# *BODYSHIFT*



## A Guide to Wellness

## INTRODUCTION

Since the beginning of time, man has been physically active. Our bodies are designed to do things. We are hard wired for survival. Earliest man hunted for food and planted crops. It was all they knew to stay alive. Years ago when machinery was unavailable, farmers would hoe for hours. This provided enough physical activity for him to maintain a healthy body.

Most recently in the past few centuries, cities have been built, motor transportation has replaced walking and people have become sedentary. Add to this the establishment of fast food chains coupled with a fast paced lifestyle and we are doomed for failure. We have become a race of remote control addicts, computer geeks and white collar workers who have no time for exercise.

Our bodies adapt quickly to change. With less physical activity, our physical strength, endurance, and energy reserves decrease. In fact, a twelve week exercise program can be undone in two weeks. This causes our physical bodies to become more tired and depressed, which may also cause anxiety and mental depression. This leads to low self-esteem and a low body image.

We are much more knowledgeable today than we have ever been. The Internet gives us instant access to information yet we do not take the time to educate ourselves about nutrition and health. Many of us have no idea of our daily required amounts for things like salt, fiber, water, protein, fat or carbohydrates. We start a diet program and practically starve ourselves. We skip breakfast thinking of the calories we saved.

We eat too much processed foods and wonder why our blood pressure is so high. We have too much fried foods and animal fat and cannot understand why our cholesterol levels are above normal.

I believe in a total, complete healthy lifestyle which includes the physical, mental and emotional parts of our lives. All of these aspects affect the other. You cannot do well if you feel terrible. When you are in great physical shape, you feel better and you are able to effectively handle the pressures and stresses that life sends your way. When you feel good, you are more confident, have more energy and you are able and want to do more things.

Maintaining a good level of health and fitness is a simple process. We complicate our lives by eating unconsciously, not thinking about what we are putting in our mouths.

This book will lead you through a complete and thorough exercise and nutrition plan. You will be introduced to a variety of exercise programs and plans which will allow you to choose the one that best fits your lifestyle.

I will introduce you to proper nutrition and will show you how to read labels. You will also learn the proper amounts of vitamins and food groups to consume.

# A SIMPLE PHILOSOPHY

I have always been a very active person. Growing up I played just about every sport at a competitive level. Today I devote one hour a day, six days a week to exercise. It keeps me in balance.

I monitor by weight, body fat and body water levels on a regular basis because I know that one of the secrets to longevity and vitality is to maintain a good level of fitness.

It is critical that you develop a proper fitness philosophy if you want to attain good physical and mental health. Physical fitness is a simple concept which has been complicated by fad commercials and quick fix schemes that just don't work. There are no easy answers when it comes to fitness. If it was easy, everyone would be fit. It takes commitment and a resolve to a program that will work for you. It will never be an overnight miracle.

A good fitness philosophy puts health first and appearance second. Shedding pounds quickly is not the proper way to a lean and fit body. Proper fitness does not include steroids or excessive protein mixtures designed to build muscle mass. Supplements provide the vitamins and minerals that we do not get from our diet. They do not replace healthy eating.

Physical fitness is the measure of a person's health and performance. It is best to include both resistance (weight) training and cardiovascular (endurance) training. Weight training builds lean muscle which helps burn fat and maintains healthy bones. Endurance training strengthens your heart and makes it more efficient.

A neglected part of a training regime is stretching or flexibility. Stretching regularly increases the mobility of your joints and you will minimize your chances of injury. By exercising smart and staying away from injuries, you are able to stay in great shape for your entire life.

The most important thing to remember when embarking on an exercise program is to listen to your body. This principle is the corner stone on which a good fitness program is built. There must be a clear distinction made between good and bad pain. Good pain is the burn that is felt during strenuous exercise. Muscles become fatigued and become mildly sore but it is not an uncomfortable pain. Bad pain is any type of sharp, tearing sensation you feel while training. It can feel very uncomfortable and restrict your movement. Exercise common sense and good judgment. Stop and give the injured area a chance to heal or see a doctor for treatment options.

Everyone's body is different and two people may get different results from the same program. Genetics plays a huge part in this process. This is why your fitness goals are personal and must keep in mind your current fitness level and abilities.

Variety is something overlooked by many people. People design a fitness program, follow a fitness regime they found online or in a fitness magazine and never make

changes. They then wonder why they are not getting results. This leads to frustration and often the person just quits. Our bodies need variety. We need to look at other options to see what works best and variety helps keep you motivated.

Motivation is the biggest challenge people face with both diet and exercise programs. How do you stay on track so you can reach your goals? People are motivated in different ways. Guys usually hit the weights looking for the muscular look, the six pac abs and the broad shoulders. Like anything else in life, you must have a balanced approach to ensure you maintain the program.

Consistent, gradual efforts are so important when it comes to maintaining a healthy diet and workout regimen, and the first step to accomplishing this is within your mind.

Working out does not paint a pleasant picture for many people. Some people feel the excitement and adrenalin rush that comes from a runner's high while others cringe at the thought of putting on a pair of sneakers and hitting the bricks. The key to success is to make the process enjoyable. If you keep telling yourself, "I hate my program or eating regime," you will sabotage your efforts. Your work will get increasingly more difficult and boring and you will become frustrated and just give up.

In order to change this, you have to find a way to make yourself enjoy working out and eating healthy foods. Think about why you bought this book. You wanted to improve your lifestyle. You wanted to develop a positive self-image and improve your self-confidence. Some of you may have had a health scare and felt it was time for a change while others just wanted to look better in a pair of jeans. Maybe some others have a special function like a wedding or a class reunion and want to feel and look their best. Everyone is motivated differently but it is this motivation that keeps us going.

Two of the greatest assets we have are the ability to set goals and to visualize success yet many of us waste these attributes. We wander through life wishing our lives were better but have no idea on how to change.

I want you to think about your own individual goals. What is it you want to change about your lifestyle? Take a few minutes and write them down. Now think about how you will feel when you have accomplished your goals. Visualize the type of body you want, mentally imagine yourself looking and feeling great. Notice how your friends and family compliment you on your physical appearance and improved self-confidence. Really get in touch with the emotional feeling on being your physical best. It is this emotion that will assist you in achieving all of your goals.

Make sure you picture these thoughts in your mind every day and make them as real as possible. Repeat the following phrase to yourself just as you go to sleep and again upon awakening, "Every day and in every way, I am becoming a stronger and better person." Once you do this thought process enough and are consistent with it every day, you will have painted a vivid picture in your mind and your goals and objectives

will become crystal clear. You will then start to enjoy the process of becoming physically and mentally fit because you have associated these feel good emotions with your exercise and eating regime. Some of you may find this difficult to comprehend but it is your motivation and intense desire to be your best and the emotional feelings you derive from that desire will carry you through the tough times. You will begin to look forward to your workouts because you set your sight on the end result and it feels good.

One way to maintain motivation is to place a picture of yourself at the weight you once were and would like to be again on your fridge or any place you see it daily. Getting down to the size you once were in your teenage years may be setting yourself up for failure so you want to aim for weight wellness.

Your success ultimately depends on how much you want to achieve your goals. Seeing yourself the exact shape and size you want to be is a powerful motivator. In fact your brain does not know the difference between internal and external stimulation so visualization exercises trick the brain into releasing endorphins that aid the process.

Another option is to place this statement on your fridge, “No food tastes as good as slim feels.” This one initiative allowed a client of mine to drop twenty-five pounds and she emailed me to say she feels on top of the world. These are simple motivators that will keep you on track. Just remember you can have anything you want, just not everything you want so the next time you are tempted to reach for that candy bar remember this phrase. In fact, I had a client who pasted this phrase on her fridge and used it as motivation to reach her goal of losing twenty-five pounds.

If you are looking at changing your eating habits and wanting to implement an eating plan, you may find it difficult. Eating five to six small meals a day may seem cumbersome at first. We get up late and don’t have time for breakfast. Many times our job schedule has us working through lunch and we tend to overindulge at dinner time. The first step to take is to begin eating smaller portions more frequently.

Plan your day and make sure you bring along healthy snacks as opposed to running to the vending machine to get your sugar fix. A small zip lock bag filled with baby carrots and celery sticks will serve you much better than a chocolate bar.

The most important consideration is to begin your program in moderation. Start with one or two pieces of fruit and work up to the daily recommended amounts. It is easier to make small changes as opposed to taking drastic measures. Your body slowly adapts to these small changes and they become your new normal.

Once you start eating nutritious foods you will begin to feel better and this alone will provide the motivation to continue. You will see yourself becoming fitter and feel yourself becoming stronger.

It is also important to set aside a day or two for relaxation. I have Sunday as my day off. This gives me the relaxation I require to maintain my motivation and allows me to

just be me. I get the rest and recuperation I require so I am ready to start again on Monday. This plan works for me.

The rest of the process will be determined by your work ethic and the effort you put into your program. It all comes down to taking responsibility for your well being and future because it is in your hands. Blaming someone else or your situation never solves anything. You create a sense of hopelessness and a feeling that this is your lot in life and there is nothing you can do to make it better.

A burning desire to change and make improvements will provide the atmosphere for success. You will then do what it takes to reach your goals and nothing will stand in your way..

I converted a room in my basement into a small gym. I have a treadmill, elliptical machine and a recumbent bike as well as a weight machine that allows me to work each area of the body. My wife and I also purchased peddle bikes that we use in the summer. We are both committed to a life style that includes fitness and exercise. Our exercise regime includes three days of cardio training and three days of weight training. This has allowed us to lead a healthy life and we will continue to make fitness a priority in our lives.

It does not matter whether you exercise at home or in a gym as long as you are consistent. What matters is to choose a program that you will continue to use throughout your life. Start slowly and keep your eye on your target. Get excited about your fitness goals and visualize everyday and you will become the best you can.

# HEALTH & FITNESS QUESTIONNAIRE

Before we begin, take the evaluation below. It will give you an idea of your nutrition and fitness knowledge.

Please answer the following questions by placing a tick in the appropriate box.

Check the answers in the Appendix

| Question | YES | NO |
|---|---|---|
| 1. The easiest way to lose weight is to cut calories. | | |
| 2. You can't get any smarter than you already are. | | |
| 3. Avoid fat at all costs. | | |
| 4. Walking and carrying 1 lb. weights help your fitness. | | |
| 5. Sore muscles after exercise is good. | | |
| 6. An ideal heart rate is 120/80 | | |
| 7. You can burn too many calories in a day | | |
| 8. Training for a marathon is good for your health. | | |
| 9. Sit-ups or crunches strengthens your back. | | |
| 10. Walking is a great way to lose weight. | | |
| 11. Wearing a waist belt prevents back injury. | | |
| 12. If I stop weight training, muscle will turn to fat. | | |
| 13. A No Carb. diet is best. | | |
| 14. Low fat foods help you lose weight. | | |
| 15. Cholesterol is bad for you. | | |
| 16. Some foods promote burning fat. | | |
| 17. Skipping meals helps in weight loss | | |
| 18. Eating after 8pm causes weight gain. | | |
| 19. You don't have to count calories to lose weight | | |
| 20 Carbohydrates make you fat. | | |
| 21. Eating some fat before a meal helps you eat less. | | |
| 22. Muscle weighs more than fat. | | |
| 23. Stretching before exercise is good. | | |
| 24 Sit-ups and crunches get rid of belly fat. | | |
| 25. Lifting weight will make women muscular. | | |

## Chapter I

## METABOLISM

Our bodies require energy to fuel the billions of chemical reactions in our cells. We get this energy by metabolizing food. Metabolism is the chemical reactions in our body's cells that convert the fuel found in food into the energy needed to do everything from moving to thinking to growing. Certain types of proteins control the chemical reactions of metabolism, and each of these reactions is coordinated with many other body functions.

Metabolism is a continual process. It begins when we are born and stops when we die. It is vital for not just humans but all life forms. If metabolism stops, a living thing dies.

The food we eat contains energy in the form of sugar, as well as other essential cell-building chemicals. When the body breaks down this sugar, energy is released and distributed to the different cells which they use as fuel.

Once the food is eaten the digestive system takes over and digestive enzymes break proteins down into amino acids, fats into fatty acids, and carbohydrates into simple sugars like glucose.

The most effective and quickest form of energy is glucose, however, both amino acids and fatty acids can also be used as energy sources by the body. All of these compounds are absorbed into the blood and they are then transported to the body's cells.

By this ongoing process, metabolism is really a balance between two types of activities that occur simultaneously. On the one hand, the process of anabolism or constructive metabolism is the building mechanism. It takes in nutrients, helps in new cell growth, tissue maintenance and the storage of energy so it can be used later. Then there is catabolism or destructive metabolism which is the process that breaks down this fuel and provides your body with energy for all sorts of bodily functions.

There are hormones of the endocrine system involved in controlling the rate and course of metabolism. Thyroxine, a hormone produced and released by the thyroid gland, plays a major role in determining how fast or slow the chemical reactions of metabolism happen in the body.

Another gland, the pancreas, secretes hormones that help establish whether the body's main metabolic activity, at a particular time, will be anabolic or catabolic. For example, after eating a meal, usually more anabolic activity occurs because eating increases the level of glucose in the blood which is the body's most important fuel. The pancreas senses this increased level of glucose and releases the hormone insulin, which signals cells to increase their anabolic activities. Glucose then gets absorbed into the cells with the help of this insulin.

Metabolism is an intricate chemical process, so it's not surprising that many people think of it in its simplest sense: as something that influences how easily our bodies gain or lose weight. That's where calories come in. A calorie is a unit that measures how much energy a particular food provides to the body. It is a unit of heat. A calorie is the amount of heat required to raise the temperature of one liter of water one degree Celsius. Some foods have more calories than others. For instance, a piece of pie has more calories than an apple, so it provides the body with more energy.

There are times when that can be too much of a good thing. Just as we store food in our refrigerator or cupboard for later use, our bodies store unused calories, usually as fat. If you buy too many groceries and attempt to cram them into a small space they will spill onto the floor. The same thing happens in the human body. If a person eats too many calories, they spill over and the result is extra body fat. The table below shows the calories contained in each food group based on one gram.

| Food Group | Amount | Calories |
|---|---|---|
| Protein | 1 gram | 4 |
| Fat | 1 gram | 9 |
| Carbohydrates | 1 gram | 4 |
| Sugar | 1 gram | 4 |
| Alcohol | 1 gram | 7 |

You can calculate the total calories from a particular food. Just multiply the number of grams by the number of calories in a gram of that food component. For example, if a serving of potato chips (about 20 chips) has 10 grams of fat, 90 calories are from fat. That's 10 grams multiplied by 9 calories per gram.

There are three ways to lose weight and all involve heat or raising your body temperature:

- ***Exercise*** – raising your body temperature through exercise will burn calories.

- ***Resistance training*** **–** increasing lean muscle helps burn calories because muscle is active. In fact, lean muscle burns about five times more calories than fat. Lose fat and gain lean muscle and you will burn more calories.

- ***Diet*** – eating foods that takes longer to digest raises your body temperature for a longer time and consequently you burn more calories. Choose whole grains and lots of fruits and vegetables. Eat complex carbohydrates like cereal as opposed to simple carbohydrates like candy bars.

The number of calories you burn on a daily basis is affected by how much that person moves (work and exercise), the amount of fat and muscle in their body, and the individuals basal metabolic rate (or BMR). BMR is a measure of the rate at which a person's body burns energy in the form of calories, while at rest. DMR or daily metabolic rate is the amount of calories burned per day including all activity. BMR is the relationship between weight and height and can be deceiving. For instance, two

people weighing two hundred pounds each can have vastly different BMR measurements if one is more muscular than the other. BMR, however, can give you an indication of your overall fitness level.

BMR can also determine a person's ability to gain weight should that individual's genetic makeup have them born with an abundance of fat cells. Because fat is passive it does not burn calories. A more muscular person will burn more calories even at rest because muscle is active and burns calories.

**Metabolism Problems**

In a broad sense, a metabolic disorder is any disease that is caused by an abnormal chemical reaction in the body's cells. Most of these disorders usually involve problems with either abnormal levels of enzymes or hormones or issues with malfunctioning enzymes or hormones. When the metabolism of body chemicals is not working normally, it can cause an increase of toxicity in the body or a decrease of essential substances required for normal body function. Both of these problems can lead to a variety of serious health concerns.

Some metabolic diseases are genetic. These conditions are called inborn errors of metabolism:

**Hyperthyroidism.** Hyperthyroidism happens when an overactive thyroid gland releases too much of the hormone thyroxine. This increases the person's basal metabolic rate (BMR) and causes symptoms such as weight loss, increased heart rate and blood pressure, poppy eyes, and a swelling in the neck resulting from an enlarged thyroid. This is called goiter. The disease may be controlled with medications or through surgery or radiation treatments.

**Hypothyroidism.** Hypothyroidism is caused by an absent or underactive thyroid gland. It is usually caused by a developmental problem or a disease of the thyroid. The thyroid releases too little of the hormone thyroxine causing a person's basal metabolic rate (BMR) to become very low. In infants and small children who are not treated immediately, this condition can result in problems with their growth or mental problems. Hypothyroidism slows body processes and causes fatigue, slow heart rate and excessive weight gain. Kids and teens with this condition can be treated with oral thyroid hormone and the critically low levels usually return to normal.

Many people blame their overweight condition on a metabolic problem. I have a slow metabolism and that causes me to gain weight. There are some people who do have medical conditions that make them prone to weight gain but studies have shown that less than one per cent of the population suffers from metabolic problems. The true underlying cause of overweight and obesity is:

***1) Poor Diet:*** We eat an excess of fried and processed foods, spend too much time ordering takeout, have an over abundance of salt in our diet and we rarely plan our meals, leading to fast foods.

***2) Under Activity:*** We have become a generation of computer games addicts, Internet surfing and home movies. We would rather drive to the store than walk and we spend a lot of time driving around looking for a closer parking spot.

***3) Genetics***, Our health problems get passed along and we feel helpless to do anything about them. We feel our destiny is pre-determined by what illnesses our parents had to deal with.

***4) Environmental***, We continue to look for quick fixes and are bombarded by infomercials that claim miracle cures for obesity or an easy way to drop those unwanted pounds by simply taking a pill that either speeds up metabolism or blocks the absorption of fat.

***5) Behavioral***(We tend to just go along with everyone else and adopt the attitude of "why not, everyone else is doing the same thing," or "I don't have the willpower to make the commitment to a life style change."

***6***) ***Social factors***. In many cases it is very difficult to eat healthy because it can be expensive. We are told to eat organically grown fruits and vegetables and purchase only grade A lean cuts of meat but it is so easy to reach for the tin soup and macaroni and cheese dinners, or the processed dinners.

All these factors play a role in determining not only a person's weight but also their health and wellness.

One myth states that metabolism slows down as you get older. This is not quite true. As we get older we become less active and we lose muscle mass. This leads to a corresponding increase in fat tissue. Because fat is passive, meaning it does not burn many calories, we gain weight as we age.

## Chapter II

## HOW YOUR BODY WORKS

In this chapter I will provide information on how the various parts of your body functions and provide tips on how to help keep them in tip top shape.

### YOUR HEART

The heart is one of the most important organs in your entire human body. It is really nothing more than a pump. This pump is composed of muscle which pumps blood throughout the body. It beats on average about seventy two times per minute. That's about one hundred thousand times a day. It pumps a total of 7,200 liters of blood over 19,000 km a day. That's enough to fill a sixty gallon gas tank one hundred and twenty times or the same distance as flying from St. John's to Vancouver and back. Not bad for a pump about the same size as your fist and weighing about ten ounces. The heart pumps the blood which carries all the vital materials which help our bodies function. It also helps remove waste products we don't need. Muscles need oxygen, glucose and amino acids as well as the proper ratio of sodium, calcium and potassium salts in order to contract. The glands need sufficient supplies of raw materials so they can manufacture their exact secretions. If the heart ever ceases to pump blood, the body would simply shut down and eventually die. Like the other muscles in our body, it contracts and expands. Unlike skeletal muscles, however, the heart works on the "All-or-Nothing Law". That is, each time the heart contracts it does so with all its force. In skeletal muscles, the principle of "gradation" is present. This means you can contract your bicep muscle (the one in your upper arm) to different degrees depending on how much force is required to lift something.

Here are the risk factors for heart disease:

1. Family history of Chronic Heart Disease.
2. High cholesterol or high blood pressure (risk increases after 45 for men and 55 for women).
3. Smoking.
4. An unhealthy unbalanced diet.
5. Lack of physical exercise.
6. Diabetes.
7. Being overweight or obese.
8. A large waist line.

Here are a number of tips for a healthy heart.

- Program yourself to get you moving. Instead of looking for the closest parking place, park at the far end of the lot and walk. Use the stairs.
- Exercise a minimum three times a week for thirty minutes each time.
- Monitor your blood pressure.
- Fight anger and hostility. Stressful people are four times more at risk of a heart attack.
- Maintain a healthy weight. This means having your BMI under twenty five. You will learn about this in the chapter on Exercise.

- Reduce your salt intake.
- Check your family history.
- Make sure you can recognise the early signs of coronary heart disease. Tightness or discomfort in the chest, neck, arm or stomach when you exert yourself but goes away with rest may be the first sign of angina, which can lead to a heart attack if left untreated.

**BONES, JOINTS & MUSCLE**

There are over 630 muscles and 206 bones in the human body. Our bones protect our vital organs and help us move.

Ligaments - Ligaments are the fibrous, slightly stretchy connective tissues that hold one bone to another forming a joint. Ligaments control the joints range of motion, preventing your elbow from hyper extending or bending backwards. Ligaments also stabilize the joint so that the bones move in a proper alignment. Stretching prevents injury because it increases the length and flexibility of the muscles. Muscles naturally shorten after exercise and stretching, allowing the joint to move farther than before. The ligaments themselves are not stretched. They merely provide the support for the joint. This stretching of the muscles is what allows gymnasts to do incredible manoeuvres either on a piece of apparatus or on the floor.

Cartilage – There are no nerves or blood vessels in cartilage so when they are damaged as when one is torn, it does not heal quickly. Cartilage does a number of things:

1. It acts as a lining on the surface of joints. This helps the bones to slide over one another with little friction and prevents damage.
2. It also acts as a shock absorber.

It is also found in other parts of the body like in the ribs, where it joins them to the breastbone. It is also found in the tip of the nose, in the external ear, in the walls of the windpipe and the voice box where it provides support and shape. In an embryo, the skeleton is made of cartilage which is eventually replaced by bone.

Tendons - A tendon is a tough yet flexible band of fibrous tissue and it connects the muscle to the bones. The skeletal muscles in your body are responsible for moving your bones, thus allowing you to walk, jump, and move in various ways. When a muscle contracts, it pulls on a bone causing it to move. The tendon is the structure that transmits the force of the muscle contraction to the bone.

Bursitis – Bursae are fluid-filled sacs that cushion areas of friction between tendon and bone or skin. Like bubble wrap, these sacs reduce the friction between joints, such as in the shoulder, knee, elbow and hip. The number varies, but most people have about one hundred and sixty bursae throughout the body. Bursae are lined with a special type of cell called synovial cells, which secrete a fluid rich in collagen and proteins. This synovial fluid acts as a lubricant for our joints. When this fluid becomes infected by some kind of bacteria or irritated due to too much exercise, the result is bursitis.

Tendonitis - The most common cause of tendonitis is overuse. In most cases, individuals start an exercise program, or increase their level of an existing exercise program, and begin to experience symptoms of tendonitis. This extra demand causes the tendon to become inflamed. Another common cause of tendonitis is age-related. As people age, the tendons loose their elasticity and do not glide as smoothly as before. The elderly are more prone to tendonitis. The cause could be due to a poorer blood supply or changes to the smoothness of the tendon itself causing a rougher glide.

Shin Splints – This occurs when trauma occurs to the front lower leg muscles and tendons causing them to tear. They occur most commonly in runners or aggressive walkers due to an abnormally long stride and resultant heavier impact to the ground. The medical term is Medial Tibial stress syndrome and is commonly seen in individuals who suddenly increase their duration or intensity of training.

Here are some helpful hints:

- Keep your weight under control.
- Don't start too many physically demanding jobs at once. Pace yourself.
- See what movements make your condition worse and avoid them.
- Wear sneakers that are well cushioned.
- Use ergonomic chairs and keep your computer at eye level.

**MUSCLES**

Did you know you have more than 600 muscles in your body? They help you do just about everything. You control some of your muscles. There are others, like your heart, that do their jobs automatically. Muscles are all made of the same material. It is a type of elastic tissue like a rubber band. They are actually strands of protein (actin and myosin) that grab on to each other and pull. This shortens the muscle and causes muscle contraction. You have three different types of muscles in your body: smooth muscle, skeletal and cardiac muscle. Muscle fiber types are also broken down into two main types: **slow twitch (Type I)** muscle fibers and **fast twitch (Type II)** muscle fibers.

The slow twitch fibers are more efficient at using oxygen to generate more fuel for extended periods of time. They contract more slowly than fast twitch fibers and can go for a long time before fatigue sets in. They are great at helping athletes run marathons or cyclists go for hours.

Fast twitch fibers are much better at generating short bursts of strength or speed than slow muscles. However, they fatigue more quickly. Having more fast twitch fibers can be great for a sprinter because they will need to generate a lot of force very quickly, particularly at the start of a race, and then continue to contract throughout the race. The faster a sprinter can generate a cycle of leg movement, the faster he will run.

These distinctions seem to influence how muscles respond to training and physical activity. On average, we have about fifty per cent slow twitch and fifty per cent fast twitch fibers. Our muscle fiber type can influence what sports we would be good at. Olympic athletes tend to fall into sports that match their genetic makeup. Olympic sprinters have been shown to possess about eighty percent fast twitch fibers, while those who excel in marathons tend to have eighty percent slow twitch fibers.

Here are some helpful hints:

- Strengthening your core will help keep your spine properly aligned and can reduce back pain. Regularly do stomach and back exercises.

- Strength training will keep muscles fit and aid in better posture.

- Make sure you warm up. A cold muscle has a greater tendency to strain.

- Stretch after exercise NOT before.

Muscle strains are treated as follows:

- **R**est: Take a break. You may even take the strain off your injured leg by using crutches.
- **I**ce: Not heat. Use a towel. Don't put ice directly on your skin. Twenty minutes on and twenty minutes off for several times a day.
- **C**ompression: An elastic bandage or compression type will prevent too much swelling. Be careful not to pull it too tight.
- **E**levation: Have your injured part higher than your heart. This minimizes swelling. Support the injured area with a pillow.

Wait a minimum of seventy two hours before getting any massage therapy. The muscle also needs to be at full strength and pain-free before you return to any activity. This will help prevent additional injury. Listen to your body. It will tell you when to return.

## Preventing Muscle Strains

Several factors can predispose you to muscle strains. Here are some things to be mindful of:

- **Muscle tightness.** Tight muscles are more susceptible to strains because they won't contract well. Make sure you warm up before exercise. When stretching, DO NOT push beyond a normal stretch. Stay where you start to feel the stretch, & take three deep slow breaths and hold the stretch. Relax and repeat a minimum of five minutes.

- **Muscle imbalance.** Each muscle has a counter part. When you are using your biceps, your triceps are released. Make sure you exercise both pairs of

muscles to maintain balance. Many people work their upper front legs (quadriceps) and neglect their back upper legs (hamstrings). Not only does this cause weak hamstrings but it can also cause problems for the weaker muscle.

- **Poor conditioning.** Weak muscles that are not used to exercise find it more difficult to cope with any kind of strain particularly exercise stress. Start gradually and then build gradually.

- **Muscle fatigue.** Fatigue reduces the energy-absorbing capabilities of muscle, making them more susceptible to injury. Don't overdo it.

**Smooth muscle** is found in your digestive system, blood vessels, bladder, airways and, in the female uterus. It has the ability to stretch and maintain its tension for a long period. It contracts involuntarily because it is controlled by your nervous system. For example, your stomach and intestines do their muscular thing all day long, and you usually will never think about what is going on in there.

**Skeletal muscle** is the type of muscle that we can see and feel. When a body builder works out to become bigger, he uses skeletal muscle. Skeletal muscles attach to our bones and they come in pairs. One muscle moves a bone in one direction and another moves it the other way. For example, your biceps (located in the front of your upper arm) are used to bend your arm and your triceps (located in the back of your upper arm) straighten your arm. These muscles are called voluntary because you make them move.

**Cardiac muscle** is found only in your heart and its big features are endurance and consistency. It can stretch in a limited way, like smooth muscle, and contract with the force of a skeletal muscle.

You will learn more about muscle and what you can do to strengthen it in the chapter on Weight Training.

**YOUR LUNGS**

The human lungs are the structures of respiration and we have two of them. The left is divided into two lobes and the right into three lobes. They contain approximately 2,400 kilometers of airways and 300 to 500 million alveoli with a total surface area of about 75 square meters or roughly the same area as a tennis court. You breath about thirteen kilograms of air a day. That's about sixteen thousand liters. This air is essential for life. Your body cannot live for more than five minutes without it. Furthermore, if all of the capillaries that surround the alveoli were unwound and laid end to end, they would extend for about 990 kilometers almost as far as St. John's to Port aux Basques. Typically a resting adult takes ten to twenty breaths per minute with about one third of that time breathing in.

Your respiratory system brings air into your body. The oxygen in the air travels from your lungs through the bloodstream and then to all the cells in your body. Your cells use this oxygen as fuel, and give off carbon dioxide as waste. This waste gas is then

carried back through the bloodstream to your lungs to be exhaled. Your respiratory system accomplishes this vital process (gas exchange) automatically.

In addition to this gas exchange, your respiratory system does other jobs as well:

- Brings all air to the proper body temperature (as long as you breath through your nose).
- Moisturizes the air.
- Protects you from harmful substances by coughing, sneezing and filtering them.

In addition to breathing, your respiratory system also enables you to talk, whistle, play the flute, sing, laugh, blow up balloons and use a straw just to name a few. If you would like to continue these activities, you need to guard your respiratory system. You must protect this vital organ from things like smoking and dangerous airborne materials. Your lungs are very resilient and while aging has a small effect, the biggest problem is how we treat our lungs. This will determine their fate. You are the only one ultimately responsible to take good care of your lungs. There are three essential things with regard to your lungs:

- *Control your environment*. Avoid infections and dusty locations. Maintain air conditioners, heat exchangers and furnaces. Breathe through your nose so it can filter dust materials. Have plants around. They supply us with oxygen. Many people do not breath properly. Using your diaphrapm to help pull in air is best. This means deep breathing. Getting vital oxygen deep into your lungs is very beneficial and healthy.
- *Be careful of technology*. Avoid pesticides and other pollutants. Live a clean free life, healthy for your lungs. Regularly clean your propane stove or fireplace. Keep your vehicle well tuned.
- *Monitor your health*. Get regular check ups. Be aware of coughs, shortness of breath, congestion and difficulty breathing.

**DIGESTIVE SYSTEM**

You may be able to eat a chicken sandwich in a few minutes but it takes your body a lot longer to digest it. The complicated process of digestion takes on average about eighteen hours from the time you ate that sandwich to the time it gets eliminated. The food journey is quite intricate.

*Step 1 – Injestion*

Once you have chewed your food, it gets mixed with saliva and passes into your oesophagus. The enzymes contained in your saliva have already started the digestive process and it is at this point that the food becomes a soft paste. It gets moved towards the stomach by a series of muscle contractions, known as peristalsis.

*Step 2 – Digestion*

Your stomach is a bag. Muscles at the top and bottom act as one way valves. The stomach wall contains specialized muscle fibres that churn the food. Glands in your

stomach then secrete acidic gastric juice which turn your food into a liquid called chyme. Your stomach secretes as much as three litres of gastric juices a day. Excess stomach acid can give rise to common problems such as indigestion or heartburn.

*Step 3 – Absorption*

Once this liquefied food leaves the stomach it travels to the small intestine. Your small intestine is a tube of muscle six metres long and it absorbs water, fat and protein from the liquid. Enzymes in the gut wall, juice from the pancreas and bile from the liver aid in this process. Then this mixture moves into the large intestine. It is smaller in length (1.5 meters) than the small imtestine but is much wider. Here, in the large intestine, additional water, salts and minerals are removed from your food.

*Step 4 – Elimination*

The final stage of the journey is towards the rectum, where waste matter is formed into stool and expelled via the anus.

Your digestive system is a highly tuned system to ensure the food you have eaten travels at the right pace and in the right direction for proper digestion to occur. It is not surprising that this complicated process can sometimes go wrong.

Here are some helpful hints.

*Slow Down*

By wolfing down your meals too quickly you take in excess air, digest poorly, eat too much and miss out on the pleasure of eating. Chewing thoroughly helps digestion because your food is broken down better. The chewing allows amylase (a digestive enzyme in saliva) to get mixed in with each mouthful and this helps in digestion. A main course should take twenty minutes to eat. If you eat too quickly your brain won't know you've eaten a lot until it is too late. The stomach takes fifteen to twenty minutes to tell the brain it's full, and by then you have eaten too much to digest.

*Eat Less & More Often*

Portion size is the answer. Choose healthy snacks like fruit, vegetables and cereal bars to keep you going between meals. Eating several light meals during the day are much easier on your digestive system than one heavy meal. Eating more fibre is a great way to keep your digestive system healthy. Many people eat only twelve grams of fiber a day. This is much lower than the recommended twenty to twenty five grams. Fiber prevents constipation and keeps you regular. It removes cholesterol and is the healthy choice.

*Plan Ahead*

We're all lead busy lives and we rarely have time to eat properly. That's causes the following problems:

- You wind up eating junk food as opposed to a healthy snack.
- Being too busy brings on stress and stress can create havoc with your digestive system because your brain is focused on other things.

Make more time for meals and especially don't skip any, especially breakfast. Choose well balanced meals and snacks. A healthy diet will help you deal more effectively with stress. Eat plenty of wholegrains and vegetables.

*Watch bedtime*

Don't eat a heavy, rich meal within three hours of going to bed. When you go to sleep, your digestive system slows down as well, so eating a big meal before bed means your digestive system is going to work right through the night. Here are the problems:

- Digestion requires energy which winds up keeping you more alert than you want. You struggle to get to sleep and wake up tired.

- Eating before bedtime causes your blood sugar to rise and that makes you more alert. If you want a snack at bedtime eat some carrot sticks or celery with some nuts and seeds. This keeps blood sugar levels low and promotes a more restful sleep. Stay away from certain fruits as they are high in sugar.

**KIDNEYS**

Your kidneys are bean-shaped organs, each about the size of your fist. They are located near the middle of your back, just below the rib cage. The kidneys are sophisticated processors. Every single day your kidneys filter about two hundred litres of blood and remove about two litres of waste. This filtering happens about four hundred times a day. The waste becomes urine, which flows to your bladder through little tubes called ureters. Your bladder stores urine until you need to go to the bathroom. The wastes in your blood come from the food you eat and from the normal breakdown of body tissues. Your body uses the food for energy and repair. After your body has removed the nutrients, waste is then sent to the blood. Kidneys need to filter this waste or your body can become toxic. The filtering occurs in tiny units within your kidneys called nephrons. There are about a million nephrons in each kidney. In the nephron, a glomerulus, which is a tiny blood vessel, connects with a small tube that collects the urine called a tubule. A chemical exchange takes place, as waste materials and water leave your blood and enter your urinary system. Your kidneys measure out chemicals like sodium, phosphorus, and potassium and release them back to the blood to return to the body. In this way, your kidneys regulate the body's level of these substances. The right balance is necessary for life and harmful if in excess.

Although we tend to take our kidneys for granted, they deserve more consideration. We wait for a problem before we give them any attention. When you have a problem you'll know. We've all heard stories about excruciating kidney stones or a painful kidney infection.

To keep your kidneys functioning as they should, here are some guidelines to follow:

1. *Drink plenty of fluids*. Drinking eight to ten glasses promotes better health and here is why. Imagine a river during a drought. The water level is very low exposing the muddy bottom. Tree branches, stones, and sometimes fish can be seen. This debris cannot move due to low water levels. This is what happens to your bloodstream and kidneys without sufficient amounts of water. There is not enough fluid to remove toxins because the pressure is just not there.

2. *Avoid caffeine*. A couple of cups of tea or coffee are fine but don't get overdo on it. Caffeine dehydrates your body and forces your kidneys to work harder. In fact, for every cup of coffee you have you need to add a glass of water to your daily intake. Too much caffeine isn't good for you on many levels and kidney stress is a major problem.

3. *Eat cleansing foods*. Experts believe that cranberry juice helps to reduce bacteria in the urinary tract by preventing it from sticking to tissues. This can cause a build up and a resultant infection. A small glass of fresh cranberry juice a day will promote better kidney health.

**ENDOCRINE SYSTEM**

Hormones are your body's chemical messengers. They travel in your bloodstream to tissues or organs providing vital information. They work slowly, over time, and affect many different processes, including:

- Growth and development
- Metabolism - how your body gets energy from the foods you eat
- Sexual function, reproduction and mood

Endocrine glands, which are a special groups of cells, make the various hormones secreted by our body. The typical endocrine organ is a ductless gland that secretes chemical mediators directly into adjacent blood vessels which circulate throughout the body via the bloodstream. The major endocrine glands are the pituitary, pineal, thyroid, adrenal, pineal, hypothalamus glands and pancreas. The testes and ovaries are also part of this system.

Here are their functions:

| | |
|---|---|
| Pituitary | It is the master endocrine gland. It is small, bean-shaped and reddish-grey located in the saddle-shaped depression in the floor of the skull and attached to the base of the brain by a stalk. It is near the hypothalamus. The hormones secreted by the pituitary stimulate and control the functioning of almost all the other endocrine glands in the body. Pituitary hormones also promote growth and control the water balance of the body. |
| | |

| | |
|---|---|
| Thyroid | It produces hormones called T3, T4 and calcitonin. These hormones enter the body cells and control our body's cellular metabolism. The metabolism that happens in each and every cell is controlled by the thyroid hormones T3 and T4. These hormones stimulate the metabolism in the cells, where oxygen and nutrients are converted to energy. When cells work better, organ function is improved. So, it is also partly responsible for the healthy functioning of organs, like the heart and liver. Thyroid has an important role in regulating body temperature too. The hormone calcitonin also regulates the levels of calcium throughout the body. |
| Thymus | The role of the thymus gland is to process lymphocytes. They stop at lymph nodes to ensure everything is working properly. If there is a problem, they work to repair any issue. These T-lymphocytes, or T-cells, play a big part in cellular immunity by blocking the invasion of harmful foreign agents, viruses, and bacteria. They also aid in preventing the abnormal cell growth that occurs with cancer. |
| Adrenal | The adrenal glands are tiny organs that rest on top of each kidney. They produce numerous hormones that impact our development and growth, affect our ability to deal with stress, and help to regulate kidney function. They produce the hormones norepinephrine and epinephrine. These hormones regulate the "fight or flight" response in the body during times of stress. They also produce several hormones that affect blood pressure and blood sugar levels, growth, as well as some sexual characteristics. |
| Pineal | The pineal gland (also called the "third eye") is a small pine cone shaped gland in the brain. It produces melatonin, a hormone that affects the wake/sleep patterns as well as our response to the various seasons. |
| Pancreas | The pancreas is a gland organ in the digestive and endocrine system. It produces insulin, glucagon, and somatostatin. There is also an exocrine gland which secretes a pancreatic juice containing digestive enzymes that pass to the small intestine. These enzymes help to further breakdown the carbohydrates, protein, and fat that are located in the stomach. |
| Hypothalamus | The hypothalamus is part of the brain that lies just above the pituitary gland. It controls the release of hormones from the pituitary gland through its own hormone release mechanism. |
| Testes | Males have twin reproductive glands called testes that produce the hormone testosterone. Testosterone helps a boy develop and then maintain his sexual traits. It is responsible for facial hair, deepening of the voice, increase in muscle mass and strength, as well as an increase in height. Throughout adult life, testosterone helps maintain sex drive, sperm production, male hair patterns, |

| | |
|---|---|
| | muscle and bone mass. |
| Ovaries | The two most important hormones for a woman are estrogen and progesterone. These hormones are responsible for developing and maintaining female sexual traits, as well as maintaining a pregnancy and controlling the menstrual cycle. The ovaries also produce inhibin which controls egg development.<br><br>The most common change in the ovarian hormones is caused by the start of menopause which is part of the normal aging process. It also can occur when ovaries are surgically removed. Loss of ovarian function means loss of estrogen, which can lead to symptoms of menopause including hot flashes, thinning vaginal tissue, lack of menstrual periods, mood changes and bone loss, or osteoporosis. |

Some endocrine disorders are related to diet. Obesity can lead to Type II diabetes. A lack of iodine in the diet can lead to goiter or an enlarged thyroid. Eating a nutritious, healthy, balanced diet and keeping the body at a healthy weight will lower the risk of developing a number of endocrine disorders.

Stress taxes all body systems. Any condition that poses a threat to the body's normal rythmn is a form of stress. Conditions that cause stress can be physical, emotional, or environmental. The endocrine system has a number of functions and one main one is to secrete hormones that help the body respond to stressful situations. However, that function is only meant to be short-term. When stress lasts longer than a few hours, much more energy demands are put on the body. More hormones are then secreted to meet those demands and the body pays a high price. They tend to weaken the body's defenses, leaving the body open to infection.

Stress over an extended period of time can result in issues like high blood pressure and digestive problems to name just a few. Long term stress can lead to organ damage and failure. Combining exercise with the right amount of sleep coupled with relaxation and positive thinking will help reduce stress and keep your hormone levels balanced.

**The Brain**

The human brain is a complex organ that allows us to think, move, feel, see, hear, taste, and smell. It controls our body, receives information, analyzes information, and stores information (our memories).

The brain produces electrical signals which, together with chemical reactions, let the parts of the body communicate. Nerves send these signals throughout the body.

The average human brain weighs about 3 pounds. At birth, the human brain weighs less than a pound. As a child grows, the number of cell remains relatively stable, but the cells grow in size and the number of connections increases. The human brain reaches its full size at about 6 years of age.

The brain consists of forty per cent gray matter and sixty per cent white matter. The brain has three main parts: the cerebrum, the cerebellum, and the brain stem (medulla).

Although the brain is only 2% of the body's weight, it uses 20% of the oxygen supply and gets 20% of the blood flow. Blood vessels (arteries, capillaries, and veins) supply the brain with oxygen and nourishment and take away wastes. If brain cells do not get oxygen for 3 to 5 minutes, they begin to die.

Caring for your brain is so important. Here are a number of activities you can do that will stimulate your thinking. Don't limit yourself to these, create your own.

**Caring For Your Brain**

Keeping your mind sharp is key to everything else. Whatever we do, feel or think it all starts with our mind.

1. You have to believe that you can improve and continue to improve. It is the mind that dictates our body. Therefore, if we kept on thinking we will improve; our whole body condition as well as our feelings will get better.
2. Have an interesting hobby or release. Boredom creates a very negative mindset and a resultant negative view of your current situation. Play strategy games and puzzle games as these will not only help enhance mind alertness but it will also increase your IQ.
3. Make sure to rest your mind by getting good nights sleep. I start thinking of my dreams and fantasies until I fall sleep.
4. Watch documentaries or informative programs that stimulate your thought process. Easy listening music can be a great stress buster. Remember, what is perceived by our eyes and ears will directly go to our brain.
5. Do some stress-free exercises like going to spa, gym or taking a nice quiet walk. Think about your goals and accomplishments.
6. Search for mind puzzles, problems and brain teasers on the Internet. They can be a great source to increase your brain capacity.
7. Join a book club and participate in the discussion as you dissect the inner meanings of the author.

## Chapter III

## NUTRITION

There are three main food groups and all food falls into one of these groups. Food also contains nutrients from multiple groups.

It is important to have a diet that contains the proper portions of these three groups. The Canada Food Guide is an excellent resource which provides the daily recommended amounts of fruits and vegetables as well as the proper amounts of protein, fat and carbohydrates.

| Food Group | Function | % Diet |
|---|---|---|
| Carbohydrates<br>Sugar, starch, fibre | Energy source, breaks down fatty acids, regulates blood glucose, | 50-60 |
| Protein<br>Fish, chicken, beef | Cell repair and cell formation, germ defence | 15-20 |
| Fat<br>Butter, Cheese, oils | Metabolism, digestion, vitamin function, brain structure. | 25-30 |

As you can see it is recommended that fifty percent of our diet come from carbohydrates. This means we need to move more or the excess calories gets stored as fat. Many people have a diet rich in fat and represents around forty percent of their diet. Some people use a carbohydrate free diet to lose weight.
Based on a 2000 calorie/day diet, here are the recommended amounts to consume on a daily basis. Please consult your physician before making any changes to your diet and supplement plan. (mg = milligrams, g = grams)

| **Nutrient** | **Daily Values** |
|---|---|
| Total Fat | 65g |
| Saturated fat | 20g |
| Trans fat | <2g |
| Cholesterol | 300mg |
| Carbohydrate | 300g |
| Protein | 45 – 55 g |
| Sugar | 10% of calories |
| Fiber | 25-35g |

| | |
|---|---|
| Sodium | 1500-2300mg |
| Vitamin C | 1200mg |
| Iron | Age 19 – 50 – 18mg<br>50+ - 8mg |
| Potassium | 4700mg |

## Cholesterol

Cholesterol is a soft, waxy substance found among the lipids (fats) in the bloodstream and in all your body's cells. It's an important part of a healthy body because it's used to form cell membranes, some hormones and is needed for other functions. But a high level of cholesterol in the blood is a major risk for coronary heart disease and this can lead to a heart attack.

Cholesterol and other fats can't dissolve in the blood. They are transported to and from the cells by carriers called lipoproteins. There are several kinds, but the ones to focus on are low-density lipoprotein (LDL) and high-density lipoprotein (HDL).

“Good cholesterol”, High-density lipoprotein (HDL), takes cholesterol away from your arteries to the liver where it is eliminated. This means that a high level of good (HDL) cholesterol is important because it helps remove fat.

“Bad cholesterol”, Low-density lipoprotein (LDL) takes cholesterol from your liver and carries it to the body tissues. If there’s a high level of bad (LDL) cholesterol in the blood it can build up in the walls of your blood vessels, causing them to narrow and increasing your risk of Coronary Heart Disease.

Most cholesterol is made in the liver (about 70-75%) and a small amount comes from the diet. Too much saturated fat and trans fat (bad fat) can increase blood cholesterol. Replacing saturated fat and trans fat with unsaturated fat (good fats) can help keep cholesterol levels low.

Cholesterol becomes a problem when the level in your blood is so high (more than your body needs) that those fatty deposits build up in your arteries and can affect your heart by causing it to work harder that normal. This is due to the narrowing of your blood vessels and can lead to heart attack or stroke.

To help keep your heart healthy it’s important that your bad (LDL) cholesterol remains low and your good (HDL) cholesterol stays high.

**What are triglycerides?**

Triglycerides are the chemical form in which most fat exists in food as well as in the body.

Triglycerides in blood plasma are derived from fats eaten in foods. They are also made in the body from other energy sources like carbohydrates. Calories ingested in a meal and not used immediately by the body are converted to triglycerides and stored in fat cells. Hormones regulate the release of these triglycerides from fat tissue so they meet the body's normal needs for energy between meals and particularly during exercise.

Chapter three will provide information on the proper daily amounts your body needs for a healthy heart.

Below is a chart showing the acceptable levels of fat in your body. The mmol/l is the Canadian measure while the mg/dl is the American measure.

| TYPE | Normal in mmol/l | Normal In mg/dl |
|---|---|---|
| LDL (bad ) | 2.6 – 3.3 | 100 - 129 |
| HDL (good ) | > 1.5 | > 60 |
| Total Cholesterol | < 5.2 | 200 |
| Ratio (Total/HDL) | < 5.0 | 190 |
| Triglycerides | < 1.7 | < 150 |

Tips to lower Cholesterol:

- Boost your intake of soluble fibre by eating oats, plenty of fruit and vegetables and choose wholegrain bread, cereals and rice.
- Trim fat and skin off red meat and chicken.
- Cook and bake with virgin olive and linseed oils.
- Steam, boil, grill or poach your food.
- Avoid processed foods.
- Add ground flaxseed (linseed) to foods like cereal and salad.
- Choose low-fat yoghurts, cheeses, creams and skimmed milk.
- Choose whole grains over refined ones and eat a variety of fruit and vegetables.
- Eat a small palmful of unsalted almonds, walnuts or hazelnuts or sprinkle some onto breakfast cereals, salads and desserts. Watch the calories as they are very high.

- Reduce your intake of cholesterol rich foods such as some shellfish (e.g. prawns and squid).

## FATS

### Monounsaturated Fats

Monounsaturated fats are good for the heart as they can help to lower LDL levels in the blood and not affect HDL levels. They may also reduce inflammation of the artery walls as well as reduce the risk of blood clotting. Remember all fats are high in calories, so don't eat in excess. These fats are contained in: olive oil, rapeseed oil, avocados, almonds, walnuts, hazelnuts, olives, seeds and peanut oil

### Polyunsaturated fats

Polyunsaturated fats are slightly less healthy for the heart than monounsaturated fats as they lower LDL cholesterol but also lower HDL cholesterol. However eating some polyunsaturated fat will ensure you are getting the Essential Fatty Acids omega 3 and omega 6 that your body needs.

**Omega 6**, the most common polyunsaturated fat, is present in many foods (meat, dairy products, fish, plants, and at very high levels in sunflower, sesame and corn oils, soybeans and many nuts and seeds.

**Omega 3** polyunsaturated fats are very good for the heart and arteries and may help reduce heart disease by:

- lowering blood cholesterol
- decreasing the risk of blood clots
- slightly lowering blood pressure

Good sources of omega 3 are: mackerel, sardines, herring, fresh and tinned salmon, trout, fresh tuna, fish oil, flaxseed, leafy green vegetables, tofu and walnuts

### Saturated Fat

The food label shows both total fat and then saturated fat. Saturated fat is considered the bad fat. It is generally solid at room temperature and mainly comes from animal sources. Eating too much saturated fat is bad for the heart and arteries as it increases LDL 'bad' cholesterol levels and blood clotting and increases your risk of heart disease. Reduce saturated fat consumption. Your heart will be very grateful.

### Trans Fats

Trans fats, also known as hydrogenated fats, are produced during 'hydrogenation', a food manufacturing process where oils are modified at high temperatures to change them from a liquid state to a solid. Trans fats are trouble for your arteries because

their effects in the body are worse than saturated fats. Trans fats raise LDL 'bad' cholesterol, lower HDL 'good' cholesterol levels, increase blood lipid levels and abdominal fat.

**PROTEIN**

Many foods contain protein, but the best sources are beef, poultry, fish, eggs, dairy products, nuts, seeds, and legumes like black beans and lentils. Protein builds up, maintains, and replaces the tissues in your body. Your muscles, organs, and immune system are composed mostly of protein. Your body uses the protein you eat to make lots of specialized protein molecules that have specific jobs. For instance, your body uses protein to make hemoglobin, the part of red blood cells that carries oxygen to every part of your body. Other proteins are used to build cardiac muscle. In fact, whether you're running or just hanging around, protein is doing its work like moving your legs and lungs and also protecting you from disease.

**Sodium**

SODIUM comes from processed foods and is used to maintain water balance. Too much can lead to hypertension, edema (swelling) and osteoporosis. Healthy adults should eat less than twenty three hundred milligrams of sodium a day. This translates to about one teaspoon.

**Blood Pressure**

Blood pressure is a measure of the force that blood exerts against the walls of your blood vessels. The top number (systolic) represents the pressure when your heart contracts and pushes blood out and the bottom number (diastolic) is the lowest pressure when the heart relaxes between beats.

Blood pressure that is consistently more than 140/90 mm Hg is considered high, but if you have diabetes, 130/80 mm Hg is high. Normal blood pressure is 120/80 mm Hg. howerer an ideal blood pressure is 115/75.

High blood pressure – also known as hypertension –affects one in five Canadians. It is the number one risk factor for stroke and a major risk factor for heart disease, so it must be controlled. High blood pressure is often called a "silent killer" because it has no warning signs or symptoms. You can't see it. You can't feel it. But the good news is that you can control it.

There are many causes of high blood pressure but they all lead to two main problems; 1) when your blood vessels narrow due to cholesterol deposits the pressure will naturally increase, 2) when we consume too much salt our bodies retain fluid to compensate and when there is more fluid in the same size blood vessel, the pressure increases.

Consistently high blood pressure can damage blood vessel walls. It is like glass running through your blood vessels. This tears the vessel wall resulting in scarring.

Cholesterol fills in these tears and results in a narrowing of the opening. This build-up can narrow and eventually block arteries. It also strains the heart and eventually weakens it. Very high blood pressure can cause blood vessels in the brain to burst resulting in a stroke.

**Here are some tips to get your blood pressure in check:**

1. Have your blood pressure checked regularly. You never know you have it until it is too late.
2. If you have high-normal blood pressure, Canadian guidelines recommend that you have your blood pressure checked at least once a year. High normal ranges between 130/85 mm Hg and 139/89 mm Hg.
3. Take your medication as directed by your doctor.
4. Eat a balanced diet, reduce your salt and alcohol intake, be physically active and smoke-free to help lower your blood pressure.
5. Achieve and maintain a healthy weight. Even a modest reduction in weight, as little as ten percent can significantly lower your risk of having a stroke or heart attack.
6. Set aside some time every day to relax. Stress can cause blood pressure to rise in the short-term.
7. Limit your alcohol intake to one or two drinks per day to a weekly maximum of nine for women and fourteen for men. If your blood pressure is high, look at measures to reduce alcohol consumption.
8. Talk to your doctor about home blood pressure monitoring. You can purchase a unit at a health care store for around $80.00.

**POTASSIUM**

Potassium is a mineral that helps the kidneys function normally. It also plays a key role in cardiac, skeletal, and smooth muscle contraction, making it an important nutrient for normal heart, digestive, and muscular function.

**Water Intake**

About 50-70 percent of the human body is composed of water. Our brain is about 75%. The exact amount of bodily water varies according to age and the proportion of muscle-to-fat (muscle contains more water than fat.) Although water contains no calories and may have no nutrients, it is essential for life. We can survive for weeks without food, but only a matter of days without water. Because we do not store excess water, we must ensure that our daily diet contains a sufficient supply to maintain adequate health. It's extremely difficult to take in too much water. If we drink too much, our body simply adjusts by increasing the amount of liquid we urinate. However, if our water level inside our body falls too low, we experience several symptoms that warn us we may be dehydrating. The principal symptom is thirst, a reaction influenced by a group of nerve cells located in the hypothalamus, located at the base of the brain.

There have been varying opinions on the amount of water we require on a daily basis. Some experts say to drink between eight to ten eight ounce glasses a day. Other reports state that to calculate your daily water requirement, divide your body weight in half and then divide that number by eight to determine your daily amount. In other words a two hundred pound man would require 100 divided by 8. This would result in twelve, eight ounce glasses a day. So the heavier you are the more water you require.

Also keep in mind that fresh fruits and vegetables contain water so it is not necessary to force feed yourself water. A good indication of your body water is to take notice of the color of your urine. If it is dark yellow, you may want to consider filling up on water.

**Carbohydrates**

Many people are confused about the differences between simple and complex carbohydrates and many popular diet books seem to only make it more confusing.

Carbohydrates are one of three macronutrients in our diets that provide calories. The other two are protein and fat. Carbohydrates provide most of the energy needed in our daily lives, both for normal body functions such as heartbeat, breathing and digestion and for exercise such as running, cycling and walking.

Carbohydrates are considered simple or complex based upon their chemical structure and both types contain four calories per gram. Both are also digested and changed into a blood sugar called glucose. This is then used to fuel our bodies for work or exercise.

In the past few years, simple carbohydrates have become known as the 'bad' carbs, while complex carbohydrates seem to be designated as the 'good' ones. Although this is based on more hype than science, here are the reasons why:

- **Simple carbohydrates** are digested quickly. Many simple carbohydrates contain refined sugars and few essential vitamins and minerals. Examples are fruits, juice, milk, yoghurt, honey and sugar.

- **Complex carbohydrates** take longer to digest and are usually packed with fibre, vitamins and minerals. Examples are vegetables, breads, cereals, legumes and pasta.

Most experts recommend that 50 to 60 per cent of the total calories in our diet come from carbohydrates. The bulk of the carbs we consume should be complex and most of the simple ones should come from fruits and milk or yoghurt, which also contain vitamins and minerals.

Avoid getting the bulk of your carbs from refined foods high in sugar, since they are usually low in nutrients that maintain health and energy levels.

**FIBER**

Most nutrition experts recommend that most adults consume 25-35 grams of dietary fiber daily. Some nutrition experts recommend even more fiber: 35-45 grams daily. Fiber is necessary to stimulate the wavelike contractions that move food through the intestine. High fiber foods are essential to your body's health because they assist in expanding the inside walls of the colon to ease the passage of waste. As fiber passes through the intestine undigested, it absorbs large amounts of water, to form softer and bulkier stools. This is why it is very important to drink plenty of water when consuming a fiber-rich diet. This prevents constipation and straining (helping to avoid or prevent hemorrhoids). Less pressure on the colon is beneficial in treating irritable bowel syndrome, diverticulosis and other digestive problems.

Fibre is divided into two types:

- **Insoluble:** you can't digest insoluble fibre but it helps move food through your digestive system which means less constipation.
- **Sources:** wholegrain bread and cereals, fruit and vegetables.
- **Soluble:** soluble fibre is digested and can help to lower blood cholesterol and control blood glucose levels.
- **Sources:** oats, beans and lentils

Below is a sample daily eating plan. You can substitute where you see fit:

| | | |
|---|---|---|
| **Breakfast** | Fiber One Cereal Juice | We choose Fiber One because it has 52% of the daily recommended amount of fiber. |
| **Snack** | Low Fat Yogurt or Fruit | Any kind of low fat product including fruit will work for you. |
| **Lunch** | Chicken Soup and Sandwich | A light lunch will keep you alert throughout the day. Stay away from fast foods. |
| **Snack** | Fiber One Cereal Bar | Choose a complex carbohydrate to help boost your energy and takes longer to digest so you stay full longer. |
| **Dinner** | Cod, Salmon or Chicken | Stay away from red meat as much as possible. |
| **Snack** | Fruit, Almonds and Juice | Make sure a nighttime snack is light in sugar. |

We also invested in a juicer (Champion brand) and now drink fresh vegetable and fruit juice four to five times a week. If you decide to juice make sure you do more vegetable juice than fruit juice because of the high concentration of sugar in fruit juice.

We have 8 ounces of fruit juice and 16 ounces of vegetable juice four to five times a week. The table below shows what we include:

| | |
|---|---|
| **Fruit** | Pineapple, apples, orange, pear, cantelope, kiwi, frozen cranberries, strawberries, blueberries, mangos. |
| **Vegetable** | Carrots, celery, gingerroot, tomato, cucumber, broccoli, cilantro, lemon, red pepper, parsnip, green apples |

**Sugar**

There are many people who have a sweet tooth. We are born with a preference for sweets, and it remains with us throughout our lives. However, too much of anything can lead to problems such as, dental cavities, obesity, type 2 diabetes, hypertension, hypertriglyceridemia, and heart disease. Problems such as osteoporosis and vitamin and mineral deficiencies can also occur when high-sugar foods replace more nutritionally balanced foods.

There is no recommended daily allowance (RDA) for sugar. In fact, some experts believe there is no requirement for any sugar. Official US Guidelines advise a maximum of 40g refined sugar for every 2000 calories consumed. This equates to eight percent of calories.

Refined sugar is not only table sugar - it includes the sugars in a wide range of processed foods (e.g. breakfast cereal). So remember to read food labels and choose lower-sugar.

The blood sugar concentration or blood glucose level is the amount of glucose (sugar) present in the blood of a human or animal. Normally, the body maintains the blood glucose level at a reference range between about 3.6 and 5.8 mM (mmol/L, ie, millimoles/liter) (64.8 and 104.4 mg/dL).

Glucose is the primary source of energy for your body and also happens to be the most efficient energy source. It is transported from the intestines or liver to body cells via the bloodstream and is absorbed by body cells with the help of the hormone insulin normally produced by the pancreas.

**Artificial Sweeteners**

The solution for being able to satisfy our sweet tooth, without the disadvantages of sugar, was the invention of non-nutritive sweeteners. The use of non-nutritive sweeteners began with the need for cost reduction and continued on with the need for calorie reduction. Since the 1950s, non-nutritive sweeteners have become a weight-loss wonder that allowed us to have our sweets without the calories and cavities. These sweeteners are also referred to as intense sweeteners, alternative sweeteners, very low-calorie sweeteners and artificial sweeteners.

The celebration and consumption of non-nutritive sweeteners came to a halt in the '70s when these sweeteners were thought to be carcinogens or a cause of cancer.

Even today, there is a great deal of controversy surrounding the safety of non-nutritive sweeteners. But are these sweeteners good for you? Here are the facts about the most common artificial sweeteners. You be the judge.

**Acesulfame Potassium**

Acesulfame potassium (also called acesulfame K or ace-K) is a non-nutritive (low-calorie) sweetener with a clean, quickly perceptible sweet taste. Its excellent stability under high temperatures and good solubility makes acesulfame K suitable for numerous products. Approximately 200 times sweeter than sucrose, acesulfame K is not metabolized by the body and therefore does not contribute calories.

Acesulfame K is currently used in thousands of foods and beverages, including tabletop sweeteners, desserts, puddings, baked goods, soft drinks, candies and canned foods. It is also used in oral hygiene and pharmaceutical products as well. You'll find products with acesulfame K in about 90 different countries.

**Safety**

More than 90 studies have confirmed the safety of acesulfame K. Numerous scientific and regulatory bodies throughout the world such as the FDA, the Joint Expert Committee on Food Additives of the Codex Alimentarius Commission (JECFA), which is the scientific advisory body to the World Health Organization (WHO), the Food and Agriculture Organization of the United Nations, and the Scientific Committee for Food of the European Union (SCF) reviewed the available research on acesulfame K and concluded that it is safe for use in foods and beverages. Acesulfame K has been used in Europe since 1983 and in the U.S. since 1988.

**Aspartame**

Aspartame is a potently sweet compound used as a low-calorie sugar substitute to sweeten thousands of food and beverage products. It is also known as Nutra-sweet, Equal, and Sugar Twin

Although commonly used as a sugar substitute, aspartame actually provides calories -- just like sugar and other food components. However, because aspartame is approximately 200 times more potent than common table sugar, a mere 1/200 of a teaspoon is needed to replace each teaspoon of sugar in a food or beverage. Thus, even though aspartame provides the same number of calories as a similar weight of table sugar (16 calories per teaspoon), so little is needed to sweeten foods and beverages that its actual calorie contribution is negligible.

Discovered in 1965 and approved for the first time by the US Food and Drug Administration (FDA) in 1981, aspartame can be found in more than 6,000 products around the world, including carbonated soft drinks, powdered soft drinks, chewing gum, confections, gelatins, dessert mixes, puddings and fillings, frozen desserts,

yogurt, tabletop sweeteners, and some pharmaceuticals like vitamins and sugar-free cough drops.

**Safety**

Aspartame is one of the most thoroughly studied food ingredients, with more than 200 scientific studies confirming its safety.

Aspartame was approved in 1981 for use in tabletop sweeteners, various foods and dry beverage mixes, making it the first low-calorie sweetener approved by the FDA in more than 25 years. In 1983, the FDA approved aspartame for use in carbonated beverages. This was followed by a number of other product category approvals over the next 13 years, leading to a general use approval in foods and beverages in 1996.

In addition to the Food & Drug Administration (FDA), the Joint Expert Committee on Food Additives of the Codex Alimentarius Commission (JECFA) and the Scientific Committee for Food of the European Union (SCF) have reviewed the research on aspartame and determined it to be safe. Aspartame is approved for use in food and beverage products in more than 100 countries.

Because phenylalanine is one of two amino acids used to make aspartame, foods and beverages that contain this sweetener are required to carry a statement on their labels to alerts people with a rare inherited disease called phenylketonuria (PKU) that there is phenylalanine in the product. Beverages sweetened with sugar substitutes other than aspartame do not carry this precautionary alert because they do not contain phenylalanine.

**Cyclamate**

Cyclamate is a low-calorie sweetener that is 30 times sweeter than sucrose. It is soluble in liquids and because it is stable in heat and cold, it has a long shelf life. Discovered in 1937, cyclamate is approved for use in foods and beverages in more than 100 countries worldwide, including Canada, Australia and Mexico.

Cyclamate is an excellent complement to other low-calorie sweeteners commonly used to reduce the calorie content of popular foods and beverages. In combination, cyclamate and other low-calorie sweeteners have a synergistic effect that enhances the overall sweet taste and reduces the total amount of sweetener needed to obtain a desired level of sweetness. Cyclamate also masks the aftertaste of other low-calorie sweeteners like saccharin, improving the overall taste of foods and beverages containing this sweetener.

**Safety**

The use of cyclamate in foods and beverages is permitted in more than 100 countries. The World Health Organization, Food and Agriculture Organization (FAO/WHO) Joint

Expert Committee on Food Additives (JECFA) has, over the past 10 years, reviewed the scientific literature related to cyclamates and consistently determined cyclamate use is safe for human. Cyclamate has also been approved by the Scientific Committee on Food (SCF) of the European Commission (now the European Food Safety Authority (EFSA)). A petition for the re-approval of cyclamate is currently under review by the US Food and Drug Administration (FDA). The petition reviews new scientific evidence, including some 75 new studies, that demonstrates the safety of cyclamate for human use. In addition, the American Statistical Association and the Society of Toxicology has called upon FDA to reassess the statistical and scientific principles that formed the basis for its 1980 decision not to reapprove cyclamate. Further support for the safety of cyclamate also comes from the Cancer Assessment Committee (CAC) of the US Food and Drug Administration (FDA) and the US National Academy of Sciences. The CAC reviewed the scientific evidence in 1984 and concluded "[T]he collective weight of the many experiments . . . indicates that cyclamate is not carcinogenic." The National Academy of Sciences (NAS) reaffirmed safety of cyclamate in June 1985, noting "the totality of the evidence from studies in animals does not indicate that cyclamate or its major metabolite cyclohexylamine is carcinogenic by itself."

**Saccharin**

Saccharin is a popular non-nutritive (low-calorie) sweetener that has been used for over a century. It is used in a wide range of low-calorie and sugar-free foods and beverages, including tabletop sweeteners, baked goods, jams, chewing gum, canned fruit, candy, dessert toppings and salad dressings. It also is used in cosmetic products, vitamins and pharmaceuticals.

**Sucralose**

Sucralose is a non-nutritive (low-calorie) sweetener that is structurally similar to sugar but 600 times sweeter. It is also sold as Splenda

**Safety**

Discovered in 1967, sucralose was granted approval by the FDA in April 1998 for use in 15 food and beverage categories. The FDA expanded the usese for sucralose in 1999, approving it as "general purpose" sweetener. Sucralose has also been approved for use in foods and beverages in more than 40 countries including the U.S., Canada, Australia and Mexico.

| SWEETENER | ACCEPTABLE DAILY INTAKE |
|---|---|
| Acesulfame Potassium | 15 mg/kg body weight |
| Aspartame | 40 mg/kg body weight |
| Cyclamate | 11 mg/kg body weight |
| Saccharin | 5 mg/kg body weight |
| Sucralose | 15 mg/kg body weight |

## Chapter IV

## VITAMINS & MINERALS

**VITAMINS AND MINERALS** are required for the regulation of the body's metabolic functions, and are found naturally in the foods we eat. Many foods are fortified in order to provide additional nutrients, or to replace nutrients that may have been lost during the processing of food. Most people are able to obtain satisfactory nutrition from a wide variety of foods but it is also a good idea to supplement your diet with vitamins and minerals.

For instance, Vitamin D in milk helps your bones. Vitamin A in carrots helps you see at night. Vitamin C in oranges helps your body heal if you get a cut and B vitamins found in leafy green vegetables help your body make protein and energy.

If a person is not able to eat a variety of foods from the basic food groups, then a vitamin and mineral supplement may be necessary. However, except for certain unusual health conditions, very few persons should need more than 100% of the Recommended Daily Allowance for any single nutrient. Large doses of vitamin and mineral supplements can be harmful.

Vitamins come in two varieties: fat soluble and water-soluble. When you eat foods that contain fat-soluble vitamins, the vitamins are stored in the fat tissues in your body and in your liver. They wait around in your body fat until your body needs them.

*Fat-soluble vitamins* are content to remain stored in your body. Some stay for a few days while others for up to six months. When your body requires them, special carriers transport them to the desired location. Vitamins A, D, E, and K are all fat-soluble vitamins. Be mindful of the amounts you consume as an excess can be harmful.

*Water-soluble vitamins* behave differently. When you eat foods that contain water-soluble vitamins, the vitamins are not stored in your body. Instead, they travel through your bloodstream and whatever is not used is expelled through urination.

So these kinds of vitamins need to be replaced often because they don't hang around. This group of vitamins includes vitamin C and the big group of B vitamins — B1 (thiamin), B2 (riboflavin), niacin, B6 (pyridoxine), folic acid, B12 (cobalamine), biotin, and pantothenic acid.

Your body is a very powerful machine, capable of doing all sorts of things all by itself. But one thing it can't do is manufacture vitamins. That's why we need food. Your body has the ability to extract from food the necessary nutrients it needs for survival. Different foods contain different vitamins so it is important to vary your diet. The key

is to eat different foods to get an assortment of vitamins. Though some people take a daily vitamin, most don't need one if they're eating a variety of healthy foods.

Below is a vitamin and mineral chart along with each DRV and their functions. The first list are the fat soluble vitamins which means they can accumulate in your body so be careful when taking these as supplements. The amounts are bases d on a 2000 calorie diet.

***Vitamin A*** (5,000 IU/day)- Vitamin A helps cell reproduction. It also stimulates immunity and is needed for formation of some hormones. Vitamin A helps vision and promotes bone growth, tooth development, and helps maintain healthy skin, hair, and mucous membranes. It has been shown to be an effective preventive against measles. *Deficiency* can cause night blindness, dry skin, poor bone growth, and weak tooth enamel. Alpha-carotene, beta-carotene and retinol are all versions of Vitamin A. Sources include: dark green and yellow vegetables, yellow fruits, such as broccoli, spinach, turnip greens, carrots, squash, sweet potatoes, cantaloupe, and apricots, as well as in animal sources such as liver, milk, butter, cheese, and whole eggs.

***Vitamin D*** (400IU/day) - Vitamin D is known as the "sunshine vitamin" since it is manufactured by the body after being exposed to sunshine. Ten to fifteen minutes of good sunshine three times weekly is enough to produce the body's requirement of vitamin D. This means that we don't need to obtain vitamin D from our diet unless we get very little sunlight.

Vitamin D is vital to the human body as it promotes absorption of calcium and magnesium, which are essential for the normal development of healthy teeth and bones. It also helps maintain adequate levels of calcium and phosphorus in the blood. Sources include: fortified milk, cheese, whole eggs, liver, salmon, and fortified margarine. The skin can synthesize vitamin D if exposed to enough sunlight on a regular basis.

***Vitamin E*** (30IU/day) - Like vitamin C, vitamin E plays a significant role as an antioxidant, thereby protecting body tissue from the damage of oxidation. It is important in the formation of red blood cells and the use of vitamin K. Many women also use it to help minimize the appearance of wrinkles, and mothers use it to help heal minor wounds without scarring, as it is valued for its ability to soothe and heal broken or stressed skin tissue. Sources include: margarine and vegetable oil, soybean, corn, wheat germ, green leafy vegetables.

***Vitamin K*** (80 mcgs or micrograms/day) - Vitamin K is fat soluble and plays a critical role in blood clotting. It regulates blood calcium levels and activates at least three proteins involved in bone health. Sources include: spinach, lettuce, kale, cabbage, cauliflower, wheat bran, organ meats, cereals, some fruits, meats, dairy products, eggs.

This next list is the water soluble vitamins and cannot be accumulated in your body.

***Vitamin C*** (60mg/day) - Vitamin C or ascorbic acid is one of the most important of all vitamins. It plays a significant role as an antioxidant, thereby protecting body tissue from the damage of oxidation. Vitamin C has also been found by scientists to be an effective antiviral agent. Sources include: many fresh vegetables and fruits, such as broccoli, green and red peppers, brussel sprouts, cauliflower, lemon, pineapples, strawberries, and citrus fruits.

***B1/Thiamine***(1.5mg/day) - Vitamin B1 is important because it helps the body cells convert carbohydrates into energy. It is also essential for the functioning of the heart, muscles, and nervous system. A lack of thiamine can cause fatigue. Sources include: whole grains, soybeans, peas, liver, kidney, lean cuts of pork, legumes, seeds, and nuts.

***B2/Riboflavin*** (1.7mg/day) - Vitamin B2 is important for body growth, reproduction and red cell production. It also helps in releasing energy from carbohydrates. Sources include: dairy products, lean meats, poultry, fish, grains, broccoli, turnip greens, asparagus, spinach, and enriched food products.

***B3/Niacin*** (20mg/day) – Vitamin B3 assists in the functioning of the digestive system, skin, and nerves. It is also important for the conversion of food to energy. Sources include: lean meats, liver, poultry, milk, canned salmon, leafy green vegetables.

***B5/Pantothenic Acid*** (10mg/day) – Vitamin B5 is essential for the metabolism of food as well as in the formation of hormones and good cholesterol. Sources include; avocado, grapefruit, raspberries, watermelon, broccoli, corn, potatoes, chicken, salmon.

***B6/Pyridoxine*** (1.5mg/day) – Vitamin B6 plays a role in the creation of antibodies in the immune system. It helps maintain normal nerve function and acts in the formation of red blood cells. It is also needed for the chemical reactions of proteins. The higher the protein intake, the more you need vitamin B6. Too little B6 in the diet can cause dizziness, nausea, confusion, irritability and convulsions. Sources include: chicken, fish, pork, liver, kidney, whole grains, nuts, and legumes

***B9/Folic Acid*** (400mcgs/day) - Folate and folic acid are both forms of B9. Folate occurs naturally in fresh foods, whereas folic acid is the synthetic form found in supplements. Your body needs folate to produce red blood cells, as well as components of the nervous system. It helps in the formation and creation of DNA and maintaining normal brain function, and is a critical part of spinal fluid. Sources include: liver, yeast, dark green leafy vegetables, legumes, and some fruits.

***B12*** (6mcg/day) - Like the other B vitamins, vitamin B12 is important for metabolism. It helps in the formation of red blood cells and in the maintenance of the

central nervous system. Vitamin B12 is the one vitamin that is available only from fish, poultry, meat or dairy sources in food.

The following is a list of important minerals:

***Calcium*** (1000mg/day) Calcium is the most common and abundant mineral in the body and is found primarily in the bones and teeth. A small but absolutely essential amount of calcium is found in the blood and soft tissue. Osteoporosis results from many factors some of which are inadequate calcium intake or absorption along with accompanying adequate vitamin D levels, hereditary factors, lack of exercise and hormone function.

Vitamin D is required for maximum calcium absorption. Calcium helps vitamin K function in blood clotting, functions in blood pressure regulation, and may be useful in lowering moderate hypertension.

Calcium is available in many foods. Most people think of dairy when they think of calcium. Though cheese is a good source of calcium it is high in saturated fat. Eat a varied diet to get the best calcium absorption. It is estimated that only 30% of dietary calcium is absorbed. Alcohol, phosphates in soft drinks and meats, sugar, and protein increase calcium excretion.

***Iron*** (18mg/day) - Iron is essential for metabolism, DNA synthesis, growth, healing, immune function and reproduction. It prevents anemia and is found in hemoglobin and myoglobin. These are proteins that transport oxygen through the blood and muscles which are important for athletic performance.

***Magnesium*** (400mg/day) - Most magnesium found in the body is in the skeleton with some found in the muscle tissues and in other tissues and fluids. Magnesium is essential for energy production, protein formation and cellular replication (DNA). It is just as important as calcium and phosophorus. Magnesium works with calcium in muscle contraction and relaxation where (calcium=contraction and magnesium=relaxation). It is used in at least 300 enzymatic reactions within the body, many relating to energy. It helps reduce blood pressure, reduce vascular spasm and improve heart function and also helps regulate calcium metabolism.

Depletion of magnesium may result from high consumption of coffee, tea, chronic diarrhea, irritable bowel, laxatives, oral contraceptives, over exercising and emotional stress. Magnesium depletion may also result in people with gastrointestinal disorders, diabetes mellitus, old age, chronic alcoholism, and in long-term use of diuretics. High doses of supplemental zinc and high protein intake interfere with magnesium absorption. Sources include: dairy products, meat, fish, poultry, green vegetables, legumes

***Potassium*** (3500mg/day) - Potassium is also known as an electrolyte. It is an essential mineral. It regulates membrane potential. Sodium is located outside the cell, potassium inside the cell. Chloride keeps sodium and potassium balanced. The sodium-potassium pump is found within cell membranes and keeps the cell in

balance. The pump also maintains the electrical charge of the cell which is critical for nerve and muscle function and contraction.

Potassium needs to be replenished after hard exercise and profuse sweating. Low potassium results in low levels of stored glycogen or muscle fuel. Potassium deficiency results in fatigue and muscle weakness. Eating fresh fruits and vegetable juices replenishes potassium most healthily and inexpensively.

Potassium also functions in regulation of the heart beat, protein and nucleic acid synthesis, energy production, and conversion of blood sugar into glycogen. Sources include: Raisins, raisin bran cereal, prunes, prune juice, baked potato with skin, avocados, cooked lima beans, salmon, bananas, cod, pork, cauliflower, dried apricots, tomatoes, tomato juice, chicken, canned tuna, whole wheat bread, frozen peas, oranges, orange juice, whole milk, eggs, artichoke, cooked spinach, sunflower seeds, almonds, molasses, cooked acorn squash, peanuts, peanut butter, dried peaches, dried pears, cooked split peas, cheese meat and vegetable pizza, and cheddar cheese.

***Zinc*** (15mg/day)) - Zinc functions in cell metabolism for growth and development, in cell signalling systems, in the immune system, in neurological development, and in reproduction. It is found in all body tissues and is particularly important in enzyme function, hormone function, and in vision, taste, smell, and in wound-healing. Its highest concentration is in muscles (65%) but is also found in the red and white blood cells, bone, skin, liver, kidneys, pancreas, eye retina, in the male prostate gland and sperm; it helps make cell membranes strong. Zinc absorption is decreased by drinking tea or coffee or eating vegetables or whole grains with phytic acid with meals.

As you review this list, take a mental note of the types of foods that contain these vital nutrients. The majority of these vitamins come from fruits and vegetables along with moderate portions of lean meat as well as fish.

Our bodies are hard wired and function much better when the majority of our food intake comes from fresh fruit, nuts, berries and vegetables. This was how we ate centuries ago. Couple this with correct portions of fish and chicken and you are well on your way to a healthy life full of longevity and vitality.

## Chapter V

## HOW TO READ LABELS

Below is a typical label from a product found in a grocery store. The ingredients are on the left and the per cent of the daily requirement is on the right. i.e. the total fat of 18g is 28% of the total daily recommended amount. This represents the amount per portion or serving amount, NOT the total amount contained in the package.

| Nutrition Facts<br>Valeur nutritive<br>Serving size 200g | Serving Size 1 bun |
|---|---|
| Amount<br>Teneur | % Daily Value<br>% valeur quotidienne |
| Calories/Calories 300<br>Fat/Lipides 18g | 28% |
| Saturated/satures 3.5g<br>+ Trans/trans 4.5g | 32% |
| Cholesterol 0mg | |
| Sodium150mg | 6% |
| Carbohydrates 33g | 11% |
| Fibre/Fibres 1g | 2% |
| Sugars/Sucres 13g | |
| Protein/Proteines 2g | |
| | |
| Vitamin A/Vitamine A<br>Vitamin C/Vitamine C<br>Calcium/Calcium<br>Iron/Fer | 20%<br>0%<br>0%<br>6% |
| | |

Let's review each measurement as they can be very deceiving unless you know what you are looking for.

***Serving size*** (200g) – the amount refers to the serving size not the total package. In the case above, there are two buns in the package so you would double the amounts listed for each ingredient to get the total for the package.

***Calories*** (300) – amount per serving. Because there are two servings in this package the total calories are 600 for the full package.

***Fat*** (18g) – total fat including saturated and trans fat (bad fat) as well as mono and polyunsaturated fat (good fat) per serving. Even if the package says low fat, it still contains calories. There are 8g of saturated and trans fat on the label above so the remaining fat is 10g of unsaturated fat.

***Saturated fat*** – this is the bad fat and your daily requirement is 20g. Be very mindful to check this amount.

***Trans fat*** – should be eliminated. The daily recommended amount is less than 2 grams.

Look at the label on the preceding page. In all cases, producers will combine the saturated fat and trans fat and give you the per cent daily value which in this case is 32 per cent. This figure is misleading because the total trans fat is 4.5g which is more that two times the daily recommended amount. A red flag for me is if the saturated and trans fat per cent is more than the total fat.

***Cholesterol*** – your body makes 75% of its cholesterol. If you ingest more, your body will produce less. Be more aware of the fat content particularly the saturated and trans fat amounts but also check the cholesterol amounts. Having more than the body needs will cause this cholesterol to be stored.

***Sodium*** – the high blood pressure issue. Daily required amount is 1500-2300mg or approximately one teaspoon. Use the lower level is you have high blood pressure or hypertension. Eliminate processed and canned food from your diet. These are slowly killing you.

**Fibre** – fibre maintains a healthy bowel and removes toxins and cholesterol from the body. Aim for 25g per day. Fibre One bars and cereals contain much of the fibre we need.

***Sugar*** – Sugar is the No. 1 food additive. It is in a variety of packaged foods, from yogurts and cereals to salad dressings, pop and ketchup. If sugar makes it to the first or second item on an ingredient list, the food product is likely to be very high in sugar. Canadians consume around fifty kilograms of sugar per person annually which accounts for an estimated 12 to 15 per cent of their daily calories. There is no information available on the recommended daily amount for sugar but many health experts feel there is no need for sugar at all. The safest rule to follow is to remove as much sugar as possible for it contains empty calories and serve no nutritional purpose. Sugars are what nutrition experts call empty calories. That means they are high in calories without contributing to overall nutrition. Your diet should consist of no more than ten percent sugar. If you have a 2000 calorie diet, that is 200 calories from sugar. There are four calories in a gram of sugar so your daily limit is fifty grams of sugar.

## Chapter VI

## THE GLYCEMIC INDEX

The Glycemic Index (GI) relates to the way your body's sugar levels respond to certain foods. Foods are given a rating from 0 –100 on the glycemic index with glucose in the highest position. High Glycemic Index foods (such as simple carbohydrates) will increase the body's sugar levels rapidly whereas low glycemic index foods will increase the body's sugar levels slowly. A good understanding of the glycemic index can assist in weight loss and help control diabetes.

The glycemic Index is complicated and cannot be generalized to all people. Different people will have different reactions to food. The body's response to food will relate to several factors including; age, activity level, insulin levels, time of day, amount of fibre and fat in the food, how refined (processed) the food is, and what was eaten with the food. In addition to this, other factors such as the ratio of carbohydrates to fat and protein as well as how the food was cooked (eg. boiled compared to fried or baked) and metabolism will determine the way your body's sugar level responds after eating. Foods that have a low glycemic index will have little effect on the body's sugar levels. Comparatively, foods that have a high glycemic index will have an instant affect on blood sugar levels. Ratings on the glycemic index have resulted from numerous studies; however, individuals should test their own reactions to food in relation to the glycemic index.

Foods low on the glycemic index will release glucose gradually into the blood stream whereas foods high on the glycemic index will provoke an immediate response in the blood sugar levels. Foods that contain carbohydrates are the only foods represented on the glycemic index and have the greatest effect on blood sugars. Pasta dishes, bread and potatoes are usually high on the glycemic index. The composition in the carbohydrate will also affect how the body's sugar levels react. For example, white bread will rate high on the glycemic index whereas wholegrain or rye bread will rate lower on the glycemic index as it contains more grains and complex carbohydrates. Examples of low glycemic foods are breakfast cereals (which are based on wheat bran, barley and oats), wholegrain break, fruit, lentils, soybeans, baked beans etc. Examples of high glycemic foods are white bread, soft drinks, full fat ice-cream, chocolate bars etc.

### The Glycemic Index and Dieting

Health experts and dieticians contend that the glycemic index is difficult to use because it is complicated and will vary from person to person. They do concede however, that the glycemic index is a useful meal-planning tool especially when individuals monitor their own individual responses to foods. Low glycemic food is especially helpful in assisting those who want to lose weight. Low glycemic index foods will increase the sugar levels in the body to sustain energy levels for longer periods of time. This means an individual will feel less inclined to eat because energy is being slowly released into their bloodstream. A good understanding of the glycemic index will also assist with exercise. If you exercise, then eating high glycemic foods

will help you recover from your workout. Specifically, faster carbohydrates that are high on the glycemic index are great for raising low blood sugars after intense exercising whereas low glycemic index foods are helpful in maintaining blood sugar levels for long periods of exercise. Health experts encourage using the glycemic index in conjunction with other meal programs to assist in managing diabetes and/or controlling weight.

The glycemic index ranks foods on how they affect our blood glucose levels. This index measures how much your blood glucose increases in the two or three hours after eating. The glycemic index is about foods high in carbohydrates. Foods high in fat or protein don't cause your blood glucose level to rise much.

| | | |
|---|---|---|
| Low Glycemic Food | = | 1-54 |
| Medium Gylcemic Food | = | 55-69 |
| High Glycemic Food | = | 70 – 100 |

***What are the Benefits of the Glycemic Index?***

Eating a lot of high GI foods can be detrimental to your health because it pushes your body to extremes. This is especially true if you are overweight and sedentary. Switching to eating mainly low GI carbs that slowly trickle glucose into your blood stream keeps your energy levels balanced and means you will feel fuller for longer between meals. Here is how they help

- help people lose and control weight
- increase the body's sensitivity to insulin
- improve diabetes control
- reduce the risk of heart disease
- reduce blood cholesterol levels
- reduce hunger and keep you fuller for longer
- Low GI carbs prolong physical endurance

High GI carbs help re-fuel carbohydrate stores after exercise

***How to Switch to a Low GI Diet***

- Use breakfast cereals based on oats, barley and bran
- Use breads with wholegrains, stone-ground flour or sour dough
- Reduce the amount of potatoes you eat
- Enjoy all other types of fruit and vegetables
- Enjoy pasta, noodles, quinoa

Eat plenty of salad vegetables with a vinaigrette dressing. The chart in the Appendix provides various foods and their associated GI number.

**Here are some helpful hints:**

Over the past few years weight can become a growing concern for some people. There are those who need to lose weight but don't seem to have the incentive to do so and there are others who feel a desire to become thinner. It is easy to see why weight is looked at differently than something like high blood pressure. You can see the weight but cannot see the blood pressure problem. If you want to be successful at managing a healthy weight, it is important to look long term.

Weight can cause a number of personal issues including low self-esteem. Looking at yourself in the mirror leaves you feeling depressed and angry at yourself. Some people look down on those who are over weight and feel they are outsiders unable to control their eating habits. Research has shown that you can improve your health by a loss of just five to ten per cent of your overall weight. This loss can help with high blood pressure and cholesterol as well as Type II diabetes. Choose this as a starting point and make that one of your goals because it is realistic and achievable.

Here are some things to consider when embarking on a weight loss program:

**Set Proper Goals**

As opposed to setting a weight loss goal look at leading a healthy lifestyle. A better focus is on a dietary and exercise change that will lead to as longer term better fitness level. Make sure you are specific and you can measure your results. Saying you will exercise more is not as effective as I run three times a week on Monday, Wednesday and Friday. Also make sure you set your sites on something you can do consistently and over the long term.

**Set Mini Goals**

Sometimes the big picture can be very scary. That's why it is important to set smaller goals. As you reach these smaller goals it becomes like a snowball effect and you will be well on your way to achieving your ultimate objective. There are two important factors to understand here:

1. Taking smaller steps is easier to handle.

2. The rewards you get by meeting these smaller goals are quite uplifting and keep you motivated.

**Reward Yourself Properly**

An effective reward is something you want, timely and dependent on meeting your goal. I had a client who rewarded himself by eating fish and chips every time he finished a project. That was two or three times a week. Pick rewards that help maintain your momentum.

**Monitor Your Progress**

Self-monitoring refers to observing and recording your behavior, such as what you eat and what you do. It helps to keep you on track and to see if your behavior is moving you closer towards your goals.

Studies have shown that people who have frequent weigh-ins (every day) are more likely to maintain their ideal weight. This is not necessary as twice a week (Monday and Friday) is sufficient to keep you on track. I use these two days because Friday will indicate how you did during the week and Monday will show you how you were during the weekend. Some people weigh themselves on Friday only so they can cheat on the weekend. This type of thinking sets you up for failure.

**Slow Down**

Studies show that it takes approximately twenty minutes for your brain to get a message you're your stomach. Eating slower will allow you to enjoy your food and keep you from over eating. Another option is to use smaller plates. You will create the illusion that your portion size is bigger.

**Healthy Eating Tips**

• Use skim, low-fat milk or cheese made from these products.

• Cut back on the amount of fat you use in cooking.

• Use water-packed tuna instead of oil-packed.

• Choose only lean cuts of meat and trim any fat.

• Roast, bake, broil, or simmer meats and drain fat after cooking. Refrain from frying.

• Remove the skin of cooked poultry

• Use smaller amounts of meat and stretch it by serving in casseroles with grains and vegetables

• Replace mayonnaise with yogurt in a dip or sandwich.

• Serve Canadian bacon instead of regular bacon.

• Use vegetable or peanut oils instead of solid shortening and use margarine instead of butter or lard

• Use only egg whites in recipes calling for whole eggs

**Control Calories**

• Avoid overeating. Eat only when hungry and just until you're full.

• Eat a variety of foods that you enjoy, but watch serving sizes. Use moderation.

• Eat slowly and chew your food well. This allows you to realize you are full before you overeat.

• If you want a second helping reach for a low-calorie vegetable or fruit.

• Decrease your fat and sugar intake and your caloric intake will also decrease.

• Eat in a relaxed environment. It takes about twenty minutes after you begin eating for your mind to realize that you are full.

**Reduce Sugar**

• Avoid high sugar foods - read labels for words like high fructose corn syrup, dextrose, sucrose.

• Use unsweetened canned fruit or fruit canned in its own juice.

• Use less sugar in your favorite recipes.

**Reduce Sodium**

• Decrease the amount of salt used while cooking and taste your food before adding salt.

• Avoid high sodium foods - read the sodium content on the labels.

• Drain and rinse canned vegetables

**Increase Fiber**

• Eat whole grain breads, cereals, and pastas as well as raw fruits and vegetables.

• Nuts and seeds add fiber, but be aware of the additional calories

• Add bran (1 to 3 tablespoons) into your daily diet. Mix it with cereals, casseroles, tuna salad, and muffins

Food Tips

* High heat, light, and oxygen destroy EFAs, so when consuming foods for their EFA content, try to avoid cooked or heated forms. For example, raw nuts are a better

source than roasted nuts. Don't use flaxseed oil for cooking, and never re-use any type of oil.
* Sprinkling flaxseed meal on vegetables, cereals and salads adds a slightly nutty taste. Whole flaxseeds are usually passed through the intestine, absorbing water only and not yielding much oil. Also, it's best not to use huge amounts of flaxseed in its meal form, as it contains phytoestrogens. .
* Replace vegetable shortening with half as much virgin olive oil. This coupled with a very small pinch of extra salt often yields similar results.
* Replace oily snack foods, like potato chips and corn chips, with nuts and seeds.

## Chapter VII

## SUPPLEMENTS

One of the biggest challenges we all face is getting enough nutrients in the form of vitamins and minerals. As well, our bodies regenerate themselves every nine months. Apoptosis is programmed cell death and these dead cells are replaced by younger ones. Between fifty and seventy billion cells die each day due to apoptosis in the average human adult. Necrosis, on the other hand, is the premature death of living tissue caused by a number of factors including infection, toxins and trauma.

The building blocks of our health are DNA or Deoxyriboneucleic acid. A strand of DNA is called a double helix and winds around in a circular formation. At the end of these DNA strands are telemeters, kind of like the ends of your shoelace. When cells die prematurely these DNA strands can unwind causing defective replications.

A cell is bonded together by a cell membrane, protons, neutrons and electrons. Cells can split and divide normally and the chemical composition remains intact. Normally, bonds don't split in a way that leaves a molecule with an odd, unpaired electron. But when weak bonds split, free radicals are formed. Free radicals are very unstable and react quickly with other compounds, trying to capture the needed electron to gain stability. Generally, free radicals attack the nearest stable molecule, "stealing" its electron. When the "attacked" molecule loses its electron, it becomes a free radical itself, beginning a chain reaction. Once the process is started, it can cascade, finally resulting in the disruption of a living cell. These chemically-reactive radicals are believed to cause degenerative diseases and cancers. They also have a short life span.

Some free radicals arise normally during metabolism. However, environmental factors such as pollution, radiation, cigarette smoke and herbicides can also spawn free radicals.

Normally, the body can handle free radicals, but if antioxidants are unavailable, or if the free-radical production becomes excessive, damage can occur. Of particular importance is that free radical damage accumulates with age.

Antioxidants neutralize free radicals by donating one of their own electrons, ending the electron-"stealing" reaction. The antioxidant nutrients themselves don't become free radicals by donating an electron because they are stable in either form. They act as scavengers, helping to prevent cell and tissue damage that could lead to cellular damage and disease.

The best way to ensure adequate intake of the antioxidant nutrients is through a balanced diet consisting of five to eight servings of fruits and vegetables per day.

There are also a number of other preventative measures that can be taken including a number of supplements and health checks you can do to ensure your immunity stays healthy.

Below are a number of vital bodily functions and provides you with supplements that promote health. Before starting on any of these, consult your physician as some may interact negatively with other medications.

*1. Body pH Level*

In order to accomplish all the many millions of complex functions that occur during the day, your body has to be able to communicate with itself at the cellular level. It does this through pulses of electricity.

Your body operates on an electro magnetic current. All of the organs in your body emit electrical current. In fact, nerve signals are nothing more than electrical charges.

What creates this electrical power in your body is a very fine balance that exists in your bio chemistry. And of all the systems in your body that depend on this delicate, bio chemical balance, one of the most important is your blood stream. This is where pH comes into play.

PH is a scale that measures the acidity or alkalinity of a substance. The scale ranges from 1 to 14 with 1 being very acid, 7 neutral and 14 very alkaline.

So what does pH have to do with you and your blood? Well, the pH of your blood is extremely important. The ideal pH level for your blood is right around 7.35 and your body goes to tremendous lengths to maintain this level.

It does this because if your blood pH were to vary one or two points in either direction, it would change the electrical chemistry in your body, there would be no electrical power and very shortly you would drop dead. As you can see, maintaining the right pH level in your blood is pretty important! In fact some researchers state that cancer cannot live in an alkaline environment.

Acidity inhibits red blood cells from penetrating into a cell. Because red blood cells carry oxygen, this causes a lack of oxygen to the affected cells. This results in a dramatic drop in your energy level.

The primary cause of an acidic condition in your body is from what you put in your mouth. In other words, what you eat and what you drink. And it isn't how "acid" something may seem when you eat or drink it. It has to do with what is left over when you digest it. In fact, scallops are one of the most acid foods you can eat.

Unfortunately, a lot of the things most people put in their mouths create an acid ash. These include alcohol, coffee and a lot of flesh protein in your diet. Interestingly enough, stress also tends to create an acid condition in the body.

Fortunately, it is pretty easy to immediately change your pH for the better and make it more alkaline. The first step is to understand which of the foods you are eating and the drinks you are drinking are acid and which are alkaline. Then it's simply a matter

of eliminating some of the more acid foods you are eating and adding in more alkaline foods.

You can do this by testing the pH of your saliva on a regular basis. pH test strips can be purchased at any health food store and are inexpensive.

*2. EFA – Essential Fatty Acids*

Essential Fatty Acids (EFAs) are necessary fats that humans cannot synthesize, and must be obtained through diet. There are two families of EFAs: Omega-3 and Omega-6 and are excellent antioxidants. Omega-9 is necessary yet "non-essential" because the body can manufacture a modest amount on its own, provided essential EFAs are present.

EFAs support the cardiovascular, reproductive, immune, and nervous systems. The human body needs EFAs to manufacture and repair cell membranes, enabling the cells to obtain optimum nutrition and expel harmful waste products. A primary function of EFAs is the production of prostaglandins, which regulate body functions such as heart rate, blood pressure, blood clotting, fertility, conception, and play a role in immune function by regulating inflammation and encouraging the body to fight infection. The minimum healthy intake for both Omega-3 and Omega-6 acid via diet, per adult per day, is 1.5 grams of each. One tablespoon of flaxseed oil (keep it refrigerated) can also provide this amount and you can get great benefits from almonds, walnuts, Brazil nuts, sesame seeds, avocados, some dark leafy green vegetables, canola oil (cold-pressed and unrefined), soybean oil, wheat germ oil, salmon, mackerel, sardines and anchovies are rich in Omega-3. Flaxseed oil, flaxseeds, flaxseed meal, pumpkin seeds, pistachio nuts, sunflower seeds (raw), olive oil, olives, black currant seed oil, chestnut oil, chicken are rich in Omega-6. Other rich anti oxidant supplements include ACAI Berry and Gogi juice. Avoid refined and hydrogenated versions of these foods.

*3. Kyolic Garlic*

Why is garlic, in its original form or as the extract of the aged vegetable, good for you? Garlic contains germanium and selenium, which are sulfur-containing antioxidants that boost the immune system. Garlic also dissolve clots and lengthen clotting time. This natural thinning of the blood helps every aspect of blood flow within your body. It is the safest source of prevention of heart attacks and strokes. Studies have shown that when garlic becomes part of the diet and supplement program individuals who, by all rights of family history, should be experiencing problems with their hearts are not having problems. They are doing better than their ancestors. In longer-term studies, they have outlived everyone simply by adding garlic in one form or another. Garlic, however, is acknowledged as one of the most effective means of reducing fat in conjunction with a healthy diet and exercise program. Perhaps one of the most promising findings of research on the use of garlic has come in the field of cancer. The Memorial Sloan-Kettering Cancer Center in New York has found that garlic inhibits the growth of cancer cells in the laboratory.

4. *White Willow Bark*

The bark of white willow contains salicin, which is a chemical similar to aspirin (acetylsalicylic acid). It is thought to be responsible for the pain-relieving and anti-inflammatory effects of the herb. Willow bark is used to ease pain and reduce inflammation. There is good evidence that it does just that. Researchers believe that the chemical salicin, found in willow bark, is responsible for these effects. However, studies have identified several other components of willow bark that have antioxidant, fever-reducing, antiseptic, and immune-boosting properties. Some studies have shown willow is as effective as aspirin for reducing pain and inflammation. Willow bark has been shown to relieve headaches.

Willow bark appears to be effective for back pain. In a well-designed study of nearly 200 people with low back pain, those who received willow bark experienced a significant improvement in pain.

Several studies have shown that willow is more effective at reducing pain from osteoarthritis. In a small study of people with osteoarthritis of the neck or lower back, those who received willow bark experienced significant improvement in symptoms. A similar study of 78 patients hospitalized with osteoarthritis of the knee or hip joint found that patients who received willow bark had significant pain relief.

## Chapter VIII

## AEROBIC EXERCISE

There are different types of exercise, and each type has different effects on your body. Some types of exercise improve flexibility and muscle strength while others like aerobic activities build heart strength. Still others increase endurance. Exercises fall into three categories, aerobic, strength conditioning (weights), and flexibility. How do you know which type works best for you? Ideally, you will achieve the best results by including all three types of exercise into your fitness program. Of course, aerobic activity, in my opinion provides the best health benefit because of the effect it has on strengthening your heart.

### Aerobic Exercises

Aerobic exercises are any activities that use oxygen to fuel your muscles. Aerobic exercises cause your muscles and joints to send messages to your brain, and your brain then stimulates your heart to beat faster and your breathing rate to increase because you need more oxygen. Any exercise that makes your heart work harder is good because as your heart works harder it becomes stronger and increases its ability to supply your muscles with blood and oxygen. This also benefits you because the effect also works when you are at rest. You can see the results by seeing your resting heart rate decrease. Aerobic training is also called endurance training because they make your muscles able to sustain the activity for longer and longer periods because they build muscle strength. Examples of aerobic activities are, running, cycling, swimming, rowing and cross-country skiing. Sports that involve continuous movement like basketball and soccer, also are aerobic exercises.

Regular aerobic activity burns calories and keeps your weight under control. They also help reduce the amount of fat on your body and increase lean muscle mass. Maintaining a healthy weight prevents Type II diabetes and other chronic health issues associated with obesity.

Studies show that three thirty minute aerobic workouts a week is very beneficial. I will introduce you to a well balanced training program later in this chapter and you will understand how to reach your target heart rate for optimal benefits both physically and weight loss.

It is also important to warm-up before any activity. A gentle stretch for only five minutes helps prevent injury. Also remember to warm down as well by stretching after your workout.

The benefits of aerobic activity are great but can also be undone. In fact three months of exercise can be undone in two weeks so be consistent and maintain a good exercise regime.

## Strength-Conditioning Exercises

Strength-conditioning exercises complement aerobic exercises by building muscle. Muscle is active and burns about five times more calories than fat even at rest. There are many ways to avail of this type of exercise program. There are many machines on the market. You may want to choose something like a bow flex or something similar. Just remember bigger is not always better. I will show you a simple resistance program that uses only dumbbells and a bench and you can train all your muscle groups this way.

Any age can benefit from weight training, even people in their 80s or 90s. This type of exercise can help you to perform daily tasks, such as lifting grocery or garbage bags, that can become very difficult for elderly people often become more difficult as you get older. Strength training can provide you with independent living and you won't have to rely on others for help.

## Flexibility Exercises

As we get older, we lose the full range of motion in our muscles and joints. It is a part of the aging process but we can slow it down. Getting older does not necessarily translate into being sedentary. Arthritis can be painful and may prevent you from doing certain things but a lifestyle that keeps you moving is best. If you don't use your muscles and joints you will lose them. As you move less, you become more immobile and this can rob you of simple tasks. Flexibility exercises such as stretching can help you to maintain good mobility in your muscles and joints as well as helps protect them from normal wear and tear that exercise can cause.

Some people are naturally more flexible than others and find it easier to stretch. You may find that certain joints may be more flexible than others. It does not matter about the condition of your joints, flexibility exercises can benefit. Make stretching a regular part of your warm-up and daily routine. Yoga is a great way to maintain muscles and joints. Stretching can prevent muscle cramping and injury that can accompany any exercise program.

The most important muscles to stretch include the hamstring (rear thigh), shoulder and lower back. Here are some tips when stretching:

1. Do not stretch to the point at which you feel discomfort or pain. Maintain a comfortable range.
2. Stretch slowly and smoothly, and never bounce or make jerking movements.
3. Sustain the stretch. Pause for 10 to 20 seconds when you have reached a full stretch, and hold that position. Your muscles and joints need time to benefit from the stretch.

There are a number of exercise myths and I would like to touch on several.

**MYTH:** If you're Not Going to Work Out Hard and Often, Exercise Is a Waste of Time.

**FACT:** This kind of thinking keeps a lot of people from maintaining or even starting an exercise program. Research continues to show that any exercise is better than none at all. For example, regular walking or gardening for as little as an hour a week has been shown to reduce the risk of heart disease.

**MYTH:** If You Exercise Long and Hard Enough, You Will Always Get the Results You Want**.**

**FACT:** It is the quality not the quantity that counts. There are also other factors like genetics that play a part. Studies have shown that people respond differently to the same exercise program.

**MYTH:** If You Want to Lose Weight, Stay Away From Strength Training Because You Will Bulk Up.

**FACT:** Most exercise experts believe that cardio-vascular exercise and strength training are both key ingredients in maintaining a healthy weight. Strength training helps maintain muscle mass and decrease body fat percentage.

**MYTH:** Home Workouts Are Fine, But Going to a Gym Is the Best Way to Get Fit.

**FACT:** Research has shown that some people find it easier to stick to a home-based fitness program. In spite of all the hype on trendy exercise programs and facilities, the "best" program for you is the one you will participate in consistently.

**MYTH:** Doing crunches or working on an "ab machine" will get rid of belly fat.

**FACT:** Don't believe everything you hear on those late-night infomercials. While an ab-crunching device might help strengthen the muscles around your midsection and improve your posture and back, being able to see your abdominal muscles has everything to do with your overall percentage of body fat. If you want to see your stomach muscles, lose the fat. You also can't pick and choose areas where you'd like to burn fat So crunches aren't going to target weight loss in your stomach area.

**MYTH:** If you stop exercising your muscle turns to fat.

**FACT:** Muscle can never turn into fat. Muscle is muscle and fat is fat. They are two separate types of specialized tissue that serve totally different functions. Muscle turning to fat would be similar to wood turning to plastic. Training and exercise can increase the size or tone of muscles while becoming sedentary will reduce their size and tone.

**MYTH:** The more you sweat during exercise, the faster you will lose body fat.

**FACT:** Most of the weight lost through sweat is water weight. Excessive sweating can have dangerous side effects, including, but not limited to, dehydration.

**MYTH:** NO PAIN NO GAIN.

**FACT:** The person who came up with this statement was probably working toward a major injury of his or her own. It is not necessary to be sore after an exercise session to improve your fitness level. Pain and injury should not be normal goals or results of exercise.

**MYTH:** Muscle weighs more that fat.

**FACT:** A pound of muscle weighs the same as a pound of fat. Muscle is denser than fat and therefore takes up less space.

Your heart is a muscle and gets bigger and stronger with exercise. The only way to achieve this is to increase your heart rate. A stronger heart is more efficient and does not pump as often as a weaker heart.

A normal resting heart beats about 68-72 beats per minute. Here is how to check your resting heart rate. Before you get up in the morning, check your pulse at your wrist just above your thumb. Count the beats for thirty seconds and double that number. This is your resting heart rate. If it is higher that seventy two, your heart is working too hard. The right exercise can help lower it. In fact lowering your resting heart rate by ten beats per minute can add 5-10 years to your life.

To achieve best results, exercise using a per cent of your maximum heart rate. Here is how you calculate your maximum heart rate.

Subtract your age from 220. As an example, at age 55, your maximum heart rate is 220 – 55 or 165 beats per minute.

**Heart Rate Training Zones**

Heart rate training zones are calculated by taking into consideration your Maximum Heart Rate (MHR) and your Resting Heart Rate (RHR). Within each training zone, changes take place that affect your fitness level.

**Recovery Zone - 60% to 70%**

Training in this zone develops basic endurance and aerobic capacity. All easy recovery running should be completed at a maximum of 70%. This zone is known as the “fat burning zone” because your heart rate allows you to do more work thus burning more calories.

**The Aerobic Zone - 70% to 80%**

Training in this zone will develop your cardiovascular system and thus strengthen your heart. You improve your ability to transport oxygen to cells and remove carbon

dioxide from those cells. As your fitness improves, you will find your running pace become quicker and your ability to take longer runs is possible.

**The Anaerobic Zone - 80% to 90%**

Training in this zone produces lactic acid. Your lactic acid threshold is your body's ability to withstand the pain of endurance training. At this level, we do not burn much fat but rely on energy stores in the muscle. A by-product of burning this energy source is lactic acid. At some point your body can no longer remove the lactic acid from the working muscles quickly enough. This is your anaerobic threshold (AT). You can delay this threshold through the correct training as your body learns how to deal with the lactic acid for longer periods. Interval training is one way to do this.

Q: What is the target zone?

A: A target zone is a heart rate range that guides your workout by keeping your intensity level between an upper and lower heart rate limit. There are various target zones that are suggested for an individual to follow that correspond with a specific exercise goal. IE: Improved Fitness Zone 70-80% of Max Heart Rate. The table below is based on a 55 year old person.

| **ZONE** | **% HR** | **HR beats/min.** | **RESULT** |
|---|---|---|---|
| Light | 60% | 100 | Maintain Healthy Heart |
| Recovery | 70% | 115 | Fat Burning |
| Aerobic | 80% | 132 | Increase Stamina |
| Anaerobic | 90% | 150 | Conditioning |

Depending on the goals you set for yourself will help you decide what target heart rate you want to achieve. From the diagram above it is important to get your heart rate to a minimum 70% of its target rate if you want optimal fat burning results. If your goal is to train for a race then you will need to step up the pace and work at 80% capacity. This taxes the heart and makes it bigger and stronger. If you are more interested in maintaining a healthy heart then exercising at a heart rate of 60% works.

**Fitness Measurements.**

Here are some common forms to measure your fitness level. (see results in appendix)

| | |
|---|---|
| Resting Heart Rate | Before you get out of bed get your pulse at your wrist just below your thumb. Count the beats for thirty seconds and multiply by two. This is your resting heart rate and should be between 68 – 72 beats. Any higher and your heart is working too hard. |
| Recovery Heart Rate | After a workout and your heart rate is between 140-150 monitor your heart rate recovery. Fit individuals usually have their heart rate drop thirty beats each minute for two minutes. |

| | |
|---|---|
| Max$VO_2$<br><br>W = weight in kilograms<br><br>T = time to run a mile.)<br><br>HR = heart rate at end | This is the measure of how efficient your lungs are at moving volumes of oxygen.<br>***Women*** – run on a treadmill for one mile at max 6.7 MPH. record your distance. Use this formula.<br>VO2max = 100.5 - 0.1636W - 1.438T - 0.1928HR<br>***Men*** – run on a treadmill for one mile at 7.5mph max. record your distance<br>VO2max = 108.844 - 0.1636W - 1.438T - 0.1928HR |

**BMI**

BMI or Body Mass Index is a measurement of the relationship of a person's height to their weight. It applies to both men and women and is a useful measurement of overweight and obesity problems. It is also a good estimate for body fat and a gauge for a number of health issues including high cholesterol, heart disease, high blood pressure, gallstones and type II diabetes. There is usually more than one issue when a person becomes over weight.

BMI is a very accurate measurement of your health level provided you have a typical body composition. It can also be deceiving because two individuals each weighing two hundred pounds can have vastly different BMI levels if one is more muscular than the other. That is why BMI must also be used in conjunction with body fat measurements.

Waist circumference is also another indication. If most of your fat is around your waist rather than at your hips, you're at a higher risk for heart disease and type 2 diabetes. This risk goes up with a waist size that is greater than 35 inches for women or greater than 40 inches for men. To correctly measure your waist, stand and place a tape measure around your middle, just above your hipbones. Measure your waist just after you breathe out.

To determine your BMI level and waist indicator you can refer to the table in the appendix.

**Interval Training**

For those interested in taking their exercise regime to the next level, interval training is the recommended exercise. It involves short bursts of effort followed by a rest period of slight exercise. Because your heart is a muscle it responds to vigorous activity by getting larger just like the other muscles in your body. A larger stronger heart is capable of pushing more blood through your system thus allowing you to do more work.

In the example of running, you would sprint for a distance and then jog for a distance. This can be accomplished in a number of ways. Sprinting and jogging between poles is one way and you can also set your treadmill to do the same thing.

Add some incline and you can accomplish so much more in an equivalent amount of time with normal jogging.

The key here is to wear a heart rate monitor so you can measure your work to ensure you elevate your heart to the proper level. You also want to make sure your rest period is sufficient so your last interval is run at the same speed as your first.

Interval training develops lactic acid tolerance which is the biggest limiting factor in high speed performance races. When you train your body to accept these higher levels of lactic acid you can work through the pain at particular points in your race and you will be able to pick up the pace if required.

Based on a one hundred fifty pound person the chart below shows the calories burned per activity. As you can see it is important to pick the activity that will give you the results you want.

| Activity | Calories Burned |
|---|---|
| Sleeping | 64 |
| Existing | 90 |
| Walking | 143 |
| Weight Lifting | 219 |
| Biking | 292 |
| Mowing lawn | 323 |
| Aerobics | 365 |
| Gym Workout | 378 |
| Snow Shoveling | 432 |
| Running 6 mph | 501 |
| Swimming | 511 |

**Here are some helpful hints:**

***Program you life to get you moving*** – instead of driving around a parking lot looking for the closest parking space, park as far away from the entrance and walk. The extra calories burned add up over a year. Also take the stairs instead of the elevator.

***Vary the workout*** – A combination of aerobic training and strength training works best. Resistance training builds bone density and we need this as we get older. Invest in a weight bench and some dumb bells and you will have all the weight equipment you need.

***Be Consistent*** – The best exercise program is the one that you do long term. Make sure you set yourself up for success by choosing a program that you can get enjoy.

# Chapter IX

# WEIGHT TRAINING

## How do we get stronger?

If you want to lose fat or change your body, one of the most important things you can do is lift weights. Diet and cardio are equally important, but when it comes to changing how your body looks, weight training is the hands down winner. If you've hesitated to start a strength training program, it may motivate you to know that lifting weights can:

- Help raise your metabolism. Muscle burns more calories than fat, so the more muscle you have, the more calories you'll burn all day long.
- Strengthen bones, especially important for women.
- Make you stronger and increase muscular endurance.
- Help you avoid injuries.
- Increase your confidence and self-esteem.
- Improve coordination and balance.

Getting started with strength training can be confusing. What exercises should you do? How many sets and reps? How much weight? The routine you choose will be based on your fitness goals as well as the equipment you have available and the time you have for workouts.

## The Basics

If you're setting up your own program, you'll need to know some basic strength training principles. These principles will teach you how to make sure you're using enough weight, determine your sets and reps and insure you're always progressing in your workouts. Reps is short for repetitions and would refer to one complete movement though an exercise. A set is a group of repetitions. A bicep curl is a good example. Lifting the weight up and down would be one rep. The lifting phase is the concentric phase and the lowering phase is the eccentric phase.

1. **Overload**: To build muscle, you need to tax it. This means using more resistance than it is used to. This is an important concept because your muscle is very adaptable. The more you do the more your body builds and becomes capable of more resistance. This means that your weight selection should be heavy enough so you can only lift the amount you have selected. You should be able to finish your last rep with difficulty but also with good form. Do not contort your body because it can cause injury.

2. **Progression**. Your muscles have a memory. To avoid this, it is a good practice to regularly increase your intensity. You can do this by increasing the weight lifted, changing your sets/reps and changing the type of exercises. Make these changes regularly.

3. **Specificity**. This principle means you should have a training goal and train for that goal. If you want to increase your strength, use heavier weights and lower reps. To lose weight, choose a variety of exercises that target different muscles

4. **Rest and Recovery**. Rest days are just as important as workout days. It is during these rest periods that your muscles grow and change, so make sure you're not working the same muscle groups two days in a row.

5. **Variety**. To keep you motivated and decrease boredom you can change your workout to include:

    - *Supersets* – a group of exercises with no rest period. It can include exercises using the same muscle group or opposing muscle groups like the chest and back.
    - *Giant Set* – a group of exercises that work the same muscle group like the chest.
    - *Drop Set* – start with heavier weights and when you cannot complete the exercise at that weight, drop the weight and do more reps.
    - *Lower Set* – Reduce the weight to fifty percent and do one set to exhaustion.

Before you get started on setting up your routine, keep a few key points in mind:

1. **Always warm up** before you start lifting weights. This helps get your muscles warm and prevent injury. You can warm up with light cardio or by doing a light set of each exercise before going to heavier weights.

3. **Lift and lower your weights slowly.** Don't use momentum to lift the weight. If you have to swing to get the weight up, chances are you're using too much weight. It is recommended that you reduce the weight to avoid injury.

4. **Breathe**. Don't hold your breath and make sure you're using the full range of motion throughout the entire exercise. Inhale as you lower the weight and exhale when it is raised.

6. **Stand up straight**. Focus on your posture and tighten your abs in every movement. Have a slight knee bend to take some pressure off your lower back. Maintain your balance and protect your spine.

Most experts recommend starting with your larger muscle groups and then proceeding to the smaller muscle groups. The most demanding exercises are those when the large muscle groups are engaged. You will need your smaller muscles to get the most out of these exercises. If they are fatigued because you worked them first, they will not be effective during the larger muscle group exercises. You can do your exercises in any order you like. Altering your workout routine by changing the order

is a great way to challenge yourself and keep you motivated. The best plan is the one that works for you so try different options and be willing to experiment.

**How Much Weight To Use**

The easiest way to determine how much weight you should use is through experimentation.

1. Pick up a light weight and do a warm up the exercise you wish to perform. My warm-up is fifteen.
2. For set two, increase your weight to an amount you can handle. The reps should also be deduced. Continue with a third and fourth set increasing the weight and decreasing the reps.
3. In general, you should be lifting enough weight that you can ONLY do the desired reps. Your last few reps should be a struggle but you are able to finish and not lose form.
4. It may take awhile to find the right amount of weight for each exercise so experiment until you find the right weight that is giving you results.
5. In general, you can use heavier weights with larger muscle groups such as chest, back and legs. You'll need smaller weights for the shoulders and arms.

Once you have experimented and found out the weight you will use, you now need to decide on number of reps and sets. Firstly, your decision should be based on your goals. The American College of Sports Medicine recommends eight to twelve reps for muscular strength and ten to fifteen reps for muscular endurance. They also recommend at least 1 set of each exercise to fatigue. I have one set to warm-up and then four additional sets. In general:

- **Fat loss**: 1-3 sets of 10-12 reps using enough weight that you can ONLY complete the desired reps.

- **Muscle gain**: 3+ sets of 6-8 reps to fatigue. If you are a beginner you will need to work up to this level and never attempt heavy lifting alone. You will need a spotter for many exercises.

- **Health and endurance**: 1-3 sets of 12-16 reps using enough weight that you can ONLY complete the desired reps.

**How Long To Rest Between Workout Sessions**

Heavier weights require a longer rest period. When lifting to fatigue, it takes an average of 2 to 5 minutes for your muscles to rest for the next set. When using lighter weight and more repetitions, it takes between 30 seconds and 1 minute for your muscles to rest.

The American College of Sports Medicine recommends training each muscle group 2 to 3 times a week. The number of times you lift each week will depend on your training method. Muscles usually require forty eight hours of rest in order to repair and grow. If you're training at a very high intensity with heavy weights, take a longer rest.

**Where to Workout**

You don't have to join a gym to get a great strength training workout. Some people feel the need to go to a gym while other people are comfortable in their own homes. Do what works for you.

A gym is nice because you'll have access to a variety of machines including free weights. If you do join a gym, it's a good idea to incorporate both types of equipment into your workout routine. Many people prefer free weights because they force you to use stabilizer muscles. Weight equipment is already stabilized so you don't use these muscles.

If you decide to workout at home, here are a few items you might want to consider buying:

- Resistance bands are inexpensive and carried my most gym equipment suppliers. You can also order them on-line. They're small, light and can be packed in a suitcase. You get a full body workout. Some come so you can vary the resistance by adding additional bands.

- Dumbbells are cheap and you can do a variety of exercise with them. You can find them at your local Fitness Store or Wal-Mart. You can also get a set which uses a pin to vary the weight from five to fifty pounds. All the weights come in a small one unit package so there is no requirement to purchase multiple sets. Other options include a barbell set, an exercise ball and a weight bench.

As I have said before, the best type of exercise you can do is the one you do consistently and for long periods of time. Many people purchase exercise equipment like a treadmill and before too long it is being used as a clothes hanger. Take the time to review your options and make the commitment to a life of health and longevity.

Most experts will agree that any type of exercise is better than nothing. However, if you are looking for results, it is important to put in enough time and effort so you will be able to see those results. Seeing none or minimal results for your effort is a main factor that causes many people to just quit.

Below is an example of a typical set of weight exercises using a bicep curl. The weights are a sample. You will need to experiment to find with various weights to find the amount that is right for you.

Looking at the chart below there are five sets. The first set is designed as a warm-up. This conditions the muscle for the particular exercise you are about to perform and is an important part of your program.

| | | | |
|---|---|---|---|
| Set 1 | Warm up | 15 reps | 5 lbs. |
| Set 2 | | 12 reps | 10 lbs. |
| Set 3 | | 10 reps | 15 lbs. |
| Set 4 | | 8 reps | 20 lbs. |
| Set 5 | | 5 reps | 25 lbs. |

The best way to develop a weight training program is to start with the bigger muscle groups first. By starting this way the smaller groups will not be fatigued.

A typical program would include a minimum of two days.

| | |
|---|---|
| Day One | Chest, Back, Shoulders, Triceps (back of upper arms), Legs and Biceps (front of upper arms.) |
| Day Two | The same body parts would be repeated in the same order but with different exercises. |

A good way to shock your muscle is to drop the weight and do as many reps as possible. For example taking the exercise above you would do a typical warm-up and then use fifteen pounds and do reps until exhaustion.

In the appendix you will find a list of exercises you can use with a set of dumbbells and a weight bench. This minimal investment will provide you with all the exercises you need to do a total body workout.

## FINAL THOUGHTS

Health and Wellness is a life long commitment. It takes dedication and hard work to lead a happy and healthy life.

As you digest the information contained in this book, take some time to reflect on the choices you have made and are now making.

As you ponder these choices, ask yourself the following questions:

1. "Is what I am doing contributing to my health and wellness?"

2. "What are some changes I can make immediately that can improve my overall health and wellness?"

3. "What is my game plan that will keep me focused and on the right track?"

4. "Am I prepared to do what is necessary and to make the commitment to ensure I lead a happy, healthy and productive life?"

We only have one life to live. I think it serves us better if we live that life to the best of our ability. That means making informed decisions about things like what we are eating and the quantity of what we are eating. It means making exercise a big part of our daily lives. It means having total conscious awareness of what contributes to our health and what detracts from it.
In conclusion take care of the big three items:

1. *Blood Pressure* – The silent killer. Have your blood pressure checked regularly and look at ways to self-monitor. Also, limit your daily intake of salt and processed foods, these are slowly killing you.

2. *Cholesterol* – Many of us eat unconsciously. We don't think before we eat. Be mindful of the types of food be are eating and especially limit your intake of saturated and trans fat These are artery clogging substances.

3. *Type II Diabetes* – The one big issue we have in our lives that is mostly self inflicted. When you control your eating habits and your calorie intake, you control your weight. Also make exercise a lifelong commitment.

As we become more consciously aware of how we can control our future and ultimate destiny, we begin to make the necessary changes in both our diet and life styles. As these changes become our new daily habits, we begin to feel better both physically and mentally and we look forward to a life of longevity and vitality.

The key to longevity and vitality is moderation and portion control. Eat sensibly, don't over-indulge, eliminate second helpings and move by making exercise a part of your lifestyle.

# APPENDIX

Answers

| | |
|---|---|
| 1 | The easiest way to lose weight is to cut calories. |
| A | NO. Your body will think you are in starvation mode and conserve. |
| 2 | You can't get any smarter than you already are. |
| A | NO. We are constantly growing brain cells so you actually can get smarter. |
| 3 | Avoid fat at all costs. |
| A | NO. Fat is an essential part of your diet. |
| 4 | Walking and carrying 1 lb. weights help your fitness. |
| A | NO. Not recommended as it may cause back problems. |
| 5 | Sore muscles after exercise is good. |
| A | NO. It may be a sign you injured something. |
| 6 | An ideal heart rate is 120/80 |
| A | NO. 120/80 is normal but ideal is 115/75 |
| 7 | You can burn too many calories in a day |
| A | YES. Burn between 500 to 900 calories max |
| 8 | Training for a marathon is good for your health. |
| A | NO. This is an extreme sport and could cause problems by doing too much |
| 9 | Sit-ups or crunches strengthens your back. |
| A | YES. It does by strengthening your core keeping your spine I proper alignment and strong. |
| 10 | Walking is a great way to lose weight. |
| A | YES. Only if you can get your heart rate to the fat burning zone. |
| 11 | Wearing a waist belt prevents back injury. |
| A | NO. It may cause your back muscles to become weak as they will rely on the belt. |
| 12 | If I stop weight training, muscle will turn to fat. |
| A | NO. They are both different tissues. |
| 13 | A No Carbohydrate diet works best. |
| A | NO. Diets don't work. |
| 14 | Low fat foods help you lose weight. |
| A | NO. You must also look at the total calories. |
| 15 | Cholesterol is bad for you. |
| A | NO. Our cells need cholesterol so choose unsaturated fats |
| 16 | Some foods promote burning fat. |
| A | NO. Studies show no foods burn fat. |
| 17 | Skipping meals helps in weight loss |
| A | NO. Studies show that skipping breakfast promotes weight gain. |
| 18 | Eating after 8pm causes weight gain. |
| A | NO. It is the amount you eat not the time. |
| 19 | You don't have to count calories to lose weight |
| A | NO. Weight loss is calories in and calories out. |
| 20 | Carbohydrates make you fat. |
| A | NO. Calories make you fat. Eat in moderation. |
| 21 | Eating some fat before a meal helps you eat less. |
| A | YES. A small amount of fat will make you fuller. |
| 22 | Muscle weighs more than fat. |
| A | NO. A pound of muscle is the same as a pound of fat. Muscle happens to be denser. |

| | |
|---|---|
| 23<br>A | Stretching before exercise id good.<br>NO. Studies have shown that this causes injury. Warm-up before exercise and stretch after. |
| 24<br>A | Sit-ups and crunches get rid of belly fat.<br>NO. You can't pick and choose where to lose. |
| 25<br>A | Lifting weight will make women muscular.<br>NO. Most women don't produce enough testosterone to build muscle mass and those that do require an extreme amount of weight training. |

**22 – 25** - EXCELLENT (You are knowledgeable)
**19 – 22** - GOOD (better than average)
**15 – 18** - AVERAGE (You know enough)
**0 – 14** - POOR (you picked a good book)

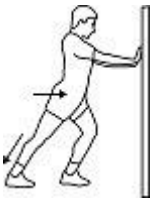
## FLEXIBILITY EXERCISES

Upper Body

| | |
|---|---|
|  | Shoulder & Chest<br><br>This can be performed kneeling or standing. Clasp hands behind back and straighten arms. Raise hands as high as possible and bend forward from the waist and hold. Repeat. |
|  | Arm Across Chest<br><br>Place one arm straight across your chest. Put your hand on elbow and pull arm towards chest and hold. Repeat with other arm. |
|  | Triceps Stretch<br><br>Place one hand behind back with elbow in air. Place other hand on elbow and gently pull towards head. Hold and repeat with other arm. |

Lower Body

| | |
|---|---|
|  | Glute Stretch<br><br>Sit on the floor with your right leg bent. Place right foot over left leg. Place left arm over right leg so elbow can be used to push right knee. Hold and repeat for other side |
|  | Adductor Stretch<br><br>Stand with feet as wide apart as is comfortable. Shift weight to one side as knee bends. Reach towards extended foot and hold. Repeat for other side. |
|  | Single Leg Hamstring<br><br>Place leg out straight and bend the other so your foot is flat into your thigh. Bend forward from the waist keeping your back flat. Hold and repeat with the other leg. |

| | |
|---|---|
|  | Standing Quadriceps<br><br>Standing on one leg and grab the bottom of other leg just above ankle. Pull heel into backside and push the hips out. Your thigh should be perpendicular to the ground. Hold and repeat with the other leg. |
|  | Standing Calf<br><br>Place feet in front of each other about 18 inches apart. Keep back leg straight and heel on the floor. Push against a wall to increase the stretch. Hold and repeat with other leg. |

**DUMBBELL EXERCISES**

**Chest**

| | |
|---|---|
|  | **Flat Press**<br>1. Lying flat on bench, hold the dumbbells directly above chest, arms extended.<br>2. Lower dumbbells to chest in a controlled manner.<br>3. Press dumbbells back to starting position and repeat.<br>4. Avoid locking elbows. |
|  | **Incline Press**<br>1. Adjust bench to an incline of 30 to 45 degrees.<br>2. Repeat as above. |
|  | **Flat Flies**<br>1. Lying flat on bench, hold dumbbells directly above chest.<br>2. Bend elbows slightly and maintain throughout the exercise.<br>3. Open arms to sides. Elbows should remain 'locked' in a slightly flexed position.<br>4. When upper arms are parallel to floor, return the weights to the starting position and repeat. |
|  | **Incline Flies**<br>1. Adjust bench to an incline of 30 to 45 degrees and repeat the exercises as steted above |

**Shoulder**

| | |
|---|---|
|  | **Seated Press**<br>1. Sit upright on bench with dumbbells over head. Make sure back is not flat.<br>2. Lower dumbbells slowly to shoulders.<br>3. When arms are at ninety degrees, press the dumbbells back up and repeat. |

| | |
|---|---|
|  | **Lateral Raises**<br>1. Stand upright with knees slightly bent, shoulder width apart and holding dumbbells at sides.<br>2. Bend elbows slightly and raise the dumbbells out to the side. And keep elbows slightly bent throughout the motion.<br>3. When arms are parallel to floor, slowly lower back and repeat. |
|  | **Reverse Flies**<br>1. Sit on edge of bench, feet flat on the floor. Bend over so chest almost resting on your thighs.<br>2. Hold dumbbells next to feet and bend arms slightly. Open arms out keeping elbows bent.<br>3. When arms are parallel to floor, slowly lower dumbbells back. |
|  | **Front Raises**<br>1. Stand upright with knees slightly bent, shoulder width apart. Your palms should be towards thighs.<br>2. Raise one dumbbell directly in front of you.<br>3. When arm is parallel to the ground lower dumbbell slowly back. Repeat with the other arm. |

**Back**

| | |
|---|---|
|  | **Single Arm Row**<br>1. Stand upright next to the bench. Place one knee and hand on bench. Upper body should be parallel to floor.<br>2. Hold one dumbbell with arm extended.<br>3. Raise dumbbell up to your midsection keeping back still throughout movement.<br>4. Slowly lower dumbbell to start position and repeat. After desired number of reps repeat for other arm. |
|  | **Lying Bent Over Row**<br>1. Lie face down on a flat or slightly inclined bench. Hold two dumbbells and let arms hang down.<br>2. Pull dumbbells up towards chest.<br>3. Slowly lower the dumbbells back down and repeat. |

**Neck**

| | |
|---|---|
|  | **Upright Rows**<br>1. Stand upright, feet shoulder width apart, knees slightly bent.<br>2. Keeping dumbbells close to body, raise them to chin.<br>3. Hold for a count of 2 and slowly lower to start position and repeat. |

| | |
|---|---|
|  | **Shrugs**<br>1. Stand upright with your feet shoulder width apart and knees slightly bent.<br>2.Keeping your arms straight 'shrug' shoulders as high as possible and hold for a count of three.<br>3. Relax and repeat.<br>4. Do not roll your shoulders backwards as you shrug up. |

**Biceps**

| | |
|---|---|
|  | **Decline Seated Curl**<br>1. Adjust the bench to a 45 degree incline.<br>2. Hold dumbbells at sides and your arms fully extended.<br>3. Keep elbows close to body and curl the weight up by bending elblows.<br>4. Slowly lower dumbbells and repeat. |
|  | **Hammer Curls**<br>1. Stand upright with dumbells at sides.<br>2. Turn palms inward so they face body.<br>3. Curl dumbbells up slowly while keeping your elbows close to sides. |
|  | **Preacher Curls**<br>1. Set bench so back rest is approx 45 degrees.<br>2. Stand behind t he bench. Holding dumbbell rest back of upper arm on back rest, arm fully extended.<br>3. Keep back of the upper arm against back rest and then curl dumbbell up towards face.<br>4. Slowly lower dumbbell until arm is not quite fully extended and repeat for desired number of reps before switching arms. |

**Concentration Curls**

1. Sit on edge of bench with feet flat on the floor.
2. Holdingthe dumbbell place elbow on inside of thigh, just above knee.
3. Curl dumbbell up towards your face. Do not swing back as you lift the weight.
4. Slowly lower the weight and repeat for desired number of reps before switching arms.

**Triceps**

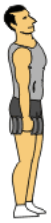
**Overhead Extensions**

1. Stand upright with feet shoulder width apart.
2. Hold dumbbell directly above head with arm fully extended. Clasp elbow with free hand for support.
3. Slowly let elbow fold so dumbbell is lowered behind head. 4. Extend arm back to starting position. Repeat for the desired number of reps and switch arms.

**ickbacks**

. Stand upright next to bench. Place one arm and leg on bench. pper body should be parallel to ground.
. Raise elbow so upper arm is parallel to ground. Elbow should e bent at right angles.
. Extend elbow so entire arm is parallel to ground.
. Slowly return to start position and repeat.

**Leg**

| | |
|---|---|
|  | **Half Squats**<br>1. Holding dumbbells at sides, stand upright with your feet shoulder width apart.<br>2. Bend from knees until thighs are almost parallel to the ground (avoid letting knees turn inwards).<br>3. Keep back flat, lower back slightly arched inwards and head up.<br>4. Return to upright position and repeat. |
|  | **Lunges**<br>1. Holding dumbbells at sides, stand upright with your feet slightly less than shoulder width apart.<br>2. Step forward about 2 feet with one foot and bend knee to about 90 degrees. As you plant your foot bend trailing knee so it nearly touches the floor.<br>3. Push off with front foot to return to starting position. |

# GLYCEMIC INDEX
## (based on 50 g of carbohydrates per serving)

**Breads, Grains and Pasta**
baguette-95
rice pasta,brown-92
instant rice-91
kaiser roll - 73
bagel -72
white bread -70
rye bread 64
mac/cheese-64
hamburger bun- 61
pita bread-57
white rice -56
brown rice- 55
sourdough bread - 52
linguine-50
multigrain bread- 48
converted rice -47
macaroni-45
spaghetti, white -41
ravioli, meat filled-39
spaghetti, whole wheat-37
spaghetti, protein enriched-27
barley -25

**Cakes/biscuits**
Rice cakes-82
Wafer biscuits 77
Doughnut -76
Waffles-76
Ryvita -67
Croissant -67
Shortbread -64
Muffin -62
Pastry -59
skimmed-34
Chocolate milk- 34
Fruit yogurt, low fat-33

**Fruits**
dates,dried-103
watermelon-72
pineapple-66
raisins-64
apricots -57
mangoes-56
fruit cocktail-55
banana -53
kiwi fruit- 53
grapes- 52
canned peach- 47
orange -43
peaches-42
blueberries -40
plums-39
pear -36
apple -36
strawberries-32
raspberries-32
blackberries-32
dried apricots- 30
grapefruit-25
cherries-22

**Potatoes, root crop**
parsnips 97
**baked potatoes-83
instant potatoes- 83
chips- 75
mashed potatoes- 73
beetroot-64
new potatoes- 57
boiled potatoes- 56
sweet potatoes-54
yam-51

**Snacks**
rice cakes -82
pretzels- 81
jelly beans-80
waffles- 76
doughnut- 76
crackers - 74
corn chips -72
mars bars-68
wheat crackers -67
rye bread -63
power bar -57
popcorn -55
oatmeal cookies-55
*potato chips-54
*chocolate -49
banana cake-47
peanuts-14

**Vegetables**
sweet corn- 55
green peas-48
carrots,cooked-39
green beans-15
peppers-15
spinach -15
tomatoes- 15
artichoke -15
asparagus-15
broccoli-15
cauliflower-15
celery -15
cucumber -15
lettuce -15

**Sugars**
Glucose-100
Honey-73
Sucrose-65
Table sugar-65

**Dairy**
Ice cream-61
*Ice cream (low fat) 50
Milk, semi-

**Cereals**
Rice Krispies-82
Grapenut flakes- 80
Cornflakes-77
Weetabix-77
Total -76
Puffed wheat-74
Cheerios-74
Shredded Wheat -69
Oatmeal-61
Mini Wheats )-57
Oatbran-55
Porridge-49
All Bran-42

**Legumes**
Baked Beans-48
Chickpean-42
Haricot -38
Chick peas-33
Lentils-29
Kidney Beans-27
Soy Beans-18

**Beverages**
Gatorade-78
Soft Drinks-68
Orange juice-57
Grapefruit juice-48
Pineapple juice -46
Apple Juice 41

**Dairy**
Milk-Skim-32
Milk -Fat-free-32
Soy Milk- 31
Whole Milk-27

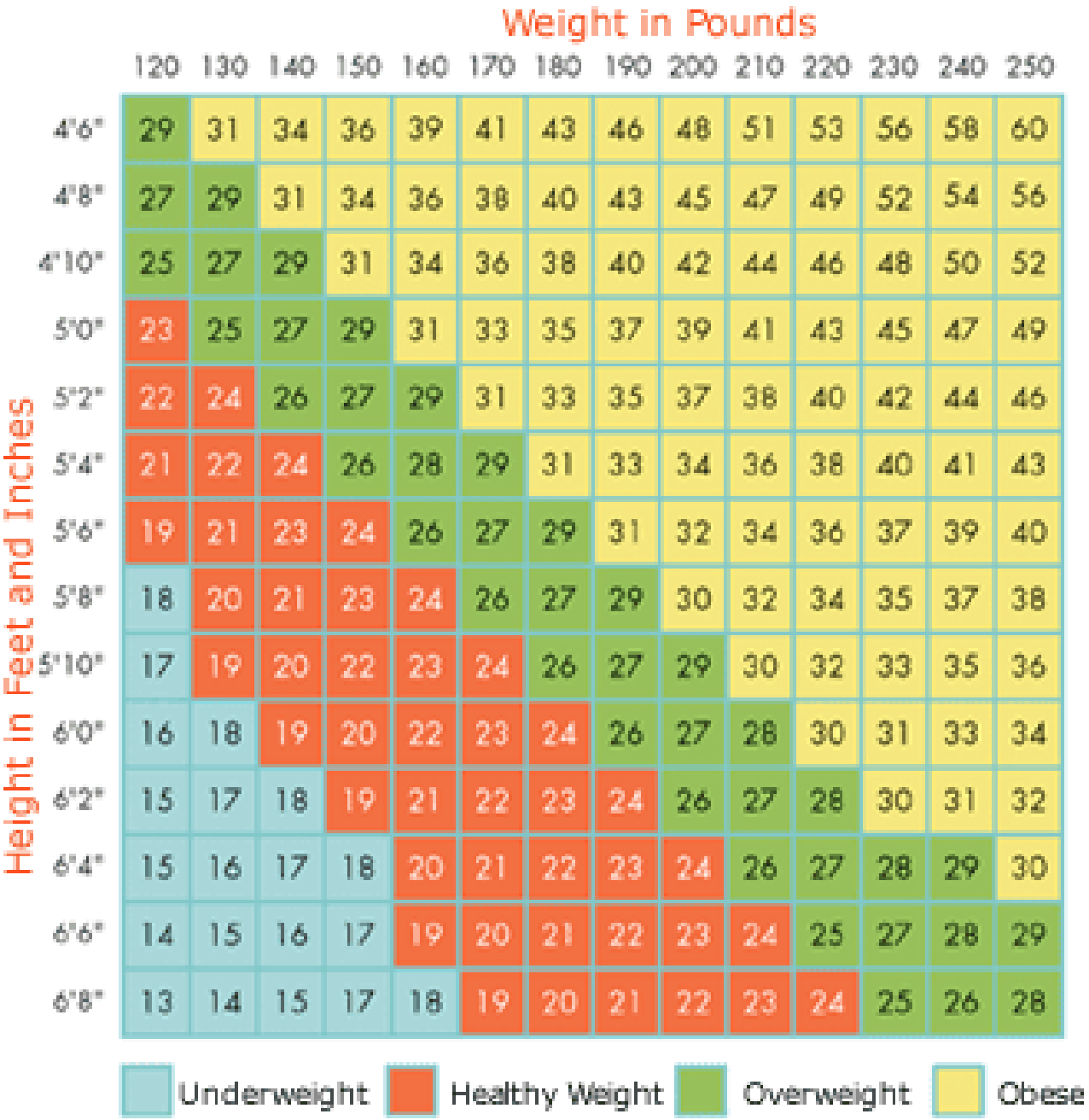
Below is the chart for $MAXVO_2$

# $VO_2$Max Norms Chart

| Age | Women | Low | Fair | Avg. | Good | High | Athletic | Olympic |
|---|---|---|---|---|---|---|---|---|
| | 20-29 | <28 | 29-34 | 35-43 | 44-48 | 49-53 | 54-59 | 60+ |
| | 30-39 | <27 | 28-33 | 34-41 | 42-47 | 48-52 | 53-58 | 59+ |
| | 40-49 | <25 | 26-31 | 32-40 | 41-45 | 46-50 | 51-56 | 57+ |
| | 50-65 | <21 | 22-28 | 29-36 | 37-41 | 42-45 | 46-49 | 50+ |
| | Men | | | | | | | |
| | 20-29 | <38 | 39-43 | 44-51 | 52-56 | 57-62 | 63-69 | 70+ |
| | 30-39 | <34 | 35-39 | 40-47 | 48-51 | 52-57 | 58-64 | 65+ |
| | 40-49 | <30 | 31-35 | 36-43 | 44-47 | 48-53 | 54-60 | 61+ |
| | 50-59 | <25 | 26-31 | 32-39 | 40-43 | 44-48 | 49-55 | 56+ |
| | 60-65 | <21 | 22-26 | 27-35 | 36-39 | 40-44 | 45-49 | 50+ |

BMI Chart

To calculate your BMI get your height and weight and cross reference them with the chart below.



**BMI Chart relative to waist size**

Check your BMI against your waist size to determine your health and disease risk.

**Heart Disease Risk Relative to Normal Weight and Waist Circumference.**

| | BMI | Men 40" or less<br>Women 35"or less | Men > 40"<br>Women > 35" |
|---|---|---|---|
| Underweight | < 18.5 | NIL | NIL |
| Normal | 18.5–24.9 | NIL | NIL |
| Overweight | 25.0–29.9 | Increased | High |
| Obesity | 30.0–34.9 | High | Very High |
| Severe Obesity | 35.0–39.9 | Very High | Very High |
| Extreme Obesity | 40.0 + | Extremely High | Extremely High |

The recommended waist size is less that ½ your height. In other words, if you are 6 ft. or 72 inches, your waist should be less than 36 inches. If you are 5 ft. 6 in. or 66 inches, your waist size should be less than 33 inches.