

FIRE UP



MET

AX THE FLAB

You don't have to exercise to incinerate fat: All of your activities add up to a hotter bonfire in your body. (See the chart at left.) Of course, some tasks feed the flames more than others. Chopping wood for a half hour? Three hundred thirty calories.

Learn how to stoke your metabolism and you'll create an internal inferno that will smoke your fat 24-7.

BY JIM THORNTON

Photographs by Patrik Giardino

YOUR ABOLISM

IT'S 9:25

in the morning, and I'm lying on a twin bed at the Pennington Biomedical Research Center, one of the country's premier facilities for the study of body weight and metabolism. My room here on the outskirts of Baton Rouge boasts all the amenities of a nicely outfitted, minimum-security prison cell. Besides the bed, I have a toilet, sink, cable TV, DVD player, computer, treadmill, even a minifridge.

The latter, alas, is for storing urine samples only. Best not to forget and reach for a Mountain Dew.

Everything I can consume over the next 24 hours of voluntary incarceration is under the tight control of PBRC staff nutritionists. At established intervals, nurses will pass me premeasured portions of a "standard American diet" (15 percent protein, 50 percent carbohydrates, 35 percent fat) through a special air-locking slot in the wall.

Though I've come to think of this as my Hannibal Lecter slot, it serves a necessary scientific function: preventing atmospheric contamination of the 27,000 liters of air surround-

ing me. This sea of air, like my calorie intake, is under scrupulous regulation. An inflow pipe on the floor continuously pumps in exactly 60 liters of fresh air per minute—untainted by contact with any human lungs, mine included. At the same time, 22 evenly spaced outflow holes in the ceiling siphon off my "breathed" samples for detailed analysis.

"The official name of the room you're now in is a 'whole-body indirect calorimeter,'" explains PBRC biomedical engineer Tuong Nguyen, over an intercom from an adjacent lab. As he begins to deliver *Calorimetry for Dummies*, he simultaneously monitors me with a video camera that has infrared capability for nighttime observations. "The reason we call it indirect calorimetry is because we're not measuring your caloric burn directly. Instead, we're detecting how much oxygen your body is using at any given point, and how much carbon dioxide you're giving off."

Complicated physiological formulae, Nguyen

adds, will then convert my gleaned gaseous data into a minute-by-minute count of every calorie I burn during sleep, work, meals, exercise, rest, TV viewing, and so forth. Other formulae will take the constantly shifting ratio of my oxygen use and carbon dioxide production to reveal what proportions of these calories are coming from fat and carbohydrate burning, respectively. (Note: When our bodies use protein for fuel, it's converted to carbohydrate first.)

At this point, Nguyen stops explicating and encourages me to begin resting in earnest. The steady whoosh of circulating air all but drowns out the gurgles of my gut, which has not seen food in the past 14 hours. Before I know it, my mind wanders to the octopus of air tubes hidden in the ceiling. I imagine my slow, relaxed puffs of exhaled gas wending their way through a drying agent before being measured by incredibly fine-tuned sensors.

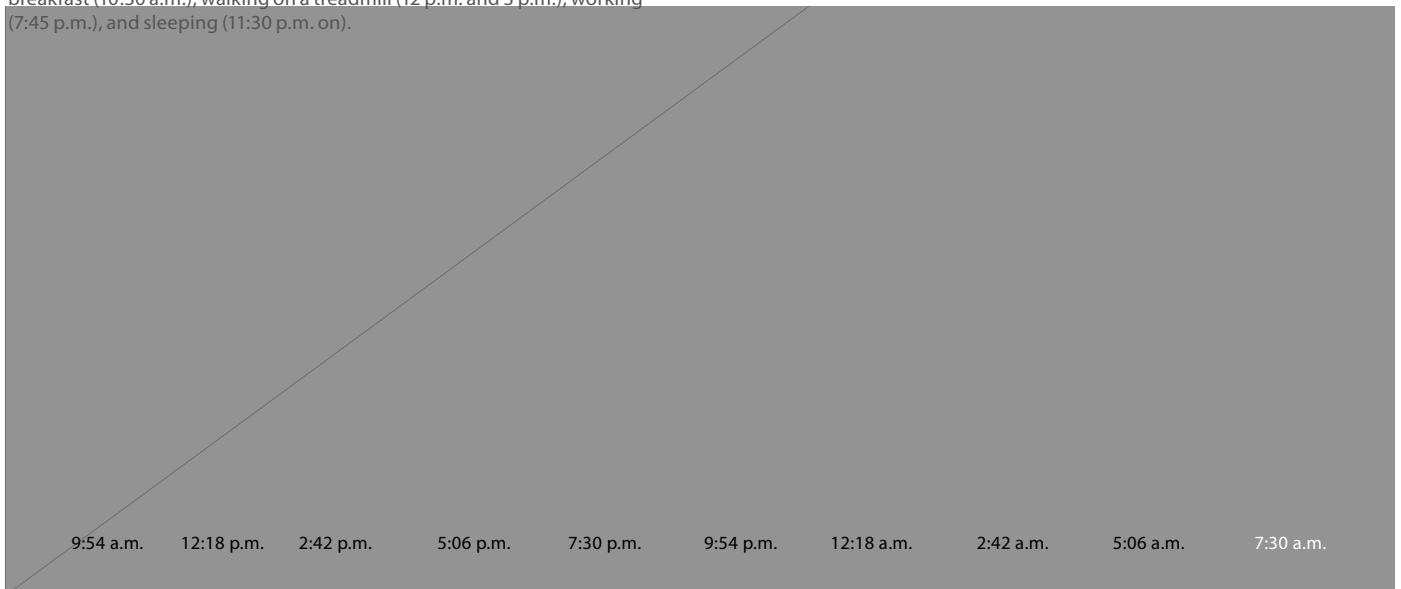
"Okay," says Nguyen, "you can get up now and move around. Breakfast will be ready in a couple

FOR MEN, RESTING METABOLISM ACCOUNTS FOR 60 TO 70 PERCENT OF TOTAL CALORIES BURNED.

CALCULATING CALORIES The author encased in a metabolism-measuring device called a ventilated-hood indirect calorimeter.

The ups and downs of metabolism

Blue peaks and valleys indicate the author's calorie burn while eating breakfast (10:30 a.m.), walking on a treadmill (12 p.m. and 3 p.m.), working (7:45 p.m.), and sleeping (11:30 p.m. on).



styling: Kathy Kalafatis, grooming: Joshua Barrett/Artists by Timothy Pilano, prop styling: Phyllis Asher; opening spread: Levi's jeans, Timberland shoes; this page: Photo by Ralph Lauren suit; Joe by Joseph Abboud shirt, Brooks Brothers tie, Emeregildo Zegna belt; Johnston & Murphy shoes; Tuong Nguyen (left)

of minutes.”

It's hard to believe a whole hour has passed.

Before I rise, I find the remote and turn on the TV. A white-trash woman in a black bikini is yelling obscenities on Jerry Springer. I can see her cellulite jodhpurs jiggling in rage. She has to be burning serious calories here, I think—though probably not, it would appear, the ones in her thighs.

AS YOU MAY RECALL from high-school biology, metabolism consists of all “the chemical processes occurring within a living cell or organism that are necessary for the maintenance of life.” To struggling dieters and body-weight researchers alike, however, metabolism has come to refer more narrowly to the pitiless calculus of kilocalories, or, as we laymen tend to call them, calories.

Take in fewer calories than we use and we'll lose weight. Take in more and we'll gain it. Achieve energy balance—wherein calories in equals calories out—and we'll remain in equilibrium.

No Dummy's book needed to comprehend this, eh?

Alas, delve the merest sliver beneath the superficial level and you'll find that the science of metabolism quickly escalates into doctorate territory. Consider, for starters, the three major components of metabolism.

Q **BASAL METABOLIC RATE (BMR).** Lorraine Lanningham-Foster, Ph.D., senior research fellow at the Mayo Clinic, in Rochester, Minnesota, explains that the technical definition of BMR is “the energy expended when an individual is lying at complete rest, in the morning, after sleep, in the postabsorptive state.” Except for time of day, BMR's motionless state of do-nothing inertia seems awfully close to what I do most nights on the couch in front of my TV.

Any appearance of passivity, however, is an illusion. Indeed, for most American males, BMR is by far the largest piece of the metabolic pie—accounting for 60 to 70 percent of total calories expended each day. Just a few of the many metabolic jobs falling within BMR's bailiwick are lung function, immune response, blood circulation, and tissue repair.

Victims of severe burns, for instance, have had BMRs exceeding 8,000 calories a day while lying motionless on hospital beds. “Even recovering from a common cold expends a large number of calories,” says John Berardi, Ph.D., author of *The Metabolism Advantage*.

Acute injury and illness aside, the biggest power draw of all comes from basic tissue maintenance. “Three-quarters of variability in BMR is predicted by lean body mass,” explains Lanningham-Foster. This includes bones and organs, which we can't change, and muscles, which we can. But as we get older, the challenge to build or even just maintain our current muscle mass

becomes more difficult. The reason: We start rowing against a physiological riptide known as sarcopenia of aging. Unless they take steps to counter it with strength training, virtually all men are fated to lose 1 percent of their muscle a year starting around age 25. Most of us more than make up for this loss with fat.

“Lots of guys in their 30s and 40s will tell me, ‘I've been eating exactly the same foods for 20 years—I can't understand why I'm gaining weight,’” says Nikhil V. Dhurandhar, Ph.D., an obesity researcher at PBRC. “What they're not accounting for is that their energy requirement is dropping.”

For all too many of us, the once-proud boast of youth—“There's not an ounce of fat on this boy!”—gradually changes to a middle-aged lament: “There's not an ounce of boy in this fat.”

Q **THERMIC EFFECT OF FOOD (TEF).**

A second major component of metabolism is one that most people have never heard of: TEF, the caloric “handling cost” of digesting, using, and storing food energy. Depending on a guy's genes and dietary preferences, TEF can range from 10 to 15 percent of total daily metabolism. The next time you swallow a 1,000-calorie meal, in other words, you can console yourself with the fact that your body is actually netting only 850 to 900.

It takes a lot of metabolic work to convert raw foodstuffs—from trout amandine to Snickers bars—into forms of energy our bodies can actually use. In a simplified overview, the process begins when the digestive system breaks down nourishment into its constituent building blocks. Complex carbohydrates are reduced to simple sugars, fats to fatty acids, and proteins to amino acids.

These smaller, more manageable molecules enter the bloodstream and circulate throughout the body, being snarfed up as needed by billions of cells. Inside each cell, tiny engines called mitochondria further break down food molecules and tap their energy into forms, such as ATP and creatine phosphate, that power life's manifold jobs, from movement and procreation to fighting off germs and worrying about our weight.

Q **THE ACTIVE LIFE: EAT AND NEAT.** Metabolism's third major component—and its most variable—is physical activity. This includes planned exercise (exercise-activity thermogenesis, or EAT), as well as the voluntary and unconscious movements we perform in the course of daily life (non-exercise-activity thermogenesis, or NEAT). Generally speaking, activity of any sort makes up 15 to 30 percent of the average man's metabolism.

There are, of course, exceptions. Manual laborers (high in NEAT), as well as men committed to large doses of exercise (high in EAT), can see their percentages skyrocket. Case in point: Tour de France riders, who have been shown to

Fire extinguishers

4 hidden factors that may be undermining your metabolism

MISSED MEALS

Severe calorie restriction creates a biological billboard that says, “We're starving here!” Your body responds by slowing your metabolism in order to hold on to existing energy stores. What's more, if the food shortage continues, you'll begin burning fat and muscle tissue, which will further lower your metabolic rate. If you must look leaner in no time, temporarily reduce your daily carbohydrate intake to below 50 grams, but without eating less than 2,000 calories total.

DRUG THERAPY

It's one of the ironies of antidepressants: They can boost a person's spirits while depressing his metabolism. Even though the brain-body mechanism is still a mystery, a study review by German researchers identified the mood meds most likely to cause this side effect: Aventyl (nortriptyline), Remeron (mirtazapine), and Paxil (paroxetine). If you gain weight on one, ask your doctor about a possible switch, such as to Wellbutrin (bupropion), which can actually raise metabolism.

SMOKING CESSATION

Smoking is horrible for every part of you except your metabolism, which it tends to rev. The likely reason: Your body is forced to expend extra energy trying to detoxify itself from the chemicals. Unfortunately, this is a big part of why people lay on the lard after quitting. To help offset the metabolic dip, exercise and chew a combination of Nicorette and Jolt gums. Research in the *American Journal of Clinical Nutrition* found that men who chewed nicotine gum (2 milligrams) spiked with 100 mg caffeine experienced a 10 percent increase in metabolism.

HORMONE SHORTAGE

When your thyroid gland doesn't pump out enough of its namesake hormone, your metabolism is forced to downshift. This is called hypothyroidism, and it slows almost every metabolic process, including calorie burning. Lethargy and weight gain are two of the most common symptoms, but a definitive diagnosis requires a blood test of your thyroid-stimulating hormone. Anything more than 4 milli-international units per liter is trouble and may mean you need a prescription for synthetic thyroid hormone.

burn as many as 9,000 calories per day throughout the 3-week race.

Realistically, most of us don't work as stevedores, nor do we have anywhere near the time to get in the shape necessary to climb even a modest Alp. With work and family obligations, we're lucky to squeeze in three hard workouts a week. This, mind you, is no small feat. Still, it may not be quite as great as we smugly tell ourselves. In the 168 hours of each week, 3 hard hours represents less than 2 percent of the total.

Things were different for our hominid ancestors, says John Castellani, Ph.D., a researcher at the U.S. Army Research Institute of Environmental Medicine. In the hardscrabble past, it was the norm to run extreme energy deficits. "If you caught the buffalo," he says, "you'd be okay for a while. The rest of the time, you'd be running around half starved, trying to find something to eat."

Chances are, the only buffalo most of us will ever "catch" today are the spicy-winged variety delivered, by the bucket, to our door.

MICHELLE HALL, an attractive 26-year-old scan technician at PBRC, tells me to take off my clothes and change into a zip-perless gown. I've just been sprung from the calorimeter, and Nguyen has arranged for me to bivouac with Hall in the DEXA (dual-energy x-ray absorptiometry) lab while he compiles my results. At Hall's instructions, I feel a spike arise somewhere deep within my metabolic physiology.

"I used to be almost a quarter pure lard," I say, emerging from the changing room in the gown, which may or may not be on backward. "You think I'm any less now?"

"Hard to tell just from looking at you," she replies with a North Carolina drawl. "We'll know more soon."

As she leads me over to a digital scale, Hall explains that DEXA was originally pioneered to diagnose osteoporosis. In recent years, it's also emerged as the most accurate way to determine body composition, supplanting the old gold standard—underwater weighing—at many obesity research centers.

Five years ago, I had a chance to undergo an underwater weighing. At that time, I was 184 pounds, a depressing 23.1 percent of which proved to be pure fat. The exercise physiologist in charge said that meant I was lugging 43 pounds of adipose tissue everywhere I moved—much of this in my midsection, a pattern common in men.

Researchers even have a diagnosis for when otherwise skinny guys put on too much abdominal fat: "weight normal, metabolically obese." I hadn't reached this point—yet.

"Okay," Hall says, pointing to a digital scale. "Step up."

Red numerals flicker around nervously before

finally settling on 75 kilograms.

"Now we get to subtract the gown," she says.

A few calculations later, I get the Americanized results: 164.4 pounds, essentially identical to my college "fighting weight." When Hall next checks my height with a digital measuring stick, I brace myself for the likelihood of significant shrinkage. But once again, the news is good: 6'0.76"—less than a quarter inch off my lifetime record. Maybe the tag team of life and gravity hasn't beaten me down quite as much as I thought. My body-mass index, or BMI, is 22.0—safely in the "not too fat, not too thin" zone.

Now, however, comes the real money shot: the DEXA scan itself. True, I've cut 20 pounds in the 5 years since the underwater weighing, but the question remains, what kind of pounds have I shed? If my body has simply cannibalized its skeletal muscle for fuel, something not uncommon in cases of significant weight loss, I may have only

turned myself into a skinnier, weaker, slower-metabolism version of the fat guy I used to be.

"I need you to lie down here," Hall says, indicating a sliding gurney beneath a moveable QDR 4500 Hologic scanner arm. For the next 3 minutes, the arm glides back and forth, spraying my body with a piddling 5 microsieverts of radiation (the same amount we get each day just living on Earth).

Once the scan is done, I get dressed and go to look over Hall's shoulder. She's using a computer mouse to draw red boxes around my arms, legs, trunk, spine, and head. A grayish halo surrounds my bones. "That's your skeletal muscle," she says, adding that the even finer layer on the perimeter is fat.

"Maybe my eyes are getting worse with age," I say, "but I can't see much fat."

"You really don't have much at all," she replies, smiling. "The software will let us know exactly

The fat-blasting workout

Rev up your metabolism and then burn blubber with this training plan

John Berardi doesn't have his Ph.D. in prestidigitation, but he can still make your gut disappear. The following workout from Berardi's new book, *The Metabolism Advantage*, combines weight training and interval sprints to create a calorie-incinerating afterburn that lasts for hours after your last rep. No mirrors, just the magic of metabolism.

How to do it

WEIGHT TRAINING Alternate between Workout A and Workout B two or three times a week, resting at least a day between sessions. Do the exercises in the order shown, performing three sets of five to seven repetitions of each movement and resting for 90 seconds between sets. For a video demonstration of each exercise, go to MensHealth.com, keyword **fitv**.

WORKOUT A

- 1 Dumbbell squat
- 2 Dumbbell alternating bench press
- 3 Dumbbell walking lunge
- 4 Swiss-ball alternating shoulder press
- 5 Dip

WORKOUT B

- 1 Deadlift
- 2 Pullup
- 3 Swiss-ball single-leg curl
- 4 Dumbbell alternating curl
- 5 Barbell rollout

How to do it

INTERVAL SPRINTS Rotate between these three workouts 3 days a week.

You can perform them either after a weight-training session or on the days in between, using any form of cardio—running, cycling, rowing. Before each workout, warm up for 5 minutes by exercising at an easy pace (about 30 percent of your full effort). After you're finished, cool down for 5 minutes in the same manner.

WORKOUT 1

- Run for 30 seconds at 90 percent of your best effort.
- Slow down to about 30 percent of your best effort for 90 seconds.
- Repeat six to eight times.

WORKOUT 2

- Run for 60 seconds at 80 percent of your best effort.
- Slow down to about 30 percent of your best effort for 60 seconds.
- Repeat four to six times.

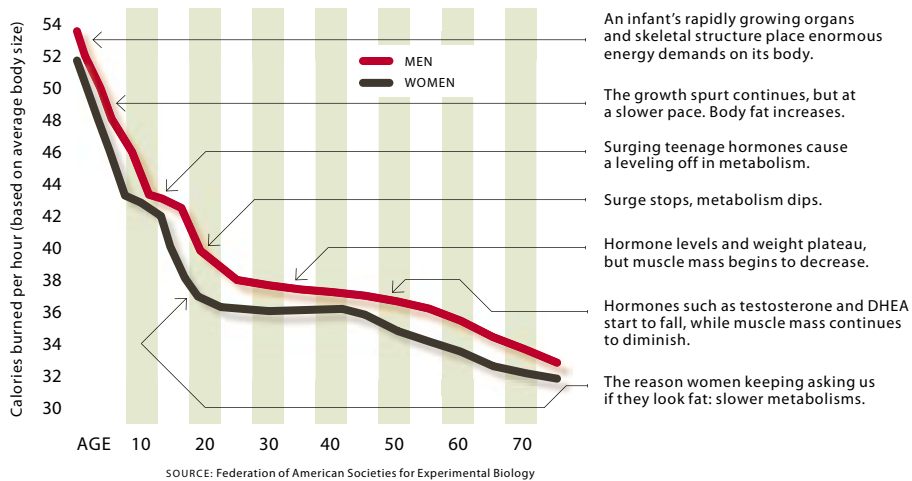
WORKOUT 3

- Run for 90 seconds at 70 percent of your best effort.
- Slow down to about 30 percent of your best effort for 180 seconds.
- Repeat two to four times.

For a complete 8-week diet-and-exercise plan, purchase a copy of *The Metabolism Advantage* at shop.MensHealth.com.

Metabolism: From birth to death

This graph is a glimpse into your fat-burning future. From infancy to old age, we all experience biological changes that affect our metabolisms—often for the worse. But if you act now, there can still be lean times ahead.



ACTIVITY OF ANY SORT
MAKES UP **15 TO 30**
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METABOLISM.

how much.”

The printout proves better than I could have hoped for. I'm down to 17.1 percent total body fat, which Hall says is distributed in a healthy, symmetrical way. My leanest parts are my legs—the left one at 14.2 percent fat, and the right one at 13.6. My abdomen, at 18.7 percent fat, is in no way suggestive of abdominal obesity, Hall says. My gut is not even my fattest body part. My head, at 20.1 percent, takes this honor.

I wonder if researchers have a diagnosis for this, too: “weight normal, fat head.”

AT FIRST, I ADMIT, it wasn't a conscious decision to lose weight. The process began approximately a year ago when I decided to quit cold turkey what had become a nightly ration of three India pale ales. Not only did teetotaling slash at least 500 calories out of each day's total allotment, but it simultaneously nipped an insatiable urge to snack on pretzels and saltines to stoke my thirst. Within a couple of months, my weight had dipped by 7 pounds. A combination of greater energy and fewer headaches, in turn, added hours to each day.

At some point last winter, it occurred to me that it just might be possible to return to the 164-pound benchmark of my 20s. The challenge was on. I resolved to devote some of my new, nontipsy hours to exercise, setting an initial goal of working out five times a week.

This training time, however, soon proved much more relaxing than Miller Time had ever been. I liked it so much that over the next several months, I increased my regimen to the point

where I now take 40-minute hikes with my two dogs most days of the week; attend 90-minute masters swimming practice on Mondays, Wednesdays, and Fridays; weight-train on Tuesdays and Saturdays; and play tennis for 3 hours on Tuesdays and Sundays.

After a couple of episodes of “bonking” mid-practice from low blood sugar, I made sure I always consumed enough food to fuel my exercise. This led me to eat more frequently and space my meals throughout the day. When I tallied up the foodstuffs I was consuming, I soon discovered I was actually eating more than I had at my gross-est fat-hood—and still losing weight.

Through personal trial and error, it seems that I had accidentally begun following the philosophy of “high energy flux” that Berardi recommends in *The Metabolism Advantage*. Put simply, this means eating lots of highly nutritious food, then burning it up through greatly increased activity. This may sound obvious, but many people who hit their target weights through diet and exercise believe that they need to keep their calorie intakes low to maintain their fat loss. The problem is that if they continue to exercise, they'll end up always running a calorie deficit, leaving them forever famished and, in many instances, fated to eat everything in sight and slide back into blubberdom.

“When you reach a healthy, stable weight you're happy with,” says Claude Bouchard, Ph.D., president of the International Association for the Study of Obesity, “then you'll need to make sure your eating is commensurate with the extra calories you're burning.” At some point, your body will achieve a new and happier homeostasis, one that will let you simultaneously work out hard,

eat enough so you're not plagued by hunger pangs, and maintain your new weight without obsessing about it.

On this intake side, Berardi recommends eating every 2 to 3 hours—the same mini-meal approach I discovered through my own experimentation. Adding protein to each of these feedings is important, too. Protein contains nitrogen, which must be stripped off and eliminated as urea by the liver. As a result of this additional metabolic step, protein's thermic effect is roughly double that of fat and carbohydrates. “Eating frequently and including at least some protein in all your meals,” says Berardi, “can boost digestive metabolism all day long.”

As helpful as these measures can be, the greatest benefits come on the expenditure

side. Not only do forms of intense exercise—such as running intervals and lifting weights—burn loads of calories while you're doing them, but they also trigger a significant afterburn as your body works to cool off and repair muscle microtrauma afterward. Afterburn alone, says Berardi, can consume an extra 100 to 200 calories.

Though genes limit just how much new lean muscle mass a person can build, most of us can add at least some, especially if we take up regular strength training. And, as I noted, this in turn will benefit your basal metabolic rate. “With exercise,” explains David M. Klurfeld, Ph.D., National Program Leader in Human Nutrition at the USDA, “you are also producing larger mitochondria in each muscle cell.” Expanding these tiny powerhouses translates into a higher calorie burn.

“Fat tissue burns very few calories,” adds Klurfeld. “Skeletal muscle, on the other hand, 189

burns at least 10 times more calories than fat, even when we're at rest."

Heck, make lifting a lifelong habit and you may be able to entirely avoid age-related muscle loss: Septuagenarians who regularly strength-train can have more muscle mass than 30-year-olds who don't.

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FRESH FROM MY UPSET victory in the DEXA lab, I'm back with Nguyen and eager to receive my calorimeter results.

"It's pretty much what I predicted we'd see in a lean guy your height and weight," he tells me. The big picture: In 24 hours, I burned 2,919 calories while taking in 2,790. "Our goal is to keep you in perfect energy balance," he says. "Being off by just 129 is still very close. We'd have been even closer, but our kitchen ran out of muffins to give you after your second 1-hour walk."

Of my total metabolism, BMR accounted for a respectable 1.28 kilocalories per minute, or 1,843 total calories per day. My metabolic burn climbed to 2.7 kcal/min when I ate breakfast, dipped back down to 1.48 when I sat down to watch TV, then jumped to 5.32 during two hour-long hikes on the treadmill at 3 mph. All told, I burned 638 calories just by taking a couple of invigorating walks.

My other significant results, Nguyen says, come from my so-called RQ, or respiratory quotient. Over 24 hours, my body produced 513 liters of carbon dioxide while using 587 liters of oxygen. On a minute-by-minute basis, the ratio of these two gases shifts depending on what you're doing. By analyzing this, researchers can precisely determine the mix of carbs and fats a body is using to power itself. RQ is a complicated concept, but Nguyen nutshells it for me.

"You're definitely a fat burner," he says. "This is the pattern we typically see in lean individuals. Heavier peoples' bodies seem to want to hold on to their stored fat."

Both ends of this fat-burning/fat-hoarding spectrum, to be sure, use their dietary calories as fuel first. It's sort of like finances. If you have a regular paycheck that meets your expenses, there's no reason to tap into money stored in a CD. Only when there's an extended calorie deficit (analogous to taking a major pay cut) does each camp launch a dual counterstrategy—mobilize the energy in stored fat reserves (i.e., take out some savings from the CD) and slow other aspects of metabolism, such as unconscious activity (i.e., slash your expenses).

Fat burners and fat hoarders alike do both. It's just that free-spending fat burners have less trouble tapping their savings to reduce the impact on their lifestyle. Stingy fat hoarders are much more conservative with their savings, opting to concentrate more on reducing expenditures.

AS I'M TYPING THESE WORDS, I'm also walking at a steady pace of 1 mile an hour. I've been "walk-writing" like this for the past 3 hours, burning 300 calories in the process.

The contraption allowing me to do this is a vertical desk—a standard exercise treadmill rigged with a height-adjustable PC keyboard and monitor. The device is the brainchild of the Mayo Clinic's James Levine, M.D., who, in a much-publicized 2005 study in the journal *Science*, demonstrated the critical role everyday activities play in metabolism and energy balance. Dr. Levine and his fellow researchers rigged 20 volunteers with custom-made, high-tech underwear to be worn 24 hours a day for 10 days straight. These electronic undies—I'm wearing a set right now—sport four inclinometers arrayed on the thighs and chest, and two accelerometers near the small of the back. Together, the sensors relay 1,200 pieces of data per minute that reveal the body's orientation in space and how much or little it's moving.

As the *Science* study showed, NEAT levels—like other aspects of metabolism—vary greatly among individuals, driven by factors that include occupation, choice of leisure activities, and unconscious movement. In overweight guys, NEAT can run as low as 15 percent of total metabolism. In leaner men, it can exceed 50 percent.

Even armed with this knowledge, I was extremely skeptical when I started out this morning at the vertical desk. I've never been the kind of person who can effectively do two things at once, and expected that only tripping and gibberish would come of this experiment. But as Lanningham-Foster predicted, it took me less than 10 minutes to reach the point where my consciousness of the slow walk faded.

At 1:30, I stop my walk and take a break for lunch. In the corridor, I see Dr. Levine and a colleague walking the hallways, badges around their necks that proclaim "Walking Meeting in Progress." The labyrinths of the hospital system seem unending, and Dr. Levine's idea of holding confabs in motion has quickly caught on with numerous Mayo staffers.

I also pass several standing desks—another calorie-burning idea that's popular at Mayo. These stations, though they lack treadmills, nevertheless allow the nursing staff to input patient data without having to sit down at computers. The difference in calorie burn just between sitting and remaining upright is no trifling: nearly 1 calorie in added expenditure per minute.

After lunch at a nearby café, I climb five flights of stairs to the NEAT lab annex and get back to work on the vertical desk. Ordinarily, I suffer a major attack of postprandial grogginess after lunch, but not so today. I walk my way through another mile of writing, then decide to take a "break." I put the keyboard down, set the treadmill to 3 mph, and luxuriate in a brisk walk for the next 30 minutes. Then I slow back down to 1 mph and resume working.

As much as I'm enjoying this gizmo, in the near term, I concede that it's about as likely to catch on with corporate America as George Costanza's "napping desk." Still, there are a myriad of other, more clandestine ways to add NEAT to a desk job.

You can, for instance, consciously choose always to park at the end of the lot instead of circling around for a closer spot. Once you arrive, just say no to the elevator and hike up the stairs when moving from floor to floor. Instead of sending an endless stream of interoffice e-mails, visit several of your would-be recipients face-to-face. And resolve to replace your desk phone with a cordless one, even if you have to buy it yourself. Then never take a call in a seated position again, opting instead to pace around whenever you're talking.

With the right attitude, you can convert your cubicle into a minigym. "Since I ride a desk chair for 8 to 9 hours a day," says Klurfeld, "I consciously attempt to 'NEATen up' my day. For instance, I flex my leg muscles, either together or in a left-right pattern, multiple times. Simply bouncing on my toes while seated is easy, too. While I'm reading something on paper, I stand to do toe raises."

Granted, overcoming sedentary seductions can take some practice. To provide yourself with regular reminders to move, buy a programmable sports watch and set it to beep every 20 to 30 minutes, then stand up and do a dozen toe raises.

Who knows? As you become leaner and fitter from NEAT, you might be inspired to use the same watch on a running track.

UPON ARRIVING back at my old-fashioned office in Pittsburgh, I find an individualized "regression analysis" in my e-mail. A six-color graph neatly illustrates all my movements and velocities over the 2 workdays I spent at the Mayo Clinic.

My body burned 723 more calories on day 2, working at the vertical desk, than it did on day 1, doing identical work over the same time period sitting down. As I listen to Dr. Levine explain this, I'm simultaneously pacing around my office with a portable phone, in the process deepening a path in the carpet. When the call's over, I glance over at my desk and chair, and their promise of hours of relative immobility to come.

If there's one overriding lesson I've learned from my recent forays to research labs, it's that human metabolism is bewilderingly complex, the sum of many interconnected processes that together define our status as energetic beings. Targeting one aspect of this metabolic nexus is not likely to optimize us. Rather, it's only by combining strategic nutrition and exercise with a NEAT-replete life that we can best gain the strength, endurance, body composition, and sustainable energy balance that define humans at their peak.

Each of us, to be sure, is likely to have areas that need more work than others. In my case, the lack of NEAT is most problematic. Occasional junkets to metabolic chambers notwithstanding, much of my livelihood involves cogitating in what I used to think was a necessary "parked but-

tocks" mode.

I now know it doesn't have to be this way.

Along these lines, I cannot shake the memory of how enjoyable and paradoxically relaxing it was to walk-write my way through an entire day.

Since I work at home, there's no on-site overlord to dictate what I cannot do. It may look goofy on the outside, but to the NEAT-starved forces within, the chance to work in motion the way my ancestors did somehow feels right. After all, they evolved to spend their days wandering around in search of food. Why should I not wander around in search of words?

Before I left Mayo, I asked Dr. Levine about procuring a vertical desk for myself, but he said they weren't yet commercially available. Nevertheless, he added, people from around the country who have read about his research regularly e-mail him pictures of models they've jury-rigged themselves. "One lady even made one out of cardboard boxes," he told me.

Once again, the challenge is on. I have some planks in the garage and a friend who bought a treadmill that he never uses.

I'll call him tonight. Maybe he'll sell it to me cheap—that is, before he learns how much it's worth. J