



My Body, My Science Project

or Losing Weight the Geeky Way

Introduction

Until college, I had always been thin. My diet was relatively healthy and I got sufficient exercise in school PE class or in the summer. But once in college with easy access to vending machines and less required physical activity, my weight went from 150 to 165, putting on the inevitable 'freshman 15'. Throughout college and a few years afterwards, my weight was around 165-170. But once I got my first office job I ballooned to 175-180 in just a few months (easy access to the vending machine, frequent fast food lunches, and being sedentary was *not* a good situation). After moving to the Portland area, my weight slowly crept up to the high 180's (despite improving my diet by sharply reducing my intake of red meat and dairy products), and then after getting my current job it slowly rose again to the mid-upper 190's. But whenever I found myself getting close to the 200 lb line, I cut back a little bit and rarely reached 200. But in late March, I hit 201 lbs. Time for a change.

Another motivation to lose weight was that the ubiquitous Atkins low-carb mania really got me riled (what next? low-carb water? dog snacks?). I wanted to prove by example just what a fraud the hype truly was (why do people never listen to nutritionists and dieticians??).

Finally, I no longer wanted to be counted among the 60% of Americans who are overweight. Having been abroad, I can personally attest that this is not a normal condition for the rest of humanity.

The Method

I first heard of *The Hacker's Diet* a couple years ago and downloaded (but never read) the PDF book. When I became interested in getting serious about losing weight, I gave it a cursory skim to see what, if anything, new it had to say. I became immediately engrossed. The fresh and informal writing style made it a light and easy read, so I blazed through the book's 300 pages quickly. I also took to it so readily because it confirmed and reinforced my belief that weight loss is simply a matter of burning more energy than one takes in (as evidenced by when I lost about 10-15 lbs in the summer of '88 because I worked hard and my lunches were next to nothing). I also liked the fact that the author wrote it *gratis*, so he wasn't trying to make a fast buck off this diet, unlike so many diet book authors. I knew this was the diet plan for me.

In a nutshell, *The Hacker's Diet* rationally explains (using well written analogies and examples) how weight gain/loss works and how to effectively monitor and control one's weight during and after dieting. *The Hacker's Diet* is based on old school calorie counting/reduction and doesn't advocate scientifically dubious nonsense such as cutting carbs or being a masochist and subsisting on grapefruit and tofu. However, the book does add a twist that especially appeals to those with a background in science and math. Every day at the same time weight is logged and plotted on a graph, plus a trend line (a simplified version of the moving average data analysis technique) calculated from the daily weight and also plotted on the graph. The trend line reflects one's actual weight because it doesn't fluctuate and changes as much as the daily weight. As long as the daily weight is less than the trend, the trend would continue to be pulled downward. Having faith in the slow inexorable progress of the trend helps to avoid anguish and discouragement whenever there's a minor plateau or the rate of loss slows.

I tried to closely heed *The Hacker's Diet's* advice and instructions, but some parts I decided not to follow. First, I didn't follow the "exercise ladder" concept (incrementally increasing reps in basic exercises) mainly because I am getting sufficient exercise in my taekwondo class. Second, I didn't use the author's Excel files for detailed tracking of weight loss data. I just used pencil and paper, and made a simplified spreadsheet that does a basic job of charting daily and trend weight data (see chart below).

By the Numbers

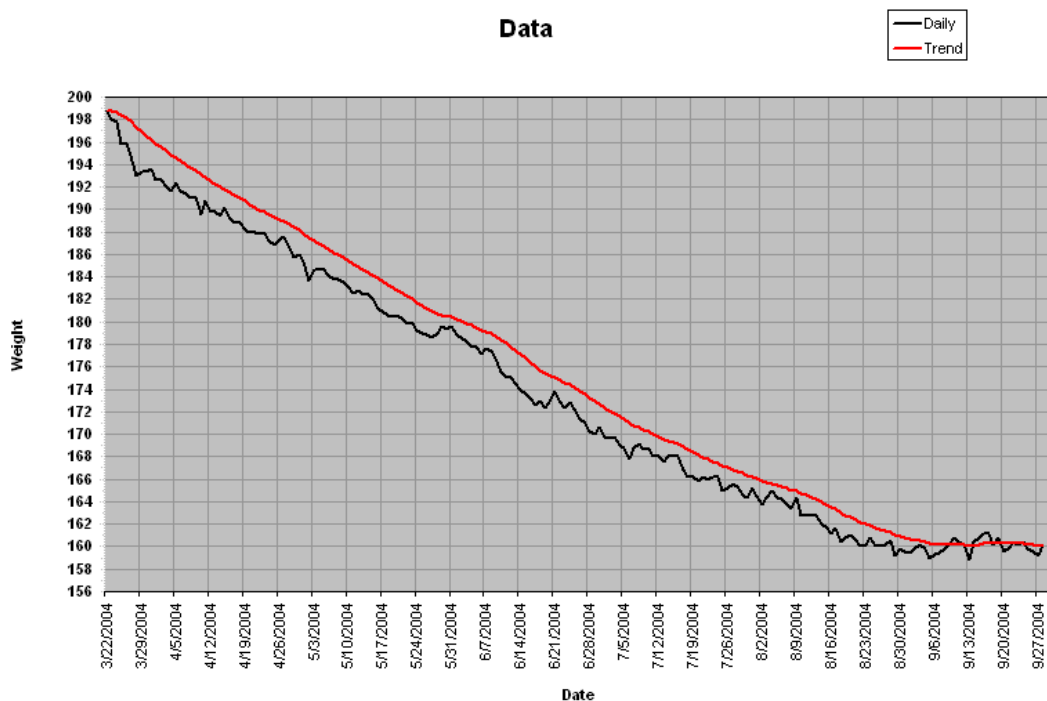
Before I began my diet, I looked at the numbers and did some planning. Based on my gender and height (male, 5'11"), my daily caloric burn rate is about 2000-2500 calories per day. Not being very muscular, I figured that I was at the lower end of that range, probably burning 2100-2200 calories per day. My optimum weight is 155-170 lbs, so with a target of 160 lbs I needed to lose nearly 40 lbs. Pushing the weekly safe loss rate to 2 lbs, I estimated the diet would take about 20 weeks or about 5 months, which would be just before summer ends (yay!). Losing a pound of fat requires burning 3500 calories, so I was looking at a weekly burn rate of 7000 calories (or a daily deficit of 1000 calories) to lose 2 lbs a week. According to various sources, a daily intake of less than 1200 calories is considered risky to one's health. Just to be safe I decided on 1300-1400 calories per day. The last thing I wanted was to push my body too hard and put my health in danger.

Dietary Changes

Other than reducing intake to 1300-1400 calories per day, I only changed the quantity but not the quality (or lack thereof) of what I ate. Well, that's not entirely true. I ate more vegetables (mainly for the fiber to keep things moving along, plus veggies are low in calories yet have bulk), cut out the hash browns I regularly had for breakfast at the office, and cut vending machine junk food (when I realized Doritos are nearly 300 calories *per ounce*, I knew those had to go!). Near the end of the diet, I have started to take protein powder to prevent muscle loss. Despite those changes, carb intake (pizza, taquitos, cereal, nuts, cookies, etc.) was still high (so go !#\$%& off Atkins!).

Results

As can be seen in the chart below, my daily weight constantly fluctuated from day to day, but the smooth predictable trend line's slope is parallel to the daily data's slope.



Analysis

Through nearly the entire diet, the trend line was a smooth downward sloping line. I have been fortunate to avoid severe plateaus or worse, weight gains (as frequently happens when food intake is severely reduced and the metabolic process shifts into a “famine” mode and resists burning fat).

The overall weekly loss has averaged 1.5 lbs per week. Dieticians and nutritionists advise that a decline of 1 to 2 lbs per week is safe, plus the slower weight is lost the less likely it will return.

Week 12 was an important milestone, as my BMI (Body Mass Index) dropped below 25.0. A BMI of 19 to 24.9 is considered “normal” and 25.0 to 29.9 is “overweight.”

Week	Trend Decline	Total Trend Change	Trend Weight	BMI*
0	0.0	0.0	198.8	27.8
1	-2.0	-2.0	196.8	27.5
2	-2.3	-4.3	194.5	27.2
3	-2.0	-6.3	192.5	26.9
4	-1.9	-8.2	190.6	26.6
5	-1.7	-9.9	188.9	26.4
6	-1.8	-11.7	187.1	26.1
7	-1.7	-13.4	185.4	25.9
8	-1.8	-15.2	183.6	25.7
9	-1.9	-17.1	181.7	25.4
10	-1.4	-18.5	180.3	25.2
11	-1.4	-19.9	178.9	25.0
12	-1.9	-21.8	177.0	24.7
13	-2.0	-23.8	175.0	24.5
14	-1.7	-25.5	173.3	24.2
15	-1.9	-27.4	171.4	24.0
16	-1.6	-29.0	169.8	23.7
17	-1.4	-30.4	168.4	23.5
18	-1.4	-31.8	167.0	23.3
19	-1.2	-33.0	165.8	23.2
20	-0.9	-33.9	164.9	23.0
21	-1.5	-35.4	163.4	22.8
22	-1.5	-36.9	161.9	22.6
23	-1.0	-37.9	160.9	22.5
24	-0.7	-38.6	160.2	22.4
25	-0.1	-38.7	160.1	22.4
26	+0.3	-38.4	160.4	22.4
27	-0.4	-38.8	160.0	22.4

* BMI = Weight / Height²
(weight in kilograms, height in meters)

Diet Positives

Obviously, the upside of losing weight is looking and feeling better. The paunch and love handles have receded, muscles show improved definition, and fastening the top button of my dress shirts is no longer a challenge. Plus socially, I'm no longer perceived as being an overweight slob (instead I'm just perceived as a slim slob).

Not all improvements have been visible. For the past few years, whenever I kneeled or squatted I couldn't stand up without minor knee pain. But after losing the first 10-12 lbs, I could kneel and stand without a hint of pain. In taekwondo, I seem to move a little faster and feel more agile. Long-term health benefits will be avoiding diabetes, knee problems, and other issues associated with being overweight.

Although this experience has not been without its unpleasantness (see below), it has been a fun and stimulating personal project. It's been a long time since I have applied engineering school methods (recording, charting, and analyzing data; using algebra) to solve a real-world problem. Finally, I take smug satisfaction in proving by example just how !@#%^^& bogus the Atkins low-carb hype truly is.

Diet Negatives

The diet has certainly achieved its desired results, but it hasn't all been beer and skittles. The first month was the worst, as I endured hunger, fatigue, occasional minor abdominal pain, and "brain fog" that made mental focus difficult. One annoyance was having to drink at least 2 quarts of water a day (and the resulting frequent trips to the loo) to wash out the toxic ketones that fat cells release along with needed energy. Since that first month, I grew accustomed to the reduced caloric intake and modest hunger pangs.

After slowly raising my caloric intake up to ~2000 calories per day, I should maintain my target weight of 160. I won't discard the tools that made this diet successful and I will continue to monitor my weight daily and make minor corrections whenever the trend line strays more than $\pm 2\frac{1}{2}$ lbs from my target weight. Some may think monitoring one's weight is a hassle, but compared to being diabetic and monitoring blood sugar levels and taking insulin, daily weight checks are no hassle at all.

One "negative" *The Hacker's Diet* never mentioned was the problem of clothes. At the mid-point of a diet, one is faced with a decision: continue to wear increasingly baggy clothes (especially pants), or buy properly fitting clothes that may be slightly big by the time the target weight is achieved. My compromise was to buy only the absolute minimum new pants needed (slacks for work, jeans for home) and get by on only those until the diet was over and my weight stabilized. So far I have gone from a 36 waist to 31 and medium size shirts fit nicely. I have not discarded my now oversized clothes yet, but I look forward to giving Goodwill a large donation of clothing.

Conclusion

This was my first (and hopefully only) planned diet and it has certainly been an amazing journey of self-discovery. In addition to the weight I have lost, I have gained a greater understanding of nutrition and my own body. For all those who used to be overweight and took control of their health, I truly understand what you went through. For those who are struggling with their weight, I also understand what you are going through and I hope that my experience described here shows that victory can be yours.