and hydrogen) at the other end. The hydrogen atoms are connected to each carbon atom and their number and position determine the degree of saturation of the fatty acid and its shape.

Figure : Saturated Fatty Acid

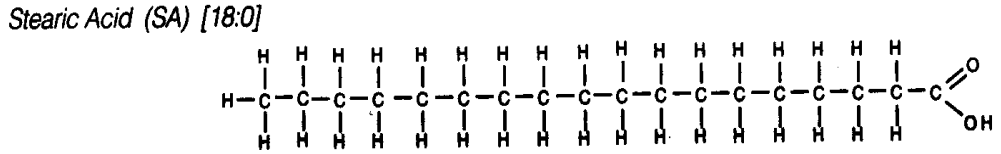
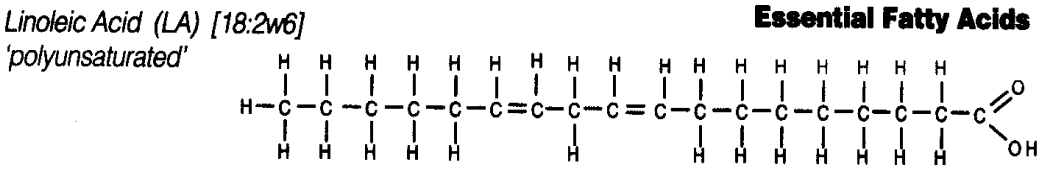


Figure : Unsaturated Fatty Acid

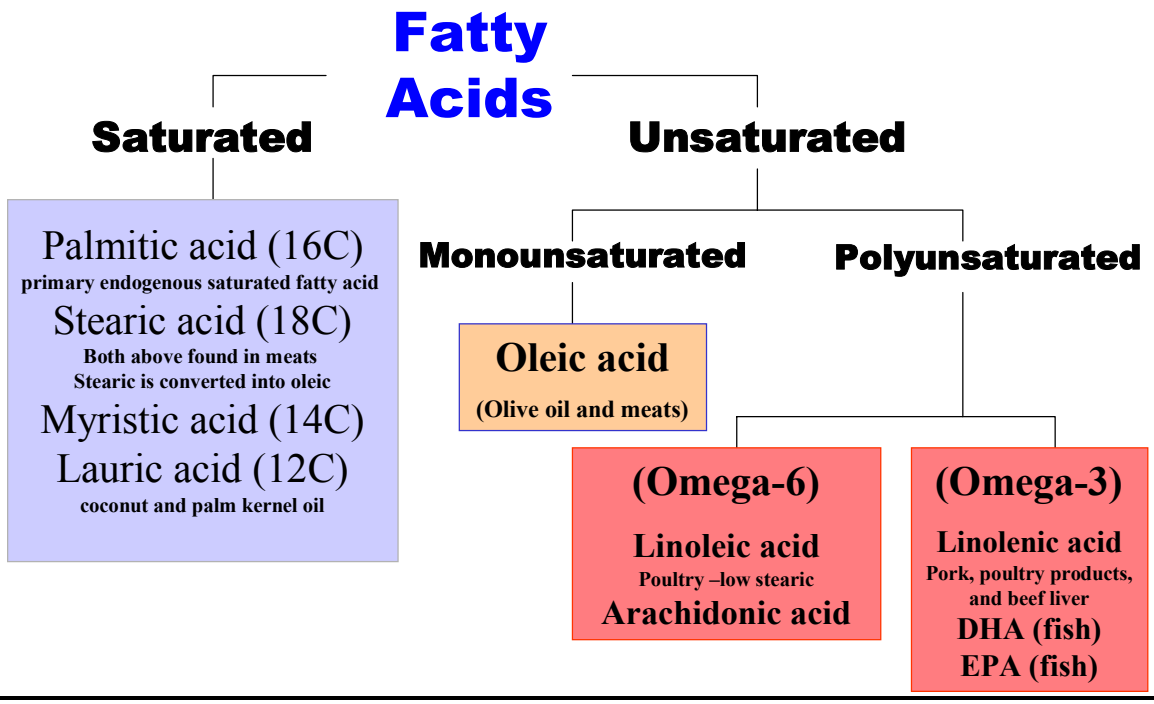


Fatty acids can be classified as either "saturated" or "unsaturated". In the diagrams above, you'll note that the "saturated" fatty acids contain carbon atoms that are linked to two hydrogen atoms. They are thus "saturated" with hydrogen atoms because they are linked to as many hydrogen atoms as possible. The term "saturated fat" refers to the hydrogen atoms attached to the carbon atoms.

In the "unsaturated" diagrams above, you'll note that a double bond joins several of the carbon atoms together. When a double bond is present, each carbon atom will only be attached to a single hydrogen atom. The carbon atoms are no longer connected to the maximum hydrogen atoms and are said to be "unsaturated". A "monounsaturated" fatty acid contains a single incidence of double bonds along its chain. A "polyunsaturated" fatty acid would feature two or more connections along its chain where two carbon atoms are double-bonded.

The hardness of a fat decreases with the increase in its double bonds. As a result, most of the liquid fats like vegetable and fish oils are polyunsaturated. Sometimes food producers will add hydrogen to the double bonds of a chain to make them less unsaturated in a process called "hydrogenation". In this way, vegetable oils can be hardened into shortening for use in cooking.

Common Fatty Acids



Good & Bad Fats: Using Your Head

- **Good Fats – EFAs, Fish oil, flax seed oil, GLA (EPO), Olive oil, some saturated fats.**
- **Bad Fats – too much saturated fats, trans fatty acids, MCTs.**
- **Fat content of foods can be changed. Examples are omega 3 enrichment of eggs by feeding flax seed to laying chickens. Also beef and pork meat fatty acid content can be manipulated.**

Good Fats

The two essential fatty acids linoleic acid (LA) and alpha-linolenic acid (LNA) (also called omega fats) are critical to health and must be supplied in a person's diet since the human body can't manufacture them.

Linoleic acid is classified as an omega-6 fatty acid. Omega-6 fatty acids are polyunsaturated fatty acids that have their endmost double bond six carbon atoms away from the CH3 end of a chain. Alpha-linolenic acid is an omega-3 fatty acid. Omega-3's are polyunsaturated fatty acids with their endmost double bond three carbon atoms from the CH3 end.

Many people do not get sufficient amounts of EFAs in their diets. Getting enough LNA seems to be more of a problem. This of course can cause health problems because these EFAs are necessary for growth, the integrity of cell membranes and the synthesis of important hormone-like substances called eicosanoids.

Now this is where we have to get very technical. But bear with me; the end result of this discussion will be easy to understand recommendations that will improve your health and the effectiveness of the Metabolic Diet.

The Eicosanoids: Piecing Together The Puzzle

Eicosanoids are physiologically active metabolites of EFAs with important effects on the immune, cardiovascular and central nervous system. Amongst these are prostaglandins and arachidonic acid, from which the eicosanoids are synthesized.

Eicosanoids act locally in and around the tissues in which they are produced. Virtually all cells in the body can form some of the eicosanoids, but tissues differ in enzyme profile and consequently in the products they form. They also differ in their ability to be affected by specific eicosanoids. Eicosanoids are not stored to any degree and must be synthesized in response to immediate need.

While it would be advantageous to be able to direct eicosanoid production so that good eicosanoids would be produced deferentially to bad ones, it is difficult to do so because of the complexity of eicosanoid production, actions and metabolism. Unfortunately we don't know a lot about the dietary influences that affect the known eicosanoids and thus can make only limited use of any knowledge we do have.

For example, some of the bad eicosanoids, such as PGE2, a series two prostaglandin that increases platelet aggregation and inflammation and has adverse effects on the cardiovascular system, are derived from arachidonic acid. We could thus reason that by inhibiting the enzyme that catalyzes the synthesis of arachidonic acid, less PGE2 would be formed. As well, more metabolites would be present for forming some of the good eicosanoids such as PGE1, a series one prostaglandin that has several favorable effects on blood clotting, inflammation and the cardiovascular system.

We know that various factors such as eicosapentaenoic acid, glucagon and even cholesterol and alcohol can inhibit the formation of arachidonic acid or the formation of PGE2 from arachidonic acid. However, utilizing this knowledge to manipulate the eicosanoids is difficult since we really need more information on the complex ways these compounds are formed, act and are metabolized. Although we could possibly formulate a working game plan, it wouldn't be written in stone and has to be validated by ongoing research.

For example, prostaglandins can be both good and bad. Unfortunately, it is difficult to stimulate the good ones and not the bad ones. If we decrease the formation of prostaglandins from arachidonic acid we inhibit the formation of both good and bad prostaglandins. Of more relevance for dieters, it is not possible to differentially stimulate the production of PGI2, which has a lipolytic action, from PGE2, which has an antilipolytic action. Both prostaglandins belong to the series 2 prostaglandins and are formed from arachidonic acid.

At present, some treatment strategies using EFAs have tentatively been formulated to try and take advantage of the good eicosanoids. For example, omega-3 fatty acids found in fish oils can decrease production of some arachidonate metabolites and increase levels of certain prostaglandins. Feeding of these fatty acids has been used as a therapeutic strategy to diminish platelet aggregation.

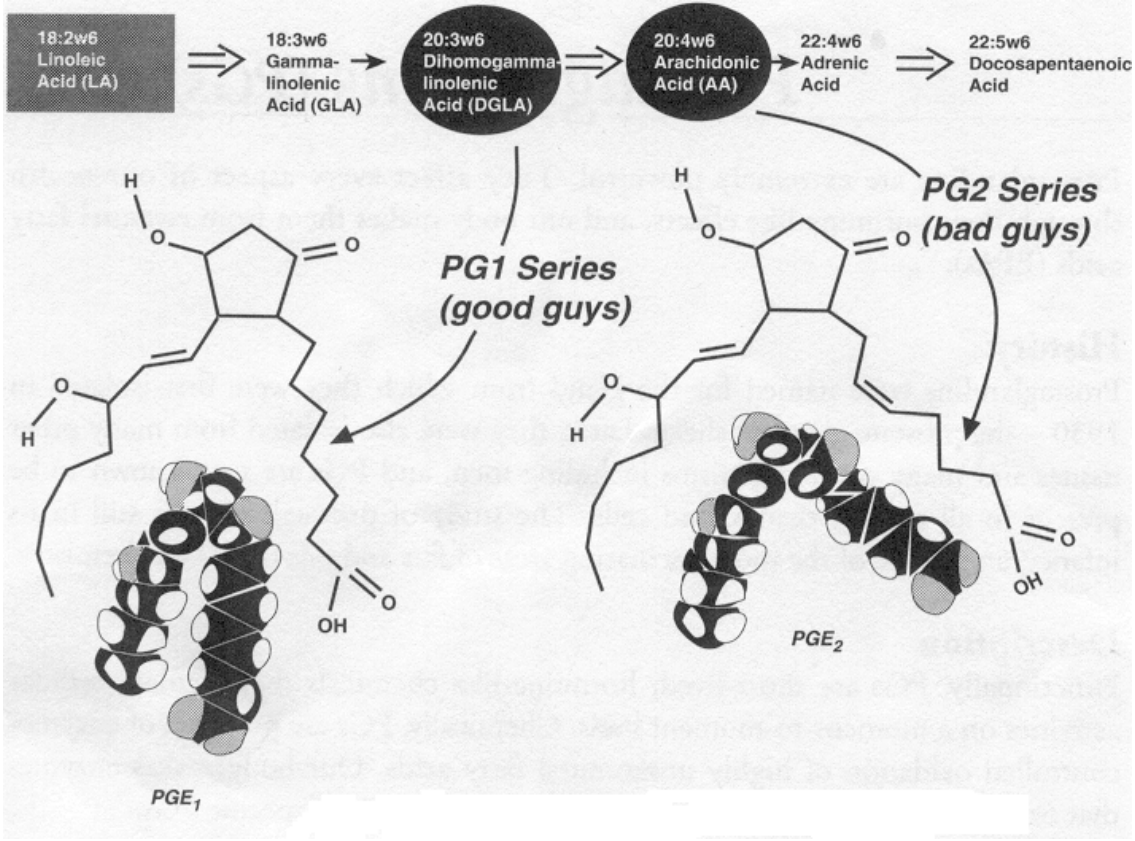


Figure 8: from "Fats that Heal Fats that Kill" by Udo Erasmus, *alive* books Vancouver

Confused? So are most people, especially since all the pieces to the puzzle haven't all been uncovered. The gist of trying to modify your intake of the omega 6 and omega 3 fatty acids is that we can, by the use of a special diet, direct the flow of linoleic acid to the good eicosanoids instead of the bad eicosanoids. This may be done by increasing the transformation of linoleic acid to gamma-linolenic acid (GLA) and/or supplementing GLA by using GLA-rich oils, and directing the formation of the good eicosanoids instead of arachidonic acid.

There are many factors that can inhibit the enzyme delta-6-desaturase, the enzyme responsible for the conversion of LA to GLA. These factors include LNA (the other essential fatty acid), trans fatty acids (see below), stress and viral infections. By limiting these factors, more GLA can be naturally formed from dietary LA.

As well, there are many factors that can inhibit the delta-5-desaturase enzyme, the one responsible for the formation of arachidonic acid from dihomo-gamma-linolenic acid (DGLA). These factors include glucagon and EPA. Insulin increases the formation of arachidonic acid from DGLA and thus increases the formation of the bad eicosanoids.

So, in theory, dietary practices can limit the production or transformation of arachidonic acid and encourage the production and transformation of GLA, thus maximizing the production of good eicosanoids over the bad ones. It's difficult, because we don't have many pieces of the puzzle to say if this is true. If further substantiated by research, this way of altering eicosanoid synthesis though changes in our intake of EFAs may well be one of the few coordinated practical uses of the complex scientific information on the eicosanoids. While we may not know for sure if what were doing accomplishes the changes we'd like to see, we can make certain dietary recommendations that fit in to the available research.

In the Metabolic Diet, I discourage excess carbohydrate consumption and encourage the use of good fats in the diet, including the use of fish and fish oils and sources of GLA such as evening primrose and borage seed oils. At present, this is the best we can do is to make sure that enough and the right proportion of the EFAs and other members of the omega-6 and omega-3 fatty acids are present in the diet.

The omega-3's like LNA and eicosapentaenoic and docosahexaenoic acids (known as EPA and DHA respectively) are critical to anyone concerned with dieting. They increase fatty acid oxidation (burning of fat), basal metabolic rates and lower cholesterol. Omega-3 fatty acids also provide an anabolic effect by increasing the binding of IGF-1 to skeletal muscle and improving insulin sensitivity, even on diets high in fat which have a tendency to decrease insulin sensitivity.[24] As well, fish oils may also have important implications for women prone to osteoporosis since they appear to decrease calcium excretion.[25]

Omega-3's also stimulate prostaglandin production. Prostaglandins are eicosanoids that regulate activity in body cells on a moment-to-moment basis and are involved in critical functions like blood pressure regulation, insulin sensitivity, immune system and anti-inflammatory responses. They're also involved in literally hundreds of other functions, many of which have yet to be fully identified in research. If you have a problem producing prostaglandins or experience an imbalance between the different kinds of prostaglandins, overall health can be radically affected.

The series three prostaglandins are formed from EPA. As well, EPA reduces the production of the bad prostaglandins from arachidonic acid. EFA deficiency can lead to high blood pressure, hormonal dysfunction, impaired immune function, coagulation problems, inflammatory changes, dry itchy skin, peripheral edema and many other conditions.

Conjugated Linoleic Acid

Conjugated linoleic acid (CLA) is a mixture of isomers of linoleic acid, which is found preferentially in dairy products, meat, and in cheese, milks and yogurt that have undergone heat treatment. Supplementation with four ounces of cheddar cheese daily was found to increase the ratio of CLA to LA by 130%.

CLA has been shown to have properties above and beyond those of linoleic acid. It has shown potential as a powerful anticarcinogen[26,27] and has potent antioxidant activity.[28] Recent studies have suggested that CLA may be toxic to human cancer cells in the body.[29] Of the vast number of naturally occurring substances that have been demonstrated to have anticarcinogenic activity in experimental models, all but a handful of them are of plant origin. CLA is unique because it is present in food from animal sources, and its anticancer efficacy is expressed at concentrations close to human consumption levels.

So now we have a better understanding of the types of dietary fats and their influence on health. We can now discuss the importance of EFAs in the Metabolic Diet.

Essential Fatty Acids And The Metabolic Diet

EFAs can be beneficial even if a deficiency doesn't exist and, if used properly, can increase overall health, help you avoid heart disease and lose body fat. Overall, the increased processing of foods in our society has lowered the amount of EFAs in the average diet significantly. Foods rich in EFAs are highly perishable and not deemed practical or profitable for most commercial preparations. The extra EFAs you'll get from the Metabolic Diet, as explained below, is just one more reason for giving the diet a try.

Earlier in this book we talked briefly about the omega-3's as a positive factor in high-fat diets. They're found to a high degree in fish oils (as EPA and DHA) and have been hailed as a major factor in lowering serum cholesterol levels, preventing coronary heart disease[30,31] and perhaps even preventing or curing atherosclerosis.[32]

Marine oils are a big part of the diets of Eskimo tribes. Though their higher-fat diet would seem to make them prime candidates for heart disease and atherosclerosis, they've been found to be almost immune to cardiovascular problems, at least until Western dietary influences in recent years. Studies have centered on omega-3 fatty acids in the fish oils and their cardioprotective capacities as being central to this phenomenon.[33]

For the person on the Metabolic Diet, where fat and protein are found at high levels, the omega-3's can provide an excellent hedge against worries about cholesterol. Blood pressure, clotting, immune response, insulin resistance and triglyceride levels are all positively affected.[34] Even in cases where dietary cholesterol is increased, omega-3's may aid in actually lowering serum cholesterol.[35] There is some evidence to suggest that in higher-fat diets aerobic exercise also reduces serum cholesterol[36] and thus may improve the effects of omega-3 rich fish oil on cholesterol.

LNA, EPA and DHA can also enhance lipolysis (body fat breakdown)[37,38] and decrease lipogenesis (body fat formation).[39,40] The combined breakdown of stored bodyfat and decrease in additional bodyfat can have very positive results for the dieter. You actually end up making less fat and breaking down more of what's already on the body when using these oils.

That's why I wholeheartedly support adding portions of fish and fish oil to your daily diet. And, while many foods contain more than one type of fatty acid, plant oils are usually richer in unsaturated fatty acid content than animal fat. It's not surprising, then, that flaxseed oil, nuts, seeds and unprocessed vegetable oil are also rich in essential fatty acids.

That’s also why I formulated an advanced EFA formula that contains all the “usual suspects” as well as other important ingredients. EFA+ is a multi purpose formulation designed to provide the full gamut of all the essential fatty acids that are so important in optimizing your metabolism, maximizing the anabolic and fat burning effects of exercise and decreasing the counter productive inflammatory response of exercise.

Fats and The Immune System

Besides the beneficial effects we've already discussed, fats can have dramatic effects on the immune system and can be used to treat patients with immune system problems. For example, it is known that the human immunodeficiency virus (HIV), is able to replicate in many human cells such as helper lymphocytes, monocytes/macrophages and glial cells. Monocytes/macrophages must be considered an important reservoir of HIV in the body and producers of cytokines such as interleukin-1 (IL1) and tumor necrosis factor (TNF).

These substances lead to a feedback loop that produces increased virus replication and a secondary production of other cytokines such as interleukin 6 (IL6) and granulocyte-macrophage colony stimulating factor (GM-CSF). These cytokines all together may be responsible for many clinical aspects of the HIV such as headache, fever, anorexia, subtle cognitive changes, and motor dysfunctions.

Omega 3 polyunsaturated fatty acids (omega 3-PUFA) are one of several compounds that can be used to both strengthen the host and attack the virus. Omegas 3-PUFAs have been shown to have significant modulating effects on the immune system in both man[41] and animals.[42] Their ability to decrease IL1 and TNF production by monocytes/macrophages and consequently of IL6 and several proteins may have beneficial effects on many clinical manifestations of AIDS.[43]

In the literature there are many confusing associations of dietary fat and immune function. It's well known that low fat diets suppress the immune system partly because of the potentially low levels of dietary essential fatty acids. Conversely, a recent study has shown that high fat intakes do not have any deleterious effects on the immune system of the well-trained runners.

In fact, a new study shows those athletes who train hard and cut back on fat may actually increase their susceptibility to infections and inflammation. Researchers found that long-distance runners who severely restricted their fat intake ended up depressing their immune systems. Runners who ate medium and high-fat diets (composed of 32 and 41 percent fat, respectively) had no immune system problems. Protein was kept at 15 percent no matter which diet the runners were on. An increase or decrease of carbohydrates made up the difference in calories between high and low-fat diets.

The higher-fat diets may lower proinflammatory cytokines, free radicals and hormones and enhance the levels of anti-inflammatory cytokines. Cytokines are messenger molecules that call cells to start or end inflammation at a site in the body. The inflammatory process is the body's response to infection or injury; swelling and pain can result as this tissue-repairing process takes place.

While researchers have shown that moderate exercise appears to enhance the immune system, very high intensity exercise has a negative effect on the immune system. A study investigating the effects of training intensity on the immune system used marathon runners because this sport tends to cause overtraining. As was revealed, the incidence of lingering upper respiratory infections was high in these athletes. I point this out because many athletes who train for a contest, especially bodybuilders and athletes competing in sports

with weight classes, will select a low fat diet and tend to overtrain in this period. A moderate-fat diet would be a better choice as far as decreasing immune depression.

Bad Fats

There's a very popular misconception that commercial vegetable oils are a good healthy source for essential and non-essential fatty acids. Nothing could be farther from the truth. The fact is that most of those vegetable oils you see on the shelf of your local supermarket including corn, canola and soybean oils, have been hydrogenated or very heavily refined, and are so overly processed that they can be harmful to your health. Processing not only removes any useful properties the oil had such as EFAs or antioxidants, but depending on the processing can cause immune problems and predispose us to certain cancers.

The problem is that the natural poly- and monounsaturated fatty acids are reactive to light and heat and spoil readily. Even natural polyunsaturated fats, because they are unstable and oxidize readily, have been recently shown to have two serious drawbacks. First of all, they seem to promote certain cancers at a dietary concentration of 5% or more.[44] Secondly, while they can lower total cholesterol they can also lower the HDL[45] and thus increase the chances of coronary artery disease.

To make matters worse, polyunsaturated fats are usually treated in an effort to solve some of the problems associated with their commercial use. A process called hydrogenation has been used for decades to change natural oils into fats that are more solid and stable at room temperature, have a longer shelf life and are easier to use in certain foods and baked goods. Hydrogenation involves heating the oil in a vacuum and then forcing hydrogen through it under pressure. The process is continued until the required degree of hydrogenation is achieved.

Unfortunately, while hydrogenation and other methods used to refine or change oils, such as chemical solvents, bleaches and heat, may be healthy for business it isn't for our bodies. Not only do these processes destroy any natural qualities present in the natural oils, they create by-products that can be harmful to our health. Trans fatty acids, crosslinked fatty acid chains, and fragments of fatty acid chains produced secondary to hydrogenation can have significant adverse effects on blood cholesterol, increase the risk of heart disease. By competing with EFAs these fats lead to EFA deficiencies and subsequently to a host of other health problems including diabetes, cancer and weight gain.

Trans fatty acids have been the most widely researched of these toxic by-products. Trans fatty acids are found in refined vegetable oils, shortenings, almost all margarines and other oil-based foods, and even in baked and prepared snack foods such as cookies, crackers, and chips. Large quantities of unnatural trans fatty acids are also found as food contaminants during excessive heating of cooking oils for deep-frying and other excessive heat-requiring mass food preparation procedures. They've been found to raise overall cholesterol levels, lower HDL, decrease testosterone and insulin response, adversely affect liver enzyme activity and impair the immune system. They've thus been linked to heart disease, cancer and other diseases associated with aging.

Much of the problem resides with the fact that the shape of a fatty acid is essential to its proper functioning. While trans fatty acids have the same exact number of carbon and hydrogen atoms as the original fatty acid (known as the "cis-fatty acid"), its shape has been greatly changed. This change in shape, from "cis" fatty acid to "trans", causes competition for existing enzymes. As a result, the cis-fatty acids are unable to carry out their proper biological role.

The amount of trans fatty acids, or other toxic by-products, found in a food varies according to the extent and nature of the processing. Generally, vegetable oil products that are hard at room temperature (like shortening or margarine) are more riddled with trans fatty acids than products that are liquid at room temperature (like vegetable oil).

Recently, several studies have pointed to the adverse health effects of hydrogenated fats and the trans fatty acids in them (especially hard margarines, but even soft margarines are suspect), including an increased incidence of heart problems[46] likely secondary to unfavorable changes in serum lipoprotein[a], a strong risk factor for coronary heart disease.[47]

In addition to the well-recognized roles of EPA, the lack of trans fatty acids in the traditional Eskimo staple diet may also be responsible for their cardiovascular health. This diet contains cis-forms of the unsaturated fatty acids in physiologically optimal concentrations and is virtually totally devoid of unnatural and potentially hazardous trans and cis isomers of these fatty acids.[48] These differences in the Eskimo diet would likely ensure the synthesis of eicosanoids from dihomo-gamma-linolenic acid, arachidonic acid and eicosapentaenoic acid in balanced, optimal physiological concentrations.
*** OFFSET Box ***

Fats to Avoid

- All Margarines except those with low trans fatty acid content.
- Hydrogenated and Partially Hydrogenated Oil Products & Foods (check the labels)
- Shortening
- Old Fats and Oils Of Any Type

In summary, bad fats are fats that have been altered by processing and so that they compete with essential fatty acids and thus negatively affect cellular metabolism and structure. There is also some speculation that trans fatty acids may adversely affect insulin sensitivity, decrease fat oxidation and increase fat synthesis. All three of these effects would be counterproductive to anyone on the Metabolic Diet.

Foods containing significant amounts of trans fatty acids usually list hydrogenated or partially hydrogenated products in their listing of ingredients. These foods include baked goods, crackers, candies, almost all fried fast foods, potato chips, and other foods that have or are made with shortening, margarine or refined oils. Keep away from them as much as possible and use the fats recommended below.

Flaxseed Oil

Of the EFAs imbalances, LNA has created the most problems. Linoleic acid deficiency occurs much less frequently than LNA. Thus the diets of most people are much higher in LA than LNA. The excess LA seems to affect the biological action of LNA creating an even greater relative deficiency of LNA. With LNA and the other omega-3's responsible for most of the health benefits of EFAs listed above, this condition becomes even more serious.

One of the best-known sources of LNA (and a good source of LA) available is flaxseed oil (also known as flax oil or linseed oil). Hemp oil, another rich source of LNA (and LA and to a lesser extent GLA) is slowly becoming more available. Flaxseed oil consists of 45-65 percent LNA, 15 percent LA and a lesser amount of monounsaturated and saturated fatty acids.

Flaxseed oil can be an excellent source of LNA and I wholeheartedly support the addition of some flaxseed oil to any diet and, especially, the Metabolic Diet. However, there are some conflicting pieces of information that may limit the usefulness of flaxseed oil.

For example a recent study has shown that increasing dietary LNA (such as with the use of flaxseed oil) elevate tissue EPA concentrations in a predictable manner.[49] Now, we know that increased levels of EPA decrease the production of arachidonic acid and its metabolism into bad eicosanoids.[50] However, increased levels of LNA also decrease the production of GLA from LA because it inhibits the delta-6-desaturase enzyme that converts LA to GLA, and thus decreases the formation of certain good prostaglandins.

What can be we conclude from all this? Well, it seems that while flaxseed oil is a good supplement to our diets, it shouldn't be overdone. Enough should be used to increase our natural production of EPA but not to decrease the formation of GLA from LA. Thus, as well as some flaxseed oil, I recommend the use of GLA and EPA, as detailed below.

If you use flaxseed oil then make sure it's fresh. Flaxseed oil, like other perishable foods, will spoil or go rancid very quickly. That's why it needs to be refrigerated and used soon after opening. Look in any good health food store or nutritional center and you'll find flaxseed oil in the refrigerated section. If you keep it refrigerated, flaxseed oil will generally last up to six weeks after it is opened.

I usually recommend a minimum of 5 grams of flaxseed oil per day to ensure you get the necessary EFAs. As well as the liquid form, flaxseed oil capsules are available and generally come in doses of 1 gram per capsule. Thus, you can use up to five capsules per day if no other flaxseed oil is used. Fresh unrefined flaxseed oil can also be added to a protein drink or salad (1-3 tablespoons) as a tasty way to supplement LNA.

Evening Primrose Oil And Borage Seed Oil

Both oils are rich in linoleic acid, vitamin E and GLA. Since GLA is a precursor for DGLA, which has been shown to be depleted by steroids, alcohol and other drugs, it has been suggested that GLA therefore provides protection for the liver. DGLA is easily produced from GLA and the use of GLA supplements may lead to the increased production of the

good prostaglandins that help fight musculoskeletal inflammation, decrease cholesterol and fluid retention, and have beneficial effects on several hormones in the body.

Thus GLA may be helpful for several reasons. Evening primrose oil, for example, has been used as treatment for a variety of problems including PMS, chronic fatigue syndrome and arthritis. Since GLA is important for the production of several prostaglandins used to fight inflammation and muscle soreness in the body, it may be of great use to those involved in an advanced exercise program. If you suffer from any of these conditions you might want to give either oil a try.

In any case, for most of us, it's not a bad idea to supplement our diets with GLA. I usually recommend at least 500 mg of GLA daily. That usually translates to six or more capsules of evening primrose oil or three or more capsules of borage seed oil daily (evening primrose oil usually contains just less than half the amount of GLA as borage seed oil).

Fish And Fish Oils

Fish oils belong to the alpha-linolenic omega-3 series of fatty acids and are rich in eicosapentaenoic acid (EPA) as described above. While the body is able to convert alpha-linolenic acid to the longer chained EPA and DHA, it does so slowly. It makes good health sense to use fish oils since they are rich sources of EPA and DHA.

While increasing fat burning capabilities and lessening the amount of fat on the body, fish oils will also aid in limiting the breakdown of muscle tissue and adding muscle tone for increased body shaping. They may also aid in lowering blood cholesterol levels, have vasodilatory effects (widening of the blood vessels), and may be protective[51] and perhaps even therapeutic[52] against certain cancers. EPA also seems to decrease the production of arachidonic acid from DGLA thus decreasing the production of some of the bad prostaglandins.

Fish oil also seems to have significant anti-inflammatory effects and protective effects on joint cartilage especially in arthritic conditions.[53] EPA and DHA seem to have some similar and independent effects on the body. For example, a recent study has found that DHA, rather than EPA is responsible for the anti-inflammatory effects of fish oil.[54]

The best way to obtain fish oil and thus your complement of these very important omega-3's is to regularly eat fresh fatty fish. For example, 100 grams (3.5 ounces) of Atlantic salmon has about 1400 milligrams of omega-3 fatty acids (EPA and DHA). Thus a half-pound of Atlantic salmon will give you an excellent daily complement of omega-3's (equal to or more than 10 capsules of fish oil).

Any fish - be it shell, freshwater, ocean or whatever - contains some omega-3 fatty acids. There is evidence, though, that ocean fish is a better source than freshwater fish (except for lake trout) for omega-3's. Fish from the colder northern waters such as the North Atlantic is superior to that caught near the Equator, and shellfish have lesser amounts of the omega-3's than other fish. Of the commonly available fish, the ones that are highest in omega-3's are salmon, herring, sardines, mackerel, and bluefish. I usually recommend that one or all of these fish be eaten at least three to four times a week.

On the other hand, there is no need to jump overboard on fish or fish oil consumption. In one study, researchers observed no significant associations between higher dietary intakes of fish, or the omega-3 fatty acids fish contained, and the risk of coronary artery disease (CAD).[55] Although men who never ate fish seemed to have a slightly higher risk of CAD than men who ate a small amount, increasing fish intake from one to two servings per week to five to six servings per week did not substantially reduce the risk of CAD among men who are initially free of cardiovascular disease.

Although further studies will have to be done to see if the results of this and other studies are valid, a recent review concluded that fish oil likely has beneficial effects on coronary artery disease and myocardial infarction.[56] On the basis of the many studies showing the benefits of fish oil, I recommend that fish or fish oil be used every day if possible or, if not, at least every other day.

If you have problems with eating fish on a regular basis, then I recommend that you use a fish oil supplement such as salmon oil capsules. Generally, I recommend 2,000 milligrams of EPA a day. Fish oil usually contains 20 percent EPA and a lesser amount of DHA so 10 capsules a day of 1,000 milligrams of fish oil should give you the recommended amount. If desired, or if there is a personal or family history of CAD, more fish oil could be consumed, as there appears to be no adverse metabolic effects of long-term fish oil supplementation.[57]

Whatever the amount that you use, be careful to buy fresh fish oil capsules that are in an opaque container. If the capsules are fishy tasting, chances are they're partially rancid and shouldn't be used. Keep the fish oil capsules in the refrigerator and away from light and use them up as soon as possible, at least within a few months of purchase.

Monounsaturated Fats

Monounsaturated fatty acids (oleic acid is the main one that concerns us), are produced by the body and are found in fats of both plant and animal origin. Animal sources of oleic acid are usually found along with saturated fatty acids and include beef, pork, lamb, chicken, turkey, dairy products, eggs, and some fish (like eel and trout). Although the common belief that the fats found in the above foods is all saturated fats, this is not the case. Oleic acid makes up from 20 to 50% of the fats in these foods.

The plant sources include olive, canola (rapeseed), hazelnut, and peanut oils as well as the foods from which these oils are extracted and also almonds, avocados, pistachios, and macadamia nuts. As well many of the foods that contain or are cooked in the above oils have significant levels of oleic acid. This includes fried foods, salad dressings, baked goods and certain soups.

Monounsaturated fatty acids, especially oleic acid, seem to have some advantages over other fatty acids. A significant intake of monounsaturated fatty acids won't increase your risk of heart disease and may even decrease it by their effects on total cholesterol, HDL and LDL.[58] The body also seems to have an easier time metabolically handling oleic acid over the other monounsaturated fatty acids.

Canola oil contains erucic acid that may have some toxic effects. As well, because of its method of extraction, canola oil contains some deformed fatty acids. Studies have also shown that, unlike olive oil use that can decrease total cholesterol and LDL, canola oil has no such effect on blood cholesterol[59].

For various reasons, olive oil seems to be one of the better fats to consume on the Metabolic Diet. But only certain olive oils are candidates. Like any other oil, any heat, chemical, solvents and other refining process ruins the health effect of olive oil. The best olive oil is the cold-pressed extra virgin olive oils since these oils are extracted by the use of gentle pressure rather than with the use of heat and solvents.

There is a body of epidemiological evidence that points to the health effects of olive oil.[60],[61] As well, studies have shown that olive oil decreases atherogenesis.[62] Olive oil seems to one of the players responsible for the health effects of the Mediterranean Diet.[63] Additionally, very few pesticides and chemicals are needed to grow olives; therefore, you then have a source of fat that seems to have everything going for it. Olive oil is definitely a useful and necessary part of the Metabolic Diet.

Saturated Fats

Many of the foods recommended in the Metabolic Diet, such as red meat, eggs and cheese and butter contain saturated fats. These fats do have a tendency to raise total serum cholesterol and LDL levels in some individuals, especially those with previous blood cholesterol problems. The increase in total cholesterol is mainly from an increase in LDL although there is also a small increase in HDL.[64]

However, not all saturated fatty acids have an adverse effect on total cholesterol. For example, stearic acid (the main saturated fatty acid found in beef) and medium chain saturated fatty acids have little or no effect on total cholesterol. Recent studies have shown that replacement of carbohydrates with stearic acid (as is done to some extent in the high-fat, low-carb phase of the Metabolic Diet) has little effect on lipid and lipoprotein concentrations in plasma.[65],[66] As well, in these studies oleic and linoleic acids had beneficial effects on blood lipids by raising HDL and lowering LDL.

It's important to realize that recent research has shown that it is the oxidized forms of cholesterol and LDL that increase the incidence of cardiovascular disease (CVD) including CAD.[67] Thus, factors that decrease the tendency of LDL to oxidize (such as the use of monosaturated and marine oils) can negate any harmful effects a higher-fat diet may have on CVD.

As well, natural saturated fats do not have the toxic harmful effects seen with the use of trans fatty acids. They are mainly an effective and compact source of energy. Most of us have no real problem with these saturated fats - our bodies know how to deal with them.

Saturated fats are an integral part of the Metabolic Diet. If used properly, natural saturated fats will help you to lose weight and body fat. Any adverse effects that they might have on those susceptible to cholesterol problems are usually diminished by the fact that the dietary as well as the body's saturated fats are used as a primary source of energy, and

therefore don't have a chance to do any harm. As well, other recommended fats can decrease or eliminate any adverse changes of the Metabolic Diet to total cholesterol, HDL and LDL.

Butter Or Margarine?

Lately the marketing of low trans fatty acid margarines has confused the issue of whether you should use margarine or butter, or neither. At the heart of this debate is trans fatty acids, a type of fat found in margarine and many processed and fast foods. At one time, trans fatty acids were thought to be better for you than saturated fat in butter. But some studies have found that trans fatty acids may be harmful to your health as saturated fat and possibly worse. So does this mean you should switch back to butter? Most health experts say no. But they do recommend limiting trans fat in your diet.

But when you want to use butter or margarine, which is better? Most health experts say margarine, particularly the tub and squeeze-bottle kinds, which are more liquid. They usually contain less trans fat than do stick margarines. In addition, some manufacturers have developed margarine spreads and sticks that contain no trans fat. As is often the case, the key is moderation.

How Much And What Kind Of Fats Do We Eat

In a diet where fat plays the key role as it does in the Metabolic Diet, it's important to get a handle on just what kind of fats you should be looking for and in what proportion they should be eaten. Taking into consideration everything we've just said about fats, the following guidelines will make the Metabolic Diet healthier and more effective.

Be Wise With Fats

- **Eat fewer processed baked goods and fried foods, especially fast foods.**
- **Bake, boil, microwave, poach or steam foods instead of frying them.**
- **Buy oils that are predominantly monounsaturated (olive or canola oils).**
- **Consume only fresh oils.**

Twenty-five percent of your fat intake should come from olive oil and the EFA-rich foods mentioned above. These include nuts, seeds, fish, flaxseed oil, salmon oil, and unprocessed vegetable oils. The other 75 percent of your fat intake should come from high quality meats, chicken, eggs, cheese, pork, butter, shell and other fish and associated foods. Also, make an effort to use the omega-3 enriched eggs and dairy products. Table 1 provides an easy way to judge the various fats in some common foods and oils.

TABLE 1

Fatty Acid Composition Of Commonly Consumed Foods
(as percentage of total fatty acids)

Food	Saturated	Monounsaturated	Polyunsaturated
Butter, Cream, Milk	**65**	**30**	**05**
Beef	**46**	**48**	**06**
Bacon and pork	**38**	**50**	**12**
Lard	**42**	**45**	**13**
Chicken	**33**	**39**	**28**
Fish	**29**	**31**	**40**
Coconut oil	**92**	**06**	**02**
Palm kernel oil	**86**	**12**	**02**
Cocoa butter	**63**	**34**	**03**
Olive oil	**15**	**76**	**09**
Peanut oil	**20**	**48**	**32**
Cottonseed oil	**27**	**20**	**53**
Soybean oil	**16**	**24**	**60**
Corn oil	**13**	**26**	**61**
Sunflower seed oil	**11**	**22**	**67**
Safflower seed oil	**10**	**13**	**77**

You should do your best to avoid the "bad fats" listed previously. Margarine (because of its trans fatty acid content) and commercial processed vegetable oils are a no-no. Hydrogenated oil products and shortening, which are found in almost every processed food, should also be avoided.

In fact, any kind of oil that has been around for a while should be suspect, even fish oils. If they've been stored too long, there's a good chance they've oxidized to some extent and can cause free radical damage in the body. As well, they likely contain altered fatty acid derivatives that are harmful to your health.

You should supplement your diet with GLA-containing oils (such as evening primrose or borage seed oils), unspoiled fish oil (if your intake of fish is lacking) and to a lesser extent

flaxseed oils as discussed previously. You should make liberal use of extra virgin olive oil for preparing foods, salads, protein drinks and in any other way that you find palatable.

Reading Between The Lines On Labels

How can you tell if a food product contains trans fat? When it comes to listing fat on food labels, manufacturers are required to only list total fat and saturated fat. Some also voluntarily list monounsaturated and polyunsaturated fat, but it's unlikely you'll see trans fat listed. Still, you may be able to tell if a product contains trans fat, even if it's not directly listed on the food label.

Look for the words "hydrogenated" or "partially hydrogenated" in the list of ingredients. These terms indicate that the product contains trans fat. However, you won't be able to tell how much trans fat is included.

If you want to learn more about good fats and bad fats and the effects they can have on your health, then I recommend you read *Fats that Heal Fats that Kill* by Udo Erasmus, published by *alive* Books, 7436 Fraser Park Drive, Burnaby, BC, Canada, V5J 5B9. This book, while being almost encyclopedic in scope, is easy to read and understand.

Chapter Six

Measuring Your Body Composition and Tracking Your Progress

The most accurate and scientific way to determine your bodyfat percentage is by hydrostatic weighing. This test is conducted in special tank and compares your weight completely under (with all air exhaled out of our lungs) and out of water. Hydrostatic weighing is based on the concept that the density and gravity of lean tissue is greater than that of fat tissue, so lean tissue will sink in water and fat tissue will float. While hydrostatic weighing is the best measurement, it can be costly, inconvenient and time-consuming. Other methods of determining bodyfat levels, such as the Bod Pod, a device that uses air displacement instead of water, while more convenient are also costly and unavailable to most of us.

Another way to measure bodyfat percentage is with anthropometric measurements. Measurements are taken with a measuring tape at sites where fat is usually distributed, such as the waist and thigh. Specific equations are used to calculate the bodyfat percentage. These measurements while less costly and easier to do but are not very accurate.

Overall, bodyfat percentage can best be measured with skin fold calipers. If done correctly calipers are an accurate, inexpensive and convenient way to measure the thickness of subcutaneous fat. This technique involves measuring fat levels in the body by assessing levels at certain key fat depots with the skin calipers. You can have the skin fold test performed by a professional, or you can do it yourself by purchasing the calipers, along with easy to follow instructions.

With the calipers you can determine your percentage bodyfat by taking skin density measurements of the suprailliac area. This area is approximately one inch above the right hipbone about five inches or so to the right of and just below your belly button (see Figure x). As per the diagram, while standing firmly pinch the suprailliac skinfold between your left thumb and forefinger. Place the jaws of the calipers over the skinfold while continuing to hold the skinfold with the left hand. Then take your measurement as per the instructions and the diagram. Once you have the measurement refer to the bodyfat interpretation chart (included with the calipers) to determine your bodyfat percentage.

While knowing your bodyfat level is a step forward, it tells you nothing about your level of lean body mass. To get the complete picture and accurately measure your present status and progress we need to find out our Metabolic Index.

Measuring Your Progress

- Weight Can Be Misleading – depending on fluid retention in the short term and on changes in body composition in the long term.
- Someone may weigh the same but have much higher muscle mass and lower body fat.

Other Ways to Measure Progress

- Mirror.
- The way clothes fit.
- What people say.
- Body Mass Index – height and weight formula that can't take into account body compositon.
- Measuring body fat is only a measure of fat loss.
- The Metabolic Index

The Accu-Measure™ Calipers

The most accurate and scientific way to determine your bodyfat percentage is by hydrostatic weighing. This test is conducted in special tank and compares your weight completely under (with all air exhaled out of our lungs) and out of water. Hydrostatic weighing is based on the concept that the density and gravity of lean tissue is greater than that of fat tissue, so lean tissue will sink in water and fat tissue will float. While hydrostatic weighing is the best measurement, it can be costly, inconvenient and time-consuming. Other methods of determining bodyfat levels, such as the Bod Pod, a device that uses air displacement instead of water, while more convenient are also costly and unavailable to most of us.

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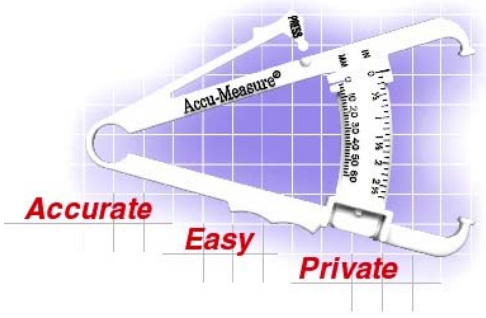
For the purposes of the Metabolic Diet and to keep things as simple as possible, we will only measure one site. The Accu-Measure™ Calipers (available from www.MetabolicDiet.com) is a precision instrument which has been shown in comparative studies to be closer in accuracy to the “gold standard” underwater weighing than any of the more elaborate methods of measuring bodyfat (without the inconvenience, expense and trained personnel and lack of privacy that these other methods entail).



With the calipers you can determine your percentage bodyfat by taking skin density measurements of the suprailliac area. This area is approximately one inch above the right hipbone about five inches or so to the right of and just below your belly button (Figures 1-5).

FIGURE 1

FIGURE 2

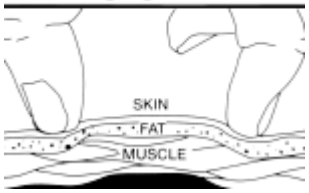


FIGURE 3

FIGURE 4

FIGURE 5

As per the diagram, while standing firmly pinch the suprailliac skinfold between your left thumb and forefinger. Place the jaws of the calipers over the skinfold while continuing to hold the skinfold with the left hand. Then take your measurement as per the instructions and the diagram. Once you have the measurement refer to the bodyfat interpretation chart below (also included with the calipers) to determine your bodyfat percentage.

While knowing your bodyfat level is a step forward, it tells you nothing about your level of lean body mass. To get the complete picture and accurately measure your present status and progress we need to use my Metabolic Index.

THE METABOLIC INDEX

The Metabolic Index™

- **The Metabolic Index (MIDx) is the best way to measure your progress while you're on The Metabolic Diet. The MIDx takes into account all the variables that other methods can't. Not only does it address the height/weight issue but also the degree of body fat. With the MIDx you get a snap shot of your body composition and progress.**
- **The MIDx is a ratio derived by considering not only weight and height but your percentage of body fat. Just plug your information into formula, in Metric or English.**

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What is the MIDx and what does it measure? The MIDx is a ratio derived by considering not only weight and height but also your percentage of bodyfat. It uses a very easy formula for calculating. In fact, just fill in your weight in pounds, your height in inches and your bodyfat level as a percentage into the following formula and do the calculations.

Figuring Out the MIDx

Body weight in pounds divided by the height in inches squared and the results multiplied by 7,250 and the results divided by the percent bodyfat.

{(body weight in pounds) / (height in inches)^2 * 7,250} / % bodyfat.

Or if you're using the Metric system:

{(body weight in kilograms) / (height in meters)^2 * 10.3} / % bodyfat.

In my case, using pounds and inches, my MIDx is 185 / (66)2 * 7,250 divided by 10%

(185 / 4356) * 7,250 / 10
MIDx = 30.8

An easier way to figure out your MIDx is to go to http://www.metabolicdiet.com/index2.htm and plug in your stats. Since it's so easy to do you can check your MIDx often and use it as a guide and measure of your progress.

The MIDx is much more advanced than the commonly used and accepted body mass index (BMI). The trouble with the BMI is it can't tell if you're overweight because you're fat or if you're heavier than they figure you should be because you've got more muscle mass than the average couch potato.

For example, even though I'm heavy for my height, I have a fair amount of muscle mass and a low bodyfat. So rather than looking fat I look trim and muscular. A couch potato with the same height and weight would definitely be fat. The big difference, besides the obvious aesthetics, is that while the couch potato has to carry his fat, my muscle carries me.

If I use the MIDx, not only do I get a more realistic look at my body composition, but I can also track my progress to improving even further. Let's say that I go on the Metabolic Diet and get down to a minimal 175 lbs and 8% bodyfat. My MIDx would then be 36. The increase in the MIDx shows that at 175 lbs. and 8 % bodyfat I'm carrying less fat in proportion to my muscle mass than at 185 lbs. and 10% bodyfat. If you was able to increase lean body mass while losing body fat to the point of maintaining my weight, then the MIDx would increase even more. At 185 lbs and 8% bodyfat my MIDx would be 38.5. When the MIDx increases, regardless of the starting point, it shows that you're making progress because you're increasing the ratio between muscle mass and body fat by decreasing body fat and/or increasing muscle mass.

The important thing about the MIDx is that it will give you a starting point and from there an indication of how you're progressing every step of the way. Once you've established your baseline MIDx it's easy to objectively see if you're making progress, if you're losing bodyfat but not at the expense of important muscle mass. If the MIDx is going up, even minimally, you're making progress.

The higher the Metabolic Index, up to a point, the better your improvement and the closer you are to your goals. The lower the Metabolic Index is, the more room for improvement there is and a determination of just how much more you have to go to reach your goals.

The ideal for the average woman is different than the ideal for average man. For women the ideal is around 13 to 20 while for men it's between 22 to 32. In reality the final point doesn't really matter since it's the improvement that counts. As long as the index keeps going up then there is some improvement being made. Once the index gets above 18 for women and 32 for men you've looking at muscle mass and bodyfat levels that are too extreme for many people but not to those who aspire to bodybuilding and competitive fitness standards. Competitive bodybuilders will be looking to get their MIDx well over 40. Olympia level bodybuilders will have a MIDx over the 100 mark.

In reality, the MIDx is an indicator that when you're losing weight you're close to maintaining or even increasing lean body mass as you lose bodyfat. In fact, the more lean body mass you have and the less fat the better the index. If someone loses even a lot of weight but loses too much lean body mass the index won't improve all that much. What that means is that even though the person has lost weight they look very flabby and therefore lost the weight by sacrificing muscle mass. This is exactly the opposite of what most people want.

Now that you've determined our Metabolic Index and we know how to measure our muscle mass, weight and fat loss progress, you can go ahead and set your weight/muscle mass/fat loss goals.

Chapter Seven

Periodizing the Metabolic Diet and Metabolic Diet Supplements

The Metabolic Diet will work for anyone who wants to lose weight and body fat while at the same time maintain or gain muscle mass. That includes those who are just interested in looking fit and toned to the bodybuilder who wants to get into competitive shape.

This section of the Anabolic Solution includes specific information for anyone looking to gain muscle mass and lose body fat, including recreational and competitive bodybuilders, on how to use the Metabolic Diet in the best way possible to get the results they want.

We'll discuss how to use the Metabolic Diet in different phases of their bodybuilding training and competition, and how and when to use some appropriate nutritional supplements for the fastest results. The starting point will be the Strict Phase of the Metabolic Diet. Carbs can be increased if need be after three to four weeks.

In this section I will give you some points for calculating starting calories for the various training and pre-competitive phases. These values are not written in stone and serve only as starting points for your journey of self-discovery. Depending on your metabolism and situation, you'll have to experiment to find what is optimal for you.

Diet Phases

There are four phases of the diet where adjustments will be made based on progress toward a competition. The mass, cutting and pre-contest phases will be familiar to most bodybuilders. We also include a "start-up phase in our diet plan. Just as the training volume and intensity in bodybuilding must be phase specific, taking into account the scope of training for each particular phase, so must the diet and nutritional supplements use.

A good bodybuilding program is one that improves muscle size, tone, density, and definition. A training program is successful only when it has these characteristics:

1. It is a part of a longer plan.
2. It is based on the scientific knowledge available in the field.
3. It uses Periodization as a guideline for planning training throughout the year.

The program must have short-term goals and long-term goals that are phase specific. Each training phase has its own objectives, so it is necessary to adapt the diet and supplements to the goals of each phase and to coincide with the overall plan.

The compilation of a plan with both short- and long-term goals must take into account the individual's background, physical potential, and rate of adaptation to the physiological challenges imposed by training.

Using The Metabolic Diet and Supplements in the Different Training Phases

In my view there are only four basic training phases that are needed to reach your goal as far as body composition, bodybuilding or strength, with a fifth phase added for competitive bodybuilders. The goal in all cases, is to increase lean body mass and decrease body fat to some degree or another. The competitive bodybuilder is at one end of the scale while the person who just wants a fit and toned body is on the other. While the goals may be different the path is the same. It's all just a matter of degree.

1. **Startup Phase**
2. **Mass Phase**
3. **Strength Phase**
4. **Cutting Phase**
5. **Pre-competition Phase**

Start Up Phase

After a lay off or even when just starting out it's a mistake to get right into it. There's no place for any routine that immediately concentrates on increasing muscle mass or increasing definition. Both your body and mind have to be conditioned for the more specific phases that follow.

It's important to get your system ready for the stress and strain of the coming programs. In short you need to build a sturdy foundation on top of which you can lay on layers of sculpted muscle.

As such, the Start Up training should consist of some progressive circuit type training. At first one set after another of a number of different exercises, using a very light load for the first few sessions, is the way to go. You can gradually increase the weight and resistance but not to the point where you're ever going all out. As well, keep the repetions in the 12 to 15 range all throughout this phase and the training time under one hour.

How long should you stay in this phase. It all depends on how long it's been since you trained and how burned out you are. Usually two to six weeks is enough with 4 weeks being about right.

Nutrition for the Start Up Phase

We'll make the assumption that you are beginning the Metabolic Diet during this phase, although this may not necessarily be the case it makes the most sense.
During most of the Metabolic Diet, you won't find yourself restricting calories much. In fact, some people may find they have a problem getting enough, especially in the Mass Phase. Even in other phases, many will find that with increased training and exercise, they can take in a huge amount without suffering any consequences. The only phase that usually requires a gradual reduction in calories is the Cutting (definition) Phase.

At the beginning, though, we want to make the switch as easily as possible. That's why it's important not to jump right in at a low calorie level. Often the fatigue and discomfort you may feel is simply from a lack of food rather than a lack of carbs. And if some of is from the actual metabolic switch, it's compounded if you're starving. Also I don't want you feeling bloated and suffering too much from the constipation and/or diarrhea that you may have as a result of the sometimes radical change in your macronutrient intake. Dieting per se often affects the bowels and can compound any effect that may come from starting on the Metabolic Diet.

That's why your STARTING POINT FOR DAILY CALORIES ON THIS DIET SHOULD BE 18 TIMES YOUR BODYWEIGHT. If you're 200 pounds, this would call for 200 X 18 or 3,600 calories a day during the weekday portion of the diet. This makes for a "static" phase where you lose some bodyfat, gain some muscle mass and maintain about the same weight. This is a phase where you'll be changing the ratio of internal masses to some degree but most of what you're trying to do is allow your body its easiest path toward adapting to the diet.

As you continue in this phase you should experiment with the formula above as a way of finding precisely where your "maintenance" level for calories is. This will let you know from what point you need to add or subtract calories for gains or losses in other parts of the diet. It's also not a bad idea to keep a 2-3 day diary of what you're eating and then have someone who has some expertise in diets look at it. That way you'll get numbers and foods you can best work with and figure what you need precisely for maintenance.

You'll need a fiber supplement when you first start the diet. One of the results of the Metabolic Diet is that the bowels must readjust to all that meat. The fats can act as a stool softener and you may experience some diarrhea. You'll need to firm them up with some fiber. The radical change in diet can also cause constipation.

Most of the problems we've found with people initiating the diet fall in this area and their failure to take the fiber necessary to harden stools or push processed food through the eliminative tract. You may be able to get away with just eating bran but there's a good chance you'll need a supplement to best get through this period.

But soluble and insoluble fiber has other purposes. Fiber has multiple effects on both the body and the GI tract, and is thought to be useful in the management and prevention of high cholesterol and triglycerides, prostate problems and diabetes. Fiber becomes even more important as you drop your calories since it decreases hunger and keeps the bowels

in synch, as well as providing some antioxidant effects from the digestion of the soluble fibers by gut bacteria, all of which become more important as you drop calories and the amount of food you eat.

As far as the phase shift, increasing the fiber in the diet decreases the absorption rate of the weekend carbs and dampens the effects of high glucose/insulin levels, as well as providing the above benefits.

The nutritional supplement line I formulated for the Metabolic Diet includes Regulate, a multi-ingredient low-carb supplement (none of the fiber is absorbed) meant to regulate the bowels and keep the whole intestinal tract healthy. It’s combination of ingredients, including several soluble and insoluble fibers, works like a charm. For more information on Regulate, see Appendix One.

If you use a commercial product such as Metamucil be careful of hidden carbohydrates. Often, refined carbs are used to make them taste better so check the carb count on the package before purchasing them.

You will probably have to take the fiber supplement for the first few weeks to a month of the diet, or for some for a few months. In most cases, by that time, your body will have fully adapted to it. If not, it’s a good idea to stay on a fiber supplement on a regular or on an as needed basis.

Some bodybuilders have also found that taking a meal high in fiber, like a Caesar Salad, in the middle of the day will do the trick. This will provide about 7 1/2 grams of carbs and, as long as you stick close to overall carb limits, shouldn't present any problem. Especially after you've been on the diet for a while.

Watch For Hidden Carbs

The start up phase will run smoother and get you in gear quicker if you remember that refined carbs are hidden in almost everything you'll find on those supermarket shelves. Seasoning, ketchup, mustard, salad dressings, nuts, BBQ sauce, breaded or processed meats, gourmet coffee and sausages can all present a problem. These foods are renowned for hidden carbs and you've got to check the label to make sure what you're getting on this diet.

Likewise, watch out in restaurants. They'll sometimes use a watery sugar on the vegetables that will wreak havoc. Our society has got a sweet tooth and you're going to run into it at every turn during the weekdays. You'll have to be especially careful during this "start-up" phase as you get used to the diet and learn where the trouble spots may be.

Don't Mix Diets

Again, the temptation may be big to mix diets combining the Metabolic Diet with aspects of other diets including the high carb and low fat diets, and putting them together in your own personal Frankenstein stew. Don't.

Many people will go on the Metabolic Diet but try to be true to their old high carb master. They'll eat meat but it's all fish, chicken and turkey. While these foods may be quite nutritious and beneficial, even when used in the Metabolic Diet, they can't be used as a total replacement for good, old-fashioned red meat. They just don't have enough fat.

What you end up doing by taking on the turkey/chicken/fish holy trinity is going on a high protein, low carb, low FAT diet. Along with being even harder to stay on than the Metabolic Diet, this diet won't get you the advantages you're looking for from the Metabolic Diet. You won't burn the fat like you should. You won't have the energy. You won't build the mass.

You need some red meat, and the more the better. You need the fat it provides. And you need to supplement your diet with other fats, such as the healthy omega-3 fatty acids including flax and fish oil. Don't shortchange yourself by trying to avoid fat (and certainly don't cut out healthy amounts of the essential fatty acids – like many do when on low fat diets) in some misled effort to stay true to forces in society who have labeled meat some kind of monster. This is simply not true.

KEYS TO SUCCESS IN THE START UP Phase

1. **-Find the "maintenance" level were calories maintain your body weight (18 X Your Present Body Weight A Good Starting Point)**
2. **-Take a fiber supplement**
3. **-Watch for hidden carbs**
4. **-Don't mix diets**
5. **-The first week is the toughest-Stick It Out**
6. **-Usually lasts 3-4 weeks**

The First Week Is The Toughest

In the first week of the diet you'll be going through the "metabolic shift" from being a carb and muscle-burning machine to being a fat burner and it can be difficult. While some people will suffer few symptoms, others will be very affected. The bowel irregularities we discussed above will come into play. You'll also experience some fatigue and get foul or fruity smelling breath caused by an increase in the production of ketones, compounds that result from the initial steps of fat oxidation.

Emotionally, you could feel irritable and mentally foggy in the first week. You may suffer some very mild disorientation.

You can also experience pre-flu like symptoms where you feel like "something's coming on" or you're "fighting something off". Energy can drop and you can feel frequently hungry. Don't be alarmed. Basically, your body is just going through a readjustment phase. It will soon pass.

Unfortunately, many people will experience these difficulties and give up on the diet or increase their carbs too soon. They try it for a couple days and don't feel good and conclude "it doesn't work for me". They never break through the barrier to experience the "metabolic shift" and the increased energy and sense of well being it can bring.

That's why we urge you to STICK WITH IT DURING THE FIRST WEEK. Once you get through that first week, it's all downhill. You'll start to feel better and better and the diet will be easier and easier. You'll get to the point where you'll feel so good the Metabolic Diet will seem like a revelation. You won't suffer those insulin ups and downs anymore. Energy will return. You'll feel strong and lean and, in most cases, you won't be tempted to go back to the old, inferior way of eating. BUT YOU'VE GOT TO GET THROUGH THAT FIRST WEEK AND PAY SOME DUES TO EXPERIENCE THE BENEFITS.

Generally you'll continue with the "start-up" phase of the diet until you've got all your energy back and have no other symptoms. This will usually take 3-4 weeks and you'll know when it's time. You'll be feeling very, very good.

At this point you can move on to the next phase, the "mass phase" of the diet. But if you find you've got enough mass, you can stay at this phase for a while and then move on to a "cutting" phase as needed. The "start up" phase, without all the introductory facets, can be returned to when needed as a transition between the "mass" and "cutting" phases of the diet. As such, it can also properly be called the "maintenance" phase of the Metabolic Diet.

If you have problems getting things going and experience fatigue then make the necessary changes by going through the troubleshooting chart and guide on pages 81-83 in the Metabolic Diet book. Once you've straightened things out you can continue with the Mass Phase or if you're massive enough, you can go right to the cutting phase and begin to zero in on that weight loss and body shaping you've been dreaming of.

Supplements for the Start Up Phase

As I mentioned above, in the Start Up Phase you should concentrate on making the metabolic shift and keeping everything else basically the same. As such, besides fiber supplements I usually don't suggest much else, other than a daily vitamin/mineral tablet, in this phase. If you're used to taking certain supplements on a regular basis you may want to continue doing so. Again, this phase is to get you into the Metabolic Diet and make that all-important shift from using carbs to using fats as your primary fuel. For this reason it's best to concentrate on making this shift and keeping other changes to a minimum.

Using my line of supplements as examples, supplements you could use include MVM, Antiox and EFA+. Also useful, and in some cases a must, as mentioned above is Regulate.

Regulate is an effective blend of natural soluble and insoluble fibers formulated to deal with occasional constipation and frequent bowel movements. The various soluble fibers and other compounds contained in Regulate have also been found useful to:

- Maintain cholesterol levels that are already within normal range;
- Support a healthy heart; and
- Increase natural insulin sensitivity.*

If you're feeling tired and generally having a hard time adjusting to the low carbs, and before you adjust your carb levels, try using Metabolic and Creatine Advantage to help get you through the rough spots.

Mass Phase

This is the bread and butter phase of training. It's where you get to put on the muscle mass and start getting strong. You won't worry if you put on some fat in this stage because it's the muscle mass you're after. You'll lose the fat later on and keep most of the muscle you've put on in this phase. Bottom line is that if you don't put on a load of muscle in this phase, you won't have any muscle to keep when you start dropping that body fat.

The idea behind this phase is to use a more structured approach to your training, and to increase the weight while decreasing the reps. The number of reps you do will vary but should be in the six to fifteen rep range, depending on the exercise and the bodypart being worked.

In this phase the exercises should concentrate on the big muscle masses. As such, it's the compound movements that you'll be using, including squats, bench presses, rowing, and deadlifts. On the other hand you'll also be working the smaller muscles especially the arm, forearm, neck and calves. You want to progressively move more weight but still keep the reps relatively high (at least relative to the Strength Phase).

The objective is to fatigue the muscles completely in every set but not to overload the musculature as far as the weight used. In this phase the training sets up the conditions for maximizing mass, while the diet meets the energy and macronutrient needs. In order to exhaust the muscles, especially as the weeks go by, you may have to use some special techniques, including cheat reps, partner assisted reps, partial reps, supersets, eccentric training and slow training, to keep the adaptation process in high gear.

The most important thing to remember during the mass phase is to keep the muscles working full out so you can maximize the increase in mass that results from your body adapting to the workload you put on it.

Nutrition for the Mass Phase

This phase is similar to the "bulking up" phase most bodybuilders are familiar with. As usual, you'll be increasing your calorie intake. On the Metabolic Diet, your goal should be to ALLOW YOUR BODY WEIGHT TO INCREASE TO 15 PERCENT ABOVE YOUR IDEAL WEIGHT.

When we use the term "ideal weight" we're talking about what you consider to be your optimum ripped or even contest weight and you've got to be practical about it. For example, if you're a competitive bodybuilder and you've been competing at 200 pounds for 4-5 years and then say your ideal weight is 315, that's not practical. More reasonable would be to take that ideal weight up to 215 or so and increase your weight to 15 percent above this, or 250 pounds, in this phase.

Realize that if you go hog wild, eat like crazy and end up going 30 percent above your "ideal weight" your body will end up being 15 percent bodyfat or more. That's not what we're looking for here. The Metabolic Diet is designed to get you more muscle and limit bodyfat. Even though you'll experience an increase in lean mass and put on less fat than you would on another diet, you've still got to exercise some discipline.

As far as the specifics of the diet itself, they're the same on this phase as on the others. You'll be sticking to the weekday high protein, higher fat, weekend carb load plan. The only change will be in the amount of calories you eat. If you want to get to a level 15 percent above your ideal weight, you're obviously going to have to eat more.

To achieve this, the bodybuilder should consume 25 CALORIES PER POUND OF BODYWEIGHT DESIRED EVERY DAY. In the example above, the bodybuilder wants to get to 250 pounds so he'll be eating 6,250 calories (25 X 250) a day. When you consider that he's probably been on a 3,600 calorie diet before that, you can see the tremendous increase in calories he's going to experience.

This can present a big problem for athletes who have trouble gaining weight. They're not used to eating and don't really have big appetites. They may think they're eating huge amounts but they're not. They'll find themselves at 6,000 calories one day and down at 1,500 a few days later. You ask them what happened and all they'll say is "I wasn't hungry."

You can't do that on this diet. You've got to be consistent. If you want, you can multiply that 6,250 calories times 7 and make your goal 43,750 for the week. That way you can vary some from day to day, for example eat 7,500 calories one day and 5,000 the next, but by the end of the week you've got to be at the 43,750 calorie level. Keep a diary or some other record of calories eaten and make sure that you're doing it.

Usually most bodybuilders find that they can take in more calories on the weekend than they can on weekdays. That's OK as long as you stay within your weekly total calories. For example if your goal is your goal is 43,750 for the week, you might want to average out at 5,000 calories or so a day on weekdays and up it to 9,000 to 10,000 calories or so on Saturday and Sunday.

KEYS TO SUCCESS IN THE Mass Phase

1. **-Increase bodyweight to 15 percent above your "ideal" contest weight**
2. **-Eat 25 calories per pound of "ideal" weight daily**
3. **-If you have trouble eating enough, make calories a weekly, rather than daily, goal**
4. **-Bodyfat shouldn't rise above the 10 percent level**
5. **-End the "Mass Phase" when you reach your "ideal" weight or rise to the 10 percent bodyfat level, whichever comes first**
6. **-Whether you've reached your "ideal" weight or not, the "Mass Phase" must cease at least 12 weeks before a contest**
7. **-A gain of 2 pounds per week is best**

Controlling Bodyfat

Of course, bodyfat is also of critical importance here. Some athletes will gain more bodyfat than others at similar calorie levels. As well, depending on personal goals, some individuals won't mind gaining a little more fat if it means more muscle and strength. While the 10% rule is best for competitive bodybuilders, and actually any athlete who competes in a specific weight class, other athletes may be willing to go higher and find that even up to 15% is acceptable, especially if it means more hypertrophy and strength. Just keep in mind that if you let your bodyfat levels get too high, it'll be that much harder to get it off.

Since most athletes want to maximize muscle mass and strength, and minimize bodyfat, we'll use the competitive bodybuilding model to discuss reaching their weight and muscle mass gains during the Mass Phase.

We've found that most bodybuilders can maintain a 10 percent bodyfat level relatively easily if properly utilizing the Metabolic Diet. This is also a good level to stay at to keep fat in check in any preparation for competitive bodybuilding. That's why we advise those on the Metabolic Diet to keep close track of their bodyfat level and don't let it go above this 10 percent level.

With this in mind the goal in the "Mass Phase" is to continue eating and gaining weight until you either reach a level 15 percent above your "ideal weight" or hit 10 percent bodyfat, whichever comes first. Chances are, no matter what comes first, you'll get the

mass you want on this anabolically supercharged diet. It's not like the old days with the high carb diet where you've got to gain so much weight and fat to get mass.

You have to use your head here, though. If you find yourself still gaining weight but haven't reached your "ideal" and your contest is 12 weeks away it's time to stop the "Mass Phase". It's time to begin cutting to properly prepare yourself for the contest regardless of weight. In this way, time before a contest joins bodyfat and weight as a determinant in how long you'll stay in this phase.

On the other hand, I know many bodybuilders who have come to believe they should gain mass quickly but I don't agree with this. 2 pounds a week is good enough. If you can gain 2, you won't gain a lot of fat during the week on the Metabolic Diet. It'll be mostly muscle. Though I'd vary this one pound plus or minus given individual differences, I think 2 pounds a week is the best benchmark for bulking up.

Mass Phase Duration Can Vary

Not that the Mass Phase can't be hurried, but you always want to maintain right about 10 percent bodyfat. That way you can get in contest shape fast. I've seen people go through a 20-week cycle in which they've bulked up for 8 weeks (3 pounds a week), skip the other phases and then use 12 weeks for cutting (1-2 pounds a week). Though they bulked for only 8 weeks and cut for 12, their weight was still above what it was for the contest before. And they were as cut if not more so.

The whole goal here is to come into a contest a little better than before you were on the diet. This may mean only 3-4 pounds. Or, in more long-term training, it could be 25. The big thing is, EVERYBODY MAKES PROGRESS WITH THIS DIET. To those people who've been the same for 15 years I say, here's a way to break out.

Some bodybuilders prefer to point for a big contest, like a Mr. Olympia, and take the whole year to do it. That can easily be done on this diet, too. You may want to mass for 20 weeks, maintain by going into the Strength Phase for 10 weeks, and cut for 20, gaining 60 pounds and losing 40 over the course of a year. You'll come in 20 pounds ahead of where you were last year and be looking great.

Keep in mind that you may also want to stay in the Mass Phase but utilize the maintenance diet described in the Strength Phase sections, if you gain the mass and bodyfat levels you want before you’re ready to go into the Strength Phase. Let's say you've got a contest in 30 weeks. You've gained all the body mass you want in 8 weeks but you don't want to go to the other phases just yet. You can maintain your gains by staying on the maintenance phase for 6-8 weeks. Then, when you're ready, you can go into the cutting phase in preparation for the contest.

Weekly Weight Gains

You may see big fluctuations in weight, especially at the beginning of the diet, as a result of your weekly carb loads. All the extra carbs and water can make for a gain of from 5-10 pounds between Friday and Monday.

If this happens, don't stress out. It's natural. When you go back on the Metabolic Diet on Monday you'll immediately begin shedding those pounds, which are mostly water. Monday-Wednesday you'll be cleaning out much of what you put into your body on the weekend. By Wednesday you should be pretty well flushed out and feeling good again. Depending on what phase of the diet you're on, you can manipulate calories so you get either the weekly weight gain or loss you're looking for by Friday.

If you're after maximum mass, without putting on too much bodyfat, you can do this by dramatically increasing your calories on the weekend and keeping the increases moderate during the weekdays. For example a friend of mine who went to well over 300 pounds while in the mass phase ate over 12,000 calories a day on both Saturday and Sunday. He kept this up until he was at the bodyweight he wanted and then dealt with the increased fat by going on the Cutting Phase for a longer period of time. He felt that doing it this way allowed him to hit the competition with more muscle and just as ripped than if he didn't gain the extra weight during the Mass Phase.

Extreme Variance

- **Extreme Mass Phase.**
- **Huge intake of carbs and calories over the weekend. Up to 12,000 calories on both Saturday and Sunday.**

Supplements for the Mass Phase

In the Mass Phase it's the food that counts more than the supplements. Getting your quota of low carb calories will supply you with much of what you need to pack on size and muscle. However, several of the more general supplements, including one or more of MVM (my complete vitamin/mineral/nutrient supplement), Antiox (my antioxidant mix), and EFA+ (my essential fatty acid formula that contains much more than just the essential fatty acids), should be used on a regular basis, and others, such as ReNew, Regulate, Joint Support, LoCarb MRP and Sports bars should be used as needed. For example if you're running into training problems, joint pain, injuries, and overtraining, I recommend that you use Joint Support and/or ReNew. Also the LoCarb MRP and Sports Bars can be extremely useful for snacks or after meals to help you reach your calorie goals in a healthy, low carb way.

Also, if you reach a plateau in this phase, especially in your training, or if you want to gain mass faster, you might want to use Exersol to maximize your training efforts. Exersol is a three-phase exercise-oriented nutritional support system that takes the guesswork out of what supplements to use before, during and after training. As the most scientifically advanced and sophisticated exercise orientated nutritional support system ever formulated, its use is invaluable for anyone who wants to lose body fat and build muscle. For more details see Appendix One.

In fact, for more information on all the supplements mentioned in this book, see Appendix One. Also check them out regularly on www.MetabolicDiet.com. There you'll find the most up to date information on my evolving Signature Series line of nutritional supplements that I formulated especially for the Anabolic Solution and the Anabolic/Metabolic Diet. These supplements are unique and effective and cover the complete gamut of supplement needs. For example Power Drink fills a gap that's been overlooked by all the other supplement companies. While they're absorbed in what to use before and after training, and rightly so, they're missing one of the most important opportunities for maximizing the results you get from training.

A Quick Guide To Supplements To Use In And Around Training.

Resolve or Resolve Competition, Power Drink and Amino take care of the pretraining, during training, and immediate post training periods (see Exersol in the Appendix). However, to round off training supplementation we should also add MRP LoCarb. This meal substitute, taken within an hour or so after training, will maximize muscle mass and recovery for anyone following the Metabolic Diet, better than any other post workout product. If you're in the Mass Phase then you can mix it with milk (taking the carb content into account) and if you're in the cutting phase then taking it with water works best.

The combination of specific proteins, fats and minimal carbs in MRP LoCarb is engineered to dramatically increase protein synthesis, maximize muscle intracellular triglycerides and glycogen, while at the same time limiting fat formation and storage, and increase recovery. The special blend of proteins in MRP LoCarb, similar to the one that's in the Myosin

Protein blend, maximizes protein synthesis and minimize protein breakdown for several hours.

Also, while taking in fat post workout will slow protein absorption in those that are carb adapted, it doesn't in people who are fat adapted, such as those on the Metabolic Diet. In fact taking in some fat is beneficial as not only doesn't it slow down protein absorption and thus allows maximum protein synthesis, but it also increases intracellular fatty acid content, resulting in increased muscle size and increased endurance and recovery.

Supplements in and Around Training

Prior to Training

Resolve or Resolve Competition

During Training

Power Drink

Right After Training

Amino

Within an hour of Training

MRP LoCarb in Water, or with Milk

Power Drink - Filling the Gap

We all know that during training muscle is broken down. Most people believe that this breakdown is a necessary part of training. After all you have to break muscle tissue down before you can build it up. Don't you? Unfortunately that's one of the most stubborn training myths. Muscle breakdown isn't what provides the adaptation stimulus for increasing muscle size. It's the damage done to the muscle cell structure and the subsequent adaptation to that damage that determines the muscle building response. You don't have to break down the muscle at all to get this response in full force. In fact doing so is counter productive. The more muscle you keep from breaking down, and the more you increase protein synthesis, the better the results from your training. Taking Power Drink while you're training will put you miles ahead of everyone else who just uses water or at best a carbohydrate low protein drink.

As well, Power Drink, because of its positive effects on the fat burning hormones and mechanisms actually allows you to burn more body fat while you're training. And with the

other ingredients in Power Drink you can train harder and longer and know that you have a powerful ally that will help you make good use of all that hard work.

Bottom line is that Power Drink is a revolutionary new concept in training drinks. This drink provides the nutrients necessary to increase muscle size and decrease body fat. By providing all the necessary ingredients to feed working muscles and shift the use of body fat as the energy source for training, Power Drink dramatically increases the positive effects of training, allows you train longer and harder, and increases recovery.

Power Drink is ideal for both those who want to increase muscle size and lose body fat and those who simply want to lose weight and body fat but maintain the muscle they now have.

Besides the hefty dose (44 grams) of the best quality proteins available anywhere, Power Drink also contains amino acids, electrolytes and other ingredients that will replace and replenish nutrients and fluid lost through exercise, prevent muscle cramps, and increase training time and efficiency.

Dr. D's Metabolic Shake

I often recommend combinations of various supplements for the different training phases. One example is a metabolic shake that some people find very useful as sort of a super shake for all the phases.

To make Dr. D's Metabolic Shake, take one packet of APT MRP LoCarb Shake, one to two scoops of each of the APT Myosin Protein and APT Creatine Advantage and blend to taste. This super shake gives you a 1-2-3 punch for maximum effect on muscle mass, strength and fat loss. The two versions of this shake are described below:

(a) **Dr. D's Metabolic Shake**: Uses only the three mixed together to minimize carb intake and especially suited for the Cutting Phase.

- APT MRP LoCarb
- APT Creatine Advantage
- ATP Myosin Protein

(b) **Dr. D's Carb-Enhanced Metabolic Shake:** Includes extra carbs and is especially suited for the Mass and Strength Phases:

- APT MRP LoCarb
- APT Creatine Advantage
- ATP Myosin Protein
- Add fruit and/or scoop of ice cream to desired carb level

Nighttime Protein Supplements

Grow muscle while you sleep. Is that possible or just hype? In fact it is and it's due to the dynamics of sleep and exercise.

The fact is that you don't build muscles while you're exercising but while you're resting. Following a single bout of resistance training in healthy males, Chesley and colleagues found that muscle protein synthesis in the biceps brachii remained elevated for up to 24 hours postexercise.[68] During this recovery period the inhibition of protein synthesis in previously less active muscles and fibers makes it possible to concentrate the adaptive protein synthesis for structures that performed the highest load. That means that the muscle you worked the most get the most attention and grow more in order to adapt to that day's exercise.

If all this is the case then why do we all neglect that part of our 24 hour day when we rest the most? That's right, I'm talking about that forgotten seven or eight hours while you sleep. Why do we fast during the night and then try to make it up with a meal to break that fast? Having a good break-fast just won't cut it. We need to think about all those wasted hours between the time we go to bed to the time we get up and break our usual fast.

During our night time fast, since it can't get the energy and nutrients it needs from food, your body gets them any way it can, usually be sacrificing some of your muscle for the amino acids your body needs for it's various functions and for fuel.

The other side of all this is that if you're short on the building blocks that make up muscle, then you're not going to build muscle as well as losing it. That's a double whammy that'll knock your muscle mass down.

We already know that the body's primed for growth and repair while we're sleeping. So what we need to do is to give the body the chance and the material to do its job. If you do it right, you can make maximum use of that beauty sleep to grow muscle, repair and rejuvenate the body and mind, and lose body fat.

Anabolic and Catabolic Influences for Increasing Muscle Mass

It's important to understand what's involved in increasing muscle mass. There is a delicate balance between protein synthesis (building muscle) and protein catabolism (breaking down muscle). Both processes go on simultaneously and it's the balance between the two that decides whether or not you're going to gain or lose muscle mass.

It's also important to understand that even if protein synthesis increases all during sleep because of an increase in anabolic hormones, the natural tendency of the body is to break down muscle in the postabsorptive phase – when there is no longer any food in the GI tract that is being absorbed. The body needs a constant supply of energy and nutrients and if this supply is not forthcoming from dietary intake then it takes what it needs from body stores and the breakdown of tissue, especially muscle.

It's the net gain in protein accretion that's important, not the degree of either protein synthesis or degradation. Even in states in which extensive protein degradation, as long as protein synthesis is greater, then we're in positive protein balance and building muscle. So it makes just as much sense to try and decrease protein degradation as to increase protein synthesis, and makes the most sense if you can do both at the same time.

Processes that decrease catabolism are called anticatabolic in that they decrease or even prevent muscle catabolism. It's important to realize that muscle mass can decrease as a result of decreased catabolism, either physiologically or through the use of anticatabolic agents, just as much as from anabolism. In fact if catabolism is not checked it can easily outstrip any anabolic processes and result in muscle loss.

The Missing Link

So if you eat right, train hard, and take your supplements and you're still not growing, you better start taking your sleep time more seriously because that's just may be the anabolic primer you're missing.

Most of us take sleeping for granted. We go to bed and wake up in the morning with little care of what goes on in between. But if you're a bodybuilder and you want to maximize the effects of your training you should care because what you do, or more specifically what you're not doing, while you sleep may be sabotaging all your hard training.

The first thing you have to do is to make sure you're getting your fair share of sleep. Look at sleep as a "do not disturb" sign for out bodies and mind and make sure you're not short changing yourself by not getting enough of it. Without enough sleep both our bodies and minds, and our metabolism are adversely affected.

We live in a society that's in a frenzy 24/7, and few people value a good nights sleep. That's because we have so many demands on us that we're always looking for a few extra hours to catch up. And most of us cut back on our sleep to gain that time. As such, sleep deprivation is all too common in our culture, with disastrous consequences on our mental and physical health. And as important, at least for us, on our ability to gain muscle and lose body fat.

Besides all the rejuvenating effects of sleep on our brain and nervous system, many of the body's cells also show increased production and reduced breakdown of proteins during sleep. Since proteins are the building blocks needed for cell growth and for repair of damage from factors like training, stress and even ultraviolet rays, the time we sleep should be optimized to get the best results.

Phases of Sleep

Although we don't pay much attention to sleep, we all know that there are times when we sleep deeply and times when we sleep lightly and have dreams. Actually there are five stages of sleep that are repeated in a cycle several times during the night. For our purposes, however, we can simplify them into two stages, deep sleep and light or rapid eye movement (REM) sleep.

When we're first falling asleep, we drift in and out of sleep and can be awakened easily. This progresses into the first deep sleep of the night, and the time in which there are changes in the regulatory influences and growth hormone peaks.[6970] In deep sleep we're almost in a coma, eye movements and muscle activity stop altogether and brain waives become slower until in the deepest sleep, the brain is producing delta waves exclusively. It appears that it's in this mode that your body goes into a repair and rebuild or "rejuvenation" mode.

When you progress from deep sleep to REM sleep, you are actually beginning to wake up. In REM, breathing becomes more rapid, irregular and shallow, eyes jerk rapidly in various directions, muscles that are already limp from deep sleep become temporarily paralyzed (likely to prevent us from acting out our dreams), heart rate increases and blood pressure rises. REM is the sleep from which dreams are born and persons awakened during REM will usually be able to remember some details of their dreams.

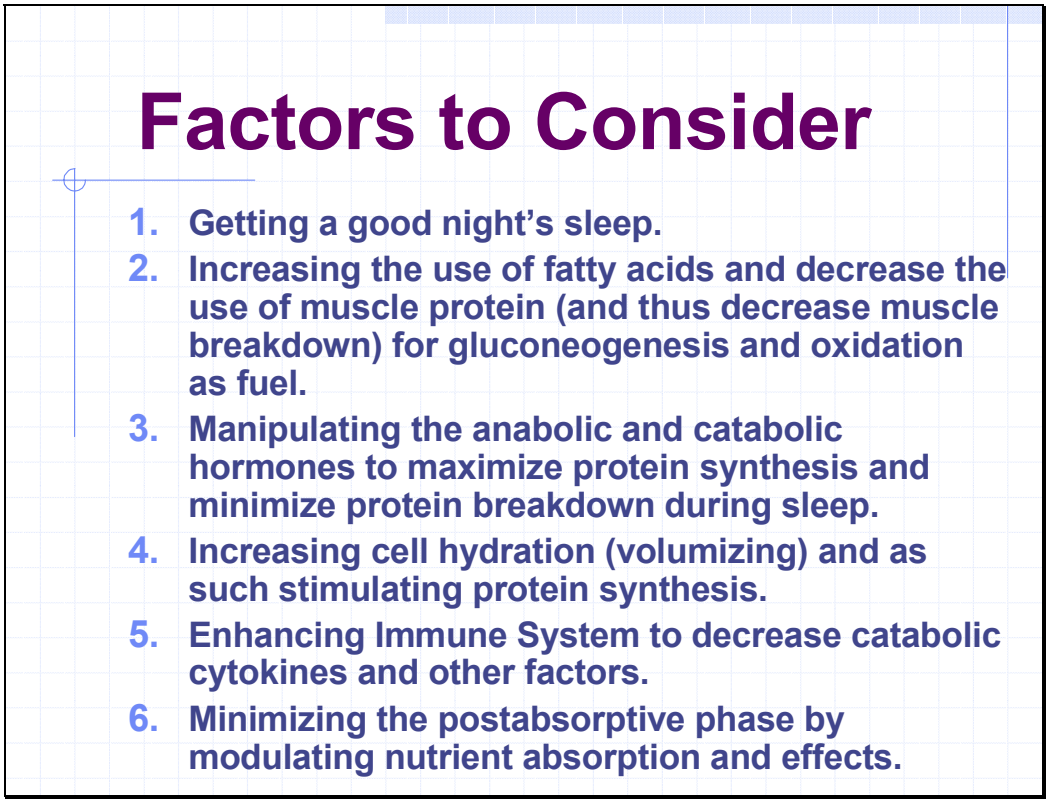
In REM sleep neuronal messages from the motor cortex of the brain are blocked at the brain stem. As a result, your muscles are completely relaxed and you are unable to move. Thus, REM sleep is characterized by an active brain, dreaming away, in what amounts to a "paralyzed" body.

While there's been a lot of research on what goes on when we sleep, there are a lot of gaps in our knowledge. On top of that many of the studies reveal contradictory or inconclusive findings. So for the purposes of this article, while I'll be drawing on solid scientific research, I'll also be extrapolating from known facts, and mixing this in with my own feelings and opinions.

So What Can You Do?

For years I've felt that we were missing the boat when it came to maximizing muscle mass because we ignored overcoming the nightly decrease in muscle growth caused by post-absorptive muscle catabolism. Well no more. We have the technology to provide full spectrum night time nutrition that will fill this crucial gap.

So what's to do? Well there are lots of factors to consider. Ideally what you want to accomplish is to make sleep time growth time by using a six pronged approach.



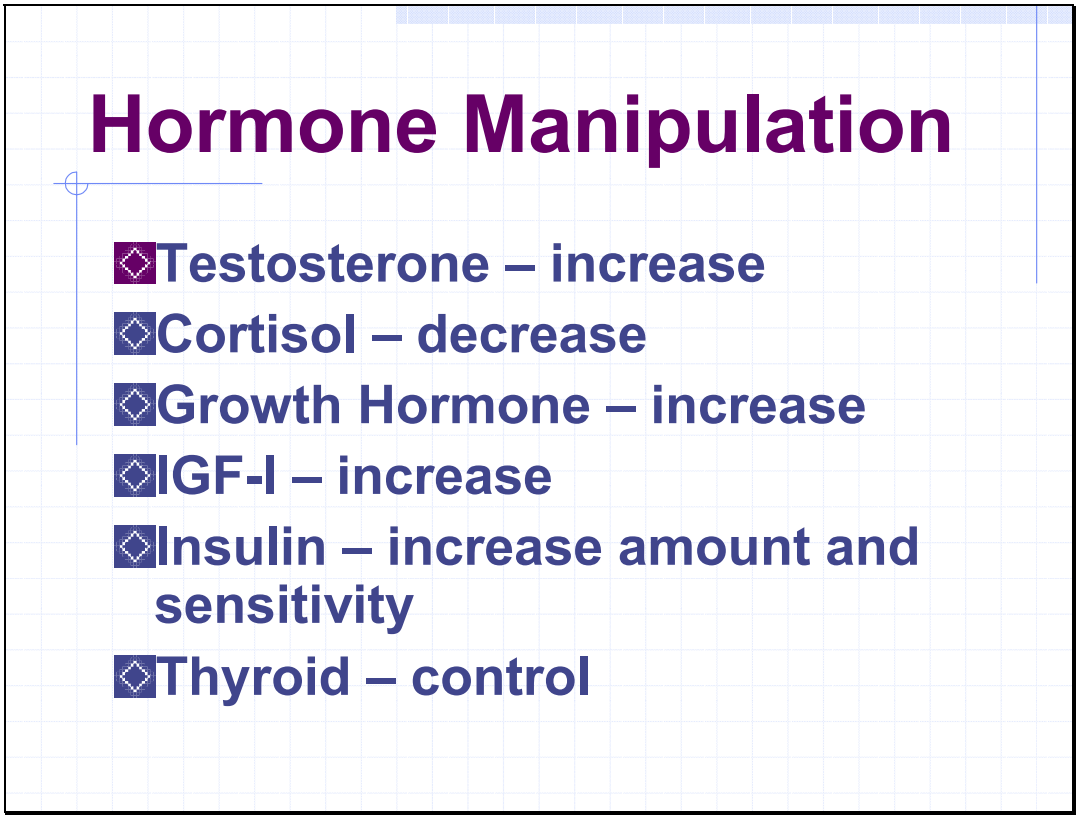
First of all you want to make sure that you get a good nights sleep, with solid and refreshing deep sleep phases and REM sleep phases. The deep sleep is important to create that night-time GH peak, and the REM for it's cognitive and immune system rejuvenation. In fact sleep deprivation, something all of us go through with the hectic pace we keep, can not only deprive you of the benefits you should be getting from exercise, but it can impact all areas of your life including your ability to work, your body's ability to defend itself and your maintenance of a positive attitude.

Exercise can affect sleep quality. Although there are a number of inconsistencies in the literature,[71] it seems that while light exercise favors sleep and enhances all the sleep phases,[72] more intense exercise can have adverse effects on both sleep latency (the time it takes to fall asleep) and sleep quality.[7374]

So sometimes it's hard to get to sleep and get a good night's sleep after a hard workout. A combination of just the right ingredients taken before bed will ensure that you get a good shot at a restful and rejuvenation night's sleep.

Optimizing the Hormones

Secondly you want to optimize the anabolic and minimize the catabolic influences, as well as maximizing fat burning. That can be done by manipulating and maximizing the sex hormones, especially testosterone, and both GH and IGF-1, at the same time as insulin. As well, you should lower cortisol.



Under normal conditions, testosterone, GH and subsequently IGF-1 all increase during sleep. Keep in mind that high levels of all three, equals positive nitrogen balance and muscle growth.

The night time increase in all three hormones, including the GH peak during slow wave sleep,[75] has been well established.[76] In fact in part because of these increases, sleep may be the prime period for anabolic activity.

However, it has also been shown that heavy resistance training[77] and long duration exercise[78] may adversely affect testosterone levels, and night time GH, IGF-I and cortisol release . As such it's important to augment GH release in the crucial 24 hours after training, especially at night.

Augmenting the night time anabolic hormones is even more important as we age. Not only do the general level of these hormones decline significantly and steadily after the third decade, but the quality of sleep and the night time surge of GH and IGF-I are adversely affected by aging.[7980] So it's also important to make sure we're sleeping well and to naturally augment these hormones as we age.

Anabolic Effects of Increasing Cellular Hydration

Using certain compounds to increase cell hydration and cell volume is also a good strategy. That's because cell volume homeostasis involves the integration of events that

allow cell hydration to play a physiologic role as a regulator of cell function, including protein synthesis.[81]

Taurine, glutamine and the electrolytes sodium and potassium are transported into cells with a resulting osmotic swelling of the cell that produces an increase in cell volume. It is generally felt that the mechanism through which there is an activation of key enzymes in these metabolic pathways involves the compound-induced cell swelling and results in an increase in protein synthesis.[82]

Enhancing the Immune System

While a good nights sleep enhances the immune system and decreases the production of inflammatory cytokines,[83] the use of certain compounds can increase this response. Enhancing the immune system decreases catabolic influences and improved net protein balance. Several compounds can enhance the immune system and include glutamine, glutathione, vitamins A and E, whey, casein and milk isolates protein, and colostrum.

For example, glutamine acts as a primary fuel for certain immune cells, which are activated under stress conditions. High intensity exercise, while considered a beneficial form of stress, still exerts a glutamine-depleting effect on muscle. Exogenous glutamine enhances the immune system to decrease catabolic cytokines and result in a positive nitrogen balance and increased recovery. Colostrum on the other hand contains several immune components and also contains IGF-I, an anabolic growth factor.

The Dreaded Postabsorptive Phase

Next you want to minimize the postabsorptive phase by making what you take before bed last as long as possible. Ideally for the full time you're sleeping.

The human body, through metabolic and hormonal controls, has evolved to meet the continuous metabolic needs of the body even though eating and thus provision of essential nutrients is intermittent.

During and after feeding while food is still being absorbed, in the postabsorptive period (after a meal has been almost completely digested and the resulting nutrients absorbed into the body - usually 3 to 4 hours after a meal – the transition from the postprandial to the fasting state occurs within 6-12 hours after a meal) and even under fasting conditions (as long as the fasting state is not extensive), the body tends to keep a constant energy output by utilizing dietary sources when available and at other times by mobilizing internal substrates (glycogen, cellular and bodyfat, cellular protein) that can be used as energy sources.

Postabsorptive energy sources include circulating glucose, fatty acids, and triglycerides, liver and muscle glycogen, the branched chain amino acids (used by skeletal muscle) and the amino acids alanine and glutamine (released from skeletal muscle and used for gluconeogenesis, in the case of glutamine directly as fuel by the immune system and gastrointestinal tract).[84,85] In a normal 70-kg man these postabsorptive energy sources

provide up to 1200 kcal (800 calories from carbohydrate sources). These sources can be exhausted in less than 12 hours if no other food is consumed.

In an individual that is dieting to lose weight or in an athlete that is limiting both caloric and fat intake in order to maximize lean body mass and minimize bodyfat, these sources may amount to less than 500 kcal since liver and muscle glycogen levels as well as circulating triglycerides and fatty acids are often limited.

In these cases the postabsorptive phase can be avoided by loading up on protein and amino acids before bed. This provides the body with both slow (for long term protein absorption and delays the postabsorptive phase) and fast proteins. The fast proteins allow for a protein peak early in the sleep process and act as an added stimulus for the GH peak, which in turn increases long term IGF-I secretion. There is also a decrease in the formation of glucose through gluconeogenesis, a process by which glucose is formed from other substrates, mainly lactate, pyruvate, glycerol and amino acids.[86],[87],[88] The end result is an increase in the use of fatty acids and ketones by the body, which in turn spares muscle from being broken down and increases the loss of body fat.

Ideally there should be no postabsorptive phase and all the anabolic and anti-catabolic effects of the various hormones should be maximized (through a synergistic action of testosterone, insulin, GH, IGF-I and thyroid), and the catabolic effects of cortisol minimized at a time when the availability of nutrients is maximal. Creating this ideal environment for muscle growth requires both knowledge and dedication.

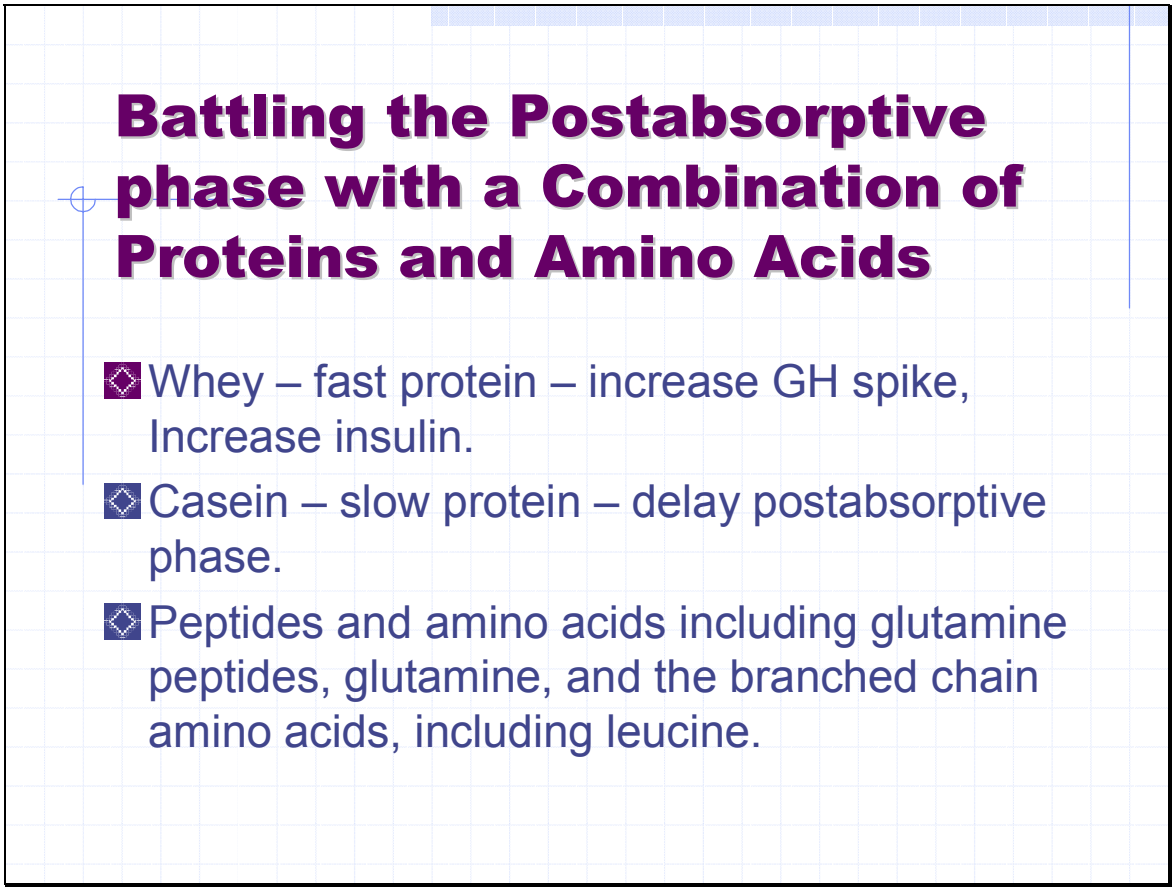
We know that the availability of amino acids is both anabolic and anticatabolic per se, even when hormones are not optimized, and more so when they are. The lack of amino acids leads to a catabolic response as muscle tissue is broken down to supply the body with the nutrients and energy it needs during sleep.

So it is important to maintain positive "nitrogen balance" in the body while sleeping. When you do and conditions are right so that your rate of protein synthesis exceeds your rate of degradation, and you maintain a positive nitrogen balance, you can grow while you sleep.

So what we need to do is to try to have a continual supply of exogenous amino acids available through the night. This isn't possible with just using the foods and supplements now available. Also eating a big meal before bed, to try and stretch out how long food is absorbed, can be counter productive in that first of all it can make it uncomfortable to get to sleep, secondly it may decrease that important GH spike that usually occurs a few hours after you fall asleep, and perhaps more importantly, decrease night time levels of IGF-I.

You could always get up half way through the night and eat but doing so would be disruptive and likely lead to disturbed sleep and thus, for the reasons we've already mentioned, be counter productive.

What's needed is to create an anabolic, anticatabolic environment that will spare muscle by providing alternate fuel during sleep and as such allow the body to grow muscle and lose body fat during sleep.



Summary

Converting your night-time down time to the plus side with just the right combination of supplements will do you and your body a world of good by:

- **Decreasing muscle catabolism**
- **Increasing muscle anabolism**
- **Accelerating the breakdown and burning of body fat**
- **Increasing metabolic and muscular recovery**
- **Decreasing the effects of overtraining**
- **Increasing repair of over stressed and injured tissues**
- **Increasing sleep quality and restorative effects**

NitAbol is a combination of three supplements that will maximize protein synthesis and increase fat oxidation while you sleep.

Strength Phase

Nutrition for the Strength Phase

This phase is an intermediate phase between the classical Mass or Bulk Phase and the Cutting or Definition Phase. The nutrition goals in the Strength Phase is to maintain much of the weight and solidify all of the muscle mass gained during the Mass Phase, and ideally to increase muscle mass marginally, while at the same time maximizing the strength that would normally go along with the increased weight and muscle mass.

During this phase we go through the process of solidifying the muscle mass gains of the Mass Phase, and increasing strength.

During this phase the bodybuilder should consume between 17 and 25 calories per day per pound of the top bodyweight he or she attained during the Mass Phase. Using the same example, the 250 lb bodybuilder will now cut back roughly 2 calories per pound per week. That means that the first week of the Strength Phase he'll take in 23 calories per pound of bodyweight or 23 * 250 = 5,750 calories per day. The following week he'll take in 21 calories per pound of bodyweight or 5,250 calories per day. The third week 19 calories per pound of bodyweight or 4,750 calories per day. The fourth week 17 calories per pound of bodyweight or 4,250 calories per day and so on. Once your weight stabilizes so that you're no longer gaining weight, keep the calories at that level or just slightly above or below until you go into the Cutting Phase.

KEYS TO SUCCESS IN THE STRENGTH PHASE

1. **Stabilize your muscle mass gained through the Mass Phase.**
2. **Bodyfat shouldn't rise above the levels of the Mass Phase.**
3. **Stay at the same daily calorie intake that you arrived at during the Mixed Phase.**
4. **Dietary protein intake should be at the same level with a lower level of dietary fat intake as compared to the intakes in the Mass Phase.**
5. **For maximum results, the use of nutritional supplements is a must.**

Supplements for the Strength Phase

In the Strength Phase, the supplements are more important than in the previous three phases. It's still important to get your quota of low carb calories and dietary protein to supply you with much of what you need to solidify your increased muscle mass (by increasing muscle protein content and fiber density) and start getting ready to decrease your bodyfat. However, because the daily calories have decreased substantially over the hypertrophy phase, and your training intensity is increasing, supplementing your diet with some targeted supplements will allow you to make better progress.

As such you'll need more than just your basic one a day vitamin and mineral tablet. MVM (my complete vitamin/mineral/nutrient supplement), Antiox (my antioxidant mix), and EFA+ (my essential fatty acid formula that contains much more than just the essential fatty acids), should be used on a regular basis.

At this point **Exersol** **(made up of Resolve, Power Drink and Amino)** is a must. See the Appendix for details.

ReNew, Regulate, Joint Support, LoCarb MRP and Sports bars can be used as needed.

For more information on these supplements see the supplement sections in the chapters describing the Mass and Cutting Phases, and the chapter Doing It Naturally. For complete information on these products log on to www.MetabolicDiet.com.

But besides the above supplements, the Strength Phase demands a more sophisticated array. At this time it's usually necessary to supplement the diet with additional "lean" protein and to make up the added protein calories by decreasing dietary fat. As well, we need to use three or four new formulations to maximize the anaerobic and aerobic energy systems and the anabolic drive.

- **Myosin Protein** allows you to keep protein levels up at a time when it might be difficult to take in enough protein from foods while at the same time cutting calories. It's an advanced synergistic blend of high quality protein powders including a specially developed source of glutamine peptides. Myosin Protein Complex, containing both fast and slowly absorbed proteins, is engineered to increase protein synthesis and decrease muscle breakdown by a direct effect, by increasing the anabolic and decreasing the catabolic hormones, and by providing the body with an increased immune response to combat overtraining and maximize the anabolic and fat burning effects of exercise. We use a variety of the highest quality protein powder to make use of the special characteristics of each and thus enhancing their overall effect while at the same time eliminating their relative disadvantages. Because of the gentle processes used to isolate the various proteins, the formula maintains the beneficial immune and other effects of the undenatured whey, casein and soy proteins.

- **Creatine Advantage** keeps the energy system in high gear despite the decreased caloric intake. As well, by increasing endogenous levels of phosphocreatine,

Creatine Advantage increases the immediately available energy that is so necessary to fuel the Strength Phases' increased exercise intensity. Added amino acids and dipeptides allow a natural increase in the absorption and utilization of creatine and increase the volumizing, anticatabolic and anabolic effect of the formula. The added energy ingredients make Creatine Advantage the most advanced creatine and energy mix on the market today and one that will maximize muscle mass and performance.

- **TestoBoost** contains several natural ingredients and is designed to improve natural testosterone formation, and decrease any potential side effects from conversion of testosterone to estrogens and dihydrotestosterone. By boosting the body's natural testosterone, TestoBoost increases muscle mass, decreases bodyfat and increases sexual desire.

- **GHboost** is formulated to increase muscle mass and decrease bodyfat by enhancing the body's natural production of growth hormone (GH) and insulin-like growth factor-1 (IGF-1). Because of its effective dual action, it's an advanced growth hormone stimulating product. The natural physiological increase in both GH and IGF-1, up to a level consistent with an individual's genetic potential, will enhance muscle development, strength, and size while decreasing bodyfat.

Used together, TestoBoost and GHboost maximize endogenous production of and maximize the anabolic and fat burning effects of testosterone, growth hormone and IGF-1.

- **NitAbol** – Grow muscles and burn bodyfat while you sleep. For information on NitAbol, see Appendix One.

Cutting Phase

Again, we don't change the mechanics of the Metabolic Diet in any phase, at least as far as the carb intakes. It's always 5 days high protein, low followed by 24-48 hours of carb loading. The only thing we change is the amount of calories and fat we eat. Since it's important to keep protein levels high (perhaps even higher than when in the other phases since as you lower calories, more protein is oxidized directly for energy, and used to form glucose through the gluconeogenesis) and carbs are already low, we have to decrease the amount of fat we eat during the low carb phase and to a lesser extent through the higher carb phase.

In the Cutting or Definition Phase we'll be cutting calories as a way of trimming fat off the body. The reason we can do this is quite simple. We've trained our bodies to burn fat as its primary fuel, so as we decrease the caloric intake and dietary fat levels, the body naturally turns to using our body fat as fuel and continues to spare muscle.

Lower Dietary Fat When Adapted

- **Once fat adapted and you're into a cutting phase the amount of fat in the diet naturally decreases. The body then uses body fat as its primary fuel. Thus lipolysis and oxidation of body fat increases.**
- **Protein intake stays the same or increases**

As a rule of thumb, you should cut 500 calories a day from your diet the first week. If you were at say 4,000 during the Strength Phase cut it to 3,500 per day during the first week of your cutting. The next week you should drop another 200 to 500 from the daily diet, depending on how many calories you're taking in. For example someone taking in only 2000 calories would only cut down 200 calories. During this time you must measure bodyfat weekly. What you want to do is LOSE 1.5-2 POUNDS OF BODYFAT EACH WEEK. Losing 1.5-2 pounds a week will insure that you don't lose appreciable lean mass as you cut.

If you find at the end of the second week that you've lost less than 1.5 pounds during the week, you'll know you should cut another 200 to 500 calories the next week and continue cutting calories in subsequent weeks, anywhere from 100 to 500 calories until you're at the 1.5 level. Likewise, if you're losing more than 2 pounds of bodyfat during the week you'll know you've cut too many calories and will need to adjust them upward.

And you don’t have to make the cuts in specific calorie increments. You can fine tune how many calories you add or subtract in any amount. The usual progression is to make the changes 500 calories at a time the first time, and then maybe 100 to 500 calories the next few weeks and then 100 to 200 calories at a time as you get closer to your goal.

The important thing to remember here is that it's not calories we're really after. It's bodyfat. Because of this you've got to allow for individual variations in calorie count to get that optimum 1.5 to 2 pounds of fat loss. You'll be doing plenty of experimentation in this phase to find the right caloric intake for you. Though the 500 calorie drops we outlined above seem to be a good general starting point, especially for those starting with the higher calorie intakes, you're going to have to find what works best for you. Also the calorie levels you eventually drop to will vary according to your initial caloric intake as well as to you metabolism and how you respond to the calorie cuts.

For example, I've dropped some bodybuilders on the diet from a 5,000 calorie a day level to 3,000 in the cutting phase. In a few others, I've taken them as low as 1,500 to see what happens. If they're losing a fair amount of bodyfat (remember the 1.5-2 pound guideline), getting leaner and not losing significant lean body mass I'll leave them at that level until they "lean out". At that point, I'll increase calories gradually to the point that they'll maintain or possibly even lose bodyfat while increasing lean mass again.

Bodybuilders who just want to cut up and are starting at a higher bodyfat level can go directly into the Cutting Phase. They should start at a reasonable daily calorie value, usually15 CALORIES PER POUND OF BODYWEIGHT. Someone weighing 200 lbs at say 17% bodyfat should start at around 3000 calories a day and then follow the instructions above on calorie adjustments needed to maintain the optimum weekly fat loss and minimal loss of muscle mass. Don’t start too low. You’ll have plenty of time to lose that bodyfat in the right way. If you start too low the lack of food may be more of a problem than the lack of carbs, and may sabotage your efforts to stick to the diet through the all-important first week.

Keys to Success in the Cutting Phase

1. **-Measure bodyfat weekly**
2. **-Lose 1.5-2 pounds a week**
3. **-Experiment with caloric intake. Cutting 500 per day the first week and 100-500 per day in subsequent weeks is a rough guideline**
4. **-Refine your contest preparation**
5. **-Experiment with foods**

Experiment With Foods

Basically, the Metabolic Diet's "5-day, 2-day" week is almost like getting a person in shape for a contest every week. In the weekend carb loading part of the diet, you'll find out exactly how many hours you can load up on carbs before you begin to smooth out and lose your contest look.

When you get to your "pre-contest" phase you really won't have to make many changes. You'll be doing the same thing you've been doing for the last several weeks in the Cutting Phase. You'll go off the higher fat, high protein diet and carb up to dramatically increase the glycogen and water inside the muscle cell. You want them swollen and big but you'll cut off the carbs before you begin to reservoir extra-cellular water or fat and smooth out.

During the Cutting Phase, you'll also want to be refining contest preparation. Play with the kinds of foods you eat on the weekends to see what gives you maximum muscle size. You'll know on Monday morning if what you've been eating is right for you. If it is, you'll be looking good. Muscles will be huge and you'll be cut up with a nice, pronounced vascularity.

If you don't look good, you'll know you did something wrong. Go back and rework your diet the next weekend and see if you can get some improvement. That's the beauty of this diet. By the time a contest approaches, you've already perfected your contest diet by practicing it during the Cutting Phase.

On the old carb diet, you did this only once. On this diet you do it every week during the "cutting" phase and you become an expert in how to manipulate your body for a contest.

Experiment with high and low sugar foods and percentages of fat intake on these weekends. See what they do for you. Treat each weekend as if your contest were imminent. That way you'll know what it takes to come into a contest looking your best. You'll also experience an increase in confidence because you'll know what to expect from your body and how to get it contest ready.

The "Pre-Contest" Phase

One of the many advantages of this diet is that, if you want to enter a lot of contests, you can manipulate your diet so you never get much above the 8 percent bodyfat level. You don't have those huge gains in bodyfat here. At 8 percent, you can drop to contest level in 2-3 weeks. It won't take a great deal of time.

Still, for most purposes you'll want to go into the "pre-contest" phase of diet and training about 16 weeks before a major contest to get ready. Again, because you already know what you need to do from previous weekends on the diet, you will only be doing some fine tuning here by lowering and increasing calories a bit as needed. You shouldn't be doing anything much out of the ordinary.

By the final 6-8 weeks before the contest you should look fairly close to how you want to be on stage. With this diet you can control things so you know exactly where you're at

each week. Following the weekend carb loading portion of your diet you should be looking great on Monday, ready to hit the gym hard with the high glycogen levels, muscle swelling and other benefits to be derived by a well-honed weekend diet strategy.

Panic Attacks

One of the things bodybuilders do to sabotage themselves before contests is to panic. They'll find themselves too fat and begin doing aerobics thinking this will get the extra bodyfat off for them. At a minimum, doing about a half hour of aerobics consistently is not going to harm you. You'll burn up more free fatty acids than you would not doing enough work and this will take off some bodyfat and get you closer to your goals.

But bodybuilders begin to panic and overdo it. They'll start doing 3-4 hours a day of aerobics to get that fat off and all they do is exhaust energy stores so that the body starts using its own muscle tissue for energy. Obviously, this is not what you want to do so close to a contest.

Likewise, if you're really in trouble you can start pigging out to build mass while thinking that aerobics will make up for the fat buildup. It's not going to work. Increasing calories and aerobics will most probably just increase catabolic activity in your body.

Aerobics, while burning fat, can also destroy muscle. Even if it doesn't do appreciable damage, it will still limit the amount of muscle you can put on to some degree. As a rule, the less calories you take in and the more time you allow yourself to lose the bodyfat, the less aerobics you'll need to do and the more lean body mass you'll retain. You need to allow yourself time to lose the bodyfat and gauge yourself effectively as you move toward a contest.

That's one of the things this diet does so well. With the weekend portion of the diet you'll learn what foods to eat and how much to make yourself successful. You'll be better able to track your progress and know what you'll need to do for the contest beforehand. There'll be no need for those rash decisions that throw a curve ball at your metabolism.

Messing Up A Good Thing

Above all, you want to make a smooth landing into a contest. You shouldn't be doing anything out of the ordinary. You certainly don't want to panic.

But some bodybuilders, in full control of their senses, will decide to try something new just before a contest. They're looking to get that final edge. They mess up. Their water table increases. They start with the sodium depletion or sodium loading trick. They'll let loose with all sorts of things they've never tried before and all of a sudden they end up wondering how it was that they were looking so great and now look so bad.

Again, don't shock your system before a contest. Make a smooth landing into it. Don't throw everything away by trying to get the extra edge through some crazy stunt.

Fluid Retention

If you do tend to retain fluid, begin to restrict yourself to distilled water and low levels of sodium 24 hours before the competition. Also increase your potassium, magnesium and calcium intake.

Actually, most people tend to retain some fluid so these suggestions should be considered by all bodybuilders. You want as little extracellular fluid as possible to avoid smoothing out. On the other hand, intracellular fluid will increase cell size so you'll be bigger. It also aids vascularity.

Distilled water and low sodium will serve to lower the extracellular fluid. Potassium will increase the amount of fluid inside the cell. Higher potassium levels are also better for muscle contractions though you want to be sure not to create potassium levels that are too high. Calcium, and magnesium, are important in avoiding cramping.

Don't Overdo It

As we discussed above, you can go through the "pre-contest" phase in preparation for a contest several times a year as long as you keep your fat levels lower. In this way, it really doesn't take much time to get into contest shape.

That being said, I'd suggest that you only got through the "pre-contest" phase 4 times a year. That means a maximum of 4 contests a year. More than this is self defeating because I don't believe you'll have the time to go back into the mass phase and use it properly.

You've got to go back and build up lean body mass to some extent between contests. This also means you'll gain a bit of fat. You'll still be bulking up and cutting down but it won't be like on the other diet where you bulk up so much that you gain so much bodyfat that by the time you lose it you're no better off than when you started.

Again, the goal here is to make you bigger, stronger and more cut from contest to contest and year to year. That's what the Metabolic Diet is all about.

1-2 Weeks Out

You should stop training 1-2 weeks out from the contest. That's pretty standard wherever you go. My advice is to do your last heavy training session 10 days before the contest. This will give your muscles maximum time to recuperate and achieve maximum growth. Don't worry about maintaining muscle mass and tone. The posing you'll be doing will take care of that and also give you some aerobic activity. Posing should, of course, be continued throughout this entire period, with the exception of the day before the contest.

But though you'll shut down training heavy 10 days or so before a contest, this is the only time you should back off. Some people think that just because they're on the Metabolic Diet, they don't have to work as hard. That's simply not true. All you're going to do by cutting back in training is limit the effectiveness of the diet and your ultimate growth.

The two, diet and training, work hand in hand. Exercise actually complements the Metabolic Diet. Hormonal changes caused by exercise result in an increase in the activity of the enzyme lipoprotein lipase (LPL) in the muscle. This in turn causes increased use of free fatty acids and decreases fat buildup.

We'll cover some more about what kind of exercise is best in concert with the Metabolic Diet in a later addendum. For now, suffice it to say that both training and lifestyle work hand in hand with the Metabolic Diet in maximizing its benefits.

Countdown To Contest

Above we talked about the importance of experimenting with carb loading duration and foods to learn when and how your body looks its best. That's basically the trick in perfecting that critical contest diet.

During the weekend carb loading part of the diet you note how many hours into it that you look your very best. You refine that time by experimenting with the types of food you eat to precisely dial in that time when you're at your best so you can use this information when the contest arrives.

What you'll eventually find is that there's a day in the week when you'll look your very best. All the water you've gained during your carb load will be drained out and you'll have just the right balance between glycogen in the muscle and water to look your best. You'll feel great, too. Some people will look their best on Monday. Some on Tuesday. Some on Wednesday. Everybody's system works differently and you'll find wide differences here. The goal is to find the right day FOR YOU, that day when you are at your best consistently, each week.

Most contests come on Saturday. Suppose you've found that you look your best on Wednesday of each week. Your goal then is to basically make the Saturday of your contest like a Wednesday. Because you look your best 3 days after your carb load, you want to complete a carb loading 3 days before the contest to make sure you look your best. Therefore, the Tuesday and Wednesday before the contest you carb up so that 3 days later, on Saturday, you'll look your best.

An important point here is that, the weekend before the contest, you won't carb up as usual. To carb up on the weekend and then carb up again two or three days later may well spill you back over to a carb-burning metabolism and smooth you out for that Saturday contest. Because of this you skip your carb load the weekend before a contest. That way you'll be on the high protein, higher fat part of the Metabolic Diet for 8 straight days, from the Monday 2 weeks before the contest to the Tuesday before the contest. At that point you'll begin your pre-contest carb load so you'll hit the contest just right.

This is one area where the Metabolic Diet has a big advantage over the competition. When you're on the high carb diet you're basically always carbing up so it's difficult to manipulate the diet so the body will respond well to your carb loading attempt before the contest.

What often happens is that you'll get off your high carb diet for 3 days at the beginning of the week before a competition and go low carb for 72 hours. Then you'll carb up to try and hit the contest right. The problem is, you really don't know how your body's going to react. Everything could work out well. Then again, you could experience a complete disaster.

It's Russian roulette. You've got maybe a 50 percent chance of hitting the mark. Here you've maybe had a year to prepare for the contest. You've been disciplined and dedicated. Yet you miss the mark when you hit the stage because of the uncertainty of the high carb diet.

With the Metabolic Diet, you'll know the exact hour when you look your best. Your body's going through the cycle every week. It's become predictable and consistent. You'll be dialed in and know what to expect. You won't be doing anything different than you've done in the preceding months.

KEYS TO SUCCESS IN THE PRE-CONTEST PHASE

1. **-Begin this phase 16 weeks before contest**
2. **-By 6-8 weeks out you should be close to your contest look**
3. **-Don't panic or make rash decisions**
4. **-Stick with the program**
5. **-Don't overdo aerobics**
6. **-Stop training 1-2 weeks out**
7. **-Skip your carb load the weekend before the contest**
8. **-Time your carb load so you'll look your best at prejudging**
9. **-Allow a 4-hour "fail-safe" period**
10. **-Begin to drink distilled water, increase potassium, magnesium and calcium, and reduce sodium 24 hours before contest**
11. **-Be careful with diet after prejudging**

Prejudging

You'll want that exact hour when you look your best to coincide with prejudging. This is where most decisions are made and this is where you'll want to look your absolute best.

But the body is not a perfectly predictable instrument. That's why, to make sure you don't smooth out, you'll want to give yourself 4 hours of extra time as a kind of "fail-safe" mechanism for prejudging.

So, if you find you're at your best 48 hours after carb loading and prejudging will take place at 2:00 on Saturday, count back 48 hours. This will put you at 2:00 Thursday. Give yourself the extra four hours mentioned above and you'll find yourself completing carb loading at 6:00 P.M. on Thursday.

You'll also want to look good at the evening show, especially if judging is close and will be ultimately decided in the evening. Fortunately, you've usually got a window, a several hour period, where you look good and that will carry over to the evening session.

Still, you've got to be careful. Some competitors will look great for prejudging and then go out and eat thinking it's all over. They'll come in bloated and retaining water for the evening show and, in a close competition, lose out because of it. You've got to stay tight all day. Keep diet minimal and in the higher fat mode. Even having food in your stomach will create a slight bulge. You want to keep everything nice and flat so keep your regimen going through the evening contest.

The above is, of course, just an example. You'll have to work with the diet to find the best approach for you. The big difference between this diet and whatever you've been on before is the precision with which you can plan your contest regimen. Not only does the Metabolic Diet build muscle and burn fat, it also gives you a weekly opportunity to practice and prepare for a contest so you can manipulate your diet to the very best effect.

No more 48 hour carb loads before a contest. No more uncertainty or panic. The Metabolic Diet lets you to know exactly what you need to do to look your best well before the actual competition takes place.

The Use of Nutritional Supplements While on The Metabolic Diet

For maximum results you'll have to use some nutritional supplements to complement the various phases of training and the diet. Like the training and diet, the intelligent cycling of your supplement use will allow you to get the best results possible. The supplements will enhance the anabolic effects of your training and the Metabolic Diet. Detailed information on each of the supplements is available in Appendix One.

Supplements that can be used in any phase of training, including the traditional Mass and Cutting Phases.

1. **MVM** – a comprehensive, specially balanced multiple vitamin and mineral formula designed to provide full-spectrum nutrition with an emphasis on the needs of athletes and anyone who exercises. MVM:

    - Provides protective properties against marginal deficiencies of vitamins and minerals.
    - Optimizes the effect of training.
    - Acts as the foundation for your body's nutritional needs.

2. **EFA+** - A complete essential and synergistic fatty acid formulation designed to provide the full gamut of all the essential fatty acids that are so important to optimizing your metabolism, maximizing the anabolic and fat-burning effects of exercise and dealing with minor muscle ache after exercise.

    Provides you with a specially balanced blend of the omega-3 and omega-6 essential fatty acids plus several other natural ingredients to optimize the anabolic and fat burning effects of exercise.

    The formulation acts to increase fatty acid oxidation, improve insulin sensitivity and serum cholesterol levels, aid in injury prevention and treatment, and support proper cardiovascular, nervous system function, and immune system function.

3. **Antiox** – complex and complete antioxidant formulation that provides targeted antioxidant support to all tissues in the body including the musculoskeletal system and the liver.

    Antiox contains the usual antioxidants beta-carotene, vitamins C and E, and it also contains immune enhancers including glutathione, the most important, all-purpose, endogenous antioxidant in our bodies. Our brand of glutathione is absorbed from the GI tract and used both systemically in all tissues in the body, but especially by the liver in its role as the primary detoxifying organ in the body. As well, Antiox contains other effective ingredients including lipoic acid, lycopene, resveratrol (from red wine) and grape seed extract.

    - Increases natural muscle recovery from the effects of excessive exercise.
    - Protects healthy tissues in the body.

4. **Regulate** – is an effective blend of natural soluble and insoluble fibers formulated to deal with occasional constipation and frequent bowel movements and keep the GI tract healthy. The various soluble fibers and other compounds contained in Regulate have also been found useful to:

    - Maintain cholesterol levels that are already within normal range;
    - Support a healthy heart
    - Increase natural insulin sensitivity.*

5. **Exersol** (combination of Resolve, Power Drink and Amino)– to maximize the anabolic and fat burning effects of exercise.

6. **MRP LoCarb** - An engineered high-protein, low-carbohydrate and moderate-fat meal replacement powder containing an advanced protein blend, healthy fats, and a balanced array of vitamins and minerals. It contains no trans fatty acids, only 1 gram of saturated fat, and only 5 grams of carbs per serving. Of those five grams of carbs, three are a combination of soluble and insoluble fiber, leaving only 4 grams of carbs that are absorbed.

7. **LoCarb Sports Bars** have the nutritional advantages of the MRP LoCarb meal replacement powders in a convenient and delicious bar. The bars can be used post-workout, or as a snack anytime since they can be easily kept nearby in your gym bag, desk drawer, purse, glove compartment etc.

8. **ReNew** – Formulated to improve fatigue, prevent overtraining and to enhance the immune system. Also to normalize the metabolism and to naturally support thyroid, testosterone, GH, insulin and andrenergic function. It's the perfect nutritional supplement to deal with stress, fatigue and the overtraining syndrome.

9. **Joint Support** – With its many ingredients, Joint Support is useful in combating inflammation and preventing and treating injuries. By providing some of the raw materials that are essential for the body's natural synthesis and maintenance of joints, ligaments, muscles and tendons. Joint Support protects joints and other tissues from the effects of excessive exercise and overtraining.

Supplements for the Cutting Phase

Cycling nutritional supplements means using those supplements that are phase specific so that a different set of supplements is used in each phase. As well, supplements should be taken at the rights times and for the right reasons.

Because of the different demands that each phase of training puts on the body, there are different needs to satisfy when talking about diet and nutritional supplements. For example, there are vast differences in dietary needs and the effects of various supplements between the mass and definition phases.

As well, there are differences in nutritional supplements used on days that you train and on rest days. Manipulating the diet and nutritional supplement use in and around training increases the anabolic and fat burning effects of the training and can decrease recuperation time and your abilities to perform at the next training session.

The different kinds of training that are followed in say the mass and cutting phases require specific dietary modifications and the use of different nutritional supplements. Other variables that also impact on the kind of diet followed and nutritional supplements used include the bodybuilders training background and the level that he or she has reached. Novice bodybuilders, in which the gains come relatively easy even with simple training

routines and a diet high in calories and protein, don't need the sophisticated dietary modifications and cutting edge nutritional supplements that are a must if the more advanced bodybuilder is to improve.

In the Definition or Cutting Phase the supplements come into their own and are extremely useful in maintaining and raising the anabolic and fat burning response to the Metabolic Diet and training. That's because you're having to consistently cut calories so that your body effectively uses your bodyfat as fuel. In so doing, your system tends to change your hormones and metabolism to a survivalist mode, one that is counter productive to our goals, to maximize muscle mass while at the same time minimizing bodyfat. The Metabolic Diet is a big help here but the supplements are also important.

- **Exersol**, consisting of **Resolve**, **Power Drink** and **Amino,** works synergistically with the Metabolic Diet to help you reach your goals faster and more effectively.
- The **LoCarb MRP** and **LoCarb Sports Bars**, because of their complete nutritional makeup, can be used as meal substitutes or snacks and will be a big help when cutting calories. See above for more details.
- **Creatine Advantage** keeps the energy system in high gear despite the decreased caloric intake. Added amino acids and dipeptides allow a natural increase in the absorption and utilization of creatine and increase the volumizing, anticatabolic and anabolic effect of the formula. The added energy ingredients make Creatine Advantage the most advanced creatine and energy mix, one that will maximize muscle mass and performance.
- **Metabolic** can really make the difference by counteracting the effects of the low calorie diet on the thyroid, adrenal and hormonal functions of the body. Metabolic optimizes the effects of thyroid hormone, decreases cortisone levels, naturally increases levels of growth hormone and testosterone (in both men and women), and increases the body's natural insulin sensitivity. These effects increase weight and fat loss while maintaining or even increasing muscle mass.
- **Myosin Protein** allows you to keep protein levels up at a time when it might be difficult to take in enough protein from foods while at the same time cutting calories. Myosin Protein Complex is an advanced synergistic blend of high quality protein powders, combining both fast and slow proteins, and including a specially developed source of glutamine peptides.
- **TestoBoost** contains several natural ingredients and is designed to improve natural testosterone formation, and decrease any potential side effects from conversion of testosterone to estrogens and dihydrotestosterone. By boosting the body's natural testosterone, TestoBoost increases muscle mass, decreases bodyfat and increases sexual desire.
- **GHboost** is formulated to increase muscle mass and decrease bodyfat by enhancing the body's natural production of growth hormone (GH) and insulin-like growth factor-1 (IGF-1). Because of its effective dual action, it's an advanced growth hormone stimulating product. The natural physiological increase in both GH and IGF-1, up to a level consistent with an individual's genetic potential, will enhance muscle development, strength, and size while decreasing bodyfat.

Used together, TestoBoost and GHboost maximize endogenous production of and maximize the anabolic and fat burning effects of testosterone, growth hormone and IGF-1.

These two supplements counteract the normal decline in these hormones seen in calorie restricted diets.

NitAbol is another combination formulation to my nutritional supplement lineup. This combo is especially useful in the Cutting Phase as it counteracts the loss of muscle mass and increases fat loss during sleep.

NitAbol is a precise combination of proteins and amino acids which has a maximum effect on stimulating protein synthesis, maximizing testosterone, growth hormone, IGF-1 and the anabolic effects of insulin, decreasing body fat, and stimulating the recovery, **All while you sleep.**

Nutrition for the Pre-Contest Phase

There's not much of a difference in the supplements you use in the Cutting and Pre-Contest Phases. The only thing to watch out for is the effects some of the supplements may have on your definition. For example some bodybuilders discontinue creatine a few weeks out from the competition because they retain more water and less defined if they stay on it. Also the use of certain supplements, such as Myosin Protein, Metabolic (to optimize the hormones including insulin, thyroid), ReNew (useful for overtraining or if you're getting run down) and JointSupport (for preventing and treating injuries and overtraining), usually increases as the competition gets closer.

Rest Phase

While we're discussing the Cutting Phase it's a good idea to cover the Rest Phase that normally follows. The Rest Phase is ideally a period of time in which you chill out, cut back on your training and get yourself mentally and physically "healed" for the next push. In the Rest Phase it's also a good idea to relax your diet and cut back on your nutritional supplement use. Basically give your mind and body a change to get back to normal, away from the self imposed rigors and schedules. The Rest Phase may even be a time during which you simply gave up training for a period of time for one reason or another.

Nutrition for the Rest Phase (Post Contest or Break)

During the Rest Phase I usually suggest going off the strict part of the Metabolic Diet and reintroducing a moderate amount of carbs, anywhere from 20 to 50%, cutting back on the protein and going on a moderate fat diet. In other words you're following a diet that's pretty close to the normal North American Diet.

And don't worry about having problems getting strict with the Metabolic Diet when it's time. Your body will "remember" and it'll be much easier to get back in the grove.

Nutritional Supplements for the Rest Phase

Again, during the Rest Phase back off on all your supplements except maybe MVM, the vitamin and mineral supplement. The one other supplement you may want to use during this phase is ReNew since this supplement is meant to get your system, and especially your immune system, back to normal.

ReNew™…Advanced Immune System Enhancer

ReNew is formulated not only to enhance the immune system, but also to normalize the metabolism and to naturally support thyroid, testosterone, GH, insulin and andrenergic function. It's the perfect nutritional supplement to deal with workout fatigue and at the end of a long periodization session.

Your immune system is the first line of defense against stress, whether physical or emotional. ReNew can naturally boost your immunity by providing the necessary nutritional building blocks for enhancing and supporting the immune system. As such, ReNew is useful for optimizing muscle recovery, and reducing the effects of excessive exercise.

For FAQs, Sample Diets, Calorie and Carb Charts, and much more information and articles, visit www.MetabolicDiet.com on a regular basis.

Appendix

Cellusol 1-2-3 System

The Complete Nutritional Supplement Cellulite and Weight Loss Solution

For more information and the complete ingredient list and nutrition panel, go online to cellusol.pdf

Cellusol is a multi phase supplement and by far the most advanced weight and fat loss formula ever. It beats anything out there right now including prescription diet aids. Cellusol has more than ten times the active ingredients of any other weight loss product, and instead of using one or two approaches, like most other products, it attacks the problems of weight and fat loss from several directions ensuring both immediate, and more importantly, long-term success.

Cellusol has been formulated to accomplish maximum weight and fat loss, **especially cellulite**, while at the same time minimizing the loss of muscle. This means that the weight you lose will be mostly body fat and you'll look both fit and trim as you lose your weight.

Cellusol is a stacked/cycled product consisting of 3 formulations. Each formulation is meant to attack the problem of maximizing body composition from a different angle. For example for the first two weeks

For the first two weeks you take Thermo. Thermo increases metabolic rate and as such increases energy output, plus it increases the breakdown and burning off of body fat, including cellulite, and help maintain muscle.

For the next two weeks it's Metabolic, which is meant to help you keep your precious muscle and keep the fat coming off. It also optimizes the important hormones and processes in your body including increasing insulin sensitivity, and regulating growth hormone, testosterone and thyroid levels.

For the next three weeks it's Renew, a sophisticated, cutting edge product meant to enhance the immune systems and support your metabolism - essentially to get the body raring to go and ready for the weight and fat loss actions of Thermo.

Each package of Cellusol contains enough product for two successive cycles – each 6-week cycle will take you to a new level of weight and fat loss. By cycling each formula for a two-week period you won't allow your body to adapt to any one formula and as such your weight and fat loss won't plateau. You'll continue to lose weight and body fat in each of the six-week cycles.

Because one of the phases is a renewal phase, during each six-week cycle you'll be allowing your body to regain it's normal balance and become more receptive to the weight and fat loss supplements that are in the other two formulations. You'll no longer have to worry about staying on any supplement for too long and reaching a weight and fat loss plateau because

your body gets used to the supplements, or go through a rebound and gain your weight back when you stop taking the weight loss aids.

While Cellusol will work it's magic alone, it works best if you follow a complete exercise and nutrition program. Regular exercise and going on the Metabolic Diet will maximize Cellusol's effects on body composition and weight and fat loss and allow you to reach your goals much faster and easier. The end result of using all three will be a fit and toned body that you'll be proud of.

- **Phase One Formulation - Thermo**
- **Phase Two Formulation - Metabolic**
- **Phase Three Formulation - ReNew**

Thermo - Advanced Thermogenic and Anabolic Formula

Thermo is formulated to increase energy levels for training, maximize fat loss by increasing fat oxidation and decreasing fat deposition, while at the same time maintaining muscle mass.

Thermo increases the body's thermogenic response, increases energy for training, has anticatabolic and anabolic properties that maintains muscle mass, increases fat breakdown and fatty acid utilization, decreases appetite, increases insulin sensitivity and supports thyroid hormone activity.

Directions: One to two capsules twice a day on a relatively empty stomach (at least an hour before eating or two hours after eating). The best times are in the morning and before training; or if not working out that day, take two capsules in the morning and two in mid to late afternoon.

Metabolic - Advanced Anabolic and Fat Loss Primer

Metabolic is formulated to optimize the body's hormones in order to maximize the anabolic and fat burning effects of exercise.

Metabolic optimizes the effects of thyroid hormone, decreases cortisone levels and increases levels of growth hormone and testosterone (in both men and women) along with increasing insulin sensitivity. These effects increase weight and fat loss while maintaining or even increasing muscle mass. As well, the hormonal environment created by Metabolic will allow cellulite, that stubborn dimpled fat, to be oxidized along with the rest of the body fat.

Directions: One to two tablets three times a day.

ReNew – Homeostatic and Immune System Enhancer

ReNew is a premier product that, as part of the Cellusol team, enhances and stabilizes weight and fat loss and allows the body to return to an optimal metabolic and immune state where it's once again ready and able to respond to the next two Cellusol cycles. With ReNew you return to a state where the body solidifies previous weight and fat losses and is once again sensitive and responsive to both Thermo and Metabolic. In a sense, ReNew rejuvenates your body so that it is ready and able to make dramatic weight and fat losses.

Directions: Five tablets once or twice a day with meals

Exersol

For more information and the complete ingredient list and nutrition panel, go online to exersol.pdf

Exersol 1-2-3 System

The Complete Exercise Solution

Resolve Power Drink Amino

Exersol Competition

Resolve Competition Power Drink Amino

Exersol is a three-phase exercise-oriented nutritional support system that takes the guesswork out of what supplements to use before, during and after training. As the most scientifically advanced and sophisticated exercise orientated nutritional support system ever formulated, its use is invaluable for anyone who wants to lose body fat and build muscle.

Exersol is the Complete Nutritional Supplement Training Solution and as such, you have the peace of mind that comes with knowing you have everything you could possibly ever need to maximize the anabolic and fat burning effects of exercise. You also have the peace of mind knowing that there is absolutely nothing out there that even comes close to doing what Exersol will do for your training and body composition, regardless of price, reputation and claims.

Exersol has been formulated to allow you to get the most from your training efforts. Not only will it maximize the fat burning and muscle building effects of exercise but it will allow you to train longer, harder and more effectively, and make the training you do much more productive.

- Formula Number One - Either Resolve or Resolve Competition before Training
- Formula Number Two - Power Drink - During Training
- Formula Number Three - Amino - After Training

Resolve and Resolve Competition - Advanced Pre-Workout Anabolic and Fat Burning Primers

Resolve and Resolve Competition are the ultimate pre training formulations. They prime your metabolism so your body can optimize the anabolic and fat burning effects of exercise.

This formulas will provide anticatabolic and anabolic effects by increasing levels of testosterone and growth hormone, decreasing protein breakdown, increasing protein synthesis and providing cell volumizing effects that increase muscle growth. They also maximize ATP and phosphocreatine (PC) functioning, as well as gluconeogenic and other processes, allowing for more strength and stamina. As well, it provides potent thermogenic and fat loss properties, increasing fat breakdown and utilization and decreasing fat buildup. And finally they exert a potent antioxidant effect to decrease muscle tissue injury and soreness.

While almost everyone considers post training nutrition as being important, many fail to realize that the intake of amino acids and other ingredients prior to training is as, or perhaps even more important for maximizing the anabolic and fat burning response to exercise (Tipton KD, Rasmussen BB, Miller SL, Wolf SE, Owens-Stovall SK, Petrini BE, Wolfe RR. Timing of amino acid-carbohydrate ingestion alters anabolic response of muscle to resistance exercise. Am J Physiol Endocrinol Metab 2001 Aug;281(2):E197-206.).

Resolve and Resolve Competition, by increasing lipolysis, and thus the availability of fatty acids, complement the Metabolic Diet, which increases fat oxidation. The combination of increased body fat breakdown and increased burning of fat for energy make Resolve and Resolve Competition ideal pre-workout primers for those on the Metabolic Diet. As well, Resolve and Resolve Competition contain no carbohydrates.

Resolve – with ephedrine and yohimbine

- **Maximizes muscle growth and strength and minimizes body fat**
- **Optimizes the anabolic and fat burning effects of exercise**
- **Decreases muscle breakdown and increases protein synthesis**

Resolve Competition – with no ephedrine or yohimbine but with neurotransmitter precursors

- Maximizes the muscle building and fat burning effects of exercise
- Optimizes your metabolism
- Supplies increased energy for training even though it's stimulant and ephedrine free

Power Drink

Advanced Anabolic Training Drink

For more information go online to powerdrk.pdf

Power Drink is a revolutionary new concept in training drinks. There's nothing even close to it on the market. This drink provides the nutrients necessary to maximize muscle mass by increasing the anabolic and decreasing the catabolic effects of exercise, and increasing the mobilization and oxidation of body fat.

Power Drink contains over 30 grams of whey protein isolate (a "fast" protein that results in high systemic amino acid levels), which is over 25% branched chain amino acids. As well, the formula contains several amino acids (arginine, alanine, taurine), glutamine peptides, creatine, ribose, electrolytes and other ingredients that will replace and replenish nutrients and fluid lost through exercise, prevent muscle cramps, and increase training time and efficiency.

The formula contains no carbohydrates or fat except for glycerol (which does not raise either glucose or insulin levels appreciably, and ribose, which increases the reformation of ATP and other important cellular compounds).

- Maximizes training energy and efficiency
- Increases training effort and energy
- Maximizes muscle mass and increases fat oxidation

Amino - Complete Amino Acid Formula

Amino, the cutting-edge amino acid formulation, maximizes protein synthesis by providing you with a quick and potent boost of anabolic and anticatabolic amino acids.

The high systemic levels of important amino acids provided by Amino has a direct potent effect on protein synthesis, and at the same time increases systemic levels of the potent anabolic hormones, including insulin, testosterone and growth hormone.

Used immediately after training it's an easy to take, easy on the stomach, source of amino acids that kicks protein synthesis into high gear so you can begin taking advantage of that post-training window of opportunity.

Amino is an enhanced, cutting-edge amino acid formula consisting of free amino acids along with a hefty dose of special glutamine and other peptides. The amino acid and peptide blend in Amino is engineered to immediately increase insulin and growth hormone levels as well as protein synthesis, combat overtraining and maximize the anabolic and fat burning effects of exercise.

Amino is formulated for quick absorption and utilization and to maximize protein synthesis. The use of this supplement will give rise to a quick amino acid peak in the liver, blood and muscle that will dramatically increase protein synthesis in the immediate post training period. As such Amino is the perfect supplement to take immediately after training since it provides an immediate anabolic effect with a minimum of gastrointestinal distress.

1. **Maximizes protein synthesis after training**
2. **Maximizes the anabolic and fat burning effects of exercise**
3. **Enhances recovery**

NitAbol

The Complete Night Time Anabolic/ Anticatabolic/Fat-Burning Combo

For Men and Women

INCREASE MUSCLE MASS AND DECREASE BODY FAT WHILE YOU SLEEP!

Goal of NitAbol is to counter the nighttime postabsorptive catabolic effects, increase recovery, fat burning and protein synthesis.

NitAbol

The Advanced Night Time Anticatabolic Formula

- Minimizes the catabolic effects of the postabsorptive phase
- Increases fat utilization over protein
- Increases insulin sensitivity
- Increases muscle, central nervous system and systemic recovery during sleep.
- Anti-inflammatory effects for increased recovery.

Three Products that make up NitAbol are:

- Myosin Protein Complex
- TestoBoost
- GHboost

Myosin Protein Complex

Myosin Complex is the most advanced synergistic blend of the highest quality protein powders, peptides and amino acids on the market today, bar none. It contains the perfect amino acid mix to maximize protein synthesis, decrease muscle breakdown and enhance athletic performance. Click here for details on Myosin Protein.

Directions: 4 to 6 scoops before bed mixed in water or diet drink (no carbs).

6 Scoops of Myosin Protein Complex contains 90 grams of mixed proteins and 12 grams of glutamine peptides.

GHboost

GHboost is formulated to increase muscle mass and decrease body fat by increasing the body's natural production of growth hormone (GH) and insulin-like growth factor-1 (IGF-1). Because of its powerful dual action it's the most advanced and powerful Growth Hormone stimulating product available. When used before bed it will increase the natural growth hormone spike associated with the first deep sleep cycle of the night (usually within 2 hours of going to sleep) and enhance the long term increase in insulin-like growth factor I (IGF-I). The combination increase of both hormones increases protein synthesis, decreases muscle catabolism, and increases the use of body fat as the main energy source all night long.

Directions: Three to six tablets before bed.

TestoBoost

TestoBoost maximizes your anabolic potential by physiologically elevating your natural testosterone levels. Not only does TestoBoost contain natural ingredients that increase testosterone formation, it also has ingredients that decrease any potential side effects from conversion of testosterone to estrogens and dihydrotestosterone. By boosting testosterone, TestoBoost has beneficial effects on increasing muscle mass, decreasing body fat, and on fertility and impotence.

TestoBoost is all natural and elevates serum testosterone levels without using any prohormones, compounds with potentially serious side effects and very little effects on testosterone levels.

Used at night TestoBoost adds to the anabolic and anticatabolic effects of GHboost to further increase protein synthesis, decrease muscle catabolism, enhance recovery and burn off body fat while you sleep.

Directions: **For men:** Four tablets before bed. **For women:** One tablet before bed.

Night Time Stack

Goal - To counter the nighttime postabsorptive catabolic effects and increase recovery and protein synthesis.

- Sleep dynamics different from when awake
  But in Postabsorptive phase there is increased muscle catabolism especially in second half of sleep phase.

NitAbol Works By:

1. Minimizing the postabsorptive phase by modulating nutrient absorption and effects.
2. Increasing the use of fatty acids and decreasing the use of muscle protein (and thus decreasing muscle breakdown) for gluconeogenesis and oxidation as fuel.
3. Manipulating the anabolic and catabolic hormones to maximize protein synthesis and minimize protein breakdown during sleep.
4. Increasing cell hydration (volumizing) and as such stimulating protein synthesis.
5. Enhancing the Immune System to decrease catabolic cytokines and increase recovery.

Hormonal Manipulation With the Use of NitAbol

- Testosterone – increase
- Cortisol – decrease
- Growth Hormone – increase
- IGF-I – increase
- Insulin – increase amount and sensitivity
- Thyroid – control

Ingredients

Macronutrients

- Protein and Amino Acids

Micronutrients

- Vitamins and Minerals

Other Ingredients

- Modify IGF-1, GH, Insulin, Testosterone, Cortisol, Thyroid, Glucagon, etc.
- Enhance Immune System – decrease catabolic effects

NitAbol Controls the Proinflammatory Cytokines

IL-1beta, IL-6, TNF-alpha

Produce a hypercatabolic state – net efflux of essential amino acids from skeletal muscle.

Ingredients to combat this include:

- Glutamine
- Ornithine
- Vitamin A and Vitamin E
- Whey, casein, soy proteins
- Milk Isolates
- Colostrum

Carbohydrates

Not necessary as in significant amounts it will decrease GH and IGF-I secretion and the use of body fat as a primary fuel.

Combination of Proteins

- Whey – fast protein – increase GH spike, Increase insulin.
- Casein – slow protein – delay postabsorptive phase.
- Milk Protein Isolate/Colostrum.
- Other proteins – egg, soy – decrease postabsorptive phase

Peptides and Amino Acids

- Glutamine Peptides
- Branched Chain Amino Acids
- Glycine
- Arginine
- Lysine
- Ornithine

Micronutrients

- Zinc – enhances testosterone synthesis
- Calcium & Magnesium
- Potassium - volumizing
- Sodium - volumizing
- Vitamins A, E – anticatabolic & antioxidant
- Vitamin A – increases insulin sensitivity
- Vitamin C – anticortisol and antioxidant

EFA+

Essential Fatty Acid Formula

For more information and the complete ingredient list and nutrition panel, go online to efa+.pdf

EFA+ is a multipurpose formulation designed to provide the full gamut of all the essential and conditionally essential fatty acids that are so important to optimizing your metabolism, maximizing the anabolic and fat-burning effects of exercise and dealing with minor muscle ache and joint pain after exercise.

EFAs are involved in:

- **Hormone Production**
- **Muscle and Joint Tissue Repair**
- **Insulin Metabolism**
- **Fat Burning**

Regular supplementation with EFA+ ensures essential and conditionally essential fatty acids, such as omega-6, omega-3, EPA, DHA, CLA, GLA, and ALA are available to support the optimal metabolic response to intense exercise. Antioxidants in EFA+ dramatically enhance the benefits of the EFAs.

With its many ingredients working in concert, EFA+:

- Optimizes metabolism to make the best use of the anabolic and fat burning effects of exercise.
- Improves testosterone production and increases growth hormone secretion
- Increases the breakdown and oxidation of body fat
- Increases lean body mass
- Improves natural insulin sensitivity.
- Supports the body's immune system.
- Decreases inflammation, muscle ache and joint pain secondary to excessive exercise.

Bottom line: **If you exercise, you shouldn't be without EFA+ since it enhances fat loss, increases lean muscle mass, and allows you to train more effectively with fewer aches, pains and injuries.**

Directions: Three soft gels once a day with a meal.
Contents: 90 Soft Gels (one month's supply).

Myosin Protein Complex

For more information and the complete ingredient list and nutrition panel, go online to Myosin Protein Complex.pdf

Myosin Protein Complex is the most advanced, synergistic blend of the highest quality protein powders, peptides and amino acids on the market today, bar none. It contains the perfect amino acid mix to maximize protein synthesis, decrease muscle breakdown and enhance athletic performance.

We use a variety of the highest quality protein powder to make use of the special characteristics of each and thus enhancing their overall effect while at the same time eliminating their relative disadvantages. Because of the gentle processes used to isolate the various proteins, the formula maintains the beneficial immune and other effects of the undenatured whey, casein, egg and soy proteins.

Myosin Complex - (Soy protein isolate, egg protein, CFM whey protein isolate, whey protein hydrolysate, calcium/sodium caseinate, and glutamine peptides) combines both fast and slow proteins and peptides that flood the body with an initial large peaked pulse of amino acids and then a sustained release that maintains protein synthesis and decreases muscle breakdown for hours. **For this reason Myosin Protein is especially useful as a night time protein, especially when used in combination with Ghboost and TestoBoost (all three make up my NitAbol combo).**

The blend of proteins and amino acids in Myosin Protein is unique and contains the exact amino acid formulation to maximize protein synthesis and minimize protein breakdown. Myosin provides for a varied spectrum of blood amino acids with spikes from the whey protein, intermediate spikes from the egg and soy,

and a prolonged amino acid response from the slowly absorbed casein. Myosin Protein was engineered to increase protein synthesis with spikes of blood amino acids and to decrease protein/muscle breakdown with a sustained low level increase in blood amino acids.

And you can't compare even the most sophisticated whey protein with Myosin Protein. Myosin has all the advantages of the best whey protein on the market, and of all the other proteins, peptides and amino acids that make it up. This is because the body treats the mix of proteins as if each protein was taken separately. Thus these proteins, even when taken together, maintain their different (fast, intermediate and slow) absorption rates. (Boirie Y, Dangin M, Gachon P, Vasson MP, Maubois JL, Beaufrere B. Slow and fast dietary proteins differently modulate postprandial protein accretion. Proc Natl Acad Sci U S A 1997 Dec 23;94(26):14930-5.).

Myosin Protein is also engineered to increase protein synthesis by increasing the anabolic hormones (including insulin and GH thus complementing GHboost) and decreasing the catabolic ones, and by providing the body with an increased immune response to combat overtraining and maximize the anabolic and fat burning effects of exercise.

Directions: 2 to 6 scoops as needed in water, milk, juice or diet drink. Can be used as a low calorie, high protein meal supplement, after training and before bed. 6 Scoops of Myosin Protein Complex contains 90 grams of mixed proteins and 12 grams of glutamine peptides.

MRP LoCarb

The Ultimate Anabolic, AntiCatabolic, Fat Burning Meal Replacement Shake

For more information and the complete ingredient list and nutrition panel, go online to mrp_locrb.pdf.

MRP LoCarb is the highest quality, best tasting, most nutritionally complete meal replacement shake on the market today, bar none.

It is the ultimate low carbohydrate meal replacement powder. Unlike some products that only have two or more ingredients and call themselves meal replacements, and others that have more but are still inadequate, MRP LoCarb is an engineered food that contains the full gamut of macro and micronutrients and is truly an anabolic, anticatabolic, and fat burning, full featured meal replacement.

MRP LoCarb is a high protein/low carbohydrate/ moderate fat meal replacement powder containing the most advanced protein blend on the market, healthy fats (mono, poly and some saturated fats along with lecithin and an essential fatty acid blend containing omega-3 and omega-6 fatty acids), soluble fiber, a complete balanced Vitamin and Mineral profile, and less than 6 grams of carbs per serving!

The protein blend in MRP LoCarb contains a synergistic blend of proteins and a specially developed source of glutamine peptides that was developed for Myosin Protein Complex. It's engineered to increase protein synthesis by increasing the anabolic hormones and decreasing the catabolic ones, and by providing the body with an increased immune response to combat overtraining and maximize the anabolic and fat burning effects of exercise.

MRP LoCarb, because it's a complete low carbohydrate meal replacement powder, can be used in confidence by anyone on the Metabolic Diet and any low carbohydrate diet plain including Atkins' and Protein Power. It's also useful for those on the Metabolic Diet higher carb plans, or other higher carb diets, because the level of carbs can be easily modified by mixing the powder with milk or juices instead of water or simply by adding carbs in the form of fruits or other carb sources including easily available maltodextrins.

The use of MRP LoCarb within a few hours of training increases the training response and protein synthesis, maximizes rebound macronutrient replenishment and improves recovery. The special blend of proteins in MRP LoCarb, like the Myosin Protein blend, maximizes protein synthesis and minimize protein breakdown for several hours.

Easy to prepare and use, our MRP LoCarb simplifies meal planning and can be taken in place of any meal, as an in between meal and/or before bed snack, and as a delayed post training meal

Directions: Add packet contents to 8-12 fl. oz. of cold water, milk or juice (depending on the carb level of the diet you're on) and mix/blend thoroughly.

LoCarb Sports Bars

The Ultimate Anabolic, AntiCatabolic, Fat Burning Sports Bar

For more information and the complete ingredient list and nutrition panel, go online to mrp_locrb.pdf.

LoCarb Sports Bars are the highest quality, most nutritionally complete sports bars on the market today, bar none.

The LoCarb Sports Bars have the nutrition and advantages of the MRP LoCarb meal replacement powders in a convenient and delicious bar. The bars can be used post-workout, or as a snack

anytime since they can be easily kept on hand by in your gym bag, desk drawer, purse, glove compartment etc.

LoCarb Bars, unlike high sugar and carb sport bars that flood today's marketplace, have a high protein and low carb content and are an ideal snack for people on The Metabolic Diet or who are watching their carb intake. And unlike the other locarb, high protein bars, LoCarb Sports Bars are nutritionally complete, with nutrients that will help you achieve your body composition goals.

The bottom line is that our LoCarb Sports Bars are the Ultimate High Protein/Low Carb Meal Replacement Bars on the market today. They have the most effective macronutrient and micronutrient content for maximizing the anabolic and fat loss effects of exercise.

ReNew

Advanced Recovery and Immune System Enhancer

For more information and the complete ingredient list and nutrition panel, go online to renew.pdf

ReNew is formulated not only to enhance the immune system, but also to normalize the metabolism, improve recovery, and to naturally support thyroid, testosterone, GH, insulin and the function of the adrenal glands.

It's the perfect nutritional supplement to deal with workout fatigue and to use at the end of a long periodization session.

Your immune system is the first line of defense against stress, whether physical or emotional. ReNew can naturally boost your immunity by providing the necessary nutritional building blocks for enhancing and supporting the immune system. As such, ReNew is useful for optimizing muscle recovery, and reducing the effects of excessive exercise.

ReNew is a premier product that is also part of the Cellusol team. It enhances and stabilizes weight and fat loss and

allows the body to return to an optimal metabolic and immune state where it's once again ready and able to respond to the next two Cellusol cycles.

With ReNew you return to a state where the body solidifies previous weight and fat losses and is once again sensitive and responsive to both Thermo and Metabolic. In a sense, ReNew rejuvenates your body so that it is ready and able to make dramatic weight and fat losses.

Directions: Five tablets once or twice a day with meals

Regulate

A potent blend of natural soluble and insoluble fibers formulated for both preventing and treating constipation, frequent bowel movements, and other problems.

For more information and the complete ingredient list and nutrition panel, go online to regulate.pdf.

The various soluble fibers and other compounds contained in Regulate have been found useful in the following problems:

- **Constipation – especially recommended in the initial stages of the Metabolic Diet.**
- **Frequent bowel movements.**
- **Other bowel problems including hemorrhoids, irritable bowel syndrome, and inflammatory**

colitis (ulcerative colitis, Crohn's disease, diverticulitis, diverticulosis).

- **Gallstones**
- **Elevated cholesterol levels from whatever reasons including genetic predisposition and a higher fat diet.**
- **Cardiovascular disease including hypertension and coronary artery disease**
- **Insulin resistance and diabetes.**

Directions: Five to ten capsules two to three times a day at first. Once regulated take five to ten capsules daily for maintenance. To be taken with at least 8 oz of water. Increasing water intake to at least 8 glasses per day is vital for the beneficial effects of Regulate.

Antiox

An advanced antioxidant blend that spares no effort or expense to bring you the best antioxidant protection available today.

For more information and the complete ingredient list and nutrition panel, go online to antiox.pdf.

Antiox is by far the best antioxidant on the market today. With its synergistic blend of powerful antioxidants Antiox provides targeted antioxidant protection to all tissues in the body including the musculoskeletal system and the liver.

Antiox contains the usual antioxidants (including beta-carotene, vitamins E and C, zinc and selenium), and it also contains higher-level (and more expensive) antioxidants and immune enhancers including glutathione, the most important, all-purpose, endogenous antioxidant in our bodies. Our brand of

glutathione, unlike most, is absorbed from the GI tract and used both systemically in all tissues in the body but especially by the liver in its role as the primary detoxifying organ in the body.

As well, Antiox contains other potent antioxidants including lipoic acid, lycopene, resveratrol (from red wine) and grape seed extract.

Directions: 2 tablets twice a day. Can be taken between meals, and/or before training.

MVM

MVM is a comprehensive, balanced multiple vitamin and mineral formula designed to provide full spectrum nutrition with an emphasis on the needs of athletes and anyone who takes exercise seriously.

For more information and the complete ingredient list and nutrition panel, go online to mvm.pdf.

MVM is the most complete foundational nutritional supplement available for the special needs that the athlete has for body maintenance, recuperation and repair. MVM supplies all the basic nutrients that may be depleted in those who exercise and is formulated to complement all our other products.

Even with the best of diets, it's still possible to have some marginal deficiencies due to depleted soils, the overuse of chemical fertilizers and poor farming, processing, storage and

transportation practices. Add that to the fact that most of us don't even eat a well-balanced diet every day, and you can see how important it is for everyone, and especially athletes, to use a high quality multiple vitamin/mineral supplement.

MVM contains a complete mix of all of the important, and more expensive, vitamins and minerals. You won't see a bloated ingredients list in MVM's nutrition panel. When you put out a high quality, high dosage, complete vitamin and mineral formula there's no need to use miniscule sprinklings of bran, kelp, wheat germ, bee pollen, rose hips, and various fruit and vegetable powders, just to give the consumer the impression that they're getting good value for their dollar.
Directions: Four capsules per day - 2 twice a day with meals.

JointSupport

A comprehensive formula for joint and muscle pain and inflammation, arthritis and sports injuries.

For more information and the complete ingredient list and nutrition panel, go online to jointsup.pdf.

JointSupport is the premier muscle and joint formula in the World. JointSupport has marked anti-inflammatory and healing effects and is useful for treating muscle soreness, acute and chronic injuries and for injury prevention.

With its many ingredients, Joint Support decreases inflammation and maximizes muscle, connective tissue and cartilage repair and maintenance. Joint Support, with its 36 synergistic ingredients, offers much more than any other product on the market today.

JointSupport

- **Protects joints and other tissues from the effects of excessive exercise and oxidant damage.**
- **Provides the ingredients the body needs for the maintenance and repair of joints, ligaments, tendons and muscle.**
- **Decreases inflammation, muscle irritability and spasm, swelling and pain, and helps heal sore and injured muscle, tendons, ligaments and joints.**

- **Supports the anabolic and anticatabolic hormones and processes that increase recovery and healing.**
- **Decreases natural wear and tear on the body, musculoskeletal system and skin.**
- **Bolsters the immune system**

Besides all the ingredients targeted for the relief of inflammation, muscle and joint pain, and maintenance and repair of musculoskeletal tissues, JointSupport also contains the cutting edge, exclusive, patented, and highly bioavailable, **Biocell Collagen II** (BC-II). BC-II is the most comprehensive and advanced ingredient for joint support. But that's not all. BC-II has also been shown to relieve musculoskeletal pain in various conditions including arthritis and fibromyalgia, and to enhance skin health and elasticity resulting in younger, healthier looking skin.

Bottom Line: JointSupport is the perfect solution for maintaining a healthy, pain free body and dealing with the aftermath of strenuous physical exercise.

Power Drink

Advanced Anabolic, AntiCatabolic, Fat Burning Training Drink

For more information and the complete ingredient list and nutrition panel, go online to powerdrk.pdf.

Power Drink fills a gap that's been overlooked by all the other supplement companies. While they're absorbed in what to use before and after training, and rightly so, they're missing one of the most important opportunities for maximizing the results you get from training.

We all know that during training muscle is broken down. Most people believe that this breakdown is a necessary part of training. After all you have to break muscle tissue down before you can build it up. Don't you? Unfortunately that's one of the most stubborn training myths. Muscle breakdown isn't what provides the adaptation stimulus for increasing muscle size. It's the damage done to the muscle cell structure and the subsequent adaptation to that damage that determines the muscle building response. You don't have to break down the muscle at all to get this response in full force. In fact doing so is counter productive. The more muscle you keep from breaking down, and the more you increase protein synthesis, the better the results from your training. Taking Power Drink while you're training will put you miles ahead of everyone else who just uses water or at best a carbohydrate, low protein drink.

Power Drink, because of its effects on increasing protein synthesis and decreasing protein breakdown, is a powerful anabolic and anticatabolic product. As well, Power Drink increases cellular hydration and the utilization of amino acids and creatine by working muscle. As if that wasn't enough, Power Drink, because of its positive effects on the fat burning hormones and mechanisms actually allows you to burn more body fat while you're training. And with the other ingredients included in Power Drink you can train harder and longer and know that you have a powerful ally that will help you make good use of all that hard work.

Bottom line is that Power Drink is a revolutionary new concept in training drinks. This drink provides the nutrients necessary to increase muscle size and decrease body fat. By providing all the necessary ingredients to feed working muscles and shift the use of body fat as the energy source for training, Power Drink dramatically increases the positive effects of training, allows you train longer and harder, and increases recovery.

Power Drink is ideal for both those who want to increase muscle size and lose body fat and those who simply want to lose weight and body fat but maintain the muscle they now have.

Besides the hefty dose (44 grams) of the best quality proteins available anywhere, Power Drink also contains amino acids, electrolytes and other ingredients that will replace and replenish nutrients and fluid lost through exercise, prevent muscle cramps, and increase training time and efficiency.

There is no other product on the market anywhere in the world like Power Drink.

Directions: Mix 2 rounded scoops of dry powder (44 grams) with 22 oz of water, stir or shake well to dissolve.

Metabolic

Advanced Anabolic and Fat Loss Primer

For more information and the complete ingredient list and nutrition panel, go online to Metabolic.pdf.

Metabolic normalizes and optimizes metabolism and macronutrient utilization (the use of fats, carbs and protein). It also has significant effects on the body's hormonal balance. It increases levels of growth hormone and testosterone (in both men and women), decreases cortisol levels, increases insulin sensitivity, and optimizes thyroid hormone levels and function. It also These effects increase weight and fat loss while maintaining or even increasing muscle mass. As well, the hormonal environment created by Metabolic will allow cellulite, that stubborn dimpled fat, to be oxidized along with the rest of the body fat.

The ingredients in Metabolic function synergistically to increase the anabolic and fat burning effects of exercise, and to combat fatigue, wear and tear on the body, stress and hormonal dysfunction.

Directions: One to two tablets three times a day.

Creatine Advantage

The Ultimate Creatine Product, With Several Synergistic Ingredients Meant to Maximize the Body's Energy Systems.

For more information and the complete ingredient list and nutrition panel, go online to crea_ad.pdf.

So advanced that it's being copied, but never duplicated, by the major supplement companies.

Creatine Advantage maximizes and enhances the anabolic and energy enhancing effects of creatine. It's the most advanced, and copied, creatine formula on the market today.

While creatine monohydrate has been shown to enhance athletic performance, and to increase strength and muscle mass, these effects are enhanced in Creatine Advantage by stacking creatine with other ingredients. Our formula not only contains the highest quality, pure crystalline creatine monohydrate so that it mixes instantly and leave's no chalky taste, but we've also added a host of other natural ingredients to give our formula an advantage over all other creatine products on the market.

Added amino acids and dipeptides and other essential boosters allow an increase in the absorption and utilization of creatine and increase the volumizing, anticatabolic and anabolic effect of the formula. The added energy ingredients and precursors make Creatine Advantage the ultimate creatine and energy mix, one that will maximize muscle mass and performance.

Unlike many other "advanced" creatine products, Creatine Advantage is based on real science and my expertise instead of hype and false promises.

It has a low carbohydrate based insulin boosting system (glutamine in the form of glutamine peptides - more stable in liquid form and more effective than free glutamine) and compounds to increase insulin sensitivity (chromium, taurine – which also has significant antioxidant and protective effects, stimulates growth hormone secretion and increases cell volume, and alpha lipoic acid – which is also an excellent antioxidant) and thus make the insulin more effective.

It also contains all the necessary products for the synthesis of both high energy phosphate compounds creatine phosphate and ATP, and for the efficient salvage of ATP after it's been metabolically degraded, including:

- **The inorganic phosphorus and phosphates – also important for normalizing and regulating thyroid hormone.**
- **Creatine**
- **Inosine**
- **Ribose**

On top of that Creatine Advantage contains:

1. Glutamine peptides, which have anabolic (increases protein synthesis and muscle mass) and anticatabolic (decrease muscle breakdown) effects, above those normally associated with glutamine, as the peptides

themselves have some physiological effects. Also the peptide form is better absorbed than free glutamine that is not peptide bonded.

As well, the glutamine in the glutamine peptides:

- **Regulates protein synthesis**
- **Increases both aerobic and anaerobic energy systems**
- **Has beneficial effects on the immune system**
- **Aids in the prevention and treatment of the overtraining syndrome.**

2. Nutrients to facilitate the glycolytic and TCA cycle energy processes:

- **Biotin - a cofactor in many energy reactions involving glycolytic, TCA and anapleurotic enzymes.**
- **Magnesium - which has also been shown to increase energy systems, insulin sensitivity, protein synthesis and serum testosterone, GH and IGF-I levels.**
- **Calcium - which has been shown to facilitate muscle contraction and decreasing fatigue).**
- **Potassium, the transport of which is linked to aerobic glycolysis.**

3. An advanced cell volumizing (resulting in increases in protein synthesis and an anabolic effect) formula containing

- **Glutamine,**
- **Taurine**
- **Potassium**
- **Sodium**
- **Creatine (which has significant volumizing effects).**

Directions: Add one portion (10 grams) to 10-12 fl oz of water and stir. Take one serving four times a day for 10 days and then once to twice a day for maintenance.

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