

# Everyday Nutrition for Persons with Spinal Cord Injury

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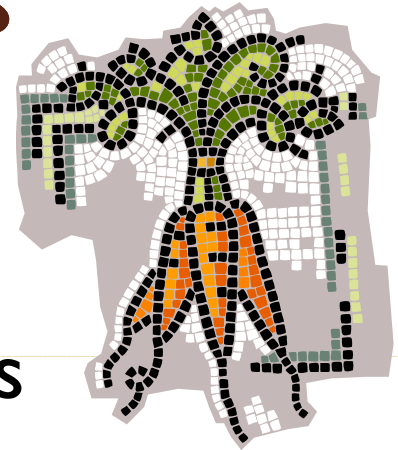
# Why is Nutrition important with Spinal Cord Injury?

- Increased concern for diabetes, elevated cholesterol and obesity
- Weight gain effects mobility and independence
- Weight gain can increase expenses
- Need for healthy skin
- Need for healthy bones



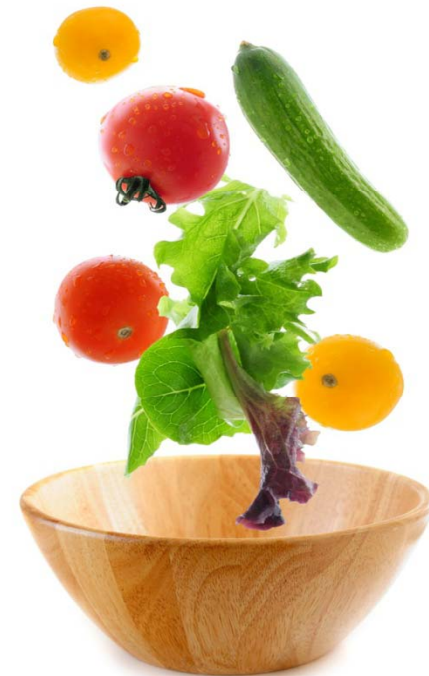
# Everyday Nutrition topics

- Calorie and protein needs
- Weight management guidelines
- SCI and heart disease risk factors
- SCI and bone health
- Nutrition and skin, bowel and bladder



# Not So Everyday Nutrition Topics

- Nutrition and Pressure Sores
- Diet supplements



# Implementing Good Nutrition Habits Every Day

- Strategies and Equipment suggestions for:
  - Food shopping
  - Meal planning
  - Meal preparation
  - Eating out



# American Dietetic Association

## Evidenced Based Library Spinal Cord Injury Guidelines:

**“a series of guiding statements that propose a *course of action* for practitioners by integrating best available evidence with professional expertise and client values to improve outcomes.”**



# • Spinal Cord Injury

## • Evidence-Based Nutrition Practice Guideline

• American Dietetic Association

[www.adaevidencelibrary.com](http://www.adaevidencelibrary.com)

The screenshot shows the top navigation bar of the ADA Evidence Analysis Library website. The logo for the American Dietetic Association (ADA) is in the top left corner, with the tagline "eat right." and "Association". To the right of the logo is a search bar with a "Search" button. Below the search bar is a horizontal menu with four main categories: "Library", "Guidelines", "A-Z Index", and "Store". The "Guidelines" category is highlighted in green. Underneath "Guidelines" is a sub-menu with several options: "Guideline List", "Evaluation", "About Guidelines", "How Does ADA Create Guidelines?", "Nutrition Care Resources", "Print Reports", and "Contributors". The "Guideline List" option is circled in red. Below the navigation bar is a banner image featuring a dumbbell, a green apple, and a measuring tape, with the text "ADA Evidence Analysis Library®" overlaid on the left side.

# ADA Library SCI Guideline Topics

## Assessment (acute, rehabilitation and community phases)

- Energy Needs in the Acute Phase
- Energy Needs in the Acute Phase Using Predictive Equations
- Energy Needs in the Rehabilitation Phase
- Protein Needs in the Acute Phase
- Protein Needs in the Rehabilitation and Community Living Phases
- Acute Care Setting
- Rehabilitation Setting
- Community Setting
- Estimating Fluid Needs to Promote Optimal Stool Consistency
- Biochemical Parameters Associated with Prevention of Pressure Ulcers
- Anthropometric, Nutrition and Lifestyle Factors Associated with Prevention of Pressure Ulcers
- Estimation of Ideal Body Weight
- BMI and skinfold measurements
- BIA and DEXA
- Prevention and Treatment of Overweight and Obesity
- Physical Activity and Energy Needs
- Energy Needs for Persons with SCI and Pressure Ulcers
- Protein Needs for Persons with SCI and Pressure Ulcers
- Fluid Needs for Persons with SCI and Pressure Ulcers
- Micronutrient Needs for Persons with SCI and Pressure Ulcers
- Lipid Abnormalities



# ADA Library SCI Guideline Topics

## • Intervention

- Nutrition and Counseling for Lipid Abnormalities
- Cranberry Juice
- Urologic Health: Cranberry Extract Supplements
- Level of Fiber Intake
- Role of Registered Dietitian
- Nutrition Education Regarding Physical Activity
- Nutrition Education Regarding Physical Activity in Overweight and Obese
- Persons with SCI
- Treatment of Overweight and Obesity
- Prevent Development of Pressure Ulcers
- Nutrition Prescription for SCI Persons with Pressure Ulcers
- Coordination of Care in SCI

## • Monitoring and Evaluation

- Pressure Ulcers: Prevention
- Monitoring and Evaluation in Acute Care Setting



# Weight Recommendations

- Paraplegia:  
Subtract 5-10% from Metropolitan Life Table
- Tetraplegia:  
Subtract 10-15% from Metropolitan Life Table





## Body Mass Index (BMI)

Should not be used to assess body composition in persons with SCI.

- Evidence indicates that a lower BMI is needed to define desired body composition in persons with SCI.
- More recent 2009 study suggests BMI of 22 instead of 30 should be used to define obesity in persons with SCI.

Laughton, GE Spinal Cord (2009)47, 757 – 762.

# Calorie Recommendations

Persons with SCI have reduced metabolic activity due to denervated muscle.

- Paraplegia:  
27.9 calories X Body Weight in kg
- Tetraplegia:  
22.7 calories X Body Weight in kg



Concerns about these formulas: they do not account for changes associated with age, gender or activity.

# Protein Recommendations

- Protein are the same as non-SCI individuals:  
.8 to 1.0 grams/kg Body Weight
- For wound healing or acute injury:  
1.2 – 2.0 grams/kg Body Weight





# General Guidelines for Weight Control

- ❖ Allow time to plan for meals and shopping.
- ❖ Do Not Skip Meals!!!
- ❖ Eat routinely, 2-3 meals per day
- ❖ Small portion sizes
- ❖ Eat a variety of foods – protein, grains, fruit and vegetables
- ❖ Low fat, high fiber diets
- ❖ Watch beverage calories – drink diet soda pop
- ❖ Weigh self as often as possible – find somewhere with a wheelchair scale
- ❖ Know how to read a food label

# Nutrition Label



## Nutrition Facts

Serving Size 1 cup (228g)  
 Servings Per Container 2

### Amount Per Serving

**Calories** 260                      **Calories from Fat** 120

	<b>% Daily Value*</b>
<b>Total Fat</b> 13g	<b>20%</b>
Saturated Fat 5g	<b>25%</b>
Trans Fat 2g	
<b>Cholesterol</b> 30mg	<b>10%</b>
<b>Sodium</b> 660mg	<b>28%</b>
<b>Total Carbohydrate</b> 31g	<b>10%</b>
Dietary Fiber 0g	<b>0%</b>
Sugars 5g	

### Protein 5g

Vitamin A 4%	•	Vitamin C 2%
Calcium 15%	•	Iron 4%

\* Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs:

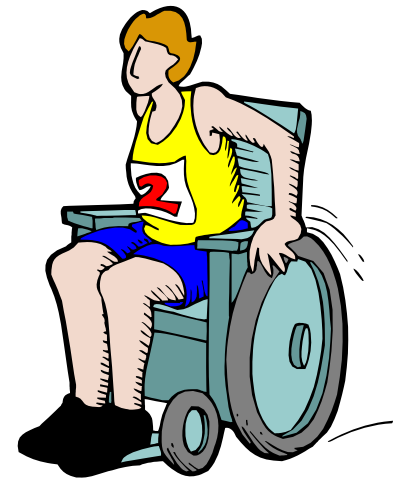
	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:

Fat 9	*	Carbohydrate 4	*	Protein 4
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# Physical Activity is Important!

Evidence suggests that appropriate physical activity, such as wheelchair sports, swimming, electrical stimulation exercise and body weight supported treadmill training may improve blood lipid parameters and weight in persons with spinal cord injury.





# Factors associated with Heart Disease Risk in SCI

- Lipid profile goals:

Total Cholesterol – less than 200 mg/dl

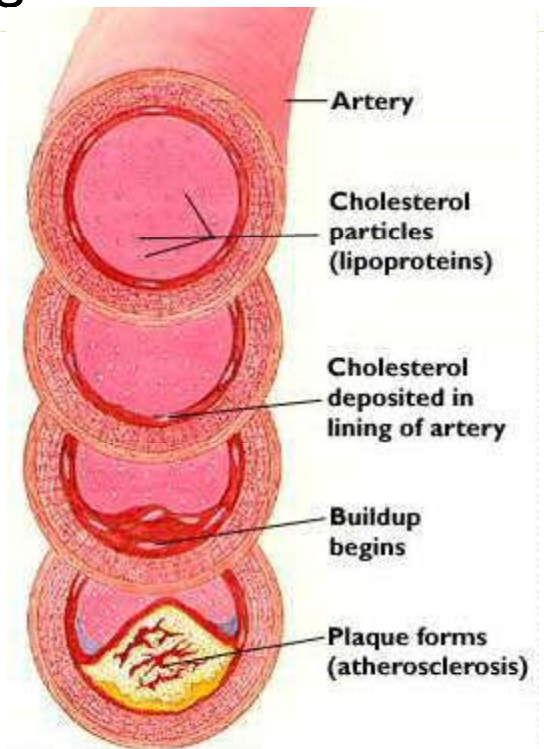
Triglycerides – less than 150 mg/dl

LDL – less than 130 mg/dl

HDL – more than 40mg/dl

\*\*\* HDL is often lower than desired in persons with SCI due to decreased activity and difficult to improve.

- Waist Circumference



# C – Reactive Protein (CRP) and Heart Disease Risk

- CRP is a protein in body that increase with stress. It increases with trauma, pressure sores, UTI, etc.
- What is the normal range of CRP level?
  - If CRP level is lower than 1.0 mg/L, a person has a low risk of developing cardiovascular disease.
  - If CRP is between 1.0 and 3.0 mg/L, a person has an average risk.
  - **If CRP is higher than 3.0 mg/L, a person is at high risk.**
- Recent study indicates persons with SCI may have elevated CRP especially if have tetraplegia or increased waist circumference.

Gibson,AE, et al. Spinal Cord (2008), pp1-6.

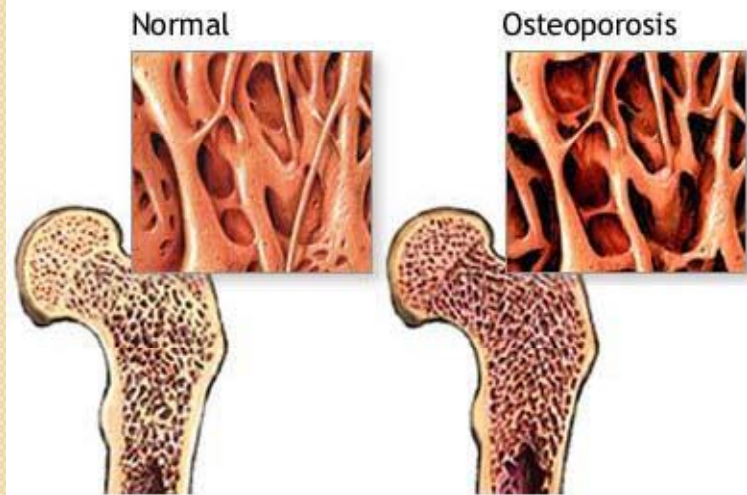
# Diet recommendations to decrease cholesterol

- Limit total fat intake, especially saturated and trans fats.
- Use low fat cooking methods
- Choose low fat dairy products
- Choose fish more often
- Aim for a healthy weight
- Stop Smoking
- Be as active as possible.



# Bone Health – Risk of Osteoporosis

- Persons with SCI are at higher risk for osteoporosis (loss of bone density due to lack of weight bearing on lower limbs).
- DEXA scan is recommended for assessment of bone density.



# Recommendation for Prevention and Treatment of Osteoporosis



- Diet:

- Adequate calcium:

- Adults 19-50 years:

- 1000 mg/day

- Adults >51 years:

- 1200 mg/day

- Adequate Vitamin D:

- Adults and Children over 1 years of age:

- 600 IU/day

- Be active

- Limit caffeine

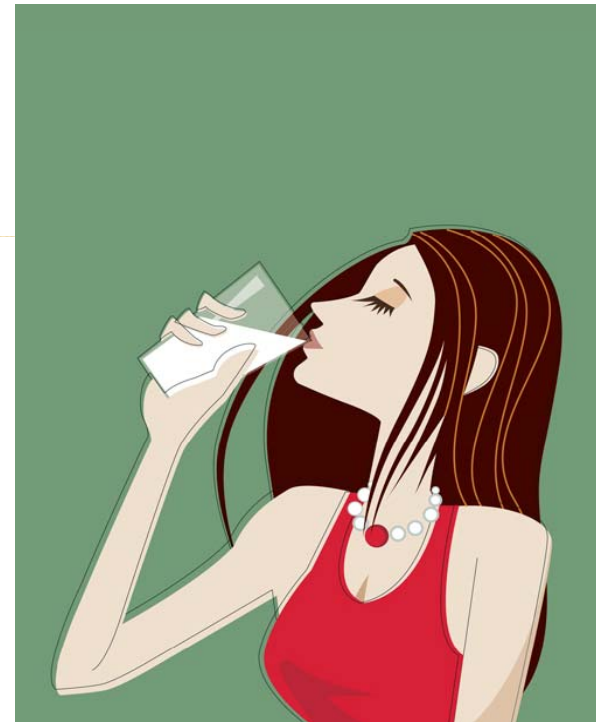
- Stop smoking

- Medication - Fosamax

- Good fall prevention

# Good Food Sources of Calcium

- Dairy Products
  - Milk 300mg
  - Yogurt 400mg
  - Cheese 250mg
  - Soy milk fortified 300mg
- Dark Green Leafy Vegetables
- Tofu
- Canned salmon
- Orange Juice with calcium



# Calcium supplements

- Many brands with Calcium and Vitamin D
- TUMS is an inexpensive Calcium source but no Vitamin D content
- Usual dose – 500 mg twice a day  
Do not take 2 at same time
- Some reports of constipation





# Recommendation for Nutrition Management Neurogenic Bowel

- Eat regular meals – spaced throughout day
- Drink adequate fluids:  
40 ml per kg body weight plus 500 ml  
At least 1.5 liters per day.
- Eat adequate fiber, suggest:  
15 - 20 grams per day





# *Recommendations for Nutrition Management of Neurogenic Bladder*

- Drink adequate fluids

- Cranberry Juice:

Consumption of one cup (250ml) cranberry juice, three times per day, may be associated with a reduced urinary tract biofilm load.

- Cranberry extract supplements:

Evidence suggests that cranberry extract supplements, ingested in tablet or capsule form, are not effective in prolonging the UTI-free period or decreasing bacteriuria or WBC count in persons with spinal cord injuries.



# Not so Everyday Nutrition Topics

- **Nutrition for Pressure sores:**

\*\*Calories needed:

30kcal to 40kcal per kg of body weight per day

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\*\*Protein needed:

- 1.2g to 1.5g of protein per kg body weight per day  
for Stage II pressure ulcers

- 1.5g to 2.0g of protein per kg body weight per day  
for Stage III and IV pressure ulcers

\*\*Adequate vitamin and mineral intake but additional supplementation may not be helpful.

# Nutrition Supplements

- Study in 2009 indicates that 50% of the 77 persons with SCI interviewed were consistent supplement users.
- Top 3 supplements used were multivitamins, calcium and Vitamin D.
- These are appropriate only if a deficiency in diet is documented.



Websites to learn if supplements are effective and/or safe:

- Office of Dietary Supplements: <http://ods.od.nih.gov/>
- Natural Medicines Comprehensive Database (subscription)

# What's stopping you from making a change?

- Convenience
- Access
- Cost
- Preparing it
- Taste



# Where to get it!

- Grocery stores
- Online
- Farmers Market
- Gardens
- Eating out



# Grocery

- Plan ahead and make a list
- Most larger stores offer assistance as needed for picking up items and packing it out
- Try to purchase what you can carry
- Can use both cash and credit/debit
- Coupons



# Getting it home





# Online Grocery Stores

- Plan ahead and make a list
- Take your time shopping
- Delivery to your doorstep
- Credit card/debit card required
- Amazon Fresh
  - [www.fresh.amazon.com](http://www.fresh.amazon.com)
- Safeway
  - [www.shop.safeway.com](http://www.shop.safeway.com)
- Individual farms , ranches & Co-Ops
  - Vegetables
  - Milk-dairy
  - Meat



# Online purchasing

- Door delivery
- Amazon provides the box initially and will trade out with each delivery
- Some require you to provide the ice box, leaving it out



# Online purchasing



- Elevate the box to reach into the bottom
- The delivery day is usually set so if you need help you can arrange it ahead of time for perishables
- Good for large staple items that may be difficult for you to carry

# Farmer Markets

- List what list?
- Variety of grains, fruits, vegetables, proteins and treats available.
- Get to know the vendors
  - Super helpful about what's good
  - Love to trade items
  - Strong community
- Perfect for small amounts- low weight but more fragile
- Picked ripe so plan on making something with it soon
- Usually cash only
  - Bring small bills
  - Prices are variable



# Gardens

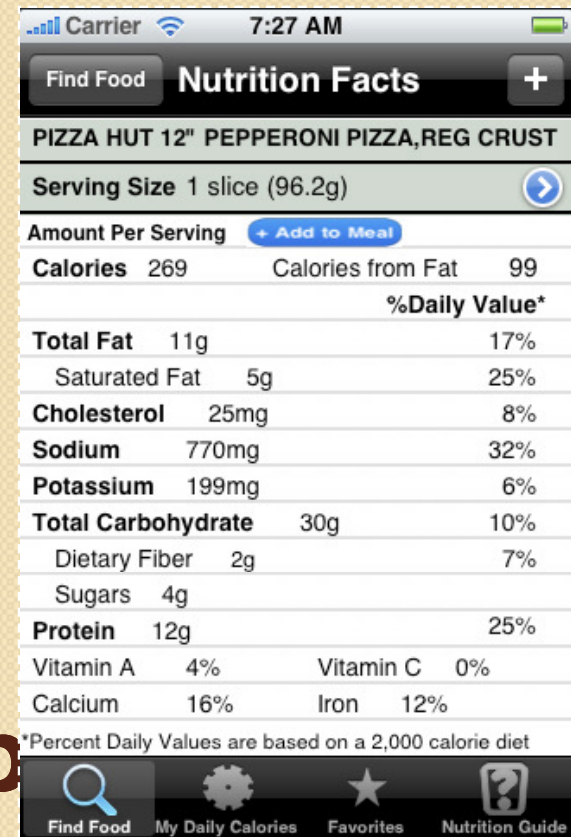
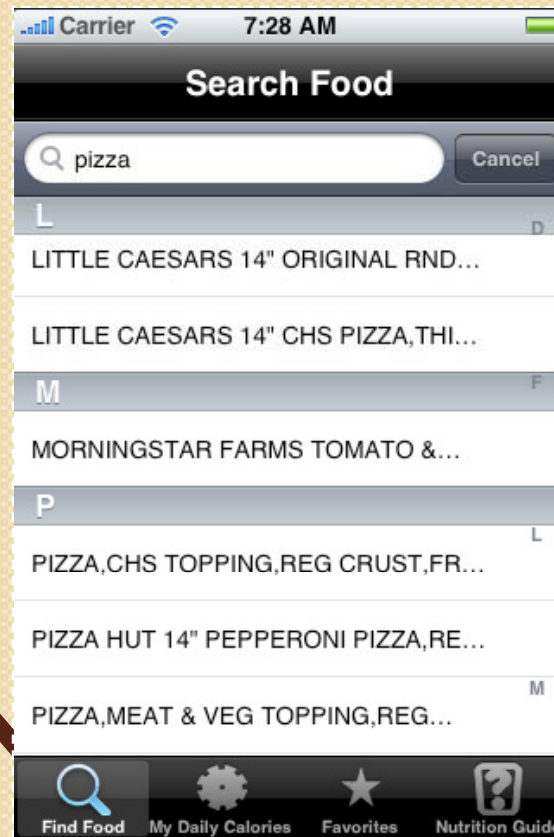
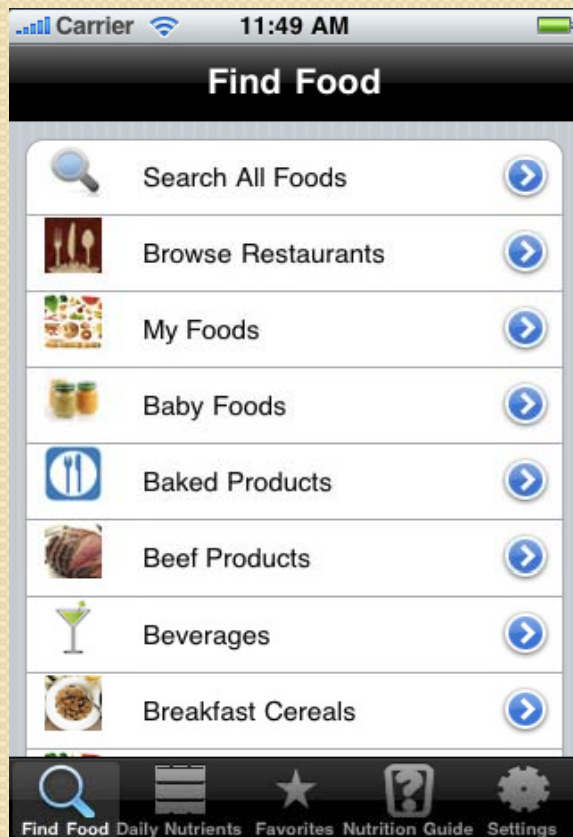
- Yours or friends
  - Pick out the items you want to eat, then plant them
  - Due to the volume-large opportunity to experiment w/ recipes
  - Not high in convenience since there's some upkeep necessary
- Pea patches
    - Elevated planting beds
    - Stone or hard packed gravel for the foot path
    - Shallow garden basket for carrying tools or vegetables
  - Small potted gardens
    - Elevated pots
    - Tomatoes
    - Herbs



# Eating out

- Convenient but with some pre-planning it can also be healthy
  - Portions, Calories, fat, sodium
- Web site for nutritional information
  - <http://www.dietfacts.com/fastfood.asp>
- Mobile apps : look under nutritional information
  - Lose It- offers caloric intake information for items from different restaurants
  - Restaurant Nutrition- prepared food from Whole Foods, Chain restaurants & Fast food

# Sample Smartphone “App”



# Cooking it up

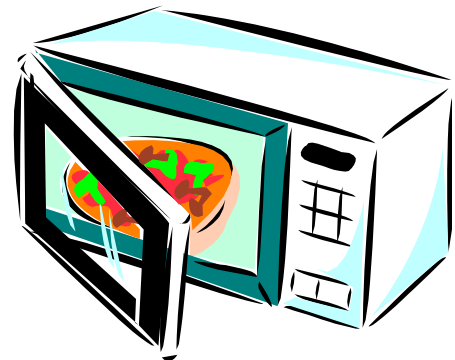
- Prep work
- [www.youtube.com](http://www.youtube.com)
  - imbonnie
- Tools for prep work
  - Xoxo, wider handles but not too long will be easier
  - Bowls, grip base
- Lap trays
  - Prep station
  - Transport





# Access to Heat

- Crock pot- push buttons vs knobs
- Oven-front knobs, protective wear
- Stove top-front knobs, mirrors
- Toaster oven- height adjustable
- Microwave- reheat pre-made food, push buttons can be built up
- Electric griddles and skillets- height adjustable





# Resources

- Northwest Regional Spinal Cord Injury System:

[http://sci.washington.edu/info/forums/reports/nutrition\\_2011.asp](http://sci.washington.edu/info/forums/reports/nutrition_2011.asp)

- ADA Evidenced Based Library:

<http://www.adaevidencelibrary.com>

- University of Alabama at Birmingham Resources:

Weight Management Following SCI – SCI Info Sheet #8 -

[www.spinalcord.uab.edu/show.asp?durki=21481](http://www.spinalcord.uab.edu/show.asp?durki=21481)

Nutrition Resource -

[www.spinalcord.uab.edu/show.asp?durki=21583&site=1021&return=24467](http://www.spinalcord.uab.edu/show.asp?durki=21583&site=1021&return=24467)

- Office of Dietary Supplements:

<http://ods.od.nih.gov/>

# Resources

- Craig Hospital: Weight Gain: The Battle of the Bulge  
[www.craighospital.org/SCI/METS/weightGain.asp](http://www.craighospital.org/SCI/METS/weightGain.asp)
- Craig Hospital: Cutting the Fat  
<http://www.craighospital.org/SCI/METS/fat.asp>
- Baylor College of Medicine and The Institute for Rehabilitation and Research: Spinal Cord Injury Nutrition Facts  
[www.ilru.org/healthwellness/html/SCII.htm](http://www.ilru.org/healthwellness/html/SCII.htm)
- Spinal Times: Food and Nutrition  
<http://spinaltimes.org/foodnutrition.html>
- U.S. Food and Drug Administration: How to Read Nutrition Labels  
<http://www.cfsan.fda.gov/~dms/foodlab.html>
- U.S. Food and Drug Administration: How to Understand and Use the Nutrition Fact Labels  
<http://www.cfsan.fda.gov/label.html>
- You Tube Videos by imbonnie:  
[www.youtube.com](http://www.youtube.com)

Questions????

