Eating Well to Prevent and Manage Secondary Conditions in SCI

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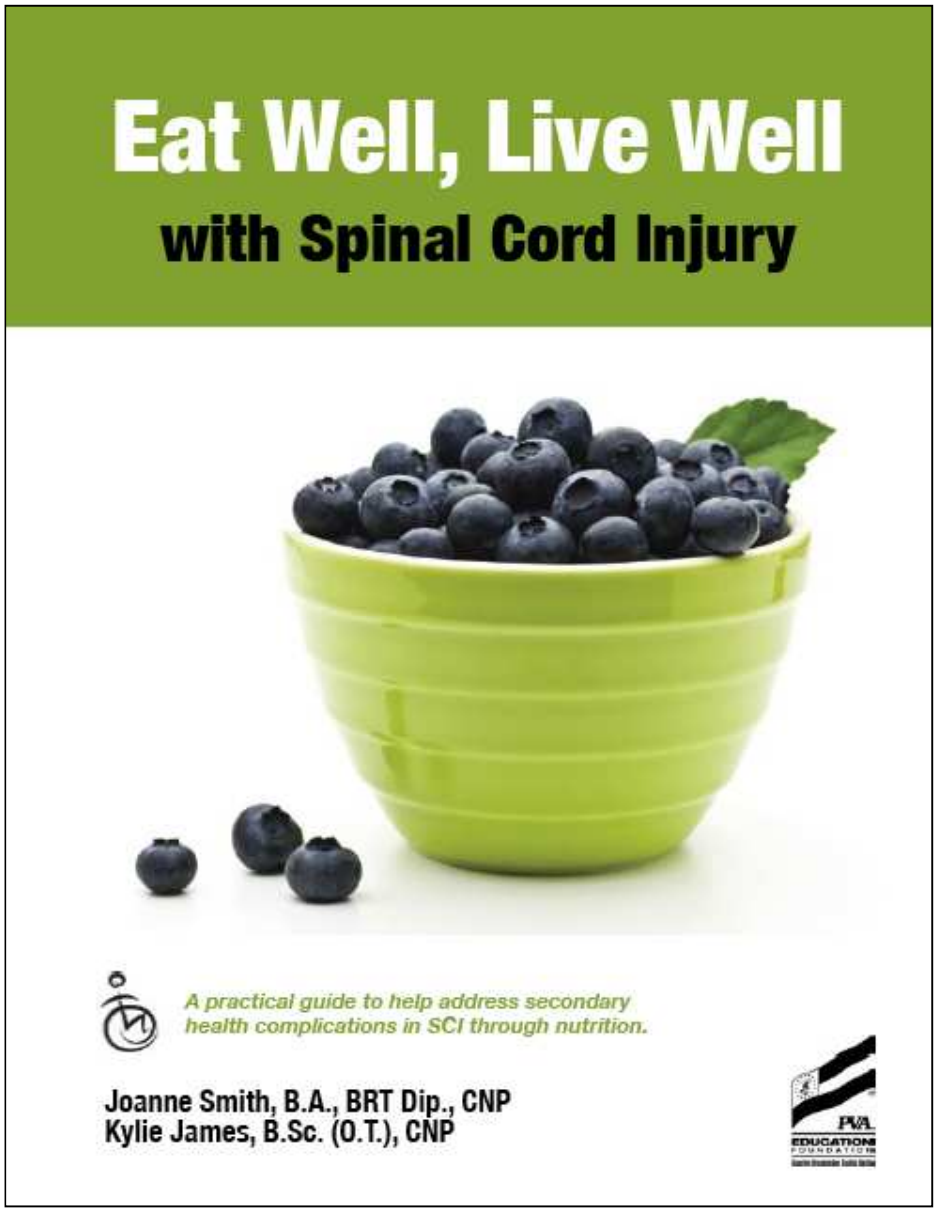
NEW ENGLAND REGIONAL SPINAL CORD INJURY CENTER
A Network of Model SCI Care

SPAULDING-HARVARD SCI MODEL SYSTEM
SERVING NEW ENGLAND


Eat Well, Live Well
with Spinal Cord Injury
A practical guide to help address secondary health complications in SCI through nutrition.
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SCI and Bladder Health

The role of your urinary system is to help eliminate waste from your body. Your kidneys filter and remove waste products from your blood. These wastes then become urine, which flows from the kidneys down thin tubes called ureters and into the bladder. Your bladder serves as a storage tank collecting urine until it is eliminated.

A neurogenic bladder requires catheterization or other urinary devices to help drain your bladder. This can introduce unwanted bacteria into your bladder and may lead to **urinary tract infections (UTIs).**

UTIs are a constant and lifelong threat to individuals with spinal cord injury (SCI). They can contribute to many secondary health issues, increase or prolong hospitalization stays, interfere with your rehabilitation, lower your self-esteem and impede your ability to function.

Therefore, a proactive approach to your bladder management is imperative. Eating a diet that contains the essential nutrients needed to build and maintain your immune system and prevent bacteria from attaching to your bladder wall can help protect you from infection.

80%

Approximately 80% of individuals with SCI will develop **bladder infections** over their lifetime, some of them chronic.

6% - 8%

Approximately 6 - 8% of individuals with SCI will develop **kidney stones** within the first 8 years post injury.

Chen et al, 2000

36%

Approximately 36% of individuals with SCI who use in-dwelling catheters will develop **bladder stones** within the first 8 years post-injury.

Linsenmeyer. 2006

This chapter will discuss the common factors that contribute to UTIs in individuals with SCI, and the many foods, herbs and supplements that can help prevent and manage UTIs.

The information and recommendations in this chapter are not meant to offer medical diagnosis, advice or substitute for medical or other professional health care treatment.

LIVE WELL

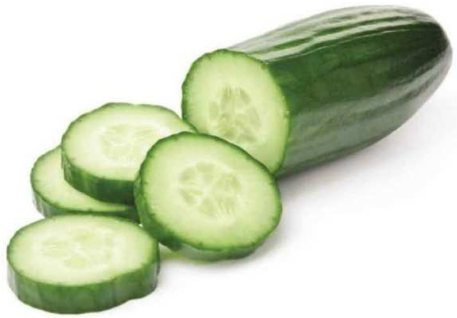
Cool cucumber dip

This quick and easy dip is a great way to help eat your 5+ vegetables a day. The yogurt has probiotics to help boost your immune system, and the garlic and parsley are powerful anti-microbials.

Ingredients:
- 2 cups of plain Greek yogurt
- 1 clove of garlic, crushed
- 1⁄2 cucumber, grated
- 1 tablespoon of fresh lemon juice
- 1 cup of parsley, finely chopped

Directions:
1. Mix yogurt, parsley, cucumber, lemon juice and garlic
2. For added bladder support use celery sticks and sliced peppers to dip

NUTRITIONAL CONTENT OF DIP:
Proteins: 30 grams
Carbohydrates: 25 grams
Fats: 20 grams
Calories: 398



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Food & Supplement Recommendations

- Consult with your medical or health care professional before starting any dietary changes and/or supplement use.
- If you are pregnant or nursing, do not take any supplements before consulting with your medical health care professional.
- References for this chapter are listed in the back of the book.

NUTRIENT	PURPOSE	FOODS	SUPPLEMENT DOSAGE	CONTRAINDICATIONS/CONSIDERATIONS
ESSENTIAL				
D-Mannose	Helps prevent bacteria from attaching to bladder wall	NA	Take 1 teaspoon every 3 to 4 hours in one glass of water when you have an infection with no signs of fever, until symptoms are gone 1 teaspoon in a glass of water every day for prevention	May cause loose stools and bloating in high doses Some research suggests that D-Mannose might affect blood sugar levels in people with diabetes If you have a bladder infection with fever, seek medical attention
Probiotics	Enhance immune system	Fermented foods such as yogurt, miso, sauerkraut & kefir	1-2 capsules at night before bedtime	If you are taking antibiotics you can take probiotics, but just ensure that they are consumed 2 hours apart. If you have completed a course of antibiotics, you will need to continue probiotics for at least 2-3 months When purchasing a probiotics, make sure you look for the following: • A minimum of 8 billion active micro-organisms • Contains strains Lactobacillus rhamnosus & Lactobacillus fermentum, as these have been shown to help reduce bacteria from the bladder • Freeze-dried probiotics, as this keeps the flora dormant until they enter your body • Keep stored in the fridge
Vitamin A	Stimulates immune system	Sweet potato, carrots, spinach, red peppers, squash & kale	5 000 IU a day for prevention 10 000 IU a day in presence of infection	Women who are sexually active or of child-bearing age should not use high doses (over 10 000 IU) of Vitamin A, due to risk of birth defects. Doses over 10 000 IU should be taken under the supervision of your health care practitioner
Vitamin C	Stimulates immune system	Papaya, red/green peppers, parsley, pineapple, broccoli, Brussels sprouts, kale & strawberries	2000 mg a day for prevention 3000-4000 mg a day in divided doses during an infection	Sulfa antibiotics decrease Vitamin C levels in the body High doses of Vitamin C can cause loose stools or gastrointestinal problems: reduce dosage if needed Take in divided doses throughout the day as Vitamin C is quickly used up in the body Take lower doses if you are prone to kidney stones Consult with your health care professional if you are on blood-thinning medication as Vitamin C can act as a natural blood thinner
Water	Helps flush the bladder	Drink a minimum of 8 cups of water every day	NA	Avoid distilled water, which can leach minerals from the body. Try to drink filtered water (as it has had toxins removed from it), preferably from carbon or reverse osmosis filter systems Avoid water stored in plastic bottles, which can leach chemicals into the water, potentially disrupting hormone balances
Zinc	Supports immune system	Red meat, oats, pumpkin seeds, sesame seeds & yogurt	50 mg a day Best taken with food Best absorption forms include: zinc picolinate, acetate, citrate, glycerate and monomethionine. Poor absorption forms include: zinc oxide and zinc sulfate	Take in divided doses during the day to prevent possible nausea Consult with your health care professional first if you have high cholesterol Higher doses of zinc (greater than 100 to 300 mg a day) can impair the immune system and may lead to a copper deficiency


BioBlue

Common Question SCI patients/clients asked…

What are you taking?

Equally important question but not often asked…

What are you eating?

Bad Diet  **Disease**

SCI FACTS:

People with SCI commonly experience;

- Poor diets
  - Change in economic status
  - Lack of transportation
  - Decreased function/ability to prepare healthy meals
- Nutrient deficiencies

Common Nutrient Deficiencies

- Vitamin A
- B2 (riboflavin)
- B9 (folic acid)
- B12
- Vitamin D
- Vitamin E
- Calcium
- Chromium
- Magnesium
- Zinc
- Fiber
- EFA's

*Walters JL 2009

*Tomey 2005

Average:
7 health complications per year

- Digestive dysfunction
- Constipation/ bowel obstruction
- Diarrhea
- UTI's
- Obesity
- Pressure sores
- Osteoporosis
- Arthritis
- Type 2 diabetes
- Heart disease
- Pain
- Sleep disorders

Benefits of Nutrition for SCI

- Enhances natural healing potential
- Restores balance
- Boosts overall health
- Helps target causes – not just symptoms
- Fulfills higher need for nutrients
- Replenishes nutrients depleted by medication
- Helps prevent development of secondary health conditions

Why use Supplements?

- Digestive dysfunction deceases nutrient absorption
- Body has an increased demand for specific nutrients to address health conditions
- Food alone may not be able to provide the nutrient levels required for therapeutic effect
- Addresses clients compliance & preference
- Certain medications deplete nutrients
- Processed foods limited in nutrients

Nutritional Protocols

Addressing Bowel Dysfunction/ Constipation

SCI FACTS:

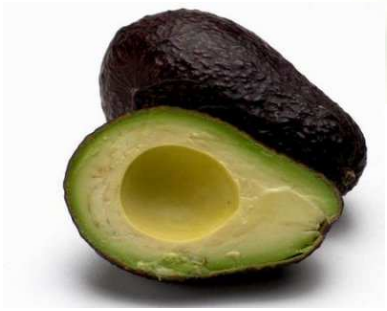
- Main gastrointestinal complaint/frustration following injury
- Abdominal pain/bloating
- Increased risk of bowel accidents
- Increased risk of bowel obstruction
- Contributes to other health issues/concerns:
  - Increased risk of hemorrhoids, spasticity, autonomic dysreflexia and diverticulitis
  - Negatively impacts overall lifestyle

Client Case:

- 26 years old
- T12-L1 incomplete paraplegic
- 3 yrs. post injury;
  - Diet-pizza, pasta, subs, cakes, processed cereal, energy drinks
  - 1 BM every 3 days (difficult, time-consuming, often incomplete bowel routines)
  - Low energy/often fatigued
  - Abdominal pain/chronic gas/bloating
    - social embarrassment/isolation

1. Support Digestive Function

- Consume enzyme rich foods:
  - fresh vegetables
  - pineapple
  - avocado
  - papaya
- Digestive enzyme supplements (1-2 every main meal)
  - betaine hydrochloride
  - bile salts
  - enzymes



2. Help Stimulate Peristalsis

- Eat small frequent meals
- Reduce/eliminate sugar and high glycemic foods
  - Donuts
  - Cookies
  - Cakes
  - Processed muffins
  - Pizza
  - Refined pasta

3. Increase Fiber

- Absorbs water and adds bulk in stool creating softer consistency and easier evacuation
- 19-30 grams of fiber per day

Healthy Sources

- Legumes (i.e. chick peas or black beans)
- Whole grains (i.e. spelt)
- Fruits and vegetables

Supplements

- 1 tbsp whole husk psyllium /day

*Cameron, Nyulasi, Collier & Brown, 1996

4. Eat Good Fats (Omega 3)

- Help soften stool
- Help lubricate bowel

Healthy sources

- Fish oils
- Olive oil
- Flax seed oil

Supplements

- 2-4, 1000 mg capsule/day

5. Take Probiotics

- Good bacteria assist with proper bowel function
- Produce fuel for cells of colon/ help maintain health of bowel
- Enhances peristalsis

Healthy Sources

- Yogurt, pickled foods, kefir

Supplement

- 1/day – minimum 8 billion microorganisms
- Lactobacillus acidophilus & bifidobacterium

Outcome

- BM every day
- Faster and more efficient bowel routines
- Reduced incidents of gas
- Elimination of abdominal pain
- Increased energy
- Increased self-esteem
  - Decreased social isolation
- Medal winning Paralympic athlete!

Addressing Pressure Sores

SCI FACTS:

- 85-95% risk of developing
- Risk increases with time since injury
- Accounts for high number of re-hospitalizations
- Contributes to other health issues:
  - Infection/osteomyelitis
  - Fatigue
  - Autonomic dysreflexia
  - Decreased quality of life

Contributing Factors:

- Altered circulation
- Altered collagen production
- Atrophy
- Body weight
- Body positioning/ seating
- Excessive moisture
- Heat
- Decreased immune function
- Spasms
- Thinning skin
- Malnutrition

Early Nutritional Intervention:

- Enhances immune system
- Improves wound healing
- Decreases length of hospital stays
- Lowers risk of associated complications

Client Case:

- 47 years old
- C4-5 incomplete quadriplegic
- 25 yrs. post injury
  - Developed 1st sore on sacrum
  - At 9 months- stage 4 – required surgery for infection/osteomyelitis
  - Post-surgery healing - rate of 5% every two weeks

1. Increase Calories

- To meet increased energy needs required for healing
- 30-35 calories per kg of body weight

Healthy sources

- Nut butters
- Dried fruits/juices
- Avocados
- Whole grains
- Coconut milk

*Kirk, 1996

2. Increase Protein

- Essential for growth and repair of new tissues
- 1.2-1.5 grams of protein per kg of body weight

Healthy sources

- Fish/Beef/poultry
- Quinoa/beans/lentils
- Nuts/seeds
- Protein powders/smoothies
  - Lysine
  - Proline
  - Glutamine

*Kirk, 1996

3. Eat foods rich in Vitamins A,C,E & zinc

- Supports collagen production immune system

Healthy sources

- Yellow & orange vegetables/sweet potato
- Broccoli, red & green peppers
- Sunflower seeds, olives/oil
- Pumpkin seeds, yogurt

Supplements

- Vitamin A (5000 IU/d)
- Vitamin C (3000 mg/d)
- Vitamin E (400 IU/day)
- Zinc (50 mg/day – take for 8 weeks)

4. Drink 8 cups of fluids/day

- Helps skin wounds heal more quickly
- Carries important repair substances
- Eliminates wastes/toxins

*Yarkony, 1994

5. Eat Good Fats (Omega 3)

- Required for proper cell production
- Helps maintain skin integrity and elasticity
- Helps prevent moisture loss
- Natural anti-inflammatory

Healthy Sources

- Fish/fish oils, walnuts, flax seeds

Supplements

- 2-4, 1000 mg/day

Outcome

- Healing time doubled –
  from 5% to 10% every 2 weeks
- Wound completely healed in
  6 months
- Returned to work full time

Overall Nutrition for SCI

1. Protein

2-3 servings a day

Serving size = the palm of your hand

- Red meat - 1-2 x a week
- Oily fish
- Chicken/Turkey
- Eggs
- Plain Greek Yogurt
- Cottage cheese
- Protein powders

2. Fruits

1-2 servings a day

- 1 cup of berries
- 1 apple
- 15 cherries
- 1 nectarine
- 3 apricots
- 1 orange
- 1 pear
- 2 kiwis
- 1 peach

3. Grains

1 serving a day

Serving size= ½ cup or 1 slice of bread

- Quinoa
- Cream of wheat
- Steel cut oats/rolled oats
- Brown or wild rice
- Spelt
- Millet
- Amaranth
- Kamut

4. Lentils/Legumes

1-2 servings a day

Serving size= ½ a cup (cooked)

- Kidney beans
- Black beans
- Hummus
- Split peas
- Navy beans
- Chick peas
- Lentils (red, yellow, green)

5. Vegetables

5+ servings a day

Serving size= ½ a cup

- Asparagus
- Broccoli
- Cauliflower
- Cabbage
- Sweet potato
- Beets/Carrots
- Dark leafy greens
- Celery

6. Fats

2 servings of healthy fat a day
Serving size = 1 tablespoon of oil or a golf ball size of nuts and seeds

- Olives/olive oil
- Avocadoes/oil
- Flax seeds/oil
- Coconut butter/oil
- Raw and unsalted nuts and seeds
- Nut and seed butters
- Chia seeds

7. Fluids

Drink 6-8 cups of water/fluids a day
Serving size = 1 cup = 240 mls / 8 oz

- Herbal teas
- Water with freshly squeezed lemon juice
- Diluted juices
- Broths
- Soups

AVOID…

- Refined carbohydrates – white flour, white rice, white pasta, cakes, cookies, bagels
- Trans fats – salad dressings, crackers, frozen dinners, commercial based goods
- Avoid sugar & artificial sweeteners
- Limit alcohol as much as possible
- Avoid or limit caffeine
- Avoid soda

Supplements

- **Multi-vitamin (1/day)**
- **Vitamin C (1000-2000 mg/day)**
- **Omega 3 (2-4, 1000 mg/day)**
- **Probiotic (1/day)**
- **Vitamin D (3000-4000 IU/day)**

Weekly Nutrition Meal Plan

Below is a one-week meal plan that implements the above recommendations. (Evening snack is optional.)

	BREAKFAST	SNACK	LUNCH	SNACK	DINNER	SNACK
Monday	Lemon juice and water Protein shake w/ spinach, frozen berries and water	Celery and almond butter	Chicken salad w/ peppers, chick peas and olive oil dressing	Pear	Salmon w/ quinoa and steamed asparagus & mushrooms	A glass of almond milk
Tuesday	Lemon juice and water 2 scrambled eggs w/ spinach and 1/4 avocado Green tea	Apple and 6 almonds	Mixed bean salad	Protein shake w/ water and banana	Beef stir-fry w/ brown or wild rice	2-3 pieces of dark chocolate (75% or more)
Wednesday	Lemon juice and water Chocolate protein shake w/ avocado and water	8 walnuts	Can of tuna on fresh green salad w/ broccoli, onions & tomatoes Plain Greek yogurt for dressing	1 hard-boiled egg	Vegetarian bean burrito on whole wheat wrap w/ salad	Unsweetened apple sauce
Thursday	Lemon juice and water Oatmeal w/ a handful of berries, mixed raw nuts, seeds and cinnamon	1/2 cup Greek yogurt	Carrot and ginger soup	Hummus w/ sliced cucumbers and peppers	Fish w/ baked sweet potato and steamed broccoli	Apple slices with almond butter
Friday	Lemon juice and water 2 egg omelet w/ mushrooms and tomatoes Green tea	Peach	Chicken spinach salad w/ goat cheese, and tomatoes	Strawberries w/ a handful of raw unsalted walnuts	Vegetarian quinoa/black bean salad	Air popped popcorn
Saturday	Lemon juice and water Greek yogurt, blueberries and green tea	Unsweetened apple sauce w/ cinnamon	Salmon salad w/ 1 slice of whole grain bread	Cauliflower and broccoli w/ taziki dip	Turkey chili w/ goat cheese on top	Pumpkin and sunflower seeds

Nutrition is…

- An integral part of rehabilitation process
- Important for helping prevent and reduce secondary health complications
- Key in optimizing long term health & well-being

So what are you eating?

www.eatwelllivewellwithsci.com

fruitful elements

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