



The Bad-Years Blimp

"Doc, about ten years ago both my next-door neighbors retired in the same week.

One of 'em went out and bought a chain saw.

The other bought a big-screen TV.

You know, doc, the one who bought the TV has had no end of health problems."

— a patient, thinking out loud, 1998.

Bill owns a Cessna 150. Bill does not like to talk about the fact that the full-fuel useful load of his Cessna is 325 pounds, because he weighs 270. There's neither width nor "capacity" for a passenger, except for his five-year-old grandson, who might smother. He's going to sell the plane because he also has a touch of diabetes, and he can't afford to do all the medical testing the FAA requires.

His buddy Jim sympathetically hints, "You don't need a medical to fly gliders." So... Bill gets in his car and drives to his friendly local gliderport, where they have a Schwiezer 2-33.

Do you see a problem here? Pull out your trusty 2-33 manual left over from your own primary training and look at the weight and balance, and check the loading graph. What's the maximum front-seat weight?

Right. It's 250 pounds. So...what's the maximum instructor weight going to be after Bill goes on a diet and loses 20 pounds? Exactly; 150 pounds.

Question: in modern America, how many CFGs weigh 150 pounds or less? Scarce as hen's teeth, eh?

If Bill doesn't want to lose weight, he can learn from the back seat with a 130-pound instructor up front. Lotsa luck, with that one.

Now, a moment for a personal confession. I do know that aircraft have been safely and successfully flown above MGW, and I have inadvertently done so, for I have been lied to by passengers when I have asked their weights. I

know this surprises you. One time a seat was broken because the maximum seat weight was exceeded. Once I was scared by the frightening over-gross stall characteristics on landing.

I would recommend a simple home scale for any operation giving rides. I have no idealism about this, however – twice I have bought scales for different glider clubs. Never have I seen them used. The only honest passengers have been those who are my patients, and they know I already know.

Look around you on the street. For that matter, look into the mirror. Epidemic portliness now plagues pilots and other people. Our aircraft are mostly designed for the obsolete 170-pound standard pilot – more important; our risk of premature physical incapacitation from illness soars with our body mass index.

(In a cosmic irony, in absolute numbers over the past 50 years, our average BMI has gone from good to bad while the glide ratio of best sailplanes has gone from bad to good.)

Weight and balance are the least part of obesity: being fat makes us sick. The food that makes us obese rots our teeth. Obesity and tobacco are the biggest contributors to elevated health care costs, especially obesity. It causes high blood pressure (leading to strokes, kidney failure and heart failure), chronic fatigue and insomnia (often through obstructive sleep apnea), premature crippling arthritis of knees, hips, and feet, as well as diabetes and its many complications, atherosclerosis (especially premature heart attacks), social ostracism, and many other ills.

As you know, if you follow this monthly essay, I like to do lots of research; however, this month there's some very distracting stuff going on, so today we have the country-doctor version of the science. We'll focus on the obvious and

the important. I've put some good references at the end.

Physical Fatigue is Lifesaving

As you know, there's been a flood of publicity about healthy diet since Ancel Keys began promoting, after World War II, the idea that the cholesterol in food was important in causing coronary heart disease. The talk got louder after he published the Seven Countries Study in 1980. This showed a clear relationship between diet and coronary heart disease.

While this is generally true, almost all the public education has swirled around diet and food choices. Even so, exercise is, in general, utterly neglected.

Exercise is profoundly important. Inuit traditional diet is about 80% saturated fat, which according to Keys' research ought to have slain them – but Inuit didn't work in offices, and were traditionally free of coronary heart disease. Until the snowmobile became widely available, after which their health declined. The earlier magic was vigorous, daily exercise in pursuit of Wily Saturated Fatty Animals.

After exercise became optional, Saturated Fatty Animals continued to be eaten, and processed foods were imported by machine. The Inuit became portly, and began to be afflicted with obesity, diabetes, and coronary heart disease.

Perhaps you see where we are going here. The diet was not a problem until vigorous exercise ceased. So: is the problem diet? Or indolence? Possibly, the answer is "yes."

In any case, we can preserve our fitness for piloting an aircraft by exercising 30-40 minutes a day, in short bouts if time's a problem. There's no need to monitor our pulse: just push hard enough to get pleasantly short of breath or to break a light sweat.

Honestly, exercise needs to be fun and pleasant, or we really won't keep on doing it. I speak from experience here. For many people, the sole reason for owning a dog is as a personal trainer, for the younger dog often insists on a daily constitutional.

A frustration for people is that the metabolic benefits of exercise are invisible, and exercise, as normally practiced, does not cause weight loss. If you truly want to lose weight through exercise, go out and get a job doing manual labor all day.



Food has its good and bad points.

You perhaps have figured out that food is essential to life. Moreover, starvation is very unpopular. At the same time, not all foods are equally nutritious. Specific knowledge of this began in the first half of the last century. Vitamins were discovered beginning in 1910; then essential fatty acids and essential amino acids – this revealed that we needed particular *types* of food for health.

Reflecting this knowledge, nutritionists came up with the Seven Basic Food Groups in 1943. We over-50 types can remember the poster hanging in the grade-school cafeteria, and cackling over coarse grade-school jokes about this. The point was that getting essential nutrients requires a variety of foods. This has remained true as more has been learned about nutrition.

But seven was too complicated for the average American, so food was reorganized into four groups, essentially *plants, animals, flour* and *milk*. In any case, education did its work well enough that nutrient-deficiency disease almost vanished.

Next, in the middle of the 20th century, foods' bad points – beyond obvious things like poisonous mushrooms and botulism – began to be unraveled. First, cholesterol and saturated fat took a hit, somewhat unfairly, because our livers make 90+% of our cholesterol from sugar, and because our industrial response was to shift unwittingly from saturated fats to trans-unsaturated fats, which are much worse, as bad as smoking a half-pack of cigarettes a day.

Dr. Keys' initial observation, in the 1940s, was that American business executives were dying young, mostly of coronary heart disease. Like the Inuit, their tribe had gone from driving cattle and harvesting crops with simple tools, to driving desks – while still eating heartily of steak and potatoes.

This fact, and the discovery of cholesterol, led into all sorts of foolishness like “don't eat eggs” and “margarine is better than butter” and “Crisco is better than lard.” These falsities, and others like them, are still embedded in the Public Brain. The trouble is that processed foods – refined sugars, white flour; foods soaked in grease, (tried to find a low-fat item in a restaurant lately?) canned goods and processed meats – are creating obesity around the world.

So: is the problem diet? Or indolence? If the answer is “yes and yes,” why are we talking all the time simply of diet? Why not talk only about exercise? The lumberjack, the stevedore and the Inuit can eat what they like. Having said that, it's clearly better, even if exercising well, to eat a vegetable-based diet.

Oh. Wait. Sorry. Missing a point here: People don't like to exercise and do like to eat. And...we pay the penalty to the cardiac surgeon. Q.E.D. (Quod Erat Demonstrandum – “which was to be proved.”)

To oversimplify (usefully, I hope) research has shown that if we exercise moderately after a high-fat meal, we dispose of the fats expeditiously. If we exercise daily, we do this after any meal. Exercise changes our metabolism.

This is important. To put it another way, exercise makes us healthy at the cellular level. We have always felt this deep inside; it's why the Victorians called formal exercise “a constitutional.” Exercise keeps our muscles and sinews resilient and strong, less prone to strain and trivial injury; and, more important to health and longevity, improves fat and sugar handling.

Why is Plump a Big Deal?

Aeronautically, it's relevant to max gross, useful load, max seat weight, and stall speed. Nutritionally, it makes us hungry and makes our blood corrosive.

A few years ago, I saw to a friend pre-flighting his 4-place Cessna, all seats occupied. I knew it had full tanks because I had filled them. I knew the weight of each person, professionally speaking. It was a warm July day. I asked quietly, “How far over gross are you?” He laughed, “About 90 pounds, but it's all in the back seat.”

The truth is, that airplane's full-fuel useful load is about 500 pounds, and they were at least 400 pounds over. They made it to their destination, but didn't complete the takeoff on return. Fortunately, no one was injured in the crash, and the airplane was repairable.

Nevertheless, flight safety, important as this is, is only a small part of the risk. Obesity sickens us. For example, our arteries deteriorate if they have to carry around oily sludge. The hormonal and metabolic changes from being overweight *increase* appetite and shift blood lipids into a more damaging (“atherogenic”) state. ■

Honestly, there are many routes to obesity, and they all lead through lack of exercise – lassitude, indolence and sedentary recreation and jobs. Nearly any kind of diet is healthful in physically vigorous people. No diet is healthful when food is eaten in surplus.

Well-meaning patients proudly tell me they are adding healthy foods like omega fatty acids and olive oil to their diet, yet weigh 60 to 90 pounds more than their ideal body weight and think that walking to the mailbox three times a week is exercise. The insane have no monopoly on hallucination. The problem is that obesity creates false hunger, which is more powerful than intellect.

Food is Interesting as Well as Necessary

The healthiest foods happen to be those that are most perishable, and they're best for us when they're still fresh. Very few restaurants carry fresh food, because what's not sold turns promptly into garbage and becomes overhead. Industrial food will keep almost forever, and so it remains as an asset, and can be converted into clear profit eventually.

The business trick is to make this industrial food look good and taste good, so that it sells. This means meat, wheat, sugar, and fat. Fruits and vegetables simply don't have the staying power. They wilt while waiting for a customer.

The pharmaceutical trick is to extract from food (or nonfood plants) the chemical that researchers think is the health-giving essential, and sell it in capsules.

Unfortunately, the researchers might be wrong (Vitamin A with cancer, Vitamin E with dementia). The extracts aren't always quite what they are claimed to be, and are more expensive than the food. Even so, the faith of the public in these nutraceuticals is such that we spend more money on buying these nostrums than we spend on all hospital care. Hallucinations affect more than the insane.

Protein is necessary, but it's not so good in large amounts. Four ounces a day is a really fine idea. Sixteen ounces of meat is a mistake.

Clearly, some forms of protein are better than others. Eggs, fish, and birds are clearly healthier. This spring, a study revealed that daily consumption of red meat (beef; let's be honest here) increases cancer and heart/stroke risk by 16%.

Refined wheat is simply sugar, metabolically. It may not taste sweet going down, but it's digested and absorbed like table sugar spooned into our mouths. Eating fettuccine Alfredo may be more interesting than eating creamed sugar cubes, but functionally it's little different. Same for bread, potatoes, and rice as for pasta. Basically, carbohydrates are fuel for our muscles, not nutrition. If we exercise, we need 'em; if we're couch potatoes – well, we simply don't need potatoes.

Fats are wonderful. They give a great flavor to food. They trickle into our brain from the gut, and inspire *satisfaction*. And they slow digestion, making food “stick to your ribs,” as my grandma used to say. But...in large amounts, they hin-

der insulin; they have about double the calories per forkful as carbohydrates, and grease up our arteries.

Today's jargon treat: *individual fatty acids differentially regulate the transcriptional activity of PPAR• by selectively acting as agonists or antagonists*. In other words, the types of fat we eat can be healthy or unhealthy. Olive oil and fish oil are much better than Crisco or butter. The type and amount of fat we eat determines how long we live to fly, and whether we're healthy enough to do it, or to have any other kind of fun.

Independent of being overweight, what we eat can keep us healthy. The Lyon Heart Study is a landmark proof that food choice makes a difference. (Google up “Lyon Heart Study outcome.”)

In 1988, 605 men and women who'd just had their first heart attack were randomized either to be instructed in the American Heart Association Heart-Healthy diet, or to an hour's seminar teaching a diet structured after food eaten on Crete, where cardiac health has been excellent. We now call this the Mediterranean diet. The French use a lot of butter, Plant-sterol-based margarine was provided free to replace this.

After two-and-a-half-years, about 20% of the group instructed in the AHA diet had had stroke, second heart attack, or death – but only about 5% of the folks instructed in the Mediterranean diet. At five years, it was about 15% versus 30%. Medically speaking, this is a huge effect.

There has been continued debate about precisely what was happening, physiologically. There has been enormous efforts into reducing the Mediterranean diet into various pills, of course, so people can eat cheeseburgers and French fries without consequences.

However, there's no doubting the fact that this study (and others) has shown that the types of food we eat make a big difference to health. Such studies show, too, that it is *possible* to change both eating patterns and exercise patterns – and that the people who do so become healthier.

Precis

Let me distil reams of medical research down to five truths:

1: Getting indolent or getting fat makes us sickish.

2: Exercise does *not* cause weight loss, but does make us healthier. It's better to be fat and fitter than not fit.

3: We can lose weight *only* by eating less than we need. (Cutting down amount by 25% is a good start).

4: At least half our food should be fresh fruits and vegetables. Add to these small portions of lean protein, 1-3 teaspoons of fat per meal for satisfaction and nutrition, and enough carbohydrates to fuel exercise.

5: The changes in exercise and eating patterns must be *permanent*.

Interesting books:

The Spectrum. Dean Ornish, MD

Ballantine, NY, 2008. The Ornish diet, a vegetarian diet, has been shown in medical studies to actually improve heart disease. Most people aren't willing to become vegetarian, so this is a modified diet that will take you as far as you're willing to go toward health.

Healthy at 100. John Robbins, Ballantine, NY, 2006. A fascinating 90-page survey of four centenarian peoples around the world and their cultural practices, followed by a 200 page essay reviewing the science of healthy eating. Social peace in a group ("love") is as important as diet and exercise.

Good to Eat: Riddles of Food and Culture. Marvin Harris, Simon and Schuster, New York, 1985. A historical and cultural review of the profound differences in food preferences around the world and through the centuries. The last chapter is a horrific look at cannibalism, of which the Aztecs were the champions.

Vegetarian and vegan cookbooks have really good vegetable recipes.

Vegan: <http://www.angelicakitchen.com/> Click on 'Cookbook' – **The Angelica Home Kitchen**, \$30. Excellent recipes. Or any cookbook by Isa Chandra Moskowitz.

Vegetarian: Plenty: Vibrant Vegetable Recipes. Yotam Ottolenghi. About \$30. The recipes are a bit busy, but incredibly good. Or any vegetarian cookbook.

Dieting: <http://www.jorgecruise.com/> Years ago, after failing to lose weight by

wanting to, I simply quit meals and ate only healthy snacks, and slowly dropped 25 pounds. I called this the Dr. Dan Snack Diet. Then, in an airport bookstore, I found **The 3-Hour Diet** by Jorge Cruise, which described exactly what I'd done. Most people won't follow a formal diet plan, but my patients who've bought this book and followed the program have lost 40 to 100 pounds in a year or so. This program works by recognizing that the false appetite of obesity can be best managed by timed eating.

Formal diet programs: The Ornish diet is the healthiest; the Pritikin diet is fine; WeightWatchers is pretty good. The rest are not good, particularly the Atkins diet – you may lose weight, but you won't keep it off, and your arteries will corrode. And as you know, there are hundreds of diet programs around.

Searching the web: The diet and health area has lots of chaff and foolishness. WebMD.com is pretty good, and Medscape.com is a reliable site aimed at medical professionals. In general, for better quality hits, use a bit of professional jargon like "prognosis" or "pathophysiology" or "efficacy" – Internet turkeys don't have words like that in their active vocabulary.

Using scholar.google.com is also pretty effective, but then you truly do get a snootful of jargon, and though the really good academic articles are freely available (as in "liberty") they're not without cost (not much free beer at that party). ✕