

## Weight Management / Body Composition

**Weight Management / Body composition**—protein, fiber, conjugated linoleic acid, chromium, L-Carnitine, L- Glutamine, Co Q10, DHEA, Vit. B, DHEA, Vit. D3, Calcium, Pyruvate

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### **OBESITY**

Obesity problems affect 10's to 100's of millions of Americans today. Since 1960s the obesity rates have tripled. One third of our children and more than two third of adults are overweight. Obesity results in increased rate of heart disease, cancer, diabetes etc. Life expectation reduces by 13 years if a person is overweight by 20 pounds. Health risks associated with obesity include diabetes, metabolic syndrome, heart disease, hypertension, hyperlipidemia, gallbladder disease, stroke, nonalcoholic fatty liver disease. Metabolic syndrome is growing rapidly, and is defined as having 3 or more disorders related to metabolism. Disorder and symptoms that characterize this disease are an increased blood pressure, elevated insulin levels, excess body fat around the waist, abnormal cholesterol levels and obesity.

Obesity is defined as an abnormal accumulation of adipose tissue. Although individual variability and lack of precise determinations of body composition make generalizations difficult, an increase of 20 percent or more above desirable body weight usually indicates excessive adiposity or obesity and is presently considered an established health risk.

Considering the above, if a person is obese then there is no option for him/her but to lose weight in a healthy manner. Weight and dieting have become a national obsession, and the overvaluation of thinness should not be encouraged. Maintaining an energy balance is the ultimate goal – regulating calorie intake so that it equals output - contributes to health and well being. Energy (calories) intake is the food consumed and is controlled by appetite, hunger, and a series of cues; energy (calories) output is daily activity and exercise plus the energy used in maintaining internal body activity (BMR – Basal Metabolic Rate), or metabolism.

Losing weight is not difficult. It is commonsense – If energy output exceeds energy input burning more calories than calories consumed, there is weight loss. Body requires certain minimum number of calories for normal functions like breathing and digestion called Basal Metabolic Rate (BMR). The actual number of calories required is a sum total of BMR and the calories required to perform extra activities. When the calories consumed exceeds the actual number of calories required by the body then it leads to weight gain. Daily calorie intake must be estimated accurately by keeping a food diary and doing the totals which is indeed a tedious task.

With regard to the individual's environment, the American diet looms as a major cause of obesity. High in fat – especially animal fats and low in fiber, such an unhealthy and calorically dense diet is responsible for a number of health problems in addition to excess weight. These diet-related problems are only compounded by an increasingly sedentary lifestyle that does not exercise the cardiopulmonary system sufficiently. Regardless of weight there is certain level of exercise that is a minimum daily requirement to reduce risks associated with diseases but exercise alone does not help and has to be combined with a well balanced diet.

When food is consumed in less quantity it results in improper nutrient balance in the body which finally leads to starvation syndrome. The quantity and quality of food consumed affects weight, energy, mood, activity level and mental posture. Eating healthy and nutrient dense food is very important. Eat less and lose weight concept does not work. A person has to eat better to lose weight. There are certain weight management products available which provide with meal and snack alternatives which are nutrient dense, low in calories, delicious and provide satisfaction. While dieting, people undergo a frustrating cycle of losing weight and gaining weight.

## **WHY WE GAIN WEIGHT**

After one eats, the body breaks down food to use for energy or for building and repairing new cells. If one eats more food than the body needs for these purposes, the remainder is stored as excess body fat to be used later. Unfortunately, many people never use fat that accumulates, and over time they become seriously “overweight” or obese.

Being overweight and not being able to lose weight results from many factors:

- High Calorie intake – eating more food than your body can use
- Low Cardiovascular and Physical exercise – regular work routine not enough
- ON and Off dieting – research suggests that the more times a person restricts calorie intake, the more easily they will regain lost weight and the harder it will be to lose weight the next time the person diets. Regained lost weight results in more fat and less lean body mass. SLOW and STEADY – must make long commitment of lifestyle modification!
- The 1<sup>st</sup>-2<sup>nd</sup> month of calorie diet change will slow the body's metabolism – BAD!, where it thinks it is hibernating, after consistent change and daily exercise approximately 6-8 weeks your Basal Metabolic Rate will begin to increase slowly and safely thus starting the positive weight loss results. Disruption in this process results in weight gain and more difficult to initiate the long term positive results.
- Developing habits or lifestyles that interfere with healthy eating or activity – the entertainer, you can be social and still be healthy however it takes discipline and knowledge for good choices.

Behavioral changes help eliminate bad habits and help motivate them to change their lifestyle permanently to become healthy and stay healthy.

- Sugar- our society has devolved a dependency on simple sugars and high fructose corn syrup (soft drinks, processed food) – these are empty calories that are easily stored as adipose.
- Fat – diets with high caloric density – our food choices and how they are prepared have high saturated fats and excessive calories per size.
- Emotional – eat foods that make us feel good about ourselves instead of dealing with conflict directly
- Stress – effects hormones and cortisol levels which further effects long term DHEA levels in turn slowing metabolism and fat gain.
- Types of food – variety, moderation, preparations, portion control
- Stimulants – high doses of caffeine reduce fiber intake and slows GI function and proper nutrition absorption.
- Hormonal Stimulation – Low thyroid, Testosterone and high estrogen levels
- MANAGE THE EATING CHAIN - Methods of eating – how we eat, how often, portion size, when – timing and where we eat all effect our metabolism.
- Psychological factors – using food as solace instead of nutrition during time of stress. We don't want to train our body to sensory –specific satiety, where we use food to feel good versus for nutrition. Also using a positive high motivation of control yields best results.
- Genetics – In most instances genes determine shape, whether it is family disposition to body fat distribution or learned methods of eating, and learned diet habits. Genetics plays a role with predetermined amounts of Leptin. Leptin is a signal hormone secreted by adipose cells as they accumulate with triglycerides and the size of energy reserve increases. Leptin provides the information to the brain that there is too much fat and fat should not be stored, but start to be used as energy and transformed to ATP and also relays messages to the body to not be hungry.
- Lack of understanding, education and its effects not only on themselves but their children and adolescents. So important to follow a healthy diet plan as a child to promote good growth and a lifelong of proper metabolism.

## HOW TO LOWER YOUR SET POINT AND RAISE YOUR METABOLIC RATE

The most important concept to take away from this is to focus on the process, it takes years to increase your metabolism - This is a lifelong healthy *LIFESTYLE* modification that requires years of regular consistent focus on proper dietary routines and choices, supplements and focus on daily exercise and fitness not fatness. Your focus should NOT be on the product – *weight loss* because in order to attain a healthy life long change requires a safe, slow, progressive weight loss and increase body composition of muscle gain and toning.

20 Tips for consistent success and weight loss:

1. Must eat breakfast within 1 hour of waking to increase metabolism. This will maintain a higher metabolic rate through the entire day – MOST IMPORTANT MEAL of the day. Start the day with green tea and grapefruit; the caffeine and citric acid will increase the BMR.

2. Consume food high in fiber especially first thing in the morning. A higher intake of insoluble fiber will delay gastric emptying, improve GI function and will promote satiety to help with cravings and appetite control.
3. Self Monitoring -- Keep a food diary to maintain accountability and learn consistent portion size.
4. Eat appropriate and *smart* calories per day. Most people can safely lose weight by consuming 10 calories per pound of *ideal* weight and at least 1200 calories per day. Talk with health care professional to determine your appropriate daily caloric intake per your individual goal.
5. Behavior modification – Plan meals: The eating plan that is structured to consume more food earlier in the day; breakfast, enough lunch and 2- 3 smart snacks so that you can eat light in the evening. AVOID situations that may tempt you to cheat on your plan.
6. No late night munching habits. – Last meal of the day should be 2 hours before bed, unless you exercised within 3 hours of bed then you can eat within 1 hour of bed.
7. Have 5-6 *small* meals intermittently to increase the metabolism rate. NEVER BE HUNGRY and NEVER BE FULL.
8. GOOD Nutrition: the body works best with balance meals that include right amounts of vitamins, mineral, 50% Carbohydrates, 30% Protein, 20% fat and 1/3 to 1/2 your ideal body weight in fluid ounces of water per day. Eat a wide variety of healthy foods to keep from becoming bored.
9. Carbohydrates take more energy to digest and have more nutrition value then fat and do not raise the set point as high fat intake does.
10. Carbohydrate intake – “carbs” are essential in our diet since they supply vitamins and minerals and are the body’s preferred source of quick energy which allows protein to be spared for building muscle. Guides suggest ingesting 80% complex such as fiber, vegetables and starch such as whole grains and pasta; and less than 20% simple sugars. Stay away from empty calorie simple sugars from candy, honey and white sugar and eat more nutritious simple sugars from lactose – milk and fructose – fruits.
11. Protein intake – is the primary component of all active tissues in the body. Very important in functions of growth and development, repair, enzyme formation, body fluid balance, ph balance, disease resistance, hormone formation, blood clotting, and nutrient carriers. Proteins are made up of building blocks called amino acids. There are 22 AA, 8 of which are considered essential and cannot be manufactured by the body therefore must be supplied to the body in our diet. Complete proteins contain all 8 essential AA in sufficient amounts and portions to meet the body’s needs. Most of our daily consumption of protein sources are not complete therefore we must eat a well rounded diet of many protein sources to combine the incomplete sources to provide a complete and complementary protein source. Eat a sufficient amount of protein to avoid loss of muscle mass, especially for those that are exercising. Consume close to **1-1.5g of protein per 1 lb** of the individuals body weight to avoid muscle breakdown and increasing metabolic rate with more lean body mass- muscle.
12. Fat intake – good in certain forms. Fats are used for hormone formation and absorption and transport of certain vitamins. It is recommended that 80% of your fat intake as monounsaturated fats (oils in olive oil, canola oils) and as polyunsaturated (liquid vegetable and fish oils) and Consume less than 20% of total dietary daily fat saturated fats – animal fat, butter, cream. Polyunsaturated oils are the healthiest and are further described as Omega 3s are mainly found in fish oil, flaxseed oil, canola oil, walnut oil, and green leafy vegetables. Omega 6s are mainly found in vegetable oil, corn oil, safflower oil, sunflower oil and peanut oil.
13. Small CONSISTENT changes make the difference. Learn to eat certain foods differently...eat normal foods in smaller portions...eat food for nourishment not emotion

14. Slow eating – eat, chew properly, sit, cut, eat, chew, drink, sit, break.... Slow down!! Your pace effects hunger appetite, satiety, getting the most nutrition out of food and controls portion size.
15. Have dietary supplements complementing the regular diet. Even the most organic and holistic diet is depleted in certain essential vitamins and minerals. Understanding what your individual supplement needs are, is crucial to optimize your results. Whether depletions from lifestyle, certain medications and goals of fitness and exercise; discuss a supplement plan appropriate for your needs with a health care provider well trained in functional medicine and supplement therapies.
16. Avoid calories from liquid foods. – Alcohol, beverage drinks and certain fruit juices are high in empty calories that will be ultimately be treated as simple sugars in the body – excess easily stored as fat.
17. GOAL setting - Individual S.M.A.R.T goals – have a coach help you set up both short and long term S – Specific, M – Measurable, A – Attainable, R – Reasonable, T – Timely goals.
18. Exercise, EXERCISE, **EXERCISE!** – expend energy with *moderate* amounts of *daily* aerobic, anaerobic and strength training with resistance and weights. Cross training using a balanced program that incorporates the different metabolic systems will help with performance, burning calories and faster results. Exercise for at least 30 minutes preferably 60-90 minutes a day; if necessary break up workout to accomplish.
19. Build muscle mass with resistance weight training – major determinant of resting metabolic rate (set point) thus increasing the rate at which you burn calories. Will change with consistent lifelong change of exercise and diet. Weight lift 2-3 times per week.
20. After exercise always glucose load to train muscle glycogen metabolic process to stimulate glucose being stored in muscle and not allow excess to be stored into fat.

## **IMPORTANCE OF SUPPLEMENTS WITH WEIGHT LOSS AND BUILDING MUSCLE**

Preparing and Eating 5 small balanced nutritious meals is of paramount importance to lose weight and our health, but actually consuming this mythical "balanced diet" is often easier said than done. Mass-produced foods are often heavily processed, losing essential nutrients in the process. Agricultural techniques used for generating the greatest possible crop yields can mean that even fresh organic foods may not contain all the vitamins and minerals they should and use to. Environmental pollutions, pesticides and herbicide have created a more toxic growing environment which has decreased our quality of vitamin rich dense produce. Add to this the time required to transport and prepare food and the allure of fast food restaurants, and it's a struggle for most of us to get all the balanced supply of vitamins and minerals our bodies need.

Lots of alternatives are available if a person is busy and does not have time to. Our body does better and it is preferable to prepare the high quality nutritious meal, however in our busy life and situations certain products like meal replacement shakes and bars are available designed for aiding weight loss but which can also supply the essential macro and micro nutrients. Some weight loss supplements have also proven to assist in weight loss and weight management and are very safe and effective.

Even during weight loss regime your body may be deprived of essential nutrients. If the daily intake of food is not supplemented with dietary supplements or nutrient supplements your body immune system weakens, is slower to recover from exercise and becomes susceptible to various diseases. For great consistent results your workout routine goals should consisting of much more than just one hour - 5

days a week at the gym. To get the most of your workout routines and to really see real, lasting results you need to go beyond the physical and more into thinking about all areas of your life including your eating habit, sleeping habits and the supplements you use to replenish your tired worn out body.

An extremely important part of your workout routines regimen involves what you put into your mouth and therefore what goes into your body. After each strenuous workout you engage in your body loses important and valuable nutrients, fluids and electrolytes. The need to replenish these bodily ingredients is great especially right after your workout. It has been stated in numerous fitness journals and magazines that the window of opportunity when your body not only needs the nutrients the most and is at its prime time to absorb these nutrients is within *one hour* after finishing the workout.

In order to replenish your body successfully and absorb the most amounts of nutrients and vitamins and proteins a good quality supplements and recovery drinks are often recommended. Not one recovery drink or specific supplement is the best and usually there are many different kinds to choose from that have the best ingredients and are all natural. The obvious most important factor to a supplement is what is in it and the quality ingredients that it is made up of. However a secondary factor that may seem trivial is the taste of the drink; because if you enjoy drinking the recovery drink you will most likely never forget to replenish your body after each intense workout.

In conjunction with recovery drinks that are best used immediately after your intense exercises, try to also remember to consume throughout the rest of your day important specific vitamins, proteins and supplements chosen for your goals. The best way to do this is to have a small handy vitamin organizer and a meal replacement shake and shaker close to you. There is a simple rule that needs to be followed frequently when taking vitamins, recovery drinks and meal replacement shakes. The rule is to make sure and use sound judgment. Where problems arise is when people begin to live exclusively off of their shakes, vitamins and recovery drinks. When good judgment is used in regards to how often and when you consume these types of substances you will find yourself being healthier and being balanced and also seeing real long lasting *RESULTS* from your workout routines.

## **FUNDAMENTAL NUTRITION**

Vitamins and minerals are necessary for normal metabolism and good health. Vitamins and minerals have no calories and are not an energy source, but assist and regulate metabolizing nutrients in food, help convert fat and carbohydrates into energy and are invaluable in keeping your body running smoothly. Vitamins make it possible for other nutrients to be digested, absorbed and metabolized by the body. Vitamins are sometimes referred to as the "spark plugs" of our human machine. They are required to do many things and when sick, dieting taking medications or living an unhealthy life with bad habits your body will become depleted of certain essential vitamins which can lead to acute and chronic disease. Vitamins promote normal growth assisting the formation of bone and tissue, provide proper metabolism, ensure good health and protect against certain diseases, assist in the formation of hormones, blood cells, nervous-system chemicals, and genetic material. Vitamins mainly serve as catalysts for certain reactions in the body. They combine with proteins to create metabolically active enzymes that in turn produce hundreds of important chemical reactions throughout the body.

There are plenty of **Multivitamins Benefits** when you are building your body through weight training or cardiovascular exercise. When you are on a low calorie diet or lifting weights for gaining muscle mass, it is hard to get the right amount of vitamins and minerals from the food you eat. Not only do you need vitamins and minerals to keep your body running good, they are also important for growth and

maintenance of your muscles. Plus, vitamins and minerals aid in the loss of stubborn body fat by boosting your metabolism. The multivitamins benefits will take your bodybuilding routine to the next level. Of course there are many more vitamins and minerals that play a role in the success of your weight management but, these are the major ones that have a great impact in muscle growth and metabolism.

**For more information on how vitamins, fiber, essential fatty acids, minerals... are critical in Weight loss and weight management and muscle building see [FUNDAMENTAL NUTRTION pdf](#).**

## WEIGHT MANAGEMENT PRODUCTS

### Vitamin B Complex

Each member of the B-complex - thiamine (B1), riboflavin (B2), niacin (B3), pantothenic acid (B5), pyridoxine (B6), biotin (B7), folic acid or folate (B9), cobalamin (B12) -has a unique structure and performs unique functions in the human body. Vitamins B1, B2, B3, and biotin participate in different aspects of energy production, vitamin B6 is essential for amino acid metabolism, and vitamin B12 and folic acid facilitate steps required for cell division.

#### These Vitamins are essential for:

The breakdown of carbohydrates into glucose (this provides energy for the body). The breakdown of fats and proteins; converts your stored fat cells into energy. Instead of using other means of energy, vitamin B complex makes use of your stored energy and uses it for energy. This in turn, helps you lose that stubborn belly fat faster when working out. Vitamin B complex also manages your body metabolism for the digestion of protein.

B vitamins are vital for clear, luminous skin, youthful looks and for delaying graying of hair. They are essential for healthy skin, hair, and eyes. Studies show that 40 percent of dermatitis sufferers lack B vitamins. B vitamins also counteract stress, which has adverse effects on one's appearance.

Vitamin B complex reduces muscle spasms, leg cramps, hand numbness and helps regulate blood pressure. Finally, this vitamin helps in the transformation of certain substances from your body and turns that into insulin and growth hormones that is essential for energy and faster muscle growth.

Supplement with a high quality *Vitamin B (100)* complex that includes all the B vitamins at the appropriate ratios; these ratios are compared to the B6 at *100 mg* per day. This is recommended for promoting optimal health and immune function, weight loss and increase ATP production (energy). You will get a lot of multivitamins benefits from the Vitamin B complex.

### Vitamin D3

Vitamin D is a group of fat-soluble the two major physiologically relevant forms of which are vitamin D<sub>2</sub> and vitamin D<sub>3</sub>. Vitamin D without a subscript refers to either D<sub>2</sub> or D<sub>3</sub> or both. Vitamin D<sub>3</sub> is produced in the skin of vertebrates after exposure to ultraviolet B light from the sun or artificial sources, and occurs naturally in a small range of foods. In some countries, staple foods such as milk, flour and margarine are artificially fortified with vitamin D, and it is also available as a supplement in pill form. Food sources

such as fatty fish, mushrooms, eggs, and meat are rich in vitamin D and are often recommended for consumption to those suffering a deficiency.

Vitamin D plays a crucial role in support and function of bone, cardiovascular, immune, and neurological health by regulating the absorption of Calcium and Phosphorus. Calcium is necessary for muscular contraction. If adequate stores of Calcium are not available in the muscle, full, hard muscular contractions cannot be sustained. Of course, Calcium is also needed for the integrity of bones, which must support increased muscle tissue and provide an anchor during muscular contraction. Phosphorus helps provide quick, powerful muscular contractions, which comprise the majority of movements during weight training. Phosphorus is also required for the synthesis of ATP, the high energy molecule used by your muscle cells during contraction.

Your own vitamin D reserves depend mainly on how much sunlight reached the deeper levels of your skin during the last two or three months, and how much vitamin D you took by mouth during this period. To be sure of your own current vitamin D status, you can take a vitamin D blood test called the 25(OH)D test.

The current recommendation for adult intake of vitamin D is 400 IU per day, but findings from a study published in the Journal of Internal Medicine suggested that a vitamin D intake of 600 IU was insufficient to maintain adequate vitamin D levels in the body in the absence of sun exposure. They proposed an increase of the minimum daily recommended adult dose to 1,000 IU per day

| <b>D3 Dose for adults</b>   | <b>Body Mass (kg / Pounds)</b>           |         |         |       |
|-----------------------------|--|---------|---------|-------|
| Body mass (kg):             | 50-70                                    | 71-90   | 91-120  | > 120 |
| Body mass (pounds):         | 110-155                                  | 156-199 | 200-264 | > 265 |
| <b>How much strong sun?</b> | <b>Vitamin D3 daily supplements (IU)</b> |         |         |       |
| No Sun                      | 3500                                     | 5000    | 6500    | 7500  |
| A little on most days       | 3000                                     | 4000    | 5000    | 6000  |
| Lots (outdoor type)         | 1500                                     | 2000    | 2500    | 3000  |

## Calcium

Calcium is especially important for growth, maintenance and repair of bone tissue, maintenance of blood calcium levels, nerve conduction, and normal blood clotting. Inadequate dietary calcium and vitamin D increase the risk of low bone mineral density and stress fractures. Female athletes are at greatest risk for low bone mineral density if energy intakes are low, dairy products and other calcium-rich foods are inadequate or eliminated from the diet, and menstrual dysfunction is present. Calcium is necessary for muscular contraction and relaxation. If adequate stores of Calcium are not available in the muscle, full, hard muscular contractions cannot be sustained.

Calcium is also stored in fat cells and plays a crucial role in regulating how fat is stored and broken down by the body. A recent study theorized that the more calcium there is in a fat cell, the more fat will burn. Calcium is no magic bullet. What the study says is that ... higher-calcium diets favor burning rather than storing fat. Calcium changes the efficiency of weight loss.

Supplementation with calcium and vitamin D should be determined after a thorough nutrition assessment. The FNB established RDAs for the amounts of calcium required for bone health and to maintain adequate rates of calcium retention in healthy people. They established 1.0 -1.2 g per day. The

two main forms of calcium in supplements are carbonate and citrate. Calcium carbonate is more commonly available and is both inexpensive and convenient. Both the carbonate and citrate forms are similarly well absorbed, but individuals with reduced levels of stomach acid can absorb calcium citrate more easily. Other calcium forms in supplements or fortified foods include gluconate, lactate, and phosphate. Calcium from M.C.H.C. and calcium citrate are readily absorbed and utilized by the body. While other forms of calcium may halt bone loss, only M.C.H.C. has been shown to restore bone density. M.C.H.C. or microcrystalline calcium hydroxyapatite complex, prepared from raw bone, is in an extremely bioavailable form of calcium which has been used with great success in prevention and treatment of osteoporosis, to prevent and halt bone loss, and to restore bone density. Additional minerals are present in the natural ratios occurring in normal bone. Calcium citrate malate is a well-absorbed form of calcium found in some fortified juices. The body absorbs calcium carbonate most efficiently when the supplement is consumed with food, whereas the body can absorb calcium citrate equally effectively when the supplement is taken with or without food. Current supplementation recommendations for athletes, individuals with disordered eating, amenorrhea, and risk for early osteoporosis are *1500 mg* of elemental calcium.

## Zinc

Zinc is an essential trace mineral, so you get it through the foods you eat. Next to iron, zinc is the most common trace mineral in the body and is found in *every cell*. It plays an important role in the immune system, reproduction, growth, building and repair of muscle tissue, break down of carbohydrates into energy production, taste, vision, smell, blood clotting, and proper insulin and thyroid function. Zinc helps transport Vitamin A from your liver to the other parts of your body that is in need. In addition, it keeps your testosterone levels high. Zinc increases lean body mass and decreases or keeps stable the amount of fat. The reason may be that zinc increases levels of leptin, a hormone in the body that helps you feel full. Zinc also has antioxidant properties. Therefore it helps protect cells in the body from damage caused by free radicals.

The best sources of zinc are oysters (richest source), red meats, poultry, cheese, shrimp, crab, and other shellfish. Other good, though less easily absorbed, sources of zinc include legumes, whole grains, miso, tofu, brewer's yeast, cooked greens, mushrooms, green beans, and pumpkin, and sunflower seeds. Fruits and vegetables are not good sources. Diets low in animal protein, high in fiber and vegetarian diets, in particular, are associated with decreased zinc intake. Our body absorbs 20 - 40% of the zinc present in food.

Survey data indicate that a large number of North Americans have zinc intakes below recommended levels. Athletes, particularly females, are also at risk for zinc deficiency. Decreases in cardiorespiratory function, muscle strength, and endurance have been noted with poor zinc status. Zinc status has been shown to directly affect thyroid hormone levels, BMR, and protein use, which in turn can negatively affect health and physical performance. A mild zinc deficiency isn't uncommon but taking a zinc supplement, plus eating a healthy diet, should give you all the zinc you need.

Recommended dose of zinc is 15 - 20 mg per day. Individuals should be cautioned against very high single-dose zinc supplements because if taken for several weeks may lead to low HDL cholesterol and nutrient imbalances by interfering with absorption of other nutrients such as iron and copper. Zinc lessens the amount of copper your body absorbs, and high doses of zinc can cause a copper deficiency. For that reason, many doctors recommend that you take *2 mg* of copper along with a zinc supplement.

## Fiber

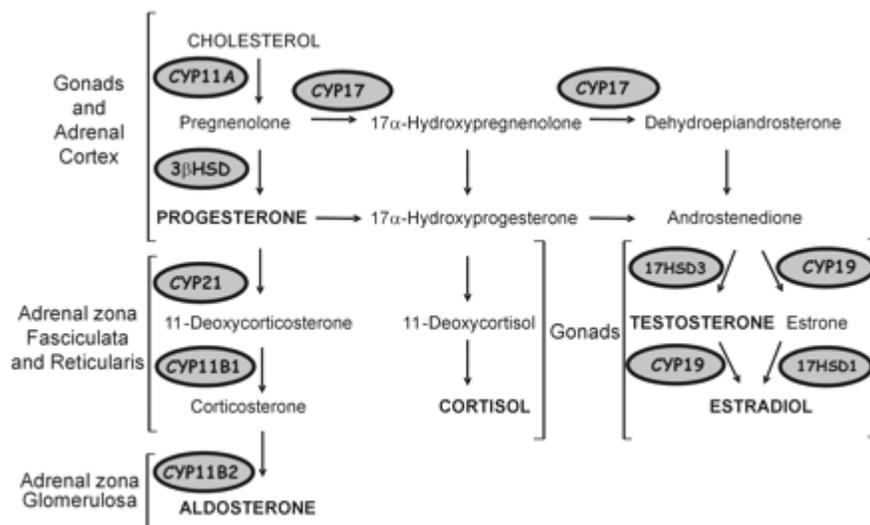
Dietary fiber plays an essential role in human health. Fiber is a non-digestible carbohydrate and carbohydrate-related substance. Fiber by itself provides no nutrients, but its passage through the digestive tract is greatly beneficial because it helps push along other waste and helps maintain the integrity of the intestinal lining. There are two types of fiber, soluble and insoluble. Most whole plant-based foods contain a combination of the two types. Both types of fiber help maintain the health of your digestive system and adds bulk to your diet, making you feel full faster and reduces appetite.

Getting more fiber in your diet has been shown to play a role in the treatment of conditions such as gastrointestinal disease, constipation, hemorrhoids, high cholesterol, heart disease, and diabetes. Most Americans don't get anywhere near the amount of fiber -- 25 to 30 grams per day -- recommended in their daily diet. Most nutritionists recommend high-fiber foods for people trying to lose weight. USDA guidelines suggest *14 grams of fiber for every thousand calories* you consume. If you are trying to lose weight, you may wish to consume more than the minimum requirement.

## Pregnenolone

Pregnenolone is a naturally occurring metabolite that is made in your body. It is often referred to as the "mother steroid compound" because it is the basic raw material for *all steroid hormones* in the body, thus making it very important. Pregnenolone itself is not a steroid hormone. Instead, Pregnenolone is a prohormone naturally produced in the mitochondria of the gonads and adrenal cortex by enzymes that convert cholesterol into pregnenolone. It is further transformed during steroidogenesis to progesterone and ultimately into mineralocorticoids, glucocorticoids, androgens, and estrogens. The pineal gland is primarily responsible for controlling this entire process, but as the body ages, it produces considerably less steroid hormones, including pregnenolone. It is estimated that by the age of 75 there is only 60% of the pregnenolone the body once had when it was 35! When the pregnenolone is formed it can take one of two pathways:

- 1) Conversion into DHEA and then the sex hormones
- 2) Conversion into progesterone and then cortisol or aldosterone.



It is misleading to think that supplementation with pregnenolone will always take care of balancing DHEA levels since it may not always go through this particular pathway. Just how much Pregnenolone is

used as Pregnenolone or is converted into other hormones depends on a number of factors, not least being your gender. Life-style issues such as diet, stress and exercise, as well as certain diseases and the stage of life that you are at also appear to be determining factors.

Although the actual way Pregnenolone works is not fully understood, using Pregnenolone as a supplement can have a number of effects. Pregnenolone appears to share many of its effects on the body with cortisol in that it can:

- Reduce allergic reactions
- Act as “a stress buffer”
- Lessen arthritis inflammation

However, whereas cortisol can have negative side effects, Pregnenolone is amazingly well tolerated. Pregnenolone is also known to enhance memory and improve mood and energy levels. Below we look at some of the benefits of Pregnenolone in more detail.

Preliminary research suggests that pregnenolone supplements may indeed offer *some of the same benefits as DHEA supplements and hormone replacement therapy (HRT)*. Pregnenolone may offer many post-menopausal women a natural estrogen replacement therapy. This is because Pregnenolone converts into DHEA which in turn converts into estrogens. Pregnenolone can also provide a natural source for progesterone, another important hormone for female reproductive health, and one which is particularly useful in controlling PMS. Like DHEA and HRT, pregnenolone has been reported to help slow the symptoms of mental and physical decline that are a natural part of aging.

Pregnenolone has also been used to treat symptoms of *depression, fatigue, and anxiety*, and is sometimes sold in combination supplements containing other natural hormones noted for their ability to promote sleep ease mental distress, such as melatonin and DHEA. Pregnenolone was shown to have fatigue busting capabilities. Even a dose of 1mg a day can improve the quality of sleep and decrease intermittent wakefulness in otherwise healthy young individuals.

It has long been reported that one of the leading benefits of Pregnenolone supplementation is the enhancement of *memory*, well in excess of the memory enhancing effects of other substances. Its role in memory enhancement appears to lie in its ability to assist in the acquisition of knowledge and the long term memory of learned behavior and it does all of this at lower doses than those required by other steroids and steroid precursors such as DHEA. Indeed, in a clinical study carried out in 1995, Pregnenolone was shown to be a potent memory enhancer – possibly 100 times more effective than DHEA. The role of pregnenolone and its enhancement of memory function

*Energy levels* are also boosted because Pregnenolone protects the energy producing mitochondria in our cells from potentially damaging toxins. This is because Pregnenolone enhances the activity of the cytochrome P450 detoxifying enzymes. These enzymes assist our cells, particularly those in the liver and the brain, to detoxify a whole range of toxins.

Pregnenolone may help to *reduce your stress* levels as it is thought that Pregnenolone may play a part in the neuro-endocrine response to stress. It may act to reduce the age-increasing effects of cortisol and induce a better state of relaxation. Research has revealed that people currently suffering from depression or with a history of depression have significantly lower levels of Pregnenolone in the fluid around the brain than those found in healthy people. Indeed, those people with active depression were

found to have lower levels of Pregnenolone than those with a history of depression. This shouldn't be that surprising as steroid hormones (which are synthesized from Pregnenolone) are known to affect mood and behavior via effects on the nervous system. Pregnenolone has proven itself to be both a mood enhancer and a *mild anti-depressant*.

Various parts of nerve cells are insulated by a membrane called the myelin sheath which acts to prevent "short circuiting" or the loss of neural transmission. Research involving mice has demonstrated that either Pregnenolone or progesterone supplementation promotes myelin formation during nerve regeneration. It maybe therefore that Pregnenolone therapy has a place in the treatment of diseases involving demyelination, such as multiple sclerosis.

Pregnenolone has been used since the 1940's as an alternative to mainstream medications for the treatment of arthritis, joint swelling and inflammation. Indeed, it is almost as synonymous with treating arthritis as cod liver oil. Many arthritis sufferers find Pregnenolone particularly effective in treating the inflammation in their joints that they experience with the disease. Studies have confirmed the effects of Pregnenolone on arthritis. In one trial 6 out of 11 people suffering from rheumatoid arthritis experienced moderate to marked improvement in joint pain and mobility after receiving intramuscular injections of 50-600mg of Pregnenolone daily. In another study involving 13 osteoarthritis sufferers, Pregnenolone reduced pain and improved mobility in 7 of the patients. The pain reoccurred once the Pregnenolone therapy was stopped. Another study highlighted the substantial benefits of Pregnenolone therapy patients with systemic lupus erythematosus (SLE), psoriasis and scleroderma.

Some people swear that pregnenolone is a sort of fountain of youth, and that these supplements can help you lose weight, build muscle, increase your sex drive, and restore youthful vigor; however, such reports are anecdotal (not scientifically proven) in nature.

Pregnenolone can convert into any number of different metabolites and there isn't at present a definite way of ensuring the precise ones you want. Pregnenolone supplementation may therefore increase the levels of progesterone and DHEA and possibly levels of other hormones such as testosterone and estradiol. In both sexes, pregnenolone produced in the adrenal glands has a high probability of converting into aldersterone, cortisol or DHEA.

Although pregnenolone is a precursor hormone to every other hormones made by the body, the site of pregnenolone manufacture will chiefly determine the results of pregnenolone hormone conversion. In males, for example, pregnenolone produced in the testicles has a high probability of converting into testosterone, and pregnenolone produced in the ovaries in females has a high probability of converting into estrogens. In both sexes, pregnenolone produced in the adrenal glands has a high probability of converting into aldersterone, cortisol or DHEA.

"Probability" and "high conversion" must be defined. Although the pregnenolone manufacture site does influence the conversion of pregnenolone into, for example, testosterone, it does not always follow that pregnenolone **MUST** convert into testosterone or any other hormone. In the worst case, pregnenolone may convert into stress hormones, thereby creating a catabolic environment that could lead to muscle breakdown instead of muscle gain (atrophy instead of hypertrophy). Furthermore, the term "high conversion" is relative. Many hormones convert to their target hormone at a rate of about ten percent. While this conversion rate is clinically significant and while pregnenolone can improve hormone profile, and quality of life, a pregnenolone to testosterone conversion rate of ten percent would still fall far short of delivering the results seen with prescription anabolic steroid drugs.

It has been cited that Pregnenolone is less likely to convert directly into testosterone than DHEA. Some testosterone may convert into estrogen. To help prevent this the use of an estrogen detoxification agent such as DIM with regular Pregnenolone use is recommended.

### **Dosage**

The classic studies on pregnenolone and stress in the 1940s, experiments generally used only 50 mg/day to achieve excellent results, while arthritis studies typically used 200-500 mg daily. Thus, although pregnenolone appears amazingly safe and beneficial, there are still many unanswered questions regarding proper dosage, metabolism, and clinical effects. Keeping these uncertainties in mind, here are some recommendations for dosage.

For those wishing to err on the side of caution, *25 to 50 mg* pregnenolone per day would probably be suitable for use without physician monitoring. Perhaps an additional safety margin could be achieved through discontinuing use for one week every month. Those wishing to use the higher, anti-arthritis doses (100 - 500 mg/day) should probably do so only under the supervision of their physician, even though many human clinical studies with arthritis at these dosages yielded no problems or toxicities. For senile dementia - daily doses of 300mg to 600mg. For mood enhancement and as an anti depressant - daily doses of 50mg to 200mg. For enhancement of detoxifying enzymes - daily doses of 25mg to 200mg per day. *Morning is the perfect time to take pregnenolone, and a single daily dose is probably best, since pregnenolone is fat-soluble, and probably follows the circadian highs and lows of DHEA and cortisol (highest in the morning, with a drop to baseline by late afternoon).*

### **Safety Studies**

Fortunately, pregnenolone seems safer than other steroids. Pregnenolone researchers working with both human and animal subjects since the 1940s have consistently commented on pregnenolone's virtual absence of toxicity. On an anecdotal note, there have been patients taking 100 - 1,000 mg pregnenolone/day intermittently since 1987, with no discernible negative side effects. Pregnenolone has been given orally to humans at doses as high as 500 mg/day for as long as 30 weeks without evidence of adverse effects. In one human study, eight people received 50 to 150 milligrams per day by intramuscular injection for 75 days, with no reported side effects. Dr. Eugene Roberts gave 20 Alzheimer patients 525 mg/day for three months with no toxicity. During rheumatoid arthritis experiments with pregnenolone, individuals were give 500 mg pregnenolone/day for up to 30 weeks, with no toxicity. And Drs. Pincus and Hoagland, two of the pioneer researchers on pregnenolone use by humans in the 1940s, found no toxic reactions with pregnenolone used by hundreds of men and women at dosages of 100 mg/day for four months.

### **Dangers of Pregnenolone**

Common side effects are over-stimulation and insomnia. If you experience either of these, try a lesser dose and take it in the morning. Anger, anxiety and irritability have also been reported when higher amounts were taken. Headaches might also occur with higher doses. Because pregnenolone can convert into androgens, there is a possibility that acne might occur. Scalp hair loss can also occur if the hormone is used daily for a prolonged amount of time. There is a more dangerous side effect of pregnenolone that should be given consideration if you are contemplating the usage of it: heart palpitations. It is also suggested that the growth of hormone-responsive cancers such as breast and prostate cancer may occur as a result of the use of pregnenolone.

Because Pregnenolone has antagonistic effects on what are known as GABA receptors in the central nervous system, Pregnenolone supplementation may cause problems in people with a history of seizures.

### **7-Keto DHEA**

DHEA (dehydroepiandrosterone) is a steroid prohormone known produced mainly by adrenal glands, gonads and the brain and is the most dominant hormone in the body involved in the physiology of virtually every cell. The body converts cholesterol into pregnenolone which is further transformed into DHEA to a hormone called androstenedione. Androstenedione is then changed into the major male and female sex hormones. In both sexes, blood levels of DHEA peak at 25. After 30 years of age, the levels steadily decline. By 80 years old, the body only has 5% of the DHEA levels it had at 20. Because levels of DHEA decline with age, DHEA has been hyped as an "antidote for aging" and a "superhormone". Proclaiming its function to help burn fat, build muscle mass, boost libido, strengthen the immune system, prevent heart disease, cancer, osteoporosis and non-insulin dependent diabetes, ease the effects of menopause, memory loss, help in the treatment of lupus, limit burn damage, combat stress and prevent or slow the progression of Alzheimer, Parkinson diseases, Multiple sclerosis (MS), low levels of steroid hormones (Addison's disease), depression, schizophrenia and chronic fatigue syndrome (CFS).

The sex steroid hormones have pronounced effects in areas of the brain that are not involved in sexual behavior or reproduction. The actions of the sex hormones have been a topic of recent research. (DHEA), the adrenal hormone, also alters spine formation, and the effect may be due to its metabolism to estrogen in the brain. One area of interest is their effects on hippocampal neuron spine formation. DHEA is used in the growth of dendritic spines in the hippocampus. The hippocampus is a brain region involved in learning, memory, and cognitive function, and it also shows pronounced changes during aging and in pathological disease states, such as Alzheimer's disease, related to aging and cognition. Estrogen and DHEA have been shown to enhance memory and learning functions and prevent damage due to anoxia and glutamate-induced toxicity. DHEA levels and estrogen levels decrease during aging and have also been implicated in etiology and treatment of the damage induced by Alzheimer's disease.

Several studies suggest that taking DHEA may help improve mood, fatigue, and well-being. In one study, women with this condition who took DHEA supplements reported improved sexuality and sense of well-being (including decreased feelings of depression and anxiety). In a few clinical studies of people with major depression, DHEA significantly improved symptoms compared to placebo.

DHEA promotes an increase in sex hormones testosterone production and associated sex drive. DHEA is also used by men for erectile dysfunction (ED), and by healthy women and women who have low levels of certain hormones to improve well-being and sexuality. A Study in France used the supplement to relieve symptoms of menopause. It suggested that the hormone may slow bone loss, improve skin health, and improve sexual drive and vaginal dryness. DHEA can be converted into either estrogen or testosterone in the body, women or men with a history of hormone-sensitive cancers such as breast or prostate cancer should consult a healthcare provider and be monitored during nutritional therapies.

DHEA is used to increase metabolism and thermogenesis to promote weight loss, to increase lean body mass and build muscle, to increase activity of the thyroid gland and immune system. It will stimulate an increase in insulin receptors for better glucose levels and ultimately usage for ATP. It also has effects on inhibiting an increase in fat cell size, the number and ability to split. Due to its effects it is used for

preventing diabetes and metabolic syndrome. Athletes use DHEA to increase muscle mass, strength, and energy. But DHEA use is banned by the National Collegiate Athletic Association (NCAA).

Additionally it will have compounding effects by reducing Adrenal stress and cortisol levels which are known to inhibit adipose breakdown. A study funded by the National Institutes of Health looked at the effect of DHEA (50 mg a day) compared to a placebo for weight loss in 56 overweight adults between the ages of 65 and 78. At the end of the six month study, people taking DHEA lost an average of two pounds compared to the people taking the placebo, who gained just over one pound. Although overall weight loss was minimal, results were more promising when fat loss around the abdomen was assessed. After six months, women taking DHEA lost 10% of their abdominal fat and men lost 7%.

There are two types of DHEA available: pharmaceutical grade DHEA supplements and DHEA extracts.

Only a doctor can prescribe pharmaceutical grade DHEA. Synthetic or pharmaceutical grade DHEA is produced from pharmaceutical grade ingredients. This form is molecularly identical to the DHEA that we produce. DHEA extracts are available over-the-counter and are made from the Mexican yam called Dioscorea that contains a sterol called diosgenin which contains about 5 to 10 percent of true DHEA.

**7-KETO DHEA** is a potent, natural metabolite, also called conversion product, of DHEA. This means that 7-Keto is a substance that is produced when DHEA is metabolized by the human body. 7-Keto may then seem to be the answer to people's prayers who want the benefits of DHEA but not the side effects that were worrisome. It gives the same effects that DHEA has as far as boosting the immune system, improving the memory, and increasing the metabolism of the body however 7-Keto is not metabolized by the body into either an androgenic or estrogenic hormone or steroid to make the sex hormones that present cancer risks.

In preliminary studies on animals, 7-Keto DHEA stimulates the immune system, prevents muscle loss (anti-catabolic), reduces stress, increases the calorie-burning rate by activating thermogenic liver enzymes and improves memory more than DHEA or a placebo. 7-Keto DHEA may be less likely to cause problems than its counterpart DHEA however when any hormonal supplement comes into play there can be side effects. It is recommended that if you have any type of medical condition please consult with your physician or medical professional prior to starting any type of supplement such as this.

Doses of *50mg -2 g/day*, never take under age of 18 years old, are typically recommended for cardiovascular, sports performance and weight loss benefits, although the effectiveness of any lower dose for sports or weight loss effects are not impressive.

### **Chromium**

Chromium is a mineral that humans require to enhance the action of insulin a hormone critical to the metabolism and storage of carbohydrate, fat, and protein in the body. Chromium has long been of interest for its possible connection to various health conditions. Among the most active areas of chromium research is its use in supplement form to treat diabetes, lower blood lipid levels, promote weight loss, and improve body composition. Tests on athletes in training have shown chromium picolinate to increase lean body mass and decrease body fat. It enhances the effects of insulin to insure its efficient use. In addition to regulating blood sugar, insulin facilitates the entrance of glucose and other carbohydrates and amino acids through cell membranes to be used for ATP (energy) and influences blood levels of other hormones. Insulin promotes development of skeletal muscle by

promoting intracellular uptake of free amino acids from the blood, enhances the rate of protein synthesis, and decreases the rate of protein degradation.

Chromium supplements are sometimes claimed to reduce body fat and increase lean muscle mass. A recent review of 24 studies that examined the effects of 200 to 1,000 mcg/day of chromium picolinate on body mass or composition found to help with weight loss when compared to placebos. Chromium is widely distributed in the food supply, but most foods provide only small amounts (less than 2 micrograms per serving).

### **L- Carnitine**

L-Carnitine is located in the mitochondrial membrane, and is a co-factor needed for transformation and transport of long-chain fatty acids (FAT), such as triglycerides into mitochondria (a cell's energy powerhouse), where they are broken down to produce energy. It is necessary to improve the body's ability to use stored fat as fuel by enhancing lipid oxidation. L-carnitine is a very popular supplement that promotes growth and development. It is also used for fat-burning and increasing energy. L-carnitine has been suggested as a muscle disease, liver disease, and kidney disease fighter, and has also been shown to help build muscle and treat some forms of cardiovascular disease. It is also great in dieting, as it reduces feelings of hunger and weakness. It was found with experiments that doses of 2 grams just prior to an event increased running speeds and decreased O<sub>2</sub> consumption and reduced heart rate with athletes. There was also a decrease in Lactate post exercise. This has led to its properties of increasing VO<sub>2</sub> Max. L-Carnitine requires many Co-factors to function such as: Magnesium, Iron, Vitamin C, Folic Acid, Vitamin B12, B6, B5 and B3.

Doses of 2-6 g/day over 6 months have been studied with no observed adverse side effects. Doses of 500mg -6 g/day are typically recommended for cardiovascular, sports performance, and weight loss benefits, although the effectiveness of any lower dose of carnitine for sports or weight loss effects are not impressive. As a "heart health" nutrient, approximately 2 g/day of carnitine provide some benefits in terms of promoting general heart function.

### **L- Glutamine**

L-glutamine is the most abundant amino acid found in human muscle and plasma. It is released from the muscle during times of stress (such as hard weight training workouts) and dieting. This amino acid not only has been shown to be a great anti-catabolic agent (protects the muscle from "breakdown" - the catabolic activities of the hormone cortisol), to be a contributor to muscle cell volume, and to have immune system enhancing properties. It is an important fuel source for muscle and rapidly dividing cells such as the cells of the immune and the gastrointestinal (GI) systems. It is also the very important fuel source of the enterocyte of the GI. It plays a role in brain function as a neuroactive precursor needed for optimal mental functioning. Additionally L-Glutamine has important roles of:

- Regulation/stimulation of protein synthesis.
- Has an anabolic effect on skeletal muscle (this is one of the ways in which steroids exert their muscle building effects).
- Increases the release of Growth Hormone.
- Accelerating glycogen synthesis after a workout.
- Sparing the use of the glycogen stored in the muscle cell (recall that the glycogen is the energy source for muscle cells to contract).
- Faster recuperation from weight training workouts.

- Primary nitrogen donor, meaning that it moves the nitrogen around in the body to where it is needed. Maintaining a positive nitrogen balance is absolutely necessary for muscle building.

Recently, glutamine has become known as a conditionally essential amino acid because in times of physical stress, such as intense exhaustive exercise, critically ill and surgery, the body requires more of it to maintain its glutamine stores in blood and muscle. When glutamine stores are depleted, you may experience decreases in strength, stamina, and recovery.

Due to its anti-catabolic properties and the fact that it accelerates glycogen synthesis after a workout, glutamine is best taken 20-30 minutes after a workout with a protein shake. One of the best products to use to prevent overtraining!

On days that you don't work out, just take it with your last protein shake of the day. Initial Dosage could start with 2-5 grams which is sufficient and will allow your stomach to get used to it; you can slowly increase to as much as 10-15 grams. However, this supplement will be most effective when taking about *10-15 grams total each day dividing the does over 2-3 times*, with the most effective times first thing in the morning, before you go to bed, and directly after your workout. Research has shown that Glutamine can help increase growth hormone levels. A study showed 2 g of L- Glutamine increased growth hormone levels by over 400%.

### **5-HTP**

5-Hydroxytryptophan (5-HTP) (600 - 900 mg per day) -- 5-HTP is thought to reduce hunger cravings by boosting serotonin levels in the central nervous system, which may reduce appetite and lessen food cravings. However, 5-HTP has been associated with eosinophilia myalgia syndrome (EMS), a rare and potentially fatal blood disorder, although it isn't clear whether 5-HTP actually contributes to developing the disorder. In addition, people who take antidepressants or herbs and supplements with antidepressant effects (such as St. John's wort and SAMe) should avoid 5-HTP. Talk to your doctor before taking 5-HTP.

### **Conjugated Linoleic Acid**

CLA is a fatty acid found primarily in meat and dairy products. Preliminary human and animal studies suggest that CLA may help control weight by reducing body fat particularly abdominal body fat. However, the benefit appears to be slight; there is some question/concern as to whether CLA can increase insulin resistance in overweight people (a precursor to developing diabetes). It appeared CLA works by inhibiting an enzyme involved in fat storage known as lipoprotein lipase. Other studies in humans showed that it helped weight lifters and athletes build more muscle mass without altering their diet.

In the past, conjugated linoleic acid (CLA) was shown in animals to reduce body fat. The researchers thought that lipogenic/lipolytic enzymes as well as certain cytokines were affected by CLA. Therefore, the enzymes that build fat were inhibited while those that release fat were upregulated. From a practical standpoint, clever physiologic effects like eating a fat to get lean may be cost prohibitive. You see, dietary lipids can exhibit a dose-response curve, i.e., more works better. And although a lot of CLA will work, it can get expensive. Although initial research has been promising regarding muscle mass and strength, we've only seen effects in the lab with 7.2 to 15 grams per day, way more than most folks could afford!

### **Co Q-10**

Co-Enzyme Q10 is an important vitamin-like nutrient found virtually in all body cell membranes and organs and energy compartments in the mitochondria. CoQ10 plays a critical role in the production of an important molecule known as adenosine triphosphate (ATP), the basic energy molecule of all cells. It is used in the conversion of energy from carbohydrates and fats to ATP. Although CoQ-10 can be synthesized by the body, the body's capacity to do so may be insufficient, to meet CoQ-10 requirements. Primary dietary sources of CoQ10 include oily fish (such as salmon and tuna), organ meats (such as liver), and whole grains. Most individuals lack sufficient amounts of CoQ10 with a "Western" diet, it may be useful for individuals with particular health conditions or those taking certain medications to supplement. Susceptibility to CoQ-10 deficiency appears to be greatest in cells that are metabolically active, such as those in the heart, lungs, immune system, and gingivae. CoQ-10 also functions as an antioxidant. By functioning as an antioxidant, CoQ10 protects tissue components by scavenging and neutralizing damaging free radicals and reactive oxygen species produced during the oxidation of fats and carbohydrates. Scientists believe free radicals contribute to the aging process, as well as the development of a number of health problems, including heart disease and cancer.

In animal studies, CoQ10 supplementation has increased mean lifespan by as much as 50%. The beneficial effects of CoQ10 appear to be dose dependent. Recent clinical trials show faster and greater regression of disease with doses (300-600 mg) of CoQ10 daily. Supplementing 50-200mg CoQ10 per day has also demonstrated an increase in ATP production (energy) by enhancing CoQ10's critical role in breaking down of carbohydrates and fats. Soft gels tend to be better absorbed by the body than capsules or other preparations. CoQ10 is fat-soluble so should be taken with a meal containing fat for optimal absorption. Also, taking CoQ10 at night may help with the body's ability to use it.

### **Growth Hormone**

GH is a powerful anabolic hormone in humans. HGH has been used by competitors in sports since the 1970s, and it has been banned by the IOC and NCAA. HGH is synthesized and secreted from the anterior pituitary gland in a pulsatile manner throughout the day; surges of secretion occur at 3- to 5-hour intervals. The plasma concentration of GH during these peaks may range from 5 to even 45 ng/mL. The largest and most predictable of these GH peaks occurs about an hour after onset of sleep. A number of factors are known to affect HGH secretion, such as age, gender, diet, exercise, stress, and other hormones. Young adolescents secrete HGH at the rate of about 700 µg/day, while healthy adults secrete HGH at the rate of about 400 µg/day. Many tissues are targets for GH including skeletal muscles. Its benefits have variably included reduced fat mass, increased lean mass, increased bone density, improved lipid profile, reduced cardiovascular risk factors, and improved psychosocial well-being. The use of Growth hormone is a **Controversial weight loss hormone** and recently has been used experimental as an anti-aging agent. Growth hormone is used as prescription drug in medicine to treat children's growth disorders and adult growth hormone deficiency. In the United States, it is only available legally from pharmacies, by prescription from a doctor. In recent years in the United States, some doctors have started to prescribe growth hormone in GH-deficient older patients to increase vitality.

The goal of supplementation would be to use safe supplements that stimulate a natural increase in your own GH production for the greatest results. For example: orally administered arginine is a potent GH releaser. More specific amounts of these substances reported a stronger effect on GH. Combining arginine and ornithine statistically increased GH. While oral dose of 1200 mg of L- arginine plus 1200mg of L- lysine on an empty stomach significantly increased plasma GH levels.

### **hCG – Human Chorionic Gonadotropin**

*Controversial weight loss hormone* - A Glycoprotein hormone produced in pregnancy that is made by the developing embryo after conception and later by the placenta. Its primary utility is to provide nourishment to the fetus by burning the fat content from the mother's body fat reserves without having any affect on muscle. Research on HCG has suggested that it can have large repercussions on tackling obesity, a glaring problem in the modern day. Taking small daily doses of HCG (approx. 125 IU to 200 IU) can result in weight loss of 1 to 2 lbs per day, and often more, when accompanied by a low calorie diet of approximately 500 calories. These controversial HCG protocol or diet plan involves stimulating a faulty metabolism correction. The protocols administrate small quantities of HCG for a specific amount of time along with a low calorie diet. The idea was to basically make the hypothalamus use up the excess stored up body fat when the body is on a low calorie diet, with the help of small doses of HCG. This makes the body burn excess fat for energy and results in weight loss at a faster and steady rate. It is theorized that HCG distributed stored fat and helped the body to metabolize fat. When we deposit fat, our bodies usually add it in certain "problem" areas. These include the hips, arms and below the chin. The easier it is to put on weight in these areas, the harder it is to lose weight from them. HCG treatments claim to be highly effective in releasing and metabolizing the body's "problem area" fat storage.

### **Stevia**

*Stevia* is a South American herb that has been used as a sweetener by the Guarani Indians of Paraguay for hundreds of years. The leaves of this small, green *Stevia rebaudiana* plant have a delicious and refreshing taste that with its extracts having up to 300 times the sweetness of sugar, stevia has garnered attention with the rise in demand for low-carbohydrate, low-sugar food alternatives. Medical research has also shown possible benefits of stevia in treating obesity and high blood pressure. Because stevia has a negligible effect on blood glucose, it is attractive as a natural sweetener to people on carbohydrate-controlled diets.

### **Pyruvate**

Pyruvate is a substance that occurs naturally in the body, as a by-product of the metabolism of carbohydrates. Pyruvate is a key intersection in several metabolic pathways. It is found naturally in fruits and vegetables, as red apples as the best source. During glycolysis (breakdown of glucose in to energy), glucose is converted into Pyruvate and then either converted into 1.- acetyl Co A, for the entry into the citric acid cycle (Krebs Cycle) under aerobic conditions or 2. – Lactic acid under anaerobic conditions. There is some evidence that it may help reduce body fat, possibly by increasing the body's metabolic rate. It is becoming popular with athletes due to reports of its endurance and weight loss enhancing effects. Studies have demonstrated that Pyruvate is most effective when given in combination with dihydroxyacetone (DYAP). Dose recommendation is 3 grams per day.

## **Product Recommendations**

At Goodyear Chiropractic Health Center, we offer only the highest quality nutritional supplements. The brands we offer are formulated with the highest regard for safety and efficacy with the highest quality ingredients and standardized extracts for best absorption and consistent results. Some of the brand names we offer are ***Advocare, Metagenics, Nutrition Dynamics, Optimum Nutrition, Standard Process, and Nutrina.***

## 7-Keto DHEA

### Weight Loss Formula

Keto DHEA is used to increase metabolism and thermogenesis to promote weight loss, to improve lean body mass and build muscle, to increase activity of the thyroid gland and immune system, to boost memory, and to reduce aging.

#### Each capsule supplies:

Keto metabolite of DHEA 100 mg

## Pregnenolone

### Bio-identical Pregnenolone

Pregnenolone is synthesized in the body from cholesterol and is the precursor for all the steroid hormones, including progesterone, aldosterone, cortisol, dehydroepiandrosterone (DHEA), testosterone, and estrogens.

#### One capsule supplies:

- Pregnenolone 30 mg

## Acetyl-L-Carnitine

### Neuroprotection Formula

Acetyl-L-Carnitine, the acetyl ester and biologically active form of L-Carnitine, is an effective delivery form for both L-Carnitine and acetyl groups. Essential for normal mitochondrial function in all cells, L-Carnitine's primary function is to transport long chain fatty acids into the mitochondria where they are oxidized to produce energy.

Acetyl-L-Carnitine is unique in that it can cross the blood-brain barrier where it facilitates energy production in brain cells. The acetyl group it carries contribute to production of the important neurotransmitter, acetylcholine. Research shows Acetyl-L-Carnitine is critical to youthful cellular function in the brain, heart, liver, peripheral nerves and immune system, which makes it extremely important for anti-aging.

#### One capsule supplies:

- Acetyl-L-Carnitine 500 mg

## L-Carnitine 500

### Cardiovascular Health and Energy Production Formula

L-Carnitine transfers long-chain fatty acids, such as triglycerides into mitochondria (a cell's energy powerhouse), where they may be oxidized to produce energy. L-carnitine is a very popular supplement that promotes growth and development. It is also used for fat-burning and increasing energy.

L-carnitine has been suggested as a muscle disease, liver disease, and kidney disease fighter, and has also been shown to help build muscle and treat some forms of cardiovascular disease. It is also great in dieting, as it reduces feelings of hunger and weakness.

Studies have been conducted on L-carnitine since as early as 1937 which show that the body's cardiovascular system can greatly benefit from its intake. Also, there are a variety of published studies that show L-carnitine is useful in increasing the heart's output and improving its functioning, as well as stimulating the heart's energy supply and improving cardiac performance. Some experts have shown it increases endurance and helps regulating heart arrhythmia.

**One capsule supplies:**

- L-Carnitine (as L-carnitine fumarate)500 mg

## **CoQ10 200 mg**

### **Stabilized, Highly Absorbable Coenzyme Q10 with Natural Vitamin E and Beta-Carotene**

Coenzyme Q-10 is essential for the health of virtually all human tissues and organs. CoQ-10 also functions as an antioxidant.

Although CoQ-10 can be synthesized by the body, the body's capacity to do so may be insufficient, to meet CoQ-10 requirements, in some situations. Susceptibility to CoQ-10 deficiency appears to be greatest in cells that are metabolically active, such as those in the heart, immune system, and gingivae.

**One softgel supplies:**

- Vitamin A (Betatene© natural mixed carotenoids)2000 IU
- Vitamin E (d-alpha-tocopherol)200 IU
- Coenzyme Q10 (Ubiquinone)200 mg

## **Glutamine**

### **Muscle Performance | Cell Volumizer**

This Glutamine product was designed for Body building and sports nutrition. Glutamine, when paired with exercise, promotes lean muscle mass and cell growth.

**One teaspoon supplies:**

- L-Glutamine 5 g
- Note: For critical illness or trauma, 10-40 grams daily has been used.

## **CATALYST™ by Advocare**

Catalyst™ Amino Acid Supplement is a blend of essential branched-chain amino acids and L-glutamine that supplies your body with muscle-building components and sustains your muscles during exercise and reduced calorie intake. Whether you're trying to lose weight or gain muscle, Catalyst helps repair and protect muscles. And it works great in conjunction with other AdvoCare® products like Spark™ Energy Drink and one of the Metabolic Nutrition Systems (MNS®). Other amino acids in Catalyst like L-arginine, taurine and betaine help fuel and maintain your muscles to support endurance and strength. Combined

with a healthy diet and exercise, Catalyst helps you retain muscle and reduce fat for a more toned and better defined look.

**One Serving supplies:** L-Glutamine-1,200mg, L-Leucine-450mg, L-Isoleucine-225mg, L-Valine-225mg, L-Arginine-100mg, Betaine-50mg, Taurine-50mg.

## Arginine Extreme

Arginine Extreme combines a substantial amount of L-arginine with other amino acids, B-vitamins and related nutrients scientifically designed to contribute to the body's production of nitric oxide and muscle support. This unique combination of powerful nutrients nourishes the growth of lean muscle tissue in conjunction with an exercise program and provides targeted nutritional support for the vascular, cardiovascular, reproductive and immune systems. For athletes and exercisers, great-tasting Arginine Extreme is a premier pre-workout supplement that can help magnify the results of strength training by providing nutrient-delivery support directly to the muscles. With 2 1/2 grams of L-arginine per serving, plus L-leucine, another important amino acid, you can **get better endurance in the weight room and improved stamina during cardio workouts**. Use it with the rest of the Performance Elite product line, especially Muscle Fuel® to help further enhance your results by supporting longer, more vigorous workouts.

But Arginine Extreme isn't just for athletes. Because it feeds the vascular system with many of the nutrients it needs to perform at its best, Arginine Extreme provides cardiovascular nourishment and excellent immune support. As nitric oxide levels increase, healthy blood flow is easier to maintain. In fact, the ingredients in Arginine Extreme have been shown to help support healthy blood pressure levels and cholesterol levels already in the normal ranges.

**One Serving supplies:** Calories per serving-25, Total Carbohydrates-6g, Riboflavin-500mcg, Niacin-5mg, Vitamin B-6 (pyridoxine HCl)-500mcg, Folic Acid-100mcg, Vitamin B-12 (as cyanocobalamin)-1.5mcg, Biotin-250mcg, L-Arginine-2,500mg, L-Leucine-800mg, L-Glutamine-200mg, Glycine-200mg, Betaine (as HCl)-100mg, L-Lysine (as HCl)-100mg, Taurine-100mg.

## Post-Workout Recovery

Post-Workout Recovery Sports Drink contains more than 30 vitamins, minerals and other nutrients that support the muscles' metabolic processes in recovery and helps minimize occasional soreness after workouts. Post-Workout Recovery combines the muscle-supporting nutrition used by hundreds of professional and world-class athletes across the United States. Post-Workout Recovery **helps enhance physical performance and endurance while supplying essential components for muscle repair and gain during and after physical activity. The unique blend of high-quality protein combined with glucose polymers and other carbohydrates, gives the body energy and structural support.**

Post-Workout Recovery also contains branched-chain amino acids to support muscle recovery, growth and endurance. Finally, the antioxidants present in this advanced sports drink help the body ward off free radicals that are commonly produced as a result of exercise.

**One Serving supplies:** Calories per serving 230, Total Carbohydrate-38g, Creatine-2g, Choline-50mcg, Inositol-50mg, Vanadium-200mcg, Boron-250mcg, Gamma-oryzanol-150mcg, L-Carnitine-25mg, Inosine-100mg, Silicon-1mg, DL-Methionine-250mg, L-Leucine-200mg, L-Valine-100mg, L-Isoleucine-100mg.

## **AdvoCare® Muscle Fuel Pre-Workout Drink**

**AdvoCare® Muscle Fuel is a unique, single-product solution that** supports multiple muscle metabolic processes and helps maintain and restore energy during and after physical activity. Its 28 vitamins, minerals, botanicals and other energy-producing intermediates synergistically enhance physical performance and endurance. It also **supplies essential muscle-gaining components during and after physical activity, helps reduce oxidative stress, facilitates workout recovery, maximizes training benefits, and helps you take your workout to the next level.** And it contains essential nutrients to fight age-related muscle atrophy.

**One Serving supplies:** Calories per serving-25, Total Carbohydrate-6g, Vitamin A(as beta-carotene)-1,250 IU, Vitamin C (as ascorbic acid)-180mg, Folic acid-100mcg, Vitamin B-12 (as cyanocobalamin)-30mcg, Pantothenic acid (as calcium pantothenate)-20mg, Calcium (as calcium citrate and carbonate)-200mg, Magnesium (as magnesium citrate)-40mg, Zinc (as zinc gluconate)-3mg, Chromium (as chromium citrate)-60mcg, Sodium (as bicarbonate)-140mg, Potassium (as bicarbonate)-250mg, Creatine (as citrate and monohydrate)-3g, Citrate-2.5g, L-Arginine-2g, D-Ribose-1.5g, Malate (as malic acid)-850mg, Green tea extract (leaf-camellia sinensis)-500mg, Calcium pyruvate-500mg, Glycine-500mg, L-Carnitine-400mg, Aspartate (as L-aspartic acid)-250mg, Tartrate (as tartaric acid)-250mg, L-Citrulline-200mg, Succinate (as potassium succinate)-200mg, Betaine (as HCl)-100mg, Caffeine-100mg, Vanadium (as amino acid chelate)-2mg, Boron (as amino acid chelate)-100mcg.

## **Crave-Curb by advocre**

**Nutritional Support for Carbohydrate, Alcohol, and Drug Cravings**

**Crave-Curb causes the synthesis of** the brain reward neurotransmitters like serotonin and atecholamins and through its effect on the natural opioids will cause a significant release of dopamine at the nucleus accumbens. This constant release of possibly **therapeutic amounts of dopamine** (anti-stress substance leads to a proliferation of D2 receptors, **thereby, reducing craving for carbohydrates.**

## **MetaFiber –(Metagenics)**

MetaFiber is a low-allergy-potential fiber drink mix designed to support healthy intestinal transit time and bowel regularity. One serving provides approximately 83% insoluble and 17% soluble dietary fiber.

\$23.25(38 servings)

## **Dynamic Greens with Mangosteen–(Metagenics)**

Easy-to-mix, as well as great tasting “phytonutrient” powder drink that is loaded with certified organic whole foods and concentrated plant extracts.

**\$41.50**

## **Spark Energy Drink–(Advocare)**

Sugar free source of long lasting energy and heightened mental focus and performance.

\$22.50 per box (14 pouches), \$51.95 canister (42 servings)

## **Fiber Drink by Advocare**

10 grams of fiber per serving. Supports intestinal function, enhances nutrient absorption, helps maintain cholesterol levels that are already in the normal range and provides a feeling of fullness which helps to curb appetite.

\$17.50 per box (14 pouches)

**Be sure to discuss nutritional supplementation with your health care provider, especially if you have a health condition or are currently taking medication.**

### ***Maintain a healthy Lifestyle***

Make sure that you're eating a sensible diet, training regularly and intensely, staying well hydrated, and getting at least 7 hours of sleep every night. Protein provides the building blocks, but even the best sources won't build new muscle without the proper stimulus and **consistency!**

**For more on why nutritional supplements are an important part of healthy eating, schedule your nutrition consult.**