

# *Week Four on The PATH*

## **The Ender**

Week Four on The PATH shows you how to beat between meal snacking. The key to this is a very French habit—the “ender” of the meal.

### WHAT TO DO THIS WEEK

- Between-meal snacking
- Adding the meal ender
- Adding foods that satisfy
- Chocolate-eating lessons

### WHAT TO KNOW THIS WEEK

- The physiology of satiety
- How to get from one end of the pool to the other
- The role of fats and fiber in stomach emptying and insulin control

### RESOURCES

- Fiber sources
- Protein Sources
- Calcium sources

### HOMEWORK

- Begin the strategies for eliminating between meal cravings
- Add the ender
- Find out which ender is most effective for you
- Play with your cravings to master them

### JOURNALING

- Own your own hunger

## The Ender

I feel a bit sheepish about the ender, for a couple of reasons. First, it's abstracted, out of context, like a gorilla in a cage or a Pepsi in Atlanta. The ender is such a natural way for the French to end their meals, and it comes because they truly love their food. It comes because of the pleasure and sensual nature of the meal itself.

But my science brain wants to hack up the smooth and continuous to see where one part ends and another begins. How do they work? And how do those parts work together? Viewing the thin, healthy French made me want to see what, in their luscious meals, was doing the trick. The ender plays a huge part.

So it's ripped from its normal context of loving your food, and plunked down right in the middle of a drive just to lose weight. I suppose that's okay. You gotta do what you gotta do. It's important, though, to remember what it's all about. Just like it's important to remember what work's about. You work to live, not live to work. Yes, the ender works for weight loss, but don't become so focused on this aspect that you lose the joy and love of food, or the vision that eating well means enjoyment without gluttony.

If you want to lose weight, follow the instructions on adding the ender to your meal. Take it like a pill proscribed by a sitcom doctor on an infomercial. It works, no doubt about it. The part that makes me squeamish isn't the fact that it's a means to an end, but that it becomes just another quick fix to an octopus problem with many very long arms.

So the ender works, and is seductively easy to do. Not only does it take away between-meal cravings, but it tastes so good! Yet don't forget where it came from, and the context it needs to have in your life. The ender is about savoring a small bit of luscious flavor—it's about satisfying your mind, not your stomach.

Finally, the ease of this technique may lead some to go too far. A small delicious ender is fantastic and will reduce your cravings. But larger amounts will reduce your body's ability to react to those very same molecules. This is the central message woven throughout the PATH.

Quantity kills. More is not better. Moderation will enrich your life.

Have a great week!

## Great Fiber Sources

FOOD	SERVING SIZE	FIBER GRAMS
Spinach	1/2 Cup Boiled	2
Boston Brown Bread	1 Slice	2.1
Carrot	1 Average Raw	2.3
Kiwi Fruit	1 Medium	2.6
Acorn Squash	1/2 Cup Baked	2.9
Corn on the Cob	1 Small Roasted Ear	2.9
Whole Wheat Bread	1 Slice	3
Apple With Skin	1 Medium	3
Orange	1 Medium	3.1
Pistachio Nuts	1 Ounce, Hulled	3.1
Sweet Potato	1 Small, Baked	3.4
Brussel Sprouts	1/2 Cup, Boiled	3.4
Chestnuts	1 Ounce, Hulled	3.7
Pumpkin Seeds	1 Ounce, Hulled	3.9
Strawberries	1 Cup, Fresh	3.9
Raisins	1/2 Cup	3.9
Oatmeal	1 Cup	4
Pine Nuts	1 Ounce, Dried	4.1
Bulgar Wheat	1/2 Cup, Cooked	4.1
Artichoke Hearts	1/2 Cup, Boiled	4.4
Coconut	1 Ounce, Flaked	4.7
Navy Beans	1/2 Cup, Cooked	4.9
Guava	1 Fresh	4.9
Dried Apples	10 Dried Rings	5.6
Baby Lima Beans	1/2 Cup Cooked	6.6
Refried Beans	1/2 Cup, Canned	6.7
Blackberries	1 Cup, Fresh	7.2
Cowpeas	1/2 Cup Cooked	8.3
100% Bran	1/2 Cup	8.4
Kellogg's All-Bran Buds	1/3 Cup	13
Baked Beans	1/2 Cup, Cooked	10
Prunes	1 Cup	11
Dried Figs	3 Medium, Dried	10
Pears	5 Dried Halves	11.5
Pearled Barley	1/2 Cup	12.3

## Just a Bit About Fiber

Being overweight is associated with heart disease, some types of cancers, type 2 diabetes (non insulin-dependent), stroke, arthritis, breathing problems, and depression. A diet high in fiber can help you control certain medical conditions by helping you control your weight, but fiber can also benefit you as it travels through your digestive system. Dietary fiber is the part of whole grains, vegetables, fruits, and nuts that resists digestion in the stomach and intestines and, depending on the type of fiber ingested, can help to control certain health conditions.

### How does fiber help you lose weight?

Fiber alone contains no calories, and it provides the bulk to your diet that gives you the satisfaction of chewing, plus the feeling of a full stomach. There are two types of fiber: water-insoluble and water-soluble. Water-insoluble fiber, found in vegetables and whole grain breads and cereals, adds bulk to the diet. Water-soluble fiber, found in fruits, legumes, seeds, and oat products, exits the stomach more slowly and helps your stomach feel full longer. Fiber has several additional benefits that can help you to control your weight. For example, foods containing fiber take longer to eat, which means your stomach feels full sooner and you eat less. Foods with fiber are also satisfying so you don't feel hungry between meals.

### What are the other benefits of a high fiber diet?

A high fiber diet and weight loss (through reduced calorie intake and exercise) can reduce your risk of certain medical conditions. The type of fiber you digest determines your benefits. For example, a diet consisting of insoluble fibers may reduce your risk of colon cancer. Insoluble fiber passes rapidly through the body, carrying cancer-causing substances through the digestive tract quicker. Additionally, insoluble fiber helps to prevent or relieve constipation because it exits the body quickly. On the other hand, a diet rich in soluble fiber can help to reduce your risk of stroke, control diabetes, prevent some cancers, and avoid gastrointestinal disorders. Soluble fiber can also help lower your blood cholesterol and lower your risk of cardiovascular (heart) disease. Soluble fiber absorbs fluids as it moves through your digestive track. During the process, the fiber dissolves, thickens, and forms a gel. This gel binds itself with acids made from cholesterol from the liver and then carries it out of your body through your waste. Your body is left to pull the cholesterol from your blood stream, reducing your blood cholesterol. The gel moves slowly through the digestive system. It slows the release of sugar and slows sugar absorption, thereby moderating blood glucose levels. The gel also creates softer and bigger stools, which means fewer hemorrhoids and fewer bouts with constipation.

### **Adding fiber to your diet**

The National Cancer Institute recommends a daily intake of 20 to 35 grams of fiber. However, most Americans only eat between 10 to 15 grams of fiber per day. A floating stool and easy passage indicates that your diet has enough fiber.

Fiber is not the cure-all for weight control. However, combined with a nutritious diet, fiber can help you lose weight. You should begin by adding fiber slowly to your diet to avoid bloating and gas. Eat a variety of high-fiber foods to receive the benefits from both the water-insoluble foods and the water-soluble foods, including raw vegetables and fruits with the skins. When possible, consume high-fiber carbohydrates such as an apple instead of low-fiber carbohydrates found in apple juice.

### **Shopping for fiber**

Shopping for good, nutritional foods is an important part of adding fiber to your diet. Keep a shopping list and only buy what you need. Also, do not shop on an empty stomach. Studies indicate that hungry shoppers are less discriminating and buy more junk food.

- Shop for fresh produce twice a week. Many vegetables lose their nutrients during prolonged refrigeration.
- Avoid wilted vegetables and bruised fruits.
- Choose small, young vegetables.
- Select whole grain products for greater nutritional content instead of “enriched” breads.
- Visit larger stores or health food stores for whole-grain flours and hard-to-find nuts and seeds.

Controlling your weight is more manageable with fiber and a nutritious diet. Fiber will not solve all your weight problems, but it is a step in the right direction. A regular daily intake of fiber has many advantages that can help you even if you are healthy and at your ideal weight.

# Protein grams

## Protein in Raw Nuts and Seeds (shelled)

NUT/SEED	SERVING SIZE	PROTEIN GRAMS
Almond	¼ cup	7
Brazil nut	¼ cup	5
Cashew	¼ cup	4
Chestnut	¼ cup	1
Coconut (shredded)	¼ cup	2
Filbert/Hazelnut	¼ cup	5
Flax seed	¼ cup	5
Macadamia	¼ cup	2
Peanut	¼ cup	8
Pecan	¼ cup	2
Pine nut	¼ cup	4
Pistachio	¼ cup	6
Pumpkin seed	¼ cup	7
Sesame seed	¼ cup	7
Soynut	¼ cup	10
Sunflower seed	¼ cup	8
Walnut	¼ cup	5

## Protein in Beans (cooked)

BEAN	SERVING SIZE	PROTEIN GRAMS
Adzuki (Aduki)	1 cup	17
Anasazi	1 cup	15
Black Beans	1 cup	15
Black-eyed Peas	1 cup	14
Cannellini (White Beans)	1 cup	17
Cranberry Bean	1 cup	17
Fava Beans	1 cup	13
Garbanzos (Chick Peas)	1 cup	15
Great Northern Beans	1 cup	15
Green Peas, whole	1 cup	9
Kidney Beans	1 cup	15
Lentils	1 cup	18
Lima Beans	1 cup	15
Mung Beans	1 cup	14
Navy Beans	1 cup	16
Pink Beans	1 cup	15
Pinto Beans	1 cup	14
Soybeans	1 cup	29
Split Peas	1 cup	16

## Protein in Grains (cooked)

GRAIN	SERVING SIZE	PROTEIN GRAMS
Amaranth	¼ cup	7
Barley, pearled	¼ cup	4-5
Barley, flakes	¼ cup	4
Buckwheat groats	¼ cup	5-6
Cornmeal (fine grind)	¼ cup	3
Cornmeal (polenta, coarse)	¼ cup	3
Millet, hulled	¼ cup	8.4
Oat Groats	¼ cup	6
Oat, bran	¼ cup	7
Quinoa	¼ cup	5
Rice, brown	¼ cup	3-5
Rice, white	¼ cup	4
Rice, wild	¼ cup	7
Rye, berries	¼ cup	7
Rye, flakes	¼ cup	6
Spelt, berries	¼ cup	5
Teff	¼ cup	6
Triticale	¼ cup	25
Wheat, whole berries	¼ cup	6-9
Couscous, whole wheat	¼ cup	6
Wheat, bulgur	¼ cup	5-6

## Protein in Hot Cereals (cooked)

CEREAL	SERVING SIZE	PROTEIN GRAMS
Arrowhead Mills		
Corn Grits	¼ cup	3
Arrowhead Mills 7 Grain	¼ cup	4
Bob's 8 Grain	¼ cup	4
Bob's 10 Grain	¼ cup	6
Bob's Kamut	¼ cup	5
Bob's Triticale	¼ cup	4
Whole Grain		
Cracked Wheat	¼ cup	5
Cream of Rye	1/3 cup	5
Kashi	½ cup	6
Mother's Multigrain	½ cup	5
Quaker Old Fashioned Oats	½ cup	5
Quinoa Flakes	1/3 cup	3
Roman Meal Hot Cereal	1/3 cup	5

### Protein in Fruits (raw)

FRUIT	SERVING SIZE	PROTEIN GRAMS	FRUIT	SERVING SIZE	PROTEIN GRAMS
Apple	2 per lb.	0	Lemon	1	1
Apricot	1 medium	0	Lime	1	0
Avocado	1 medium	4	Loganberry	1 cup	1.4
Banana	1	1-2	Loquat	1	0
Blackberry	1 cup	2	Mango	1	1
Blueberry	1 cup	1	Mulberry	1 cup	2
Boysenberry	1 cup	1	Nectarine	1	1
Cantaloupe	1 cup	1	Orange	1	1
Casaba Melon	1 cup	2	Papaya	1 cup	1
Cherimoya	1	7	Passionfruit	1	0
Cherry	1 cup	1	Peach	1	1
Cranberry	1 cup	0	Pear	1	1
Currant	1 cup	2	Persimmon	1	0
Date(pitted)	1/4 cup	1	Pineapple	1 cup	1
Durian	1 cup	4	Plum	1	1
Feijoa	1 medium	1	Pomegranate	1	1.5
Fig	1	0	Pomelo	1/2	2.3
Gooseberry	1 cup	1	Prickly Pear	1 medium	1
Grape	1 cup	1	Quince	1 medium	.4
Grapefruit	1/2	1	Raspberry	1 cup	1
Guava	1 medium	1	Rhubarb	1 cup	1
Honeydew	1 cup	1	Sapote	1 medium	5
Jackfruit	1 cup	2	Star Fruit	1 cup	1
Jujube, dried	1 oz.	1	Strawberry	1 cup	1
Kiwi	1 large	1	Tangerine	1 medium	1
Kumquat	1 medium	0	Watermelon	1 cup	1

*Protein grams*

### Protein in Fresh Vegetables (cooked)

VEGETABLE	SERVING SIZE	PROTEIN GRAMS
Artichoke	medium	4
Asparagus	5 spears	2
Beans, string	1 cup	2
Beets	½ cup	1
Broccoli	½ cup	2
Brussels Sprouts	½ cup	2
Cabbage	½ cup	1
Carrot	½ cup	1
Cauliflower	½ cup	1
Celeriac	1 cup	1
Celery	1 cup	1
Chard, Swiss	1 cup	3
Chayote	1 cup	1
Chives	1 oz.	8
Collards	1 cup	4
Corn, Sweet	1 large cob	5
Cucumber	1 cup	1
Eggplant	1 cup	1
Fennel	1 medium bulb	3
Kale	1 cup	2.5
Kohlrabi	1 cup	3
Leeks	1 cup	1
Lettuce	1 cup	1
Okra	½ cup	1
Onion	½ cup	1
Parsnip	½ cup	1
Peas	½ cup	4
Peppers, bell	½ cup	1
Potato, baked with skin	½ cup	5
Potato, boiled with skin	½ cup	1
Radish	1 cup	1
Rhubarb	1 cup	1
Rutabaga	1 cup	2
Spinach	1 cup	1
Squash, Summer	1 cup	2
Squash, Winter	1 cup	2
Sweet Potato	1 cup	3
Tomato	1 medium	1
Turnip	1 cup	1

### Protein in Nut Butters

NUT/SEED	SERVING SIZE	PROTEIN GRAMS
Almond	2 Tbsp.	5–8
Cashew	2 Tbsp.	4–5
Peanut	2 Tbsp.	7–9
Sesame Tahini	2 Tbsp.	6
Soy Nut	2 Tbsp.	6–7

### Protein in Milk Substitutes

BEVERAGE	SERVING SIZE	PROTEIN GRAMS
Soy Regular	1 cup	6–9
Soy Lo with Nonfat	1 cup	4
Rice	1 cup	1
Rice and Soy	1 cup	7
Almond	1 cup	1–2
Oat	1 cup	4
Multigrain	1 cup	5

### Protein in Soy

PRODUCT	SERVING SIZE	PROTEIN GRAMS
Tofu (Med- or Ex-Firm)	3 oz.	7–12
Tofu (Soft or Silken)	3 oz.	4–6
Tempeh	4 oz.	12–20
Textured Vegetable Protein	1/4 cup	10–12



## Fats in your Foods

**MONOUNSATURATED FATS:** These are found in olives, flax oil, most nuts and avocados. These fats will bring your hormones into balance and lower your total cholesterol, while increasing heart-protective HDL's. Studies show that just 5 serving per week of the "good fats" can decrease your risk of heart disease by 50%. (nuts should be eaten 'raw' and unsalted for the greatest benefit)

**OMEGA-3 FATTY ACIDS:** These are most plentiful in fatty fish— salmon, trout, and tuna as well as in green leafy vegetables, flaxseed oil and tofu.

Before cutting back on fat in our diets, remember that fat serves many important roles:

- maintaining skin and hair
- storing and transporting fat soluble vitamins A, D, E, and K
- protecting cell walls
- keeping our bodies warm
- protecting organs

## Foods with Calcium

DAIRY	SERVING SIZE	MILLIGRAMS PER SERVING
Cheese	1 oz.	150
Milk	½ cup	150
Yogurt	½ cup	137
Ice Cream	½ cup	50

BEANS	SERVING SIZE	MILLIGRAMS PER SERVING
Baked Beans	½ cup	114
Garbanzo Beans	½ cup	39
Kidney Beans	½ cup	35
Navy Beans	½ cup	114
Pinto Beans	½ cup	41

VEGETABLES (RAW)	SERVING SIZE	MILLIGRAMS PER SERVING
Beet Greens	1 cup	46
Bock Choy	1 cup	150
Broccoli	1 cup	42
Celery	1 cup	42
Collard Greens	1 cup	218
Eggplant	1 cup	30
Endive	1 cup	26
Kale	1 cup	94
Okra	1 cup	82
Parsley	1 cup	78
Peas	½ cup	32
Rhubarb	1 cup	266
Spinach	1 cup	56
Turnips	1 cup	105

FRUIT	SERVING SIZE	MILLIGRAMS PER SERVING
Blackberries	½ cup	23
Figs	10 pieces	269
Kiwi	½ cup	23
Orange	1 medium	52
Raisins, golden	1/3 cup	26.5
Tomato	1 medium	32
Watermelon	1 medium slice	23

NUTS AND SEEDS	SERVING SIZE	MILLIGRAMS PER SERVING
Almonds	24	75
Brazil Nuts	8	50
Macadamia Nuts	10	20
Sesame Seeds	1 Tbsp.	10
Walnuts	7	25

*Calcium*

## Homework

- Add the ender to your meal
- Sample a range of different enders, and see which one works best for you
- Pull your Appestat DOWN!!
- At least once this week, play with your hunger as we discussed in class

## Journal

### Beginning of the week

- Keep track of which ender works best
- Keep track of your Appestat reading compared to your average
- Write at least one page on:
  - Hunger is a paper tiger
  - The paradoxical circle — appetite causes us to eat, but eating causes our appetite
  - Weight loss happens when you love your food
  - Fear of food comes from...where?
  - Food is medicine, but should not be abstracted to a pill
- We have so much food, but we are terrified of being hungry even for a minute

### End of the week

- The hardest part/the easiest part
- Changes in your eating frequency
- Discuss how your Appestat average has changed

## Further Reading

J Clin Endocrinol Metab. 2004 Feb;89(2):632-7.

*Effect of calcium supplementation on weight and fat loss in women.*

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Data suggest that a diet deficient in calcium is associated with higher body weight and that augmenting calcium intake may reduce weight and fat gain or enhance loss. Our aim was to determine whether calcium supplementation during a weight loss intervention affects body fat or weight loss. Data were combined from three separate 25-wk randomized, double blind, placebo-controlled trials of 1000 mg/d calcium supplementation in 100 premenopausal and postmenopausal women. The primary outcome measures were change in body weight and fat mass adjusted for baseline values. There were no significant differences in body weight or fat mass change between the placebo and the calcium-supplemented groups in the pooled analysis (adjusted mean  $\pm$  SE; body weight, placebo -6.2  $\pm$  0.7 vs. Ca -7.0  $\pm$  0.7 kg; fat mass, placebo -4.5  $\pm$  0.6 vs. Ca -5.5  $\pm$  0.6 kg), and no significant interactions of calcium supplementation with menopausal/diet status. Analysis as separate trials also found no significant differences between the placebo and the calcium groups.

**Calcium supplementation did not significantly affect amount of weight or fat lost by women counseled to follow a moderately restricted diet for 25 wk.**

Nevertheless, the magnitude and direction of the differences for group means are consistent with a hypothesized small effect.

**Science to English Translation** Pills are for sick people. Although calcium is an important mineral in the weight loss equation, supplements did not help at all.

Urol Oncol. 2003 Sep-Oct;21(5):384-91.

*The potential benefits of dietary and/or supplemental calcium and vitamin D*

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Osteoporosis is a significant problem in women and men. In addition, as osteoporosis has garnered more attention there should be more attention than ever placed on the potential benefits of calcium and vitamin D. Clinicians need to inform patients that there are numerous healthy dietary sources of calcium and vitamin D. Calcium and vitamin D supplements seem to act synergistically to reduce fracture risk in men and women; therefore, they need to be taken together to impact fracture risk. In addition, almost every randomized trial of an effective osteoporosis drug therapy has utilized calcium and vitamin D to enhance the efficacy of the drug itself. Several forms of calcium supplements are commercially available today and clinicians need to understand the similarities and differences between them. Calcium and vitamin D in moderation also have a good safety profile and may actually have benefits far beyond osteoporosis therapy. For example, calcium may increase high-density lipoprotein (HDL), prevent colon polyps, reduce blood pressure, reduce kidney stone recurrence, and may promote weight loss. Vitamin D may reduce the risk of some cancers, provide an enhanced response to some chemotherapeutic agents, prevent type I diabetes, and may reduce tooth loss along with calcium. Clinicians need to encourage individuals to receive the recommended daily allowance of these two agents because they seem to have an impact on numerous health conditions besides osteoporosis.

**Science to English Translation** This is a nice review of the importance of calcium, and of Vitamin D for health—for our bones, but also for the prevention of cancers, diabetes, and oral health.

Say Cheese!

*Role of dietary calcium and dairy products in modulating adiposity.*

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Dietary calcium plays a pivotal role in the regulation of energy metabolism. High-calcium diets attenuate adipocyte lipid accretion and weight gain during overconsumption of an energy-dense diet and increase lipolysis and preserve thermogenesis during caloric restriction, thereby markedly accelerating weight loss. Our studies of the agouti gene demonstrate a key role for intracellular  $\text{Ca}^{2+}$  in regulating adipocyte lipid metabolism and TG storage. Increased intracellular  $\text{Ca}^{2+}$  resulting in stimulation of lipogenic gene expression, and lipogenesis and suppression of lipolysis resulting in adipocyte lipid filling and increased adiposity. Moreover, we recently demonstrated that the increased calcitriol produced in response to low-calcium diets stimulates adipocyte  $\text{Ca}^{2+}$  influx and, consequently, promotes adiposity. Accordingly, suppressing calcitriol levels by increasing dietary calcium is an attractive target for obesity intervention. In support of this concept, transgenic mice expressing the agouti gene specifically in adipocytes (a human-like pattern) respond to low-calcium diets with accelerated weight gain and fat accretion, whereas high-calcium diets markedly inhibit lipogenesis, accelerate lipolysis, increase thermogenesis, and suppress fat accretion and weight gain in animals maintained at identical caloric intakes.

**Further, low-calcium diets impede body fat loss, whereas high-calcium diets markedly accelerate fat loss in transgenic mice subjected to caloric restriction.**

Dairy sources of calcium exert markedly greater effects in attenuating weight and fat gain and accelerating fat loss. This augmented effect of dairy products is likely due to additional bioactive compounds in dairy that act synergistically with calcium to attenuate adiposity. These concepts are confirmed by both epidemiological and clinical data, which demonstrate that increasing dietary calcium results in significant reductions in adipose tissue mass in obese humans in the absence of caloric restriction and markedly accelerates the weight and body fat loss secondary to caloric restriction, whereas dairy products exert significantly greater effects. These data indicate an important role for dairy products in both the prevention and treatment of obesity.

**Science to English Translation** This article articulates the emphatic approval of calcium foods as a way to lose weight. Note that the author stresses the importance of dairy products, not calcium supplements.

## Nutrition News Focus

A prospective study of over 14,000 Finnish adults revealed 380 cases of type 2 diabetes over 12 years. Coffee drinkers were younger, heavier, less well-educated, less likely to drink tea or alcohol, and more likely to smoke. The heaviest drinkers consumed 10 or more cups of java daily; women had an 80 percent reduction while men had a 60 percent reduction in risk of diabetes. It did not matter if coffee was filtered or boiled. The study was published in the March 10, 2004 edition of the Journal of the American Medical Association.

<http://jama.ama-assn.org/cgi/content/abstract/291/10/1213>

**HERE'S WHAT YOU NEED TO KNOW**—The Finnish population drinks more coffee than most others. Does this mean that adding 6 cups a day to your routine will prevent or cure diabetes? Absolutely not. It is unknown if this is a cause and effect relationship, although it fits with several previous studies on this topic. There are a variety of chemicals in coffee that may have beneficial effects but the active factors are unknown.