Nutrition and Weight Management for Persons with Spinal Cord Injuries

Changes in Energy Needs

After a spinal cord injury (SCI), body metabolism changes, and you also may experience changes in weight.

Soon after your injury, you may experience weight loss. This is due to your body having increased energy needs for healing after surgery or trauma. However, as the healing process continues, your energy needs lessen.

Patients with SCI have reduced metabolic activity due to weakened or paralyzed muscles. You may experience muscle loss and reduced muscle mass, which decreases the body’s energy needs. With the loss of muscle, body fat increases.

You might not necessarily look or feel different but these changes occur in the body as a result of inactivity. Due to these changes in your body, it is much easier to gain weight when you have a SCI.

As with the general population, being overweight puts you at increased risk for diabetes, heart disease, elevated cholesterol, elevated triglycerides, hypertension and impaired glucose tolerance.

Other consequences of excess weight include:

- Increased work load on arms to remain mobile
- Risk for skin breakdown due to:
  - Increased skin pressure due to excess weight
  - Skin rubbing wheelchair
  - Reduced ability to reposition in bed or chair
  - Increased skin fold flaps allowing increased moisture for skin breakdown
  - Increased needs for proper hygiene
- Increased cost for special equipment to accommodate increased body size

For individualized calorie recommendations see a registered dietitian.
What is a desirable weight?

A reference for “Ideal Body Weight” ranges of the general population is the Metropolitan Life Insurance tables. To assess patients with SCI, the ranges for ideal body weight must be adjusted as follows:

- **Quadraplegia** – Reduce the reference range 10-15 percent, or 15-20 pounds, lower than the Metropolitan Life Insurance tables for individuals of equal height and weight
- **Paraplegia** – Reduce 5-10 percent, or 10-15 pounds, lower than the reference on Metropolitan Life Insurance tables for individuals of equal height and weight

**BMI**

Body mass index is not a reliable tool to assess the SCI weight status due to the reduced lean body mass secondary to the SCI patient having higher fat mass and lower lean mass than the non-spinal cord injury person.

**Skin Health**

Monitoring weight, skin integrity, food and nutrition related lifestyle factors are essential in preventing skin breakdown. People who maintain a normal weight, consume adequate amounts of nutrients and do not have a history of smoking or alcohol abuse have a reduced risk of developing pressure ulcers. SCI patients have a greater chance for skin breakdown due to increased pressure on some parts of the body and decreased movement.

Persons with spinal cord injury who have pressure ulcers have higher energy needs than a spinal cord injury person with no skin breakdown. Depending on the severity of the pressure ulcer protein needs can range from 1.2-2.0 grams/kg/day for optimal healing of pressure ulcers.

**Comparison of protein needs of a person with no skin breakdown to person with pressure ulcers:**

<table>
<thead>
<tr>
<th>Weight (lbs)</th>
<th>No Skin Breakdown</th>
<th>Pressure Ulcers</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>0.8-1g/kg/day</td>
<td>1.2-2g/kg/day</td>
</tr>
<tr>
<td>150</td>
<td>0.8-1g/kg/day</td>
<td>1.2-2g/kg/day</td>
</tr>
</tbody>
</table>

1 ounce protein is equal to 1 ounce beef, chicken, fish, pork, or cheese, 1 egg or 8 ounces milk (whole, skim or low fat)

Hydration status is important for healthy skin. Increased fluid losses may result from fluids lost with a draining or open wound, fever or the use of an air-fluidized bed. The fluid recommendations are 30 – 40 ml per kilogram body weight/day.

<table>
<thead>
<tr>
<th>Weight (lbs)</th>
<th>Needs</th>
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<tbody>
<tr>
<td>100</td>
<td>6-8 cups/day</td>
</tr>
<tr>
<td>150</td>
<td>8-11 cups/day</td>
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</table>
Balanced nutrition is important for all persons, but when skin breakdown is present, a daily multivitamin/mineral supplement is recommended. Additional vitamin or mineral supplementation is not recommended unless a deficiency is noted for a particular vitamin or mineral.

**Making Healthy Nutrition Choices**

Nutrition is important in overall health and making good choices will help you control your weight. Overall, healthy nutrition can help to give you energy, fight infections, maintain proper body weight and keep your body systems working properly.

Excess calories beyond what you require will be stored as fat.

The *Dietary Guidelines for Americans, 2010*, provide good tips for healthful eating. Some of these tips include:

- **Build a Healthy Plate**
  - Make half your plate fruits and vegetables. Include red, orange and dark green vegetables, such as tomatoes, sweet potatoes and broccoli in main and side dishes.
    - Eat fruit, vegetables or unsalted nuts as snacks.
  - Switch to skim or 1 percent milk.
    - They provide the same calcium, protein and other essential nutrients as whole milk with less fat and calories.
    - Try calcium-fortified soy products as an alternative to dairy foods.
  - Make at least half your grains whole.
    - Choose 100 percent whole grain cereals, breads, crackers, rice and pasta.
    - Check the ingredients list on food packages to find whole-grain foods.
  - Vary your protein food choices.
    - Twice a week, make seafood the protein on your plate.
    - Eat beans, which are a natural source of fiber and protein.
    - Keep meat and poultry portions small and lean.

- **Cut back on foods high in solid fats, added sugars and salts.**
  - Choose foods and drinks with little or no added sugars.
    - Choose water instead of sugar drinks. There are about 10 packets of sugar in a 12 ounce can of soda.
    - Select fruit for dessert. Eat sugary desserts less often.
    - Choose 100 percent fruit juice instead of fruit flavored drinks. (Both beverages can be high in calories.)
  - Look out for salt (sodium) in foods you buy.
    - Compare sodium in foods like soup, bread and frozen meals, choosing foods with lower numbers.
    - Add spices or herbs to season food without adding salt.
  - Eat fewer foods that are high in solid fats.
- Make major sources of saturated fats, such as cakes, cookies, ice cream, pizza, cheese, sausages and hot dogs occasional choices. Avoid eating these foods daily.
- Select lean cuts of meat or poultry, and fat free or low fat milk, yogurt and cheese.
- Switch from solid fats to oils when preparing food.

Examples:

<table>
<thead>
<tr>
<th>Solid Fats</th>
<th>Oils</th>
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</thead>
<tbody>
<tr>
<td>Beef, pork and chicken fat</td>
<td>Canola Oil</td>
</tr>
<tr>
<td>Butter, cream and milk fat</td>
<td>Corn oil</td>
</tr>
<tr>
<td>Coconut, palm and palm kernel oils</td>
<td>Cottonseed oil</td>
</tr>
<tr>
<td>Hydrogenated oil</td>
<td>Olive oil</td>
</tr>
<tr>
<td>Partially hydrogenated oil</td>
<td>Peanut oil</td>
</tr>
<tr>
<td>Shortening</td>
<td>Safflower oil</td>
</tr>
<tr>
<td>Stick margarine</td>
<td>Tub (soft) margarine</td>
</tr>
<tr>
<td></td>
<td>Vegetable oil</td>
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- **Eat the right amount of calories for you.**
  - **Enjoy your food, but eat less.**
    - Avoid oversize portions.
    - Use a smaller plate, bowl and glass
    - Stop eating when you are satisfied, not full
    - Cook more often at home, where you are in control of what is in your food
    - When eating out, choose lower calorie menu options. Choose small portions or share meals.
    - If you drink alcoholic beverages, do so sensibly – limit to one drink a day for women or two drinks a day for men.

**How to judge a portion size:**
Your fist = about 1 cup or 1 medium size fruit
Your palm (without fingers) = about 3 ounces of cooked meat, poultry, or fish
Your cupped hand = about 1-2 ounces of nuts or pretzels
Your thumb = about 1 ounce of cheese or meat
Your thumb tip = 1 tablespoon
Your fingertip= about 1 teaspoon

- **Be physically active your way**
  - Add upper body exercises to your daily routine, as able.
  - The use of a manual standard wheelchair increases energy needs, heart rate, oxygen consumption and ventilation, especially as speed and resistance levels increase compared to ultralight wheelchairs and pushrim-activated, power-assisted wheelchairs.
For more information, visit:


References:


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