

"A cookbook of minimalist methods for rapid body transformation—  
a practical crash course in how to reinvent yourself."

—KEVIN KELLY, WIRED MAGAZINE

# The 4-Hour BODY



AN UNCOMMON GUIDE  
TO RAPID FAT-LOSS, INCREDIBLE SEX,  
AND BECOMING SUPERHUMAN

## TIMOTHY FERRISS

AUTHOR OF THE  
#1 NEW YORK TIMES BESTSELLER

*The 4-Hour Workweek*

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# The 4-Hour Body

ALSO BY TIMOTHY FERRISS

*The 4-Hour Workweek*

PRAISE FOR

# The 4-Hour Workweek

“This is a whole new ball game. Highly recommended.” —Dr. Stewart D. Friedman, adviser to Jack Welch and former director of the Work/Life Integration Program at the Wharton School, University of Pennsylvania

“It’s about time this book was written. It is a long-overdue manifesto for the mobile lifestyle, and Tim Ferriss is the ideal ambassador. This will be huge.” —Jack Canfield, cocreator of *Chicken Soup for the Soul*®, 100+ million copies sold

“Stunning and amazing. From mini-retirements to outsourcing your life, it’s all here. Whether you’re a wage slave or a Fortune 500 CEO, this book will change your life!” —Phil Town, *New York Times* bestselling author of *Rule #1*

“*The 4-Hour Workweek* is a new way of solving a very old problem: just how can we work to live and prevent our lives from being all about work? A world of infinite options awaits those who would read this book and be inspired by it!” —Michael E. Gerber, founder and chairman of E-Myth Worldwide and the world’s #1 small business guru

“Timothy has packed more lives into his 29 years than Steve Jobs has in his 51.” —Tom Foremski, journalist and publisher of *SiliconValleyWatcher.com*

“If you want to live life on your own terms, this is your blueprint.” —Mike Maples, cofounder of Motive Communications (IPO to \$260M market cap) and founding executive of Tivoli (sold to IBM for \$750M)

“Thanks to Tim Ferriss, I have more time in my life to travel, spend time with family, and write book blurbs. This is a dazzling and highly useful work.” —A. J. Jacobs, editor-at-large of *Esquire* magazine and author of *The Know-It-All*

“Tim is Indiana Jones for the digital age. I’ve already used his advice to go spearfishing on remote islands and ski the best hidden slopes of Argentina. Simply put, do what he says and you can live like a millionaire.” —Albert Pope, derivatives specialist at UBS World Headquarters

“Reading this book is like putting a few zeros on your income. Tim brings lifestyle to a new level—listen to him!” —Michael D. Kerlin, McKinsey & Company consultant to Bush-Clinton Katrina Fund and a J. William Fulbright Scholar

“Part scientist and part adventure hunter, Tim Ferriss has created a road map for an entirely new world. I devoured this book in one sitting—I have seen nothing like it.” —Charles L. Brock, chairman and CEO of Brock Capital Group; former CFO, COO, and general counsel of Scholastic, Inc.; and former president of the Harvard Law School Association

“Outsourcing is no longer just for Fortune 500 companies. Small and mid-sized firms, as well as busy professionals, can outsource their work to increase their productivity and free time for more important commitments. It’s time for the world to take advantage of this revolution.” —Vivek Kulkarni, CEO of Brickwork India and former IT secretary of Bangalore; credited as the “techno-bureaucrat” who helped make Bangalore an IT destination in India

“Tim is the master! I should know. I followed his rags to riches path and watched him transform himself from competitive fighter to entrepreneur. He tears apart conventional assumptions until he finds a better way.” —Dan Partland, Emmy Award-winning producer of *American High* and *Welcome to the Dollhouse*

“*The 4-Hour Workweek* is an absolute necessity for those adventurous souls who want to live life to its fullest. Buy it and read it before you sacrifice any more!” —John Lusk, group product manager at Microsoft World Headquarters

“If you want to live your dreams now, and not in 20 or 30 years, buy this book!” —Laura Roden, chairman of the Silicon Valley Association of Startup Entrepreneurs and a lecturer in Corporate Finance at San Jose State University

“With this kind of time management and focus on the important things in life, people should be able to get 15 times as much done in a normal workweek.” —Tim Draper, founder of Draper Fisher Jurvetson, financiers to innovators including Hotmail, Skype, and Overture.com

“Tim has done what most people only dream of doing. I can’t believe he is going to let his secrets out of the bag. This book is a must read!” —Stephen Key, top inventor and team designer of Teddy Ruxpin and Lazer Tag and a consultant to the television show *American Inventor*

# The 4-Hour Body

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AN UNCOMMON GUIDE TO  
RAPID FAT-LOSS, INCREDIBLE SEX,  
AND BECOMING SUPERHUMAN

Timothy Ferriss



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First Edition

**For my parents, who taught a little  
hellion that marching to a different  
drummer was a good thing. I love you both  
and owe you everything. Mom, sorry about  
all the crazy experiments.**

**Support good science—  
10% of all author royalties are donated  
to cure-driven research,  
including the excellent work of  
St. Jude Children's Research Hospital.**



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# The 4-Hour Body



### TIM'S DISCLAIMER

Please don't be stupid and kill yourself. It would make us both quite unhappy.  
Consult a doctor before doing anything in this book.

### PUBLISHER'S DISCLAIMER

The material in this book is for informational purposes only. As each individual situation is unique, you should use proper discretion, in consultation with a health care practitioner, before undertaking the diet, exercises, and techniques described in this book. The author and publisher expressly disclaim responsibility for any adverse effects that may result from the use or application of the information contained in this book.



# ON THE SHOULDERS OF GIANTS

I am not the expert. I'm the guide and explorer.

If you find anything amazing in this book, it's thanks to the brilliant minds who helped as resources, critics, contributors, proofreaders, and references. If you find anything ridiculous in this book, it's because I didn't heed their advice.

Though indebted to hundreds of people, I wish to thank a few of them up-front, here listed in alphabetical order (still more in the acknowledgments):

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Dr. Lee Wolfer	Matt Mullenweg	Yuri V. Griko PhD
Dr. Mary Dan Eades	Michael Ellsberg	Zack Even-Esh
Dr. Michael Eades	Michael Levin	
Dr. Ross Tucker	Mike Mahler	

START HERE

**Does history record  
any case in which the  
majority was right?**

—Robert Heinlein

**I love fools'  
experiments.  
I'm always making  
them.**

—Charles Darwin

## **THINNER, BIGGER, FASTER, STRONGER?**

### **How to Use This Book**

MOUNTAIN VIEW, CALIFORNIA, 10 P.M., FRIDAY

Shoreline Amphitheater was rocking. More than 20,000 people had turned out at northern California's largest music venue to hear Nine Inch Nails, loud and in charge, on what was expected to be their last tour.

Backstage, there was more unusual entertainment.

"Dude, I go into the stall to take care of business, and I look over and see the top of Tim's head popping above the divider. He was doing f\*cking air squats in the men's room in complete silence."

Glenn, a videographer and friend, burst out laughing as he reenacted my technique. To be honest, he needed to get his thighs closer to parallel.

"Forty air squats, to be exact," I offered.

Kevin Rose, founder of Digg, one of the top-500 most popular websites in the world, joined in the laughter and raised a beer to toast the incident. I, on the other hand, was eager to move on to the main event.

In the next 45 minutes, I consumed almost two full-size barbecue chicken pizzas and three handfuls of mixed nuts, for a cumulative total of about 4,400 calories. It was my fourth meal of the day, breakfast having consisted of two glasses of grapefruit juice, a large cup of coffee with cinnamon, two chocolate croissants, and two bear claws.

The more interesting portion of the story started well after Trent Reznor left the stage.

Roughly 72 hours later, I tested my bodyfat percentage with an ultrasound analyzer designed by a physicist out of Lawrence Livermore National Laboratory.

Charting the progress on my latest experiment, I'd dropped from 11.9% to 10.2% bodyfat, a 14% reduction of the total fat on my body, in 14 days.

How? Timed doses of garlic, sugar cane, and tea extracts, among other things.

The process wasn't punishing. It wasn't hard. Tiny changes were all it took. Tiny changes that, while small in isolation, produced enormous changes when used in combination.

Want to extend the fat-burning half-life of caffeine? Naringenin, a useful little molecule in grapefruit juice, does just the trick.

Need to increase insulin sensitivity before bingeing once per week? Just add some cinnamon to your pastries on Saturday morning, and you can get the job done.

Want to blunt your blood glucose for 60 minutes while you eat a high-carb meal guilt-free? There are a half-dozen options.

But 2% bodyfat in two weeks? How can that be possible if many general practitioners claim that it's *impossible* to lose more than two pounds of fat per week? Here's the sad truth: most of the one-size-fits-all rules, this being one example, haven't been field-tested for exceptions.

You can't change your muscle fiber type? Sure you can. Genetics be damned.

Calories in and calories out? It's incomplete at best. I've lost fat while grossly overfeeding. Cheesecake be praised.

The list goes on and on.

It's obvious that the rules require some rewriting.

That's what this book is for.

## Diary of a Madman

The spring of 2007 was an exciting time for me.

My first book, after being turned down by 26 out of 27 publishers, had just hit the *New York Times* bestseller list and seemed headed for #1 on the business list, where it landed several months later. No one was more dumbfounded than me.

One particularly beautiful morning in San Jose, I had my first major media phone interview with Clive Thompson of *Wired* magazine. During our pre-interview small chat, I apologized if I sounded buzzed. I was. I had just finished a 10-minute workout following a double espresso on an empty stomach. It was a new experiment that would take me to single-digit body-fat with two such sessions per week.

Clive wanted to talk to me about e-mail and websites like Twitter. Before we got started, and as a segue from the workout comment, I joked that the major fears of modern man could be boiled down to two things: too much e-mail and getting fat. Clive laughed and agreed. Then we moved on.

The interview went well, but it was this offhand joke that stuck with me. I retold it to dozens of people over the subsequent month, and the response was always the same: agreement and nodding.

This book, it seemed, had to be written.

The wider world thinks I'm obsessed with time management, but they haven't seen the other—much more legitimate, much more ridiculous—obsession.

I've recorded almost every workout I've done since age 18. I've had more than 1,000 blood tests<sup>1</sup> performed since 2004, sometimes as often as every two weeks, tracking everything from complete lipid panels, insulin, and hemoglobin A1c, to IGF-1 and free testosterone. I've had stem cell growth factors imported from Israel to reverse “permanent” injuries, and I've flown to rural tea farmers in China to discuss Pu-Erh tea's effects on fat-loss. All said and done, I've spent more than \$250,000 on testing and tweaking over the last decade.

Just as some people have avant-garde furniture or artwork to decorate their homes, I have pulse oximeters, ultrasound machines, and medical de-

1. Multiple tests are often performed from single blood draws of 10–12 vials.

vices for measuring everything from galvanic skin response to REM sleep. The kitchen and bathroom look like an ER.

If you think that's craziness, you're right. Fortunately, you don't need to be a guinea pig to benefit from one.

Hundreds of men and women have tested the techniques in *The 4-Hour Body* (4HB) over the last two years, and I've tracked and graphed hundreds of their results (194 people in this book). Many have lost more than 20 pounds of fat in the first month of experimentation, and for the vast majority, it's the first time they've ever been able to do so.

Why do 4HB approaches work where others fail?

Because the changes are either small or simple, and often both. There is zero room for misunderstanding, and visible results compel you to continue. If results are fast and measurable,<sup>2</sup> self-discipline isn't needed.

I can give you every popular diet in four lines. Ready?

- Eat more greens.
- Eat less saturated fat.
- Exercise more and burn more calories.
- Eat more omega-3 fatty acids.

We won't be covering any of this. Not because it doesn't work—it does . . . up to a point. But it's not the type of advice that will make friends greet you with “What the #\$%& have you been doing?!” , whether in the dressing room or on the playing field.

That requires an altogether different approach.

## The Unintentional Dark Horse

Let's be clear: I'm neither a doctor nor a PhD. I am a meticulous data cruncher with access to many of the world's best athletes and scientists.

This puts me in a rather unusual position.

I'm able to pull from disciplines and subcultures that rarely touch one another, and I'm able to test hypotheses using the kind of self-

2. Not just noticeable.

experimentation mainstream practitioners can't condone (though their help behind the scenes is critical). By challenging basic assumptions, it's possible to stumble upon simple and unusual solutions to long-standing problems.

Overfat? Try timed protein and pre-meal lemon juice.

Undermuscle? Try ginger and sauerkraut.

Can't sleep? Try upping your saturated fat or using cold exposure.

This book includes the findings of more than 100 PhDs, NASA scientists, medical doctors, Olympic athletes, professional sports trainers (from the NFL to MLB), world-record holders, Super Bowl rehabilitation specialists, and even former Eastern Bloc coaches. You'll meet some of the most incredible specimens, including before-and-after transformations, you've ever seen.

I don't have a publish-or-perish academic career to preserve, and this is a good thing. As one MD from a well-known Ivy League university said to me over lunch:

*We're trained for 20 years to be risk-averse. I'd like to do the experimentation, but I'd risk everything I've built over two decades of schooling and training by doing so. I'd need an immunity necklace. The university would never tolerate it.*

He then added: "You can be the dark horse."

It's a strange label, but he was right. Not just because I have no prestige to lose. I'm also a former industry insider.

From 2001 to 2009, I was CEO of a sports nutrition company with distribution in more than a dozen countries, and while we followed the rules, it became clear that many others didn't. It wasn't the most profitable option. I have witnessed blatant lies on nutritional fact panels, marketing executives budgeting for FTC fines in anticipation of lawsuits, and much worse from some of the best-known brands in the business.<sup>3</sup> I understand how and where consumers are deceived. The darker tricks of the trade in supplements and sports nutrition—clouding results of "clinical trials" and creative labeling as just two examples—are nearly the same as in biotech and Big Pharma.

3. There are, of course, some outstanding companies with solid R&D and uncompromising ethics, but they are few and far between.

I will teach you to spot bad science, and therefore bad advice and bad products.<sup>4</sup>

Late one evening in the fall of 2009, I sat eating cassoulet and duck legs with Dr. Lee Wolfer in the clouds of fog known as San Francisco. The wine was flowing, and I told her of my fantasies to return to a Berkeley or Stanford and pursue a doctorate in the biological sciences. I was briefly a neuroscience major at Princeton University and dreamed of a PhD at the end of my name. Lee is regularly published in peer-reviewed journals and has been trained at some of the finest programs in the world, including the University of California at San Francisco (UCSF) (MD), Berkeley (MS), Harvard Medical School (residency), the Rehabilitation Institute of Chicago (fellowship), and Spinal Diagnostics in Daly City, California (fellowship).

She just smiled and raised a glass of wine before responding:

“You—Tim Ferriss—can do more outside the system than inside it.”

## A Laboratory of One

Many of these theories have been killed off only when some decisive experiment exposed their incorrectness . . . thus the yeoman work in any science . . . is done by the experimentalist, who must keep the theoreticians honest.

—*Michio Kaku (Hyperspace), theoretical physicist and co-creator of string field theory*

Most breakthroughs in performance (and appearance) enhancement start with animals and go through the following adoption curve:

*Racehorses → AIDS patients (because of muscle wasting) and bodybuilders → elite athletes → rich people → the rest of us*

The last jump from the rich to the general public can take 10–20 years, if it happens at all. It often doesn't.

I'm *not* suggesting that you start injecting yourself with odd substances never before tested on humans. I *am* suggesting, however, that government agencies (the U.S. Department of Agriculture, the Food and Drug Admin-

4. I have absolutely no financial interest in any of the supplements I recommend in this book. If you purchase any supplement from a link in this book, an affiliate commission is sent directly to the nonprofit DonorsChoose.org, which helps public schools in the United States.



istration) are at least 10 years behind current research, and at least 20 years behind compelling evidence in the field.

More than a decade ago, a close friend named Paul was in a car accident and suffered brain damage that lowered his testosterone production. Even with supplemental testosterone treatments (creams, gels, short-acting injectables) and after visiting scores of top endocrinologists, he still suffered from the symptoms of low testosterone. Everything changed—literally overnight—once he switched to testosterone enanthate, a variation seldom seen in the medical profession in the United States. Who made the suggestion? An advanced bodybuilder who knew his biochemistry. It shouldn't have made a difference, yet it did.

Do doctors normally take advantage of the 50+ years of experience that professional bodybuilders have testing, even synthesizing, esters of testosterone? No. Most doctors view bodybuilders as cavalier amateurs, and bodybuilders view doctors as too risk-averse to do anything innovative.

This separation of the expertise means both sides suffer suboptimal results.

Handing your medical care over to the biggest man-gorilla in your gym is a bad idea, but it's important to look for discoveries outside of the usual suspects. Those closest to a problem are often the least capable of seeing it with fresh eyes.

Despite the incredible progress in some areas of medicine in the last 100 years, a 60-year-old in 2009 can expect to live an average of only 6 years longer than a 60-year-old in 1900.

Me? I plan on living to 120 while eating the best rib-eye cuts I can find. More on that later.

Suffice to say: for uncommon solutions, you have to look in uncommon places.

## The Future's Already Here

In our current world, even if proper trials are funded for obesity studies as just one example, it might take 10–20 years for the results. Are you prepared to wait?

I hope not.

“Kaiser can’t talk to UCSF, who can’t talk to Blue Shield. *You* are the arbiter of your health information.” Those are the words of a leading surgeon at UCSF, who encouraged me to take my papers with me before hospital records claimed them as their property.

Now the good news: with a little help, it’s never been easier to collect a few data points (at little cost), track them (without training), and make small changes that produce incredible results.

Type 2 diabetics going off of medication 48 hours after starting a dietary intervention? Wheelchair-bound seniors walking again after 14 weeks of training? This is not science fiction. It’s being done today. As William Gibson, who coined the term “cyberspace,” has said:

“The future is already here—it is just unevenly distributed.”

## The 80/20 Principle: From Wall Street to the Human Machine

This book is designed to give you the most important 2.5% of the tools you need for body recomposition and increased performance. Some short history can explain this odd 2.5%.

Vilfredo Pareto was a controversial economist-cum-sociologist who lived from 1848 to 1923. His seminal work, *Cours d’économie politique*, included a then little explored “law” of income distribution that would later bear his name: “Pareto’s Law,” or “the Pareto Distribution.” It is more popularly known as “the 80/20 Principle.”

Pareto demonstrated a grossly uneven but predictable distribution of wealth in society—80 percent of the wealth and income is produced and possessed by 20 percent of the population. He also showed that this 80/20 principle could be found almost everywhere, not just in economics. Eighty percent of Pareto’s garden peas were produced by 20% of the pea-pods he had planted, for example.

In practice, the 80/20 principle is often much more disproportionate.

To be perceived as fluent in conversational Spanish, for example, you need an active vocabulary of approximately 2,500 high-frequency words. This will allow you to comprehend more than 95% of all conversation. To get to 98% comprehension would require at least five years of practice in-

stead of five months. Doing the math, 2,500 words is a mere 2.5% of the estimated 100,000 words in the Spanish language.

This means:

1. 2.5% of the total subject matter provides 95% of the desired results.
2. This same 2.5% provides just 3% less benefit than putting in 12 times as much effort.

This incredibly valuable 2.5% is the key, the Archimedes lever, for those who want the best results in the least time. The trick is finding that 2.5%.<sup>5</sup>

This book is not intended as a comprehensive treatise on all things related to the human body. My goal is to share what I have found to be the 2.5% that delivers 95% of the results in rapid body redesign and performance enhancement. If you are already at 5% bodyfat or bench-pressing 400 pounds, you are in the top 1% of humans and now in the world of incremental gains. This book is for the other 99% who can experience near-unbelievable gains in short periods of time.

## How to Use This Book—Five Rules

It is important that you follow five rules with this book. Ignore them at your peril.

### RULE #1. THINK OF THIS BOOK AS A BUFFET.

Do *not* read this book from start to finish.

Most people won't need more than 150 pages to reinvent themselves. Browse the table of contents, pick the chapters that are most relevant, and discard the rest . . . for now. Pick one appearance goal and one performance goal to start.

The only mandatory sections are “Fundamentals” and “Ground Zero.” Here are some popular goals, along with the corresponding chapters to read in the order listed:

5. Philosopher Nassim N. Taleb noted an important difference between language and biology that I'd like to underscore: the former is largely known and the latter is largely unknown. Thus, our 2.5% is not 2.5% of a perfect finite body of knowledge, but the most empirically valuable 2.5% of what we know now.

**RAPID FAT-LOSS**

All chapters in “Fundamentals”  
 All chapters in “Ground Zero”  
 “The Slow-Carb Diet I and II”  
 “Building the Perfect Posterior”  
 Total page count: 98

**RAPID MUSCLE GAIN**

All chapters in “Fundamentals”  
 All chapters in “Ground Zero”  
 “From Geek to Freak”  
 “Occam’s Protocol I and II”  
 Total page count: 97

**RAPID STRENGTH GAIN**

All chapters in “Fundamentals”  
 All chapters in “Ground Zero”  
 “Effortless Superhuman” (pure strength, little mass gain)  
 “Pre-Hab: Injury-Proofing the Body”  
 Total page count: 92

**RAPID SENSE OF TOTAL WELL-BEING**

All chapters in “Fundamentals”  
 All chapters in “Ground Zero”  
 All chapters in “Improving Sex”  
 All chapters in “Perfecting Sleep”  
 “Reversing ‘Permanent’ Injuries”  
 Total page count: 143

Once you’ve selected the bare minimum to get started, get started.

Then, once you’ve committed to a plan of action, dip back into the book at your leisure and explore. Immediately practical advice is contained in every chapter, so don’t discount something based on the title. Even if you are a meat-eater (as I am), for example, you will benefit from “The Meatless Machine.”

Just don’t read it all at once.

**RULE #2. SKIP THE SCIENCE IF IT'S TOO DENSE.**

You do not need to be a scientist to read this book.

For the geeks and the curious, however, I've included a lot of cool details. These details can often enhance your results but are not required reading. Such sections are boxed and labeled "Geek's Advantage" with a "GA" symbol.

Even if you've been intimidated by science in the past, I encourage you to browse some of these GA sections—at least a few will offer some fun "holy sh\*t!" moments and improve results 10% or so.

If you ever feel overwhelmed, though, skip them, as they're not mandatory for the results you're after.

**RULE #3. PLEASE BE SKEPTICAL.**

Don't assume something is true because I say it is.

As the legendary Timothy Noakes PhD, author or co-author of more than 400 published research papers, is fond of saying: "Fifty percent of what we know is wrong. The problem is that we do not know which 50% it is." Everything in this book works, but I have surely gotten some of the mechanisms completely wrong. In other words, I believe the how-to is 100% reliable, but some of the why-to will end up on the chopping block as we learn more.

**RULE #4. DON'T USE SKEPTICISM AS AN EXCUSE FOR INACTION.**

As the good Dr. Noakes also said to me about one Olympic training regimen: "This [approach] could be totally wrong, but it's a hypothesis worth disproving."

It's important to look for hypotheses worth disproving.

Science starts with educated (read: wild-ass) guesses. Then it's all trial and error. Sometimes you predict correctly from the outset. More often, you make mistakes and stumble across unexpected findings, which lead to new questions. If you want to sit on the sidelines and play full-time skeptic, suspending action until a scientific consensus is reached, that's your choice. Just realize that science is, alas, often as political as a dinner party with die-hard Democrats and Republicans. Consensus comes late at best.

Don't use skepticism as a thinly veiled excuse for inaction or remaining in your comfort zone. Be skeptical, but for the right reason: because you're looking for the most promising option to test in real life.

Be *proactively* skeptical, not defensively skeptical.

Let me know if you make a cool discovery or prove me wrong. This book will evolve through your feedback and help.

#### RULE #5. ENJOY IT.

I've included a lot of odd experiences and screwups just for simple entertainment value. All fact and no play makes Jack a dull boy.

Much of the content is intended to be read as the diary of a madman. Enjoy it. More than anything, I'd like to impart the joy of exploration and discovery. Remember: this isn't a homework assignment. Take it at your own pace.

## The Billionaire Productivity Secret and the Experimental Lifestyle

“How do you become more productive?”

Richard Branson leaned back and thought for a second. The tropical sounds of his private oasis, Necker Island, murmured in the background. Twenty people sat around him at rapt attention, wondering what a billionaire's answer would be to one of the big questions—perhaps *the* biggest question—of business. The group had been assembled by marketing impresario Joe Polish to brainstorm growth options for Richard's philanthropic Virgin Unite. It was one of his many new ambitious projects. Virgin Group already had more than 300 companies, more than 50,000 employees, and \$25 billion per year in revenue. In other words, Branson had personally built an empire larger than the GDP of some developing countries. Then he broke the silence:

“Work out.”

He was serious and elaborated: working out gave him at least four additional hours of productive time every day.

The cool breeze punctuated his answer like an exclamation point.

4HB is intended to be much more than a book.

I view 4HB as a manifesto, a call to arms for a new mental model of living: the experimental lifestyle. It's up to you—not your doctor, not the newspaper—to learn what you best respond to. The benefits go far beyond the physical.

If you understand politics well enough to vote for a president, or if you have ever filed taxes, you can learn the few most important scientific rules for redesigning your body. These rules will become your friends, 100% reliable and trusted.

This changes everything.

It is my sincere hope, if you've suffered from dissatisfaction with your body, or confusion regarding diet and exercise, that your life will be divided into before-4HB and after-4HB. It can help you do what most people would consider superhuman, whether losing 100 pounds of fat or holding your breath for five minutes. It all works.

There is no high priesthood—there is cause and effect.  
Welcome to the director's chair.

Alles mit Maß und Ziel,

Timothy Ferriss  
San Francisco, California  
June 10, 2010

## FOR YOUR READING PLEASURE

### Getting Tested

There are dozens of tests mentioned throughout this book. If you ever ask yourself “How do I get that tested?” or wonder where to start, the “Getting Tested” list on page 478 is your step-by-step guide.

### Quick Reference

Not sure how much a gram is, or what the hell 4 ounces is? Just flip to the common measurements on page 476 and unleash your inner Julia Child.

### Endnotes and Citations

This book is very well researched.

It’s also big enough to club a baby seal. If you really want to make your eyes glaze over, more than 500 scientific citations can be found at [www.fourhourbody.com/endnotes](http://www.fourhourbody.com/endnotes), divided by chapter and with relevant sentences included.

### Resources

To spare you the headache of typing out paragraph-long URLs, all long website addresses have been replaced with a short [www.fourhourbody.com](http://www.fourhourbody.com) address that will send you to the right place.

Got it? Good. Let’s move on to the mischief.



# FUNDAMENTALS— FIRST AND FOREMOST

Perfection is  
achieved, not when  
there is nothing more  
to add, but when  
there is nothing left  
to take away.

—Antoine de Saint-Exupéry

## THE MINIMUM EFFECTIVE DOSE

From Microwaves  
to Fat-Loss

Arthur Jones was a precocious young child and particularly fond of crocodiles.

He read his father's entire medical library before he was 12. The home environment might have had something to do with it, seeing as his parents, grandfather, great-grandfather, half-brother, and half-sister were all doctors.

From humble beginnings in Oklahoma, he would mature into one of the most influential figures in the exercise science world. He would also become, in the words of more than a few, a particularly "angry genius."

One of Jones's protégés, Ellington Darden PhD, shares a prototypical Jones anecdote:

*In 1970, Arthur invited Arnold [Schwarzenegger] and Franco Colombu to visit him in Lake Helen, Florida, right after the 1970 Mr. Olympia. Arthur picked them up at the airport in his Cadillac, with Arnold in the passenger seat and Franco in the back. There are probably 12 stoplights in between the airport and the Interstate, so it was a lot of stop-and-go driving.*

*Now, you have to know that Arthur was a*

*man who talked loud and dominated every conversation. But he couldn't get Arnold to shut up. He was just blabbing in his German or whatever and Arthur was having a hard time understanding what he was saying. So Arthur was getting annoyed and told him to quiet down, but Arnold just kept talking and talking.*

*By the time they got onto the Interstate, Arthur had had enough. So he pulled over to the side of the road, got out, walked around, opened Arnold's door, grabbed him by the shirt collar, yanked him out, and said something to the effect of, "Listen here, you son of a bitch. If you don't shut the hell up, a man twice your age is going to whip your ass right out here in front of I-4 traffic. Just dare me."*

*Within five seconds Arnold had apologized, got back in the car, and was a perfect gentlemen for the next three or four days.*

Jones was more frequently pissed off than anything else.

He was infuriated by what he considered stupidity in every corner of the exercise science world, and he channeled this anger into defying the odds. This included putting 63.21 pounds on champion bodybuilder Casey Viator in 28 days and putting himself on the Forbes 400 list by founding and selling exercise equipment manufacturer Nautilus, which was estimated to have grossed \$300 million per year at its zenith.

He had no patience for fuzzy thinking in fields that depended on scientific clarity. In response to researchers who drew conclusions about muscular function using electromyography (EMG), Arthur attached their machines to a cadaver and moved its limbs to record similar "activity." Internal friction, that is.

Jones lamented his fleeting time: "My age being what it is, universal acceptance of what we are now doing may not come within my lifetime; but it will come, because what we are doing is clearly established by simple laws of basic physics that cannot be denied forever." He passed away on August 28, 2007, of natural causes, 80 years old and as ornery as ever.

Jones left a number of important legacies, one of which will be the cornerstone of everything we'll discuss: the minimum effective dose.

## The Minimum Effective Dose

The minimum effective dose (MED) is defined simply: the smallest dose that will produce a desired outcome.

Jones referred to this critical point as the “minimum effective load,” as he was concerned exclusively with weight-bearing exercise, but we will look at precise “dosing” of both exercise and anything you ingest.<sup>1</sup>

Anything beyond the MED is wasteful.

To boil water, the MED is 212°F (100°C) at standard air pressure. Boiled is boiled. Higher temperatures will not make it “more boiled.” Higher temperatures just consume more resources that could be used for something else more productive.

If you need 15 minutes in the sun to trigger a melanin response, 15 minutes is your MED for tanning. More than 15 minutes is redundant and will just result in burning and a forced break from the beach. During this forced break from the beach, let’s assume one week, someone else who heeded his natural 15-minute MED will be able to fit in four more tanning sessions. He is four shades darker, whereas you have returned to your pale pre-beach self. Sad little manatee. In biological systems, exceeding your MED can freeze progress for weeks, even months.

In the context of body redesign, there are two fundamental MEDs to keep in mind:

*To remove stored fat → do the least necessary to trigger a fat-loss cascade of specific hormones.*

*To add muscle in small or large quantities → do the least necessary to trigger local (specific muscles) and systemic (hormonal<sup>2</sup>) growth mechanisms.*

Knocking over the dominos that trigger both of these events takes surprisingly little. Don’t complicate them.

For a given muscle group like the shoulders, activating the local growth mechanism might require just 80 seconds of tension using 50 pounds once every seven days, for example. That stimulus, just like the 212°F for boiling

1. Credit is due to Dr. Doug McGuff, who’s written extensively on this and who will reappear later.

2. In fancier and more accurate terms, *neuroendocrine*.

water, is enough to trigger certain prostaglandins, transcription factors, and all manner of complicated biological reactions. What are “transcription factors”? You don’t need to know. In fact, you don’t need to understand any of the biology, just as you don’t need to understand radiation to use a microwave oven. Press a few buttons in the right order and you’re done.

In our context: 80 seconds as a target is all you need to understand. That is the button.

If, instead of 80 seconds, you mimic a glossy magazine routine—say, an arbitrary 5 sets of 10 repetitions—it is the muscular equivalent of sitting in the sun for an hour with a 15-minute MED. Not only is this wasteful, it is a predictable path for preventing and reversing gains. The organs and glands that help repair damaged tissue have more limitations than your enthusiasm. The kidneys, as one example, can clear the blood of a finite maximum waste concentration each day (approximately 450 mmol, or millimoles per liter). If you do a marathon three-hour workout and make your bloodstream look like an LA traffic jam, you stand the real chance of hitting a biochemical bottleneck.

Again: the good news is that you don’t need to know anything about your kidneys to use this information. All you need to know is:

*80 seconds is the dose prescription.*

More is not better. Indeed, your greatest challenge will be resisting the temptation to do more.

The MED not only delivers the most dramatic results, but it does so in the least time possible. Jones’s words should echo in your head: “REMEMBER: it is impossible to evaluate, or even understand, anything that you cannot measure.”

80 secs. of 20 lbs.  
10:00 mins. of 54°F water  
200 mg of allicin extract before bed

These are the types of prescriptions you should seek, and these are the types of prescriptions I will offer.

**Everything popular  
is wrong.**

—Oscar Wilde, *The Importance  
of Being Earnest*

**Know the rules well,  
so you can break  
them effectively.**

—Dalai Lama XIV

## RULES THAT CHANGE THE RULES

**Everything Popular  
Is Wrong**

“This is clearly a lie. Gaining 34 lb in 28 days requires a caloric surplus of 4300 calories per day, so for a guy his size, he must have eaten 7000 calories a day. He expects me to believe that he dropped 4% in bodyfat as a result of eating 7000 calories? . . .”

I took a big swig of Malbec and read the blog comment again. Ah, the Internet. How far we haven’t come.

It was amusing, and one of hundreds of similar comments on this particular blog post, but the fact remained: I had gained 34 pounds of muscle, lost 4 pounds of fat, and decreased my total cholesterol from 222 to 147, all in 28 days, without anabolics or statins like Lipitor.

The entire experiment had been recorded by Dr. Peggy Plato, director of the Sport and Fitness Evaluation Program at San Jose State University, who used hydrostatic weighing tanks, medical scales, and a tape measure to track everything from waist circumference to bodyfat percentage. My total time in the gym over four weeks?

Four hours.<sup>3</sup> Eight 30-minute workouts.  
The data didn't lie.

But isn't weight loss or gain as simple as calories in and calories out?

It's attractive in its simplicity, yes, but so is cold fusion. It doesn't work quite as advertised.

German poet Johann Wolfgang Goethe had the right perspective: "Mysteries are not necessarily miracles." To do the impossible (sail around the world, break the four-minute mile, reach the moon), you need to ignore the popular.

Charles Munger, right-hand adviser to Warren Buffett, the richest man on the planet, is known for his unparalleled clear thinking and near-failure-proof track record. How did he refine his thinking to help build a \$3 trillion business in Berkshire Hathaway?

The answer is "mental models," or analytical rules-of-thumb<sup>4</sup> pulled from disciplines outside of investing, ranging from physics to evolutionary biology.

Eighty to 90 models have helped Charles Munger develop, in Warren Buffett's words, "the best 30-second mind in the world. He goes from A to Z in one move. He sees the essence of everything before you even finish the sentence."

Charles Munger likes to quote Charles Darwin:

*Even people who aren't geniuses can outthink the rest of mankind if they develop certain thinking habits.*

In the 4HB, the following mental models, pulled from a variety of disciplines, are what will separate your results from the rest of mankind.

## New Rules for Rapid Redesign

### NO EXERCISE BURNS MANY CALORIES.

Did you eat half an Oreo cookie? No problem. If you're a 220-pound male, you just need to climb 27 flights of stairs to burn it off.

3. In this case, the "4-Hour Body" is quite literal.

4. These "mental models" are often referred to as *heuristics* or *analytical frameworks*.

Put another way, moving 100 kilograms (220 pounds) 100 meters (about 27 flights of stairs) requires 100 kilojoules of energy, or 23.9 calories (known to scientists as kilocalories [kcal]). A pound of fat contains 4,082 calories. How many calories might running a marathon burn? 2,600 or so.

The caloric argument for exercise gets even more depressing. Remember those 107 calories you burned during that kick-ass hour-long Stairmaster™ session? Don't forget to subtract your basal metabolic rate (BMR), what you would have burned had you been sitting on the couch watching *The Simpsons* instead. For most people, that's about 100 calories per hour given off as heat (BTU).

That hour on the Stairmaster was worth seven calories.

As luck would have it, three small stalks of celery are six calories, so you have one calorie left to spare. But wait a minute: how many calories did that sports drink and big post-workout meal have? Don't forget that you have to burn more calories than you later ingest in larger meals due to increased appetite.

GA

(Remember: skip the "GA" boxes if you don't like the dense stuff.)

F\*cking hell, right? It's enough to make a lumberjack cry. Confused and angry? You should be.

As usual, the focus is on the least important piece of the puzzle.

But why do scientists harp on the calorie? Simple. It's cheap to estimate, and it is a popular variable for publication in journals. This, dear friends, is referred to as "parking lot" science, so-called after a joke about a poor drunk man who loses his keys during a night on the town.

His friends find him on his hands and knees looking for his keys under a streetlight, even though he knows he lost them somewhere else. "Why are you looking for your keys under the streetlight?" they ask. He responds confidently, "Because there's more light over here. I can see better."

For the researcher seeking tenure, grant money, or lucrative corporate consulting contracts, the maxim "publish or perish" applies. If you need to include 100 or 1,000 test subjects and can only afford to measure a few simple things, you need to paint those measurements as tremendously important.

Alas, mentally on your hands and knees is no way to spend life, nor is chafing your ass on a stationary bike.

Instead of focusing on calories-out as exercise-dependent, we will look at two underexploited paths: heat and hormones.



So relax. You'll be able to eat as much as you want, and then some. New exhaust pipes will solve the problem.

#### A DRUG IS A DRUG IS A DRUG

Calling something a “drug,” a “dietary supplement,” “over-the-counter,” or a “nutriceutical” is a legal distinction, not a biochemical one.

None of these labels mean that something is safe or effective. Legal herbs can kill you just as dead as illegal narcotics. Supplements, often unpatentable molecules and therefore unappealing for drug development, can decrease cholesterol from 222 to 147 in four weeks, as I have done, or they can be inert and do absolutely nothing.

Think “all-natural” is safer than synthetic? Split peas are all-natural, but so is arsenic. Human growth hormone (HGH) can be extracted from the brains of all-natural cadavers, but unfortunately it often brings Creutzfeldt-Jakob disease with it, which is why HGH is now manufactured using recombinant DNA.

Besides whole foods (which we'll treat separately as “food”), anything you put in your mouth or your bloodstream that has an effect—whether it's a cream, injection, pill, or powder—is a *drug*. Treat them all as such. Don't distract yourself with labels that are meaningless to us.

#### THE 20-POUND RECOMP GOAL

For the vast majority of you reading this book who weigh more than 120 pounds, 20 pounds of *recomposition* (which I'll define below) will make you look and feel like a new person, so I suggest this as a goal. If you weigh less than 120 pounds, aim for 10 pounds; otherwise, 20 pounds is your new, specific goal.

Even if you have 100+ pounds to lose, start with 20.

On a 1–10 attractiveness scale, 20 pounds appears to be the critical threshold for going from a 6 to a 9 or 10, at least as tested with male perception of females.

The term “recomposition” is important. It does *not* mean a 20-pound reduction in weight. It's a 20-pound change in appearance. A 20-pound “recomp” could entail losing 20 pounds of fat or gaining 20 pounds of muscle, but it most often involves losing 15 pounds of fat and gaining 5 pounds of muscle, or some blend in between.

Designing the best physique includes both subtraction and addition.

THE 100-UNIT SLIDER: DIET, DRUGS, AND EXERCISE

How, then, do we get to 20 pounds?

Imagine a ruler with 100 lines on it, representing 100 total units, and two sliders. This allows us to split the 100 units into three areas that total 100. These three areas represent diet, drugs, and exercise.

An equal split would look like this:

\_\_\_\_\_|\_\_\_\_\_|\_\_\_\_\_| (33% diet, 33% drugs, 33% exercise)

It is possible to reach your 20-pound recomp goal with any combination of the three, but some combinations are better than others. One hundred percent drugs can get you there, for example, but it will produce the most long-term side effects. One hundred percent exercise can get you there, but if injuries or circumstances interfere, the return to baseline is fast.

|\_\_\_\_\_| (100% drugs) = side effects  
 //\_\_\_\_\_| (100% exercise) = easy to derail

Here is the ratio of most of the fat-loss case studies in this book:

\_\_\_\_\_|\_|\_\_\_\_\_| (60% diet, 10% drugs, 30% exercise)

If you're unable to follow a prescribed diet, as is sometimes the case with travel or vegetarianism, you'll need to move the sliders to increase the % attention paid to exercise and drugs. For example:

\_|\_\_\_\_\_|\_\_\_\_\_| (10% diet, 45% drugs, 45% exercise)

The numbers need not be measured, but this concept is critical to keep in mind as the world interferes with plans. Learning diet and exercise principles is priority #1, as these are the bedrock elements. Relying too much on drugs makes your liver and kidneys unhappy.

The percentages will also depend on your personal preferences and "adherence," which we cover next.

### THE DUCT TAPE TEST: WILL IT STICK?

Eating at least one head of lettuce per day works well for losing fat and controlling insulin levels.

That is, if you're a critical intervention patient, such as a morbidly obese type 1 diabetic. The options for such people, as explained by their doctors, are (1) change your diet with this prescription, or (2) die. Not surprisingly, adherence is often incredible. For someone who would like to lose 20 pounds but is more interested in how their ass looks in a pair of jeans, the adherence will be abysmal. Chopping vegetables and cleaning the Cuisinart three times per day will lead to one place: abandonment of the method. Does that mean it won't work for some people? No. It just means that it will fail for *most* people. We want to avoid all methods with a high failure rate, even if you believe you are in the diligent minority. In the beginning, everyone who starts a program believes they're in this minority.

Take adherence seriously: will you actually stick with this change until you hit your goal?

If not, find another method, even if it's less effective and less efficient. The decent method you follow is better than the perfect method you quit.

### DON'T CONFUSE PHYSICAL RECREATION WITH EXERCISE

Physical recreation can be many things: baseball, swimming, yoga, rock-climbing, tipping cows . . . the list is endless. Exercise, on the other hand, means performing an MED of precise movements that will produce a target change. That's it. It's next to impossible to draw cause-and-effect relationships with recreation. There are too many variables. Effective exercise is simple and trackable.

Physical recreation is great. I love chasing dogs at the dog park as much as the next person. Exercise in our context, however, is the application of measurable stimuli to decrease fat, increase muscle, or increase performance.

Recreation is for fun. Exercise is for producing changes. Don't confuse the two.

### DON'T CONFUSE CORRELATION WITH CAUSE AND EFFECT

Want to look like a marathon runner, thin and sleek? Train like a marathoner.

Want to look like a sprinter, ripped and muscular? Train like a sprinter.

Want to look like a basketball player, 6'8"? Train like a basketball player.

Hold on now. That last one doesn't work. Nor does it work for the first two examples. It's flawed logic, once again appealing and tempting in its simplicity. Here are three simple questions we can ask to avoid similar mistakes:

1. Is it possible that the arrow of causality is reversed? Example: do people who are naturally ripped and muscular often choose to be sprinters? Yep.
2. Are we mixing up absence and presence? Example: if the claim is that a no-meat diet extends average lifespan 5–15%, is it possible that it is the presence of more vegetables, not the absence of meat, that extends lifespan? It most certainly is.
3. Is it possible that you tested a specific demographic and that other variables are responsible for the difference? Example: if the claim is that yoga improves cardiac health, and the experimental group comprises upper-class folk, is it possible that they are therefore more likely than a control group to eat better food? You bet your downward-dog-posing ass.

The point isn't to speculate about hundreds of possible explanations.

The point is to be skeptical, especially of sensationalist headlines. Most “new studies” in the media are observational studies that can, at best, establish correlation (A happens while B happens), but not causality (A causes B to happen).

If I pick my nose when the Super Bowl cuts to a commercial, did I cause that? This isn't a haiku. It's a summary: correlation doesn't prove causation. Be skeptical when people tell you that A causes B.

They're wrong much more than 50% of the time.

#### USE THE YO-YO: EMBRACE CYCLING

Yo-yo dieting gets a bad rap.

Instead of beating yourself up, going to the shrink, or eating an entire cheesecake because you ruined your diet with one cookie, allow me to deliver a message: it's normal.

Eating more, then less, then more, and so on in a continuous sine wave is an impulse we can leverage to reach goals faster. Trying to prevent it—attempting to sustain a reduced-calorie diet, for example—is when

yo-yoing becomes pathological and uncontrollable. Scheduling overeating at specific times, on the other hand, fixes problems instead of creating them.

The top bodybuilders in the world understand this and, even when in a pre-contest dieting phase, will cycle calories to prevent hormonal down-regulation.<sup>5</sup> The daily average might be 4,000 calories per day, but it would be cycled as follows: Monday, 4,000; Tuesday, 4,500; Wednesday, 3,500, etc.

Ed Coan, described as the Michael Jordan of powerlifting, set more than 70 world records in his sport. Among other things, he deadlifted an unbelievable 901 pounds at 220 pounds bodyweight, beating even super-heavyweights. His trainer at the time, Marty Gallagher, has stated matter-of-factly that “maintaining peak condition year-round is a ticket to the mental ward.”

You can have your cheesecake and eat it too, as long as you get the timing right. The best part is that these planned ups and downs accelerate, rather than reverse, progress.

Forget balance and embrace cycling. It’s a key ingredient in rapid body redesign.

#### PREDISPOSITION VS. PREDESTINATION: DON’T BLAME YOUR GENES

The marathoners of Kenya are legendary.

Kenyan men have won all but one of the last 12 Boston Marathons. In the 1988 Olympics, Kenyan men won gold in the 800-meter, 1,500-meter, and 5,000-meter races, as well as the 3,000-meter steeplechase. Factoring in their population of approximately 30 million, the statistical likelihood of this happening at an international competition with the scope of the Olympics is about one in 1.6 billion.

If you’ve been in the world of exercise science for any period of time, you can guess their muscle fiber composition, which is an inherited trait: slow-twitch. Slow-twitch muscle fibers are suited to endurance work. Lucky bastards!

But here’s the problem: it doesn’t appear to be totally true. To the surprise of researchers who conducted muscle biopsies on Kenyan runners, there was a high proportion of fast-twitch muscle fibers, the type you’d expect to find in shot-putters and sprinters. Why? Because, as it turns out, they often train using low mileage and high intensity.

5. For example, proper conversion of T4 thyroid hormone to the more thermogenically active T3.

If you are overweight and your parents are overweight, the inclination is to blame genetics, but this is only one possible explanation.

Did fatness genes get passed on, or was it overeating behavior? After all, fat people tend to have fat pets.

Even if you are *predisposed* to being overweight, you're not *predestined* to be fat.

Eric Lander, leader of the Human Genome Project, has emphasized repeatedly the folly of learned helplessness through genetic determinism:

*People will think that because genes play a role in something, they determine everything. We see, again and again, people saying, "It's all genetic. I can't do anything about it." That's nonsense. To say that something has a genetic component does not make it unchangeable.*

Don't accept predisposition. You don't have to, and we can feed and train you toward a different physical future.<sup>6</sup> Nearly all of my personal experiments involve improving something that should be genetically fixed.

It is possible to redirect your natural-born genetic profile. From now on, "bad genetics" can't be your go-to excuse.

#### ELIMINATE PROPAGANDA AND NEBULOUS TERMS

The word *aerobics* came about when the gym instructors got together and said, "If we're going to charge \$10 an hour, we can't call it jumping up and down."

—Rita Rudner

One question you must learn to ask when faced with advice or sales pitches is: "If this [method/product/diet/etc.] didn't work as advertised, what might their other incentives be for selling it?"

Aerobics classes? The reason you're sold: aerobics is more effective than alternative X. The real reason it's promoted: there's no equipment investment and the gym can maximize students per square foot per class. Many "new and improved" recommendations are based on calculating profit first and then working backward to justify the method.

6. Genes alone cannot account for the diversity of characteristics we see around us. Messenger RNA (mRNA) is now thought to be responsible for much of the diversity, and there is good news: just as you can turn genes on and off, you can influence mRNA dramatically with environment—even shut down certain processes entirely through interference.

Marketer speak and ambiguous words have no place in 4HB or your efforts. Both will surface in conversations with friends who, in their best effort to help, will do more harm than good. If unprepared, one such conversation can single-handedly derail an entire program.

These are two categories of words that you should neither use nor listen to. The first, **marketer-speak**, includes all terms used to scare or sell that have no physiological basis:

Toning  
Cellulite  
Firming  
Shaping  
Aerobics

The word *cellulite*, for example, first appeared in the April 15, 1968, issue of *Vogue* magazine, and this invented disease soon had a believer base worldwide:

*Vogue began to focus on the body as much as on the clothes, in part because there was little they could dictate with the anarchic styles... In a stunning move, an entire replacement culture was developed by naming a "problem" where it had scarcely existed before, centering it on the women's natural state, and elevating it to the existential female dilemma... The number of diet-related articles rose 70 percent from 1968 to 1972.*

Cellulite is fat. Nothing special, neither a disease nor a unique female problem without solutions. It can be removed.

Less obvious, but often more damaging than marketer-speak, are **scientific-sounding words** that are so overused as to have no agreed-upon meaning:

Health  
Fitness  
Optimal

To eliminate words you shouldn't use in body redesign, the question to ask is: **can I measure it?**

“I just want to be healthy” is not actionable. “I want to increase my HDL cholesterol and improve my time for a one-mile jog (or walk)” is actionable. “Healthy” is subject to the fads and regime du jour. Useless.

The word *optimal* is also bandied about with much fanfare. “Your progesterone might fall within the normal range, but it’s not optimal.” The question here, seldom asked, should be: optimal for what? Triathlon training? Extending lifespan 40%? Increasing bone density 20%? Having sex three times a day?

“Optimal” depends entirely on what your goal is, and that goal should be numerically precise. “Optimal” is usable, but only when the “for what” is clear.

If it isn’t, treat *optimal* as Wikipedia would: a weasel word.



## WHY A CALORIE ISN'T A CALORIE

Calories are all alike, whether they come from beef or bourbon, from sugar or starch, or from cheese and crackers. Too many calories are just too many calories.

—Fred Stare, founder and former chair of the Harvard University Nutrition Department

The above statement is so ridiculous as to defy belief, but let's take a look at the issue through a more rational lens: hypothetical scenarios.

Scenario #1: Two male identical twins eat the exact same meals for 30 days. The only difference: one of the subjects just finished a strong course of antibiotics and now lacks sufficient good bacteria for full digestion.

Will the body composition outcomes be the same?

Of course not. **Rule #1: It's not what you put in your mouth that matters, it's what makes it to your bloodstream. If it passes through, it doesn't count.**

The creator of the "calorie" as we know it, 19th-century chemist Wilbur Olin Atwater, did not have the technology that we have today. He incinerated foods. Incineration does not equal human digestion; eating a fireplace log will not store the same number of calories as burning one will produce. Tummies have trouble with bark, as they do with many things.

Scenario #2: Three females of the same race, age, and body composition each consume 2,000 calories daily for 30 days. Subject 1 consumes nothing but table sugar, subject 2 consumes nothing but lean chicken breast, and subject 3 consumes nothing but mayonnaise (2,000 calories is just 19.4 tablespoons, if you'd care to indulge).

Will the body composition outcomes be the same?

Of course not. **Rule #2: The hormonal responses to carbohydrates (CHO), protein, and fat are different.**

There is no shortage of clinical studies to prove that beef calories<sup>7</sup> do not equal bourbon calories.

One such study, conducted by Kekwick and Pawan, compared three groups put on calorically equal (isocaloric) semistarvation diets of 90% fat, 90% protein, or 90% carbohydrate. Though ensuring compliance was a challenge, the outcomes were clearly not at all the same:

1,000 cal. at 90% fat = weight loss of 0.9 lbs. per day

1,000 cal. at 90% protein = weight loss of 0.6 lbs. per day

1,000 cal. at 90% carbohydrate = weight gain of 0.24 lbs. per day

7. Protein, for one, provokes a greater thermic effect of food (TEF) than either carbohydrate or fat—in simple terms, in digestion a higher percentage of protein calories are "lost" as heat vs. carbohydrates or fat. This has led some scientists to suggest that the 4 calories per gram assumed for protein should be downgraded 20% to 3.2 calories per gram.

Different sources of calories = different results.

Things that affect calorie allocation—and that can be modified for fat-loss and muscle gain—include digestion, the ratio of protein-to-carbohydrates-to-fat, and timing.

We'll address all three.

## MARKETING 101: SEXISM SELLS

More than 50% of the examples in this book are of women.

Marketers have conditioned women to believe that they need specific programs and diets “for women.” This is an example of capitalism at its worst: creating false need and confusion.

Does this mean I'm going to recommend that a woman do exactly the same thing as a 250-pound meathead who wants 20-inch arms? Of course not. The two have different goals. But 99% of the time both genders want exactly the same thing: less fat and a bit more muscle in the right places. Guess what? In these 99 cases out of 100, men and women should therefore do *exactly* the same thing.

On average, women have less than one-tenth (often less than one-fortieth) the testosterone of men. This biochemical recipe just doesn't support rapid muscular growth unless you're an outlier, so, for the duration of this book, please suspend any fear of “getting bulky.”

Even if you are a fast-responder, as you observe changes, you can omit pieces or reduce frequency. Don't worry about waking up looking like the Hulk the morning after a single workout. It won't happen, as much as men wish it did. There will be plenty of time to tweak and fine-tune, to cut back or shift gears, as you go.

One potential objection from the scientists in the group: *But don't women have more slow-twitch muscle fibers? Doesn't that mean women should train differently?* I propose not, and I'm not the first. Based on the data in this book and in the literature, you'll see that (1) muscle fiber composition can be changed, and (2) you should eat and train for your desired outcome, not to accommodate your current condition.

Don't fall victim to sexism in exercise. It's almost always a fraud or a sales pitch.



Marilyn Monroe building her world-famous sex appeal.

## TOOLS AND TRICKS

***Seeking Wisdom: From Darwin to Munger*** ([www.fourhourbody.com/wisdom](http://www.fourhourbody.com/wisdom)) This is one of the best books on mental models, how to use them, and how not to make a fool of yourself. I was introduced to this manual for critical thinking by Derek Sivers, who sold his company CD Baby for \$22 million.

***Poor Charlie's Almanack: The Wit and Wisdom of Charles T. Munger*** ([www.fourhourbody.com/almanac](http://www.fourhourbody.com/almanac)) This book contains most of the talks and lectures of Charlie Munger, the vice chairman of Berkshire Hathaway. It has sold nearly 50,000 copies without any advertising or bookstore placement.

***Munger's Worldly Wisdom*** ([www.fourhourbody.com/munger](http://www.fourhourbody.com/munger)) This transcribed speech, given by Charlie Munger at USC Business School, discusses the 80–90 important mental models that cover 90% of the decisions he makes.

# GROUND ZERO—

## Getting Started and Swaraj

**At the individual level Swaraj is vitally connected with the capacity for dispassionate self-assessment, ceaseless self-purification and growing self-reliance. . . . It is Swaraj when we learn to rule ourselves.**

—Mahatma Gandhi, *Young India*, June 28, 1928, p. 772

**I must not fear.  
Fear is the mind-  
killer. Fear is the  
little-death that  
brings total  
obliteration.  
I will face my fear.  
I will permit it to  
pass over me and  
through me.  
And when it has gone  
past I will turn the  
inner eye to see  
its path.  
Where the fear has  
gone there will be  
nothing. Only I  
will remain.**

—Bene Gesserit “Litany Against  
Fear,” from Frank Herbert’s  
*Dune*

## THE HARAJUKU MOMENT

The Decision to Become  
a Complete Human

For most of us, the how-to books on our shelves represent a growing to-do list, not advice we’ve followed.

Several of the better-known tech CEOs in San Francisco have asked me at different times for an identical favor: an index card with bullet-point instructions for losing abdominal fat. Each of them made it clear: “Just tell me exactly what to do and I’ll do it.”

I gave them all of the necessary tactical advice on one 3"×5" card, knowing in advance what the outcome would be. The success rate was impressive . . . 0%.

People suck at following advice. Even the most effective people in the world are terrible at it. There are two reasons:

1. Most people have an insufficient reason for action. The pain isn’t painful enough. It’s a *nice-to-have*, not a *must-have*. There has been no “Harajuku Moment.”
2. There are no reminders. No consistent tracking = no awareness = no behavioral change. Consistent tracking, even if you

have no knowledge of fat-loss or exercise, will often beat advice from world-class trainers.

But what is this all-important “Harajuku Moment”?

It’s an epiphany that turns a nice-to-have into a must-have. There is no point in getting started until it happens. It applies to fat-loss as much as strength gain, to endurance as much as sex. No matter how many bullet points and recipes I provide, you will need a Harajuku Moment to fuel the change itself.

Chad Fowler knows this.

Chad, CTO of InfoEther, Inc., spends much of his time solving hard problems for customers in the Ruby computer language. He is also co-organizer of the annual RubyConf and RailsConf conferences, where I first met him. Our second meeting was in Boulder, Colorado, where he used his natural language experience with Hindi to teach a knuckle-dragger (me) the primitive basics of Ruby.

Chad is an incredible teacher, gifted with analogies, but I was distracted in our session by something he mentioned in passing. He’d recently lost 70+ pounds in less than 12 months.

It wasn’t the amount of weight that I found fascinating. It was the timing. He’d been obese for more than a decade, and the change seemed to come out of nowhere. Upon landing back in San Francisco, I sent him one question via e-mail:

What were the tipping points, the moments and insights that led you to lose the 70 lbs.?

I wanted to know what the defining moment was, the conversation or realization that made him pull the trigger after 10 years of business as usual.

His answer is contained in this chapter.

Even if you have no interest in fat-loss, the key insights (partial completeness, data, and oversimplification among them) will help you lift 500 pounds, run 50 kilometers, gain 50 pounds, or do anything else in this book.

But let’s talk about one oddity upfront: calorie counting. I just got done thrashing calorie counting, and I’m including Chad’s calorie-based approach to prove a point.

This book didn't exist when Chad lost his weight, and there are far better things to track than calories. But . . . would I recommend tracking calories as an alternative to tracking nothing? You bet. Tracking anything is better than tracking nothing.

If you are very overweight, very weak, very inflexible, or *very* anything negative, tracking even a mediocre variable will help you develop awareness that leads to the right behavioral changes.

This underscores an encouraging lesson: you don't have to get it all right. You just have to be crystal clear on a few concepts.

Results will follow.

Enter Chad Fowler.

## The Harajuku Moment

“Why had I gone 10 years getting more and more out of shape (starting off pretty unhealthy in the first place) only to finally fix it now?”

“I actually remember the exact moment I decided to do something.

“I was in Tokyo with a group of friends. We all went down to Harajuku to see if we could see some artistically dressed youngsters and also to shop for fabulous clothing, which the area is famous for. A couple of the people with us were pretty fashionable dressers and had some specific things in mind they wanted to buy. After walking into shops several times and leaving without seriously considering buying anything, one of my friends and I gave up and just waited outside while the others continued shopping.

“We both lamented how unfashionable we were.

“I then found myself saying the following to him: ‘For me, it doesn't even matter what I wear; I'm not going to look good anyway.’

“I think he agreed with me. I can't remember, but that's not the point. The point was that, as I said those words, they hung in the air like when you say something super-embarrassing in a loud room but happen to catch the one randomly occurring slice of silence that happens all night long. Everyone looks at you like you're an idiot. But this time, it was me looking at myself critically. I heard myself say those words and I recognized them not for their content, but for their tone of helplessness. I am, in most of my endeavors, a solidly successful person. I decide I want things to be a certain way, and I make it happen. I've done it with my career, my learning

of music, understanding of foreign languages, and basically everything I've tried to do.

"For a long time, I've known that the key to getting started down the path of being remarkable in anything is to simply act with the intention of being remarkable.

"If I want a better-than-average career, I can't simply 'go with the flow' and get it. Most people do just that: they wish for an outcome but make no intention-driven actions toward that outcome. If they would just do *something* most people would find that they get some version of the outcome they're looking for. That's been my secret. Stop wishing and start doing.

"Yet here I was, talking about arguably the most important part of my life—my health—as if it was something I had no control over. I had been going with the flow for years. Wishing for an outcome and waiting to see if it would come. I was the limp, powerless ego I detest in other people.

"But somehow, as the school nerd who always got picked last for everything, I had allowed 'not being good at sports' or 'not being fit' to enter what I considered to be inherent attributes of myself. The net result is that I was left with an understanding of myself as an *incomplete* person. And though I had (perhaps) overcompensated for that incompleteness by kicking ass in every other way I could, I was still carrying this powerlessness around with me and it was very slowly and subtly gnawing away at me from the inside.

"So, while it's true that I wouldn't have looked great in the fancy clothes, the seemingly superficial catalyst that drove me to finally do something wasn't at all superficial. It actually pulled out a deep root that had been, I think, driving an important part of me for basically my entire life.

"And now I recognize that this is a pattern. In the culture I run in (computer programmers and tech people), this partial-completeness is not just common but maybe even the norm. My life lately has taken on a new focus: digging up those bad roots; the holes I don't notice in myself. And now I'm filling them one at a time.

"Once I started the weight loss, the entire process was not only easy but enjoyable.

"I started out easy. Just paying attention to food and doing relaxed cardio three to four times a week. This is when I started thinking in terms of making every day just slightly better than the day before. On day 1 it was easy. Any exercise was better than what I'd been doing.



“If you ask the average obese person: ‘If you could work out for ONE year and be considered “in shape,” would you do it?’ I’d guess that just about every single one would emphatically say, ‘Hell, yes!’ The problem is that for most normal people, there is no clear path from fat to okay in a year. For almost everyone, the path is there and obvious if you know what you’re doing, but it’s almost impossible to imagine an outcome like that so far in the distance.

“The number-one realization that led me to be able to keep doing it and make the right decisions was to **use data**.

“I learned about the basal metabolic rate (BMR), also called resting metabolic rate, and was amazed at how many calories I would have to eat in order to stay the same weight. It was huge. As I started looking at calorie content for food that wasn’t obviously bad, I felt like I’d have to just gluttonously eat all day long if I wanted to stay fat. The BMR showed me that (1) it wasn’t going to be hard to cut calories, and (2) I must have been making BIG mistakes before in order to consume those calories—not small ones. That’s good news. Big mistakes mean lots of low-hanging fruit.<sup>1</sup>

“Next was learning that 4,000 calories equals about a pound of fat. I know that’s an oversimplification, but that’s okay. **Oversimplifying is one of the next things I’ll mention as a tool**. But if 4,000 is roughly a pound of fat, and my BMR makes it pretty easy to shave off some huge number of calories per day, it suddenly becomes very clear how to lose lots of weight without even doing any exercise. Add in some calculations on how many calories you burn doing, say, 30 minutes of exercise and you can pretty quickly come up with a formula that looks something like:

$$\text{BMR} = 2,900$$

$$\text{Actual intake} = 1,800$$

$$\text{Deficit from diet} = \text{BMR} - \text{actual intake} = 1,100$$

$$\text{Burned from 30 minutes cardio} = 500$$

$$\text{Total deficit} = \text{deficit from diet} - \text{burned from 30 minutes cardio} = 1,600$$

“So that’s 1,600 calories saved in a day, or almost half a pound of bad weight I could lose in a single day. So for a big round number,

1. Tim: This type of low-hanging fruit is also commonly found by would-be weight gainers when they record protein intake for the first time. Many are only consuming 40–50 grams of protein per day.

I can lose 5 pounds in a week and a half without even working too hard. When you're 50 pounds overweight, getting to 10% of your goal that fast is **real**.

**“An important thing I alluded to earlier is that all of these numbers are in some ways bullshit.** That's okay, and realizing that it was okay was one of the biggest shifts I had to make. When you're 50–70 pounds overweight (or I'd say whenever you have a BIG change to make), worrying about counting calories consumed or burned slightly inaccurately is going to kill you. The fact of the matter is, there are no tools available to normal people which will tell us exactly how much energy we're burning or consuming. But if you're just *kinda* right and, more important, the numbers are *directionally* right, you can make a big difference with them.

“Here's another helpful pseudo-science number: apparently, 10 pounds of weight loss is roughly a clothing size [XL → L → M]. That was a HUGE motivator. I loved donating clothes all year and doing guilt-free shopping.

“As a nerd, I find myself too easily discouraged by data collection projects where it's difficult or impossible to collect accurate data. Training myself to forget that made all the difference.

“Added to this knowledge was a basic understanding of how metabolism works. Here are the main things I changed: breakfast within 30 minutes of waking and five to six meals a day of roughly 200 calories each. How did I measure the calories? I didn't. I put together an exact meal plan for just ONE week, bought all the ingredients, stuck to it religiously. From that point on, I didn't have to do the hard work anymore. I became aware after just one week of *roughly* how many calories were in a portion of different types of food and just guessed. Again, trying to literally *count* calories sucks and is demotivating. Setting up a rigid template for a week and then using it as a basic guide is sustainable and fun.

“Just a few more disconnected tips:

“I set up a workstation where I could pedal on a recumbent bike while working. I did real work, wrote parts of *The Passionate Programmer*, played video games, chatted with friends, and watched ridiculous television shows I'd normally be ashamed to be wasting my time on all while staying in my aerobic zone. I know a lot of creative people who hate exercise because it's boring. I was in that camp too (I'm not anymore . . . it changes once you

get into it). The bike/desk was my savior. That mixed with a measurement system:

“I got a heart rate monitor (HRM) and started using it for EVERYTHING. I used it while pedaling to make sure that even when I was having fun playing a game I was doing myself some good. If you know your heart rate zones (easy to find on the Internet), the ambiguity non-fitness-experts feel with respect to exercise is removed. Thirty minutes in your aerobic zone is good exercise and burns fat. Calculate how many calories you burn (a good HRM will do it for you), and the experience is fun and motivating. I started wearing my HRM when I was doing things like annoying chores around the house. You can clean house fast and burn serious fat. That’s not some Montel Williams BS. It’s real. Because of the constant use of an HRM I was able to combine fun and exercise or annoying chores and exercise, making all of it more rewarding and way less likely I’d get lazy and decide not to do it.

“Building muscle is, as you know, one of the best ways to burn fat. But geeks don’t know how to build muscle. And as I’ve mentioned, geeks don’t like to do things they don’t *know* are going to work. We like data. We value expertise. So I hired a trainer to teach me what to do. I think I could have let go of the trainer after a few sessions, since I had learned the ‘right’ exercises, but I’ve stayed with her for the past year.

“Finally, as a friend said of my difficulty in writing about my insights for weight loss, a key insight is my lack of specific insights.

“To some extent, the answer is just ‘diet and exercise.’ There were no gimmicks. **I used data we all have access to** and just trusted biology to work its magic. I gave it a trial of 20 days or so and lost a significant amount of weight. Even better, I started waking up thinking about exercising because I felt good.

“It was easy.”

It was easy for Chad because of his Harajuku Moment. It worked because he used numbers.

In the next chapter, you’ll get your numbers.

That’s when the fun begins.



Chad Fowler, before and after his Harajuku Moment. (Photos: James Duncan Davidson)

## TOOLS AND TRICKS

### **“Practical Pessimism: Stoicism as Productivity System,” Google Ignite**

([www.fourhourbody.com/stoicism](http://www.fourhourbody.com/stoicism)) This is a five-minute presentation I gave in 2009 on my personal Harajuku Moment. This video will show you how to inoculate your fears while leveraging them to accomplish what you want.

### **Clive Thompson, “Are Your Friends Making You Fat?” *New York Times*, September 10, 2009**

([www.fourhourbody.com/friends](http://www.fourhourbody.com/friends)) Reaching your physical goals is a product, in part, of sheer proximity to people who exhibit what you’re targeting. This article explains the importance, and implications, of choosing your peer group.



Think fat is just under the skin? Think again. The above MRI of a 250-pound woman, compared to a 120-pound woman, shows the large fat deposits around internal organs. The undigested food is a reader-gagging bonus.

**The first principle  
is that you must not  
fool yourself, and  
you are the easiest  
person to fool.**

—Richard P. Feynman, Nobel  
Prize-winning physicist

γνωθι σεαυτόν  
[“Know Thyself”]

—Inscription at Temple of  
Apollo at Adelfi

## ELUSIVE BODYFAT

Where Are You Really?

Update E-Mail from Subject X, Male:

12/27/08

Beginning weight 245 lbs.

1/30/09

End of month #1 228 lbs.

3/1/09

End of month #2 222 1/2 lbs.

[Too little protein in the morning for the past 4 weeks;  
added 30 grams within 30 minutes of waking to restart  
fat-loss]

4/2/09

End of month #3 203 3/4 lbs.

[90 day weight loss = 41 1/4 lbs.]

5/1/09

End of month #4 200 lbs.

6/1/09

End of month #5 193 lbs.

7/1/09

End of month #6 186 3/4 lbs.

7/31/09

End of month #7 ————— 185 lbs.

It's somewhat demoralizing to only lose eight pounds in the last two months.

As far as my lifting exercises are concerned, there are five basic lifts.<sup>2</sup> The two weights I am giving you are the poundage when I started and my present poundage.

1. Shoulder Press—10 slow reps<sup>3</sup>

Starting weight—15 lbs. Present weight—75 lbs.

2. Pulldown—8 slow reps

Starting weight—50 lbs. Present weight—135 lbs.

3. Bench Press—8 slow reps

Starting weight—30 lbs. Present weight—90 lbs.

4. Row—8 slow reps

Starting weight—50 lbs. Present weight—120 lbs.

5. Curl—12 slow reps

Starting weight—15 lbs. Present weight—50 lbs.

Subject X, aged 65, was depressed by his slowing rate of weight loss. The real question was: should he have been?

## The Deceptive Scale

Looking at his exercise logs, he showed massive strength gains in the three months where he showed the least *weight* loss.

I didn't think this was a coincidence. He had almost tripled his strength in all movements, and to estimate 10 pounds of lean muscle gain over those three months would be conservative. This would make his actual fat-loss closer to 18 pounds, not the scale's 8.

His muscle gains slowed after this update e-mail, and the fat-loss once again began to show on the scale. He dropped from 185 to 173. Total *weight* lost: 72 pounds.

But total *fat* lost? It's impossible to tell. In a rush to get started, I hadn't insisted on getting his bodyfat percentage measured.

2. This subject had more than 10 fractures in his knees and could not perform lower-body exercises.

3. For those unfamiliar with lifting parlance, "reps" are repetitions of a movement. If you do 20 push-ups, you've done 20 reps of the push-up.

Not that I cared much. For the first time in my life, I saw my father weighing less than me. During his annual checkup four months later, his doctor remarked: “You realize you’re younger now than you were a year ago. You may just live forever.” It was a stark contrast to his 245 pounds at 5'6" just a year earlier. My dad had gone from risk of sudden heart attack to looking and feeling 10 years younger in 12 months.

Regardless, he had become depressed about his results precisely when he should have been giving people high-fives. It takes just one such incident to ruin an entire program and months of progress.

How can *you* prevent unnecessary moments of doubt?

It just takes a few simple numbers to steer the ship—to know, without fail, when something is working and when it is not.

Until you finish this chapter, do not pass go.

**If you want to skip directly to the actions, jump to “Starting Your Physical GPS” on page 51. In fact, I suggest this for the first read through.**

## Choosing the Right Tools

I used to have a signature move while driving.

About a quarter-mile or so before arriving at my hard-fought destination, often within 200 feet, I would come to the unwavering conclusion that I’d gone too far. Then I would U-turn and drive in the opposite direction, only to repeat the drill like a dog tethered to a clothesline. Best-case scenario, this shuttle run doubled my travel time. Worst-case scenario, I got so frustrated that I abandoned the trip altogether.

This is exactly what most people do with fat-loss and exercise.

Using a blunt instrument like a scale (the equivalent of the odometer in my example) people often conclude they’re not making progress when, in fact, they are making tremendous progress. This leads to a musical chairs of fad diets and demoralizing last-ditch efforts that do more harm than good. To hit your target 20-pound recomposition, you’ll need to track the right numbers.

The scale is one tool, and you should use it, but it is not king. It can mislead. Take this unedited feedback from Angel, who was two weeks into the Slow-Carb Diet at the time (see “The Slow-Carb Diet I and II” chapters):

*After my cheat day on Saturday, I gained 1 pound which is normal for me... week two, I lost that 1 pound. I didn't lose any [additional] weight on week two, but I'm not discouraged. I did manage to lose in inches. I lost ½ an inch off my hips which is absolutely great. I lost a total of 1 inch off my thighs. Not so shabby either. So that's a total of 1.5 inches for the week. I'll take the inches. The grand total of inches lost from Day One: 5 inches... Yippee! No exercise either.*

My driving issues ended when I bought a GPS device.

The GPS fixed my problem because it could answer the simple question: was I getting *closer* to my destination?

In body redesign, our “destination” is a better ratio of body *composition*, not weight.

How much of you is useful muscle and how much of you is useless fat? Our constant companions will be circumference and bodyfat measurements. By the end of this chapter, you will have a starting point for your own physical GPS. This will guide you to your 20-pound recomposition goal.

Circumference is easy enough: use a tape measure. We'll cover the details at the end of this chapter.

But how do we actually measure bodyfat percentage?

It turns out, there are a lot of options, and the most common are the worst.

## Skinning the Cat

In one 24-hour period,<sup>4</sup> I took more than a dozen bodyfat measurements using the easiest-to-find, as well as the most sophisticated, equipment available.

Here are some of the results, from lowest to highest:

7%—3-point with SlimGuide calipers

7.1–9.4%—Accu-measure

9.5%—BodyMetrix ultrasound

11.3%—DEXA

4. From noon on October 3, 2009, to noon on October 4, 2009.



13.3%—BodPod

14.7–15.4%—Omron hand-held bio-impedance (second value after drinking two liters of water in five minutes)

15.46–16.51%—4-site SlimGuide calipers

The range is 7% to 16.51%. So then, which of these bad boys is accurate?

The truth is, none of them are accurate. Moreover, this doesn't matter. We just need to make sure that the method we choose is consistent.

The table on the next page shows the various techniques I considered, ordered from most to least error-prone.<sup>5</sup>

#### COMPARISON OF METHODS FOR ESTIMATING % BODYFAT

	Cost of Procedure	Time (minutes)	Technician Skill	Subject Comfort	Error in %BF	Comments	
METHOD	Circumference	Low	–5	Low to moderate	High	–3.0% – 3.6%	
	Bio Electrical Impedance	Low	–5	Low	High	–2.5% – 4.0%	Sensitive to subject hydration
	Skinfold	Low	–5	High	Low	–2.0% – 3.5%	Dependent on formula
	Ultrasound	Low	–5	Moderate	High	–2.3% – 3.0%	Only low-cost method that can also measure muscle thickness
	BodPod	High	–30	High	Moderate	–2.3% – 2.8%	
	Underwater Weighing	High	–30 – 60	High	Low	–2.3% – 2.8%	Needs careful measurement and can be affected by subject
	DEXA	High	–15 – 30	High	High	–1.2% – 2.5%	Can measure lean mass and bone
	X-ray CT	High	–10 – 15	High	High	–1.0% – 2.0%	Significant radiation
	MRI	High	–30 – 45	High	High	–1.0% – 2.0%	

Provided by Luiz Da Silva, PhD., scientific advisory board, UC Davis National Science Foundation Center for Biophotonics Science and Technology.

After dozens of trials with multiple subjects, and taking into account both constancy and convenience (including cost), there were three clear winners<sup>6</sup>:

5. These error ranges assume trained professionals and optimum conditions for measurements (e.g., good hydration for body-impedance). The order was determined using the median of their lower and upper error percentages.

6. In an ideal world, X-ray CT and MRI would be used, but I omitted them due to radiation and cost, respectively.

1. DEXA
2. BodPod
3. Ultrasound (BodyMetrix)

## The Top 3

### DEXA

Dual energy X-ray absorptiometry (DEXA), which costs \$50–100 per session, ended up my favorite, as it is repeatable and offers valuable information besides bodyfat percentage. The GE Lunar Prodigy, the machine I used, is designed for bone density testing and splits the body into different zones:

If you're not concerned about osteoporosis, why is this interesting?

Because it highlights muscular imbalances between the left and right sides. In my case:

Left arm—4.6 kg

Right arm—4.7 kg (I'm right-handed, so not surprising)

Left leg—12.4 kg

Right leg—12.8 kg

Left trunk—18.9 kg

Right trunk—17.9 kg

As we'll see in "Pre-hab," making yourself injury-proof requires, above all, correcting left-right imbalances. In five to ten minutes, DEXA gives a crystal-clear picture of mass imbalances that even outstanding physical therapists can miss after hours of observation.

### BODPOD

Costing just \$25–50, BodPod uses air displacement and is comparable to the clinical "gold standard" of hydrostatic underwater weighing. The subject (you) sits inside a sealed capsule, and alternating air pressures determine body composition. Infinitely faster and more comfortable than underwater weighing, the BodPod is the official bodyfat measurement device of the NFL Combine, where the 330 best college football players are analyzed by NFL coaches and scouts to determine their worth.



My DEXA scan image.

Unlike calipers and some other methods, BodPod can accommodate obese subjects of 500+ pounds.

### BODYMETRIX

BodyMetrix is a hand-held ultrasound device that tells you the exact thickness of fat (in millimeters) wherever you place it. It ended up being the tool I used most often and still use most often.

Ultrasound has been used for more than a decade to determine the fat and muscular characteristics of livestock. Want to see how that intramuscular marbling is coming along on your living Kobe beef? Pull out the pregnancy cam!

It's amazing that it took so long to reach athletics. The next-generation BodyMetrix wand, small enough to fit in a jacket pocket, connects to any PC with a USB cable and is now used by world-famous teams like the New York Yankees and AC Milan football. It is the picture of simplicity: I was able to take frequent readings in less than two minutes, and both data and images were automatically uploaded to my Mac. (The PC software actually runs faster on a Mac using Parallels®, a program that allows you to use PC software on Macs.)

Rather than attempt to find a gym that offered this for per-session fees, I decided to own a unit. At \$2,000 for the professional unit, it was worth the convenience. There is a personal version in development that will cost less than \$500.

## Can't Find the Fancy Stuff?

If you choose to use calipers or bio-impedance (any tool you hold or stand on) out of convenience, or if you use them for more frequent measurement alongside one of the Top Three, here are critical points to consider:

### 1. NEVER COMPARE BEFORE-AND-AFTER RESULTS FROM DIFFERENT TOOLS.<sup>7</sup>

Results from different tools cannot be compared. In my 24-hour measurement marathon, I tested 13.3% with BodPod and 11.3% with DEXA. Let's say I had tested using only DEXA at 11.3% and then tested on BodPod for my follow-up, which resulted in 12.3%. I would wrongly conclude that I'd

7. Nor should you compare different algorithms on the same equipment. This most frequently causes confusion when you get caliper readings from different trainers. Use the same person and same algorithm (e.g., 3-point Jackson-Pollock).

gained 1% bodyfat, whereas I would have seen a more accurate 1% loss had I used BodPod for both.

## 2. IF YOU CHOOSE TO USE BIO-ELECTRICAL IMPEDANCE (BEI),<sup>8</sup> YOU NEED CONSISTENT HYDRATION.

Using bio-impedance devices, I have been able to make my bodyfat percentage jump almost 1% in five minutes by drinking two liters of water in between measurements. Here's a simple approach that largely fixes hydration issues:

Immediately upon waking, drink 1.5 liters (about 50 fluid ounces) of cold water<sup>9</sup>—ensure that water temperature is the same day to day—and wait 30 minutes. Urinate and then test bodyfat using bio-impedance. Do not eat or drink anything else before testing. I use two empty Bulleit bourbon bottles (750 milliliters  $\times$  2 = 1.5 liters) because I love the old-school bottles, but Nalgene bottles are generally one liter each and have line measurements on the side. Wine and most liquor is also standardized for a 750-milliliter bottle size.

## 3. IF YOU CHOOSE TO USE CALIPERS, YOU NEED A CONSISTENT ALGORITHM.

Even with the same calipers, using different math = different results. I suggest asking the gym or trainer to use a 3-point or 7-point Jackson-Pollock algorithm, which I have found gives the most consistent results compared to the Top Three.<sup>10</sup> This should be as simple as selecting from a drop-down menu in their software.

## Starting Your Physical GPS—The Steps

Starting a body recomposition program without measurements is like planning a trip without a start address. I *guarantee* you will regret it later. Don't fly blind.

My father, who lost more than 70 pounds and more than tripled his strength, is still kicking himself for not having bodyfat numbers.

8. Also referred to as bio-impedance, or BI.

9. The coldness of the water will also help fat-loss.

10. There are population-specific formulas that give better numbers, but they are not commonly used since most fitness clubs and personal trainers deal with the broad population.

Drop a dime or two and get your data. If need be, skip a few lattes and a dinner out.

Next steps:

1. Take your “before” circumference measurements. Get a simple tape measure and measure four locations: both upper arms (mid-bicep), waist (horizontal at navel), hips (at widest point below waist), and both legs (mid-thigh). Total these numbers to arrive at your **Total Inches (TI)**. Changes in this total will be meaningful enough to track.
2. Estimate your bodyfat (BF%) based on the “Eyeballing It” sidebar on page 54.
3. Choose the best tool and schedule a session.

If you’re over 30% bodyfat, avoid calipers and use DEXA, BodPod, or ultrasound, in that order. If you cannot find these, opt for bio-impedance and follow the hydration rules mentioned earlier.

If you are under 25%, still aim for DEXA, BodPod, or ultrasound. If you cannot find these, opt for calipers with a qualified professional (use the same person for all follow-up visits) and request the 3-point or 7-point Jackson-Pollock algorithm. If neither is available, use another algorithm that includes a leg measurement and at least three points total. Leg fat is tricky and needs to be included. Record the name of the algorithm used for future reference.

## TOOLS AND TRICKS

**OrbiTape One-handed Tape Measure** ([www.fourhourbody.com/orbitape](http://www.fourhourbody.com/orbitape)) Measure any body part with military precision using this tape measure, the armed services' choice for physical examinations.

**Finding DEXA** DEXA must be administered by licensed medical staff and so eliminates most gyms and health clubs. First, Google your city, plus "DEXA body fat." If that fails, search "DEXA," "osteoporosis testing," or "bone density testing" for your zip code or city. Add "facility" if the search returns too many results. I spent \$49 on the test in Redwood City, California, at the Body Composition Center ([www.bodycompositioncenter.com](http://www.bodycompositioncenter.com)).

**BodPod Locators** ([www.lifemeasurement.com/clients/locator](http://www.lifemeasurement.com/clients/locator)) The BodPod is used to test athletes at the NFL Combine for fat and fat-free mass, as well as respiratory volume. Use this site to find BodPod assessment centers, which are located in almost all 50 states.

**BodyMetrix** ([www.fourhourbody.com/bodymetrix](http://www.fourhourbody.com/bodymetrix)) The hand-held BodyMetrix device uses ultrasound to measure body composition down to the millimeter. For those with the means, it is an outstanding option and my default choice.

**Escali Bio-impedance Scale** ([www.fourhourbody.com/escalibio](http://www.fourhourbody.com/escalibio)) Escali's bio-impedance scale measures weight and percentage of bodyfat for up to 10 users.

**Slim Guide Skinfold Calipers** ([www.fourhourbody.com/slimguide](http://www.fourhourbody.com/slimguide)) These are the most widely used calipers in the world. They're low-cost, but accurate enough for professional use. Be sure to include at least one leg measurement in all calculations.

**Cosmetic Fat vs. Evil Fat—How to Measure Visceral Fat** ([www.fourhourbody.com/evil](http://www.fourhourbody.com/evil)) Ever wonder how some people, especially older men, can have beer bellies that seem as tight as a drum? Distended abdomens that seem like muscle if you poke them? The answer is unpleasant: rather than fat under the skin, it's fat around internal organs that presses the abdominal wall out.

One weakness of calipers and ultrasound is that they can only directly measure subcutaneous fat (under the skin) and not what's called visceral fat (around the organs).

This article, authored by Michael Eades MD and Mary Dan Eades MD, explains a low-tech method for estimating the latter, which is particularly important for those over 25% bodyfat or of middle-age and older.

### EYEBALLING IT: A VISUAL GUIDE TO BODYFAT

What should your bodyfat goals be? For most people, I suggest the following as a starting point:

For men:

If obese, aim for 20%.

If you have just a bit of extra padding, aim for 12%.

For women:

If obese, aim for 25%.

If you have just a bit of extra padding, aim for 18%.

If you (male or female) want to get to 5%, we'll help you later.

Use the pictures on pages 56–57 and descriptions (whatever is most helpful) to estimate your current bodyfat percentage. Where are you really? Look at the pics before reading the rest, as you might be able to skip the text.

The following percentages and descriptions are intended to reflect high-end caliper readings on males, but the guidelines are still helpful for women. Keep in mind that since calipers measure a skinfold, both subcutaneous fat and subcutaneous water are reflected in the numbers. Special credit to Surferph34 for the guidelines and photo links<sup>11</sup>:

#### 20% Bodyfat

There is *no* visible muscle definition and only a hint of separation between major muscle groups if those groups are large and well developed. For examples, see:

[www.fourhourbody.com/20a](http://www.fourhourbody.com/20a)

[www.fourhourbody.com/20b](http://www.fourhourbody.com/20b)

[www.fourhourbody.com/20c](http://www.fourhourbody.com/20c)

#### 15% Bodyfat

Some muscle separation appears between the shoulders (deltoids) and upper arms. Abs are not visible. For an example, see:

[www.fourhourbody.com/15a](http://www.fourhourbody.com/15a)

11. [www.fourhourbody.com/bodyfat-examples](http://www.fourhourbody.com/bodyfat-examples)

### **12% Bodyfat**

More muscle separation appears, particularly in the chest and back, and an outline of the abs begins to appear. Standing under a ceiling light with favorable shadows, a pending four-pack might be visible. For examples, see:

[www.fourhourbody.com/12a](http://www.fourhourbody.com/12a)

[www.fourhourbody.com/12b](http://www.fourhourbody.com/12b)

### **10% Bodyfat**

Muscle separations get deeper in the arms, chest, legs, and back, and six-pack abs are visible when flexed. For an example, see:

[www.fourhourbody.com/10a](http://www.fourhourbody.com/10a)

### **7-9% Bodyfat**

Abs are clearly visible all the time, vascularity in arms is prominent, chest and back separation is obvious, and the face starts to appear more angular. For examples, see:

[www.fourhourbody.com/7a](http://www.fourhourbody.com/7a)

[www.fourhourbody.com/7b](http://www.fourhourbody.com/7b)

### **5-7% Bodyfat**

Striations appear in large muscle groups when they are flexed. Vascularity appears in lower abdomen and in the legs. Competitive bodybuilders often aim for this state for competition day. For an example, see:

[www.fourhourbody.com/5a](http://www.fourhourbody.com/5a)



MALE EXAMPLES



Trevor Newell  
33% bodyfat, 19% bodyfat, 9% bodyfat



Trevor Newell  
33% bodyfat, 19% bodyfat, 9% bodyfat



Ray Cronise  
31.56% bodyfat, 24.7% bodyfat, 12.65% bodyfat



Nathan Zaru: 8% bodyfat. Despite the Incredible Hulk lighting, I believe this to be (among these photos) the best representative picture of what 8% bodyfat looks like for males with decent muscle tone. People dramatically underestimate bodyfat percentage. If you have a bit of muscle and are sub-10%, you should have definition similar to this.



Nic Irwin  
22% bodyfat, 5% bodyfat

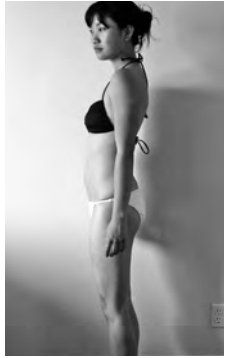
FEMALE EXAMPLES



227 lbs., 39.8% bodyfat



Erin Rhoades  
30% bodyfat, 25% bodyfat, 12% bodyfat



Julee  
22% bodyfat (compare to Trevor or Nic in their  
19–22% pics—the smooth appearance is similar)



Andrea Bell  
13.4% bodyfat

**I have a great diet.  
You're allowed to eat  
anything you want,  
but you must eat it  
with naked  
fat people.**

—Ed Bluestone

**What gets measured  
gets managed.**

—Peter Drucker, recipient of  
Presidential Medal of Freedom

## FROM PHOTOS TO FEAR

### Making Failure Impossible

199.2 . . .

Trevor stared at the LCD as it delivered the news. He blinked a few times. 199.2. Then he blinked a few more times.

“Holy crap!”

He'd put on about 10 pounds a year after sophomore year in high school, tipping the scales at 240 pounds at college graduation. Now, for the first time since his teens, Trevor weighed less than 200 pounds.

That had been the goal since stepping on a treadmill almost two years earlier, but a distant goal. Breaking the 200 barrier had seemed unattainable. Now he'd done it. The question wasn't so much how he did it. The real question was: *why* did it work?

Simple. He'd made an agreement with a co-worker: they would go to the gym together three times per week, and if either of them missed a session, that person had to pay the other \$1.

In his first gym visit, Trevor walked for four minutes on the treadmill.

Not long thereafter, he ran a mile for the first time since fourth grade.

Now he has run two half-marathons.