

# *Week Three on The PATH*

## **Your Appetite Thermometer**

Week Three on The PATH shows you how to turn down the knob on your appetite. Not only is the amount you eat within your control, but the amount you want to eat as well.

### WHAT TO DO THIS WEEK

- Timing the meal
- Set up your day for success
- Set up your meal for success
- Eating at work
- Getting over the sense of urgency around eating fast

### WHAT TO KNOW THIS WEEK

- The role of pace in satiety
- Adaptations of stomach size (teeth versus prisms)

### RESOURCES

- Brief-duration timer
- The Appetite Thermometer

### HOMEWORK

- Practice eating with the timer
- Divide and conquer
- Eat in courses

### JOURNALING

- Time and timing matter

## Appetite Thermometer

The Appetite Thermometer feature of The PATH allows you to watch your portions decrease over time. Your body adapts and adjusts to the inputs you give it. We've already talked about several aspects of your body's miraculous ability to respond to your behaviors and the foods you feed it.

- The body responds to Faux Foods with ill health and weight problems.
- The body responds to excessive sugars by craving more (the Sweet Tooth!).

In our homes, we have a thermostat to control temperature. When the air cools off, the heater comes on until the temperature cuts off the thermostat.

In our body, we have signals that control hunger. The word coined for this adjustable "hunger knob" is the "Appestat," or appetite thermometer. And just like when you're mother-in-law comes and cranks the thermostat WAY up, many influences can change your appestat. We've already talked about how our foods change the settings, but they are also changed by our habits of eating.

Everyone has an appestat, which consists of all the body chemicals that signal feelings of hunger and fullness. Just as you are in control of the taste mechanism for sweetness, you are also in control of the appetite mechanism.

## How to turn your Appestat down

Finding the volume knob. The food you eat throughout the day becomes the average amount your body expects from one meal to the next. Eat tons of food and you train your body to want more and more over time. Eat small, and you'll train your body to expect less over time.

The most important way to turn down the volume is to take at least 20 minutes to eat your meal. Eating too fast makes you eat too much. Eating too much dials your appetite thermometer WAY up.

If you're not hungry, don't eat. Eating because you feel you HAVE to for some reason is unhealthy and creates associations between a Pandora's Box of psychological issues and your food. As if we didn't have enough issues to deal with!

Listen to your body. When you are satisfied, stop. If you ever feel stuffed, you have just turned your appestat a notch higher. If you stop at satisfied, you have turned it down, or have at least left it alone!

Prepare for your meal by slowing down before eating. Like someone who has a "warm down" after exercise, you have to put your gears into low to avoid rushing through the meal.

Don't stress at the meal. Make it enjoyable. Stressy eating is effective at driving up your appestat, because it increases gobbling and this has nothing to do with hunger and satiety. It simply trains your body to expect more and more over the long term.

## How do you control your Appestat?

The “appetite thermometer” is a way to measure changes relative to your baseline. It means nothing in itself, but only as it changes over time. Thus, you must start from an average number generated over a week. Use that as your starting level.

The value will fluctuate day by day. It will fluctuate (to a lesser extent, week by week). So don’t worry about the micro-changes you see.

Once the first week is done, compare the daily figures with the average from the prior week. If the daily value is less than the average, you have made a small adjustment **downward**. If the daily value is greater than the average, you have made a small adjustment **upward**. But remember that the best indication of how you are doing is the weekly comparisons.

## What dials it down?

- Every time you eat small, you turn down the level.
- Every time you stop eating when you are satisfied, you turn down the level.
- Every time you push the portion bar lower, you turn down the level.
- Every time you push the snacking bar longer, you turn down the level.

## What dials it up?

- Hurry through a meal, and you increase your appestat.
- Eat sugary foods and you increase your appestat.
- Eat large volumes, and you increase your appestat.

## The Measurement

$[\text{Volume (portions)/Time between eating (minutes)}] * 100$

### EXAMPLE: IF YOU ONLY EAT AT MEALS.

Volume in portions: 2 Breakfast (BK) + 4 Lunch (LCH) + 4 Dinner (DN) = 10 portions

Time between meals: 240 (4 hours from BK to LCH) + 240 (4 hours from LCH to DN) = 480 minutes

Appestat Reading: 2.1

### EXAMPLE: IF YOU SNACK BETWEEN BREAKFAST AND LUNCH.

Volume in portions: 2 Breakfast (BK) + 1 Snack (SNK) + 4 Lunch (LCH) + 4 Dinner (DN) = 11 portions

Time between meals: 120 (2 hours from BK to SNK) + 240 (4 hours from LCH to DN) = 360 minutes

Appestat Reading: 3.1

*Appestat*

## \*Volume in portions

One portion is a deck of cards — whether meat, veggies, or starch. Count the number of portions at breakfast, lunch, and dinner.

### **DRINKS**

Drinks don't count as a portion, if they're in the "small" category (6 ounces). Water, tea, coffee, wine, juice, etc. If your drink is larger than 6 ounces (a small size) it counts as 1 portion. All drinks must be "real".

### **SNACKS**

One snack portion of cheese = 5 dice.

One snack portion of nuts = the amount that will fit on the palm of your hand.

## \*Time between eating

Simply note the minutes between breakfast and the next time you eat, including the between-meal snacks. Then start again at lunch and note time in minutes between lunch and the next time you eat, including snacks. Total these.

## \*Appetate reading

This value is ONLY valid in context. Daily fluctuations may have nothing to do with anything. Weekly fluctuations are meaningful. But even though daily changes do not matter in themselves, consistent daily changes add up to your weekly average.

Once you have a weekly average for your Appetite Thermometer, you can view each week's reading by comparison. You turn down your appetite thermometer every time the day's number is less than the average.

## Increment

Values will be in units of Volume/Time for each day. Daily measurements will be averaged over 1 week.

## Eating Exercises

Find key areas that push the Appetate higher, such as the portion number and snacking. Target values: Breakfast = 2; Lunch & Dinner = 4; Snacking = 0.

### **MANAGE YOUR MUNCHIES BY PLAYING WITH YOUR HUNGER RESPONSE**

Note which breakfasts leave you hungry before lunch.

### **WATCH YOUR HUNGER RESPONSE CHANGE OVER TIME.**

## Do you suffer ‘Portion Distortion’?

If you think food portions are bigger than they used to be, you’re right. Take a look at how “typical” restaurant portion sizes have grown over the past 20 years or so:

PRODUCT/ITEM	THEN	NOW
<b>Soda</b>	6 ounces 85 calories	20 ounces 300 calories
<b>Bagel</b>	3-inch diameter 140 calories	5 to 6 inches 350 calories or more
<b>Chips</b>	1 oz. bag 150 calories	1.75 oz. “Grab Bag” about 260 calories
<b>Pasta</b>	2 cups 280 calories without sauce or fat	4 cups or more 560 calories or more without sauce or fat
<b>Burger</b>	2 oz. patty + bun 270 calories	4 oz. patty +bun 430 calories
<b>French Fries</b>	2 ounces 210 calories	5 ounces 540 calories
<b>Dinner Plate</b>	10-inch diameter	12.5-inch diameter

Developed by the Children’s Nutrition Research Center

And, before blaming your local restaurateur for your family’s growing waistlines, take an honest look at how you “value” dining out experiences. According to the National Restaurant Association’s Dinner Decision Making study, most consumers rank portion size as one of the 10 “hallmarks of a great place.”

## Homework

Become a conscious eater to improve your relationship with food

- Taste your food
- Smell the fragrance
- Feel the texture

Make meals last at least 20 minutes (more is better)

- Use a timer if you have to
- Divide and conquer if you have to

Get your baseline for your Appetite Thermometer

- Just count your portions
- Remember your times (estimates are okay)
- Plug it into the formula

## Journal

Your goal this week is to cut your portions and take your time.

### Beginning of the week

In your own thoughtful words (at least 1 page), discuss one of the following:

- The irony: squeezing more time to be productive is unhealthy
- Our relationship with food is like a relationship with a person
- The difficulty of allowing yourself the luxury of time
- Our success (providing food) has become our failure
- Sensual eating
- Our drive to power through an agenda is in your mind. The need to love your life is in your body and mind.
- When is it hardest for you to make room to love your food?

### End of the week

- What changes have you made?
- What effects have you noticed (energy level, food flavor, enjoyment)?
- Thoughts on pushing the Appetite Thermometer lower

## Further Reading

Gastroenterology. 2004 Oct;127(4):1276

### *Independent influences of body mass and gastric volumes on satiation in humans*

GELIEBTER A. DEPARTMENT OF MEDICINE AND PSYCHIATRY, ST. LUKE'S-ROOSEVELT HOSPITAL, NEW YORK, NY 10025.

**BACKGROUND & AIMS**—We assessed the association of body mass and gastric volumes (fasting and postprandial) with satiation and postprandial symptoms.

**METHODS**—Healthy obese and nonobese subjects underwent measurement of caloric intake at maximum satiation; postprandial symptoms were measured with visual analogue scales 30 minutes after a meal. Gastric volume during fasting and after 300 mL of Ensure was measured with technetium-99m single-photon emission computed tomography imaging. We used multiple regression analysis to assess the associations among variables.

**RESULTS**—Among 134 participants (81 women and 53 men), the median age was 26 years (range, 12–58 years), and the median body mass index was 24 kg/m<sup>2</sup> (range, 17–48 kg/m<sup>2</sup>). Increased body mass index, but not height, was associated with delayed satiation ( $P < 0.003$ , adjusted for sex). Overweight and obese subjects ingested, on average,  $225 \pm 57$  more kilocalories ( $945 \pm 239$  kJ) at maximum satiation compared with normal weight individuals. Increased fasting gastric volume was not associated with body mass index or height, but it was significantly associated with delayed satiation ( $P = 0.001$ , adjusted for body mass index and sex). An increase of 50 mL in the fasting gastric volume was associated with  $114 \pm 32$  kcal ( $479 \pm 134$  kJ) more ingested at maximum satiation. Increased body mass index was associated with lower fullness scores 30 minutes after a meal ( $P = 0.0012$ , adjusted for sex and volume of Ensure ingested). In contrast, scores of postprandial bloating and pain were higher with increased body mass index (both  $P < 0.05$ , adjusted for sex and volume of Ensure ingested).

**CONCLUSIONS**—Greater body mass index and fasting gastric volume are associated with reduced satiation. Increased body mass index or height was not associated with greater gastric volumes.

**Science to English Translation** First, the obvious. If you have a greater BMI...you eat more, so...it takes more food to fill you up. But these authors also confirmed that larger stomachs make it harder for you to feel full as well.

The message is that reducing stomach volume will serve you by preventing overeating.

Physiol Behav. 1988;44(4-5):665-8.

*Gastric distension and capacity in relation to food intake in humans.*

GELIEBTER A, DEPARTMENT OF MEDICINE AND PSYCHIATRY, ST. LUKE'S-ROOSEVELT HOSPITAL, NEW YORK, NY 10025.

Two studies were performed in the same subjects to explore the relationship between stomach capacity and food intake. In the first study, a balloon was passed orally into the stomach of four lean and four obese subjects before they ingested a liquid lunch meal. The balloon was filled with 0, 200, 400, 600, and 800 ml of water in a random sequence on different days. The balloon was kept inflated during ingestion then deflated and removed. Food intake was significantly reduced ( $p$  less than 0.01) by a balloon volume of greater than or equal to 400 ml. In the second study, another balloon was inserted into the stomach of these subjects to estimate stomach capacity. The balloon was gradually filled at the rate of 100 ml/min with 30 sec pauses. The subjects rated their discomfort as 1 to 10, from no discomfort to extreme discomfort. A rating of 10 was the main index for stomach capacity. Mean capacity (ml) for the lean subjects was 1100 +/- 185 (SE) and for the obese 1925 +/- 175 (SE),  $t = 3.24$ ,  $p$  less than 0.02. When stomach capacity from the second study was correlated to spontaneous food intake at 0 balloon volume from the first study,  $r = .44$ , n.s. However, the relationship between stomach capacity and the balloon volume needed to suppress 50% of spontaneous intake was significant,  $r = .66$ ,  $p$  less than 0.05. This may have implications for treatment of obesity with a gastric balloon.

**Science to English Translation** These authors put a balloon in the bellies of test subjects—probably grad students! This way they could measure the size of someone's stomach. Lean subjects had a volume of about 1100 mls, where obese people had almost twice that at 1925 mls.

Change the volume of your stomach over time.

*Treatment Helps Eating Disorders*

BY DANIEL DE NOON WEBMD FEATURE ARCHIVE  
REVIEWED BY GARY VOGIN, MD.  
ON TUESDAY, JULY 02, 2002

July 2, 2002—Few problems are more deadly and more difficult to treat than eating disorders. Now, a Swedish clinic claims its program cures three out of four cases of anorexia and bulimia.

It's not just an ad. The claim appears in the July 1 online issue of one of the world's most respected science journals: *Proceedings of the National Academy of Sciences*. Most treatments for eating disorders have at best a 50% recovery rate—and a very high relapse rate. In contrast, nine in 10 patients who recover with the Swedish program remain well at least a year later.

"These results suggest that most patients treated to remission with our method recover from their eating disorders," write Cecilia Bergh, MD, chief of the anorexia center at Huddinge University Hospital, Sweden, and colleagues.

One of the main features of their method was a change in the eating rate. Patients were allowed to eat from a plate on a scale. That scale was connected to a computer that showed their eating rate on a graph. Patients had to try to make their eating rate match a set rate on the screen. The eating rate goal gradually increased over time.

Their treatment worked so well in a pilot study that Bergh's team tried it with 168 new patients. Three out of four got better after an average treatment time of about 15 months. Remarkably, 93% of these patients remained well for at least 12 months.

Int J Obes Relat Metab Disord. 1992 May;16(5):355-60.

*Eating behaviour in obese and normal weight 11-year-old children.*

BARKELING B, EKMAN S, ROSSNER S, HEALTH BEHAVIOUR RESEARCH, KAROLINSKA INSTITUTE, STOCKHOLM, SWEDEN.

The eating behaviour of 23 normal weight and 20 obese 11-year-old children was measured by the computerized eating monitor VIKTOR. The total intake of food, duration of consumption, rate of consumption and the relative rate of consumption were measured during two lunch meals. Subjective motivation to eat and food preferences were also measured. The obese children ate faster (P less than 0.05) and did not slow down their eating rate towards the end of the meal (P less than 0.05) as much as normal weight children. The obese children also described themselves as having less motivation to eat before lunch than normal weight children (P less than 0.05). A deficient satiety signal or an impaired response to such signals in obese subjects could possibly explain these differences found.

**Science to English Translation** Obesity in our children is a horrible shame we face. This study looked at the eating habits of obese and normal-weight children. They found that the eating pace of obese children was much higher than normals.

Paradoxically, they found that the pace did not slow as the meal progressed. These children were not listening to their body to tell them when to eat and when to stop eating.

Interesting, too, is the observation that they were less motivated to begin eating in the first place. Again, they aren't listening to their body's cues of satiety and hunger.

Obes Res. 2003 Jan;11(1):130-4.

*Vision and eating behavior in obese subjects.*

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**OBJECTIVE**—Vision is one of a number of factors influencing the amount of food consumed during a meal. The purpose of this study was to investigate the impact of vision on the microstructure of the eating behavior of obese subjects. **RESEARCH**

**METHODS & PROCEDURES**—Eighteen obese subjects with a body mass index (mean +/- SD) of 39.1 +/- 6.3 kg/m<sup>2</sup> twice consumed a standardized test meal in excess, once with and once without a blindfold. The microstructure of the eating behavior was registered by VIKTOR, a computerized eating monitor. Subjective motivation to eat (i.e., desire to eat, hunger, satiety, and prospective consumption) was rated by visual analogue scales (VASs) before, immediately after, and then hourly up to 3 hours after the test meals.

**RESULTS**—The obese subjects ate 24% less food when blindfolded (359 +/- 194 g vs. 472 +/- 179 g; p < 0.01). Despite a smaller amount of food consumed when blindfolded, there were no significant differences with or without the blindfold for any of the VASs measuring subjective motivation to eat after test meals.

**DISCUSSION**—The importance of vision in regulating our eating behavior was demonstrated in this study. The obese subjects ate 24% less food blindfolded without feeling less full. Eating blindfolded could be tested as a didactic tool to make obese subjects aware of what factors affect the termination of eating.

**Science to English Translation** What a fascinating study. These authors found that removing vision decreased the total amount of food children ate by 24%, without decreasing their satisfaction with the meal.

It would be interesting to find out whether the blindfold caused these children to slow down and take more time with their meal. Another variable not discussed here is the fact that the children were likely less distracted during the eating times.