

restorHEALTH

*The Comprehensive
Alternative*

**Nutrition Education
And
Planning**

*A Program Of
RESTOR Physical Therapy, Inc.
And
John R. Horsley, PT
Ellyn C. Silverman, RD, MPH*

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Welcome

We would like to take the time to welcome you to RESTOR Physical Therapy. In conjunction with your specific needs, we are pleased to provide you the opportunity to use our facilities and programs.

RESTOR has served the community for the last eleven years, and is continually developing and growing with our doctors and patients; presenting a positive and open environment for efficient recovery, through our rehabilitation treatment programs. Some of our programs incorporate yoga-based therapy, nutrition/exercise planning and dealing with the bodily effects of health management.

At present, we have the largest aquatic facility to assist us in pool therapy, which we believe is an excellent way to initiate movement early on. For your convenience our clinics are located within the Los Caballeros Raquet and Sports Club in Fountain Valley, and on the campus of Fountain Valley Medical Center. Our hours of operation are between 7am and 7pm, Monday and Friday.

Enclosed is additional information about a new program we have developed called **RESTORhealth**. This program is one of the first of its kind to merge physical therapy with nutrition education by a Registered Dietitian, all in efforts to treat chronic diseases such as Diabetes, Hypertension and Hyperlipidemia (high cholesterol/high triglycerides). Our purpose is to give patients an alternative to treating these life-threatening diseases. Our nutrition program is based on the works of cutting edge nutritional information. The results have been promising, with patients seeing a 25-40% improvement health indicators in one months time.

This program begins with an evaluation by our physical therapist and an exercise plan is adopted based on the results of these findings. We incorporate the use of water exercises, cardiovascular training on the latest exercise equipment, yoga and circuit training. The nutrition portion of the program involves assessing current eating habits, re-structuring daily eating patterns, keeping food logs, on-going follow-up and support and continued education throughout the duration of the program.

The **RESTORhealth** program requires a minimum commitment of one month and begins with your doctor writing a prescription for our services. We need to have your entire doctor's reports relating to your condition so we can establish a baseline from which to gage your progress. At the present time, Medicare, Blue Cross, Blue Shield and Aetna are accepting and paying for treatments for these conditions.

For more information on our program, please call 714.754.7268 or 714.754.7022. Ask for John R. Horsley, PT, Beth Horsley-Gomez, PT or Vince Vizcarra, CPT. Ellyn Silverman, RD, MPH can be reached at 562-424-5555.

We are looking to working with you soon.
Best regards,



John R. Horsley, PT
President

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Nutrition Planning and Education

Healthy eating and sound nutritional status is the basis to good health. Lifestyle changes and the management of chronic illness is an ongoing process of which the **RestorHealth** program can help with. The backbone of the nutrition information in this program is found in our reference section and we recommended reading these publications if you are interested in furthering your knowledge of how and why to eat for optimal health.

It is important to note that changing the way you eat will ultimately involve a lifestyle change. This is exactly what this program hopes to achieve. Our nutrition expert, Ellyn Silverman, RD, MPH can help you optimize your lifestyle changes and individualize the eating plan for you. These suggestions are put into a simplified approach designed to help you achieve optimal health. This is not a dieting plan subjecting you to deprivation or calorie counting. Understanding what, when and why to eat foods that are better choices, provides the basis for this program.

Our focus is to give you the knowledge and foundation to make intelligent choices when deciding what foods to consume and what foods to avoid. This knowledge and understanding should help you to better manage your health now and in the future. It will be more successful in the long run when you choose the foods you like that best fit into your lifestyle. With the information provided, you should be able to devise a plan that works best for you.

The first essential point we need to drive home is that **YOU NEED TO EAT**. Food is necessary for energy, immunity and ultimately for survival. This eating plan is a strategic method designed to help you best utilize the foods you do eat and minimize their destructive efforts on the body, allowing you to build up your health and vitality.

Protein is an essential part of nutritional health. It provides the amino acids that are the building blocks for our body. It is responsible for many vital functions, most commonly the building and rebuilding of tissue. Protein is necessary in the right quantities. Too much or too little is equally harmful; understanding the right amount of protein for your body type is the key.

Protein also helps to stabilize our blood sugar levels, which has profound effects on body weight and overall health. Think of it this way, proteins are the builders of health and provide sustained energy. Vegetables provide the bulk, fiber and enzymes that allow us to gain the full benefits of proteins. Therefore, it is best to eat proteins with vegetables.

Most Americans consume too many carbohydrates. Carbohydrates provide short-term energy, raises your blood sugar levels and is easy to digest. Hence, it is suggested that you do not eat carbohydrates with proteins. We want our bodies to have full access to the proteins we consume because they are harder to digest. If we eat carbohydrates with proteins, the process of protein digestion is interrupted because the body will digest the carbohydrate first and spare the protein. The body always chooses the easiest path first. Undigested protein is not good and may prevent you from achieving optimal health and vitality.

When we eat, our body utilizes the food we consume and eliminates the food that is unused as waste. Accumulation of unused food and waste can lead to weight gain and poor health. The guidelines presented in this program are designed to help you get the most out of the food you do eat and effectively eliminate what is not used.

A. Nutritional Guidelines

1) Eat Proteins With Vegetables Only.

- Do not mix protein-based meals with starchy carbohydrates.
- Say no to steak and potatoes and say yes to steak and salad. Say NO to shrimp pasta. Say YES to pasta and vegetables.
- Protein based meals are digested best when eaten early in the day, between the hours of 6 am and 2 pm, so eat your larger protein-based meals early in the day and keep your evening protein based meals light.
- Try and eat proteins with vegetables ONLY to maximize digestion and the breakdown of proteins.
- Proteins are difficult to digest and require all of our digestive efforts.
- It is recommended to distribute protein evenly throughout the day, and make the bulk of your carbohydrate sources from vegetables.

When mixing a carbohydrate (Such as pasta, bread, potatoes, etc.) with a protein (Steak, fish, chicken, etc.) the body will likely digest the carbohydrate first, because it is easiest to digest. This will spare the protein and leave it undigested, which may contribute to poor health.

2) Eat Generous Amounts of Raw Green Leafy Vegetables With Each Meal.

- Vegetables are full of enzymes that help you digest and assimilate foods and therefore should be eaten with each meal.
- Vegetables contain antioxidants, which offer protective benefits to our immune systems and help us stave off diseases.
- Raw vegetables contain large amounts of fiber that assist in the clearing of undigested foods and waste products from our digestive tract and colon.
- When cooking vegetables, cook them lightly in extra virgin olive oil. Do not overcook a vegetable or it will lose many of its valuable nutrients and fiber content.
- Eating vegetables with every meal will help you balance your carbohydrates without affecting your blood sugar levels and help keep your thyroid functioning at its peak.
- Depriving your body of carbohydrates for extended periods of time is not advisable for it can have an adverse affect on your thyroid gland and may lead to thyroid suppression, which will make weight loss more difficult and lead to a decrease in overall energy.

- We recommend you eat at least 4-raw and 1-cooked vegetable with each meal. Common vegetables we recommend are spinach, lettuce, broccoli, cauliflower, celery, radishes, squash, zucchini, cucumber, onions and garlic.

3) *Eat Larger Protein Meals Early In The Day.*

- Our enzyme functions are highest in the early morning hours after a night of fasting, protein is the best source of food to consume.
- Our largest meal of the day should be breakfast and this should be based largely on quality sources of protein, vegetables, fats and oils.
- This will help to stabilize our blood sugar for the day and help provide a sustained source of energy.
- Try and consume generous portions of raw green leafy vegetables with each meal, this will help you digest your proteins, keep your blood sugar stabilized and your thyroid functioning at its peak.

Cooked sources of proteins consist of eggs, fish, meat, poultry, etc. Raw sources of proteins consist of nuts and seeds such as almonds, sesame seeds, pumpkin seeds, walnuts, etc. By eating these foods early in the day with vegetables you are giving your body the best chance of effectively digesting the proteins, stabilizing your blood sugar, increasing energy levels and achieving optimal health.

Beginning the day with the standard American breakfast of cereal and fruit, will likely contribute to less sustained energy, unstable blood sugar levels, more cravings for sugary foods, making it more difficult to manage your body weight and disease.

4) *Eat Quality Fats and Oils.*

- Quality sources of fats and oils are also difficult for the body to digest, therefore it is best to consume these foods with an abundance of vegetables.
- We recommend you eat the bulk of these food sources early in the day with proteins and vegetables only.
- Many books and dietary plans recommend low fat diets, but research now indicates the importance of fat in our diet and the best ratio may be that one-third of our diet should consist of quality monounsaturated fats such as extra virgin olive oil and nuts and seeds.
- Fats are necessary for many vital functions in the body including the brain, nervous system and hormone functions.
- Consume good quality sources of fats and oils, but at a time when we can best digest them. That way we can achieve all the healthful benefits that fats and oils can afford and prevent the build-up of unused fats that can contribute to elevated cholesterol levels in the blood.
- Examples of good sources of fats and oils are flaxseed, sesame seeds, extra virgin olive oil, canola oil and grape seed oil. Extra virgin olive oil is the best source for it is resistant to the harmful affects of cooking.

It is important to note that eating any foods that are fried in oils are known to be harmful to your health. Heating any oils to extreme temperatures changes the nature of the oil and turns a good oil into a bad oil.

5) *Avoid Drinking Fluids With Meals.*

- Hydration is critical to optimal health and essential for all the functions in the body.
- Drinking fluids with a meal can alter the digestive process and dilute the available nutrients and we recommend drinking no more than 6-8 oz with each meal.
- Wait at least 30 minutes after drinking fluids before eating.
- Wait at least one hour after eating a meal before drinking fluids.
- Consuming coffee or other fluids with caffeine is also not recommended as this may adversely affect your blood sugar as well as food absorption.

6) *Eat a Big Breakfast, Large Lunch, Small Snack and Small Dinner.*

- Eating a big breakfast starts your day and should set the tone for the days energy supply.
- Eating a large lunch is an extension of your earlier meal. This should also be protein based and eaten with quality sources of fats and oils along with lightly cooked and raw vegetables. This meal is digested best if eaten before 2 pm.
- Skipping early meals makes it very difficult to eat light at night, so make sure the bulk of your calories are eaten early, this helps keep you from overeating at night.
- Eating a large meal at night does not make good sense and it may lead to excessive weight and poor health.
- The quickest way to lose unwanted pounds is to eat more early in the day and taper off and eat a light balanced meal at night.

B. Enzyme Functions

- Enzymes are responsible for driving the digestive process. These enzymes help to break down and digest what we eat and convert the food to energy and waste products.
- Eating strategically will help to maximize the digestion of the foods we consume and minimize the waste build up and fat storage.
- This reduces the body's exposure to disease and gives the body a chance to overcome diseases that may already be present.
- Digesting what we eat and eliminating what we do not use, we can easily shed unwanted pounds and reduce our exposure to gaining weight.
- Eat the majority of your calories early in the day when enzyme functions are high, between 6 am and 2 pm.
- Eat lighter meals later in the day when our enzyme functions are lower, between 3 pm and 7 pm.

C. Hydration Requirements

- Proper hydration is essential for optimal health and is also very important for anyone trying to reduce excessive body weight.
- Hydration also plays a role in regulating blood volume and this can be beneficial for those who suffer from hypertension.
- Consuming pure water is recommended for proper hydration.
- Sodas, alcohol and caffeinated beverages do not apply nor do they contribute to proper hydration. These drinks should be avoided if possible due to their ability to dehydrate the body and cause the elimination of fluids from the body.
- Begin hydrating first thing in the morning. This helps the body cleanse the waste products produced from the previous days food.
- Water can also help mobilize fat stores making it easier to reduce unwanted pounds. You can also include decaffeinated herbal teas.
- Wait 30 minutes after drinking water before eating and wait at least one hour after eating before drinking water or any fluids. This will help the body absorb and utilize the fluids you consume so they won't interfere with the body's digestive process.

How much water should you drink? It is suggested that you consume a minimum of one-half gallon per day or two quarts. If you are exercising and dealing with high blood pressure, it is suggested that you drink three-quarters to one gallon of water per day.

- 1-cup equals 8 oz. of water.
- 4-cups equals 1-quart or 32 oz.
- 8-cups equals one-half gallon, or 64 oz.
- 16-cups equals 1-gallon or 128 oz.

D. Exercise

A key component to any healthy lifestyle is exercise. This is also critical to successfully overcoming conditions such as hypertension, high cholesterol, diabetes and arthritis. Exercise creates movement and movement creates an increase in blood flow and fluid exchange in the body.

Picture your body as pool of water. If the pool of water has little or no movement, it can stagnate allowing bacteria to form, which can lead to disease. If we add consistent movement to the water, the movement creates a cleaner environment by mobilizing harmful particles and bacteria. This can help keep the water free from bacteria and disease.

Exercise also has particular significance for those who have diabetes and insulin resistance. Regular exercise can help clear the blood of glucose and act in a sense like an insulin shot. When we exercise regularly, the movement created by our muscles helps open up channels within our cells allowing glucose to enter. Thus extracting glucose from the blood. The overall effect is the extraction of glucose from the blood and lower blood sugar levels. Regular exercise gives our cells the ability to utilize the excessive blood glucose that is so common with diabetes and insulin resistance.

The benefits of exercise are well documented in research. Medical professionals recommend that everyone partake in some form of regular exercise routine. Our goal is to find the form of exercise that best suits you and one that will fit into your lifestyle. We suggest that your exercise program include:

- Cardiovascular training for up to 25-40 minutes per day.
- Circuit training that includes upper body and lower body conditioning.
- Yoga and flexibility training to maintain good spinal health, posture and unlock internal restrictions.
- Aquatic exercises and/or swimming to assist the lymphatic flow and provide a good total body workout.
- We will design a program that best suits you and one that you can continue on your own.
- Exercise is a lifelong process and it must become a regular part of your day.

You have been hearing this for years, over and over, the need for everyone to be on a consistent exercise program. The benefits of exercise are well documented, the continued apathy and general disregard for this healthful practice continues to baffle me. Why anyone would not do something that they knew was good for them is one of the biggest mysteries of science and one that I hope is solved one day.

Why is exercise so important and what is it about exercise that contributes to health? First and foremost, exercise is movement and movement means blood flow. Blood flow is everything, you stop the flow of blood in the body and you die. To get energy to the cells requires blood; the oxygen necessary to live is carried in the blood, and it is our lifeline and exercise serves to strengthen this line of life. A good example is a pool of water verses a running stream.

The pool of water, which lacks movement, stagnates and bacteria begins to form and the water eventually becomes infested with disease. The stream on the other hand is constantly moving and the water remains clean and fresh, free from the formation of bacteria and toxins and much less resistant to disease. Consistent moderate exercise will also improve the blood flow to our vital organs, intestines, all of our glands, tissues and extremities, improving the health of these areas and increasing their resistance to disease.

Benefits of Exercise

Just look at some of the more popular benefits of exercise outlined below:

- Increases metabolism and your ability to burn calories.
- Reduces body fat and increase in lean muscle mass.
- Increases bone density, thus reducing the risk of osteoporosis.
- Improves circulation of blood to the heart.
- Reduces the risk of heart disease, cancer, diabetes, obesity and arthritis.
- Lowers blood cholesterol levels, increases good cholesterol (HDL's) and helps lower bad cholesterol (LDL's).
- Reduces stress and anxiety, thus helping to suppress cortisol production.
- Reduces depression and improves mood.
- Helps the body remove toxins through increased blood flow to vital organs, elimination of intestinal wastes and sweat.
- Helps supports your hormonal system.
- When done appropriately, can increase growth hormone and testosterone production.
- Helps boost your immune system by through stimulation of growth hormone and muscle building.

A study published in the Journal of the American Medical Association in 1996 that showed that lack of exercise may pose as great a risk to your health and well being as that of smoking. Lack of exercise poses a greater risk than that of high cholesterol, high blood pressure and obesity. Smoker's, who are moderately fit and engage in regular exercise and have high blood pressure and cholesterol levels, live longer than non-smokers who are sedentary.

Aerobic and Anaerobic Exercise

Aerobic exercise uses oxygen to produce energy. This type of exercise is usually of the low intensity and long duration and makes up the most common form of exercise used today. This type of exercise can be performed for long periods of time and uses fat as its primary source of fuel. The downside of doing too much aerobic exercise is that it can suppress growth hormone and lead to muscle burning rather than muscle building. Aerobic exercise alone is not enough to maximize fat burning and enhance muscle building, which is so essential to a healthy immune system.

Aerobic exercise also serves to build a base of conditioning that allows one to train at higher levels as conditioning improves. For example, if you have been sedentary most of your life and the only exercise you are used to is getting up and going to the refrigerator, walking for 20 minutes a day is enough, and much more than this may be problematic and too difficult. After 4-6 weeks of this, your body will adapt and be ready to handle more aggressive exercising.

Below is outlined the different forms of aerobic conditioning that can be tailored to your exercise routine and help insure progressive adaptation and improved fitness;

- *Tempo*: Easy, long slow distance work such as jogging and walking at a leisurely pace. 40-60% effort. Good to do on easy, recovery days.
- *Extensive Tempo*: Steady state exercise at higher intensity, 60-80% effort. Should be able to carry on a conversation with your partner. Example of this type of training is doing repeat strides or easy intervals with longer recovery.
- *Intensive Tempo*: Shares the aerobic and anaerobic systems. Usually performed at 80-90% effort. Example would be running, walking, cycling reps at high intensity with short recovery.

Anaerobic exercise is performed in the absence of oxygen and the by-product of this type of training that ultimately leads to muscle failure is lactic acid. Lactic acid is what causes that burning sensation that occurs with intense training. The primary source of fuel is the ATP/creatine system. This type of training pays the biggest dividends when it comes to muscle growth, fat burning, hormone production and improved levels of fitness. It is absolutely necessary to engage in this type of training periodically to overcome plateaus and stress the body into continued growth.

Examples of this type of training are running sprints, interval training, weight training, power lifting, hill sprints, plyometrics, etc. Anything that involves 90-100% effort and done repeatedly with long bouts of recovery. Anytime you train at maximum intensity, more time is required between repetitions, usually 2-3 minutes. Failure to allow for proper recovery can lead to over-training and diminished performance. It is important to note that on intense training days, the volume of work should be kept low, otherwise, you can do more harm than good, in other words, less is more.

Below is outlined an example of anaerobic conditioning for a runner. You can tailor these times to fit any type of exercise other than running;

- Speed Training: 95-100% effort, 0-7 seconds of max work, 20-60 meters.
- Speed Endurance: 95-100% effort, 7-20 seconds of work over 80-150 meters.
- Speed Endurance I: 95-100% effort, 20-40 seconds of work over 150-300 meters.
- Speed Endurance II: 95-100% effort, 40 seconds to 2 minutes over 300-600 meters.

Weight training is also considered anaerobic conditioning and this type of exercise does not have to be cardiovascular-based. When you lift weights, you are applying stress to your muscular system beyond what it is used to and this causes growth hormone to be produced so the body will be able to adapt if and when the stress is applied again. Weight training and other forms of high intensity training will increase metabolism and fat burning more effectively than aerobic conditioning and this occurs after the workout session once the hormonal system is stimulated. Therefore, combining both aerobic and anaerobic conditioning can be a very effective way to maximize fat loss both during and after the exercise session.

We should be focusing on exercises that promote building muscle rather than burning it. Muscle tissue will enhance the functional ability of the body, whereas, excessive body fat tissue reduces the functional ability of the body. Muscle tissue helps support the heart because it is very vascular whereas fat tissue taxes the heart because it is less vascular.

Starvation

It is not advisable to restrict food for too long or to partake in starvation type diets. The body can handle short-term calorie and food restriction, but not long term. The body will begin to burn valuable muscle because muscle requires so much energy to support; it is the body's way of staying alive. The muscle is burned, and the fat is stored for later, in case it is needed. This is never a good scenario if it continues to persist because the next area to be affected is the thyroid, which decreases its function by slowing the metabolism down as another step in survival. The net result is a slow metabolism, loss of muscle tissue, decreased immune strength and increased body fat. Just as we should never starve ourselves for too long, we should also not rely on low intensity aerobic conditioning for too long for the same reason and outcome.

Pre and Post Workout Meals

Our goal should always be to maximize fat burning, muscle building and hormone production when we eat. The same principles apply before and after workout sessions. The preferred source of fuel is again protein, quality fats and plenty of vegetables. Despite popular belief, we want to avoid carbohydrate rich meals before and after exercising because this will promote fat storage, sugar burning and muscle wasting. Eating a carbohydrate rich meal before a workout can also inhibit growth hormone production and as shown in one study as little as 3 ounces of fruit juice before a workout can halt growth hormone secretion during that exercise session. It is better to eat a balanced meal that contains proteins, fats and vegetable sources of carbohydrates.

One gram of carbohydrate yields 4 calories of energy verses fat, which yields 9 calories of energy, so you will always get more bang for your buck with fat. A pre-workout protein, fat and vegetable meal will help spare muscle glycogen and ensure the body uses fat as the primary source of fuel. Always allow at least 75 minutes of time between your meal and your exercise session. You want to make sure you allow enough time for digestion. The last thing you want is to train on a full stomach; this limits effectiveness and impairs digestion. If you cannot tolerate

eating a full meal prior to exercise, consider easy to digest sources of fuel such as protein shakes, cottage cheese, tofu and eggs.

As far as the post workout meal is concerned we will follow the same principles of the pre-workout meal, protein, fat and vegetables. The reason being is that we want to continue the fat burning process after the exercise session and consuming a carbohydrate meal will put a stop to this process. It is recommended that you eat within 40-60 minutes after your exercise session. If you cannot tolerate a full meal or not have time for one, consider at least a protein/fat shake to help replenish fuel.

Exercise Intensity

Intensity relates to the amount of stress placed on the body that is above and beyond what is customary for a given activity. It is an important concept to understand and must be incorporated into any training program to see that progress takes place, otherwise, the body will regulate and no further progress will be achieved. The stress applied can be in the form of more weight lifted, more distance run, shorter recovery, faster times that a given distance is covered, more reps of a particular exercise or adding a new form of exercise.

For example, a 20-minute run with 10 x 1:00 intervals run at a faster pace with a one minute recovery run provides a greater amount of stress and intensity than if you just went on a 20-minute steady state, low intensity run. The benefits of this type of training are improved anaerobic capacity, increased mitochondrial activity, increased metabolism, increased fat burning and maximum hormonal output. Interval training can lead to a 2-fold increase in VO₂ max and can improve aerobic capacity by 28%.

Weight training is the most common form of adding intensity to any exercise program. However, there are many who do not enjoy this type of activity and the results it yields. Usually what accompanies any weight-training program is increased muscle mass, and for many, this is not desirable. There are other ways to increase intensity than weight training such as yoga, martial arts, interval training, jumping rope, footwork and agility training, walking or running hills, mountain biking and swimming just to name a few. As we age, weight training becomes an important element and should be part of your training program to help retard muscle loss, increase fat burning and enhance hormonal output.

Duration

This is the amount of time spent in any one training session or performing any one particular activity. Duration is important and must be considered to help you stay in the “hormonal zone” when you exercise. Any exercise done over long periods can inhibit hormone production, enhance muscle loss and increase cortisol output. We must be careful not only with how intensely we train, but for how long we train. A simple rule to follow is high intensity, short duration requires longer recovery, low intensity, and long duration requires a shorter recovery.

What is the optimal amount of time you should train? This depends on your level of fitness, but all things being equal, total training time should be no more than 40-60 minutes per workout. For aerobic training, 30-40 minutes is plenty, any more than this and you risk falling out of the “hormonal zone.” Again, you will benefit more from higher intensity, shorter duration training than low intensity, long duration training.

Volume

The amount of work performed in a given session and over the course of a week or training cycle. Volume is important to consider as well for the reasons previously mentioned. In order to remain in the hormonal zone, you want to control volume and not be excessive. It is always better to error on the conservative side when training at higher levels of intensity to prevent the cumulative effects of excessive volume, which eventually will lead to over-training.

It is easy to over do it on the volume once you get accustomed to any exercise regimen. The old adage of more is better is not the case. The more fit you become, the less volume you will require to achieve more results. What you will require is more intensity and load, more recovery and less volume. When planning your exercise routine, remember that at lower intensity levels you can handle more volume and less recovery will be required. At higher intensity levels, keep the volume down and the recovery time generous.

How do you know when your training volume is too high? Your body will let you know it. You will likely be excessively tired after, later that day and on into the next day. Your legs may feel heavy, you may feel a little lethargic and lack energy, all a sign that you have significantly stressed your body and you need to allow more time for recovery before training at that level again. A good rule to follow is the hard-easy rule. Train hard one day, then easy the next. This is often the formula used by many Olympic level athletes to help maximize growth and reduce the chances of over-training. The more you stress, the more you will need to rest.

One bout of short duration maximum effort exercise will cause growth hormone to be released. Several bouts of short duration max efforts will cause even more growth hormone production. A study in the European Journal of Applied Physiology demonstrated that after a 30-second sprint, growth hormone levels rose rapidly and reached their peak 10-minutes after exercise. A nursing home study showed that after 10-weeks of high intensity weight training with the elderly (averaged age 87) produced a 113% improvement in average strength.

Long term increases in volume may lead to over-training which can lead to reductions in growth hormone, testosterone, thyroid activity, decreased metabolism, increased body fat and cortisol, increased muscle loss, fertility problems and hormonal disturbances in women and ultimately immune system failure. The answer to this problem is to increase your intensity and volume gradually. Allow your body to adapt and give it time to recovery, for recovery is where the hormones work their magic. Keep your workout short in the beginning to build confidence and allow your body time to adapt. 2-short duration workout sessions are always better than one long session.

Weight Training

The common advice often given with respect to weight training is that lighter weights with a lot of reps will burn more fat. Weight lifting itself does not burn fat; growth hormone and testosterone burn fat. Any weight you can lift for 20-reps or more is too light to stimulate growth hormone. Also, light weights only activate type I muscle fibers and we want to activate type II, especially with the elderly, for type II fibers are the first to go and they effect balance and response time that when inhibited, can lead to loss of balance and falls that are so common in elderly populations.

The muscular system must be stressed sufficiently in order for it to grow and change. Stressing your muscular system does not mean that you should lift weights everyday. Follow the same hard-easy philosophy and allow your body time to recover between lifting sessions. Remember that weight training is often the most intense form of stress we can apply to our body and this will require more time to recover. Even if you train different body parts on different days, you should not weight train everyday. Weight training has a systemic effect as well as a local effect, and it is the system that needs the most time to recover to prevent from over-training.

Light to moderate aerobic conditioning between lifting days can help to speed the recovery process and get you ready for the next stressful session. If you do not feel fully recovered and ready to push it, back off on the intensity and keep it light. The goal of exercise is to stay in the hormonal zone, otherwise we may be engaging in a self- defeating activity.

Weight training and aerobic exercise can be done on the same day and can help maximize the fat burning process. As you recall, aerobic exercise relies on fat for energy during the activity of choice and weight training causes fat burning after the activity is finished and the hormones exert their affect. This provides the rationale for doing a light warm up, break a sweat, do your weight training session then cap it off with a light to moderate aerobic exercise session. Also, the reason you want to lift first is because lifting requires the most energy and resources to perform, you want to be fresh when stressing your body.

Exercise and Hormones

You have heard the phrase training in the “hormonal zone” throughout this section and we now address why this is so valuable and the main reason why we should all exercise intelligently. Just like anything in the body, “use it or lose it” applies here as well. Wolf’s law profoundly states why this axiom is so real, “muscles, bones, ligaments and tendons grow in response to stress.” Grow in response to stress is very clear, we must move and apply reasonable stresses to our body to keep it growing, keep it functioning and to keep it healthy. But our bodies are inherently lazy and desire comfort, so we must all have the discipline to overcome our bodies desire for comfort and gradually increase the intensity of exercise sessions.

Our hormonal system is no different, use it or lose it, stress it or it will decay at an even faster rate. Glands drive hormones and glands secrete these little wonders that are responsible for all the vital functions in our body. Exercise increases blood flow to all areas of the body and this includes the glands as well, so the more fit we are, the more fit our hormonal system will be and most importantly, the more fit our immune system will be. In 1930 a study using rats showed

considerable changes in the weight of their glands after a 90-day exercise program. The adrenals, pituitary, thymus, gonads and thyroid glands were weighed and all increased in size and weight. After 125 days of de-training, the weight of these glands was back to their initial pre-exercise size and weight.

Exercise that is of gradually increasing intensity and varied can help to keep this vital system functioning at its peak. Older individuals who have long histories of exercise and remain physically fit have better hormone profiles than younger people who do not exercise. Speaking of the youth, what is so alarming is that today's youth exercise less than ever, one reason why obesity is climbing. The long-term affects are not going to be good considering what will happen to their hormonal systems and what we are likely to see are a general increase in disease and illness and earlier average death rates.

Bottom line is that people who engage in a regular, intelligent and progressive exercise programs have higher levels of human growth hormone, higher testosterone levels, lower insulin levels, lower levels of cortisol and lower and more stable blood sugar.

The Benefits of Stress

As indicated earlier, stress is required for growth, any growth. Whether it is our body, our mind, our spirit, increasing demand is required for us to improve. When we stress our body to a level that it has not dealt with before, it is forced to adapt to the stress in order to survive and achieve that desired state of comfort. The body does this to prepare for the stress if it comes again, so that it will not be as difficult as it was when it was first introduced. This is the reason why when you first began an exercise or weight lifting program you were very sore then next few days. But the more you went back and did those same exercises, the soreness dissipated and the exercises actually got a little easier.

You stress the body by either lifting more weight, running a given distance faster, running longer, doing more reps, running hills, plyometrics, jumping rope, shorter recovery between bouts, etc. These are all examples of things you can do to change the amount of stress and see that your body adapts progressively. Remember, the body desires "homeostasis" or a state of comfort and stress threatens this state. If we do not push ourselves periodically and mix up our exercise demands, the body will again quickly settle. If we continue to do the same workout over and over, we will stay the same and likely regress. You do not always need to train harder, just train differently.

You will only be limited by your imagination when mixing up your exercise program. Play with speed, recovery times, intensity, duration, and different warm up routine, anything to accomplish the same goal differently. For example, if you like to walk for 30-minutes at a moderate pace try adding intervals to your walk. This can be accomplished by walking hills, taking a block or two and walk it at a faster pace than normal. If you do push ups, you can do them differently by increasing the speed, doing them slower, or doing plyometric or military push-ups. Mixing up your training and challenging your nervous system has been shown to be good for brain development and may prove to be a protective effect against alzheimer's disease.

For adaptations to occur, recovery is required. When we stress, we must also rest and allow the body time to adapt. This is where the hormones come into play, for they exert their beneficial

effects between the exercise session and during the recovery phase. So if we do not allow for this critical process to take place, then we are defeating the purpose of exercising. Whenever I plan a training program for an elite level athlete, I always include a week of recovery every four to six weeks to allow for adaptation and to help avoid over-training.

Exercise and Testosterone

High volume low intensity exercise has been shown to suppress testosterone. This usually occurs when a training session goes beyond 45-minutes to one-hour and/or consecutive days of training are put together without proper recovery. Train too frequently and cortisol will dominate and this will suppress testosterone levels. Thus, recovery is what is essential to the production of testosterone and this must be carefully considered and built into your exercise regimen.

This recovery and replenishment process may take a few hours up to a few days and is dependent on how intense the exercise session was. Obviously, the more intense, the more recovery time is required to gain full testosterone enhancement, go back too early and you may shut down this process. Other factors that influence your recoverability are; fitness and conditioning level, pre and post-workout nutrition, sleep and emotional stress. Testosterone initially drops after a workout where rest and recovery are what is required to cause it to rebound at an exaggerated rate leading to enhancement.

Exercise and The Immune System

Our immune system is everything; it is our own personal military, our defense against the myriad of diseases that are dominating the world. Our focus and goal of exercise should be to strengthen our defense and keep it in top form at all times. Exercise can both strengthen and weaken the immune system. It can be our best ally or our worst enemy. Over-train and you will weaken your immune system, train in the “hormonal zone” and you will strengthen your immune system.

Did you know that everyone develops cancer thousands and millions of times, yet our immune systems are there for us to fend off this deadly disease? Eating right and exercising to stay in the “hormonal zone” is the way we keep our immune system functioning at its peak. Over-train, cortisol is produced and this is toxic to the immune system. Over-training also produces catabolism, which is the burning of muscle, one reason why many endurance athletes are so thin and often have weakened immune systems.

The dominance of this catabolic or muscle burning state is the primary reason why the elderly have weakened immune systems and disease is so common amongst this age group. This is why the elderly need to exercise, eat right and weight train, to stay in an anabolic or muscle building state. This will keep the hormone profiles in more youthful ranges, keep the body lean, improve energy and vitality and ultimately strengthen the immune system.

Warm Up and Stretching

The warm up is an important element of any exercise and training program and deserves attention because it is one area that is commonly performed incorrectly. Warming up properly

has many benefits such as reduction of injuries and improved performance. The warm up routine should be tailored to prepare the body for the specific demands of the workout and we summarize the warm up with athletes this way, “it gets the body ready to compete.”

The old school days of jogging and static stretching for a warm up are gone. Static stretching is when you hold a stretch for 15 seconds or longer. Static stretching serves to relax and inhibit a muscle, whereas the goal of the warm up is to get the body ready to compete, or train, so we want to excite, not relax the muscles. For example, if you are weight training your upper body, your warm up may consist of 10-15 minutes of aerobic conditioning, jumping rope for 2-3 minutes and dynamic arm swings in various directions. A good rule to follow is to always break a sweat before you weight train and dynamically stretch the body parts you intend to train.

The proper warm up today is one that is movement oriented, designed to get you to game speed. We need look no further than Olympic level track and field athletes who are the most scientific in their approach to training. Their warm up commonly consists of 8-10 x 100 meter build up strides, followed by sprint drills done to prepare the body for speed, dynamic stretching, hip and leg swings for mobility, footwork and they always hit top speed in their warm ups to ensure that they will in their workout or race.

Static stretching does have its place, and it is when the training is complete. We must first look at the reason why we are stretching. If we are stretching to get ready for a workout or a game, our stretching needs to be dynamic and movement oriented, designed to excite and get the muscles ready to perform. If your goal is to gain length and improve your range of motion, then static stretching is preferable and should be done after a workout and each stretch should be held a minimum of a minute up to 2-3 minutes in duration.

Static stretching is very beneficial and should be a part of everyone’s exercise program to help maintain and improve range of motion. Many of the injuries I treat and have seen develop are related to a lack of range of motion. I cannot emphasize how important stretching is to the human body and for the prevention of injuries. Keeping the muscles lengthened and supple are critical to joint health and integrity and one of the best ways to prevent arthritis and joint degeneration.

In all my years of practice, the gold standard for gaining length and achieving optimal balance of your musculoskeletal system is to routinely engage in yoga. Yoga teaches you how to gain length and does so through strength and proper breathing techniques. There is no better way to gain length and improve muscle suppleness than yoga. Many of today’s top athletes are now incorporating yoga into their workout routines to help prevent injuries, improve speed and power and to lengthen their careers. We have been utilizing this ancient art form in our practice for several years now and it has made a tremendous difference in our ability to treat orthopedic conditions and has improved our effectiveness considerably.

Static stretching should be a staple in anyone’s exercise program over the age of forty. As we age, we dry-out, our tissues become more like glue. We sit more and exercise less. Gravity will have its way with us unless we perform exercises to counteract its harmful effects. Over time the length of our muscles shorten and this exerts its effect on the joint by decreasing range of motion, this limits our ability to move, which begins to impair function, shorten our stride length and ultimately reduce our balance. This cascade gets worse as we age unless we hydrate and

stretch. If not, our function and joint integrity will continue to decline and the incidence of loss of balance and falls will increase.

In summary, keep your warm up active, designed to get you ready to compete or train. Do dynamic movement oriented stretches to prepare for the upcoming stress of the workout or competition. Do your static stretching daily, at the end of the workout, or at the end of the day to help you maintain range of motion or to gain new length. Take yoga, and if you do not have time to engage in these often-lengthy sessions, rent a yoga DVD or Video and design your own personal routine that can be done in 20-30 minutes.

Caffeine

What I am about to discuss no one wants to hear, for it concerns one of the most consumed beverages in the world, coffee. Let's get right to the heart of the issue. Those of you who need to drink coffee everyday in order to feel energized, normal, or need it to help you eliminate in the morning, you are addicted to caffeine. There are more people in the world addicted to caffeine than any other drug available. Caffeine is a drug, a stimulant, and what the coffee and soda industry does not want you to know is that it is contributing to a myriad of diseases and may be contributing to shorter life spans. This was spelled out pretty clearly in the section on hormones and the affect caffeine has on this most vital system.

How many of us needed a cup of coffee or tea, to get us going when we were in high school? Look at how many teenagers and even grade school kids are drinking coffee today. The reason you did not need coffee when you were younger is because of youth and as we discussed in the hormone section, youth is the indication of the health of the health of our hormonal system.

Pathological Cascade of Coffee with a Meal

Research today indicates that coffee and/or caffeinated beverages will raise insulin levels an average of 15%. Have coffee with a carbohydrate rich meal and the numbers get even higher. The most common and lethal breakfast we can eat is coffee and a bagel, coffee and a muffin or donut. Let's look at what happens when we have coffee and our favorite pastry or carbohydrate rich meal.

The refined sugar in the pastry will get converted to sugar in your blood almost as soon as it hits your mouth. So we now have a fast rising level of sugar in our blood and you are now in fat storage mode and your body is beginning to store fat. We then wash this down with a cup of coffee that produces adrenaline, which produces nor epinephrine and epinephrine, stress hormones needed for energy in situations of life or death.

Adrenalin produces cortisol, which is the enemy of testosterone and you may have just suppressed your testosterone production. Adrenalin, when produced, causes the adrenal glands to over work and become stressed. The function of the adrenal glands drives your energy production, immunity and helps you produce testosterone. The body then produces more insulin to clear the blood of excess fatty acids that are produced because of the adrenalin from the

coffee. The more insulin produced means you are storing more fat and suppressing testosterone and growth hormone as well and potentially setting you up for diabetes.

Caffeine also shuts down aldosterone, a hormone that helps maintain electrolyte balance. You are now de-hydrating and eliminating vital water from your body and this will cause your blood volume to drop which may cause your blood pressure to go up and leave you more likely to develop plaque in your blood vessels, increase clotting and may lead ultimately to heart disease. Studies show that caffeine will contribute to higher levels of blood pressure.

Finally, when you retire for the night, you will not need as much sleep. Your quality of sleep will not be very good due to the adrenal overload and cortisol production. Once again, this will hinder the release of testosterone and human growth hormone. The end result can lead to accelerated aging and decay of your body.

As you can see, the systems affected are the most important systems in the body and all contribute to our health and well-being. We may feel good for a short time, but drinking coffee and using other stimulants comes with an expensive price tag and the long-term affects are dramatic. When we use these substance daily and are mastered by their effects, we may be accelerating the aging process and contributing to the development of a myriad of diseases.

Kicking the coffee or stimulant habit is not an easy one, for there will be consequences for your long-term dependency on this drug that include headaches, irritability, constipation, moodiness, lack of energy and fogginess. The good news is these will go away in a short period of time. Your energy will come back a little slower, usually in a couple of weeks when you begin to make up for all those years of poor sleep associated with caffeine use. You will also notice your sleep will change and become deeper, more restful and complete. This is a good sign, for your body will now begin to repair itself and you are back on the road to a more youthful state.

E. Stabilizing Your Blood Sugar

Blood sugar is one of the values that are routinely monitored by your doctor when you have a medical exam or check up. What was once unimportant in your life may now have become an issue. This can be due to a variety of factors such as heredity. Other factors include obesity, poor diet and lack of consistent exercise. Whatever the reason, having blood sugar values that exceed normal limits is a very serious situation that can lead to the development of serious complications.

The basic elements of this program will help to stabilize your blood sugar values and should be of assistance to anyone who is dealing with diabetes and insulin resistance. Here are some suggestions as to how you can keep your blood sugar in healthy ranges:

- Eat protein-based meals evenly throughout the day early and focus on vegetables and quality sources of fats with each of these meals. This will help to regulate your energy and blood sugar throughout the day.
- Avoid eating too many simple carbohydrate-based meals, this can exacerbate a blood sugar problem and cause the values to remain high.
- Focus instead on eating meals that contain carbohydrate sources that are more complex and have lower glycemic index ratings.

- Avoid foods that are high in sugars, this can be determined by reading labels. Look for foods that have sugar values lower than 10 grams per serving.
- These foods include all sugary sweets, pastries, breads that are not whole wheat, sodas, alcohol (except red wine), fruit juices and sweet fruits like bananas, raisins, dried fruit and dates.
- An example of a snack may be a lowfat Mozzarella stick with an apple, or lowfat cottage cheese with sliced strawberries.

If you have a blood sugar problem or have been diagnosed with diabetes, you will have to be more careful about selecting foods when you eat carbohydrate-based meals. Select carbohydrates that are complex such as whole grain pastas, cereals, rice, vegetables, oatmeal, some granolas, apples and strawberries. There are many other options available to you. Our registered dietitian will help you with meal planning and disease management. Please refer to the list of carbohydrate foods in this handout and always use the provided glycemic index list when constructing your meals.

F. Glycemic Index

The glycemic index measures how quickly the foods you eat are converted to glucose. Foods that have high glycemic index values will produce higher increases in blood sugar and an accompanied rise in insulin. This fast rise is followed by an abrupt decline in blood glucose levels, so the energy received is quick and short-lived.

The opposite effects occur when eating foods that have lower or more moderated glycemic ratings. These foods will cause a slower, steady rise in blood sugar and insulin. The end result is more stable blood sugar levels and sustained energy. A diet that focuses on foods with lower glycemic values is preferable for those who have diabetes and insulin resistance.

The following foods are considered high on the glycemic index and **UNACCEPTABLE**:

- Foods containing sugar, honey, molasses and corn syrup.
- Fruits; bananas, watermelon, pineapple, raisins.
- Vegetables; potatoes, corn, carrots, beets, turnips, parsnips.
- Breads; all white breads, all white flour products, corn breads.
- Grains; white rice, white rice products, corn, corn products.
- Pasta; thick, large pasta shapes.
- Cereals; all cereals except those low on the GI list.
- Snacks; potato chips, corn chips, popcorn, rice cakes, pretzels.
- Alcohol; beer, liqueurs, all liquors except red wine.

The following foods are considered low on the glycemic index and are **ACCEPTABLE**:

- The sweetener “Stevia”. Can be found at health food stores.

- All lean meats, chicken and fish
- All lowfat dairy products with no sugar added.
- Fruits; all except for the foods that are high on the GI list.
- Vegetables: all green vegetables and those that are high on the GI list.
- Breads; whole grain, whole rye, pumpernickel, whole-wheat pita.
- Pasta; thin strands, whole-wheat pasta, bean threads, spinach pasta and pasta made from semolina flour.
- Grains; barley, bulgar, kasha, millet.
- Cereals; Special K™, All Bran™, Fiber One™, regular oatmeal.
- Snacks; raw nuts (pecans, almonds, cashews, walnuts), olives, lowfat cheese, pita chips.
- Alcohol; red wine
- Miscellaneous; eggs, peanut butter with no sugar added.

To summarize the importance of the glycemic index and how it can be useful, please consider the following guidelines:

- When eating carbohydrates, focus on foods that have lower glycemic index values. These foods should make up the majority of your daily caloric intake.
- Foods that have a glycemic index rating of 0-40 are considered low.
- Moderate glycemic index values are foods with a rating of 45-65.
- High glycemic index values are foods with a rating of 70-100.
- All Green vegetables, tomatoes, beans and peas, whole-wheat pasta, apples, berries, oatmeal, sprouted grains and citrus fruits are considered low glycemic foods. These foods should be eaten in abundance.
- Proteins, oils, nuts and most dairy products are considered low glycemic foods.
- Simple carbohydrates such as white bread, pastries, desserts, potatoes, dried fruits and pretzels are considered high glycemic foods. Those with diabetes and insulin resistance should avoid these foods and others, with values in excess of 70.
- Refer to the complete list of foods and their glycemic index values provided in the back of this program.

G. Dealing With Cravings

Cravings are often driven by what you eat and in what combinations. If you consume a diet that consists primarily of carbohydrates, this can elevate your blood sugar. Remember that simple carbohydrates are easily digested and produce fuel that is fast burning. When these sources of fuel burn out, our bodies cry out for more.

- Consume a large protein based meal combined with quality fats and vegetable sources for breakfast to sustain energy throughout the day. A good example of this is an omelet with vegetables and cheese.
- A Consistent steady release of energy keeps our blood sugars more stable and you will experience fewer cravings.
- Give this nutrition plan a few weeks to exert its healthy effects and you should notice improvements and experience less cravings.

H. Weight Loss

Dealing with weight loss is a multi-billion dollar industry and people spend inordinate amounts of money each year trying to lose weight. What has happened in the process is that America is getting fatter. Children are gaining more weight and childhood obesity numbers are steadily climbing.

Is **RestorHealth** the answer? We are presenting a comprehensive approach to the problem that takes into account many factors that contribute to weight gain and poor health. Our goal is to try and reverse the effects of weight gain and simultaneously build up your health. We want to improve your system by making it work cleanly and more efficiently. This combination will give you the best chance of losing weight safely and keeping it off forever. Follow these guidelines to successful weight loss:

- Exercise and follow the guidelines in our exercise section of this book.
- What we eat and when we eat can determine if the food consumed is utilized, eliminated, or stored as fat.
- If what we eat is not used and eliminated, it is stored.
- Eat foods in the right combinations to maximize the digestive process and eliminate what we do not use. This will reduce the storage problem and keep unwanted pounds from piling on.
- Eat large portions of low glycemic index vegetables with each meal.
- Maintain proper hydration. If you are not hydrated properly, weight loss is a difficult task.
- Increase your flexibility and improve your posture.
- Consider adding supplements like fiber, flaxseed oil and digestive enzymes to your daily routine to aide the digestive and elimination process.

The best approach to this problem is one that combines all of the factors we have discussed in this program. Once you learn how to better manage your health, consistency will help you maintain it.

I. Straying From the Program

It is human nature to indulge and you should, just do not do it on a regular basis. Learning how to say no is a learned discipline required to achieve optimal health and overcome disease. You now have learned what you should and should not do and it is up to you to govern yourself. Know when to say no or when to say yes.

Deprivation leads to failure, and it is human nature to want what we cannot have. You should enjoy all the foods you like and occasionally indulge in forbidden foods. It is advisable to give this program time to exert its positive effects on the body. At least 3-4 weeks. This will help build a strong foundation and allow you to stray on an occasional basis.

The goal is to build up the body to make it stronger and more resilient. This on-going process takes time and the longer you stay with it, the stronger your system becomes. The stronger your system, the more capable you will be to handle poor food choices. When you do decide it is time to indulge, consider following the steps below. These will help to minimize the effects of straying from the program. Enjoy your time off, you have earned it.

- Try and stay within your food combinations. Proteins with vegetables and fats are preferable. Vegetables with any non-preferred meal will help keep your blood sugar more stable and help prevent sudden increases in insulin.
- Sugary foods or sweets should be eaten later in the day and with some type of vegetable or vegetable juice.

J. Supplements

The supplement portion of this program is not a requirement but is an option. Our research indicates that the supplements discussed in this section may be beneficial to you and have been shown to help lower cholesterol, stabilize blood sugar, lower blood pressure and improve your ability to lose weight.

Before you consider taking any supplement always consult with your physician and get their approval first.

Below we will list the supplements that have been shown to exert positive effects on the conditions outlined in this program. These supplements can be purchased at most health food stores such as Mother's Market or Whole Foods Market. Inneractive Nutrition in Newport Beach (949.642.8042) also has an excellent selection at reasonable prices.

- Multivitamin and mineral supplement (Taken as directed)
- Fiber. Powder/water soluble type, should include flaxseed and psyllium seed and husks (1-2 tablespoons per day)
- Garlic (1 clove per day)
- Flaxseed oil (1-2 tablespoons per day, recommend Barlean's brand)
- Omega-3 fatty acids (Fish oils, 2-4 x 1000mg capsules per day)
- Chromium (100-500mg per day) For diabetics, take 1/2 hour before a meal.

K. Food Sources

I. Vegetables

These should be eaten in a variety of sources every day. Because of the use of pesticides, try and use certified organic vegetables. It is important that you clean your vegetables thoroughly before eating. There are now products designed to assist you with this process and are available at most food and grocery outlets.

When cooking vegetables, it is best to cook them lightly. Lightly cooked vegetables release inner cell factors that are essential for good health. You can cook vegetables at high temperatures, but only for a short time. Al dente is the preferred way to eat cooked vegetables.

Eat one cooked vegetable with 3-4 raw sources of vegetables with each protein-based meal. These vegetables listed below are all good sources to eat with proteins:

alfalfa sprouts	lettuce	asparagus	red leaf lettuce
bamboo shoots	beet greens	romaine	bell peppers
broccoli	onions	cabbage	parsley
cauliflower	celery	chard	scallions
spinach	sprouts	collard greens	cucumber
kale	garlic	green beans	sweet peppers
swiss chard	tomatoes	turnip greens	watercress
artichoke	beets	peas	carrots
Eggplant	radish	summer squash	rhubarb
squash	turnips	water chestnut	zucchini
okra	jicama	parsnips	chayote

This lists the vegetable sources that you should avoid and these should not be eaten with protein-based meals.

beans	rice	cereals	rutabaga
grains	split peas	sweet potato	potatoes
pumpkin	yams		

II. Proteins

Here we will list the quality sources of protein that you can consider eating, which will help you achieve optimal health. It is important to read labels so you can determine how many grams of protein you are ingesting.

Many nutritionists recommend consuming 30-50 grams of protein per 100 pounds of body weight. For example, if you weigh 200 pounds, your recommended protein intake would be 60-100 grams per day.

- 1 oz. of uncooked meat = 7 grams of protein.
- 3-4 oz. of meat (about the size of a deck of cards) = 21-28 grams of protein.

cottage cheese	scallops	feta cheese
squid	egg (yard or range)	shrimp
chicken (organic)	tuna	turkey (organic)
beef or veal	soybeans	tofu
cod	lentils	haddock
halibut	octopus	salmon

III. Fats and Oils

To follow is a list of the quality sources of oils and fats that are considered good choices for your daily nutrition plan. Remember to eat fats and oils early in the day, in conjunction with proteins and vegetables only.

extra virgin olive oil	pumpkin seeds	sesame seeds
canola oil	safflower oil	grape seed oil
sunflower seeds	flaxseed oil	

IV. Carbohydrates

Complex carbohydrates are the best alternative when selecting a source for your daily nutrition plan. Below is a list of common sources that are available and would be good considerations for your carbohydrate meals.

beans	lentils	cactus
potatoes	carrots	pumpkin
artichokes	rutabaga	amaranth
grits	rye meal	barley
lentils	spelt	breads, whole grains
millet	whole wheat	buckwheat
popcorn	oatmeal	fresh fruit
granola	brown rice	

Glycemic Index Values

This is a list of common foods you may eat and their glycemic values. These values are based on using Glucose as baseline. Glucose is given a value of 100 and all the foods are listed as they compare to this value.

You should focus on choosing the foods with the lowest values, those with a value range of 0-40. If you deviate from the low value selection, choose from the moderate valued foods, those with a value range of 45-65. The foods you should avoid are considered high and have a value range of 70-100.

Breads

Bagel	70
French Bread	96
Kaiser Roll	73
Melba Toast	71
Pita Bread	58
Pumpernickel	49
Rye Bread	64
Rye Bread whole	50
Stuffing	75
Tortilla, corn	70
Waffles	76
White Bread	95
Whole Wheat Bread	75

Grains

Barley	25
Buckwheat	54
Bulgar	47
Couscous	65

Cereals

All Bran	43
Bran Chex	59
Cheerios	75
Corn Bran	75
Corn Chex	83
Cornflakes	84
Cream of wheat	71
Grapenuts	68
Life	66
Muesli	60
Nutri Grain	66
Oat Bran	53
Oatmeal, regular	53
Oatmeal, quick	66
Puffed wheat	74
Puffed rice	90
Rice chex	89
Rice crispies	82
Shredded wheat	69
Special K	54

Cornmeal	68
Millet	71
Rice, brown	56
Rice, instant	85-91
Rice, white	70

Total 76

Dairy Products

Ice Cream, regular	61
Ice Cream, low fat	50
Milk, regular	27
Milk, skim	32
Yogurt, sugar	33
Yogurt, aspartame	14

Glycemic Index from Linda Johnson Larsen (Busycook.about.com)2002

Crackers

Graham crackers	74
Rice cakes	77
Rye crispbread	67
Stoned Wheat thins	68
Water crackers	72

Fruits

Apple	39
Apple juice	41
Apricots, dried	35
Bananas, ripe	60
Cantaloupe	65
Cherries	23
Grapefruit	25
Grapefruit juice	49
Grapes	43-50
Kiwi	52
Mango	56
Orange	40-44
Orange juice	45-57
Peach	30-40
Pear	35
Pineapple	66
Plum	25-39
Raisins	64
Strawberries	32
Watermelon	72-76

Legumes

Baked beans	68
Black beans	30
Black eyed peas	42
Butter beans	31
Chick peas	33
Chick peas, canned	42

Vegetables

All green vegetables	0-30
Bean sprouts	OK
Beets	64
Carrots	71
Cauliflower	OK
Corn	55-60
Eggplant	OK
All onions	OK
Parsnips	97
Peppers	OK
Potato, russet	90
Potato, instant	83
Potato, mashed	73
Potato, boiled	57
Potato, French fried	75
Radishes	OK
Sauerkraut	OK
Sweet potato	54
Tomato	38
Water chestnuts	OK
Yams	51
Yellow squash	OK

Pastas

Angel hair	45
Bean threads	26
Gnocchi	67
Pastas, brown rice	92
Pastas, refined	65
Pastas, whole grain	45
Star pastina	38
Vermicelli	35

Snack, Miscellaneous

Corn chips	70
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Fava beans	80	Fried pork rinds	OK
Kidney beans	52	Olives	OK
Lentils, green	30	Peanuts	10
Lentils, red	25	Peanut M&M's	32
Lima, baby, frozen	32	Popcorn	56
Pinto beans	39	Potato chips	55
Soy beans	18	Pretzels	82
Split peas	32	Rice cakes	77
		Rich tea cookies	56
		Vanilla wafers	77

Glycemic Index from Linda Johnson Larsen (Busycook.about.com)2002

Carb Counter

Food	5-Gram Portion	10-Gram Portion	15-Gram portion	20-Gram Portion	25-Gram Portion
Apple- raw	1/4 apple (4.5)	1/2 apple (9)	3/4 apple (13.5)	1 apple (18)	1 1/4 apples (22.5)
microwave-cooked	1/4 cup (5)	1/2 cup (10)	3/4 cup (15)	1 cup (20)	1 1/4 cups (25)
Applesauce- unsweetened	1/8 cup (3)	1/4 cup (6)	1/2 cup (12)	3/4 cup (18)	1 cup (24)
Apricots- raw	1 1/2 med.	3 med. (10.4)	4 med. (14)	5 med. (17.5)	7 med. (24.5)
canned (water)	4 halves (5)	8 halves (10)	12 halves (15)	16 halves (20)	20 halves (25)
Avocado (California)	3/4 med. (5.4)	1 med. (7.3)	2 med. (14.6)	2 1/2 med. (18.3)	3 med. (21.9)
Banana- raw	*	1/3 med. (8.3)	1/2 med. (12.5)	2/3 med. (16.7)	1 med (25)
Blackberries- raw	1/2 cup (5.9)	3/4 cup (8.9)	1 1/4 cups (14.7)	1 1/2 cups (17.8)	2 cups (23.6)
Blueberries- raw	1/3 cup (5.7)	1/2 cup (8.6)	3/4 cup (13)	1 cup (17.2)	1 1/2 cups (25.8)
Boysenberries- frzn/unsweet	1/4 cup (4)	1/2 cup (8)	1 cup (16)	1 1/4 cups (20)	1 1/2 cups (24)
Cantaloupe- raw pieces	1/2 cup (5.7)	3/4 cup (8.6)	1 cup (11.4)	1 3/4 cups (20)	2 cups (22.8)
Cherries- sour canned (water)	1/4 cup (5.4)	1/2 cup (10.9)	3/4 cup (15.7)	1 cup (21)	1 1/4 cups (26.4)
sweet raw	5 whole (5.1)	10 whole (10/2)	15 whole (15.3)	20 whole (20.4)	25 whole (25.5)
sweet canned (water)	*	1/4 cup (7.3)	1/2 cup (14.6)	2/3 cup (19.5)	3/4 cup (22)
Crabapples- raw slices	*	1/4 cup (8.3)	1/2 cup (11)	3/4 cup (16.5)	1 cup (22)
Cranberries- raw	1/3 cup (4)	3/4 cup (8)	1 cup (12)	1 1/2 cups (16)	2 cups (24)
Cranberry sauce, jellied	2 tsp (4.6)	1 Tblsp (7)	2 Tblsp (14)	*	*
Currants- black raw	1.2 cup (5.6)	3/4 cup (8.4)	1 cup (11.2)	1 1/2 cups (16.8)	2 cups (22.4)
Dates- dried whole	*	1 whole (6)	2 whole (12)	3 whole (18)	4 whole (24)
Figs- raw whole	1/2 med. (4.8)	1 med. (7.3)	1 1/2 med. (14.4)	2 med. (19.2)	2 1/2 med (24)
dried whole	*	*	1 whole (12.4)	1 1/2 whole (18.3)	2 whole (24.4)
Fruit cocktail- canned, water	1/4 cup (5.2)	1/2 cup (10/4)	3/4 cup (15.6)	1 cup (20.8)	1 1/4 cups (26)
Fruit salad- canned, juice	*	1/3 cup (10/6)	1/2 cup (16)	1/2 cup (16)	3/4 cup (24)
Grapefruit- raw	1/4 whole (4.4)	1/2 whole (8.8)	3/4 whole (12.4)	1 whole (17.6)	1 1/2 whole (26.4)
canned, juice	1/4 cup (5.5)	1/3 cup (7.4)	2/3 cup (14.8)	3/4 cup (16.7)	1 cup (22.2)
Grapes- seedless	1/3 cup (5.3)	1/2 cup (7.6)	1 cup (15.8)	1 1/3 cups (21.1)	1 1/2 cups (23.4)
Guava- raw	1/2 med. (5.3)	1 med. (10.7)	1 1/2 med. (16)	2 med. (21.4)	2 1/2 med (25.7)
Honeydew- raw pieces	1/4 cup (3.9)	1/2 cup (7.9)	1 cup (15.6)	1 1/4 cups (19.5)	1 2/3 cups (26.5)
Kiwifruit- raw	1/2 med (4.4)	1 med (8.7)	1 1/2 med (13)	2 med. (17.4)	2 1/2 med (21.7)
Lemon peel	*	*	*	*	*
Lemon- raw	1 med (5.4)	2 med (10.8)	3 med (16.2)	4 med (17.9)	5 med (27)

Lime- raw	1/2 med (3.5)	1 med (7.1)	2 med (14.2)	*	*
Mandarin orange juice packed	*	1/3 cup (8)	1/2 cup (11.9)	3/4 cup (17.9)	1 cup (23.8)
Mango - raw pieces	*	1/4 med. (8.3)	1/2 cup (16.5)	2/3 cup (21.1)	3/4 cup (24.8)
Nectarine - raw	*	1/2 med (6.9)	1 med.(13.8)	1 1/2 (20.7)	2 med (27.6)
Orange, Valencia or navel -raw	1/2 med (5.5)	3/4 cup (8.6)	1 med (11.5)	1 1/2 med (17)	2 med. (23)
Papaya- raw	*	1/4 med. (6.8)	1/2 med. (13.5)	3/4 med. (20)	1 med. (27)
Passionfruit, purple - raw	1 med (4.2)	2 med. (8.4)	3 med. (12.6)	5 med. (21)	6 med. (25.2)
Peach - raw	1/2 med (4.2)	1 med. (8.3)	1 1/2 med. (12.5)	2 med. (16.6)	3 med. (25)
canned, water	1/3 cup (4.8)	1/2 cup (9.5)	3/4 cup (14.3)	1 cup (19.1)	1 1/4 cups (23.8)
dried, halves	*	1 half (8)	1 1/2 halves (12)	2 halves (16)	3 halves (24)
Pears - raw	1/4 med. (5.2)	1/2 med. (10.4)	3/4 med. (15.6)	1 med. (20.8)	1 1/4 med. (26.4)
canned, water	1/4 med. (4.8)	1/2 cup (9.5)	3/4 med. (14.3)	1 cup (19.1)	1 1/4 cups (23.8)
dried, halves	*	1/2 half (6.1)	1 half (12.2)	1 1/2 halves (18)	2 halves (24.4)
Asian	1/4 med. (3.3)	3/4 med. (9.9)	1 med (13.1)	1 1/2 med. (19.6)	2 med. (26.2)
Food	5-Gram Portion	10-Gram Portion	15-Gram portion	20-Gram Portion	25-Gram Portion
Persimmon - raw	*	1 med (8.4)	1 1/2 med. (12.6)	2 med. (16.8)	3 med. (25.2)
Pineapple - raw, pieces	1/4 cup (4.3)	1/2 cup (8.7)	3/4 cup (13)	1 cup (17.3)	1 1/2 cups (26)
canned, juice	*	1.4 cup (9.3)	1/3 cup (12.4)	1/2 cup (18.6)	2/3 cup (24.8)
Plum - raw	1/2 med. (4.3)	1 med (8.6)	1 1/2 med. (12.9)	2 med (17.2)	3 med. (25.8)
Pomegranate- raw	*	1/4 med. (6.6)	1/2 med. (13.2)	3/4 med. (19.8)	1 med (26.4)
Prunes - dried	1 whole (5.3)	2 whole (10.6)	3 whole (15.9)	4 whole (21.2)	5 whole (26.5)
Quince	*	1/2 med. (7)	1 med. (14)	1 1/2 med. (21)	1 3/4 med. (24.5)
Raisins	*	*	1/8 cup (13.9)	1/8 cup (13.9)	1/4 cup (27.8)
Raspberries - raw	1/2 cup (4.2)	1 cup (8.4)	1 3/4 cups (14.7)	2 cups (16.8)	3 cups (25.2)
Strawberries - raw	3/4 cup (5)	1 1/2 cups (9.9)	2 cups (13.2)	3 cups (19.8)	4 cups (26.4)
frozen, unsweet	1/3 cup (4.5)	1/2 cup (6.8)	1 cup (13.6)	1 1/2 (20.4)	2 cups (26.2)
Tangerine - raw	1/2 med. (4.7)	1 med. (9.4)	1 1/2 med. (14.1)	2 med. (18.8)	2 1/2 med. (23.8)
Watermelon - raw, pieces	1/2 cup (5.5)	3/4 cup (8.3)	1 cup (11)	1 1/2 cups (16.5)	2 cups (22)
Bagel	*	*	1/2 med. (15)	1/2 med. (15)	1 small (27)
Biscuit - small (3/4 oz.)	1/2 small (4.8)	1 small (9.7)	1 1/2 small (14.5)	2 small (19.4)	2 1/2 small (24.2)
med. (1oz.)	*	1/2 med. (6)	1 med. (12)	1 1/2 med (18)	2 med. (24)
large (2oz)	*	*	*	1/2 large (16)	1/2 large (16)
Boston brown bread - canned	*	1/2 slice (10)	3/4 slice (15)	1 slice (20)	1 slice (20)
Bread, pita pocket	*	1/2 pocket (10.1)	1/2 pocket (12.6)	1 pocket (20.3)	1 pocket (20.3)
Bread, raisin, regular - sliced	*	1/2 slice (6.3)	1 slice (12.6)	1 1/2 slices (18.9)	2 Slice (25.2)
Bread sandwich, regular- sliced	*	1/2 slice (6)	1 slice(14)	1 1/2 slices (17.5)	2 slices (24)
light- sliced	1/2 slice (3.5)	1 slice(7)	2 slices (14)	2 1/2 slices (17.5)	3 slices (21)
Breadstick, sesame (Keebler)	2 sticks (5.3)	4 sticks (10.6)	5 sticks (12.5)	1 stick (18.2)	9 sticks (24.9)
Breadstick, soft (Pillsbury)	*	1/2 stick (8.3)	3/4 stick (12.5)	1 stick (16.6)	1 1/2 stick (24.9)
Bun, hamburger or hot dog- reg.	*	1/2 bun (10)	1 bun (10)	1 bun (20.1)	1 bun (20.1)
light	*	1/2 bun (7)	1 bun (14)	1 1/2 buns (21)	1 1/2 buns (21)
Couscous - cooked	*	1/4 cup (10)	1/3 cup (13.6)	1/2 cup (20.5)	scant 2/3 cup (26)
Crackers (saltine, club,					
Ritz-style melba)	2 regular (4)	4 regular (8)	6 regular (12)	10 regular (20)	12 regular (24)
(oyster type)	10 (5.3)	20(10.6)	25 (13.3)	35 (18.6)	45 (23.9)
(Triscuits)	1 cracker (3)	3 crackers (9)	5 crackers (15)	6 crackers (18)	8 crackers (24)
(Sociables, Nobisco)	3 crackers (4.5)	6 crackers(9)	10 crackers(15)	12 crackers(18)	15 crackers(22.5)
(Wasa, Sesame Rye)	2 pieces (4)	5 pieces(10)	7 pieces (14)	10 pieces (20)	12 pieces (24)

Cheez-It (Sunshine)/					
Cheese Nips (Nabisco)	8 nips (4.8)	15 nips (9)	25 nips (15)	30 nips (18)	40 nips (24)
Flours, commmeal- whole grain					
oat bran- raw	*	2 Tblsp (10)	3 Tblsp (15)	4 Tblsp (20)	5 Tblsp (25)
rice flour- brown	*	4 Tblsp (11.7)	5 Tblsp (15)	6 Tblsp (18)	8 Tblsp (24)
rye flour	*	1 Tblsp (7.5)	2 Tblsp (15)	2 Tblsp (15)	3 Tblsp (22.5)
soy flour- roasted, full- fat	*	2 Tblsp (10)	3 Tblsp (15)	4 Tblsp (20)	5 Tblsp (25)
wheat germ	scant 1/4 cup (5.5)	1/3 cup (8.3)	1/2 cup (12.5)	2/3 cup (16.6)	1 cup (25)
white flour- all purpose	1/8 cup (5.3)	1/4 cup (10.5)	1/3 cup (14)	1/2 cup (21.2)	scant 2/3 cup (26)
whole-wheat flour	*	2 Tblsp (10.5)	3 Tblsp (15)	4 Tblsp (20)	5 Tblsp (25)
Grain cakes-pressed (rice, oats, wheat, popcorn, sesame, barley)					
Melba toast	1/2 cake (3.5)	1 cake (7)	2 cakes (14)	3 cakes (21)	3 cakes (21)
	2 pieces (4)	5 pieces(10)	7 pieces (14)	10 pieces (20)	12 pieces (24)
Food	5-Gram Portion	10-Gram Portion	15-Gram portion	20-Gram Portion	25-Gram Portion
Muffin- English (plain)	*	*	1/2 muffin (13)	3/4 muffin (19.5)	1 muffin (26.2)
Corn (small)	*	1/2 muffin (10)	3/4 muffin (15)	1 muffin (20)	1 muffin (20)
Oat bran (Estee mix)	*	1/2 muffin (7.5)	1 muffin (15)	1 muffin (15)	1 1/2 muffins (22.5)
Oat bran (Gen Mills mix)	*	*	1/2 muffin (12.5)	3/4 muffin (19)	1 muffin (25)
Oatmeal- cooked, plain	*	*	scant 1/2 cup (15)	1/2 cup (16.5)	2/3 cup (22)
Pancake (from mix, 4" diameter)	*	1/2 cake (12)	1 cake (12)	1 1/2 cake (18)	2 cakes (24)
(frozen Aunt Jermima, plain)	*	1/2 cake (6)	1 cake (12)	1 1/2 cake (18)	2 cakes (24)
Pasta (egg noodles, spaghetti, macaroni-cooked)					
(chow mein noodles)	*	1/4 cup (10)	1/3 cup (13)	1/2 cup (20)	3/4 cup (26.6)
(noodles w/rice- LoChoy)	*	1/3 cup (8.7)	1/2 cup (13)	3/4 cup (20)	1 cup (20)
(lasagna- dry uncooked)	*	1/4 cup (10)	1/3 cup (13)	1/2 cup (21)	3/4 cup (26)
	*	1/2 oz. (10)	2/3 oz. (13)	1 oz. (20)	1 1/4 oz. (25)
Piecrust (Keebler, Pillsbury All Ready, 9" dis.)					
	*	*	1/8 crust (15)	1/6 crust (20)	1/5 crust (24)
Pizza crust (small, thin-crust 9" dia.)					
Popovers- homemade, small	*	*	1/8 crust (15)	1/6 crust (20)	1/5 crust (24)
	1/2 small (5.1)	1 small (10.3)	1 1/2 small (15.4)	2 small (20.6)	2 small (20.6)
Rice- brown, cooked					
white, long grain, cooked	1/8 cup (5.2)	1/4 cup (10.4)	1/3 cup (13.5)	1/2 cup (20.9)	scant 2/3 cup (25)
wild, cooked	1/8 cup (5.3)	1/4 cup (10.5)	1/3 cup (14)	1/2 cup (21)	scant 2/3 cup (25)
Rice- fried	1/8 cup (4.4)	1/4 cup (8.8)	scant 1/2 cup (15)	1/2 cup (17.5)	scant 3/4 cup (26)
Risotto- cooked	1/8 cup (5.2)	1/4 cup (10.5)	1/3 cup(14)	1/2 cup (21)	1/2 cup (21)
	*	1/8 cup (6)	1/4 cup (12)	1/3 cup (16)	1/2 cup (24)
Rolls-crescent (Pillsbury canned) small					
dinner, small	1/2 roll (5.4)	1 roll (10.8)	1 roll (10.8)	1 1/2 rolls (16.2)	2 rolls (21.6)
Stuffing, corn bread or bread	*	1/2 roll (7)	1 roll (14)	1 1/2 rolls (21)	1 1/2 rolls (21)
	*	1/4 cup (10.5)	1/3 cup (14)	1/2 cup (21)	1/2 cup (21)
Tortillas Corn-tostada, taco shell, small*					
Flour- fajita, small	*	1 shell (7)	2 shell (14)	3 shells (21)	3 shells (21)
Waffle-plain, homemade 7	*	1/2 small (7.5)	1 small (15)	1 small (15)	1 1/2 small (22)
frozen, small	*	*	1/2 waffle (13)	3/4 waffle (19.5)	1 waffle (26)
	*	1/2 waffle (7)	1 waffle (14)	1 1/2 waffles (21)	1 1/2 waffles (21)

Alfalfa sprouts -raw	*	*	*	*	*
Amaranth-boiled	1 cup (5.4)	2 cups (10.8)	unlimited	unlimited	unlimited
Artichoke-boiled	*	1/2 med (6.7)	1 med (13.4)	1 1/2 med (20.1)	2 med (26.8)
Artichoke hearts-boiled	1/4 cup (4.4)	1/2 cup (8.7)	3/4 cup(13)	1 cup (17.4)	1 1/2 cups (21.7)
marinated, oil	1/4 cup (3.5)	1/2 cup (6.9)	1 cup (13.8)	1 1/2 cups (20.7)	1 3/4 cups (24)
Arugula-raw	unlimited	unlimited	unlimited	unlimited	unlimited
Asparagus-boiled	10 spears (4)	20 spears (8)	30 spears (12)	unlimited	unlimited
canned	1 cup (5.6)	1 1/2 cups (8.4)	2 1/2 cups (14)	3 cups (16.8)	4 cups (22.4)
frozen, boiled	6 spears (8.2)	13 spears (9.5)	20 spears (14.6)	unlimited	unlimited
Bamboo shoots- raw	1 cup (4)	2 cups (8)	3 cups (12)	5 cups(20)	6 cups (24)
canned	1 cup (4.6)	2 cups (9.2)	3 cups (13.8)	unlimited	unlimited
Bean salad (Pillsbury)-canned	1/8 cup (3.6)	1/4 cup (7.3)	1/2 cup (14.5)	2/3 cup (19.3)	3/4 cup (21.8)

Food	5-Gram Portion	10-Gram Portion	15-Gram portion	20-Gram Portion	25-Gram Portion
Beans, chili canned					
Hunt's	scant 1/4 cup (5)	1/3 cup (8)	1/2 cup (12)	3/4 cup (18)	1 cup (24)
Joan of Arc, Caliente	1/4 cup (5.4)	1/2 cup (10.8)	2/3 cup (14.4)	3/4 cup (16.2)	1 cup (21.6)
Bean,w/pork&ham					
(Joan of Arc)-canned	1/8 cup (4.4)	1/4 cup (8.7)	1/3 cup (11.6)	1/2 cup (17.4)	2/3 cup (22.2)
Beans, refried (Rosarita)-canned	1/8 cup (3.5)	1/3 cup (9.3)	1/2 cup (14)	2/3 cup (18.7)	3/4 cup (21)
Beet greens-boiled	2/3 cups (5.2)	1 cup (7.8)	2 cups (15.6)	2 1/2 cups (19.5)	3 cups (21)
Beets-boiled, sliced	1/2 cup (5.7)	3/4 cup (8.5)	1 cup (11.7)	1 1/2 cups (17.1)	2 cups (23.4)
Harvard, canned	*	1/4 cup (11.2)	1/3 cup (14.9)	1/3 cup (14.9)	1/2 cup (22.4)
pickled, canned	1/8 cup (4.7)	1/4 cup (9.3)	1/3 cup (12.4)	1/2 cup (18.6)	2/3 cup (24.8)
Black beans-boiled	1/2 cup (4.2)	1/4 cup (8.4)	1/3 cup (11.1)	1/2 cup (16.8)	3/4 cup (25.2)
Black turtle beans-canned	1/8 cup (4.9)	1/4 cup (9.9)	1/3 cup (13.2)	1/2 cup (19.8)	2/3 cup (26.4)
Broccoli-raw, chopped	2 cups (4.4)	unlimited	unlimited	unlimited	unlimited
boiled,chopped	1 cup (4)	2 cups (8)	3 cups (12)	5 cups (20)	unlimited
frozen, chopped or spears	3/4 cup (4.4)	1 1/2 cups (8.7)	2 1/2 cups (14.5)	3 cups (17.4)	4 cups (23.2)
Broccoli frozen with					
carrots (Pillsbury)	3/4 cup (4.7)	1 1/2 cups (9.3)	2 cups (12.4)	3 cups (18.6)	4 cups (24.8)
cauliflower	1 cup (5.4)	2 cups (10.8)	2 1/2 cups (13.5)	3 cups (16.2)	4 cups (21.6)
corn/red pepper	1/3 cup (5)	2/3 cup (10.1)	1 cup (15.2)	1 1/3 cups (19.8)	1 1/2 cups (22.8)
peppers/bamboo shoot/mush.	1 cup (3.5)	2 cups (7)	4 cups (14)	5 cups (17.5)	6 cups (21)
pearl onions/red peppers	1 cup (3.5)	2 cups (7)	4 cups (14)	5 cups (17.5)	6 cups (21)
Brussels sprouts-boiled	5 sprouts (4.3)	11 sprouts (9.4)	15 sprouts (12.8)	17 sprouts (14.5)	25 sprouts (21.3)
with cheese-frozen	*	*	1/2 cup (12.5)	3/4 cup (18.8)	1 cup (25)
Butter beans-canned	*	1/3 cup (8)	1/2 cup (12.2)	2/3 cup (16)	1 cup (24.4)
Cabbage					
Chinese (bok choy) - raw	3 cups (2.4)	unlimited	unlimited	unlimited	unlimited
green or red-raw	1 1/2 cups (4.5)	2 cups (6)	5 cups (15)	6 cups (18)	unlimited
boiled	1 1/2 cups (5.4)	2 cups (7.2)	3 cups (10.8)	5 cups (18)	6 cups (21.6)
Carrots-raw	1 med (5)	2 med (10)	3 med (15)	4 med (20)	5 med (25)
boiled, sliced	*	1/2 cup (6.7)	1 cup (13.4)	1 1/2 cups (20.1)	2 cups (26.8)
canned, slices	3/4 cup (4.5)	1 1/2 cups (9)	2 cups (12)	3 cups (18)	4 cups (24)
frozen, slices	1/2 cup (4.7)	1 cup (9.4)	1 1/2 cups (14.1)	2 cups (18.8)	2 1/2 cups (23.5)
Cauliflower					

raw/boiled/frozen, pieces	2 cups (5.2)	4 cups (10.4)	5 cups (13)	unlimited	unlimited
Celery-raw	4 sticks (3.6)	unlimited	unlimited	unlimited	unlimited
boiled, diced	3/4 cup	1 1/2 cups (9)	2 cups (12)	3 cups (18)	4 cups (24)
Chard, Swiss-boiled, chopped	3/4 cup (5.4)	1 cup (7.2)	2 cups (14.4)	2 1/2 cups (19.8)	3 cups (21.6)
Chickpeas-boiled	*	1/4 cup (10)	1/3 cup (13.3)	1/2 cup (20)	2/3 cup (26.6)
hummus	*	*	1/4 cup (12.5)	1/3 cup (16.6)	1/2 cup (25)
Chives-raw	unlimited	unlimited	unlimited	unlimited	unlimited
Coleslaw-homemade	1/3 cup (5)	1/2 cup (7.5)	1 cup (15)	1 1/3 cups (20)	1 2/3 (25)
Collard greens-boiled	1/2 cup (3.9)	1 cup (7.8)	2 cups (15.6)	2 1/2 cups (19.5)	3 cups (23.4)
frozen, chopped	1/3 cup (4)	3/4 cup (9)	1 cup (12)	1 1/2 cups (18)	2 cups (24)
Corn-white, frozen or canned	*	1/4 cup (8)	1/3 cup (10.6)	1/2 cup (16)	3/4 cup (24)
Corn-yellow, boiled	*	1/4 cup (8.5)	1/3 cup (11.3)	1/2 cup (17)	2/3 cup (22.6)
frozen,boiled	*	1/3 cup (10)	1/2 cup (15.1)	2/3 cup (20)	3/4 cup (22.5)
on the cob	*	*	1/2 ear (12)	1/2 ear (12)	1 ear (24)
Food	5-Gram Portion	10-Gram Portion	15-Gram portion	20-Gram Portion	25-Gram Portion
Cowpeas (black-eyed peas)					
Canned	*	1/3 cup (10.9)	1/3 cup (10.9)	1/2 cup (16.4)	2/3 cup (21.8)
frozen, boiled	*	1/4 cup (10)	1/3 cup (13)	1/2 cup (20)	2/3 cup (26.6)
Cucumber-raw	1/2 med (3)	1 med (6)	2 med (12)	3 med (18)	4 med (24)
Dandelion greens-raw	1 cup (5.2)	2 cups (10.4)	3 cups (15.6)	4 cups (20.8)	5 cups (26)
boiled, chopped	1/2 cup (3.3)	1 cup (6.6)	2 cups (13.2)	3 cups (19.2)	4 cups (26.4)
Eggplant-raw pieces	1 cup (5)	2 cups (10)	3 cups (15)	4 cups (20.8)	5 cups (25)
steamed, pieces	3/4 cup (4.8)	1 cup (6.4)	2 cups (12.8)	3 cups (19.2)	4 cups (25.6)
Endive, raw	2 cups (3.2)	4 cups (6.4)	unlimited	unlimited	unlimited
Fava beans-canned	1/8 cup (3.9)	1/4 cups (7.8)	1/2 cup (15.5)	2/3 cups (20.6)	3/4 cup (23.3)
Fennel-fresh	3/4 cup (4.7)	1 cup (6.3)	2 cups (12.6)	3 cups (18.9)	4 cups (25.2)
Garlic,raw	3 cloves (3)	unlimited	unlimited	unlimited	unlimited
Great northern beans-boiled	*	1/3 cup (10.4)	1/2 cp (15.6)	2/3 cup (15.6)	3/4 cup (24)
(Joan of Arc)- canned	*	1/3 cup (8.2)	1/2 cup (12.3)	2/3 cup (16.4)	3/4 cup (18.5)
Green Beans (snap beans)					
boiled	1/2 cup (3.8)	1 cup (7.6)	2 cups (15.2)	2 1/2 cups (19)	3 cups (22.8)
canned	1 cup (4.4)	2 cups (8.8)	3 cups (13.2)	4 cups (20.8)	5 cups (22)
frozen, whole	1/2 cup (4.2)	1 cup (8.4)	1 1/2 cups (12.6)	2 cups (16.8)	3 cups (25.2)
Hominy, canned	*	1/4 cup (7.5)	1/2 cup (15)	2/3 cup (20)	3/4 cup (22.5)
Italian-style vegs - frozen	1/3 cup (7.3)	1/2 cup (11)	2/3 cup (14.6)	3/4 cup (16.5)	1 cup (22)
Japanese-style vegs- frozen	1/3 cup (6.6)	1/2 cup (10)	3/7 cup (15)	1 cup (20)	1 1/4 cups(25)
Kelp-boiled, chopped	1/2 cup (3.7)	1 cup (7.4)	2 cups (14.8)	2 1/2 cups (18.5)	3 cups (22.2)
Kelp-raw	1/4 cup (5.5)	1/2 cup (11)	2/3 cup (14.6)	3/4 cup (16.5)	2 cups (22)
Kidney beans, red- boiled	*	1/4 cup (8.4)	1/3 cup (11.2)	1/2 cup (16.8)	2/3 cup (22.4)
Canned	1/8 cup (5)	1/4 cup (10)	1/3 cup (13.3)	1/2 cup (20)	2/3 cup (26.6)
Leeks- boiled, chopped	1/2 cup (4)	1 cup (8)	1 1/2 cups (12)	2 cups (16)	3 cups (24)
Lentils- boiled	*	1/4 cup (8)	1/3 cup (10.6)	1/2 cup (16)	3/4 cup (24)
Lettuce, butterhead or iceberg					
raw	unlimited	unlimited	unlimited	unlimited	unlimited
romaine- shredded	unlimited	unlimited	unlimited	unlimited	unlimited
Lima beans- boiled	1/8 cup (3.3)	1/3 cup (8.6)	1/2 cup (12.9)	3/4 cup (19.4)	1 cup (25.8)
canned	1/8 cup (4.5)	1/7 cup (9)	1/3 cup (12)	1/2 cup (18)	2/3 cup (23.9)

Mushrooms- raw, pieces	1 cup (2.2)	unlimited	unlimited	unlimited	unlimited
steamed or canned, pieces	1 cup (4.6)	2 cups (9.2)	3 cups (13.8)	4 cups (18.4)	5 cups (23)
(enoki)- raw whole	unlimited	unlimited	unlimited	unlimited	unlimited
(straw)- canned	1 cup (5.6)	unlimited	unlimited	unlimited	unlimited
(shiitake)- whole, boiled	2 whole (5.1)	4 whole (10.3)	5 whole (15.4)	8 whole (20.6)	unlimited
dried, whole	2 whole (5.6)	3 whole (8.4)	5 whole (14)	7 whole (19.6)	8 whole (22.4)
Mustard greens- boiled, chopped	1 1/2 cups (4.5)	3 cups (9)	unlimited	unlimited	unlimited
	1 cup (4.6)	2 cups (9.2)	3 cups (13.8)	4 cups (18.4)	unlimited
Navy beans- boiled	*	1/4 cup (10.4)	1/3 cup (13.8)	1/2 cup (20.7)	2/3 cup (27.5)
canned	*	*	1/4 cup (13.4)	1/3 cup (17.8)	1/2 cup (26.8)
Okra- boiled, slices	1/2 cup (5.8)	3/4 cup (8.7)	1 cup (11.6)	1 1/2 cups (17.4)	2 cups (23.2)
frozen, slices	1/3 cup (5)	1/2 cup (7.5)	1 cup (15)	1 1/3 cups (20)	1 1/2 cups (22.5)
Onions- raw, chopped	1/2 cup (5.6)	3/4 cup (8.4)	1 cup (11.2)	unlimited	unlimited
boiled, chopped	1/4 cup (5.3)	1/2 cup (10.7)	3/4 cup (15.9)	1 cup (21)	1 1/4 cups (26.3)
dehydrated, flakes	1/8 cup (5.9)	1/4 cup (11.7)	1/3 cup (15.6)	1/3 cup (15.6)	1/2 cup (23.4)
Food	5-Gram Portion	10-Gram Portion	15-Gram portion	20-Gram Portion	25-Gram Portion
Onions,					
green (spring)- raw, chopped	1 cup (5)	unlimited	unlimited	unlimited	unlimited
Parsley- raw, chopped					
freeze-dried	unlimited	unlimited	unlimited	unlimited	unlimited
Parsnips- boiled, slices					
*	1/3 cup (8.7)	1/2 cup (13.1)	2/3 cup (17.5)	1 cup (26.2)	
Peas, green- boiled					
1/4 cup (5.1)	1/2 cup (10.3)	3/4 cup (15.5)	1 cup (20.6)	1 1/4 cups (25.8)	
Canned					
1/3 cup (5.2)	1/2 cup (7.8)	1 cup (15.6)	1 1/3 cups (20.8)	1 1/2 cups (23.4)	
Peas, split- boiled					
*	1/4 cup (10)	1/3 cup (14)	1/2 cup (21.2)	1/2 cup (21.2)	
Peas, sweet- canned					
1/4 cup (4.2)	1/2 cup (8.4)	3/4 cup (12.6)	1 cup (16.8)	1 1/2 cups (25.2)	
Peppers,					
hot chili- raw					
1 whole (4.3)	2 whole (8.6)	3 whole (12.9)	4 whole (17.2)	6 whole (25.8)	
canned, chopped					
1/2 cup (4.2)	1 cup (8.4)	1 3/4 cups (14.7)	2 cups (16.8)	unlimited	
jalapeno- canned, chopped					
1/2 cup (3.3)	1 cup (6.6)	unlimited	unlimited	unlimited	
sweet- raw, chopped					
1 cup (4.8)	2 cups (9.6)	unlimited	unlimited	unlimited	
freeze-dried, chopped					
1 cup (4.4)	unlimited	unlimited	unlimited	unlimited	
sweet, yellow- raw, whole					
1/2 large (5.9)	3/4 large (8.9)	1 large (11.8)	1 3/4 large (20.7)	2 large (23.6)	
Pimientos- canned					
unlimited	unlimited	unlimited	unlimited	unlimited	
Pinto beans- boiled					
1/8 cup (4.7)	1/4 cup (9.3)	1/3 cup (12.4)	1/2 cup (18.6)	2/3 cup (24.8)	
canned					
1/8 cup (4.4)	1/4 cup (8.7)	1/3 cup (11.6)	1/2 cup (17.5)	2/3 cup (23.3)	
Joan of Arc, Picante Style					
1/8 cup (3.7)	1/3 cup (9.7)	1/2 cup (14.6)	2/3 cup (19.5)	3/4 cup (21.9)	
Potato, sweet- baked, skin eaten					
*	1/4 med. (6)	1/2 med (12)	3/4 med. (18)	1 med. (24)	
boiled, mashed					
*	*	*	1/4 cup (19.9)	1/3 cup (25.9)	
Potato, white- baked, skin eaten					
*	*	1/4 med. (12.8)	1/3 med. (17)	1/2 med. (25.5)	
baked, no skin					
*	1/4 med. (7.8)	1/3 med. (10.4)	1/2 med. (15.7)	3/4 med. (23.4)	
boiled, no skin					
*	1/4 med. (6.3)	1/2 med. (12.5)	2/3 med. (16.7)	1 med. (25)	
Potato, new- canned, whole					
*	1/3 cup (10)	1/2 cup (15)	2/3 cup (20)	3/4 cup (22.5)	
Potatoes- french fried, drained					
*	5 fries (10)	7 fries (14)	10 fries (20)	12 fries (24)	
Potatoes, white- mashed					
*	1/4 cup (7.5)	1/2 cup (15)	2/3 cup (20)	3/4 cup (22.5)	
Pumpkin- boiled, mashed					
1/4 cup (3)	1/2 cup (6)	1 cup (12)	1 1/2 cups (18)	2 cups (24)	
canned, solid pack					
1/4 cup (2.2)	1/2 cup (6.3)	1 cup (12.6)	1 1/2 cups (18.9)	2 cups (25.2)	
Radicchio- raw, shredded					
unlimited	unlimited	unlimited	unlimited	unlimited	
Radishes, red- raw					
unlimited	unlimited	unlimited	unlimited	unlimited	

Radishes, white- raw, slices	unlimited	unlimited	unlimited	unlimited	unlimited
Red beans- canned	*	1/3 cup (8)	1/2 cup (12)	2/3 cup (16)	1 cup (24)
Rhubarb- boiled	1/2 cup (3.5)	1 cup (7)	2 cups (14)	3 cups (21)	3 1/2 cups (24.5)
Rutabaga, boiled, sliced	1/3 cup (4.4)	1/2 cup (6.6)	1 cup (13.2)	1 1/2 cups (19.8)	1 3/4 cups (23.1)
Sauerkraut- bottled or canned	1/2 cup (5.1)	3/4 cup (7.6)	1 cup (10.2)	2 cups (20.4)	2 1/2 cups (26.5)
Shallots- raw, chopped	3 Tblsp (5.1)	unlimited	unlimited	unlimited	unlimited
Spinach- raw, chopped	unlimited	unlimited	unlimited	unlimited	1.4 grams per cup
frozen, boiled	1 cup (3.1)	3 cups (9.3)	5 cups (15.1)	unlimited	unlimited
canned	3 cups (3.6)	unlimited	unlimited	unlimited	unlimited
Squash, summer varieties (crookneck, scallop, zucchini)					
raw, pieces	1 cup (4)	2 cups (8)	4 cups (16)	5 cups (20)	6 cups (24)
boiled	1 cup (5.2)	2 cups (10.4)	3 cups (15.6)	4 cups (20.8)	5 cups (26)

Food	5-Gram Portion	10-Gram Portion	15-Gram portion	20-Gram Portion	25-Gram Portion
Squash, winter varieties (acorn, butternut, Hubbard)					
raw, pieces	1/2 cup (5.1)	1 cup (10.2)	1 1/2 cups (15.3)	2 cups (20.4)	2 1/2 cups (25.5)
baked	1/3 cup (4)	2/3 cup (8)	1 cup (12)	1 1/2 cups (18)	2 cups (24)
spaghetti - baked or boiled	1/2 cup (5)	1 cup (10)	1 1/2 cups (15)	2 cups (20)	2 1/2 cups (25)
Succotash- boiled	*	*	1/4 cup (11.7)	1/3 cup (15.6)	1/2 cup (23.4)
canned or frozen	*	1/4 cup (8.5)	1/3 cup (11.3)	1/2 cup (17)	3/4 cup (25.5)
Tomatillo- raw, whole	2 med. (4)	5 med. (10)	7 med. (14)	10 med.(20)	12 med.(24)
Tomato, green- raw, whole	1 med. (4.1)	2 med. (8.2)	3 med. (12.5)	5 med.(20.5)	6 med. (24.6)
red- raw, whole	1 med. (4.1)	2 med. (8.2)	3 med. (12.5)	5 med.(20.5)	6 med. (24.6)
red- canned	1/2 cup (5)	1 cup (10)	1 1/2 cups (15)	2 cups (20)	2 1/2 cups (25)
red with green chilies- canned	1/2 cup (4.3)	1 cup (8.6)	1 1/2 cups (12.9)	2 cups (17.2)	2 1/2 cups (21.5)
Tomato- sun-dried	1/8 cup (3.8)	1/4 cup (7.5)	1/2 cup (15)	2/3 cup (20)	3/4 cup (22.5)
Turnips- boiled, pieces	1 cup (4.4)	2 cups (8.8)	3 cups (13.2)	4 cups (17.6)	5 cups (22)
Turnips greens- boiled, chopped	2 cups (3.6)	4 cups (7.2)	unlimited	unlimited	unlimited
canned, chopped	2 cups (5.6)	3 cups (8.4)	5 cups (14)	unlimited	unlimited
Water chestnuts- raw, sliced	1/8 cup (3.7)	1/4 cup (7.4)	1/2 cup (14.8)	2/3 cup (19.7)	3/4 cup (22.2)
canned, whole	5 whole (5)	10 whole (10)	15 whole (15)	unlimited	unlimited
canned, sliced	1/4 cup (4)	1/2 cup (8)	3/4 cup (12)	1 cup (16)	1 1/2 cups (24)
Wax beans- canned	1/2 cup (4.5)	1 cup (9)	1 1/2 cup (13.5)	2 cups (18)	2 1/2 cups (22.5)
White beans- boiled	*	1/4 cup (11.3)	1/3 cup (15)	1/3 cup (15)	1/2 cup (22.5)
canned	*	1/8 cup (7.2)	1/4 cup (14.4)	1/3 cup (19)	1/3 cup (19)
Yams- baked or boiled, pieces	*	1/4 cup (9.4)	1/3 cup (12.5)	1/2 cup (18.8)	2/3 cup (25)