



"Nutrition"

Basic good nutrition is important for everyone. The foods you eat affect how you look, how you feel, and how your body systems work. Eating the right foods each day provides your body with all the nutrients it needs. A proper diet helps to:

- ◆ give you energy
- ◆ fight infections
- ◆ maintain proper body weight
- ◆ keep all your body systems working properly

This does not change after having a spinal cord injury. However, because of changes that occur to the body after a spinal cord injury, you need to understand the role that nutrition plays in keeping you healthy. The foods you include in your daily meal plan are important to your overall health following a spinal cord injury.



After SCI: Changes and Concerns

After a spinal cord injury most individuals normally lose some weight. Men usually lose more than women. Immediately after the injury the body requires energy and nutrients to repair itself and fight infection. The spinal cord injury puts stress on the body. When the body is stressed, the metabolic rate is higher. This means that the body burns calories faster. Often during this time newly injured patients are not able to eat a regular diet. Paralyzed muscles also atrophy which causes additional weight loss. The loss of weight slows after 3 to 4 weeks.

Individuals with SCI experience changes in how their different body systems work. Many of the changes that the body experiences can be managed by eating healthy meals and snacks. Eating the proper foods, in the correct amount, every day, provide the body with the essential nutrients.

Special health concerns that individuals with spinal cord injury have are:

Bowel Management

Individuals with SCI may have neurogenic bowel. This means the messages from the brain that control the downward muscular movements of the bowel are

either absent or not working properly. This makes it difficult for stool to move through the intestines.

A healthy diet that includes high fiber and plenty of fluids is the way to regulate your bowel program. The fiber helps move the stool through the bowel. The fluid keeps the stool soft. Foods high in fat may make it difficult to regulate your bowel program.



Eat 25-35 grams of fiber every day.
Drink 8-10 8oz glasses of liquid each day.

Heart Problems

Individuals with SCI are now at greater risk for cardiovascular and heart problems since they are now living longer. Too much cholesterol can increase your risk of heart disease.

Watch the amount of cholesterol that you eat each day. Have your cholesterol checked when you go for your annual medical check-up.



Avoid foods high in cholesterol. Cholesterol is only found in animal products (meats, eggs, cheese, and whole milk dairy products).

You also need to limit the amount of salt in your daily food plan. Too much salt is a hazard if you have high blood pressure or heart problems.

Pressure Ulcers

Pressure ulcers are always a concern to individuals with SCI. Your skin is more likely to breakdown when you do not eat healthy meals and snacks. A healthy diet helps keep your skin healthy and prevents the risk of pressure ulcers.

If you should develop a pressure ulcer, a diet high in protein, vitamins, and minerals is recommended.



Eating foods rich in vitamins and protein help pressure sores heal quickly. Remember, do your pressure releases frequently!

Kidney or Bladder Stones

Individuals with spinal cord injuries may be prone to developing calcium stones. Certain beverages can cause crystals to form in the urine. Do not eat or drink an excess of dairy products (milk, cheese, yogurt, ice cream).



The best way to avoid kidney or bladder stones is to make water your beverage of choice.

Urinary Tract Infection

The loss of normal bladder function after SCI places an individual at risk for Urinary Tract Infection (UTI). A high fluid intake everyday reduces the problem of infections and stones forming. The fluids that pass through the kidneys help keep the bladder and catheter relatively clear. You need to understand how much fluid to drink each day to manage your bladder program.

Drinking carbonated beverages (soda pop), orange juice, and grapefruit juice can cause the urine to become alkaline. When urine becomes alkaline it can have a strong, unpleasant odor. Alkaline urine is a breeding ground for bacteria that can cause UTI. Limit the number of these beverages you drink each day.



Make WATER your #1 beverage of choice.

Weight Control

After a spinal cord injury it is important to find a weight that is acceptable and healthy for you. Your metabolic rate may be lower after your SCI. Metabolic rate is how fast your body burns the calories you eat. A lower muscle mass and a decrease in activities causes your metabolic rate to be lower. This means you need fewer calories each day in order to maintain a desirable weight. After rehabilitation, the ideal body weight of a person with SCI is lower than for a nondisabled individual. In figuring the number of calories needed by an individual with SCI, dieticians normally decrease the amount by 5% for those with paraplegia and 10-15% for those with tetraplegia (quadriplegia).

Overweight

Gaining weight is a common concern of many individuals after having an SCI. This weight increase may occur because you

- ◆ change your lifestyle and activities.

- ◆ are not able to exercise at a level to burn the extra calories.
- ◆ become bored and frustrated, turning to food as a solution to this problem.

The danger of being overweight with a spinal cord injury is that it decreases your mobility, endurance, and balance. This can make transfers difficult. Some ways to help avoid gaining weight are to:

- ◆ Know what you are eating. Read the labels on food products.
- ◆ Know how many calories you can eat without gaining weight. Try not to go over this amount.
- ◆ Be active and exercise.

There are other benefits to exercise besides helping to control your weight.

- ◆ You look better as exercise can help tone muscles.
- ◆ You feel better as your endurance increases and the cardiovascular system improves.

Underweight

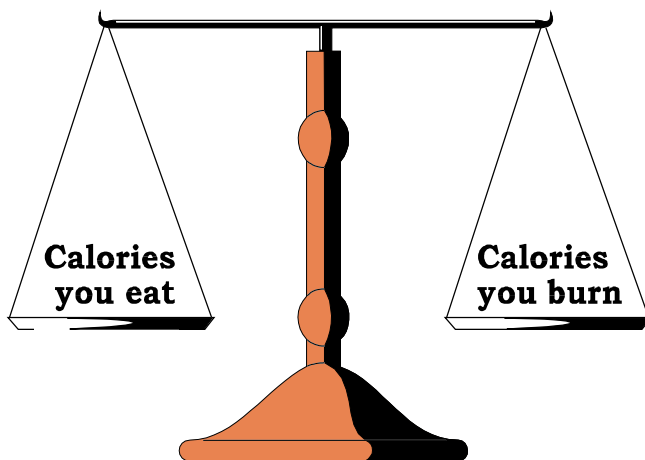
If you keep losing weight it usually means your body is using more calories than you are eating. There are dangers to being underweight. You

- ◆ may be at a higher risk for infections and pressure sores.
- ◆ may have less energy and tire easily.

Body Image

After spinal cord injury you may find that your body carries weight differently than it did before your injury. Muscle mass decreases and fat may increase in the parts of your body that are paralyzed. The weight often settles in the torso or abdominal areas. The legs often lose their muscle mass and appear skinny and shapeless. You may find that your idea of "ideal body image" may need to change.

Balance your Diet



Goals of Weight Control

The goals for weight control after a spinal cord injury are to

- ◆ Eat foods high in nutrients.
- ◆ Balance the calories you eat with the calories you burn.
- ◆ Choose foods moderate in calories.
- ◆ Maintain your normal activities without tiring easily.

Understanding Calories, Grams, and Nutrients

It is important to know how to get the recommended amount of each nutrient to maintain your desired weight. To do this you need to understand calories and grams. A calorie is the amount of energy in food. It is the fuel for your body. Foods are also measured by weight units called "grams".

Each nutrient contains a specific number of calories per gram. This means that when you eat a certain amount of a nutrient, it provides your body with a certain amount of fuel. If your body stores more fuel than it uses, you gain weight.

You should design your daily food plan based on the recommended daily amounts for each nutrient. This amount is based on a percent of your total daily calories.

Carbohydrates	- 50-60% of total calories
Protein	- 20% of total calories
Fat	- 30% or less of total calories

Each nutrient also contains a specific number of calories per gram.

Carbohydrates	= 4 calories/gram
Protein	= 4 calories/gram
Fat	= 9 calories/gram

Fat grams are the most important to count in a weight control program. They are the most "fattening". Using the following formula you can determine the proper amount of fat grams to include in your daily food plan.

EXAMPLE:

You know that you can eat 1800 calories each day and maintain your weight. To determine the amount of Fat grams you can have each day figure:

$1800 \text{ calories} \times .3 (30\%) = 540 \text{ calories}$
 $540 \text{ calories} / 9 \text{ grams} = 60 \text{ grams or less of fat a day.}$

You can also adjust this formula to figure the amount (grams) of protein and carbohydrates that you need to eat each day.

What Nutrients Do For You

Eating a healthy variety of foods is the key to good nutrition. There are 8 main nutrients that the body needs each day to stay healthy and keep your body working properly.

Carbohydrates

- ◆ the body's main source of energy.
- ◆ helps to give the stomach a full feeling

Foods rich in Carbohydrates

breads - pasta - potatoes - rice
fruits - vegetables

Carbohydrates do not contain a significant amount of fat, unless it is added.

Fats

- ◆ provide the body with energy.
- ◆ help insulate the body.
- ◆ help in cell and membrane growth.

There are 2 types of fats, *unsaturated* and *saturated*. Unsaturated fats (monounsaturated and polyunsaturated) are liquid at room temperature. These are generally alright for your heart and arteries. They can actually help reduce cholesterol level in the blood and are considered "heart healthy". Saturated fats are solid at room temperature. These fats are generally bad for your heart and arteries and should be avoided.

Saturated (solid)

whole milk products, butter, lard, coconut oil,
palm oil, poultry skin, bacon grease

Unsaturated (liquid)

Polyunsaturated -

safflower oil, sunflower oil, soybean oil, corn oil.

Monounsaturated -

canola oil, olive oil, peanut oil, nuts

WARNING! Avoid hydrogenated fats. These are liquid fats that are processed into hard fats (read your food labels).

Fats are also present in many different foods - margarine, salad dressings, mayonnaise, bakery goods, meat, and dairy products

Protein

- ◆ builds and repairs body cells.
- ◆ helps prevent skin breakdown pressure sores.
- ◆ helps fight infection.
- ◆ helps heal wounds.

Foods containing Protein

meat - fish - poultry - cheese - eggs
dried peas & beans - nuts - peanut butter

Remember, foods high in protein may be high in fat!

Vitamins

Vitamins help with certain chemical reactions in the body.

Vitamin A

- ◆ keeps skin and nerves healthy.
- ◆ helps resist infection.

Foods high in Vitamin A

dark green and yellow fruits and vegetables
carrots - squash - sweet potatoes - apricots - spinach
egg yolks

B Vitamins

- ◆ help with digestion.
- ◆ provide energy.
- ◆ keep eyes, skin, and nerves healthy.

Foods rich in B Vitamins

whole grain cereals and breads
pork - peanuts - meats - green leafy vegetables

Vitamin C

- ◆ helps fight infection.
- ◆ helps in healing of wounds.
- ◆ maintains a healthy oxygen supply to the skin.

Foods rich in Vitamin C

citrus fruits - strawberries
tomatoes - broccoli

Vitamin D

- ◆ helps the body use calcium and phosphorus.
- ◆ works with calcium to form bones.

Sources of Vitamin D

Fortified milk - fish liver oils
Exposure to sunlight

Minerals

Aid in wound healing and tissue repair.

Calcium

- ◆ helps build bones and teeth.
- ◆ aids in blood clotting.
- ◆ helps develop muscle tone.

Foods rich in Calcium

milk - cheese - yogurt - dried peas and beans
salmon with bones - sardines
dark green leafy vegetables - broccoli

Iron

- ◆ helps build blood cells.
- ◆ carries oxygen to all cells.

Foods rich in Iron

liver - lean red meats
fortified breads & cereals - dried peas & beans
green leafy vegetables - dried fruits - nuts

Potassium

- ◆ regulates muscles and nerves

A good source for potassium is bananas

Fiber

Fiber or “roughage” is found in foods that come from plants. It is the part of fruits, vegetables, and grains that cannot be digested. There are two kinds of fiber, soluble and insoluble.

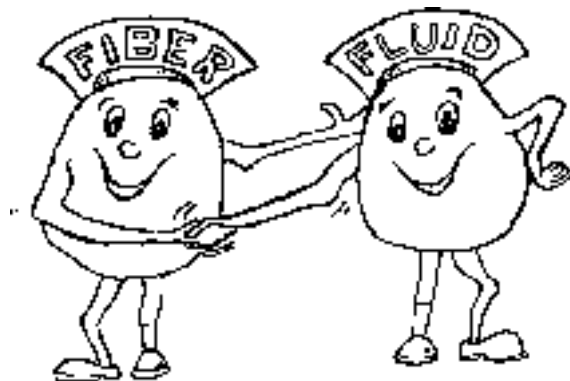
Insoluble fiber (like wheat bran) speeds up elimination. Soluble fiber (oats and fruits) binds with fats like cholesterol and carries them out of the body.

- ◆ keeps bowel movements regular.
- ◆ holds food in the stomach longer.
- ◆ slows down calorie absorption.
- ◆ helps keep you from feeling hungry.

Foods high in Fiber

Fresh or dried fruits - vegetables (fresh is best)
brown or wild rice - dried beans and peas
wheat germ - popcorn
whole grain breads and cereals

Fiber cannot do its job without fluid!



Water and Fluids

Water is an important nutrient that most people do not think about when planning their diet.

- ◆ regulates body temperature.
- ◆ carries food nutrients through the body
- ◆ carries food waste out of the body.

After SCI it is recommended that you drink 8 -10 (8 ounce) glasses of water or other liquids every day. This amount

- ◆ helps prevent urinary tract infections.
- ◆ helps prevent kidney and bladder stones.
- ◆ keeps stools soft for regulating your bowel program.
- ◆ aids with digestion and elimination.

There are many fluids that you can drink but water should be your #1 beverage choice. When selecting your beverage to drink remember to

- ◆ Limit the amount of milk that you drink. Calcium in milk may cause kidney or bladder stones.
- ◆ Limit carbonated beverages (soft drinks) to 1 a day. They cause the urine to become alkaline and have an unpleasant odor.
- ◆ If you are watching your weight, avoid fluids with calories (juices, milkshakes, soft drinks).

Fluids

Water - lemonade - Kool-aid - decaf tea
non-frozen cranberry or apple juice

The Food Guide Pyramid

There are approximately 50 different nutrients needed by a cell for it to live. A basic diet plan following the food guide pyramid provides these needed nutrients. Use the food pyramid as your daily eating guide.

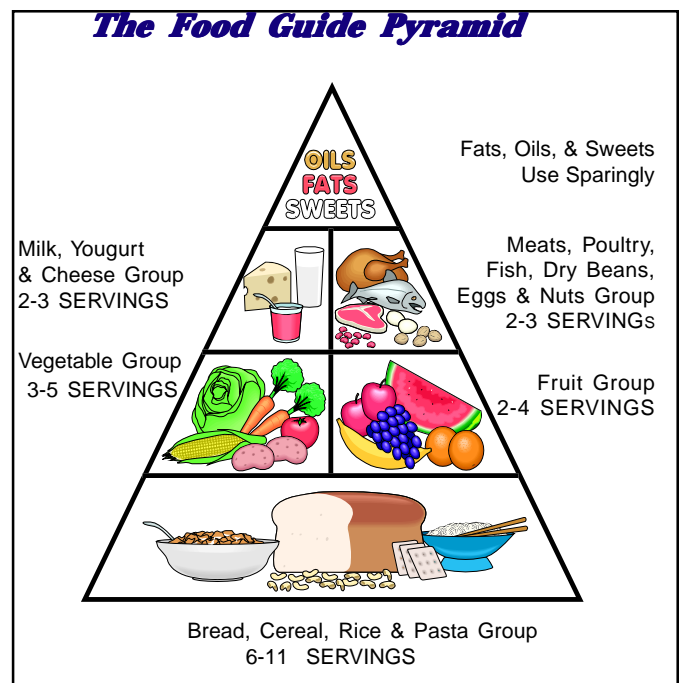
The foods at the bottom or the largest part of the pyramid should be eaten in the largest amounts. The foods at the top or the smallest part of the pyramid, should be eaten in the smallest amounts.

The base of the pyramid is made up of the breads and starches. These foods should form the base of your diet. Foods in this group include breads, cereals, pasta, and grains. They are usually low in fat and high in carbohydrates and the body's favorite energy source. They are also high in vitamins, minerals, and fiber. Plan 6 - 11 servings in your daily food plan.

The next pyramid level contains fruits and vegetables. Like the breads and starches, foods from these two groups should be eaten in large amounts. Fruits and vegetables are packed with vitamins, minerals, and fiber. They are fat free and make great snacks during munchy attacks. Plan for 3-5 servings of vegetables and 2-4 serving of fruits each day.

The third level of the pyramid includes dairy products and meats and meat substitutes. These foods are great sources of high quality protein. Unfortunately, they also tend to be high in fat, so choose carefully. The best choices include skim and 1% milk, lowfat and nonfat cheeses and yogurt. Lowfat meats include skinless chicken, fish, lean beef, fresh pork and lean ham.

The top of the pyramid is occupied by the fats, oils, and sweets. Since this is the smallest part of



the pyramid, these foods should make-up the smallest part of your diet.

Does your diet look like the food pyramid? Think of ways you can increase the breads, starches, fruits and vegetables in your diet.

To order a copy of "The Food Guide Pyramid" booklet, send \$1 check or money order made out to the Superintendent of Documents to: Consumer Information Center, Dept 159-Y, Pueblo, Colorado 81009.

Additional Resources: The following can be obtained through your local public library or by contacting the publishers.

Hammond M, Unlauf R, Matteson B, and Perduta-Fulginiti S. **Yes, Your Can! A Guide to Self-Care for Persons with Spinal Cord Injury.** 2nd Ed. Washington, DC: Paralyzed Veterans of America, 1993. Chapter 8, Nutrition.

Corbet, B, **Spinal Network.** 3rd Ed. Boulder, CO: Spinal Network, 1998:65-70. [Available from Spinal Network, PO Box 8987, Malibu, CA 90265-8987].

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