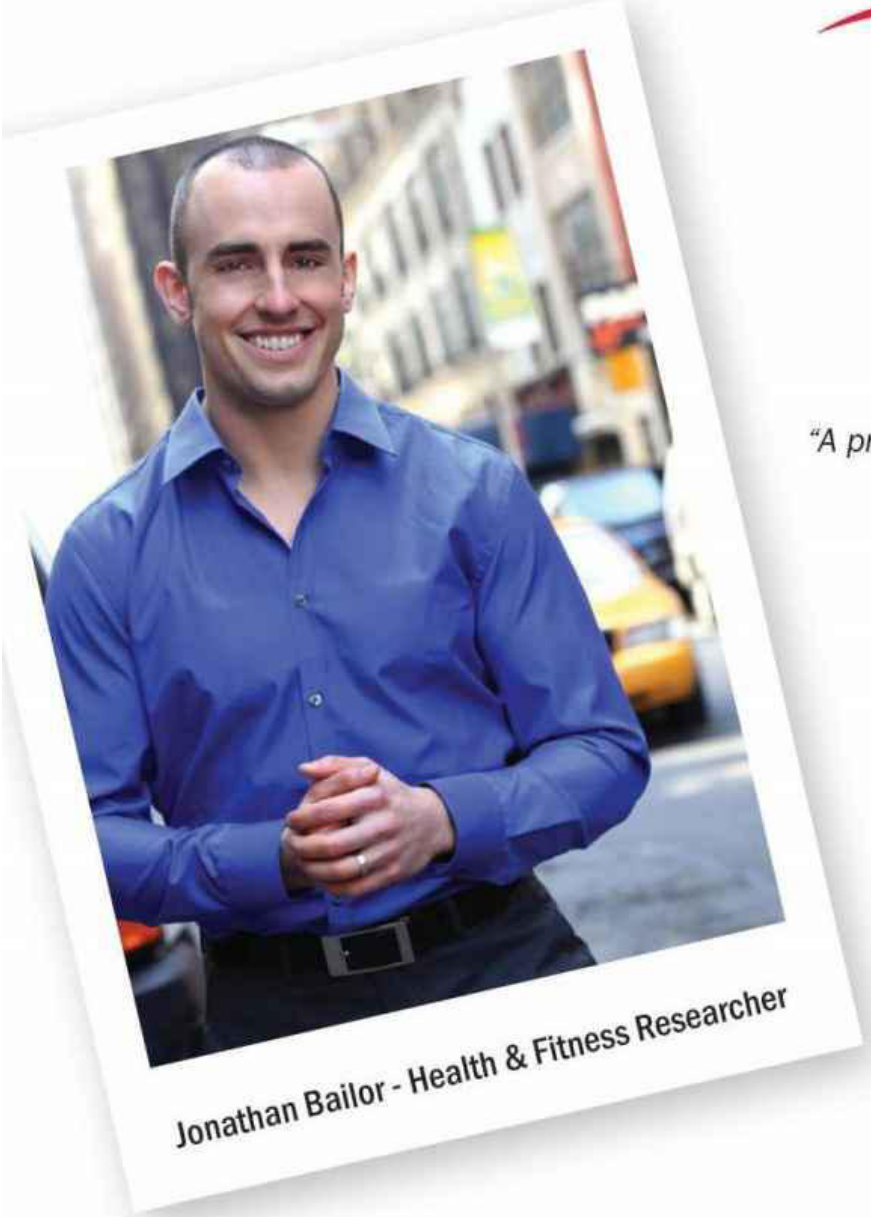
THE SMARTER SCIENCE OF SLIM

Scientific Proof. Fat Loss *Facts!*



Jonathan Bailor - Health & Fitness Researcher

"A proven and practical guide for weight loss and robust health."

Dr. Theodoros Kelesidis *
Harvard Medical School and
UCLA School of Medicine

* Plus dozens of other medical endorsements from around the world - *See back cover!*

Jonathan Bailor

If this book helps you, I highly recommend buying a copy and supporting the author.

Praise For *The Smarter Science of Slim*

THE SMARTER SCIENCE OF SLIM is a proven and practical guide to fighting the big problem of obesity. Simplifying a bunch of biology while making decades of academic obesity research accessible to everyone, Bailor gives a complete and captivating explanation of the science of losing weight permanently.

Dr. Theodoros Kelesidis, Division of Endocrinology, Diabetes, & Metabolism, Harvard Medical School & Department of Medicine, UCLA School of Medicine

THE SMARTER SCIENCE OF SLIM challenges the diet dogma and offers a sensible path to good health. Bailor's insightful book is smart, health promoting, and deserves to be hot, hot, hot!

Dr. JoAnn E. Manson, Chief, Division of Preventive Medicine, Brigham and Women's Hospital, Professor of Medicine, Harvard Medical School

In THE SMARTER SCIENCE OF SLIM, Bailor demolishes the dietary and nutritional nonsense that has contributed to the epidemics of obesity and diabetes in our country. In its place he erects a simple program anyone can follow that is based on solid science and common sense. THE SMARTER SCIENCE OF SLIM is likely to be the last diet book you will ever need to buy. Unless you enjoy failed diets, do the right thing—the healthy thing—and read this book.

Dr. Larry Dossey, *Oprah* medical expert, *New York Times*best-selling author, and Former Chief of Staff of Medical City Dallas Hospital.

THE SMARTER SCIENCE OF SLIM reveals some of the latest and best scientific research on the real story of diet, exercise, and their effects on us. Bailor's concept of high-quality exercise is rapidly gaining support in the medical community and has repeatedly delivered clinical results which seem almost too good to be true. I heartily recommend this book to people who want to take responsibility for their own health.

Dr. John J. Ratey, Clinical Professor of Psychiatry at Harvard Medical School and author of *Spark: The Revolutionary New Science of Exercise and the Brain*

THE SMARTER SCIENCE OF SLIM sheds light on the surprising discrepancy between the way healthy nutrition has been presented to the public and the science that underlies it. The idea that fat in the diet translates into fat on the body has dominated nutritional discussions for decades. This work challenges this central idea, and offers clues about why diabetes has been on the rise, and why so many people who are intent on losing weight have found it so difficult to do so. It is an important piece of work.

Dr. Anthony Accurso, Johns Hopkins Bayview Medical Center

As someone who takes fitness and health seriously and has written extensively on this topic over some 30 years, I am generally underwhelmed whenever I see a new "how to" book enter the marketplace. Most are celebrity driven, and most celebrities simply do what their personal trainers tell them to do with little regard for physiologic fact. I am pleased to say that THE SMARTER SCIENCE OF SLIM represents something different. Strikingly different in fact.

Author Jonathan Bailor has that rare gift of being able to take highly technical scientific data and interpret it in a way that the average person can understand instantly. In addition, he is able to do so in a manner that makes entertaining and compelling reading while clearly indicating how (and why) the last 40 years of fitness and nutrition advice have made us fatter and more at risk for disease than at any other point in our species' history. But most importantly, he is able to take that mountain of scientific data and divine the practical and simple direction it is pointing to in terms of advancing human health and fitness. The book you are holding in your hands can be said to represent the thinking person's guide to exercise and diet in the 21st Century. No fads. No gimmicks. No celebrity-driven pitching of nonsense. Finally, a book that is worth reading; not only for the sheer pleasure of it, but also for its ability to dramatically and positively change your health, strength and life.

John Little, Author of *Max Contraction Training*, Co-Author of *Body By Science*

Revolutionary. Thoroughly researched, rigorously simplified, and downright fun, Bailor's work stands head-and-shoulders above the mass of fat loss myths lining bookstore shelves. In his surprising and scientifically sound exposé of the modern fat loss mythology, Bailor reveals the sources of our fat loss struggles and provides straight-forward, practical solutions. Everyone, and I mean everyone, will learn and laugh a lot while reading THE SMARTER SCIENCE OF SLIM.

Dr. Jan Fridén, Distinguished professor and head of a muscle research program at the University of Gothenburg, Sweden

When it comes to the most important part of your life, your health, Bailor has written a book that is a must-read for knowing the truth about evaporating body fat. I am a firm believer in achieving the body you have always dreamed of, and Bailor opens the black box of fat loss and makes it simple for you to explore the facts. Read this book today in order to live your best life.

Joel Harper, *Dr. Oz Show* fitness expert, NYC celebrity personal trainer, joelharperfitness.com

WOW! This book will blow your mind and is a must-read for anyone who wants to learn how to be healthy the 21st century way. In THE SMARTER SCIENCE OF SLIM, Bailor exposes the dietary myths of why we as a nation are still overweight despite years of best-selling diet books. Calories, fat, exercise and hormones - it is all in this book and finally someone got it right. The diabesity epidemic stops here.

Dr. Fred Pescatore, Author of *The Hamptons Diet*

THE SMARTER SCIENCE OF SLIM redefines and updates the science of weight loss and bravely takes on long held beliefs about body change. This book provides a groundbreaking paradigm shift

for all of those who have struggled with weight loss. I have used this science in my clinic for years. It gets results and changes lives.

Jade Teta, ND, CSCS, author of *The New ME Diet*

Poignant, applicable and easy to read, Bailor's relevant work couldn't have come at a better time. If you've struggled with weight loss, this could be the magic bullet you're looking for.

David Barr, Exercise Science Writer for *Muscle & Fitness*, Editor in Chief of Strength and Science, CSCS, CISSN

In THE SMARTER SCIENCE OF SLIM, Bailor entertains as much as he educates. Simplifying and integrating an amazing amount of important scientific and clinical research, Bailor presents a well-conceived, well-researched and well-written book, in addition to a very sensible, practical, and successful approach to losing fat. This book will undoubtedly change the way you think and look, while keeping you smiling all along the way.

Dr. Wayne Westcott, Quincy College Fitness Research Director and author of *Get Stronger, Feel Younger*

THE SMARTER SCIENCE OF SLIM is the go-to source for all that is practical, realistic, and effective when it comes to weight loss. Bailor brilliantly brings together all the outdated myths (i.e. eat less, exercise more) and dispels them one at a time in a fun, easy to understand way. This book changes the future of permanent weight loss forever!

Cynthia Pasquella, Board Certified Clinical Nutritionist, CHLC, CWC, cynthiapasquella.com

Fat loss theories are everywhere; except here. THE SMARTER SCIENCE OF SLIM is the source for the fat loss facts. Bailor has taken a lot of amazingly complex medical research and turned it into a simple, clinically proven fat loss program that will change the way we think about fat loss.

Dr. William Dunn, specializing in the obesity/cancer link

Stimulating and provocative.

Dr. Søren Toubro, Professor at the Centre for Advanced Food Research at the University of Copenhagen

Strikingly beautiful and accessible.

Reinhard Engels, Author of the *No S Diet*, nosdiet.com

Brilliant. THE SMARTER SCIENCE OF SLIM is a masterful compilation of nutritional and exercise science disproving the archaic fat loss theory of "eat less, exercise more." Bailor persuasively

packages a wealth of research along with his personal and professional experience into an easily understood and applied framework that will change the way you live, look, and feel. For all those who feel left behind in the nutritional battles and exercise gimmicks of the last ten years, look no further, Bailor will end your confusion once and for all.

Dr. William Davis, Fellowship of the American College of Cardiology

This is not just another diet book. Bailor has assembled a wealth of scientific evidence showing how our "healthy" diet and exercise obsession are making us fat and sick. THE SMARTER SCIENCE OF SLIM is a scientifically backed, paradigm shifting, and entertaining exposé that disproves our basic ideas of eating and exercise. If you buy one health book this decade, make it THE SMARTER SCIENCE OF SLIM.

Marion G. Volk, MHSc, Obesity researcher

As a World Cup and Olympic athlete I have read hundreds of health and fitness books; Bailor's work stands alone. I have never seen such a simple and entertaining presentation of so much fat loss science. Debunking the myths sabotaging the weight loss efforts of millions, Bailor will change the way you think of fat loss and the way you look in less time than you ever thought possible.

Maik Wiedenbach, World Cup and Olympic Athlete, CEO of Adlertraining, National Academy of Sports Medicine certified trainer

Through a combination of detailed research, shocking facts, and time spent in the fat-loss trenches, Bailor has passionately produced an essential guide to transforming the human body. We urgently need an unbiased solution to making our bodies look and feel better. THE SMARTER SCIENCE OF SLIM is that solution.

Ben Greenfield, National Personal Trainer of the Year, National Strength and Conditioning Association- BenGreenfieldFitness.com, nutritionalmagnesium.org

From preface-to-conclusion, Bailor cleverly articulates the misinformation that has inundated Americans' views on fat loss for the last 30 years. His book is not just an enjoyable read, but his ability to incorporate scientific-backed research with his no-nonsense, often humorous at times- approach makes this a book every intelligent American should read, especially those who are frustrated with yo-yo dieting and unsuccessful attempts at fat loss. THE SMARTER SCIENCE OF SLIM is at the top of my recommended reading list for each of my clients and employees.

Lindsay Vastola, CEO Body Project Fitness and Health, Certified Fitness Trainer

THE SMARTER SCIENCE OF SLIM says it all! As a former athlete and NFL referee it was—and still is—my goal to be in the best physical condition possible. It takes discipline and effort, but with the plan that author Bailor presents, obtaining and maintaining your best physical being is achievable.

Dr. Jim Tunney, former NFL Referee, Author of *It's the Will, Not the Skill*

THE SMARTER SCIENCE OF SLIM is both fun and informative. It challenges the central dogma of diet and weight control and provides a sensible alternative to the current less food, more exercise strategy. Bailor provides a compelling, simple, and practical solution to the challenge of obesity. Try it!

Dr. Steve Yeaman, Deputy Director, Institute of Cellular Medicine, Newcastle University

Skeptics will be disappointed. The ideas presented in THE SMARTER SCIENCE OF SLIM seem both like common sense and mind-blowing revelations. Almost as if these are things all of us knew but have forgotten in the haze of disinformation. More than a dozen times while reading Bailor's book, the phrase "Too good to be true" popped into my head. But even cynics must cave in the light of factual data. The real impact, though, comes when the reader reconciles the decades of half-truths with the scientific research, and realizes that there is still hope. All we needed was someone to help us remember.

Robby Reining, Amazon.com Top Reviewer

Jonathan Bailor spent ten years summarizing the last forty years of nutrition and exercise research—and we will all be better off because of it. Bailor uses these thousands of pages of academic research to show us why what we are currently doing is not working, along with an exciting and proven way to fix it. He rightly calls this fix THE SMARTER SCIENCE OF SLIM.

While showing a genuine concern for his reader, Bailor reveals how small—but scientifically proven—lifestyle changes dramatically change the way our bodies look and work. Bailor's book is bar-none the best health related publication I've ever read, and the easiest to implement. You can't help but change the way you think about eating and exercise after reading this book. Give Bailor a few hours and he'll change your mind and your life, forever, for the better.

Julie Spiegel, Amazon.com Top Reviewer

It is obvious that Bailor has done his homework while creating this important publication that turns current thinking on weight loss on its ear. When I first saw his premise that the common theory of weight loss - eat less and exercise more to lose weight - is all wrong, I couldn't believe it. What he is telling us is that there is a smarter way to fat loss - eat more, exercise less - smarter. Now that sounded like my kind of program to lose fat and improve my health. I am just an average guy trying to keep his weight in check in my golden years. I have tried many diets out there and most left me hungry all the time and feeling deprived, and I would eventually give up. When I saw this book, it gave me hope again.

Bailor has a writing style that makes it seem he is talking directly to you - like he was your neighbor and friend. His humor gets his points across easily and his extensive research and references in the book make it easy to see how he cannot be wrong. I loved the book and highly recommend it to anyone who has tried to diet the conventional way and ended up hungry and miserable during the process, and eventually just gaining the weight back. The book provides you a path to lower your body's weight set point and unclog your metabolism so it actually burns stored fat. It will change your view of weight loss completely.

Alan Hukle, Amazon.com Top Reviewer

If you are going to read one book on how to eat and exercise, read this one. THE SMARTER SCIENCE OF SLIM had an immediate and dramatic impact on how I eat and how I feel. This book will significantly and permanently improve your life.

The Reverend Craig Stephans, Anglican Priest and Amazon.com Top Reviewer

In an absorbing book that you will not want to put down, Bailor will change the way you think about diet and exercise. Using an astonishing collection of academic research, THE SMARTER SCIENCE OF SLIM shows why so many diets fail and the scientifically proven way to change that. Extensively researched and easy to understand, THE SMARTER SCIENCE OF SLIM is a must-read for anyone ready to live a healthier life.

Angela Streiff, Amazon.com Vine Voice Reviewer

THE SMARTER SCIENCE OF SLIM takes the pain out of gain. The science will amaze you and Bailor's solution will forever change you. Truly, you do not need to waste your time or money on another health or fitness book…THE SMARTER SCIENCE OF SLIM is your answer to living with optimum health.

Cherie Hill, Bestselling Kindle Author in Christian Non-fiction and Amazon.com Top Reviewer

Reading THE SMARTER SCIENCE OF SLIM, Bailor's passion for his topic and his amazing level of research are immediately apparent. What I appreciated most is that the book gave me information to which the average person does not have access--information that the government and big business would rather be kept locked away.

Sheri Ackerman, Amazon.com Top Reviewer

Jonathan Bailor has put a lot of time into his work in this arena. He provides compelling data regarding exercise and nutrition and our collective view on these subjects. After everything you've already tried to get in shape, isn't it worth giving it another shot? I think it is.

Gunnar Peterson CSCS

If you want the "real skinny" on getting and staying skinny you must read THE SMARTER SCIENCE OF SLIM. This book cuts through the fat and gives you the science of being fit from the world's top authorities. Bailor has masterfully woven together all the scientific facts from the top thought leaders in this space to provide us with a clear, lose the fat and keep it off blueprint for life.

Michael Altshuler, Motivational Speaker and CEO of Texting Pays

Bailor explodes common diet beliefs with THE SMARTER SCIENCE OF SLIM. This is solid information, backed by scientific studies that can help you reach your goal weight without dieting or depriving yourself.

Bill Cashell, Author of *The Emotional Diet*

If you want to learn how to eat right, exercise more effectively and shed fat, I can't think of a better book.

J.W.K., Amazon.com Top Reviewer

In his book THE SMARTER SCIENCE OF SLIM Jonathan Bailor presents much more than advice on lifestyle and diet. This is a complete argument relating themes of nutrition, exercise, digestion and food to their associated consequence, weight. Unlike many works in the area of diet, THE SMARTER SCIENCE OF SLIM presents informed consideration of the subject, offers no quick fix, no formulaic or unsubstantiated, quasi-religious claims. What the book does do is argue a coherent, rationally-constructed and evidence-justified position which identifies an approach to diet and lifestyle rather than a prescription. It is to the author's credit that the book achieves its aims in a fluent, readable style that engages and entertains as well as informs.

Philip Spires, Author of *Mission and A Fool's Knot*

THE SMARTER SCIENCE OF SLIM is extremely informative, well-researched, and easy to read. If you want to know anything about being slim - this is the book for you.

Dr. Wolfgang Riebe

With remarkable scientific evidence Jonathan Bailor leads you from the pain and slavery of obesity to the happiness and freedom of permanent fitness. His words gain universal value and will motivate you to change your life forever.

Dr. Bruno Cortis, Author of *Heal Your Cancer-Emotional and Spiritual Pathways*

Also by Jonathan Bailor

The Smarter Science of Slim Workbook:

The Five-Week Harvard Medical School, Johns Hopkins, and UCLA Endorsed Program to Burn Fat Permanently

The Smarter Science of Slim Journal:

A Smarter Way to Track Your Weight Loss

THE SMARTER SCIENCE OF SLIM

What the Actual Experts Have Proven About Weight Loss, Health, and Fitness

Jonathan Bailor

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A special thanks to Dr. JoAnn E. Manson and Dr. Theodoros Kelesidis for their life-changing research and boundless support. Also, I cannot thank my wonderful editors John Paine, Hillel Black, and Mary Rose Bailor enough. Your ability to help make dense academic research simple and compelling is unparalleled.

And special appreciation to Michael David McGuire and his media team in New York. McGuire's unique insights and guidance helped greatly strengthen this project.

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Acknowledgments

This book is the result of more than ten years of collaboration with hundreds of brilliant and inspiring researchers and reviewers. To everyone who helped bring this science to the surface, I cannot thank you enough for your time, insight, and support. Together we will make the world a healthier and happier place. Truly and deeply, thank you.

Dedication

To my best friend and wife Angela and my heroes and parents Mary Rose and Robert. All that I am and ever will be is thanks to your love, example, and support.

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Foreword

By JoAnn E. Manson, M.D, M.PH., Dr.P.H

Professor of Medicine and the

Michael and Lee Bell Professor of Women's Health

Harvard Medical School

Chief, Division of Preventive Medicine

Brigham and Women's Hospital

The dual epidemics of obesity and type 2 diabetes are the looming public health crises of the 21st century. All around us today, in all walks of life, are people who struggle with weight control. The growing prevalence of obesity in the United States and around the world, especially among children and adolescents, portends an enormous global burden of chronic disease in the future. The crystal ball shows not only more people with diabetes, but also enormous numbers of people with hypertension, heart disease, stroke, and even cancer. Although medical research has made strides in treating and controlling some of the health consequences of obesity, the prevention and management of obesity truly hold the key to improved health. Of particular importance, we now know that people suffering from overweight or obesity can take charge of their health—if they are willing to make even modest changes in their lifestyle.

Throughout my career in preventive medicine and epidemiology, I have valued the importance of empowering the public through information and shared decision making. Together with my colleagues, our research has focused on prevention of cardiovascular disease and diabetes, including assessing the role of lifestyle factors in reducing risks. We have examined the "power of prevention" in several large-scale clinical studies, including the Harvard Nurses' Health Study, the Women's Health Initiative, the Women's Health Study, the VITamin D and OmegA-3 TriaL (VITAL), and other research projects. One of the major findings from our large population-based studies is that type 2 diabetes and heart disease are largely preventable through lifestyle modifications, which are powerful determinants of our risk of chronic disease. For example, we've published papers from the Nurses' Health Study indicating that at least 90% of cases of type 2 diabetes and at least 80% of heart attacks can be prevented by lifestyle changes, including being physically active, maintaining a healthy weight, and following a diet high in fruits, vegetables, and whole grains, and low in saturated and trans fats and refined carbohydrates.

We've made efforts to inform the public of these findings, as well as of the work of other researchers around the world, often writing columns in magazines and working closely with print and electronic media over the years. Yet the scientific findings of so many researchers and other dedicated individuals in academia remain largely unknown by the general public. Part of the problem is the pervasive and overpowering impact of mass marketing by the food industry. Another problem is the often confusing and contradictory messages about nutrition and health on the internet and various mass media outlets. Even the dietary guidelines from the federal government may seem confusing and at odds with some of the research studies that have attracted attention. How is the general public supposed to know which scientific studies to believe?

That's why Jonathan Bailor has performed an invaluable service with his book, *The Smarter Science of Slim*. Jonathan has studied thousands and thousands of pages of academic research on health and weight-loss, and he has put the results into terms that the everyday person can understand. We have made great strides over the years in understanding how the body responds to different types of food. Yet all too often a popular author selectively cites the scientific evidence, emphasizing only those aspects of the wide-ranging research that support the diet plan he or she is promoting. Jonathan's work is far from "just another diet book."

The Smarter Science of Slim dismantles the myths that have contributed enormously to the health and weight problems that many people have, and replaces them with easy-to-understand facts that will change the way you think about eating and exercise. On the eating side, he shows why changes in a person's metabolism affect weight gain, and how to get your metabolism burning rather than storing body fat. He provides a sensible formula for eating the right kinds of food that produce satiety – that fill you up so much that you won't have room for the types of foods that are fueling the obesity and diabetes epidemics. He shows how balance is the key to long term health and weight loss. He also clarifies what the scientific literature suggests are the best ways to exercise. Short bursts of vigorous and forceful activity can provide all of the stimulation needed to get your metabolism back on track. But moderate exercise also has a role.

The scientific community now knows a great deal about how the human body works. In culling the literature and gathering the results of so many clinical studies, Jonathan Bailor presents a weight-loss program that is based on rigorous science. We can make the right choices that will help us to avoid becoming overweight or obese. As a treasure trove of reliable information and sound facts, *The Smarter Science of Slim* can help you take charge of your destiny and turn the tide on weight gain.

Preface

By Theodoros Kelesidis, M.D,

Division of Endocrinology, Diabetes, & Metabolism, Harvard Medical School

Department of Medicine, UCLA School of Medicine

While researching and practicing at the Division of Endocrinology, Diabetes, & Metabolism at the Harvard Medical School and the UCLA School of Medicine, I would often be asked when there will be a proven prescription for weight loss. *The Smarter Science of Slim* is that prescription.

Jonathan Bailor's easy-to-understand and engaging style disguises an astonishing amount of otherwise incredibly complex scientific information. You will not realize you are learning so much because you will be so involved in what you are reading. The pages you are holding will change the way you feel and look faster than any pill ever could. It is incredibly rare to find anything as thoroughly researched and carefully analyzed, yet so clearly and engagingly presented in the context of everyday living—and eating. For anyone who has struggled with managing weight or maintaining energy, you do not need pills. You need this book.

Having conducted research across four continents, I appreciate Bailor's meticulous methodology, but it's what he does with the information that made the book one I will "prescribe" to colleagues, patients, students, family, friends—and you. He points out that in so many cases what scientists have proven in the lab IS NOT how you have been told to eat or exercise. No, this isn't a conspiracy diatribe; it's just a smart writer pointing out the disconnect between the science and our lifestyle and then showing how you can eat more food and do less exercise, while improving how you look and feel, once you know and apply the science.

Here is a sample of some of what you will discover in *The Smarter Science of Slim:* Most people can manage to temporarily lose weight via traditional techniques, but Bailor reveals the biology of why these techniques lead to long term weight gain 95% of the time. Bailor then provides a proven way to burn fat long term. With this information, you can avoid "yo-yo'ing" forever. Another one of my personal favorites: Ever notice how more people are members of gyms and how there are more "health" supplements than ever before in human history, yet the "civilized" world has never been so heavy or suffered from so many lifestyle diseases? Bailor leverages reams of research to suggest a simple approach that will get your biology working for you rather than against you. He rightly prescribes solving problems—fixing the deep metabolic issues underlying weight gain—instead of treating symptoms by starving yourself. And he does so without going to ridiculous extremes, like so many of the fad diets you see every day. This collection of research reveals a wholly different cause and wholly proven solution to the weight and health issues plaguing us today.

For a fresh perspective on why and how to make simple and practical life-enhancing adjustments to your eating and exercise habits, read Bailor's book. You will learn how some mis-information is probably responsible for the "weighty" matters of epidemic rates of obesity and heart disease. You will also be given simple, scientifically sound guidelines on how to eat more food and exercise less—but smarter, while burning fat and boosting your health.

The Smarter Science of Slim is a proven and practical guide to fighting the big problem of obesity. Simplifying a bunch of biology while making decades of academic obesity research accessible to everyone, Bailor gives a complete and captivating explanation of the science of losing weight permanently.

Enjoy reading this book, but more importantly, apply what you will learn.

Introduction

Simple Surprising Science

> *Hippocrates [the father of Western medicine] wrote that the obese should "eat only once a day and…walk naked as long as possible." Progress in this area [fat loss] will require that we move beyond this 2,000-year-old prescription and instead develop strategies that are based on twenty-first-century science.*
>
> **J.M. FRIEDMAN, ROCKEFELLER UNIVERSITY**[1]

As our knowledge of the human body becomes ever more exact, scientists have made remarkable leaps forward in many fields. We have completed the study of the human genome. We can combat horrible diseases such as childhood leukemia with terrific success rates. Yet for one question that many of us would like answered—what causes the body to burn fat?—we find all sorts of confusing claims. One guru advises an all-fat diet. Another wants you to eat only vegetables. Since we know so much about how our body works, can't science tell us the answer?

As it turns out, science already has.

I have spent over ten years reading thousands of fat-loss studies. Not theories promoted by diet gurus. Not what magazines say. Not what TV tells us, often while selling a pharmaceutical product. Only the proven data. Just the facts.

My investigation uncovered all kinds of scientific findings:

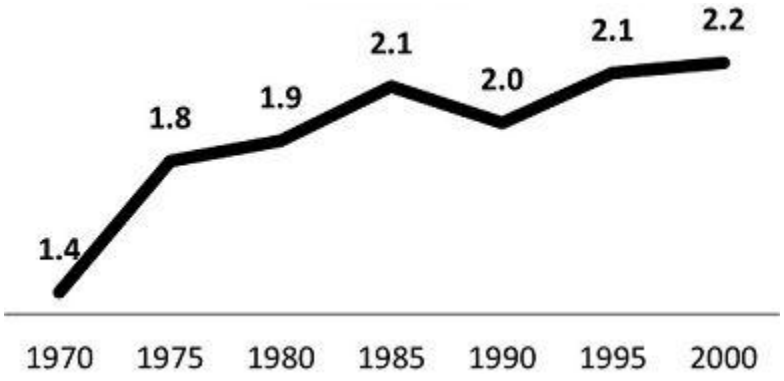
- Studies stating how certain foods cripple our ability to burn fat
- Scientists showing how to burn fat while eating more food
- Researchers revealing how to get all the benefits of traditional exercise in a tenth of the time
- Physiologists finding out how eating less sets us up to *gain*fat in the long run
- Doctors discussing how a few minutes of a new form of exercise immunizes us against fat gain
- Endocrinologists explaining how we fix the underlying condition causing us to gain fat

We deserve to know the proven facts about fat loss, but who has time to read tens of thousands of pages of scientific studies? The investigation took me more than a decade. It should not take you that long—because the facts have been summarized in this book. They have also been simplified, so anyone who wants to lose weight can understand them. Make no mistake. Tons of clinical studies have shown the best way to trim off those unwanted pounds.

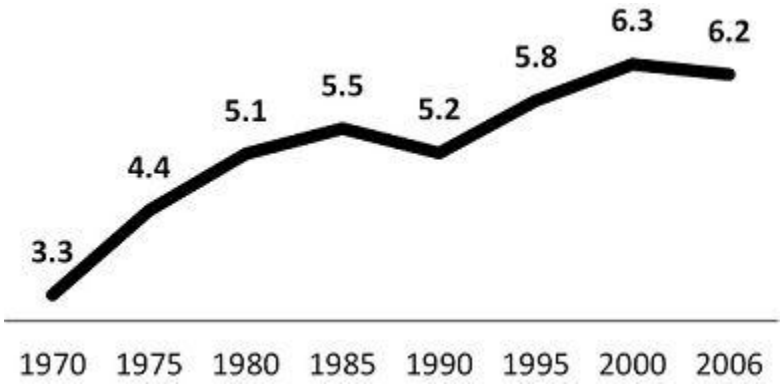
It is time to stop listening to marketing myths about how to lose weight. We tried it. It failed. It is time to move on to a smarter science of slim.

For example, since the 1970s we have been told to eat less and exercise more. Today, nearly half of all women and a third of all men are following some diet plan, and studies from the University of Southern Denmark show we have significantly increased the amount of exercise we get. In other words, we have taken the "eat less, exercise more" theory to heart. Here is what that has done to our hearts (and waistlines):[2]

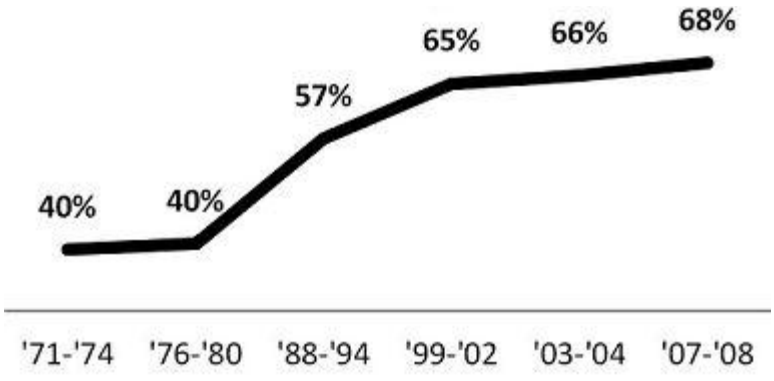
Millions of Non-Fatal Heart Disease Incidents in the U.S.



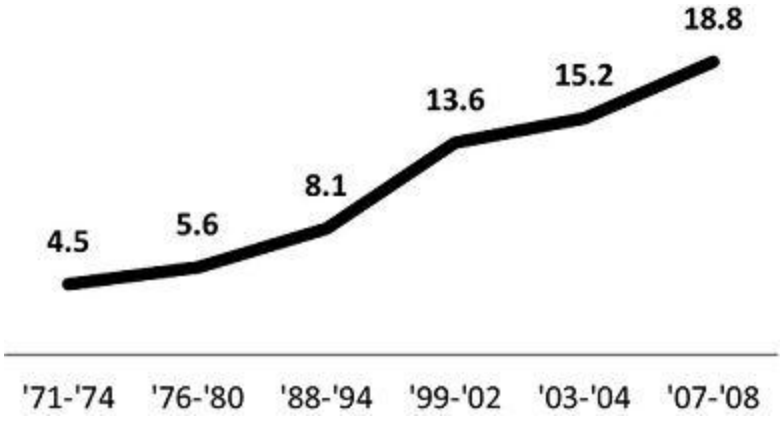
Millions of Hospital Discharges for Cardiovascular Diseases in the U.S.



Percent of Americans at Least Overweight



Millions of Americans with Diabetes



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Judging by these results, attempting to eat less and exercise more is not effective. Researcher S.C. Wooley from the University of Cincinnati wrote: “The failure of [heavy] people to achieve a goal they seem to want—and to want almost above all else—must now be admitted for what it is: a failure not of those people but of the methods of treatment that are used.”{4}

Hundreds of the most brilliant academic health and fat loss researchers from around the world agree with Dr. Wooley. Albert Stunkard at the University of Pennsylvania said: “How may the medical profession regain its proper role in the treatment of obesity? We can begin by looking at the situation as it exists and not as we would like it to be… If we do not feel obliged to excuse our failures, we may be able to investigate them.”{5}

Why should you and I care? Those same scientists have released thousands of pages of revolutionary fat-loss research over the past few decades. The only catch has been that the research was accessible only to academics. Fortunately, this book simplifies the last forty years of fat-loss facts so you can use them for your own benefit.

Let’s take an example: The *Calories In – Calories Out* theory of weight loss. This *theory* has been proven wrong in study after study, but you do not need to wade through all those facts. All you need is some plain common sense. A pound of body fat contains 3,500 calories. Cutting a measly 100 calories—less than one cup of reduced-fat milk—per day would cut 365,000 calories over ten years. If *Calories In – Calories Out* is correct, a 150-pound woman who drinks one less cup of reduced-fat milk per day will lose 104 pounds and weigh 46 pounds ten years later. That is absurd.

Or take the classic myth: *a calorie is a calorie*. Researchers have discovered that calorie quality varies wildly. High-quality calories from non-starchy vegetables, lean protein, and natural fats trigger hormones that cause our body to burn fat. Low-quality calories from starches and sweets trigger hormones that cause our body to store fat. According to clinical studies, by eating *more* high-quality calories we burn more body fat.

Here is another old weight loss myth: *calories are all that matter*. Scientists know that is false. Take the simple example of diabetics—people who cannot effectively get energy into their cells because they are missing the hormone insulin. Why are they injecting themselves with the hormone insulin if

calories are all that matter? Hormones—not how much we eat or exercise—determine whether we are burning or storing body fat.

Finally, let's look at the government's *Dietary Guidelines*—both their pyramid and the more modern plate graphics.The Chair of the Department of Nutrition at the Harvard School of Public Health has stated: "…the USDA Pyramid is wrong…at best, the USDA Pyramid offers wishy-washy, scientifically unfounded advice…it ignores the evidence that has been carefully assembled over the past forty years." The *Journal of the American College of Cardiology* goes even further: "The low-fat-high-carbohydrate diet, promulgated [encouraged] vigorously by the…food pyramid may well have played an unintended role in the current epidemics of obesity…diabetes, and metabolic syndromes." Our primary source of nutrition information—the U.S. Department of Agriculture (USDA)—is hurting rather than helping us. Is it any wonder we are struggling with our health and weight?[6]

On the bright side, researchers at top universities around the world have discovered a dramatically different set of dietary guidelines that make us thin and fit instead of heavy and sick. These guidelines have dramatically improved my life, and they will improve your life too. All you need is access to the right information.

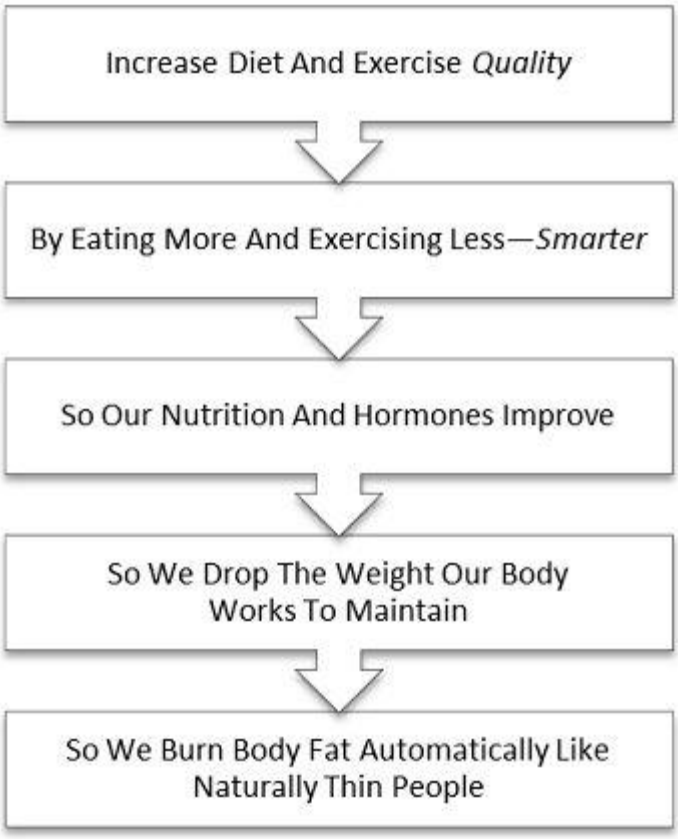
Make no mistake: the food, fitness, and pharmaceutical industries have known these facts for decades. Why haven't they come forward and made the information available to the general public? Because there is a lot more money to be made off of sick, stocky, and sad people than off of healthy, happy people. The bigger we are, the bigger the profits of the $3.1 trillion food, $150 billion fitness, and $500 billion pharmaceutical industries. Big food, fitness, and pharma want us to stay slim like big tobacco wants us to stop smoking. And just as big tobacco tried to hide the scientific facts of smoking, big food, fitness, and pharma are trying to keep the science of slim from surfacing. As Yale University researcher Kelly Brownell puts it: "By 1964, there was sufficient scientific evidence…[but] many years passed and many millions died before decisive action was taken to [turn the tide against smoking]… Repeating this history with food and obesity would be tragic."[7]

Once you have empowered yourself with proven fat-loss facts, your body will burn fat automatically. Does that sound too good to be true? Have you ever met anyone who eats as much as they want, does not exercise, and still stays skinny? Put differently, have you ever met anyone who's body burns fat for them automatically? We all have. So the question is not: "Is automatic lifelong fat loss possible?" Millions of naturally thin people have already demonstrated that it is. The question is: "How can you and I burn fat automatically, like naturally thin people?"

Researchers have revealed a simple and surprising answer: Eat more. Exercise less. Smarter.

Smarter is the key. By eating more—but higher-quality food—and exercising less—but with higher-quality—we provide our body a unique combination of nutrition and hormones which reprograms it to behave more like the body of a naturally thin person. Our body starts burning—instead of storing—fat. It is not magic. It is the smarter science of slim.

The Smarter Science of Slim



Let's look at a point-by-point comparison of common weight loss theory and what researchers have proven. On the left you'll find the advice you've read dozens of times. Now look at the right-hand column. There is quite a difference.

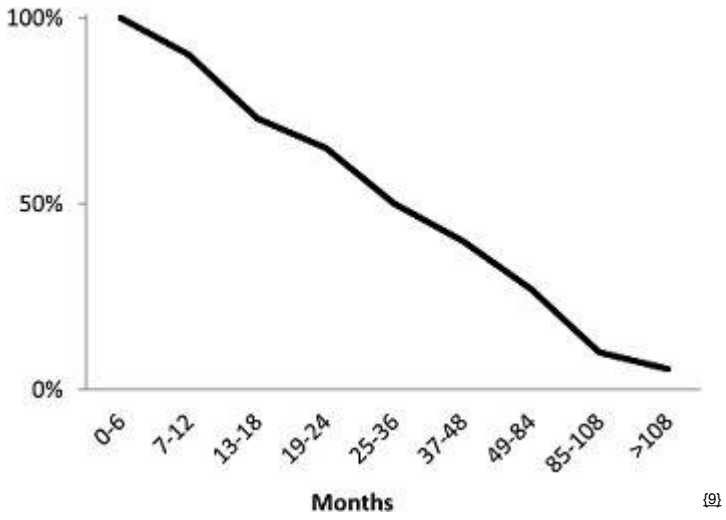
Common Theory vs. Smarter Science

Common Theory Eat Less, Exercise More—Harder	Smarter Science Eat More, Exercise Less—Smarter
• Focuses on calorie quantity and ignores calorie quality • Fights against our "set-point weight" • Provides the temporary need to burn something • Slows down our metabolism • Ignores hormonal issues • Destroys our ability to burn body fat • Profitable for the "food," fitness, and pharmaceutical industries	• Leverages calorie quality to take care of calorie quantity • Lowers our "set-point weight" • Provides the permanent need to burn body fat • Speeds up our metabolism • Focuses on hormonal issues • Restores our ability to burn body fat • Not profitable for the "food," fitness, and pharmaceutical industries

To be clear, the last forty years of fat-loss research reveals that the traditional approach *can* work—just not very often. Eating less and exercising more does not keep body fat off long-term 95% of the time. To put this 95% failure rate into perspective, quitting smoking cold turkey has a 94.5% failure

rate. In other words, more people are able to quit smoking cold turkey than are able to keep body fat off using the traditional approach.[8]

% of People That Lose Weight Long-Term Using the Traditional Approach



[9]

The smarter scientific approach to fat loss is much more effective.[10]

For example, researchers at Skidmore College compared a traditional “eat less, exercise more—harder” program against an “eat more, exercise less—smarter” program. Let’s call the groups in the study the Harder Group and the Smarter Group.

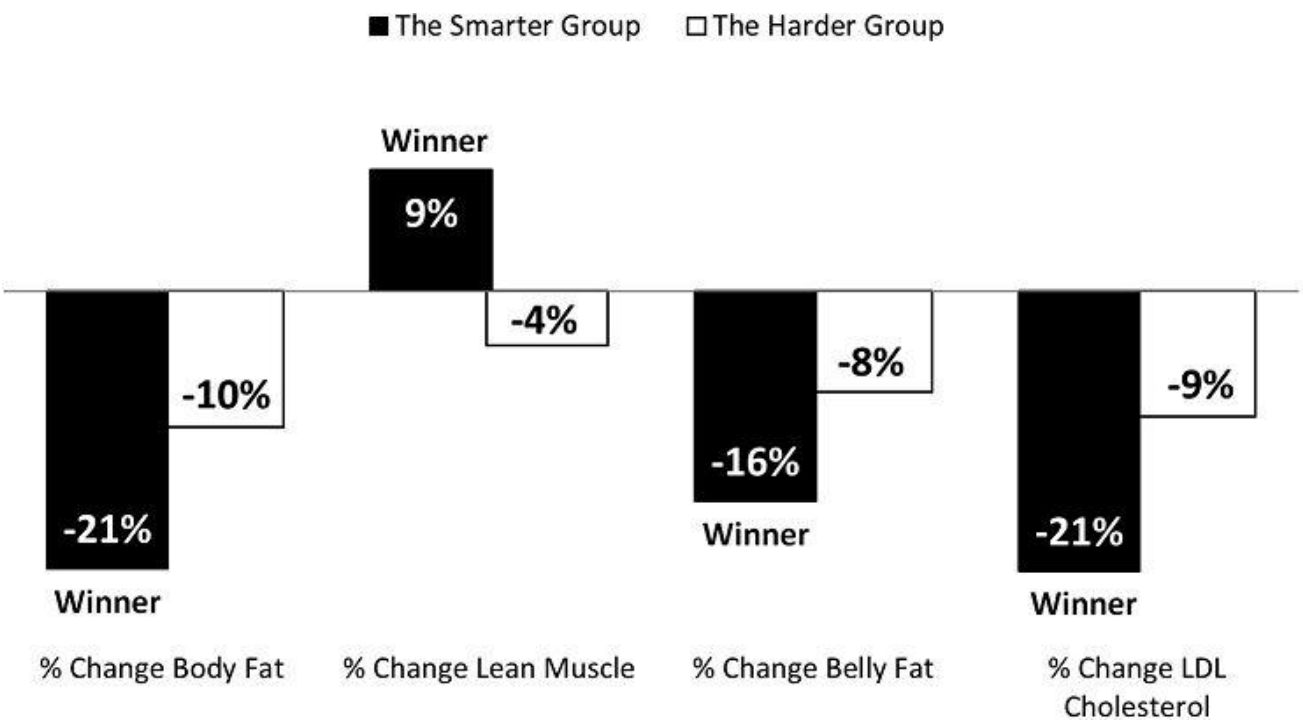
The Harder Group ate the traditional diet of 60% carbohydrates, 15% protein, and 25% fat while doing low-quality cardiovascular exercise for forty minutes per day, six days per week. Low-quality cardiovascular exercise refers to exercises like walking, biking, and jogging, which must be done for hours to impact our health and weight. The Smarter Group ate a higher-quality diet of 40% carbohydrate, 40% protein, and 20% fat while exercising only 60% as much, but with higher-quality. The study lasted for 12 weeks and included 34 women and 29 men between the ages of 20 and 60.[11]

At the end of the study, the Harder Group “successfully” ate less and exercised eighteen hours more than the Smarter Group. After examining the results though, the researchers concluded:

The primary finding of the current study is that a lifestyle modification program consisting of high-intensity cardiovascular and resistance training combined with a balanced carbohydrate and protein diet results in greater improvement in body composition, cardiovascular risk factors, and muscular strength than a program comprised of a traditional diet and moderate-intensity exercise regimen commonly recommended for weight loss.

Less academically speaking, eating more and exercising less—smarter—was more effective than the traditional approach. Here is the data.

Smarter vs. Harder



Intrigued? It gets better. The program in this book takes the strategies used by the Smarter Group to the next level. We'll cover this program in seven parts.

Part 1 – Myth: Calories In – Calories Out

We'll start by reviewing research revealing how our weight is controlled. We'll discover that our weight revolves around a "set-point"—a range of about ten pounds that our body works to keep us within. Low-quality food creates a hormonal "clog" that raises our set-point. That's how we gain weight.

Next we will explore how this hormonal clog causes our body to want to weigh more regardless of how little we eat or how much we exercise. Then we will get to the good news: Once we unclog our metabolism, our set-point falls, and our lowered set-point keeps us slim regardless of how much we eat or exercise. Millions of naturally thin people already do this. We can too.

Finally, you and I will see that the first step to enabling our bodies to burn fat for us is to free our minds from the myths of calorie and exercise *quantity*. Instead of focusing on counting the calories we take in and exercise off, we will focus on increasing the *quality* of our calories and exercise. We will eat *more* and exercise *less*, but smarter. This will unclog our metabolism, and our body will take care of fat loss for us.

Part 2 – Myth: A Calorie Is a Calorie

We'll see that in order to eat *more*—smarter, we need to eat more high-quality foods. They help heal the hormones that control our body's ability to burn fat. That is the key to clearing the clog that prevents us from losing weight long term.

We will find that the quality of calories is determined by four factors: Satiety, Aggression, Nutrition, and Efficiency. Satiety is how quickly calories fill us up. Aggression is how likely calories are to be stored as body fat. Nutrition is how many vitamins, minerals, amino acids, essential fatty acids, etc., calories provide. Efficiency is how easily calories are converted into body fat. Whether a calorie is high-quality or low-quality depends on where it fits on the SANEity spectrum.

High-quality calories are on the healthy end of the SANEity spectrum. They are Satisfying, unAggressive, Nutritious, and inEfficient. They fill us up quickly and keep us full for a long time. They provide a lot of nutrients, and few of them can be converted into body fat. Even better, they trigger the release of body-fat-burning hormones, clear clogs, and lower our set-point. In short, they are SANE.

Low-quality calories are just the opposite. They are on the unhealthy end of the SANEity spectrum. They are unSatisfying, Aggressive, non-Nutritious, and Efficient. They trigger the release of body-fat-storing hormones, cause clogs, and raise our set-point. In short, they are inSANE.

Lastly, we will see that SANE eating is simple. When you eat high-quality food—such as non-starchy vegetables, seafood, lean meat, fat-free or low-fat cottage cheese, fat-free or low-fat *plain Greek*yogurt, fruit, eggs, nuts, and seeds—you will be too full for low-quality food such as starches and sweets. Eating *more* SANE calories causes the quality of our diet to rise. That lowers our set-point. And a lower set-point keeps us slim automatically.

Part 3 – Myth: Calories Are All That Matter

You and I will walk through the science showing why understanding and improving the quality of our calories is so important. We will discover that calorie *quality* controls the hormones that control our set-point, while summarizing shocking studies where calorie *quantity* had little if anything to do with long-term body weight.

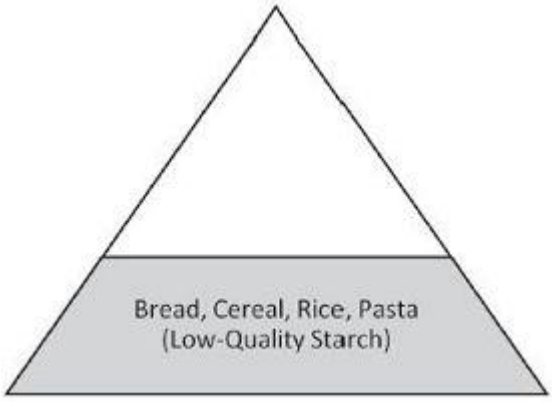
We'll explore how our metabolism relies heavily on hormones, and how eating SANE high-quality calories keeps things running smoothly, while eating inSANE low-quality calories causes us to produce too many body-fat-storing hormones and too few body-fat-burning hormones.

Finally, we'll review how we can heal our hormones by eating *more* and exercising *less*—smarter—instead of eating less and exercising more—harder. We will see that since inSANE low-quality calories caused our clog, eating less of them will not clear it, while eating more SANE high-quality calories will.

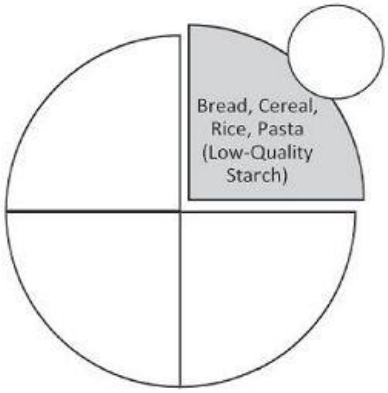
Parts 4 & 5 – Government Guidelines and Graphics, Big Profits and People

We will discover that the clogged-up and myth-filled world of today has a long history. One of the lowest-quality sources of calories in the world is starch, but our government somehow does not know this fact. In their pyramid, the starch group appears at the very base, as though it should be the foundation of a healthy diet:

Government's *Food Guide Pyramid*



Government's *MyPlate*



Then, you and I will uncover how USDA bureaucrats recommend starch as the backbone of our diet, while biologists have proven that the body needs absolutely no starch and that a surplus of starch removes our body's ability to burn body fat. We ate no starch for 99.8% of our evolutionary history, but today's typical diet is saturated with it. This dramatic change in our diet has led to the dramatic change in our appearance.

Lastly, we'll see how big food, fitness, and pharmaceutical corporations have made things worse. They exploit the government's guidelines and graphics to keep people and profits fat. Their most powerful weapon is the single most inSANE clog-causing substance in the world: added sweeteners. You and I will see how added sweeteners further prevent our body from burning fat, and how returning to the diet that kept us healthy and slim for hundreds-of-thousands of years is the key to staying healthy and slim today.

Part 6 – Solution: Eat More—Smarter™

We will find that long-term fat loss has nothing to do with dieting and everything to do with eating so many more non-starchy vegetables, fish, meat, select dairy products, fruits, nuts, and seeds that we are too full for starches and sweets. Low-fat, low-carbohydrate, and high-protein diets are unnecessary. If we simply return to our natural balanced way of eating, we will return to our normal weight—along with good health.

I will suggest five steps to eating more—smarter:

1. Eat so many non-starchy vegetables and so much protein that you are too full for starches and sweets.

2. Remember your ancestors.

3. Buy groceries in bulk to save money.

4. Drink lots of water and green tea.

5. Do what works for you.

Part 7 – Solution: Exercise Less—Smarter™

We'll explore how exercising to enable our body to burn fat for us long term is completely different than exercising to burn a few calories right now. While calorie-focused exercise is done frequently, for a long time, and uses a little resistance, exercise which focuses on long-term fat loss is done infrequently, for a short period of time, and uses a lot of resistance.

Together we will find that just as high Satiety, low Aggression, high Nutrition, and low Efficiency calories dramatically increase the quality of eating, deep, hormonal, infrequent, eccentric, and brief movements dramatically increase the quality of exercise. We will see how moving our body a little, but forcefully, makes our metabolism work more like the metabolism of a naturally thin person.

We'll also discover that this smarter scientific exercise program takes at most twenty minutes per week, is safer than traditional exercise programs, and can be done at home with no expensive equipment.

And finally, you and I will put all of this science together to see how:

The problem is complex. The solution is simple. The science is surprising. And the results are amazing.

Let's get started.

PART 1

Myth: Calories In – Calories Out

"*In other fields, when bridges do not stand, when aircraft do not fly, when machines do not work, when treatments do not cure, despite all conscientious efforts on the part of many*

persons to make them do so, one begins to question the basic assumptions, principles, theories, and hypotheses that guide one's efforts."

ARTHUR JENSEN, UNIVERSITY OF CALIFORNIA[12]

Chapter 1

The Fat Metabolism System

"*The best data available suggest that the obese…eat no more than the lean."*

S.C. WOOLEY, UNIVERSITY OF CINCINNATI[13]

Think back to high school biology class. We all learned how we pump blood with our circulatory system, how we breathe with our respiratory system, and how men think with their reproductive system. (Actually, maybe they didn't teach that last part.) But there is another major system which did not make it into our high school biology textbooks. This system lies at the heart of the obesity, diabetes, cardiovascular disease, and heart disease epidemics. It is also the system completely ignored by the typical approach to fat loss. It is our *fat metabolism system*.

The Fat Metabolism System: A series of signals from our hormones and brain which control how much we eat, how many calories we burn, and how much body fat we store. Researcher P.J. Havel from the University of California defines it more academically: "…a variety of nutrient, endocrine [hormonal], and neural [brain] signals…[regulating] food intake, energy expenditure, and body fat stores."

[14][15]

We've been told that the key to fat loss is manually controlling "calories in" and "calories out." Yet our fat metabolism system is an automatic internal calorie controller. How all its parts work together within the body is complicated, but knowledge of biology is not needed to understand its effects. We use metabolism all the time to explain why that guy who eats whatever he wants looks like a beanpole, while other people pack on the pounds after smelling a cheesecake. We say, "Sam's so lucky to have a fast metabolism." Or, "Poor Jane. She must have a slow metabolism."[16]

Instead of going through life hungry or spending countless hours in a gym, we can fix the issue that underlies fat gain: a hormonal clog in our fat metabolism system. By unclogging, we can change the way our fat metabolism system works. We can make it burn—instead of store—body fat.

The Clog: The inability of our fat metabolism system to respond to signals from our hormones and our brain which otherwise enable us to burn body fat. Academics also refer to "the clog" as metabolic dysregulation, and it is the underlying cause of long term weight gain. UCLA and Harvard Medical School researcher T. Kelesidis puts it more academically: "The circulating [hormone] level…directs the central nervous system in regulating energy [balance]…[However] the vast majority of obese humans… are resistant…to its weight-reducing effects."

{17}

Think about trying to remove body fat from a clogged fat metabolism system like trying to drain water from a clogged sink. Eating less is like turning down the faucet. Exercising more is like scooping out the overflowing water. Both are temporary ways to deal with the symptoms of the problem. Neither does anything about the root cause. That is why they both fail long term.

The problem is the clog. The solution is clearing the clog. And clearing the clog requires thinking in terms of *quality*, not *quantity*.

Fiddling with the quantity of food we eat and the quantity of exercise we get will never clear our hormonal clog. Q*uality*—low-quality food and low-quality exercise—is the cause of the backup. A sink does not get clogged by putting too much water into it. It gets clogged when we put the wrong stuff into it.

As M.F. Rolland-Cachera, a researcher at the French National Institute of Health and Medical Research puts it: "Many studies have *failed* to show a correlation between individual energy intake and obesity." H. Keen, a researcher at King's College London goes one step further and tells us [my emphasis here and throughout]: "The association of increased adiposity [body fat] with *low* food energy consumption may indicate an underlying 'low energy throughput' state [clog]." More simply, the theory that weight gain is *caused* by too many calories has been disproven. Researchers now know the real cause of weight gain is a clog in our fat metabolism system.{18}

The Need and Ability to Burn Body Fat

Let's imagine a world where calorie *quantity* is actually the key to long-term fat loss. Now let's try an experiment. We'll divide a group of people in half. We'll feed one half 120 extra calories per day for eight years. What would happen? If weight was ruled by calorie quantity, the math is pretty easy. Multiply 120 extra calories per day times 365 days in a year, times eight years, and the total equals 350,400 extra calories. Take that sum and divide it by the 3,500 calories in a pound of body fat, and we can predict that these people will gain 100 pounds. The equation is easy, but unfortunately, it's incorrect.

Instead, let's look at a real-life study: the $700 million Women's Health Initiative. This study tracked nearly 49,000 women for eight years. Just like our experiment, the women in one group ate an average of 120 more calories a day than the other group. Remember, that adds up to 350,400 more calories. How many more pounds did the women who ate 350,400 more calories gain?

0.88 pounds.[19]

That is not a typo. Eating 350,400 more calories caused the women to gain an average of less than a pound. Hmmmm. It seems that something is wrong with the *Calories In – Calories Out* equation.

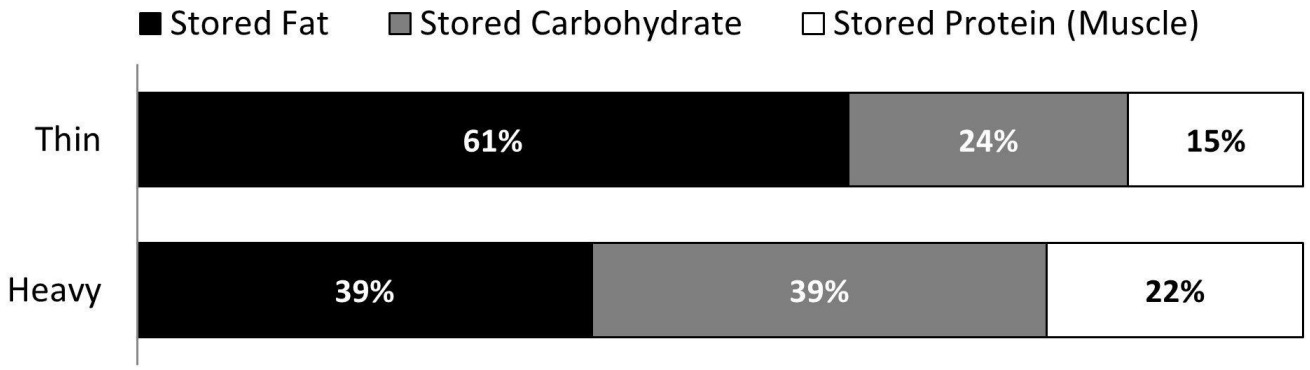
This quantity-focused fat loss myth incorrectly assumes that taking less calories in, or exercising more calories off, forces our fat metabolism system to burn body fat. That has been clinically proven to be false. It does not force us to burn body fat. It forces us to burn less calories. That is why dieters walk around tired and crabby all day. Their bodies and brains have slowed down.[20]

When our fat metabolism system needs calories and none are around, it is forced to make a decision: Go through all the hassle of converting calories from body fat or just slow down on burning calories. Given the choice, slowing down wins. University of Wisconsin researcher R.E. Kessey puts it more academically: "Metabolism [is] sharply reduced when an organism falls into negative energy balance."[21]

More importantly, the *need* to burn body fat does not mean body fat is burned. If you are clogged, the *need* to burn body fat is not enough. Your fat metabolism system does not have the *ability* to burn body fat, and you do not burn body fat efficiently. From researcher J.M. Friedman at the Rockefeller University: "The implication is that something metabolically different about [overweight] individuals results in obesity independent of their caloric intake." Consider a study done at St. Joseph's Hospital and Medical Center in Phoenix, Arizona. Researchers examined both heavy and thin people to see how their fat metabolism systems behaved when they were given no calories. As expected, everyone's system slowed down. Because these people were on zero-calorie diets, everyone burned body fat, but here's the kicker. Thin people burned off nearly 50% more body fat than heavy people.[22]

Think about that for a second. Despite having *more* body fat, the heavy people burned *less* body fat. In the words of the researchers, "…obese patients could not take advantage of their most abundant fat fuel sources but have to depend on the efficient use of…the breakdown products of body protein [muscle]."[23]

Where Patients' Fat Metabolism Systems Got Energy



That finding is depressing. The heavy people burned what relatively little muscle tissue they had rather than burning the excess body fat they were drowning in. They *needed* to burn body fat, but did not burn body fat effectively. This is where the idea of a clog comes into play. The researchers put the

problem like this: “Profound metabolic disturbances [clogs] exist in the obese state that constantly interfere with normal hormonal responses [the ability to burn body fat].” As long as you and I are clogged, our ability to burn body fat will be severely compromised.[24]

Fiddling with the quantity of calories in or out does not create the *ability* to burn body fat. We need to shift our focus to eating more—but higher-quality—food and doing less—but higher-quality—exercise.

Eating more high-quality food provides more nutrition while preventing overeating. That helps clear our hormonal clog while creating the need *and* the ability to burn body fat. If we add high-quality exercise, then we activate clog-clearing hormones, and burning body fat goes from being a struggle to being simple. And since we will eat as much high-quality food as we want while doing only ten to twenty minutes of high-quality exercise per week, we can keep this up permanently. That permanent need *and* ability to burn body fat is our bullet train to long-term fat loss.[25]

Get Your Fat Metabolism System to Burn Body Fat for You

Despite being proven wrong, eating less and exercising more is still the most common approach to weight loss. We are led to believe that our fat metabolism system sits back while we consciously regulate our weight. That is not how our body works. After W.C. Miller of Indiana University ran a clinical test of this principle, he concluded: “This study examined the relationships among body fat… energy intake, and exercise…There was *no* relationship between energy intake [calories in] and adiposity [body fat]”[26]

Think about any other system in our body—our respiratory system, our immune system, etc. We do not manually control our bodily systems. We can try to hold our breath. We can try to avoid colds. But the respiratory and immune systems are in control and will do what they want. The fat metabolism system works the same way. Researcher J.M. Friedman from the Rockefeller University explains, “The average human consumes one million…calories a year, yet weight changes very little…These facts lead to the conclusion that energy balance is regulated with a precision of greater than 99.5%, which far exceeds what can be consciously monitored.”[27]

When you think about how hard our body systems work to make sure we stay on an even keel health-wise, this point makes perfect sense. Yet here is what the American Heart Association advises: “How can you manage your weight in a healthful way? The answer is simple: balance the calories you take in with the calories you burn.” Which seems odd considering they also said: “Few reliable data are available on the relative contributions to this obesity epidemic by energy intake and energy expenditure.” I might be missing something, but if “few reliable data are available,” then how did they come up with this answer?[28]

We don't have to worry about beating our hearts thanks to our circulatory system, and we also don't have to worry about balancing our calories thanks to our fat metabolism system. The key to weight loss and health in general is keeping all of our body's systems “clog-free” by eating more high-quality food. In the case of our fat metabolism system, this lowers our set-point weight and keeps us slim as reliably as our elevated set-point currently keeps us heavy. Chapter 2 shows how our set-point works and how we will get it to burn body fat for us.

Chapter 2

Your Set-Point Weight

> "*The set-point theory of body weight regulation is based on a large body of empiric evidence."*
>
> **D.S. WEIGLE, UNIVERSITY OF WASHINGTON**[29]

Our fat metabolism system automatically regulates our weight around a "set-point." That set-point is why no matter how little we eat or how much we exercise, we generally end up weighing the same. It is why you can get sick, lose weight, but then gain it all back. It is also why heavy people do not keep getting heavier and heavier until they explode.

Set-Point Weight: The weight that our fat metabolism system automatically works to keep us at regardless of the quantity of calories we take in or exercise off.

I know that last part sounds silly, but let's look at this point seriously. Why don't obese people gain weight forever? If the quantity of calories they ate and exercised off raised them to 450 pounds, why doesn't it raise them to 4,500 pounds? These individuals somehow *automatically* stop gaining weight. How does that work under the *Calories In – Calories Out* theory?

It doesn't.

Here is how weight gain works in the real world: A person's set-point rises and then their fat metabolism system fights to keep them weighing more regardless of how little they eat or how much they exercise. D.S. Weigle at the University of Washington notes: "Obesity is not a disorder of body weight regulation. Most obese patients regulate their weight appropriately about an elevated set-point weight." A heavy person's higher set-point keeps them at that higher weight like a thin person's lower set-point keeps them at a lower weight. We all have a set-point. The issue is how high it is. Long-term fat loss comes from lowering it, not from starving it.[30]

The set-point takes *whatever* quantity of calories we eat plus *whatever* quantity of calories we burn and balances us out automatically. That is why manually balancing calories fails 95% of the time over the long term. It is trying to override our set-point, and we generally do not win battles against our basic biological functions. As researcher Keith Frayn of Oxford University noted: "We should not be surprised that dieting is difficult because it is a fight against mechanisms which have evolved over many millions of years precisely to minimize its effects."[31]

In a series of studies, University of Cincinnati researchers surgically removed and added body fat to various animals. Animals with body fat surgically removed then replaced “exactly the mass of fat which was taken.”Animals with body fat surgically added automatically burned more body fat until their body fat returned to its set-point.[32]

In other studies, individuals intentionally overate. All these studies show that people:[33]

1. Gain less weight than predicted by *Calories In – Calories Out*
2. Stop weight gain completely at a certain point
3. Return to their original weight automatically when overeating stops

You can see the pivotal role that a set-point plays in our metabolism. Study after study makes the same point. In studies at the University of Vermont, students ate up to five times more than normal but could not increase their weight by more than 12%. They would overeat and overeat, but their fat metabolism systems would not let them gain weight beyond a certain point. Studies were also conducted where prison inmates voluntarily ate up to 10,000 calories a day—they literally ate until they vomited. None of the prisoners could increase their weight by more than 25%.[34]

Knowing that our initial set-point is determined by our genetics, researchers tested twins to definitively prove the power of the set-point.Twins share the same genes and therefore the same initial set-point. One study tested two sets: let’s call them the Smith twins and the Thomas twins. Given 1,000 excess calories per day, would the Smith twins and Thomas twins all gain the same amount of body fat? Or would the set-point for the Smiths produce a different weight gain than the Thomases?[35]

Different. Very different.

The Smiths both gained the same amount of weight because they had the same set-point. So did the Thomases. But weight gain varied by nearly three times between the two sets of twins because they had different set-points. While the Smiths each gained two pounds, the Thomas twins each gained eight pounds.

J.M. Friedman of the Rockefeller University sums up the set-point: “[The simplistic notion] that weight can be controlled by ‘deciding’ to eat less and exercise more…is at odds with substantial scientific evidence illuminating a precise and powerful biologic system that maintains body weight within a relatively narrow range.” This point is also emphasized by P.J. Havel at the University of California:“Body weight…[is] tightly regulated over relatively long periods of time. Even after large alterations of body fat resulting from restriction of energy intake…body weight and fat stores tend to return to pre-intervention levels.”[36]

Our body does not want us to starve. To lose weight, we need to lower the “relatively narrow range” where our “powerful biologic system” operates. In order to do that, we need to find out what causes the set-point to rise in the first place.[37]

How Our Set-Point Rises

Our fat metabolism system keeps us at our set-point the same way it does everything else: hormones. The two most commonly talked about are insulin and leptin. Insulin determines whether we are storing or burning body fat. Leptin regulates how much food we eat, how much energy we burn, and the amount of body fat specified by our set-point.

Let's assume we are unclogged. When our weight starts rising above our set-point, hormonal signals cause our metabolism to go up, our appetite to go down, and our body fat to get burned. This prevents excess body fat from sticking around for long. We stay at our set-point without trying.[38]

But when we fill our body with low-quality foods, the fat metabolism system gets clogged. It is unable to effectively respond to these hormones. Without those hormonal "burn body fat" signals getting through, the metabolic processes that otherwise automatically keep us thin do not happen.

Once our fat metabolism system is not effectively responding to hormones like leptin and insulin, we are clogged. When the current level of hormones do not get the job done, our fat metabolism system produces more of them. Chronically high levels of these hormones make our fat metabolism system think that an abnormally high level of body fat is normal. Since our fat metabolism system automatically keeps us at what it thinks is normal, it keeps us at an abnormally high level of body fat. By eating poorly, we can raise our set-point.[39]

Raised Set-Point: Abnormal levels of hormones making the fat metabolism system think abnormal levels of body fat are normal.

The set-point won't go back down to normal until we get our hormone levels back to normal. We do that by unclogging ourselves. That means increasing the quality of our eating and exercise. And increasing the quality of our eating and exercise is easy when we eat more and exercise less—smarter.

University of Wisconsin researcher R.E. Keesey makes this point more academically: "If the goal is substantial and sustainable weight loss…a more promising approach would be one based upon a strategy of directly altering the set-point…The physiologic adjustments that ordinarily act to *resist* weight change…would instead *facilitate* the achievement and subsequent maintenance of a lower weight."[40]

The set-point can be frustrating. It's why eating less of our current diet and doing more traditional exercise doesn't work 95% of the time. But by understanding the science of the set-point, it can become our ultimate source of hope. Instead of fighting against our raised set-point by working harder, we can eat and exercise smarter, unclog, lower our set-point, and enable our fat metabolism system to burn body fat for us automatically. Chapter 3 shows how we do that.[41]

Chapter 3

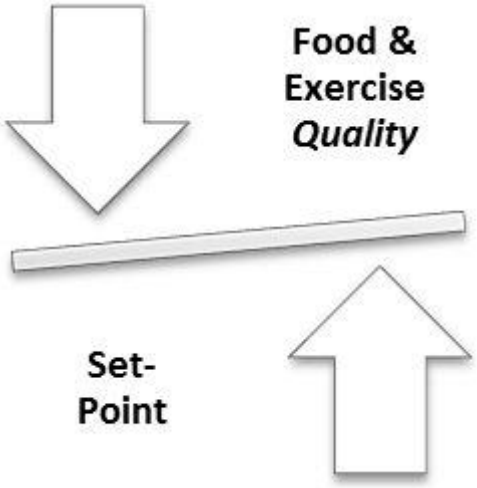
How to Lower Your Set-Point Weight

"*Set-points are not fixed."*

R.E. KEESEY, UNIVERSITY OF WISCONSIN[42]

As we have seen, you can stray from your set-point temporarily by lowering the *quantity* of food you eat and raising the *quantity* of exercise you do. Yet you cannot adjust your set-point itself unless you focus on changing the *quality* of the food and exercise. The higher the quality, the lower your set-point.

How Quality Influences Our Set-Point



Consider B.J. Rolls' research at the University of Oxford. She took rats and divided them into two groups:

As expected, the Low Quality Group got heavy and the Normal Quality Group did not. But here is where the study gets interesting. After the Low Quality Group got heavy, Rolls took the low-quality food (processed starches such as such as chips, cookies, and crackers) away from them. Now both the overweight Low Quality Group and the regular-weight Normal Quality Group had access to the same food. The Low Quality Group, though, stayed at their heavy weight.

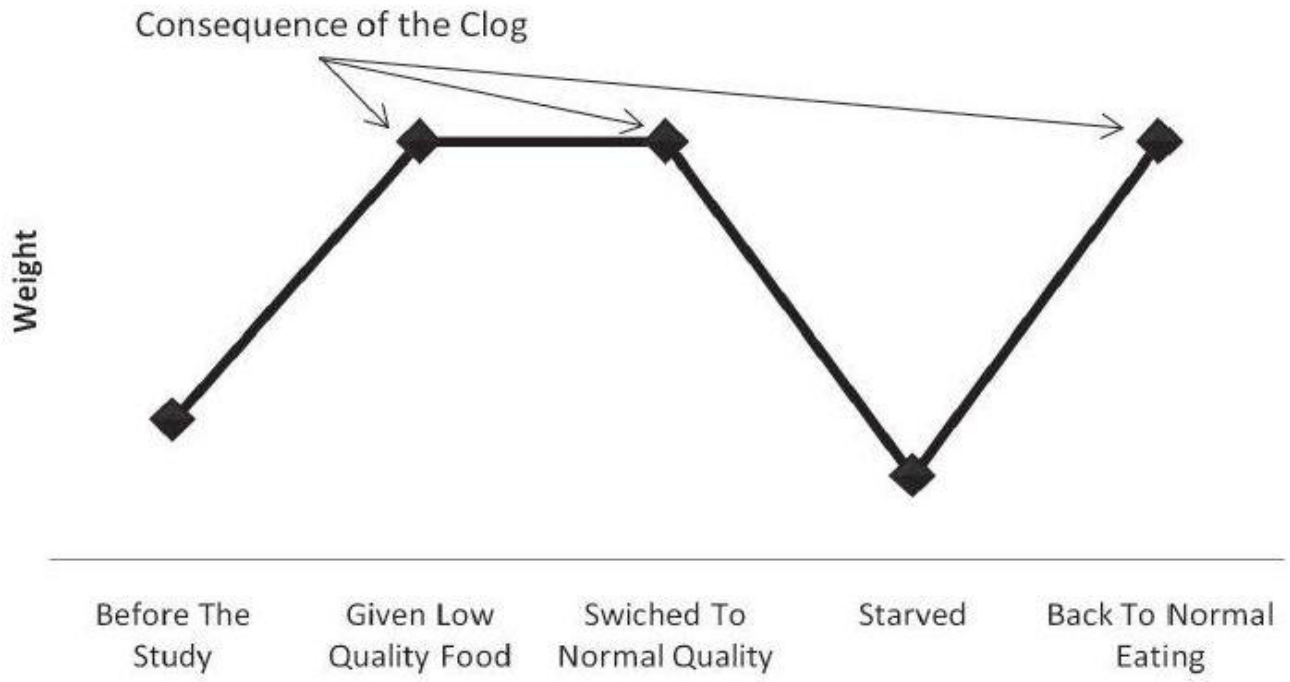
Wait a second. How can the same diet keep one group of rats heavy and keep another group slim? Because they changed their set-points.

The Normal Quality Group started with a normal set-point, remained at a normal set-point thanks to a normal quality diet, and therefore maintained a normal weight. The Low Quality group started with a normal set-point, increased their set-point thanks to a low-quality diet, and thereafter maintained a heavy weight. In Rolls' words: "Because the experimental rats are maintaining excess weight above the control rats, despite eating the same amount…it is possible that the obese rats have undergone *a long-lasting endocrine or metabolic change*." That change is a clog in their fat metabolism system.

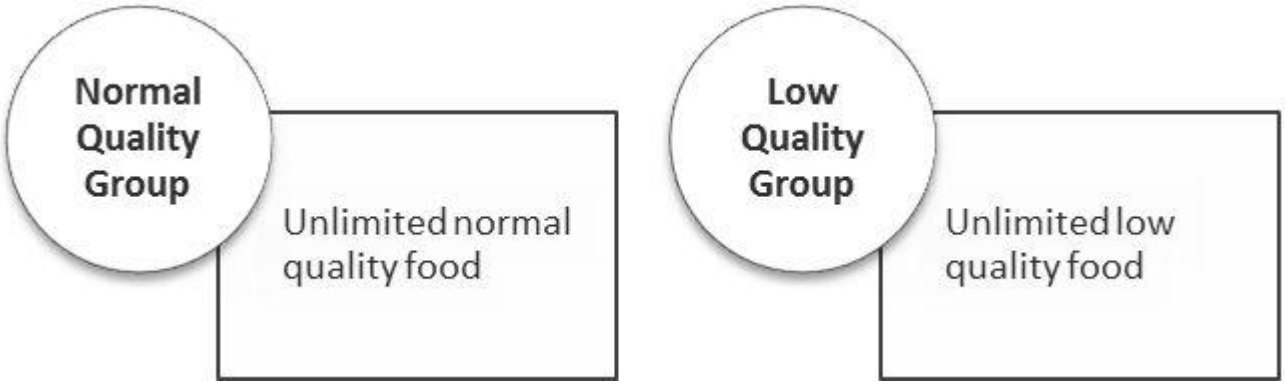
The study gets even more interesting. Rolls then took half of the heavy Low Quality Group and kept them eating only normal quality food, but much less of it. In other words, she made the heavy rats eat

less. Lowering the *quantity* of food caused the rats to *temporarily* lose weight. However, as soon as Rolls stopped starving the Low Quality Group, they returned to the heavy weight targeted by their recently raised set-point. They did not return to a standard rat weight. The low-quality food they ate at the start of the study created a clog in their fat metabolism system that raised their set-point and put them on a path of long-term weight gain.[43]

The Impact of Low Quality Food



These eye-opening results have been repeated over and over. University of Utah researcher J.W. Peck devised a test similar to Rolls' study, dividing normal rats into three groups. Each group could eat an unlimited quantity of calories. The only difference was the quality of the calories.



As expected, the Normal Quality Group maintained a standard weight, the Low Quality Group gained weight, and the Quinine Group lost weight. Peck then made each group of rats eat less of their type of food. All of the rats temporarily lost about 10% of their body weight. Now for the unexpected part.

Peck then stopped starving the rats, and they all went back to eating an unlimited amount of their chosen food. The Normal Quality Group automatically returned to their standard rat weight. The Low Quality Group automatically returned to their heavier weight. And the Quinine Group automatically returned to their reduced weight. Like Rolls' study, after eating less, all the rats automatically regained weight, but how much they regained depended on their set-point, which depended on the quality of their diet. In other words, food *quantity* temporarily moved them away from their set-point, but food *quality* determined the set-point itself.

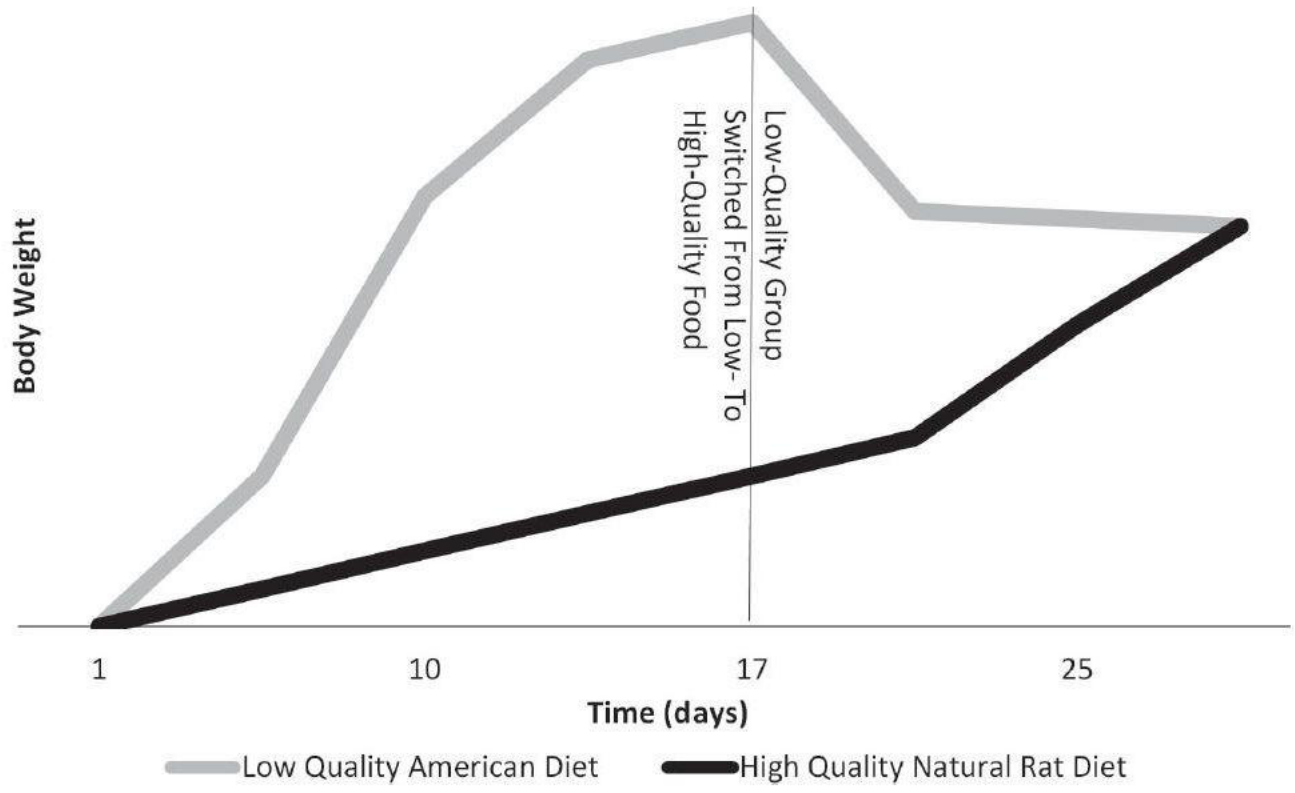
Peck was not done. He wanted to see what impact exercise quantity would have on the various set-points, so he had his furry friends burn off calories by shivering away all day in a very cold room. All of the rats automatically increased how much they ate to offset how much they exercised. Burning more calories simply made the rats eat more calories. Their set-point was unchanged.

Peck then freed the rats from the cold conditions, but continued the experiment. He kept all the groups on their respective diets while feeding them additional calories through a stomach tube. He wanted to see if a higher *quantity* of the same *quality* of calories would impact the rats' set-points. It did not. All of the rats automatically adjusted the amount of normal quality, low-quality, or bitter food they ate in order to maintain the normal, higher, or lower weights targeted by their set-points.

Eating less did not cause long-term weight loss. The set-point won. Exercising more did not cause long-term weight loss. The set-point won. Having additional calories pumped directly into the stomach did not cause long-term weight gain. The set-point won. The only factor that did impact rats' long-term weight was the quality of their calories. That worked because it changed their set-point. Fortunately, recent research reveals a more enjoyable way of changing the quality of our diet. No quinine-laced food for us. Just a lot more natural foods rich in water, fiber, and protein like non-starchy vegetables, seafood, lean meat, eggs, fat-free or low-fat cottage cheese, or fat-free or low-fat *plain Greek* yogurt, fruits, nuts, and seeds.[44]

One more study proves this point. In Dr. Nancy J. Rothwell's study at St. George's Hospital Medical School in London, growing rats were divided into Low-Quality American Diet and High-Quality Natural Rat Diet groups. Rothwell let all of the growing rats eat as much as they wanted for sixteen days. On

the seventeenth day the rats continued eating as much as they wanted, but Rothwell switched the Low-Quality American Diet rats to the high-quality natural rat diet. Here is what happened:[45]



The heavier young rats quickly dropped all their excess weight automatically when the *quality* of their diet improved. And so will you once you stop focusing on quantity and start applying the science of quality. So let's look at the four major problems of the traditional quantity-focused fat-loss approach:[46]

1. Eating less does *not* cause long-term fat loss.
2. Exercising more does *not* cause long-term fat loss.
3. Exercising less does *not* cause long-term fat gain.
4. Eating more does *not* cause long-term fat gain.

In chapter 4, we'll look at what scientists have to say about each of these statements. They already know the answers, and they can prove it. That's good for you, because by knowing the facts, you can finally start to lose weight—for good.

Chapter 4

Eating Less Does *Not* Cause Long-Term Fat Loss

"*The reduction of energy intake continues to be the basis of…weight reduction programs… [The results] are known to be poor and* not *long-lasting."*

GEORGE BRAY, PENNINGTON BIOMEDICAL RESEARCHCENTER[47]

Eating less does *not* create the need to burn body fat. It creates the need for the body to slow down. Contrary to popular opinion, the body hangs on to body fat. Instead, it burns muscle tissue, and that worsens the clog problem. Only as a last resort, if the body has no other option, it may also burn a bit of body fat.[48]

Why does the body hang on to body fat and burn muscle? To answer that question, let's look at it another way. What does our fat metabolism system want more of when it thinks we are starving? Stored energy. What is a great source of stored energy? Body fat. So when our fat metabolism system thinks we are starving, does it want to get rid of or hold on to body fat? It wants to hold on.

Next, what does our fat metabolism system want less of when we are starving? It wants less tissue which burns a lot of calories. What type of tissue burns a lot of calories? Muscle tissue. So when our fat metabolism system thinks we are starving, it gets rid of calorie-hungry muscle tissue. Studies show that up to 70% of the weight lost while eating less comes from burning muscle—not body fat.[49]

Burning all this muscle means that starving ourselves leads to morebody fat—not less—over the long term. As soon as we stop starving ourselves, we have all the calories we used to have but need less of them, thanks to all that missing muscle and our slowed-down metabolism. Now our fat metabolism system sees eating a normal amount as overeating and creates new body fat. Inthe *Journal of the American Medical Association*, researcher G.L. Thorpe tells us that eating less does not make us lose weight, "…by selective reduction of adipose deposits [body fat], but by wasting of all body tissues… therefore, any success obtained must be maintained by chronic under-nourishment." It is not practical or healthy to keep ourselves "chronically under-nourished," so we don't. Instead, we yo-yo diet. And that is why eating less is not an effective long-term fat loss approach.[50]

Why Eating Less Fails Long-Term 95% of the Time

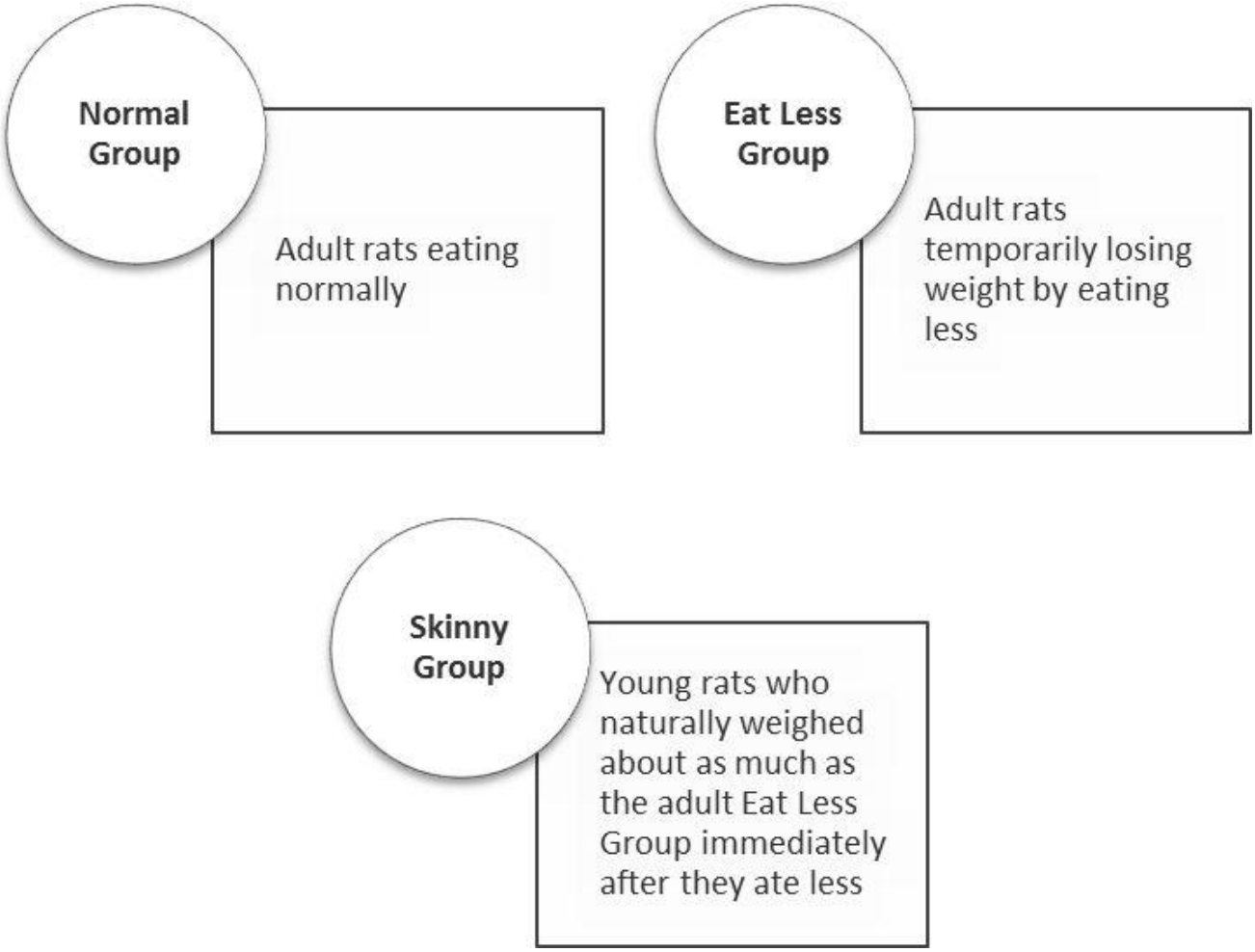
Imagine watching TV and seeing a commercial for a new medication. The ad tells you the medication slightly improves your vision as long as you keep yourself chronically sleep-deprived. At the end of the commercial, a quieter voice lists the medication's long-term side effects. One of them is that your vision will become much worse if you ever go back to sleeping a normal amount. Would you ever use that medication? Of course not. You cannot go through life tired. Its temporary benefit is not worth its long-term side effects.

Now imagine another commercial. This one is for a mail-order weight-loss meal program that slightly reduces your weight as long as you keep yourself chronically food-deprived. At the end of the commercial a quieter voice goes though the program's side effects. The side effects include making you much heavier if you ever go back to eating a normal amount. Would you ever use that program? Of course not. You cannot go through life hungry. To escape the superstition of starvation, let's dive deeper into the science of its side effects.

> "*…a general public health recommendation for weight reduction through dieting cannot be supported strongly with existing data."*
>
> **D.S. WEIGLE, UNIVERSITY OF WASHINGTON**[51]

The Side Effects of Eating Less

My favorite experiment showing the side effects of eating less took place at the University of Geneva and involved three groups of rats all eating the same quality of food.

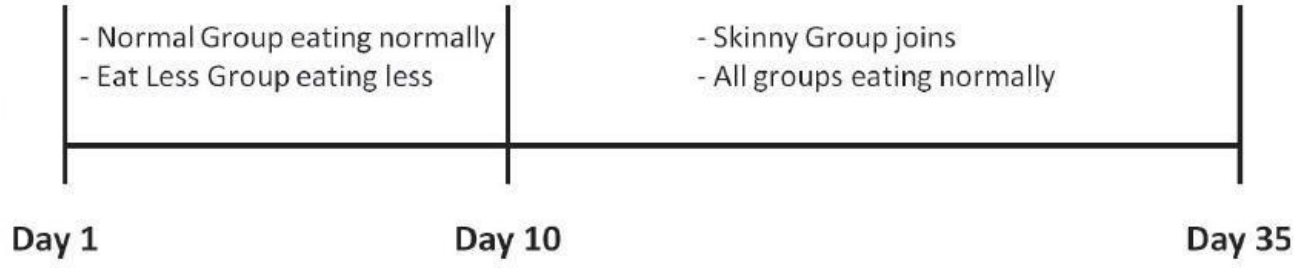


If the study were conducted on humans, the Normal Group would be typical thirty-five-year-old women. The Eat Less Group would be thirty-five-year-old women cutting calories until they fit into their high school jeans. And the Skinny Group would be high school girls who fit into size four jeans without trying.

For the first ten days of the study, the Eat Less Group ate 50% less than usual while the Normal Group ate normally. On the tenth day:

1. The Skinny Group showed up and ate normally.
2. The Eat Less Group stopped starving themselves and started eating normally.
3. The Normal Group kept eating normally.

This went on for twenty-five days and the study ended on day thirty-five.



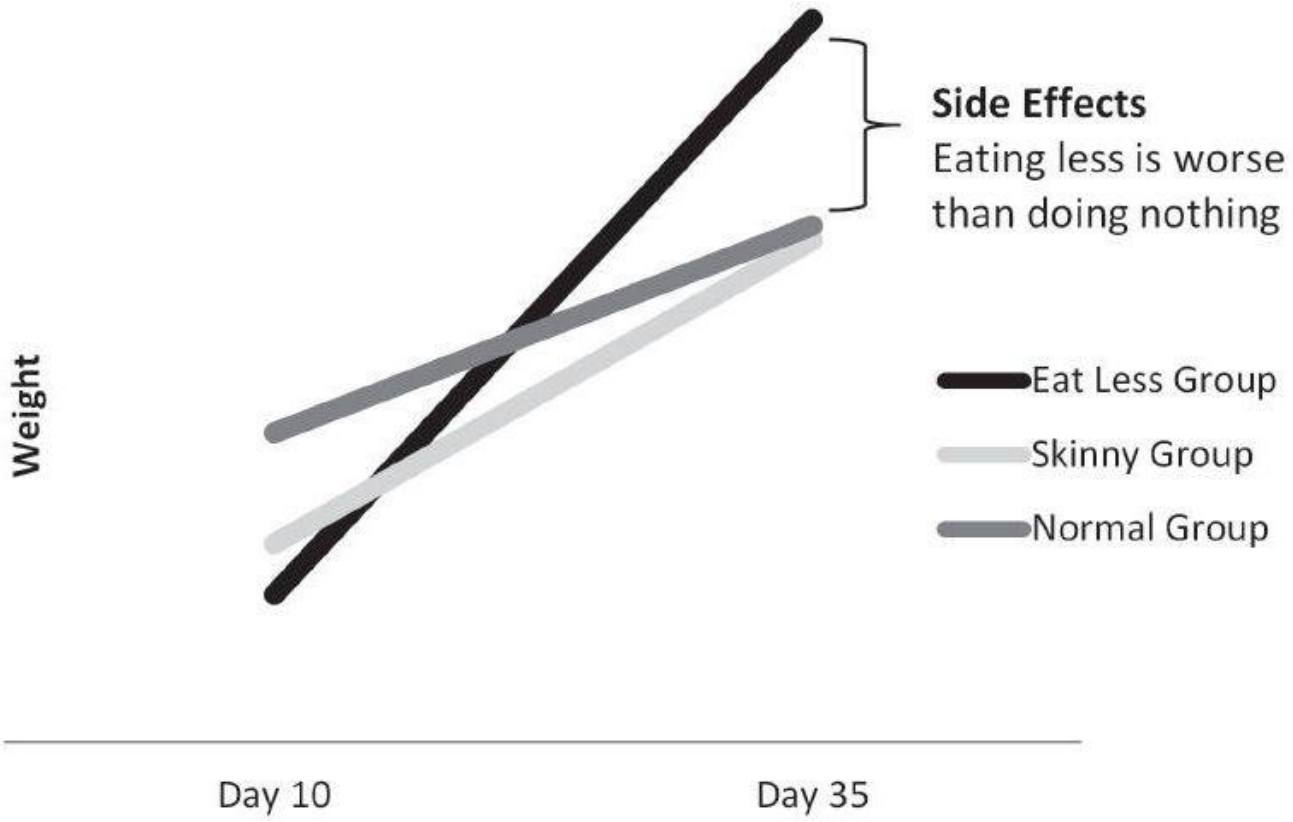
At the end of the thirty-five day study, the Normal Group had eaten normally for thirty-five days. The Eat Less Group had eaten less for ten days and then normally for twenty-five days. And the Skinny Group had eaten normally for twenty-five days.

Which group do you think weighed the most and had the highest body fat percentage at the end? The Skinny Group seems like an easy “no” since they are younger and naturally thinner than the other rats. Traditional fat loss theory would say the Eat Less Group is an easy “no” as well since they ate 50% less for ten days. So the Normal Group weighed the most and had the highest body fat percentage at the end of the study, right?

Nope.

The Eat Less Group weighed the most and had the highest percent body fat. Even though they ate less for ten days, they were significantly heavier than those who ate normally all the way through. Eating less led the rats to gain—not lose—body fat. MacLean at the University of Colorado describes this general metabolic behavior: “[When we eat less] metabolic adjustments occur…[which] contribute to a large potential energy imbalance that, when the forcible control of energy intake is relieved… results in an exceptionally high rate of weight regain.”[52]

Here is the data:



Talk about side effects. Eating less was worse than doing nothing. Why? After our fat metabolism system is starved, its number one priority is restoring all the body fat it lost and then protecting us from starving in the future. Guess how it does that? By storing additional body fat. Researchers call this "fat super accumulation." From researcher E.A. Young at the University of Texas: "These and other studies…strongly suggest that fat super accumulation…after energy restriction is a major factor contributing to relapsing obesity, so often observed in humans."[53]

Fat Super Accumulation: The unavoidable gaining of more body fat than we lose after we starve ourselves. The primary side effect of eating less. The main reason eating less is not an effective long-term fat loss technique.

The most disturbing aspect of fat super accumulation is that it does not require us to eat a lot. All we have to do is go back to eating a normal amount. The Eat Less Group in the study gained a massive amount of body fat quickly while eating *the same amount* as the Normal Group and the Skinny Group. The fat metabolism system was trying to make up for the past losses.

There is another reason: eating less slowed the metabolism. Put the same quantity and quality of food and exercise into a slowed-down fat metabolism system, and out comes more body fat. TheUniversity of Geneva researchers discovered that the Eat Less Group's fat metabolism systems were burning body fat over 500% less efficiently and had slowed down by 15% by the end of the study. They remarked: "These investigations provide direct evidence for the existence of a *specific metabolic component* that contributes to an elevated efficiency of energy utilization during

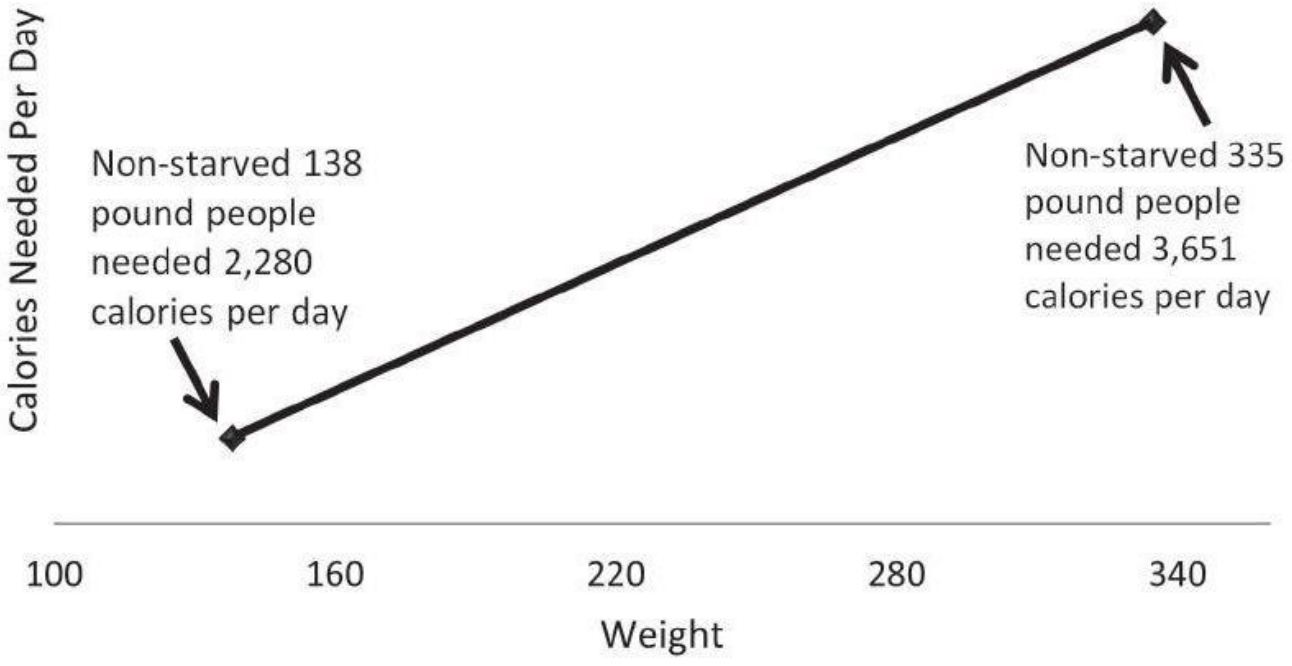
refeeding after low food consumption," or once eating less stops. I call that "specific metabolic component" a clogged-up and slowed-down fat metabolism system. It results in a significant drop in our*need* and our *ability* to burn body fat.[54]

For another example of starvation's long-term side effects, consider Dr. Rudolph Leibel's study at Rockefeller University. A group of people weighing an average of 335 pounds starved themselves down to 220 pounds. After the starvation period was over, the researchers wanted to see what impact eating less had on the 220-pound dieters' need to burn body fat. To do this they brought in people who were the same age but naturally slim. This gave the researchers three groups of people to compare:

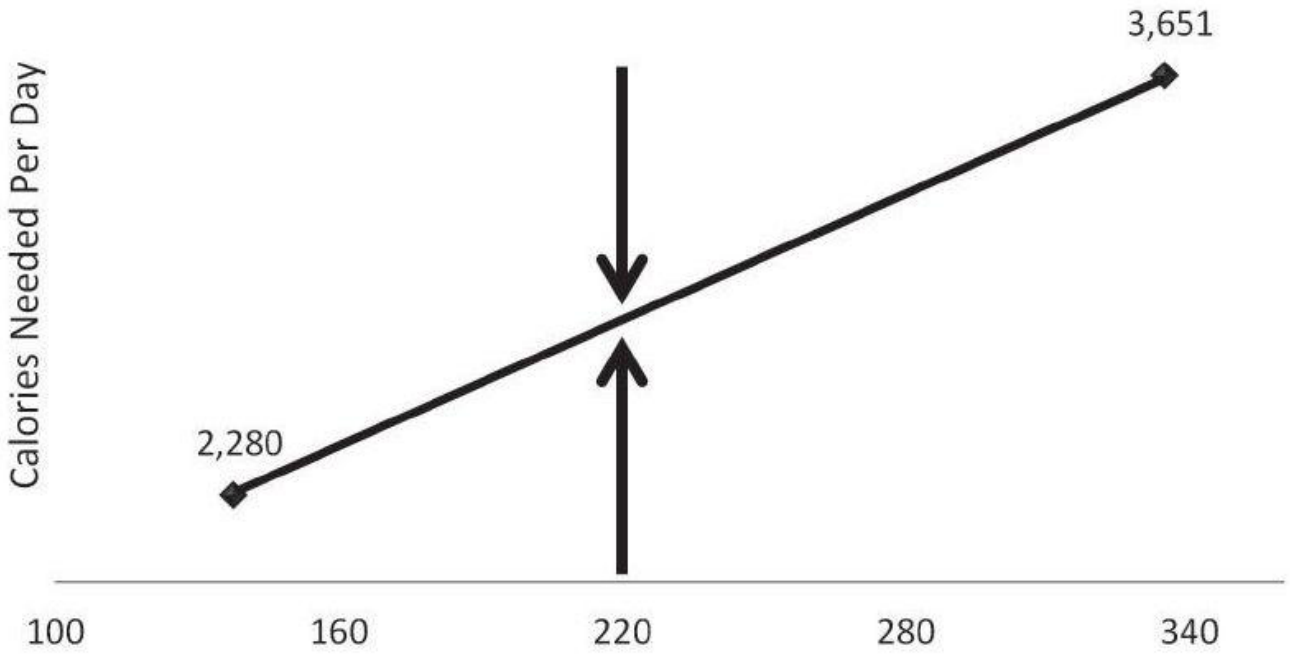
1. Non-starved 335-pound people
2. Formerly 335-pound people who weighed 220 pounds
3. Non-starved 138-pound people

Like a larger SUV should need more gasoline than a smaller motorcycle, the non-starved 335 pound people should need more calories than the non-starved 138-pound people, right?

Yes.

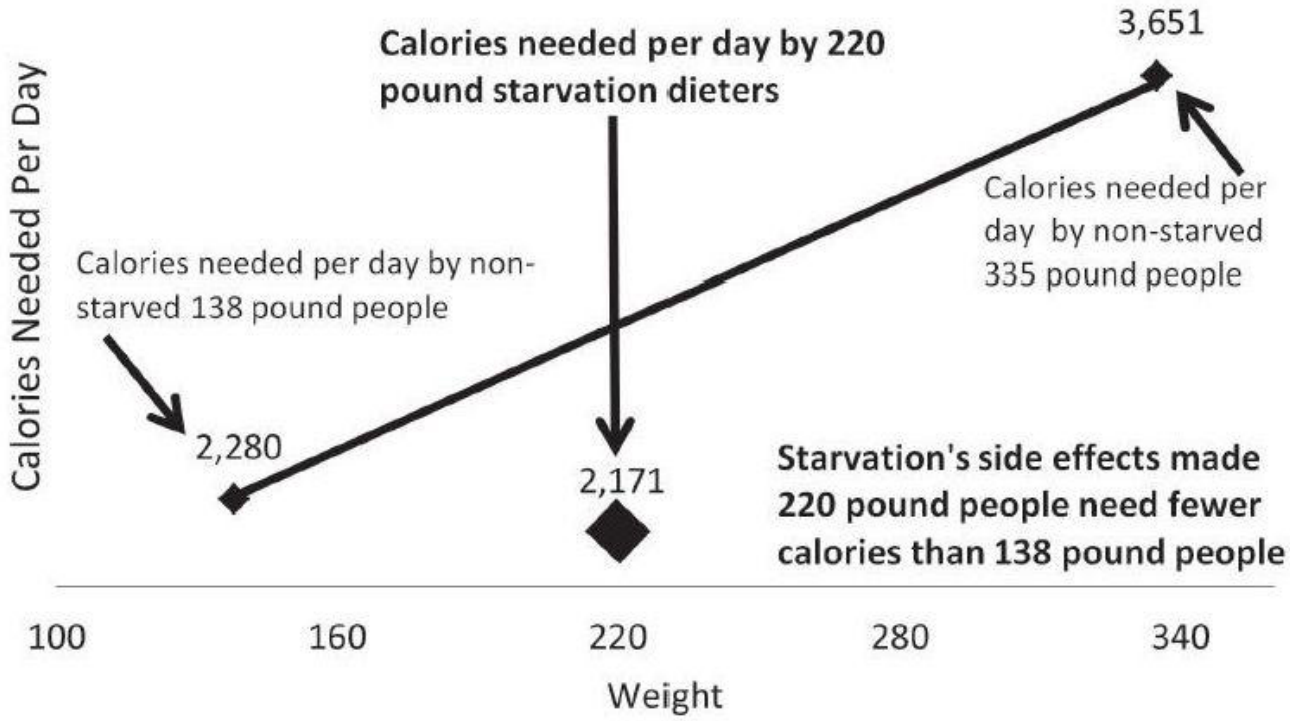


All things being equal, more body weight means more calories needed per day to maintain and move more mass. So after losing 115 pounds, you would think the 220-pound people must have slid down the graph and ended up here:



Right?

Not necessarily. It depends on how the 115 pounds were lost. After all, we know starvation burns calorie-hungry muscle while slowing down the fat metabolism system. So having starved away 115 pounds, how many calories did the 220-pound starvation dieters' need?



Thanks to starvation's side effects, the 220-pound people destroyed their need to burn body fat. The 220-pound starvation dieters ended-up needing 5% fewer calories per day than the non-starved 138

pound people, even though they had eighty-two more pounds of mass to move. That is a scary side effect. And that is why University of Wisconsin researcher R.E. Keesy said: “Disproportionately large declines in resting metabolism are seen in food-deprived men.”[55]

Similar results were gained from a test done as far back as World War II. University of Minnesota researchers studied starvation to get a better understanding of how to help the hungry in war-torn Europe. The researchers recruited people in the United States and had them cut back to a 1,600 calories per day diet.[56] Their fat metabolism systems responded by slowing down by a whopping 40%. At the same time their strength fell by 28%, their endurance fell by 79%, and their rates of depression rose by 36%.[57]

Let’s focus on the fat metabolism system slowing down by 40% for a moment. Say Jill needs and eats 2,000 calories per day. But now Jill wants to drop a few pounds for her vacation in two weeks, so she reads a magazine which tells her to starve herself, and she cuts back to 1,600 calories per day. According to this study, Jill’s fat metabolism system would slow down by 40% and only need 1,200 calories per day. Before Jill ate less, she needed 2,000 calories per day and ate 2,000 per day. After eating less, Jill only needed 1,200 calories per day but ate 1,600 per day. When she stops eating less, she will eat 2,000 calories per day while only needing 1,200 per day. That’s not helpful.

Back to the World War II study. In addition to completely destroying their need to burn body fat, as soon as subjects stopped eating less, they ate an average of 5,000 calories a day until they gained all the weight they lost back plus 5%. That is the good news. The bad news is that their body fat percentage was 52% higher than before they starved themselves. All the muscle they burned was replaced by body fat. They experienced fat super accumulation.[58]

The More We Starve Ourselves, the Worse Off We Are

The counterproductive nature of eating less is called yo-yo dieting for a reason. The continuous down-and-back-up cycle matters because the more often people yo-yo, the slower their fat metabolism system gets. In a University of Pennsylvania study, rats ate a fattening diet and gained weight, then ate less and lost weight, then went back on the fattening diet and gained weight, then went back to eating less and lost weight, and then went back on the fattening diet and gained weight. They yo-yo’ed up, down, back up, back down, and then back up.

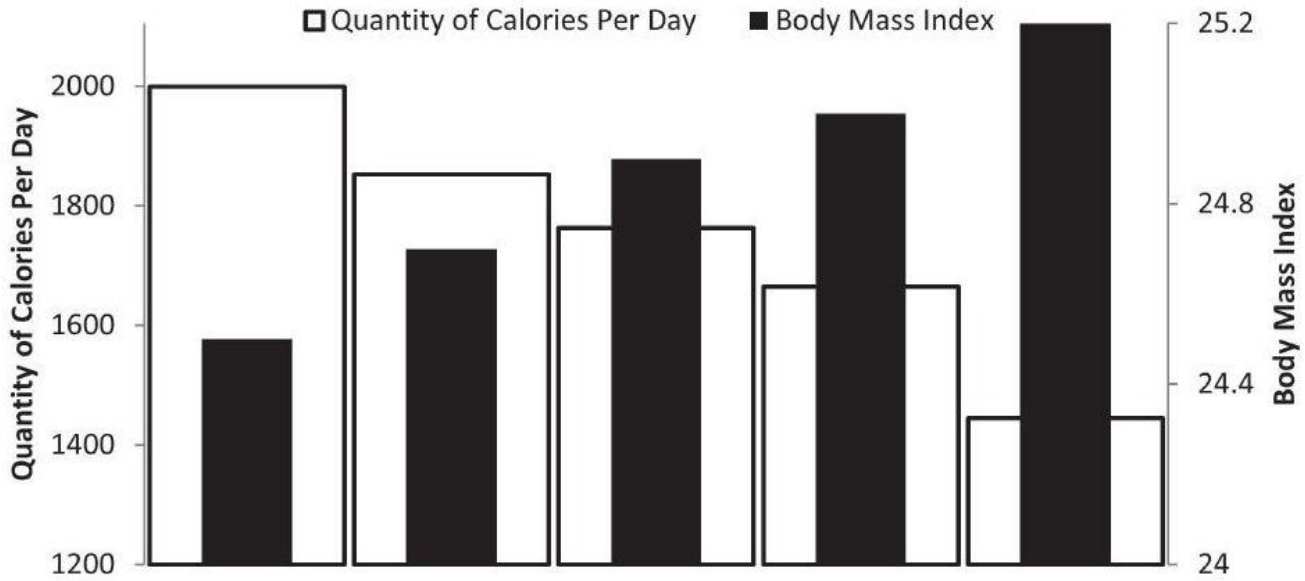
The second time the rats tried to lose weight by eating less, they lost weight 100% slower and regained the weight 300% faster than the first time they ate less. After the rats stopped eating less for the second time, they “had a four-fold increase in food efficiency compared to obese animals of the same weight who had not cycled.” Translation: The rats who yo-yoed the second time stored food as body fat 400% more efficiently than rats who constantly ate a fattening diet.[59]

Doing nothing is better than eating less. This study shows it is 400% better. Researcher D.M. Garner at Michigan State University had this to say about starvation dieting: “It is only the rate of weight regain, not the fact of weight regain, that appears open to debate.”[60]

The Nail in the Eat-Less Coffin

We have heard the “eat less to weigh less” myth a lot, so we need a lot of evidence to break free from it. Even after all the evidence, there still may be a voice in the back of your head saying: “Now hold on. There has to be some truth in eating less means less body fat, because that’s what everybody says.” I felt the same way.

Harvard researchers provided one last study that freed my mind once and for all. They divided a massive sample of 67,272 people in five groups according to the quantity of calories they ate, and the researchers found that the *less* people ate, the *more* body fat they had. This finding is shown in the following chart, where “Body Mass Index” approximates “body fat.”{61}{62}



When you have a sampling that is so large, it makes sense to pay attention to the results. In my research, I found all sorts of studies like this. T. Mann at the University of California concluded: “[We] reviewed studies of the long-term outcomes of calorie-restricting diets to assess whether dieting is an effective treatment for obesity…In sum, there is little support for the notion that diets lead to lasting weight loss or health benefits.”{63}

I also could provide studies showing that yo-yo dieting increases our risk of heart attack, stroke, diabetes, high blood pressure, cancer, immune system failure, eating disorders, impaired cognitive function, chronic fatigue, and depression. But that is beyond the scope of this book. For people who want to lose weight, the lesson is simple.{64}

Starvation does not make us thin. It makes us stocky, sick, and sad. It’s bad for health and it’s bad for fat loss. Your body just doesn’t work that way.

The Philosophy of Long-Term Body Fat Loss

The 18th century German philosopher Immanuel Kant proposed a helpful theory when thinking about moral issues. He said we can tell whether an action is good or bad if it makes sense for everyone to do it all the time. For example, is it okay to lie? No, because if everyone always lied, society would fall apart.

His logic is even more useful in the fat-loss field. If any fat-loss program suggests you and I do something we cannot do over the long run, it is bad. We are trying to become slim for the rest of our lives. We do not want to lose body fat now only to gain it back later. So if we cannot follow a fat-loss program forever, forget it.

Whatever we do to lose body fat, we have to keep on doing it or we will gain all the body fat back. It is like pushing the accelerator pedal to make your car go sixty miles per hour. As soon as you stop pushing it, you will quickly slow down. Similarly, if you change the way you eat and exercise to burn body fat and then stop eating and exercising that way, you will quickly regain body fat. For instance, researcher P.C. Boyle reported in the *American Journal of Physiology* that as soon as rats stopped eating less, they gained weight twenty times faster than normal until they returned to at least their original weight.[17]

Nobody wants to gain body fat twenty times faster than normal, so before trying any diet or exercise program, be a philosopher and ask yourself, "Can I do this forever?" If the answer is yes, do it. If the answer is no, skip it.

Chapter 5

Exercising More Does *Not* Cause Long-Term Fat Loss

"*My grandmother, she started walking five miles a day when she was sixty. She's ninety-seven today and we don't know where the hell she is.*"

ELLEN DEGENERES

We have seen that eating less is not effective. But what about exercising more? From the perspective of our fat metabolism system, there is no difference between the two. Eating 300 fewer calories is the same as burning 300 more calories. In both cases, our fat metabolism system reacts like this: "Oh no! Less nutrition! I am starving! Time to slow down, hang on to protective body fat, and burn calorie-hungry muscle." More calories out is the same as less calories in. Everything that makes the "eat less" principle fail makes "exercise more" fail too.{65}

That is not to say that all exercise is pointless. What is ineffective is traditional low-quality exercise. Exercising less—smarter—burns all sorts of body fat. You and I will cover that science in *Part 7 – Solution: Exercise Less—Smarter*, but first we have to free our minds from the "exercise more to burn more" mythology.

In the same way that people drink more fluids when they exercise more, they also eat more when they exercise more. Researcher Hugo R. Rony found: "Consistently high or low energy expenditures result in consistently high or low levels of appetite. Thus men doing heavy physical work spontaneously eat more than men engaged in sedentary occupations." J.M. Friedman at Rockefeller University makes a similar point: "Exercise by itself has *not* been shown to be highly effective in treating obesity because the increased energy use from exercise is generally offset by increased caloric intake."{66}

Compounding the problem, many people who exercise more do not eat high-quality food. The majority of people get most of their calories from low-quality starches and sweeteners.Therefore, exercising more triggers the consumption of more low-quality food. More *low-quality* food means less need to burn body fat, more clogging, and a higher set-point. Far from burning body fat, we burn time and build-up clogs.{67}

Pennington Biomedical Research Center researcher T.S. Church found, "After 18 months of exercise training and achieving 2,000 kcal [calories] per week of exercise, college-aged women had *no*weight loss." Church divided overweight women into four groups:

1. No change in exercise
2. Exercise more
3. Exercise even more
4. Exercise way more

After six months Church found: "The change in body fat was *not*statistically different across the… groups." He went on to note how more exercise did not cause more body fat to be burned because "a relatively high dose of exercise results in *compensatory*mechanisms that attenuate [offset] weight loss…Our findings are important because most exercise guidelines for weight loss recommend 200–300 minutes per week and we provide evidence that this amount of exercise induces compensation that results in*significantly less* weight loss than predicted."{68}

Here is one scenario for exercising more: Michelle goes for a 30-minute jog and burns 170 more calories than she would have burned by sitting at home and reading this book. She is trying hard to cut calories, so she does not drink any sugary sports drinks and fights through the hunger pangs after her jog. At dinner Michelle unconsciously drinks an extra glass of reduced-fat milk thanks to her increased thirst and hunger. The net result of her jog is thirteen more calories than if she had not exercised.

30 min. jog	-170 calories
12 oz. milk	+183 calories
Net	**+13 calories**

Much more commonly, people will have sweetened “power juice” while pounding it out on the treadmill. Afterward, they overeat low-quality food. The net result is more low-quality food and more clogging.

30 min. jog	-170 calories
24 oz. sports drink	+189 calories
Extra half serving of Fettuccine Alfredo	+390 calories
Net	**+409 calories**

The food industry is very well aware that exercising more encourages eating more low-quality food. That’s why the following corporations serve on the executive board of the American Council on Fitness and Nutrition:[69]

- Coca-Cola Company
- PepsiCo
- Hershey Foods Corporation
- Sara Lee Corporation
- Kellogg Company
- Kraft Foods
- General Mills
- Campbell Soup Company
- ConAgra Foods
- Del Monte Foods
- Grocery Manufacturers Association
- H.J. Heinz Company
- Masterfoods USA
- National Restaurant Association
- Unilever United States
- American Association of Advertising Agencies
- American Beverage Association
- Association of National Advertisers

Are we told to exercise more because it is good for fat loss or because it is good for business? The National Soft Drink Association advises us to “consume at least eight glasses of fluids daily, *even more when you exercise*. A variety of beverages,*including soft drinks*, can contribute to proper hydration.”[70]

But wait. If you exercise less, won’t you gain body fat? As you’ll see in chapter 6 and part 7, that depends on the type of exercise you do.

A Note About Sweeteners: When I talk about sweeteners, I am talking about sweeteners containing calories which are added to foods. Substances like sugar, high-fructose corn syrup, evaporated cane juice, etc. I am not talking about the sugars already found in natural foods like fruits and non-starchy vegetables. Those are fine. I am also not talking about calorie-free sweeteners like stevia, aspartame, sucralose, or saccharin. Those are fine in moderation. Studies show that calorie-free sweeteners *may* be harmful in ridiculously high amounts, while caloric added sweeteners are harmful in any amount. Researcher John Yudkin at the University of London tells us, "...think of what is already known that sugar can do, as distinct from what [sugar substitutes] might possibly do if taken in enormously unrealistic amounts...There is no doubt that people today are very worried about their food... but...most of them are worried about the wrong things."

{71}

Chapter 6

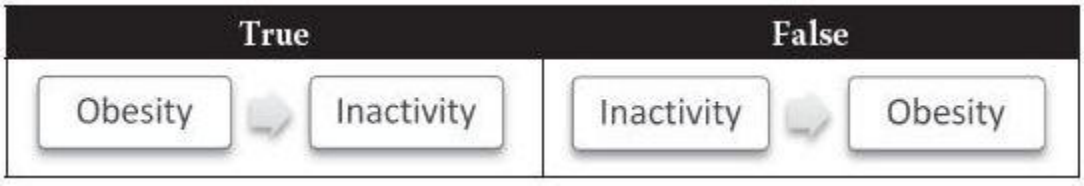
Exercising Less Does *Not* Cause Long-Term Fat Gain

"*It is reasonable to* assume *that persons with relatively high daily energy expenditures would be less likely to gain weight over time compared with those who have low energy expenditures. So far,* data *to support this hypothesis are* not*particularly compelling."*

AMERICAN HEART ASSOCIATION{72}

The idea that we have an obesity epidemic because people are not exercising enough is another myth. Saffron A. Whitehead at St. George's University of London reported: "Most studies show that the obese do about the same physical activity as [the] lean."{73}

The only "weight versus activity" relationship that has been proven is that obesity leads to inactivity. Consider the conclusion of the 2004 University of Copenhagen study: "This study did *not* support that physical inactivity…is associated with the development of obesity, but…that obesity may lead to physical inactivity." More body fat leads to less exercise, not the other way around.{74}



You might want to compare it to the idea that “partying less causes aging.” People party less when they become older. They do not get older because they are partying less. With age comes deep metabolic changes that make partying until 3 am harder. The same holds true with exercise and obesity. People exercise less because they are obese. They do not become obese because they are exercising less. With obesity comes deep metabolic changes that make exercise harder.

Also, common sense tells us that if exercising less is the cause of our collective weight issues, we must be collectively exercising less. Are we?

Not even close.

The idea of aerobic exercise did not even exist in the mainstream until the 1968 publication of the book *Aerobics* by Dr. Kenneth H. Cooper. Dr. Entin, with the department of Biological Sciences at Northern Arizona University, explains the common view before then: “In the 1930’s and 40’s…high volume endurance training was thought to be bad for the heart. Through the ‘50’s and even ‘60’s, exercise was not thought to be useful…and endurance exercise was thought to be harmful to women.” During that same period the percent of obese Americans was dramatically lower than today. Nowadays, Americans exercise more than anyone else in the world and are the sixth heaviest population in the world. How could doing too little of something that we did even less of before the problem existed cause the problem?{75}

> “…[*Americans*] *are voluntarily exercising more than ever…While it seems perfectly clear that our lives are less physically demanding than they were in the 1950s, it’s not necessarily the case that we are cumulatively burning fewer calories.*”
>
> **ERIC J. OLIVER, UNIVERSITY OF CHICAGO**{76}

Some experts say that we are getting heavier because we are using labor-saving devices. Yet that doesn’t make sense. The vast majority of labor-saving devices became common in households decades before obesity shot up. Use of dishwashers, washing machines, vacuum cleaners, and all the major labor-saving devices increased most between 1945 and 1965. However, obesity increased little during that time period. Use of these devices increased very little between 1978 and 1998 while obesity rates shot up. So how could labor-saving devices be the cause of weight problems?

Reread the quote from the American Heart Association at the start of this chapter. Digging into the data and abandoning *assumptions*about our activity levels, researchers like New York University’s Marion Nestle tell us, “…the activity levels of Americans appear to have changed little, if at all, from the 1970s to the 1990s.”{77}

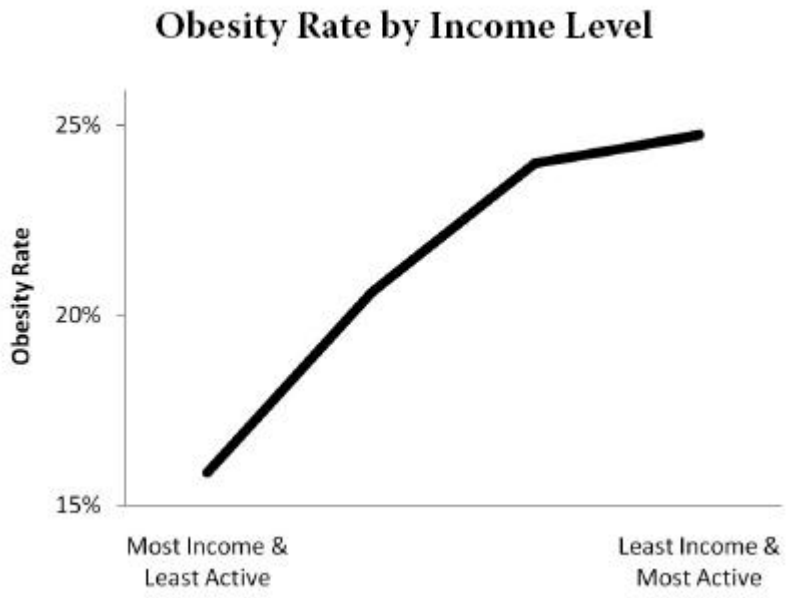
What about all the TV watching? That’s got to be the cause, right? That too does not correspond with the facts. Tsinghua University professor Seth Roberts determined: "Time spent watching TV increased by 45% from 1965 to 1975, yet obesity increased little over that time; from 1975 to 1995, when obesity shot up, TV watching increased only a little.”{78}

Finally, if general activity level determined weight, then the thinnest people in the world would be manual laborers, while the heaviest would be desk jockeys. People with manual labor jobs are

“active” forty hours a week, every week, at their jobs. People with desk jobs are “inactive” forty hours a week. Are manual laborers slimmer than desk jockeys?

Let’s look at the research. The Centers for Disease Control and Prevention collected data from over 68,000 adults and found that obesity *rises* as income falls and manual labor—i.e., work-related activity—rises. The data suggest that, on average, active manual laborers are heavier than inactive desk jockeys. Therefore, it seems that inactivity causes obesity as much as jackets cause cold weather.[79]

> “*A recent review of* [*319 studies*] *suggests that obese*[*peoples’*] *energy expenditure is higher than that of the* [*non-obese*] *population*.”
>
> **JOHN E. BLUNDELL, UNIVERSITY OF LEEDS**[80]



But wait a second. Aren’t low-quality starches and sweets abundant in low-income areas (convenience stores, fast food, etc.), while high-quality non-starchy vegetables, seafood, lean meat, and fruits are scarce? Couldn’t low-quality food be the cause of higher obesity rates in *more* active low-income areas?

Yes.

Eating lower-quality food creates the clog that causes chronic weight gain. People can be plenty active, but if they eat low-quality food, they will get clogged and gain body fat. Weight gain is determined by food and exercise quality, not quantity.

Still not convinced? Chapter 7 shows how you can eat more and burn more body fat—as long as you eat smarter.

Chapter 7

Eating More Does *Not* Cause Long-Term Fat Gain

> "[*We found*] *highly significant inverse correlations between food energy intake and adiposity* [*body fat*]."
>
> **H. KEEN, KING'S COLLEGE LONDON**[81]

Eating more *low-quality* food causes us to gain body fat. But that does not mean eating more food produces the same result. Interestingly enough, eating more *high-quality* food has been clinically proven to cause body fat to be burned. The research on this topic comes from all over:

- **Volek's Study at the University of Connecticut**: People in the eat-more-high-quality-food group ate 300 more calories per day and burned more body fat.[82]
- **F.F. Samaha's Study at the University of Pennsylvania**: People in the eat-more-high-quality-food group ate a total of 9,500 more calories and lost 200% more weight.[83]
- **Green's Study from *Obesity Research***: People in the eat-more-high-quality-food group ate a total of 25,000 more calories without gaining any additional weight.[84]
- **Sondike's Study from the *Journal of Adolescent Health***: People in the eat-more-high-quality-food group ate a total of 65,000 more calories and lost 141% more weight.[85]

How are these results possible? Research reveals two main reasons: First, a calorie is *not* a calorie. Second, an unclogged fat metabolism system burns excess calories instead of storing them. The next section will cover why a calorie is *not* a calorie, so let's turn first to how unclogging enables our body to burn—instead of store—excess calories.

Eat More, Burn More

Let's return to the idea of a clog. If you pour more water into an unclogged sink, then it will drain more water. You will only see water build up if you put more water into a *clogged* sink. Our fat metabolism system works the same way. If you put more food in an unclogged fat metabolism system, then it will burn more calories. Body fat will build up only if you put more food into a *clogged* fat metabolism system.

In a Mayo Clinic study, researchers fed people 1,000 extra calories per day for eight weeks. A thousand extra calories per day for eight weeks totals 56,000 extra calories. Everyone gained sixteen pounds—56,000 calories worth—of body fat, right?

Nope.

Nobody gained sixteen pounds. The most anyone gained was a little over half that. The least anyone gained was basically nothing—less than a pound. How could that be true? People are eating 56,000 extra calories and gaining basically no body fat? How can 56,000 extra calories add up to nothing?

That's because extra calories don't have to turn into body fat. They could turn into heat. They could be burned off automatically. Researcher D.M. Lyon in the medical journal *QJM* reported: "Food in excess of immediate requirements…can easily be disposed of, being burnt up and dissipated as heat. Did this capacity not exist, obesity would be almost universal."{86}

Eating more and gaining less is possible because an unclogged fat metabolism system has all sorts of underappreciated ways to process excess calories other than storing them as body fat. In the Mayo Clinic study, researchers measured three of them:

1. Increase the amount of calories burned daily.
2. Increase the amount of calories burned digesting food.
3. Increase the amount calories burned via unconscious activity.

Looking through the lens of the clog analogy, here is what they found:

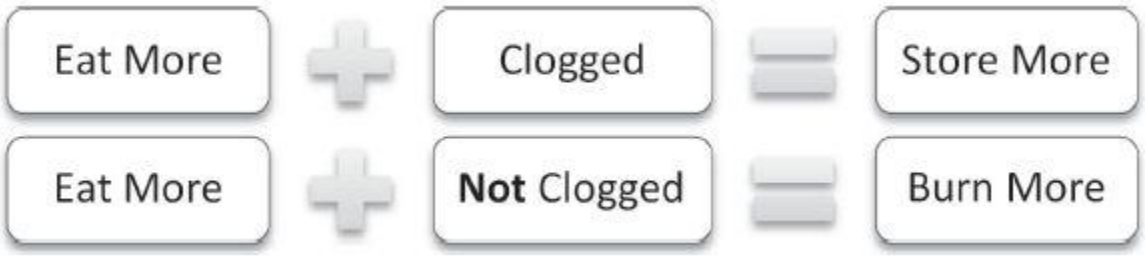
Daily Response to 1,000 Extra Calories

	Clogged	Unclogged
Base Calories Burned Daily	Decreased by 100 calories ☹	Increased by 360 calories ☺
Calories Burned Digesting Food	Increased by 28 calories 😐	Increased by 256 calories ☺
Calories Burned Via Unconscious Activity	Decreased by 98 calories ☹	Increased by 692 calories ☺ ☺
Total Daily Response	**Burned 170 Fewer Calories** ☹	**Burned 1,308 More Calories** ☺☺☺

That is how some people ate 56,000 extra calories and gained essentially nothing. Instead of storing the excess calories as body fat, unclogged fat metabolism systems automatically increased the base amount of calories burned, the amount of calories burned digesting food, and the amount calories burned via unconscious activity. {87}

On the surface this study seems shocking, but we have all seen examples of "eat more, burn more" in our day-to-day lives. Think about naturally thin people you know who eat a lot, exercise a little, and

stay slim. They eat more and burn more. Just as eating less causes the fat metabolism system to slow down, eating more causes an unclogged fat metabolism system to speed up.[88]



Eating less does *not* cause long-term fat loss. Exercising more does*not* cause long-term fat loss. Thinking in these terms won't help you. The issue is not calorie quantity, but poor calorie quality causing a hormonal clog that removes your fat metabolism system's need and ability to burn body fat. One more time, the issue is not calorie quantity, but poor calorie quality.

Unfortunately, the people teaching us about eating and exercise—the United States Department of Agriculture (USDA)—have not seen the science. Take this excerpt from chapter 3 of the USDA's*Dietary Guidelines for Americans*: "Since many adults gain weight slowly over time, even small decreases in calorie intake can help avoid weight gain."[89]

Here's the bureaucrats' basic misunderstanding: If "small decreases in calorie intake" lead to gradual weight loss, does that mean "small decreases in calorie intake" will eventually make us weigh nothing? Of course not. Why? Because our set-point automatically regulates our weight. But if that is true, then how can a small decrease in calorie intake help us avoid weight gain?

It can't.

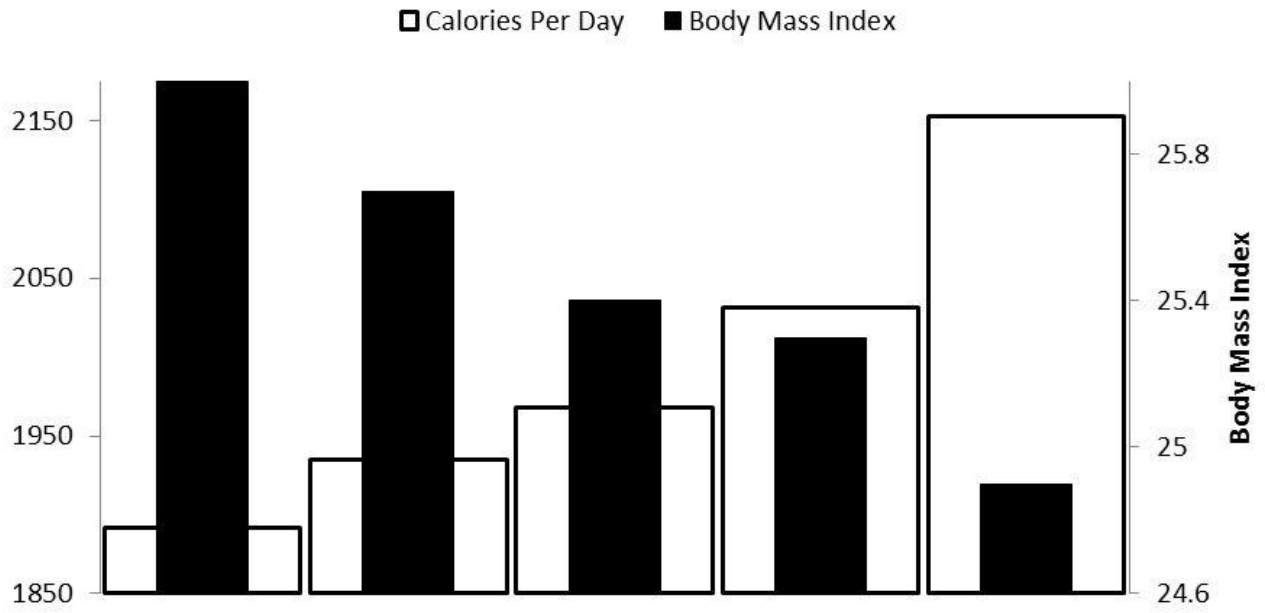
The issue is not that our body wants us to weigh less, but that too many calories per day are blocking it. The issue is that our body does not want us to weigh less thanks to our elevated set-point. The same mechanism preventing "small decreases in calorie intake"from making you weigh nothing also prevents it from effectively causing your body to burn off excess fat right now.[90]

A more promising approach is to unclog and to lower your set-point. And you can do that easily by eating *more* high-quality calories. Remember the Harvard researchers who studied the massive sample of 67,272 people? They did another super-sized study. This one included 51,529 people divided into fifths according to the quantity and quality of calories they ate. This massive sample demonstrated two points:[91]

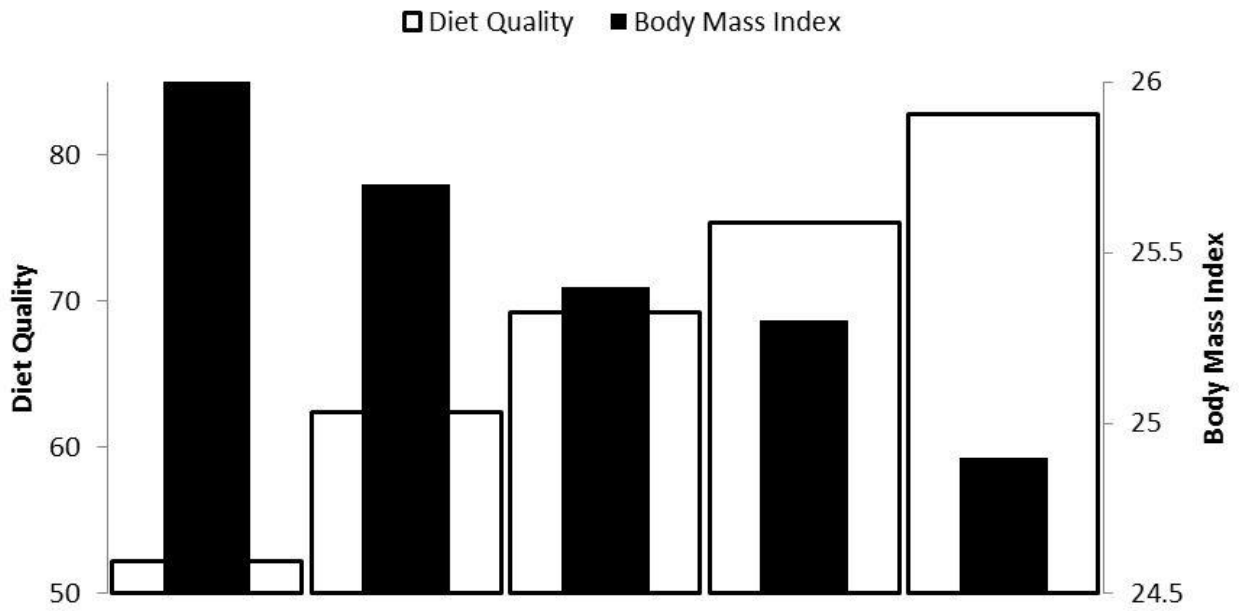
1. Eating more correlated with less body fat

2. Higher-quality food correlated with less body fat

Eating *More* Correlated With *Less* Body Fat



Higher-Quality Food Correlated With *Less* Body Fat



If you can escape the trap of old calorie quantity myths, you will never have to worry about your weight again.Part 2 shows how to increase the quality of your calories, lower your set-point, and get your body burning fat for you.

Doesn't the "Law of Thermodynamics" Prove Eating Less Burns Body Fat?

> *"The principle that weight gain [only depends on calorie quantity] would violate the second law of thermodynamics."*
> R.D. Feinman, State University of New York[12]

We know the traditional approach to fat loss fails 95% of the time, yet common sense seems to tell us: "If you eat less and exercise more, you must burn body fat. Anything else violates the law of thermodynamics."

There are four laws of thermodynamics. The two that apply to burning body fat do not prove that reducing the number of calories eaten makes the fat metabolism system burn *body fat*. They tell us energy cannot be created nor destroyed; energy can only change forms. When people eat less, the fat metabolism system must do *something*. That's it. The laws of thermodynamics prove nothing about *what* the fat metabolism system must do.[13]

Remember how it is easier for your metabolism to slow down than to burn body fat? And remember how it makes more sense to burn calorie-hungry muscle than it does to burn protective body fat? Put those two facts together, and instead of proving that eating less equals long-term fat loss, the applicable laws of thermodynamics prove that eating less makes the body slow down and burn muscle, which leads to long-term fat gain—not fat loss.[14]

Part 2

Myth: A Calorie Is a Calorie

"Attacking the obesity epidemic will involve giving up many old ideas that have not been productive. 'A calorie is a calorie' might be a good place to start."

R.D. Feinman, State University of New York{92}

Chapter 8

The Four Calorie Quality Factors

"*That would be cool if you could eat a good food with a bad food and the good food would cover for the bad food when it got to your stomach. Like you eat a carrot with an onion ring and they would travel down to your stomach. Then they would get there and the carrot would say, 'It's cool, he's with me.'*"

MITCH HEDBERG

Beyond battling our basic biology, calorie balancing is bound to fail us because a calorie is *not* a calorie. The difference in calorie quality is really important. That's because the quality of the calories we eat influences our hormones. Those in turn determine our set-point. We can control our weight, just not the way you have been led to believe.[93]

Why Calorie *Quality* Is Important

The *Calories In – Calories Out* theory of weight control depends on the assumption that our bodies work like balance scales. Balance scales do not measure quality. On a balance scale, a pound of feathers weighs the same as a pound of lead. Quality is irrelevant. So on a balance scale, 300 calories of vegetables is the same as 300 calories of pasta. The only problem is that the body is not a balance scale.

Body ≠ Balance Scale

Let's look at the issue another way. Breathing in smoke-filled air for thirty years does something different to our respiratory system than breathing in the same quantity of fresh air. In the same fashion, putting 2,000 calories of low-quality food into our fat metabolism system does something different than putting in the same quantity of high-quality food. Quality counts. Our bodies do not work like balance scales.[94]

Marshall University conducted a childhood obesity study where researchers divided obese kids into two groups:

After two months, the Change Quality kids lost eleven pounds, but the Cut Quantity kids *gained* five pounds. We do not have to go on a low-carbohydrate diet, but it is a great example of how critical calorie quality is. People can eat and eat and eat and can still burnbody fat because they have changed the quality of their calories.[95]

The quality of calories depends on four fascinating factors:

1. **S**atiety – How quickly calories fill us up and how long they keep us full

2. **A**ggression – How likely calories are to be stored as body fat

3. **N**utrition – How many nutrients—aka protein, vitamins, minerals, essential fatty acids, etc.—calories provide

4. **E**fficiency – How many calories can be stored as body fat

The more Satisfying, unAggressive, Nutritious, and inEfficienct a calorie is, the higher its quality. The more SANE it is. The more body-fat-burning hormones it triggers. The more it clears our clog and prevents overeating. The more it restores our *ability* to burnbody fat and maximizes our *need* to burn body fat.

The more unSatisfying, Aggressive, not Nutritious, and Efficient a calorie is, the lower its quality. The more inSANE it is. The more body-fat-storing hormones it triggers. The more it creates a clog and encourages overeating. The more it destroys our *ability* to burnbody fat and removes our *need* to burn body fat.

The more we understand the four calorie-quality factors, the more clearly we will see how eating *more* high-quality SANE food is the only practical way to burn body fat long term. When you stay full of SANE food, you will not have any room for clog-causing inSANE calories. When we are totally full from a super-sizedSANE supper, skipping the sundae after isn't a burden. It's a blessing in

disguise. By staying full of SANE calories, we clear our clog, drop our set-point, and enable our fat metabolism system to burn body fat for us automatically.{96}

> "*…for the vast majority of people, being overweight is not caused by how much they eat but by what they eat. The idea that people get heavy because they consume a high volume of food is a myth. Eating large amounts of the right food is your key to success…*"
>
> **JOEL FUHRMAN, DOCTOR AND AUTHOR**{97}

Sound too good to be true? In all of the studies that follow, everyone ate the exact same quantity of calories, but one group's calories were of much higher quality (were much more SANE) than the other groups':

- University of Florida researcher J.W. Krieger analyzed eighty-seven studies and found that those people who ateSANE calories lost an average of twelve more pounds ofbody fat compared to those who ate an equal quantity of inSANE calories.{98}

- C.M. Young at Cornell University split people into three groups, each eating 1,800 calories per day, but at different levels of SANEity. The most SANE group lost 86.5% morebody fat than the least SANE group.{99}

- In the *Annals of Internal Medicine*, F.L. Benoît compared a reduced-calorie inSANE diet to a reduced-calorie SANEdiet. After ten days the SANE diet burned twice as muchbody fat.{100}

- Additional studies by researchers U. Rabast (1978,1981), P. Greene (2003), N.H. Baba (1999), A. Golay (1996), M.E. Lean (1997), C.M. Young (1971), and D.K. Layman (2003) all show that people who ate SANE calories lost an average of 22% more weight than those who ate the *exact* same quantity of inSANE calories.{101}

The science of SANE eating is surprising and encouraging. And keep in mind that you and I do not always have to eat SANEly. SANE eating does not require perfection. When you eat the SANEway, you will burn as little or as much body fat as you want to. Want to burn up to two pounds of body fat per week? Eat so much SANE food that you are too full for inSANE food. Want to burn up to two pounds of body fat per month? Eat less SANE food and some inSANE food. You make the decision. The more SANE food you eat, the slimmer you will be.

Let's look at each of the four factors of SANE eating. We'll start with Satiety. By the way, if the word seems oddly familiar, it comes from the same root as *satisfying.* You know what that means. Chapter 9 will reveal how to feel more satisfied while looking and feeling better.

Chapter 9

Calorie Quality Factor 1: Satiety

> "*Food intake occurs until signals arising largely from the gastrointestinal tract are interpreted by the central nervous system to produce…satiety"*
>
> **D.S. WEIGLE, UNIVERSITY OF WASHINGTON**[102]

A calorie is not a calorie when it comes to filling us up and keeping us full. Ever notice how a six-pack of beer makes people eat more pizza while five cans of tuna or thirty cups of broccoli—the same quantity of calories—would make them uncomfortably full? The capacity of calories to make us and keep us full is called **S**atiety. The fewer calories needed to fill us up and the longer those calories keep us full, the higher their Satiety.[103]

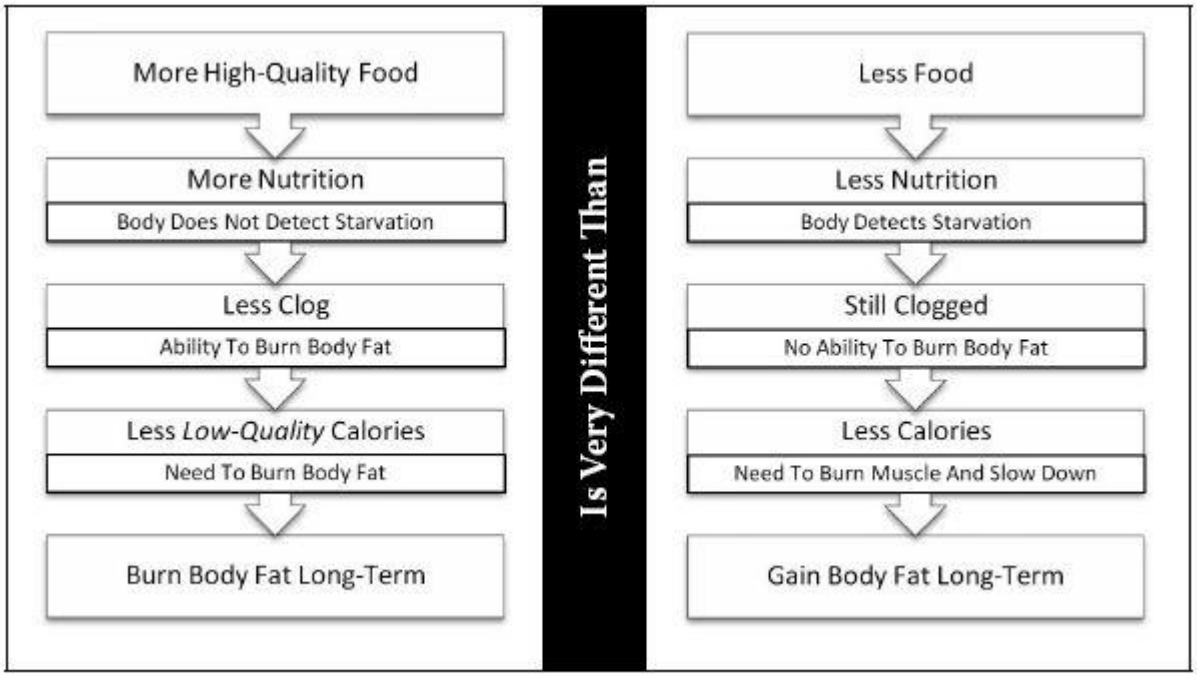
A study in the *Annals of Internal Medicine* showed that people who ate as much high-**S**atiety protein and natural fat as they wanted while avoiding low-Satiety starches and sweets, unconsciously avoided 1,000 low-quality calories per day. Even better, these folks felt as full as other people in the study who ate 1,000 more lower-Satiety calories.[104]

Why is eating 1,000 fewer low-quality calories per day a good thing? We have already proven how harmful starvation is. Yet there is a big difference between depriving our bodies of nutrition—starving ourselves—and being unable to fit as many calories into our stomach as we used to—by eating more high-Satiety foods. That's because high-Satiety foods contain dramatically more Nutrition than low-Satiety foods

When we eat high-Satiety food, we get much more Nutrition and become full much more quickly. *More* food and *more* Nutrition is entirely different from *less* food and feeling hungry. The surplus of Nutrition from high-Satiety food takes starvation off our fat metabolism system's radar. After all, how could it think we are starving since we are taking in *more* Nutrition? Then it is free to burn body fat instead of slowing down or burning muscle.

In addition to keeping us too full for low-quality foods, high-Satiety foods have been shown to help clear our hormonal clog. That leads to long-term fat loss—not starvation.

How High-Satiety Eating Avoids Starvation's Side Effects



So we need to find the answers to two questions: What increasesSatiety? And how do we eat more high-Satiety calories?

The water, fiber, and protein in food increase its Satiety. And we eat more high-Satiety calories by eating more water-, fiber-, and protein-rich foods such as non-starchy vegetables, seafood, lean meat, fat-free or low-fat cottage cheese, fat-free or low-fat *plainGreek* yogurt, eggs, legumes, and fruits.

Fiber: From the Mayo Clinic: "Dietary fiber, also known as roughage or bulk, includes all parts of plant foods that your body cannot digest or absorb. Unlike other food components such as fats, proteins or carbohydrates—which your body breaks down and absorbs—fiber isn't digested by your body." Taking up space in our digestive system until it "keeps us regular," fiber keeps us full for a long time.

{105}

Non-Starchy Vegetables: The most SANE vegetables. Basically anything other than corn, potatoes, turnips, yams, parsnips, radishes, etc. Common non-starchy vegetables include: broccoli, carrots, cauliflower, celery, cucumber, eggplant, lettuce, mushrooms, onions, peas, peppers, spinach, squash, and zucchini. Generally speaking, vegetables which grow above ground—except corn…which is a starch—are super-SANE non-starchy vegetables.

We're going to get scientific for a second. We have two areas in our brain that tell us when we feel satisfied: the lateral hypothalamus and ventromedial hypothalamus. Think of them as our Satiety centers. They send their respective "you are hungry" or "you are satisfied" signals depending, basically, on three factors:[106]

1. How much do the calories we are eating stretch our digestive organs (our stomach, etc.)?

2. How much do the calories we are eating impact short-termSatiety hormones?

3. How much do the calories we are eating stimulate long-term Satiety hormones?

How much any given food stretches our stomach and other digestive organs is mostly determined by the amount of water and fiber in it. More water and fiber means bigger food. Bigger food means more stretch. More stretch means we get full faster and stay full longer.

That is why 200 calories of wet, fibrous celery is more filling than 200 calories of dry, fiber-free gummy bears. Calorie for calorie, celery is about thirty times the size of gummy bears, stretches our stomach and other digestive organs about thirty times more, and is therefore thirty times more satisfying.[107]

The amount of protein that food contains is also important. T.L. Halton at Harvard University concluded at the end of his study: "Protein, along with fiber and water, were significantly and positively correlated with satiety scores." The amount of protein in food impacts the other two factors influencing whether our brain is telling us we are hungry or full: short- and long-term Satiety hormones. More protein means more "full" signals being sent to our brains' Satiety centers via our hormones. More protein enables us to "full" ourselves into burning bunches of body fat.[108]

These scientific findings have been repeated in numerous other clinical trials:

- **University of Washington Study:** People ate an unlimited quantity of calories while having the percentage of protein in their diet increased from 15% to 30%. They responded by unconsciously avoiding 441 excess calories per day without feeling hungry.[109]

- **University of Sussex Study:** People ate either a high-protein or a low-protein meal. The high-protein people unconsciously ate 26% less than the low-protein people at their next meal without feeling hungry.[110]

- **University of Leeds Study:** People ate the exact same weight of food, but one group ate a higher percent from protein. The higher-protein group unconsciously ate at least 19% fewer calories than the lower-protein group without feeling hungry.[111]

- **Karolinska Hospital Study**: People ate more or less protein for lunch. The more-protein group got full on 12% fewer calories at dinner than the less-protein group.[112]

There is no lack of proof. Here is a summary of what researchers said in their studies:

- “Protein is more satiating than carbohydrate and fat in the short term…and in the long term.” – M.S. Westerterp-Plantenga, Maastricht University{113}

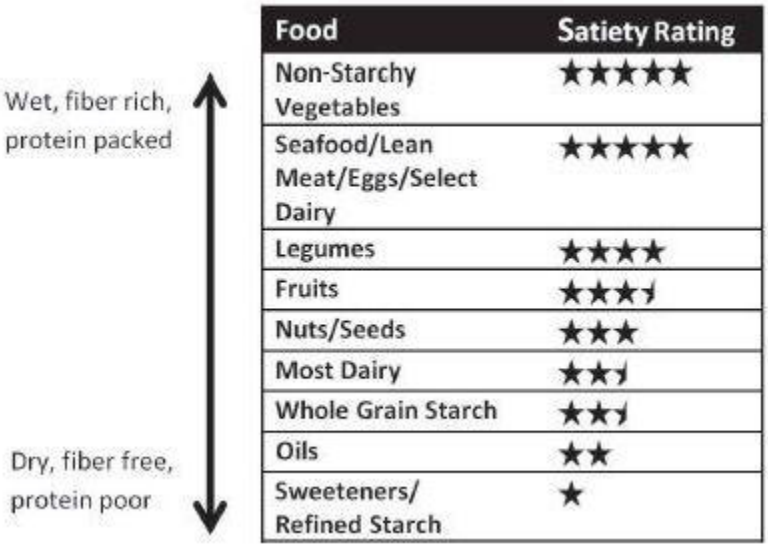
- “An increase in dietary protein from 15% to 30% of energy at a constant carbohydrate intake produces a sustained decrease in…caloric intake.” – D.S. Weigle, University of Washington{114}

- “Protein appears to be the macronutrient that suppresses energy intake to a greater extent than any of the other macronutrients.” – John E. Blundell, University of Leeds{115}

- “Diets high in protein…resulted in greater weight losses than traditional low-fat diets… This effect is likely due to increased satiety caused by increased dietary protein.” – D.A. Schoeller, University of Wisconsin-Madison{116}

In summary: More protein means more Satiety. More Satiety means we are too full for low-quality food. And less low quality food means less clogging, a lower set-point, and more burning ofbody fat. {117}

How to Eat More Satisfying Foods



Food	Satiety Rating
Non-Starchy Vegetables	★★★★★
Seafood/Lean Meat/Eggs/Select Dairy	★★★★★
Legumes	★★★★
Fruits	★★★½
Nuts/Seeds	★★★
Most Dairy	★★½
Whole Grain Starch	★★½
Oils	★★
Sweeteners/ Refined Starch	★

Select Dairy: Dairy products which have more than 60% of their calories coming from protein and contain no added sweeteners. The most common examples are fat-free or low-fat cottage cheese and fat-free or low-fat *plain Greek* yogurt.

Chapter 10

Calorie Quality Factor 2: Aggression

> "*The crucial factor is not how much is eaten…or how much is expended, but how…those calories are utilized and made available when needed."*
>
> **GARY TAUBES, IN GOOD CALORIES, BAD CALORIES**[118]

A calorie is *not* a calorie when it comes to how likely it is to be stored as body fat. We can think about human biology like this: When we eat, a traffic cop tells calories where to go. How Aggressively calories approach this traffic cop determines their chances of being stored as body fat.

The traffic cop directs calories to repair, fuel, or fatten us—in that order. It first makes sure we have enough fuel to rebuild anything that has broken down. Next, it keeps us doing whatever we are doing. Last, it seeks to protect us from starving. As long as we have a calm and consistent flow of calories coming into our system, the cop does a great job directing them.

However, when calories approach the traffic cop Aggressively, it gets angry, throws its clipboard down, and sends those calories to fat cells. When we eat a plate of pasta and a breadstick, a massive wave of starch starts screaming all at once and the traffic cop says, "Oh, really. That's how you want to do it? To the fat cells…all of you." Like the rest of us, our body does not do its best work when dealing with a bunch of Aggressive requests all at once.

To keep calories out of our fat cells, we do not need to worry about eating less food. We need to worry about the *quality* of the food we are eating. Our body is fine with a lot of food. It is Aggressive food that aggravates it.[119]

Five hundred calm calories creeping into the bloodstream over many hours are less likely to be stored as body fat than five hundred Aggressive calories rushing in all at once. Any time the body has more calories available than it can deal with at one time, it stores them as body fat. That is why the *glycemic index* and *glycemic load* have become all the rage. They are handy measures of calories' Aggression.[120]

Glycemic Index: A measure of foods' Aggression. The higher a food's glycemic index, the more Aggressive it is.

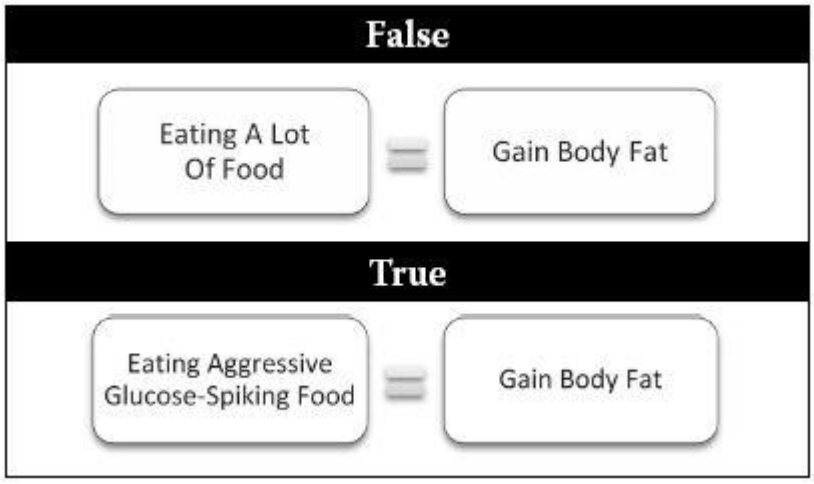
Glycemic Load: A measure similar to glycemic index, which also considers quantity. The glycemic load measures a food's Aggression combined with the calories in a portion of it.

{121}

To best understand calories' Aggression, glycemic index, and glycemic load, we first need to understand how our body fuels itself. It does not run on the food we eat. It runs primarily on glucose, a sugar our body creates from the food we eat. That may seem like a meaningless distinction, but it is not.

Storing body fat is not caused by eating a lot of food. Storing body fat is about a response to eating food that causes us to have more glucose in our bloodstream than we can use at one time. That is why calories' Aggression matters so much. The more Aggressive calories are, the faster they increase the levels of glucose in our bloodstream. The faster calories increase our glucose levels, the more likely we are to have more glucose than the body can deal with at one time. That's when it shuttles the excess into our fat cells.

Why the Distinction Between Food and Glucose Matters



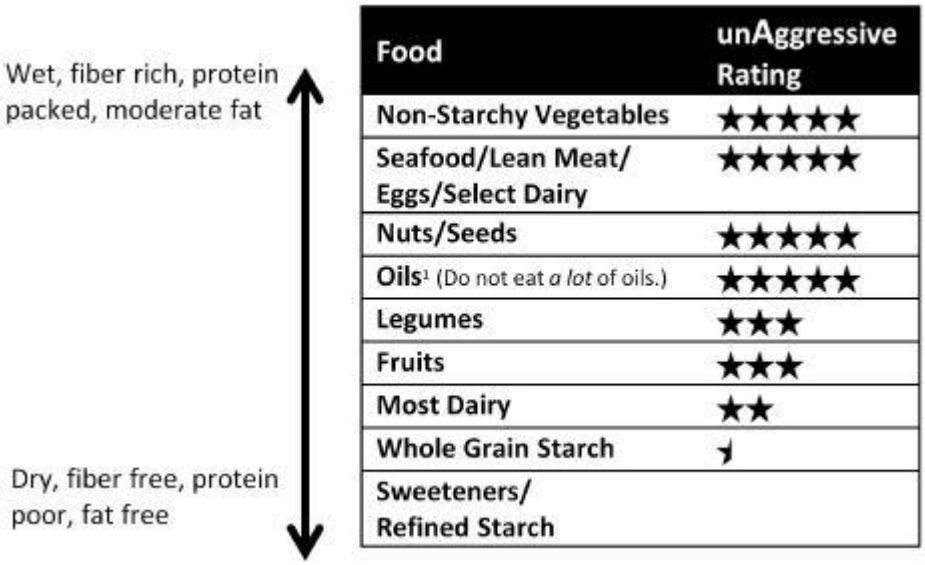
The distinction between "a lot of food" and "a lot of glucose right now" is important. We can eat all the food we want and never gainbody fat if the glucose the food generates does not exceed the glucose level we can deal with right then. That is why the glycemic index, glycemic load, and low-glycemic diets like the *South Beach Diet* and the *Atkins' Diet* have gotten so much press. They are all tools which help people avoid Aggressive foods.

Fortunately, we do not need to worry about glycemic index or glycemic load because SANE foods prevent excess glucose from getting into our bloodstream. If we simply focus on increasing the

amount of water-, fiber-, and protein-packed high-Satiety foods we are eating, we will automatically eat low-glycemic-index foods, ensure a low glycemic load, and store less body fat.{122}

Avoiding Aggressive calories has some terrific additional benefits. It lowers our risk of coronary heart disease, diabetes, unhealthy cholesterol levels, and heart disease. We do not get heavy and sick by eating a lot of food. We get that way by eating a lot of low-quality Aggressive food.{123}

How to Eat More (High-Satiety) UnAggressive Foods



Food	unAggressive Rating
Non-Starchy Vegetables	★★★★★
Seafood/Lean Meat/ Eggs/Select Dairy	★★★★★
Nuts/Seeds	★★★★★
Oils[1] (Do not eat *a lot* of oils.)	★★★★★
Legumes	★★★
Fruits	★★★
Most Dairy	★★
Whole Grain Starch	½
Sweeteners/ Refined Starch	

Chapter 11

Calorie Quality Factor 3: Nutrition

"*Low energy density [high **N**utrition] is not an inevitable characteristic of low-fat diets; as many of the low-fat foods presently being promoted in our commercial food supply are based on sugar or highly refined carbohydrates."*

W.C. WILLETT, HARVARD UNIVERSITY{124}

Two hundred and fifty calories of Twinkies are not the same as 250 calories of broccoli. Clearly a calorie is *not* a calorie when we are discussing the Nutrition we need to burn body fat and be healthy. So what is nutritious? Like everything else, the key toNutrition is *quality*, but all we are ever told about is quantity—aka the Nutrition facts labels on food.

The information found on food labels tells us half of what determines Nutrition: the quantity of nutrients in the food. The other half is the quality of the calories we are getting along with those nutrients.

Talking merely about the quantity of nutrients in food leads to a very fattening view of Nutrition. Consider the American Heart Association's endorsement logos on boxes of sugar-stuffed cereal because the cereal was "enriched." A high quantity of nutrients combined with low-quality calories is not nutritious.[125]

Most people already know that thinking about the *quantity* of nutrients in food is not sufficient. We know that ten doughnuts are not ten times as nutritious as one doughnut. We have to consider nutrients relative to calories, or Nutrition *quality*.

Determining Nutrition quality is simple. We take the nutrient quantity information provided on Nutrition labels and divide it by the number of calories in a serving of the food. This provides the food's Nutrition *per calorie*. Many nutrients per calorie—provided by non-starchy vegetables, seafood, lean meats, select dairy, and fruits—means high Nutrition. Few nutrients per calorie—see starches and sweets—means low Nutrition.

For example, here's how one cup of enriched wheat flour compares to one cup of spinach in terms of nutrient *quantity*. I've shaded the cell of the food with more of the given nutrient when we measure by the cup.

Nutrient *Quantity* of Enriched Wheat Flour vs. Spinach

(Nutrients Per Cup)

Nutrients (% DV)[1]	Enriched Wheat Flour	Spinach
Vitamin A	0%	56%
Vitamin C	0%	14%
Vitamin E	3%	3%
Vitamin K	1%	181%
Thiamin	74%	2%
Riboflavin	41%	3%
Niacin	52%	1%
Vitamin B6	3%	3%
Folate	63%	15%
Calcium	2%	3%
Iron	34%	5%
Magnesium	9%	6%
Phosphorus	13%	1%
Potassium	4%	5%
Zinc	8%	1%

Looking at quantity, enriched wheat flour seems more nutritious than spinach. Here's why that's misleading. One cup of enriched wheat flour contains 495 calories. One cup of spinach contains 7 calories. Looking at quality—nutrients *per calorie*—we see something much different—and more useful.

Nutrient *Quality* of
Enriched Wheat Flour vs. Spinach
(Nutrients Per 250 Calories)

Nutrients (% DV)	Enriched Wheat Flour	Spinach
Vitamin A	0%	2000%
Vitamin C	0%	500%
Vitamin E	2%	107%
Vitamin K	1%	6464%
Thiamin	37%	71%
Riboflavin	21%	107%
Niacin	26%	36%
Vitamin B6	2%	107%
Folate	32%	536%
Calcium	1%	107%
Iron	17%	179%
Magnesium	5%	214%
Phosphorus	7%	36%
Potassium	2%	179%
Zinc	4%	36%

When we make a fair comparison—comparing 250 calories of enriched wheat flour against 250 calories of spinach, instead of comparing 495 calories of enriched wheat flour against 7 calories of spinach—we see that spinach is dramatically more nutritious than enriched wheat flour.{126}

Looking at Nutrition this way is useful for two reasons:

1. It gives us a more accurate view of which foods are nutritious.

2. It helps us burn body fat instead of slowing down or burning muscle.

Like Satiety and Aggression, a food's Nutrition depends on water, fiber, and protein. Water and fiber have no calories, and protein calories do not "count" as much as carbohydrate or fat calories (more on this in chapter 12). Since a food's Nutrition is found by dividing the number of nutrients by the

number of calories, more water, fiber, and protein reduce the relative number of calories in the food and therefore increase its Nutrition.{127}

$$\frac{\text{Nutrients}}{\downarrow \text{Calories}} = \uparrow \text{Nutrition}$$

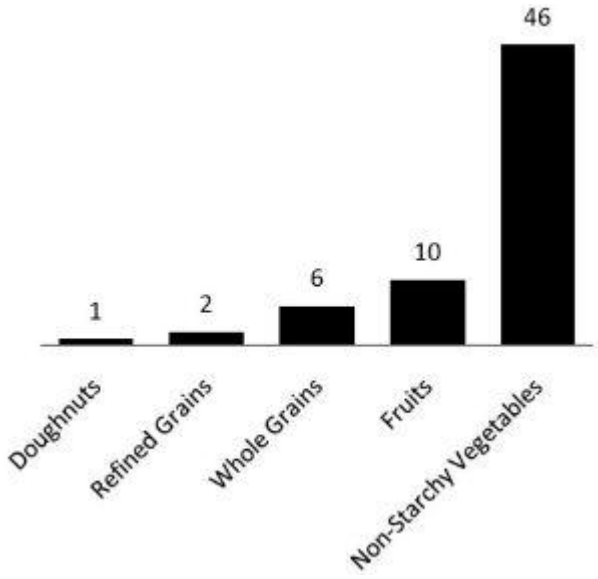
Viewing Nutrition in terms of water, fiber, and protein gives us a dramatically different view of which foods are nutritious. Considercereal, bread, or “healthy” whole grain starches. They are all dry and contain little protein, so they are starting out zero for two. Fiber is their only hope.

The companies selling starchy products say we get a great deal of fiber from their whole-grain products, but is that actually true?Well, the four grams of fiber in 250 calories of whole-grain cereal is 100% more fiber than the two grams of fiber in 250 calories of refined-grain cereal, but that is only comparing grains. You have to ask if grains are a good source of Nutrition relative to more water and protein-packed foods we could be eating. So are whole grains good sources of Nutrition relative to non-starches?

Not even close.

Sure, whole grains are better than processed grains, but that is like saying one broken leg is better than two. It does not make either option good. Look at the fiber *per calorie* in whole grains compared to more water and protein-packed foods:

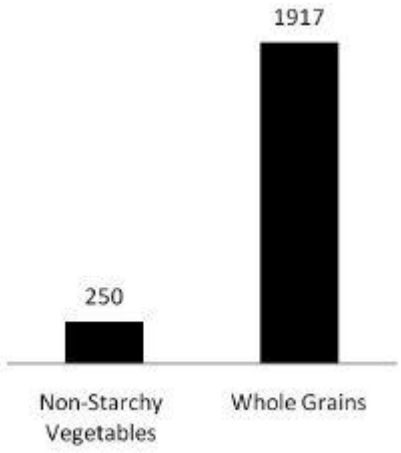
Grams of Fiber in 250 Calories{128}



Whole grains do have six times more fiber than doughnuts, but non-starchy vegetables have nearly fifty times more fiber. Whole grain toast is better than a doughnut, but that is not saying much considering the other foods we could be eating. For example, if we eat 250 calories worth of non-

starchy vegetables, we will get about forty-six grams of fiber. To get the same amount of fiber from whole grains, we would have to eat a whopping 1,917 calories worth of whole grains.

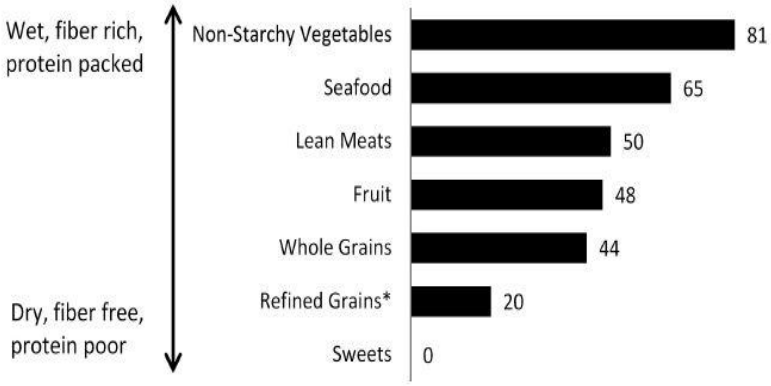
Number of Calories Needed to Get the Same Amount of Fiber



Starch is an excellent example of how careful you have to be when trying to judge Nutrition—comparing nutrients per calorie. We could be eating all sorts of whole-grain starches thinking we are at the top of the Nutrition mountain, while we are actually sitting at the bottom getting buried with low-quality calories. A littleNutrition plus a lot of unSatisfying and Aggressive calories is not a happy combination.

Fortunately for us, we do not need to do all sorts of math withNutrition labels to maximize the Nutrition of our diets. Researchers at Colorado State University did the math for us. They analyzed theNutrition quality of the most common foods and found that if wemaximize the Satiety and minimize the Aggression of our diet—by eating more water-, fiber-, and protein-packed foods—we will get the most Nutrition per calorie automatically.

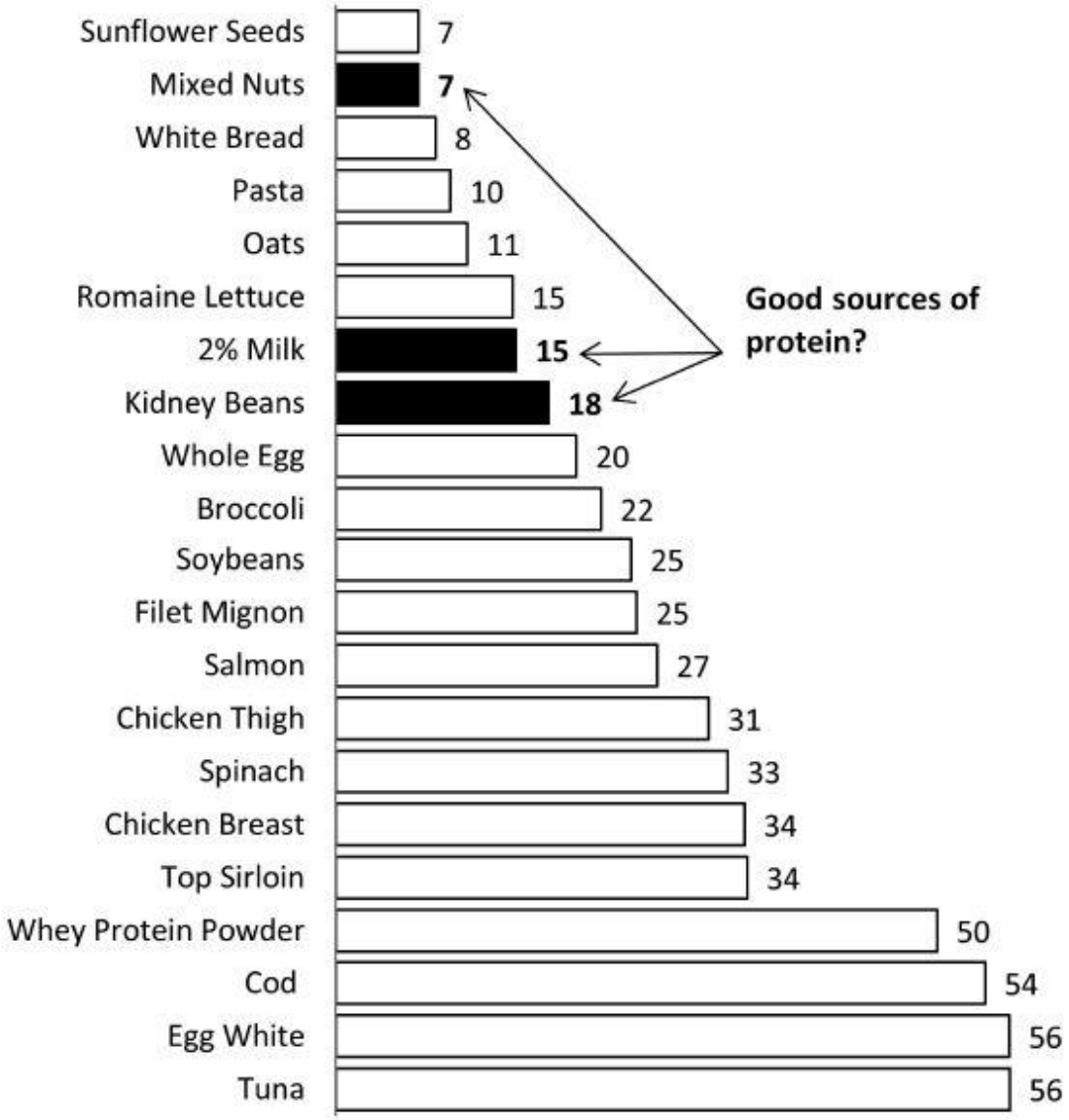
Nutrition Quality Per Calorie{129}



(*Data on refined grains is an estimate)

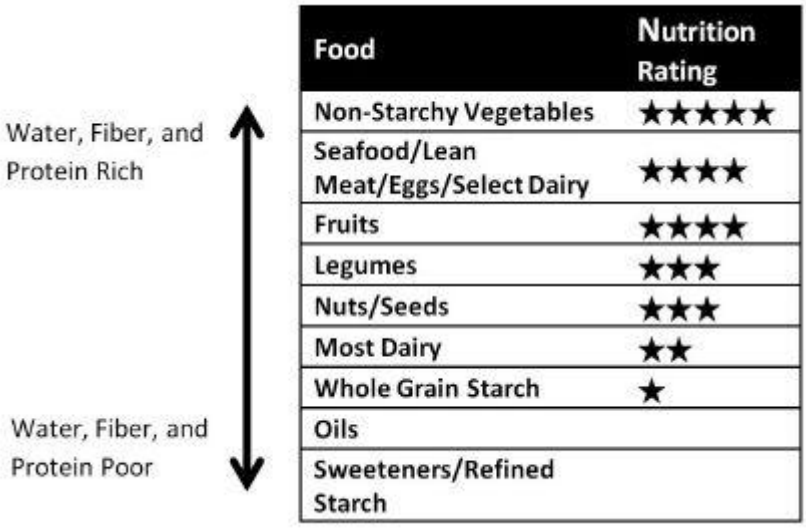
If you would like to calculate calorie quality for yourself, the math is easy and informative. For example, carefully check the foods people call “good sources of protein,” such as beans, milk, and nuts. Are these foods good sources of protein per calorie? Divide the grams of protein in a serving by the number of calories.

Grams of Protein in a 250 Calorie Serving[130]



Nutrition quality also affects the need to burn body fat instead of the need to slow down and burn muscle. When we eat more water-, fiber-, and protein-packed food, we get more Nutrition while avoiding overeating—or overwhelming the body with glucose. Combine *more* nutrients with less glucose, and we burn body fatwithout the negative side effects of eating less. After all, our fat metabolism system has more Nutrition than ever before. A surplus of Nutrition is the opposite of starvation.[131]

How to Eat More Nutritious Foods



Food	Nutrition Rating
Non-Starchy Vegetables	★★★★★
Seafood/Lean Meat/Eggs/Select Dairy	★★★★
Fruits	★★★★
Legumes	★★★
Nuts/Seeds	★★★
Most Dairy	★★
Whole Grain Starch	★
Oils	
Sweeteners/Refined Starch	

Chapter 12

Calorie Quality Factor 4: Efficiency

"*Efficiency…is dependent on…the nature of the fuel and the processes enlisted by the organism. A simple example is the inefficiency of low-test gasoline…If a 'calorie is a calorie'…were true, [then gasoline is gasoline and] nobody would pay extra for high test gasoline."*

R.D. FEINMAN, STATE UNIVERSITY OF NEW YORKDOWNSTATE MEDICAL CENTER{132}

Last but far from least, a calorie is *not* a calorie when it comes to how Efficiently our fat metabolism system converts it into body fat. If Satiety measures how quickly calories fill us up, andAggression shows how likely calories are to be stored as body fat, and Nutrition determines how many nutrients calories provide, thenEfficiency is concerned with how easily calories are stored as body fat. The more inEfficient calories are at being stored as body fat, the better. Keeping the science of SANE eating simple, fiber and protein are entirely inEfficient.{133}

Explaining the inEfficiency of fiber is easy. Fiber is not digested, and therefore can never be stored as body fat. The body tries and tries to digest fiber, but then after burning a bunch of calories trying to break down and absorb fiber, it gives up and passes fiber through the digestive system. That is why fiber helps keep us regular.

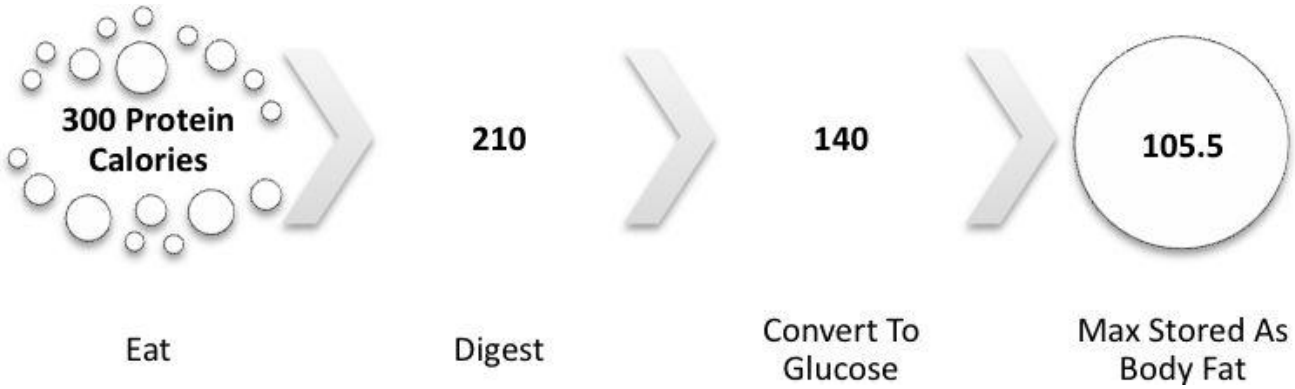
Explaining the inEfficiency of protein is a bit more involved. To start with let's talk about the calories we burn digesting food. Our body digests fat and carbohydrate Efficiently. However, it takes our body five to ten times more energy to digest protein. In fact, about 30% of the calories we get from protein are burned digesting it. Protein's inEfficiency doesn't stop there.{134}

Even after we burn 30% of protein calories during initial digestion, the road from chicken breast to love handles is far from over. Correction: there is no road from chicken breast to love handles. Protein cannot be stored as body fat. However, there is a super-highway shuttling glucose to our fat cells. So when we have excess protein lying around, excess protein is sent to the liver to be converted into glucose.

The process of converting protein into glucose is called g*luconeogenesis* (*gluco* = sugar, *neo* = new, *genesis* = creation). This process burns another 33% of the original protein calories eaten. Combine the third of protein calories burned during digestion with the third of those remaining calories burned during g*luconeogenesis*, and you and I are left with a measly 47% of the original protein calories. What started off as 300 calories of juicy protein is reduced to 140 calories of glucose in the bloodstream. But wait, there's more.{135}

Converting that newly formed glucose into body fat consumes another 25% of the glucose calories. So when everything is said and done, even if we never move a muscle, only 35% of the calories we get from protein can be stored as body fat. You read that correctly. Over two-thirds of calories from protein are burned converting protein into a compound which can be stored as body fat. {136}

The InEfficient Path from Protein to Glucose to Body Fat

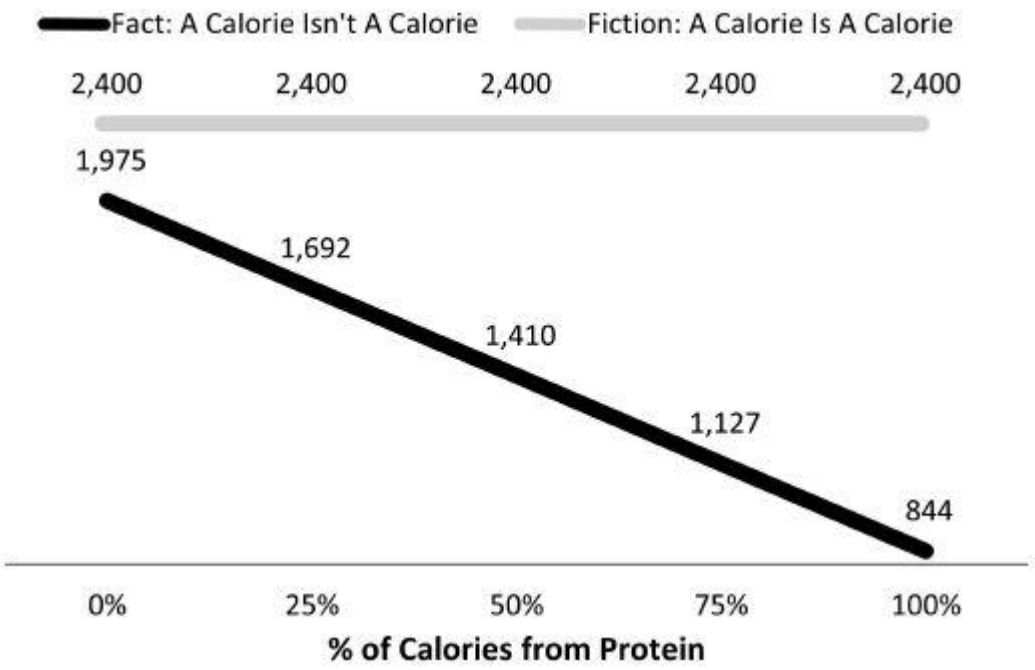


If we followed the same digestion process for starch, we would find that 211 of 300 starch calories can be stored as body fat. That means 70% of calories from starch can be stored as body fat. In other words, calories from starch are twice as Efficient at becoming body fat as calories from protein.

	Calories from Protein	Calories from Starch
Eaten	300	300
Digested	210	282
Converted into Glucose	140	282
Converted into Body Fat	105.5	211
105.5 x 2 = 211 Calories from starch are twice as Efficient at being converted into body fat as calories from protein		

Demonstrating the difference an inEfficient diet can make on a daily basis, consider the maximum daily calories we could ever convert into body fat if we got 0%, 25%, 50%, 75%, or 100% of a 2,400 calorie diet from protein.{137}

The InEfficient Path from Protein to Glucose to Body Fat{138}



This graph does not mean we should eat 100% protein. Yet we can eat more and burn more by eating more protein-packed (and fiber-packed) food. And keeping long-term fat loss simple, the same techniques we are using to increase Satiety, decrease Aggression, and increase Nutrition, also decrease the Efficiency of our calories.

How to Eat More InEfficient Foods

More fiber- and protein-packed per calorie

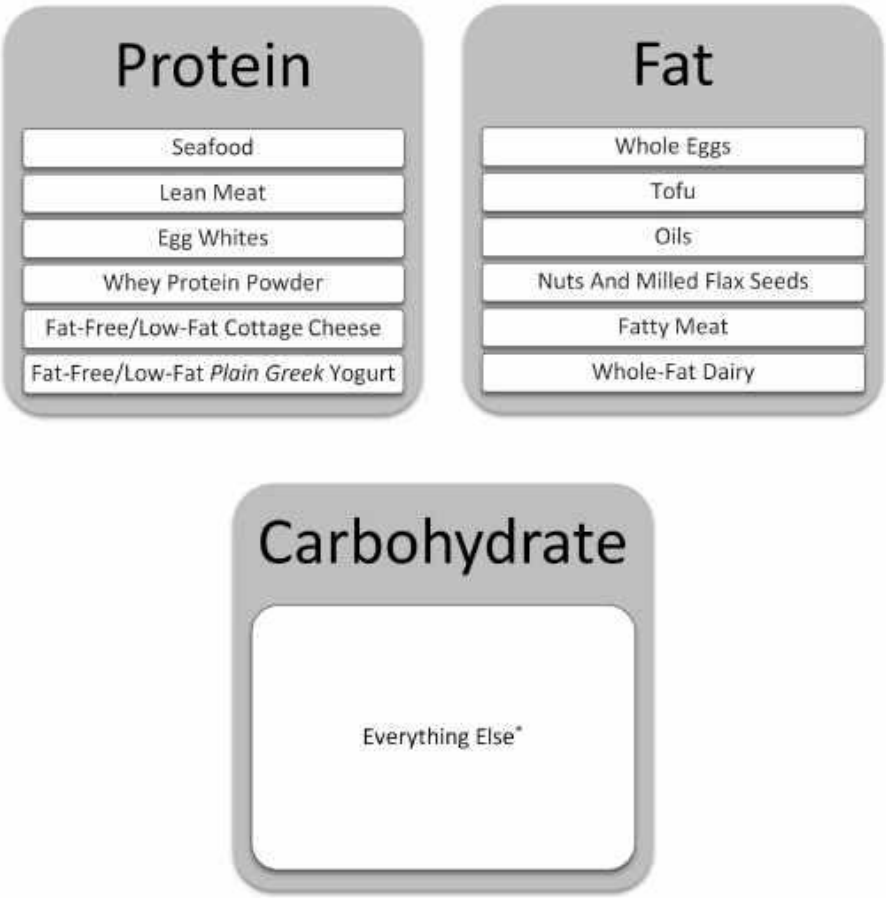
Less fiber- and protein-packed per calorie

Food	inEfficiencyRating
Seafood/Lean Meat/Eggs/Select Dairy	★★★★★
Non-StarchyVegetables	★★★★★
Legumes	★★★
Nuts/Seeds	★★½
Most Dairy	★★½
Fruits	★★
Whole Grain Starch	★
Sweeteners/ Refined Starch	½
Oils	

How Body Fat Is Created

With all this talk of calories being more or less Efficient at being stored as body fat, it is worth quickly covering how body fat gets created. The process of creating new body fat is called *lipogenesis* (*lipo* = fat and *genesis* = creation). And with genesis in mind, in the beginning there was food, and food was classified by its dominant macronutrient.

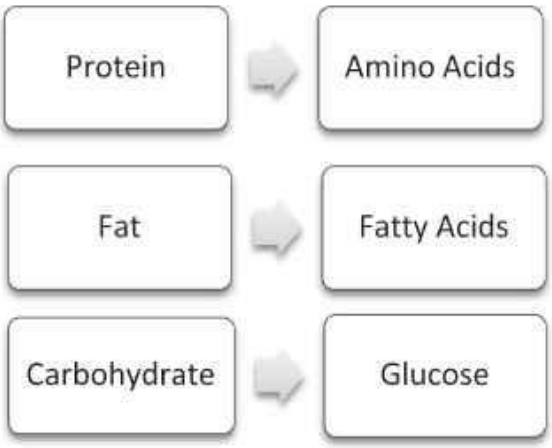
The Three Macronutrients and Their Common Sources



*Vegetables, fruit, most dairy, beans, and everything else is a carbohydrate.
They are not proteins or fats, so what else could they be?

As soon as our fat metabolism system gets its hands on protein, fat, or carbohydrate, it turns them into amino acids, fatty acids, or glucose, respectively.

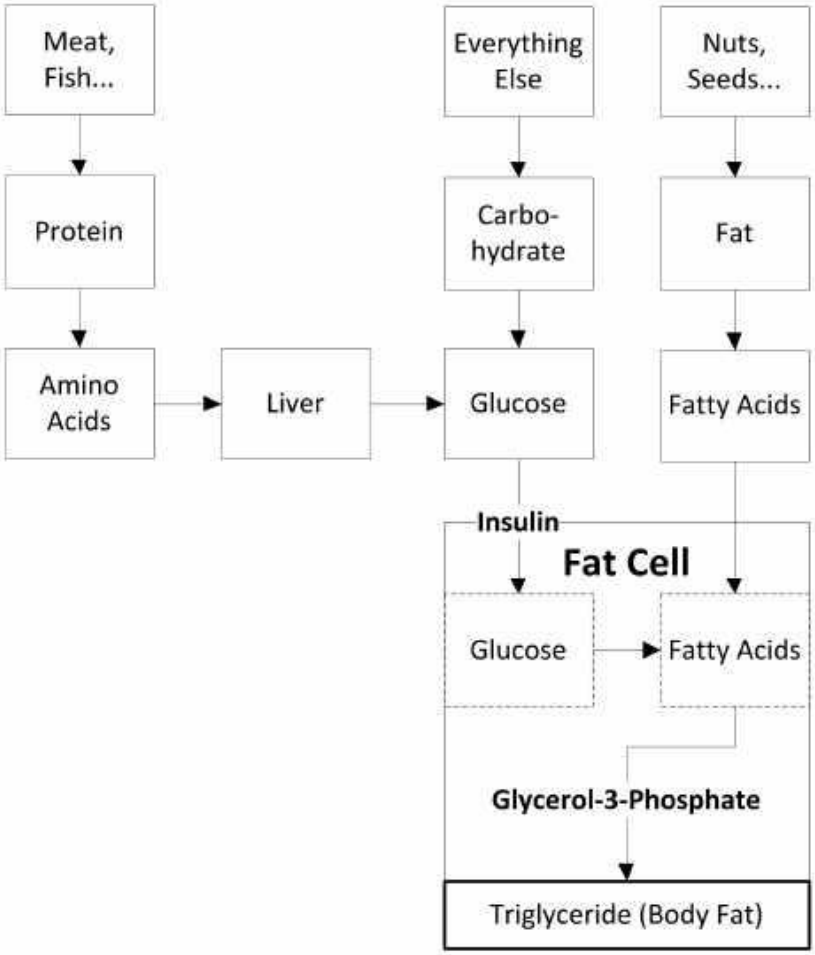
The First Step from Food to Body Fat



This first step is important because it is another example of why a calorie is *not* a calorie. Once fat is converted to fatty acids, if there are more fatty acids around than we currently need, all of them are sent off to be stored as body fat. The glucose we get from carbohydrates does not work that way. Glucose cannot be stored as body fat without the hormone insulin. And then there are the inEfficient amino acids from protein. Amino acids must first be converted into glucose. Once they become glucose, they need insulin or they cannot be stored as body fat.

Now let's assume the hormone insulin is making its rounds and we have glucose on its way to fat cells. At that point all remaining glucose is converted into fatty acids and we are one step away from new body fat. During the last step in the process all those fatty acids combine with a glycerol molecule to form triglyceride—aka body fat. This is called esterification and it is not possible without a substance called glycerol-3-phosphate.[8]

From Food to Body Fat



How is this scientific knowledge useful? Three ways:

1. A calorie is not a calorie, considering that protein is five calorie-burning steps away from body fat—convert into amino acids, convert to glucose, meet up with insulin, transform to fatty acids, and hook up with glycerol-3-phospate—while fat is only two calorie-burning steps away—convert into fatty acids and hook up with glycerol-3-phospate.
2. It is impossible to store glucose as body fat without enough insulin. The more Aggressive a calorie is, the more insulin it triggers. That is one of the reasons we do not like Aggressive calories.
3. No body fat gets stored without glycerol-3-phospate. Guess where we get the most glycerol-3-phospate? InSANE starches and sweets. Carbohydrates are not bad.

Non-starchy vegetables are carbohydrates and they are the most SANE foods around. It is just that inSANE carbohydrate from starches and sweets fuel body fat formation.[9]

Put this all together and it gets clearer why eating more—smarter—works while eating less does not. When people eat less, they are still overeating since their metabolism slows down. Additionally, they have plenty of insulin and glycerol-3-phospate thanks to the inSANE low-quality starches and sweets they continue eating. Overeating plus insulin and glycerol-3-phospate means new body fat.

On the other hand, when we eat more—smarter:

1. We avoid overeating thanks to high-Satiety.
2. We get calories into our bloodstream slowly and they trigger little insulin thanks to low-Aggression.
3. We maximize the number of nutrients we get from those calories thanks to high-Nutrition.
4. We burn a lot of calories during digestion thanks to low-Efficiency.

Eating all this SANE food makes us too full for inSANE starches and sweets. By avoiding starches and sweets, we do not have enough insulin or glycerol-3-phospate to fuel body fat formation. Free from excess insulin and glycerol-3-phospate, we eat more food and store less body fat.[10]

Chapter 13

A More SANE Approach to Calories

"*We found marked improvement of glucose tolerance [unclogging] after advice to eat a… diet, based on lean meat, seafood, fruits, vegetables, root vegetables, eggs and nuts as staple foods, while avoiding cereals, dairy products, refined fat, sugar and salt. Control subjects, who were advised to follow a (Mediterranean-like) diet based on whole grains… did not significantly improve their glucose tolerance [unclog themselves].*"

S. LINDEBERG, UNIVERSITY OF LUND{139}

Now that we have covered the four calorie quality factors, burning more by eating more makes better sense. Let's bring all the factors together.

Our body fat level is controlled by our set-point and fat metabolism system. Our set-point and fat metabolism system are controlled by hormones. Our hormones are controlled by the quality of our

diet. The quality of our diet is controlled by the quality of our calories. The quality of our calories is controlled by their Satiety,Aggression, Nutrition, and Efficiency. SANE high-quality calories trigger body-fat-burning hormones. InSANE low-quality calories trigger body-fat-storing hormones. SANE calories are packed with water, fiber, and protein. They enable us to feel full so we can easily avoid dry, fiber-free, and protein-poor calories.

When we raise the quality of our diet, our hormones heal, the clog in our fat metabolism system clears, and our set-point falls. We create both the need and the ability to burn body fat. Then our bodies behave like the bodies of naturally thin people. We burnbody fat all day automatically.{140}

You and I can start leveraging this science today by applying two principles:

Stay Too Full for Starch and Sweets

Eat so many SANE foods that you are too full for inSANE starches and sweets. When eating out, avoid pasta and rice dishes, or ask your server to "hold the starch, double the vegetables." At home, skip the rolls and enjoy larger helpings of the main course (seafood/lean meat) and extra helpings of non-starchy vegetables.{141}

The More Natural it Is, the More SANE It Is

The closer a food is to a plant we could gather or an animal we could hunt, the more SANE it is. On the contrary, the further a food is from a plant or animal, the less SANE it is. This point has nothing to do with eating organic versus non-organic food. Until someone discovers a Cheerios tree, a pasta plant, or a bread bush, non-organic oranges are more SANE than organic Cheerios, pasta, or bread. And added sweeteners like sugar and high-fructose corn syrup are the most inSANE "foods" in the world. Eating added sweeteners is like stuffing paper towels down a drain. It is not a question of whether it will cause a clog. It is a question of how much damage the clog will cause.

Summarizing, let's:

- Feast: On as many non-starchy vegetables as we possibly can. Broccoli, carrots, cauliflower, celery, cucumber, eggplant, lettuce, mushrooms, onions, peas, peppers, spinach, squash, and zucchini, are the most common options. Deeply-colored leafy vegetables are the best options.

- Feast: On lean protein at least five times a day. Seafood, lean meat, egg whites, whey protein powder, fat-free or low-fat cottage cheese, and fat-free or low-fat *plain Greek* yogurt are the most practical ways to do this.

Whey Protein Powder: Whey comes from milk. And yes, the nursery rhyme "Little Miss Muffet sat on a tuffet eating her curds and whey..." is referring to the same whey we are talking about here. Remove the fat and water from whey and you are left with a SANE and convenient whey protein powder drink mix.

{142}

- Eat: Plenty of fruit. Focus on berries—blueberries, strawberries, etc.—and citrus fruits—grapefruit, oranges, etc. Bananas, grapes, and apples are not bad. However, they are not the best options for body fat loss because they have relatively low Nutrition compared to berries and citrus fruits.

- Eat: Plenty of nuts and seeds. Focus on milled flax seeds. At least a quarter cup of milled flax and a handful of nuts every day.

Milled Flax Seeds: These can be found in the health foods sections of most grocery stores and are extremely SANE. In addition to filling us up, they provide an incredible amount of nutrients—such as omega-3 fatty acids—which are otherwise hard to get. Make sure to get *milled* flax seeds—flax seeds ground into a flour-like powder. Whole flax seeds are not digestible.

- Eat: As many beans and dairy products other than fat-free or low-fat cottage cheese and *plain Greek* yogurt as you need to stay happy. They are great for variety, but not necessary to burn body fat or to optimize health. *Note: Try to completely avoid dairy that has more than ten grams of sugar per serving—i.e. most yogurt, flavored milk, ice cream, etc.*

- Avoid: Oil, whole grains, and any form of starch given their inSANEity. Anything good that starch—even whole-grain starch—does nutritionally, non-starchy vegetables and fruit do better.

- Avoid: All sweets and added sweeteners. Sweets and added sweeteners are the least SANE “foods” in the world.

A SANE Approach to Lowering Your Set-Point

Type of Food	SANEity Rating	How Much to Eat
Non-Starchy Vegetables	★★★★★	As much as you possibly can 10+ servings per day
Seafood/Lean Meat/Egg Whites/Whey Protein Powder/Select Dairy	★★★★★	More than most people currently do 6 servings per day
Nuts & Milled Flax Seeds	★★★½	More than most people currently do 4 servings per day
Fruits	★★★	More than most people currently do 4 servings per day
Legumes	★★★	As needed 0-2 servings per day
Most Dairy	★★½	As needed 0-2 servings per day
Oils	★★★	As little as possible
Whole Grain Starch	★½	As little as possible
Processed Starch	½	None
Sweeteners		None

Before we dig deeper into the specifics of eating more—smarter—there are two more important areas to explore. First, the science of how calorie quality influences the hormones which control our set-point. Second, the source of all this calorie quantity confusion. Part 3 disproves the old myth that calories are all that matter. Part 4 reveals the origins of the calorie quantity myths.

Part 3

Myth: Calories Are All That Matter

"*The 'classical theory' that fat is deposited in the adipose tissue [body fat] only when given in excess of the caloric requirement is finally disproved."*

E. WERTHEIMER, IN PHYSIOLOGICAL REVIEWS[143]

Chapter 14

Understanding Hormones, Especially Insulin

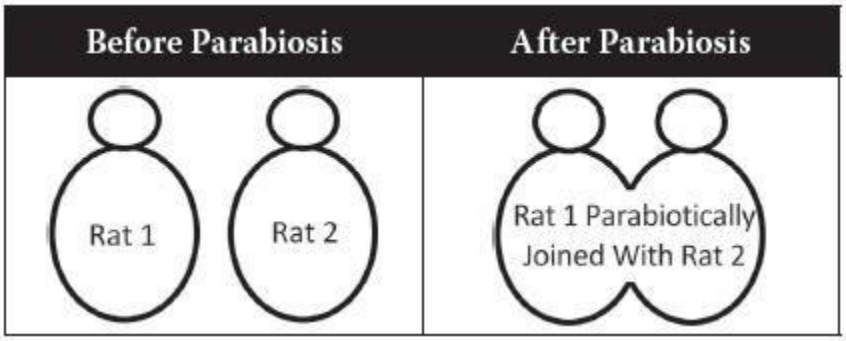
"*Insulin has profound metabolic effects in the determination of body weight…"*

B. DOKKEN, UNIVERSITY OF ARIZONA[144]

"*…obesity is impossible in the absence of adequate tissue concentrations of insulin." – M. Goldberg, in* **JOURNAL OFTHE AMERICAN MEDICAL ASSOCIATION**[145]

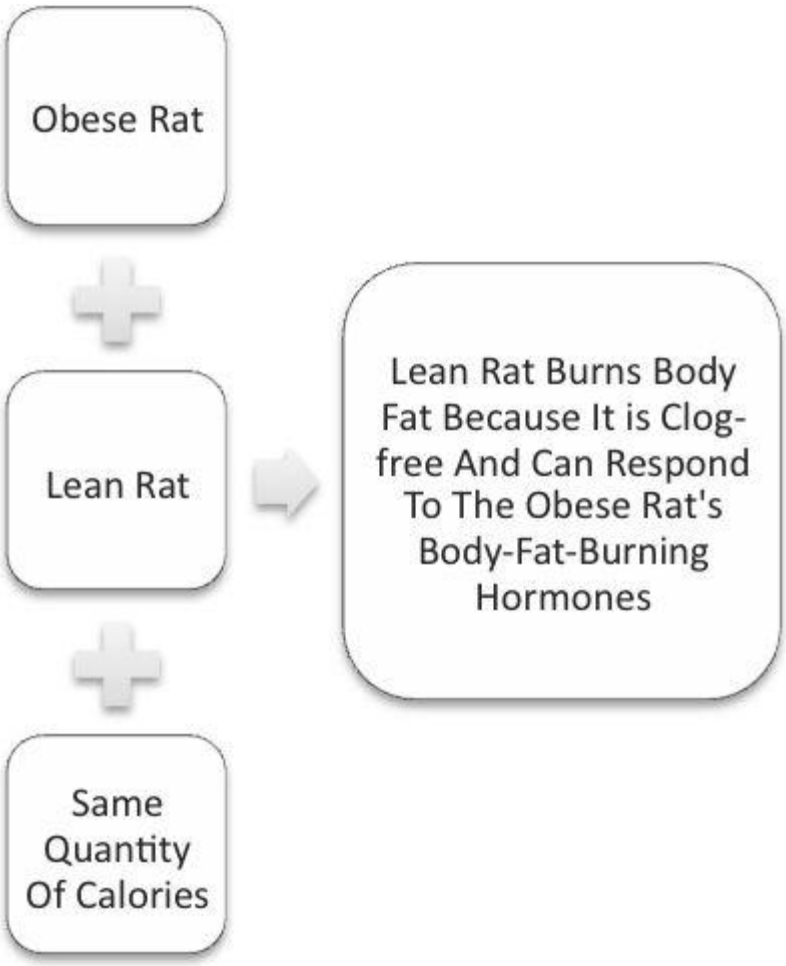
The critical effect hormones have on body fat has been well known in scientific circles for a long time. Especially the hormone insulin. Most of us know insulin only in reference to diabetics. They need insulin shots. Yet a true understanding of how hormones generally—and insulin specifically—work in relation to body fat reveals the cause of, and solution to, weight gain and related diseases such as diabetes.[146]

At the risk of being gross, one way scientists discovered the important relationship between hormones and weight is through the procedure known as parabiosis. Parabiosis occurs when researchers cut two live animals open and then join them so they share the same blood supply and hormones. In other words, researchers create Siamese twins.

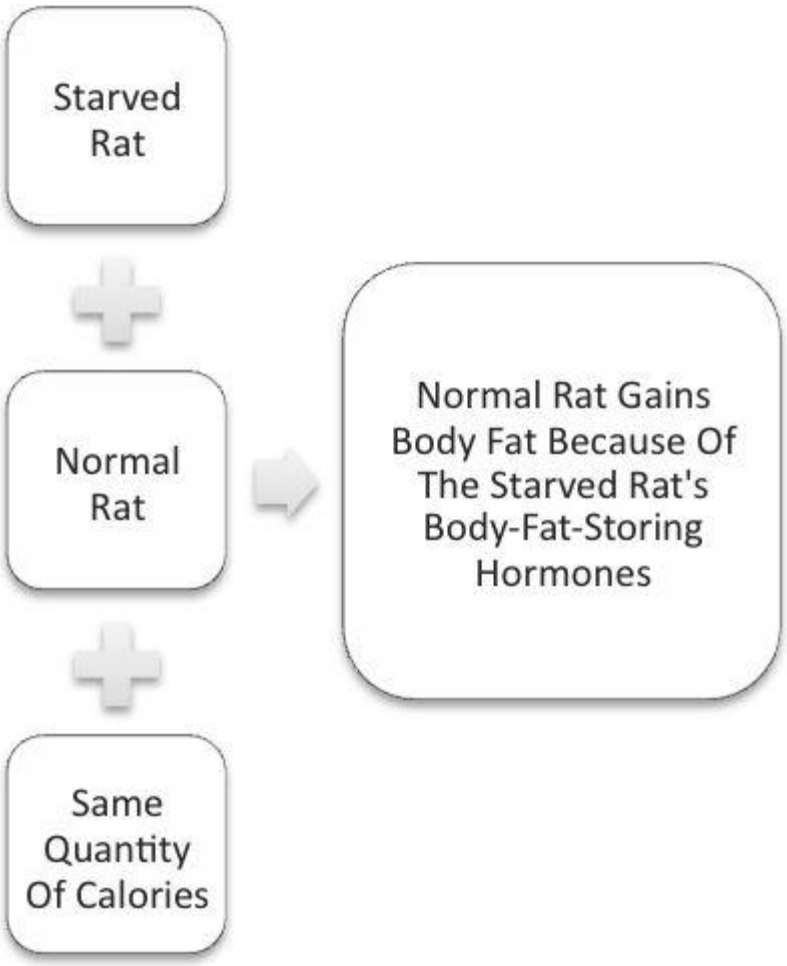


Why would researchers create a Franken-rat with one set of hormones but twice as much of everything else? Because it allows them to conduct studies showing the impact hormones have on body fat. For example, when researchers join an obese rat to a lean rat, the lean rat gets leaner regardless of the quantity of calories it eats. How is that possible? Think back to how the set-point works.

The obese rat's fat metabolism system is producing a massive amount of body-fat-burning hormones in an effort to get the obese rat back to normal automatically. But because the obese rat is clogged and cannot respond to the body-fat-burning hormones effectively, it stays heavy. However, the lean rat is not clogged. The clog-free rat *is* able to respond to all of those body-fat-burning hormones. Lots of body-fat-burning hormones plus the ability to respond to them equals burning body fat despite eating the same quantity of calories.

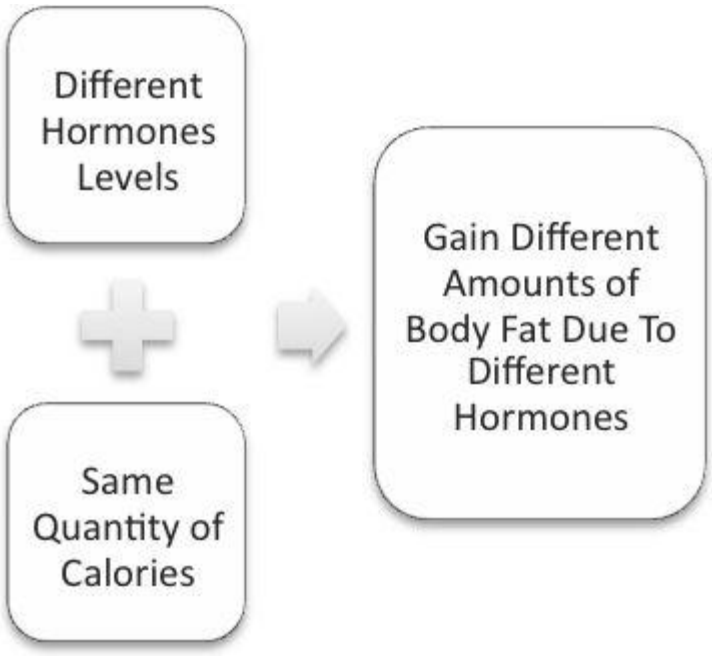


In a similar manner, when researchers stitch a normal rat and a starved rat together, the starved rat's body-fat-storing hormones make the normal rat get fatter regardless of the quantity of calories the normal rat eats. The starved rat is producing body-fat-storing hormones in an effort to get back to its set-point. These body-fat-storing hormones enter the normal rat, and its unclogged fat metabolism system does exactly what the hormones tell it to do: the normal rat stores body fat without eating any more or exercising any less.{147}

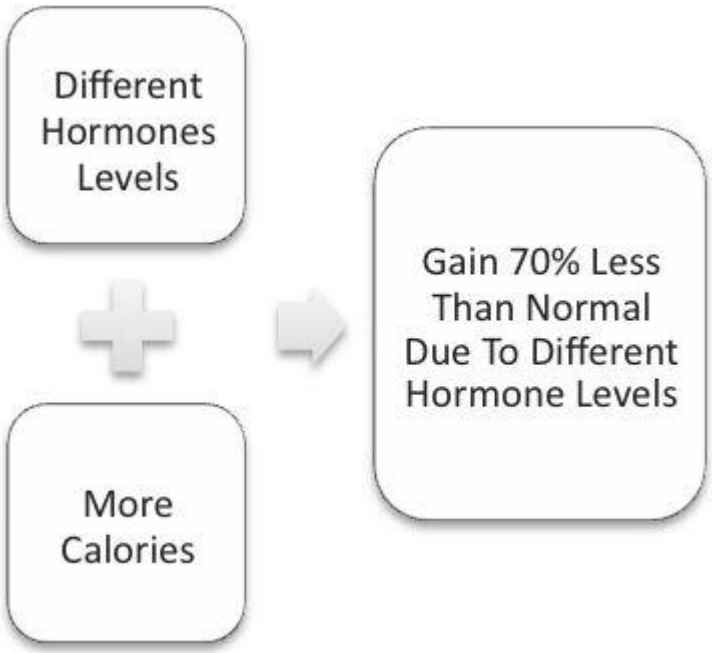


Besides the horror of joining living animals together, these studies powerfully demonstrate the massive impact hormones have on body fat. And that is only the tip of the investigative iceberg.

Researchers at the Gladstone Institute of Cardiovascular Disease made two sets of mice overeat and watched as mice with less of “a key enzyme in mammalian triglyceride synthesis [in body fatcreation]” were “protected against diet-induced obesity.”{148}



Researchers at the Veterans Affairs Palo Alto Health Care System then went one step further and genetically altered mice so they would no longer have a primary enzyme responsible for storingbody fat. These rats ate more and gained 70% less than normal mice. In the researchers' words, completely independent of calories, altering mice's hormones caused "a drastic reduction in lipogenesis [body fat creation]."{149}

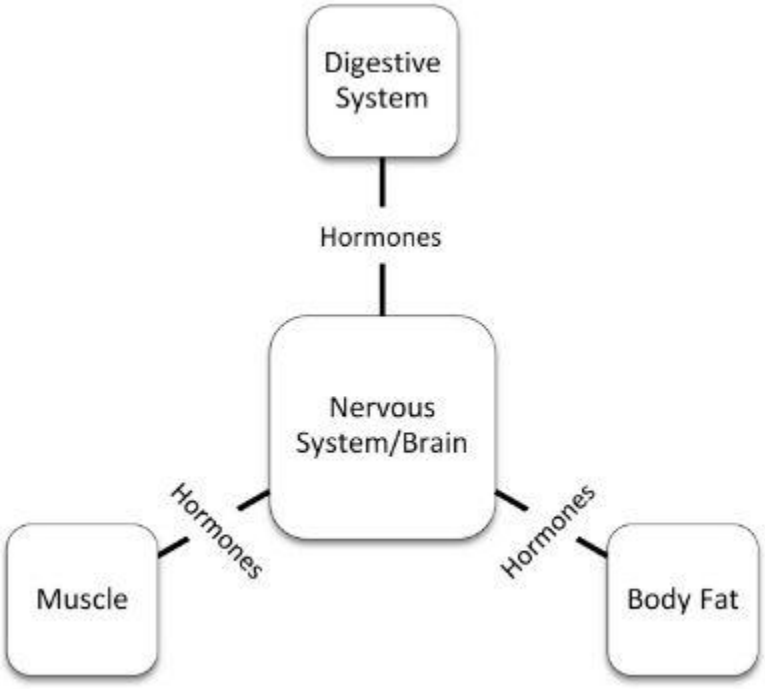


Two more: Researchers at the University of Basel genetically altered mice's hormone levels such that the mice stayed lean, "…in spite of reduced physical activity," and were "unaffected [by] caloric intake." And P.J. Havel from the University of California tells us that, "…mice which are unable to produce ASP [a specific hormone], consume 30% more food than wild-type mice, yet have reduced adipose [body fat] mass and are resistant to weight gain."{150}

These and hundreds of other experiments clearly show that hormone levels strongly influence weight gain or loss. In the journal *Neuroscience & Biobehavioral Reviews*, J. Le Magnen captures the importance of healing our hormones before we are free of body fat: “humans that become obese gain weight because they are no longer able to lose weight.” Le Magnen’s statement is brilliant. Gaining body fat because we lost the ability to burn body fat thanks to a hormonal clog is totally different than gaining body fat because we eat too much or exercise too little.And if we aregaining body fat because we lost the ability to burn body fat, then what good is eating less or exercising more?{151}

How Hormones Help Store or Burn Body Fat

Researcher P.J. Havel from the University of California presents the scientific explanation of how hormones handle our love handles: “Short-term [hormonal] signals are primarily from the GI tract [digestive system]…and are involved in promoting sensations of satiety…. The long-term [hormonal] signals insulin and leptin are produced and circulate in proportion to recent energy intake and body adiposity [body fat]. Together, the short- and long-term [hormonal] signals interact to regulate energy balance…” In other words, our digestive system, muscle tissue, and fat tissue are constantly communicating with our nervous system and brain via hormones. They are talking about how much fuel they think we need to keep us at our set-point. If they think we are at risk of rising above our set-point, they automatically decrease our calories in and increase our calories out, and vice versa.{152}



When we eat SANE high-quality calories, this conversation goes well. The right amount of hormones are used and the right message gets across: “Burn body fat.” When our hormones are able to do their job, we have the ability to burn body fat, and away our body fat goes.

However, when we eat inSANE low-quality calories, communication breaks down. Our fat metabolism system doesn’t have a good idea of how much fuel we need, hormones go bonkers, and our fat metabolism system demands more food since it does not know what is going on and errs on the side

of not starving. Thanks to this communication breakdown, we end up overeating, hormonally clogged, and heavier.{153}

To gain a deeper understanding of this communication breakdown, let's look at a specific hormone—insulin—and its role in this process. Insulin is a good choice because it is known in scientific circles as, "…the most important hormonal factor influencing lipogenesis [body fat creation]."{154}

Up Close and Personal with the Hormone Insulin

Insulin's job is to get energy into cells. For example, after we eat lunch, our body digests it and then releases insulin to carry those freshly digested calories into our cells. Since insulin is activated only when we need to get fuel into our cells, our fat metabolism system "hears" insulin in the bloodstream "communicating" that we have energy on its way to our cells and therefore do not need to use any stored energy—aka burn body fat. So the hormone insulin—not the calories we ate—blocks the burning of body fat. That point is extremely important.

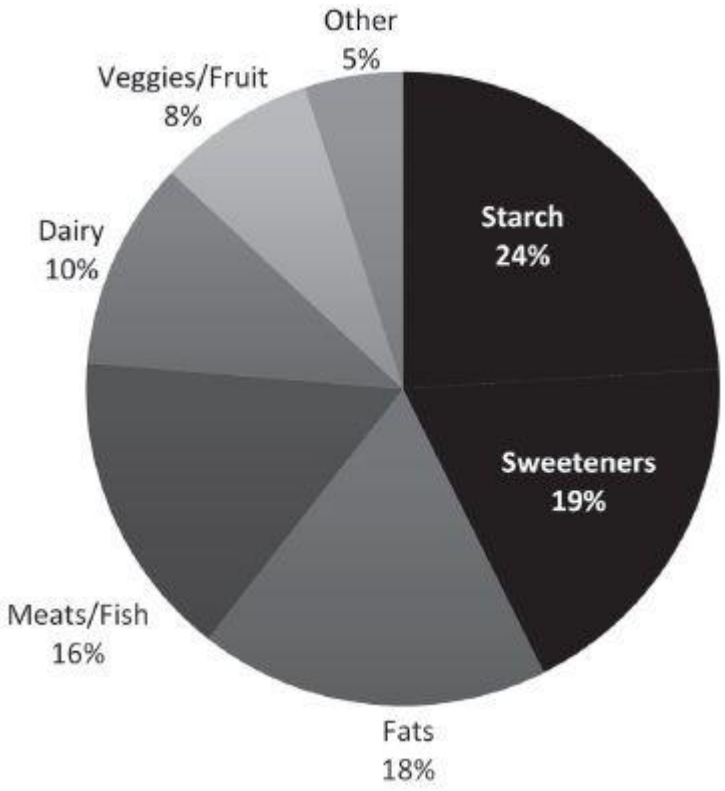
Our fat metabolism system does not decide to burn or store body fat based on calories. It makes these decisions based on the hormones those calories trigger. That is why the quality of calories matters so much. As we have already seen, higher-quality calories trigger body-fat-burning hormones while low-quality calories trigger body-fat-storing hormones.{155}

You can cut calories all day and will not burn body fat if you are eating low-quality calories which trigger excess body-fat-storing hormones such as insulin. Why? Hormones like insulin remove our*ability* to burn body fat regardless of whether or not we *need* to according to calorie quantity. That is why scientists refer to the hormone insulin as the "principal regulator of fat metabolism."{156}

Here is the sad part. Calories from inSANE starch and sweets trigger the release of ridiculous amounts of insulin. All that insulin gets those inSANE starch and sweets' calories into our cells, but then we still have insulin left over in our bloodstream. That excess insulin clogs us up and removes our *ability* to burn body fat.{157}

Where the Average American Gets Calories{158}

(Insulin-spiking starch and sweeteners make up 43% of what we eat)



Things go from bad to worse if this inSANEity keeps up for too long. Not only does all the excess insulin destroy our ability to burnbody fat, it makes the fat metabolism system resistant to insulin. How does this process work? Compare becoming resistant to the effects of insulin with becoming resistant to the effects of alcohol. When people drink alcohol in moderation, everything is fine. It takes relatively little alcohol to generate the desired effect, so people don't drink too much of it. However, if people drink too much alcohol, they become resistant to alcohol's effects. Then they have to drink more alcohol to get the desired effect. This volume of alcohol eventually destroys their liver and makes them gain body fat. This leaves heavy drinkers in an unfortunate place where they have become resistant to alcohol and have to drink an unhealthy amount of it to get the desired effect.

Similarly, when people eat mostly SANE foods and just a littleinSANE starch and sweets, everything is fine. It takes little insulin to get energy into cells, so the body doesn't produce too much of it. However, if people eat mostly starch and sweets, their bodies become resistant to insulin's effects. Then their body has to produce more insulin to get energy into cells. This volume of insulin eventually destroys their pancreas and makes them gain body fat.

Even more unfortunate, at least one in four Americans are insulin resistant. All this excess insulin forms the backbone of our clog. Not only does it crush our ability to burn body fat, it also increases the rate at which we store body fat because excess insulin preferentially puts calories into our fat tissue. This happens because no matter how resistant other tissues become to insulin, our fat tissue is always receptive. And while that is technically good because it keeps insulin resistance from killing us, it can crush any dreams of losing weight. We end up with more body fat and no ability to burn it.{159}

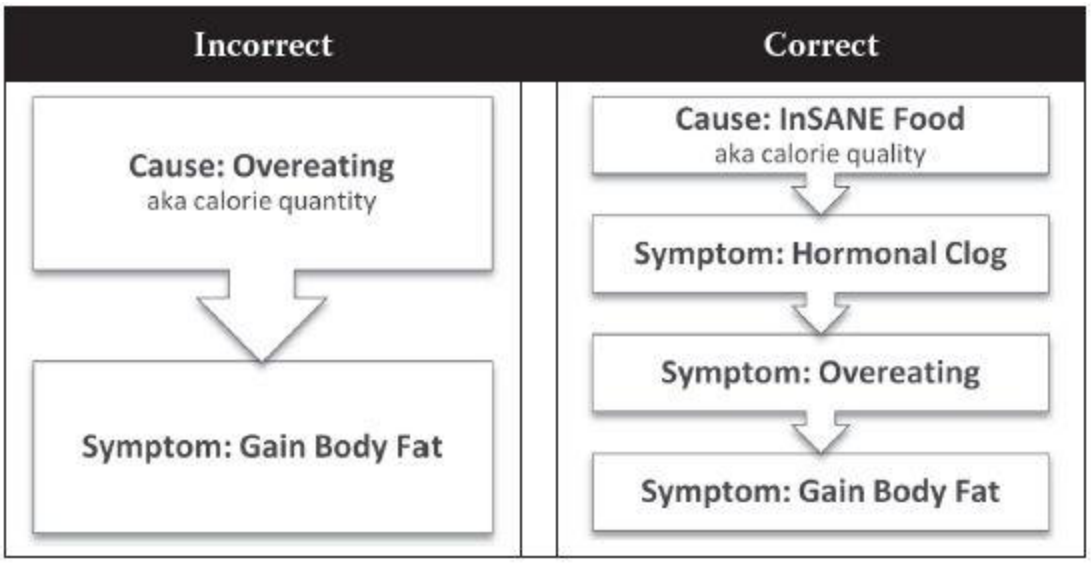
inSANE Body Fat Gain

Once most of the calories we eat are being stored in fat cells because insulin cannot get them into other cells, *internal starvation* has set in. We eat plenty of food but starve on the inside because insulin cannot effectively get that energy into any cells other than our fat cells. With excess insulin shuttling most calories into fat tissue and eliminating our ability to burn body fat, the fat metabolism system has no choice but to slow down, burn muscle tissue, and demand more food. It does what it always does when it senses starvation.

Consider Terri. She is internally starving and needs 500 calories of energy. Terri is also a yo-yo dieter and has already slowed down her metabolism and burned as much muscle as she can. Needing some calories, Terri eats 500 calories. Instead of those 500 calories getting into the cells needing it, only 250 make it in while the other 250 are ignored—thanks to insulin resistance—and stored as new body fat. Terri still needs 250 calories. She cannot slow down anymore. She cannot burn any more muscle. And thanks to all the excess insulin floating around, she does not have the ability to burn body fat. What is her only option? Overeat. Specifically, eat 250 extra calories.

So Terri snacks on 250 extra calories to keep her cells from starving. But now only a fraction of the 250 make it to the cells needing it while the rest is stored as body fat. Again, she must overeat even more. This process of overeating to keep a clogged fat metabolism system running repeats itself until Terri eats 1,000 calories to meet her need for 500 calories. Terri's fat metabolism system is leaking calories into her fat cells and has to compensate by taking in extra calories.

Continue this “overeat to compensate for the clog” cycle day after day and Terri gains body fat. And on the surface it looks like she is gaining body fat because she is eating too many calories. But eating too many calories is not the *cause* of her new body fat. It is a*symptom* of a deeper problem: her hormonal clog. Terri’s high consumption of calories is not the *cause* of her weight gain. It is a*symptom* of the hormonal clog caused by inSANE low-quality calories.{160}



Even the American Heart Association, which champions calorie quantity, acknowledged that calorie quantity does not *cause*obesity when they remarked: “One can argue that people become obese because they consume more calories than they expend, but this doesn’t tell us why the imbalance exists or the best way to correct it.” Put differently: “People become obese because they overeat, but that doesn’t tell us the *cause* of their overeating or how to fix it.”{161}

Obesity is not *caused* by eating too many calories, and it is notcured by eating fewer calories. Hilde Burch at Baylor University concludes: “Though [overeating] is observed with great regularity, it is not the cause of obesity; it is a symptom of an underlying disturbance…. The changes in weight regulation and fat storage are the essential disturbances.”{162}

Problems are not solved by treating symptoms. That is why the calorie-quantity-based approach to fat loss, eating less and exercising more, fails 95% of the time long-term. It is only treating symptoms. It is based on the myth that gaining body fat is *caused*by calorie quantity, and that is wrong.

Know what else is wrong? How our government started and keeps fueling this fat-loss fiction to fund the food, fitness, and pharmaceutical industries. You can’t believe everything you hear. These companies are seeking profits. You have to seek something far more dear: your health.

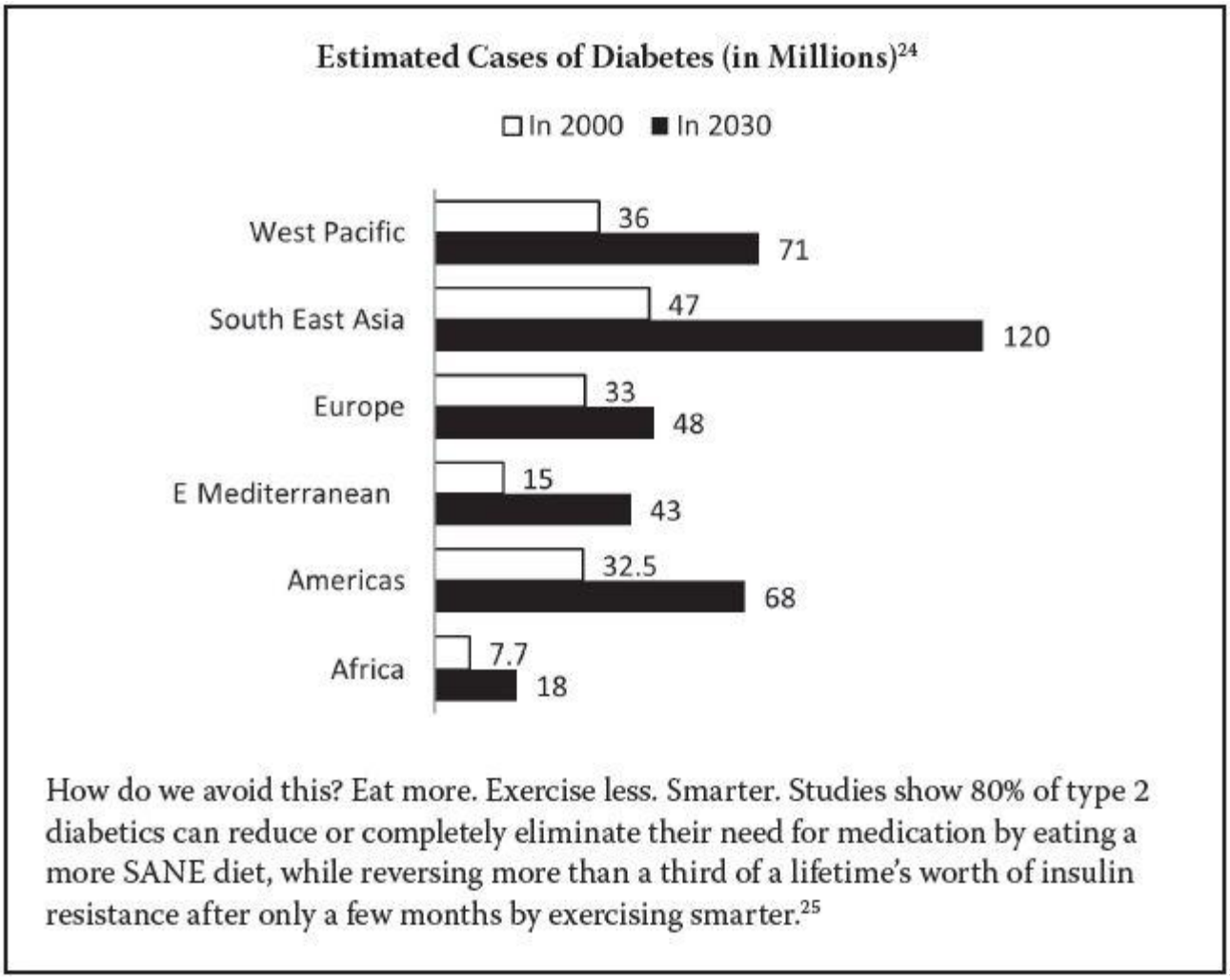
What Is Type 2 Diabetes?

> *"Just twenty years ago, the best information available suggested that 30 million people had diabetes. A bleaker picture has now emerged. Diabetes is fast becoming the epidemic of the 21st century."*
>
> PRESIDENT PIERRE LEFÈBVRE, INTERNATIONAL DIABETES FEDERATION[21]

If left untreated, insulin resistance turns into type 2 diabetes. To quickly understand type 2 diabetes, let's go back to the example of the clogged sink. Type 2 diabetes is like running water into a clogged sink for so long that water overflows all over the place and the faucet breaks down. Once so much insulin is produced that it is overflowing our bloodstream while our ability to produce insulin has broken down, we have type 2 diabetes.

This build-up and breakdown causes potentially lethal havoc on the body. The Center for Disease Control and Prevention estimates people diagnosed with diabetes by the age of forty die twelve years sooner if they are male, and fourteen years sooner if they are female.[22]

Type 2 diabetes is terrible. What is even worse is its disturbing growth. In the late 1800s, one in every 4,000 people was diabetic; today one in every four people is diabetic or pre-diabetic. That is a 100,000% increase in one century, and researchers estimate that we are on our way to a third of men and nearly a half of women in the U.S. becoming type 2 diabetic. That is insane. That is caused by inSANE calories.[23]



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Part 4

Source: Government Guidelines and Graphics

"*Dietary guidelines necessarily are political compromises between what science tells us about nutrition and health and what is good for the food industry.*"

MARION NESTLE, NEW YORK UNIVERSITY{165}

Chapter 15

Where the Calorie-Quantity Confusion Came From

"*The USDA-sponsored Dietary Guidelines for Americans and its Food Guide Pyramid are nutritionally and biochemically unsound…They radically changed the food habits of tens of millions of Americans in a massive human experiment that has gone awry…. Today, there*

is little doubt that there is a clear temporal association between the 'heart healthy' diet and the current, growing epidemics of cardiovascular disease, obesity, and type-2 diabetes."

A. OTTOBONI, IN THE JOURNAL OF THE AMERICANPHYSICIANS AND SURGEONS[166]

One way to clear up all the confusion about calorie-quantity is to start from the very beginning. Let's look at the history of eating using a scale of one day. Say 12:00am last night was the dawn of our first ancestors, and right now it's one second before midnight. Up until 11:57pm our ancestors stayed healthy and fit, eating only what could be hunted or gathered—vegetables, seafood, meat, eggs, fruit, nuts, and seeds. At 11:57pm, people started farming, became "civilized," and began eating starch and a small amount of sweets. Two seconds ago, people started eating processed starches and sweets. Only right now—one second before midnight—did people start getting most of their calories from manufactured starch- and sweetener-based food products.[167]

That means the diet recommended by the government's *Dietary Guidelines* was not possible for 99.8% of our history. Our ancestors did not hunt or gather pasta, rice, cereal, or bread. They did not eat whole grains. They ate no grains. They did not cut back on added sweeteners. They did not know what added sweeteners are. Emory University researcher S.B. Eaton tells us: "During the late Paleolithic [the vast majority of human history], the great majority of carbohydrates was derived from vegetables and fruit, very little from cereal grains and none from refined flours."[168]

This idea is interesting to think about when it comes to our health. Obesity, diabetes, heart disease, and cardiovascular disease are called "diseases of civilization." They did not become issues until agriculture enabled production of starches and sweets about 12,000 years ago. And they did not reach epidemic status until starches and sweets made up most of our diet.[169]

Of course, some people might object: "Back then, people did not live as long as we do now." That is an excellent point. I felt the same way until I read research revealing three facts about hunter-gatherers:

1. They are few and far between today, but hunter-gatherer tribes are still around, and scientists have studied them intensively. The studies show that they are free from obesity, diabetes, heart disease, and cardiovascular disease.[170]

2. While their *average* age of death is lower than ours, many ancient hunter-gatherers lived beyond the age of sixty. Emory University researcher S. Boyd tells us: "Occasionally one hears the claim that primitive people all died too young to get degenerative diseases. This claim is simply false—many lived well into and through the age of vulnerability for such disorders, yet didn't get them."[171]

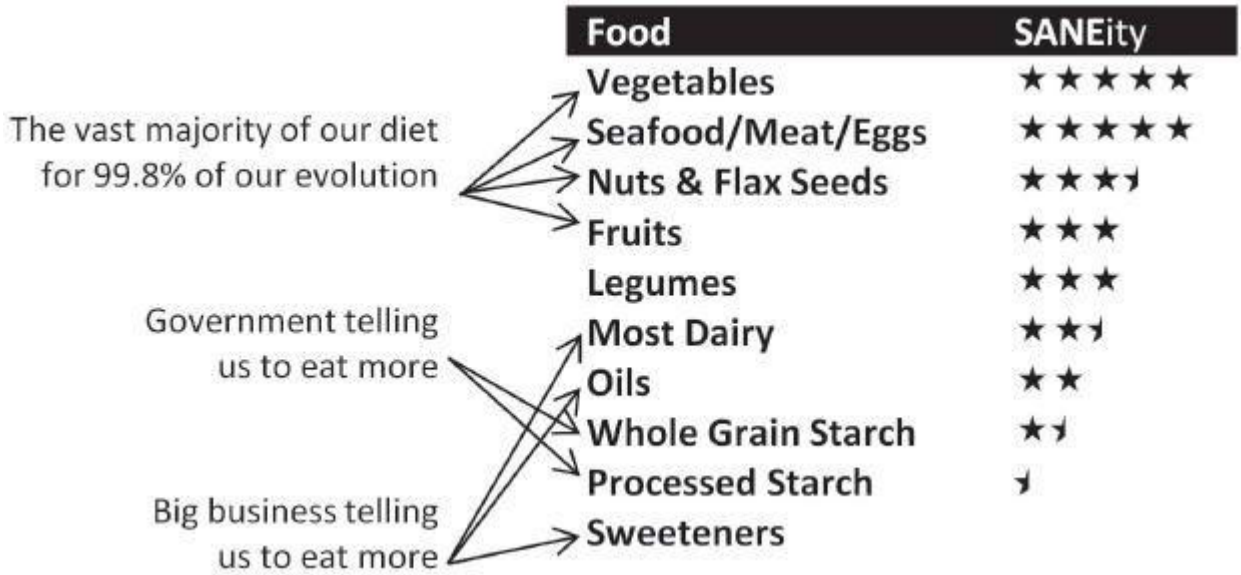
3. Let's take old age out of the equation entirely. Obese and type 2 diabetic "civilized" children are running around all over the place. The children of hunter-gatherers were obesity and diabetes free.[172]

The lowering in the quality of our diet and the lowering in the quality of our health are not coincidences. Could it be possible that we are not designed to digest the food that makes up the majority of the modern diet?

The Chair of the Department of Nutrition at Harvard School of Public Health states unequivocally: "The USDA Pyramid is wrong. It was built on shaky scientific ground…[and] has been steadily eroded by new research from all parts of the globe…. At best, [it] offers wishy-washy, scientifically unfounded advice." Here's what the *Journal of the American College of Cardiovascular Exerciselogy* has to say: "The low-fat-high-carbohydrate diet, promulgated [publicized] vigorously by the…food pyramid, may well have played an unintended role in the current epidemics of obesity…diabetes, and metabolic syndromes." The Co-Founder of the Center for Science in the Public Interest chimes in: "Good advice about nutrition conflicts with the interests of many big industries, each of which has more lobbying power than all the public-interest groups combined."{173}

We are not getting bigger and sicker because we are putting too much fuel into our fat metabolism systems. We are getting clogged from putting the wrong quality of fuel into our fat metabolism system. The further the quality of our calories has gotten from the high-quality SANE food we ate for 99.8% of our evolutionary history, the bigger and sicker we have become.{174}

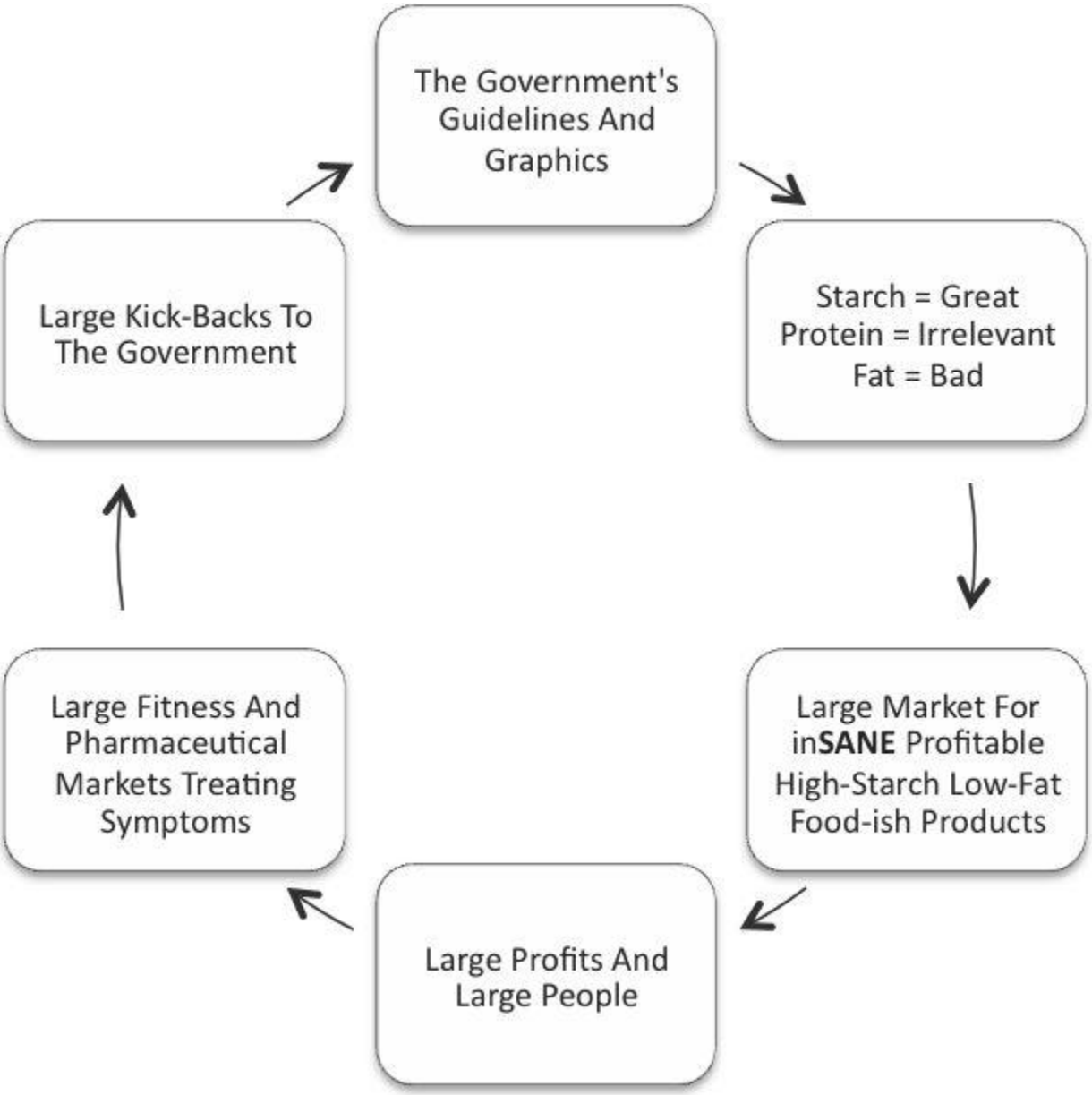
The Source of Our Weight Problems



Decades of advanced dietary research have taken place alongside spiking obesity and disease rates. This research recommends a diet much different than any version of the government's *Dietary Guidelines.* For example, Marion Nestle at New York University notes how the scientific community has long criticized the USDA's*Food Guide Pyramid's* failure to "recognize the biochemical equivalency of sugars and starches in the body." More simply, starch has the same impact on our body as sugar. Why don't the government's guidelines reflect this research? Who needs science when a constant barrage of food, fitness, and pharmaceutical industry marketing bullies us into believing that the government's recommendations are healthy?{175}

A great deal of money is being made from our nutritional confusion.

The Source of Our Problem



Even worse, the government created these guidelines in much the same way it creates laws: by listening to lobbyists and by making compromises. The history of the USDA guidelines and graphics is nothing short of shocking.

Chapter 16

Politicians Playing Physicians

"*The low-fat, high-carbohydrate diet recommended by the…USDA Food Guide Pyramid may be among the worst eating strategies for someone who is overweight…. People on low-fat diets generally lose about two to four pounds after several weeks, but then gain that weight back even while continuing with the diet. Randomized trials of weight loss usually show little net weight changes after a year."*

W.C. WILLETT, HARVARD UNIVERSITY[176]

Detailing the disturbing history of the government's role in our diet would take an entire book. If you would like to find out the whole story, you can read an excellent book called *Good Calories, Bad Calories* by Gary Taubes. Here I will provide the short version.

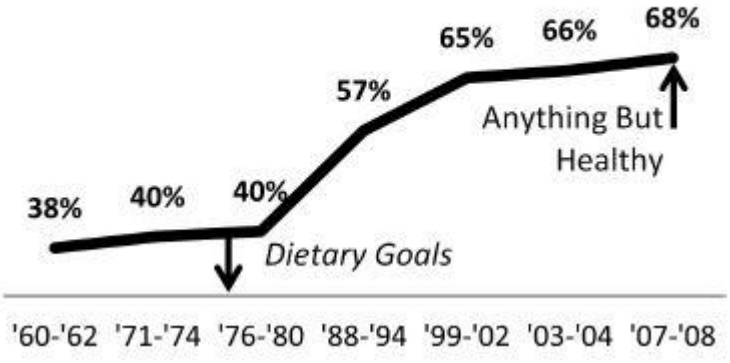
The original release of the government's *Dietary Guidelines*—and subsequent Food Guide Pyramid and MyPlate graphics—came about because certain politicians were playing physicians. The Chair of the Department of Nutrition at Harvard School of Public Health notes: "Some recommendations on diet and nutrition are misguided because they are based on inadequate or incomplete information. That hasn't been the case for the USDA's pyramids. They are wrong because they brush aside evidence on healthful eating that has been carefully assembled over the past forty years." In the *Journal of the American Physicians and Surgeons*, researcher A. Ottoboni adds: "There is considerable concern today that the diet the Pyramid illustrates is responsible for the current epidemic of cardiovascular disease. The concurrent epidemics of obesity and type-2 diabetes are unintended consequences that can also be attributed to this diet."[177]

How did the government come up with these *Dietary Guidelines*? J.B. German from the University of California has written: "At the time the 1980 guidelines were established, there was no solid basis for understanding what the consequences of such overall dietary changes would be for most persons." The *Dietary Guidelines* and graphics were not drawn up by nutrition scholars. They were derived from a political document released in 1976 called *Dietary Goals for the United States*.[178] The *Dietary Goals* was designed by the Senate Nutrition Committee to do two things. The first was to "increase carbohydrate consumption to account for 55% to 60% of calorie intake." The second was to, "reduce overall fat consumption from 40% to about 30% of calorie intake."[179]

These goals and the rest of the document are more speculative than scientific. For example, T.A. Sanders at King's College London, notes, "The scientific basis for a reduction in the proportion of energy from fat below 30% is *not* supported by experimental evidence." A.S. Truswell from the University of Sydney tells us: "The first edition of *Dietary Goals…*took nutritionists by surprise…was written by a group of politically interested activists with small knowledge of nutrition…. The collected objections can be summarized very briefly: Too soon, more research needed, relationships not proved; politically motivated."Here is what theAmerican Medical Association had to say when *Dietary Goals* was released: "There is a potential for harmful effects for a radical long term dietary change as would occur through adoption of the proposed national goals." More blunt criticism was delivered by University of Wisconsin-Madison researcher A.E. Harper: "The dietary goals report is not scientifically sound: it is a political and moralistic document." And finally, my favorite comes from the president of the National Academy of Sciences in his testimony to the Senate in regards to *Dietary Goals:* "What right has the federal government to propose that the American people conduct a vast nutritional experiment, with themselves as subjects, on the strength of so very little evidence that it will do them any good?"[180]

But despite being unproven and controversial among the scientific community, the government declared *Dietary Goals* "the truth" on these grounds: "We [the government] live in the present and cannot afford to await the ultimate proof before correcting trends we believe to be detrimental." With that uneducated guess, a low-fat, low-protein, high-starch diet was declared "healthy." Sadly, the results have been anything but.{181}

Percent of Americans at Least Overweight



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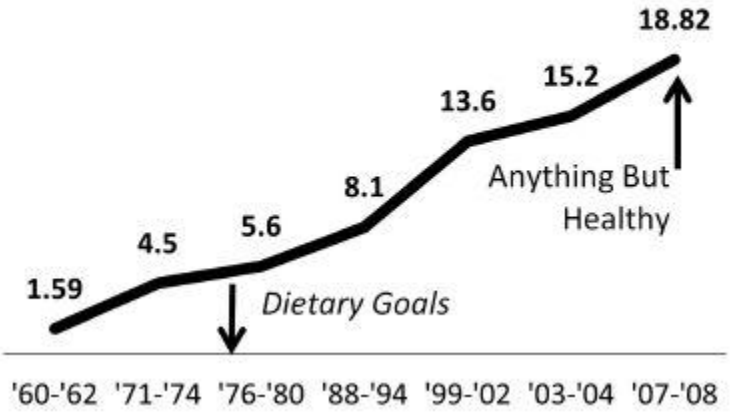
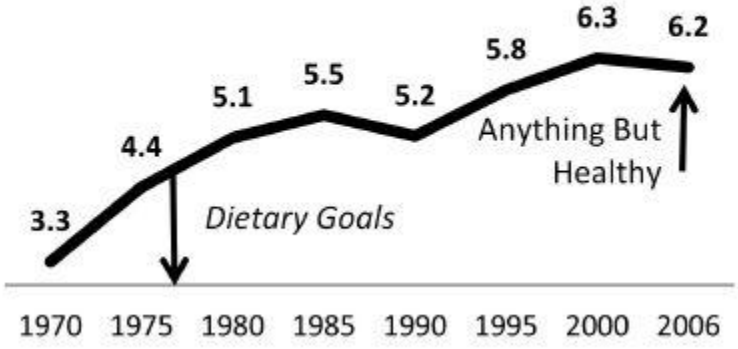
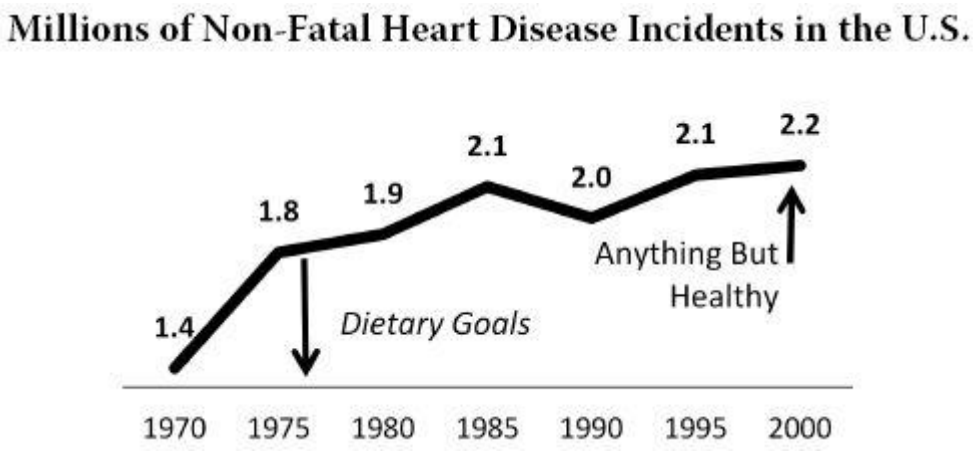
Millions of Americans with Diabetes



Millions of Hospital Discharges for Cardiovascular Diseases in the U.S.

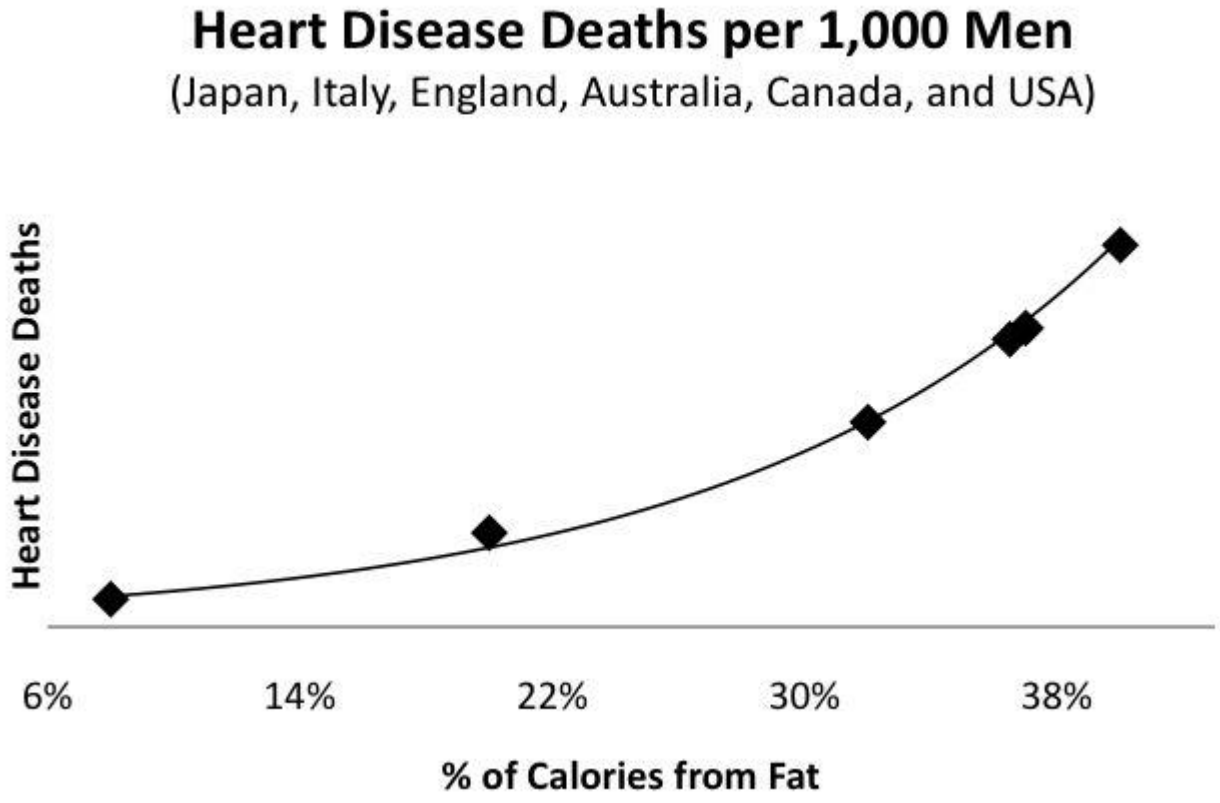




To understand why the Senate Nutrition Committee gave us these *Dietary Goals* in the first place, we have to go back a few more decades. One man single-handedly convinced the country that natural foods are deadly.{183}

Fat Fiction

In the 1950s, Ancel Keys examined diet and heart disease trends in twenty-two countries. He was apparently more interested in headlines than science because he then published a study that included data from only the *six* countries that showed a scary link between diet and heart disease. Keys garnered a massive amount of press and then went on tour preaching that eating fat is deadly. {184}



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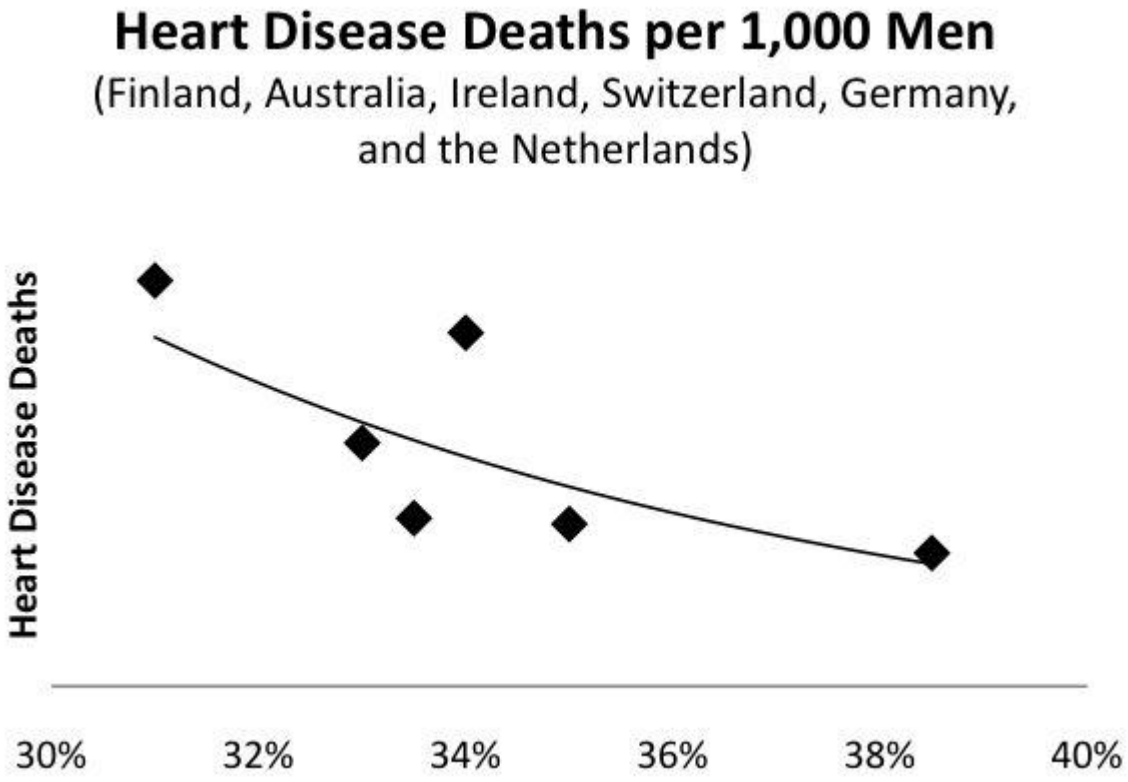
Here are the facts: When the data from *all twenty-two* countries in Keys' study is examined, they show *no* relationship between fat intake and heart disease deaths. Keys selectively picked data and designed a headline-worthy conclusion. In the words of a fellow researcher, "No information is given by Keys on how or why the six countries were selected."{186}

Further exposing the sketchiness of Keys' methods, those same researchers revealed that by selectively choosing six different countries from Keys' data, they could create a graph suggesting that eating *more* fat *decreases* the risk of dying from heart disease.



Finally, looking at Keys' data a few years later, they concluded, "The examination of *all* available basic data…show that the association [between fat and heart disease] lacks validity." They also discovered a "a strong *negative* association…for both animal protein and fat with mortality from non-cardiac diseases." Even the American Medical Association spoke up in protest: "The anti-fat, anti-cholesterol fad is not just foolish and futile...it also carries some risk."{187}

No matter. The "fat is evil" myth started a nationwide campaign to replace natural foods containing fat with fat-free products and climaxed with the government's *Dietary Guidelines*, Food Guide Pyramid, MyPyramid, and MyPlate diets. Those diets are high in starch because starch is low in fat. Unfortunately, over a billion dollars' worth of studies have failed to prove that the government's guidelines are good for anything other than profits.{188}

From the Harvard Medical School: "Few public health messages are as powerful and as persistent as this one: Fat is bad…The average American has substantially reduced the percentage of calories that

she or he gets from fat over the past three decades…But we are not any healthier for all of this effort. In fact, we are worse off for it."{189}

Numerous studies have found no link between dietary fat and heart disease. When P.W. Siri-Tarino of the Children's Hospital & Research Center in Oakland examined 21 studies which included a total of 347,747 people, he found: "There is *no* significant evidence for concluding that dietary saturated fat is associated with an increased risk of heart disease or cardiovascular disease."{190}

The National Heart, Lung, and Blood Institute funded an enormous trial designed to link the consumption of foods containing fat to heart disease. The $115 million Multiple Risk Factor Intervention Trial took 12,866 men with high cholesterol, split them into two groups, and fed one group the government guidelines' diet for seven years with the hopes of lowering the incidence of heart disease. The government's diet resulted in a 7.1% *increase* in heart disease deaths.{191}

The Women's Health Initiative of the National Institutes of Health completed a $700 million study to test the fat hypothesis. A whopping 48,835 women ate their normal diet or the government diet for about eight years. At the end of the study, the regular- and government-diet women weighed the same and no differences were found in their health. The researchers concluded: "Dietary intervention that reduced total fat intake did *not* significantly reduce the risk of coronary heart disease, stroke, or cardiovascular disease." As reported in the study: "[This] trial is the largest long-term randomized trial of a dietary intervention ever conducted to our knowledge, and it achieved an 8.2% reduction…in total fat intake…*No* significant effects on incidence of coronary heart disease or stroke were observed." The *New York Times* ran the headline: *Low-Fat Diet Does* Not *Cut Health Risks, Study Finds.*{192}

A massive study named MONICA involved 113 groups of scientists and doctors in twenty-seven countries studying everything they thought could contribute to heart disease. They found little if any association between the average cholesterol level and heart-related mortality.{193}

In The Western Electric Study—known in academic circles as one of "the most informative prospective studies to date"—researchers concluded: "Although the focus of dietary recommendations is usually a reduction of saturated fat intake, *no* relation between saturated fat intake and risk of coronary heart disease was observed [in their study]."{194}

There's no shortage of data. In the Malmö Diet and Cancer Study, 28,098 men and women were split into four groups according to their intake of foods containing fat. After six years of observation, researchers found: "Individuals receiving more than 30% of their total daily energy from fat and more than 10% from saturated fat, did *not* have increased mortality. Current dietary guidelines concerning fat intake are thus generally *not* supported by our observational results [data]." Additionally: "With our results added to the pool of evidence from large-scale prospective cohort studies on dietary fat, disease and mortality, traditional dietary guidelines concerning fat intake are thus generally *not* strongly supported." And the icing on the cake: "*No* deteriorating effects of high saturated fat intake were observed for either sex for any cause of death."{195}

I'll briefly point out three more studies: the Nurses' Health Study, the Health Professionals Follow-Up Study, and the Nurses' Health Study 2. Together these studies tracked 300,000 people. None of these studies showed total fat intake increasing the risk of heart disease. The only conclusive finding was that eating *more* plant fats—such as the fats in flax seeds and nuts—*lowers* the risk of heart disease. The researchers involved reported: "Intake of linolenic acid [unsaturated fat] was inversely associated

with risk of myocardial infarction [heart attacks]…These data do *not* support the strong association between intake of saturated fat and risk of coronary heart disease suggested by international comparisons."[196]

> "*It is now increasingly recognized that the low-fat campaign has been based on little scientific evidence and may have caused unintended health consequences."*
>
> **F.B. Hu, Harvard University**[197]

The government was trying to help with the guidelines, but sadly, it failed. Even worse, it keeps on failing. Scientists know it, and the data show it. Chapter 17 exposes why we haven't been told about it.[198]

Chapter 17

Focused on the Wrong Target

> "*The idea that you become fat by eating fat is just as silly as to say that you become green by eating green vegetables."*
>
> **Uffe Ravnskov, MD, Ph.D.**[199]

Sugar-laden muffins, nutritionally neutered toast, and insulin-exploding juice are touted as part of a balanced, nutritious breakfast because they are low in fat. We look at food and ask ourselves, "Is this low in fat?" If the answer is yes, we think it is healthy. Yet foods that contain fat are not necessarily unhealthy. Researcher M. Leosdottir from Lund University stated: "Most researchers today agree on total fat intake *not* being a risk factor for cardiovascular disease or cancer."[200]

In addition to not killing us, foods containing fat do not make us fat. We think so because a gram of fat contains more calories than a gram of carbohydrate or protein. Fat has nine calories per gram while protein and carbohydrate only have four. The problem is that fat's higher quantity of calories does not mean eating it causes us to store body fat. That thinking is rooted in the *Calories In – Calories Out* theory of fat loss, which we now know is wrong.

According to the National Academy of Sciences, "Obesity itself has *not* been found to be associated with dietary fat in either inter- or intra- population studies." Harvard researcher W.C. Willett adds, "There is *no* good evidence linking dietary fat with excess weight. In fact, there is plenty of evidence showing that the percentage of calories from fat is *not* the culprit leading to excess weight." There is even evidence that *lower* fat intake correlates with *higher* obesity rates. Willett continues, "In country-to-country surveys across Europe, women with the lowest fat intake are the most likely to be obese, while those with the highest fat intake are the least likely."[201]

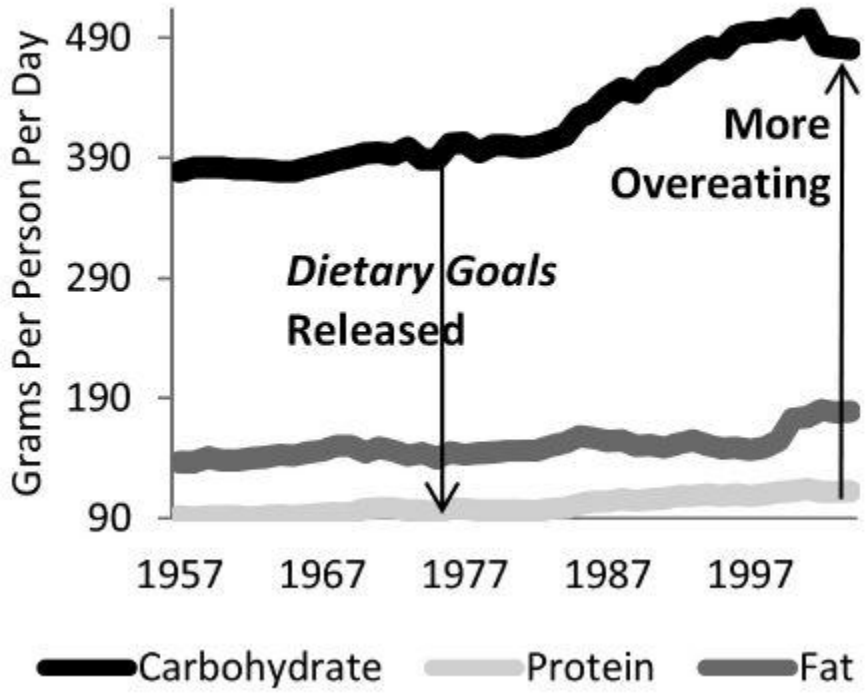
A fellow researcher at Harvard, F.B. Hu, makes a similar point: "Although reduction in percentage of calories from dietary fat intake is commonly recommended for weight loss, long-term clinical trials have provided no good evidence that reducing dietary fat *per se* can lead to weight loss."[202]

This data seems counterintuitive because we've been led to believe that eating fat encourages overeating. We've been misinformed.

Think back to Satiety. Water, fiber, and protein play the biggest role in the Satiety of food, and Satiety determines how many calories we eat. Notice how there is no mention of fat there. Many water-, fiber-, and protein-packed foods contain fat. For example, seafood, meat, nuts, and flax seeds all contain fat. But when we focus on eating less fat, we replace these high-Satiety foods with low-Satiety starches and sweets. Since low-Satiety foods require more calories to fill us up, this swap causes us to eat more—not less—calories. So, far from discouraging overeating, avoiding SANE foods that contain fat *encourages* overeating.{203}

The last four decades of data tell the same story. We were told to avoid eating fat, so we reduced our relative intake of fat, increased our intake of starches and sweets, increased our total caloric intake, and ended up heavier and diabetic as a result.

Less Natural Foods Containing Fat, More Overeating [6]



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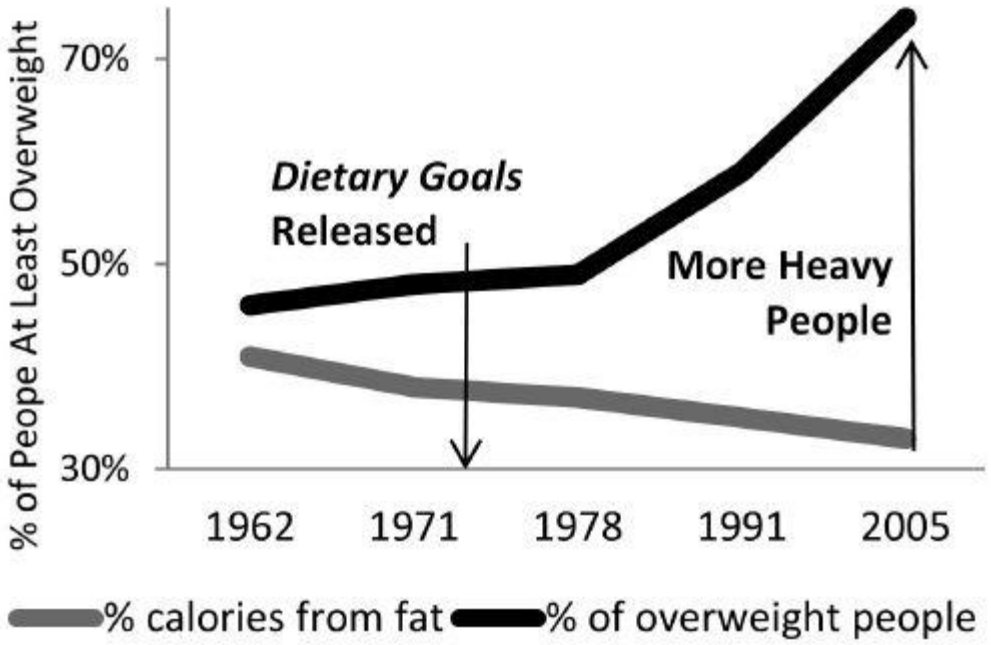
Less Natural Foods Containing Fat, More Body Fat



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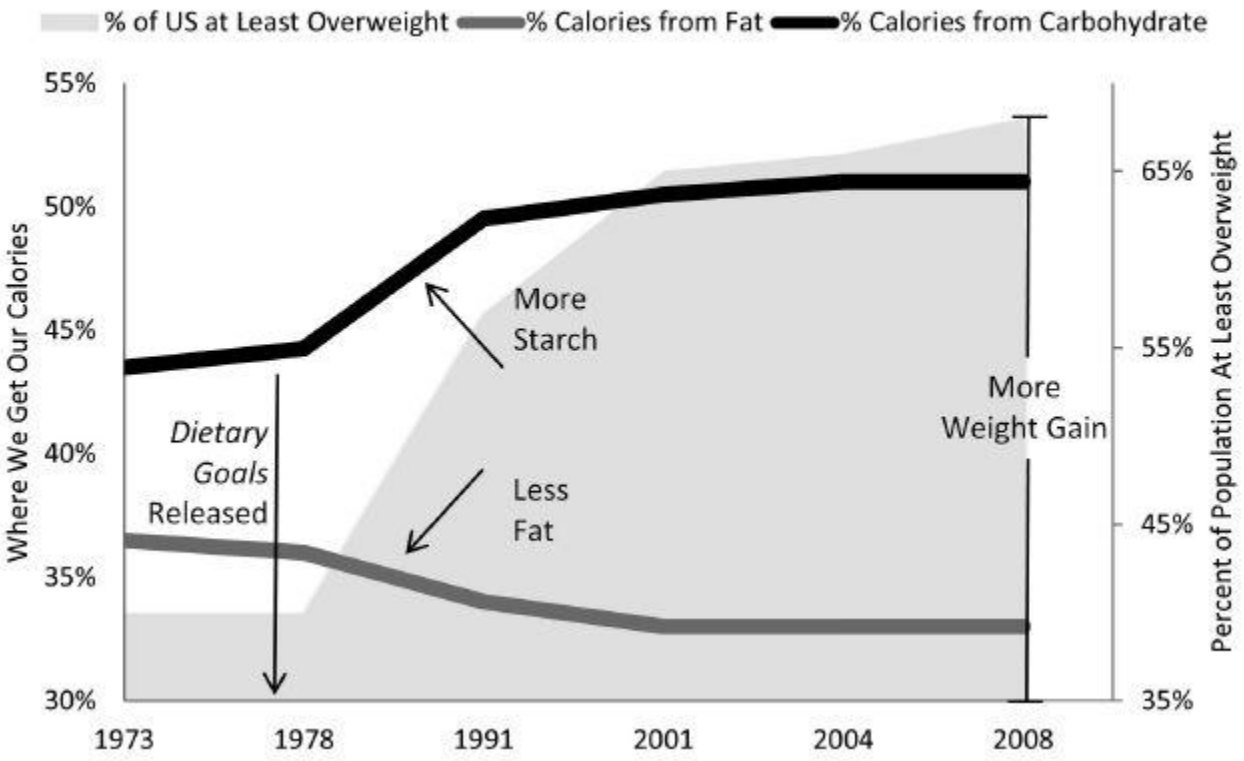
How We Eat vs. Our Incidence of Weight Gain [8]



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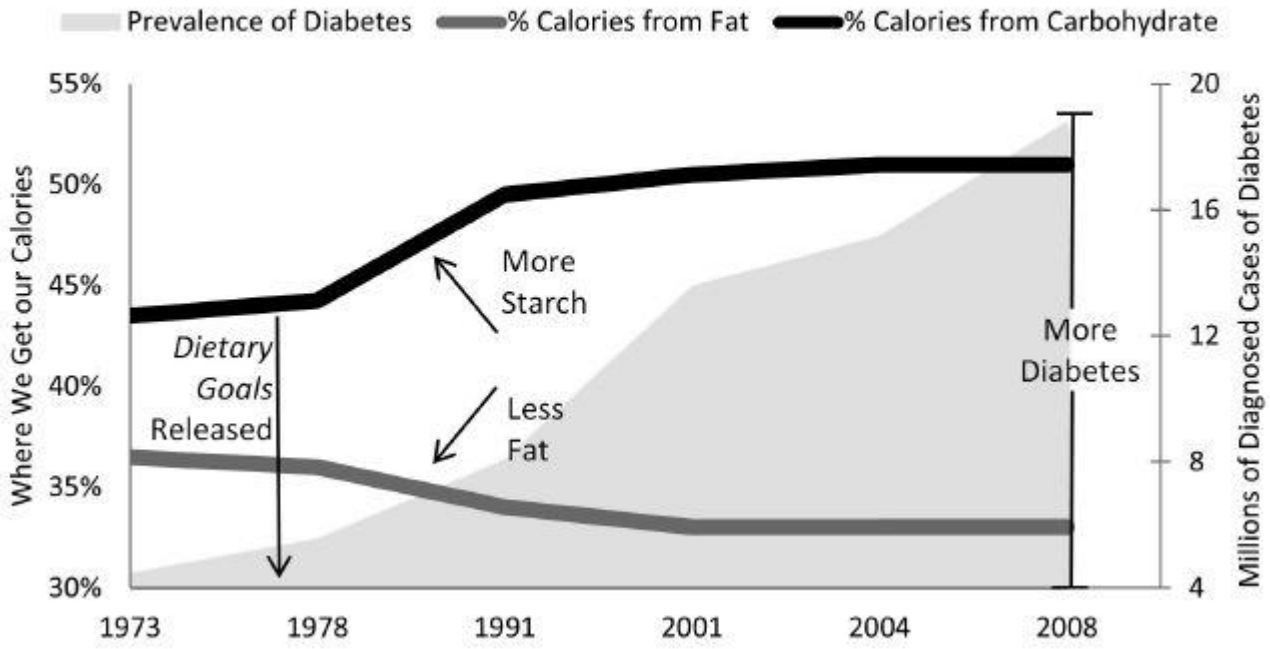
How We Eat vs. Our Incidence of Diabetes [9]



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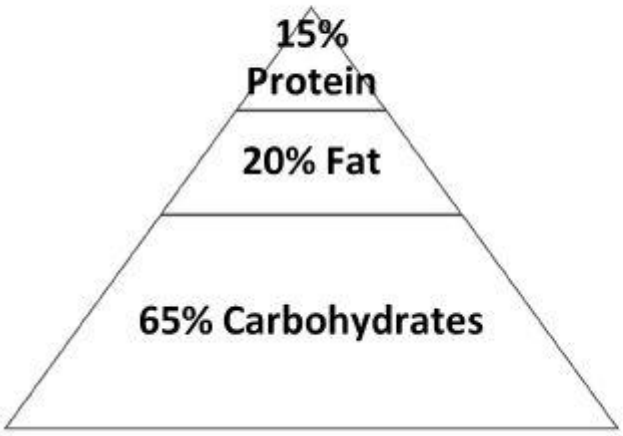
The government knows this too. The Centers for Disease Control and Prevention (CDC) reported: "During 1971-2000, a statistically significant increase in average energy intake occurred…The increase in energy intake is attributable primarily to an increase in carbohydrate intake." Even the authors of the government's guidelines—the U.S. Department of Agriculture—have gone on record stating that since the 1970s the major dietary trend has been a "greatly increased consumption of carbohydrates." They found that starch consumption had increased by nearly sixty pounds per person per year, and sweetener consumption had increased by nearly thirty pounds. That is ninety additional pounds of low-quality low-Satiety food—every year.{208}

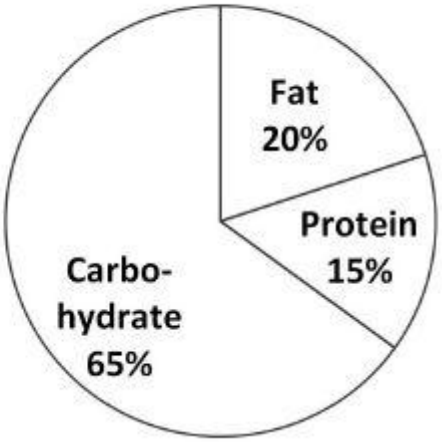
The emphasis on low fat leads to inSANEity and misses an important point. Long-term health and fat loss does not result from diets low in fat, carbohydrate, or protein. Fat is not evil. Carbohydrates are not bad. And protein is not dangerous. The best way to burn body fat is to be balanced and SANE.

However, when you look at the government's pyramid and plate, balance is nowhere to be found:

The Food Guide Pyramid/MyPyramid



MyPlate



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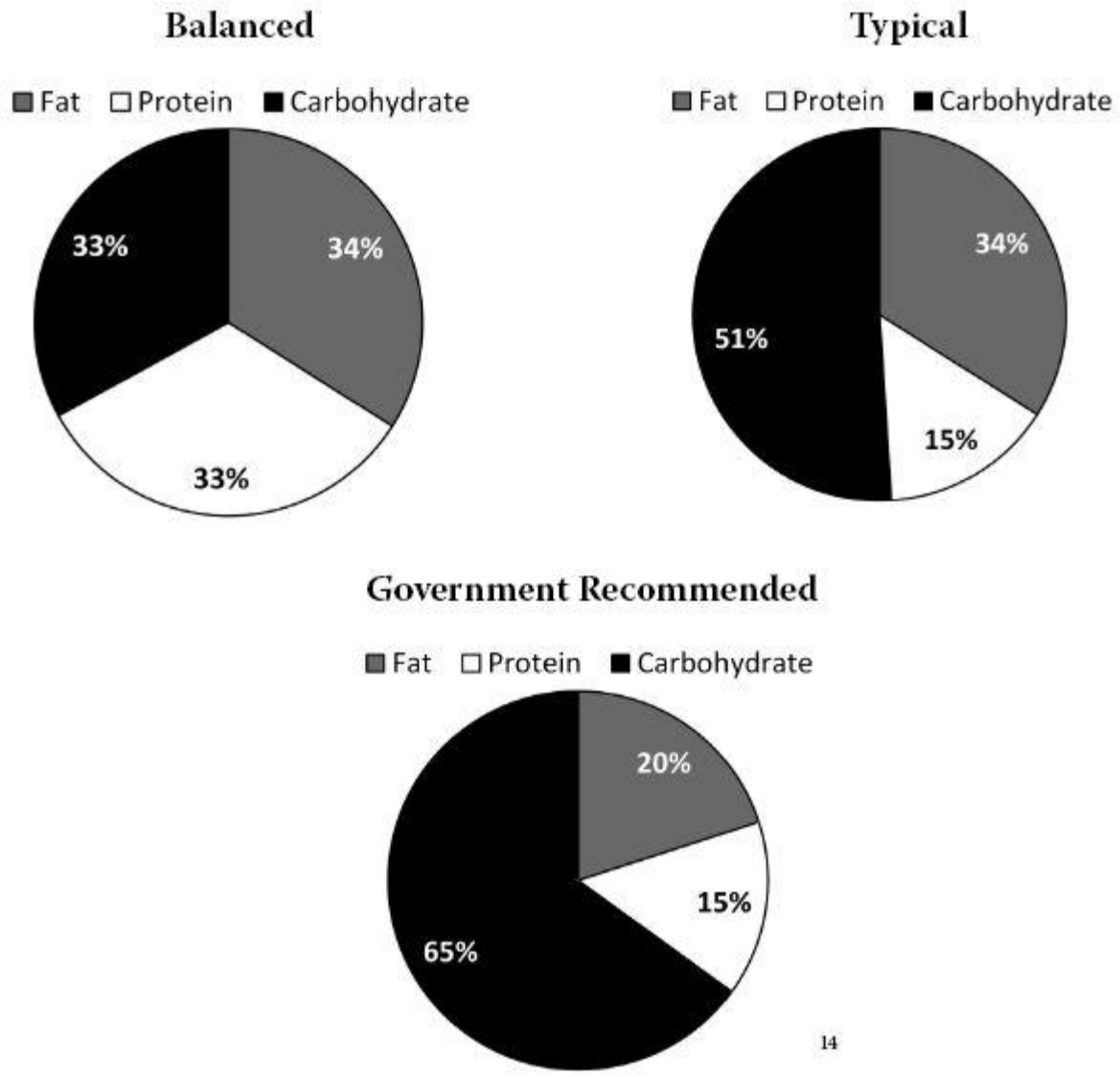
How are these balanced diets? They are high in carbohydrates and low in everything else. Consider the high-fat *Atkins* diet. It is called "high-fat" because it advises individuals to get 65% of their calories from fat. Look at the USDA's pyramid and plate diets that advise us to get 65% of our calories from carbohydrate. Doesn't that make them high-carbohydrate diets? This could be why the January 13, 2011, edition of *USA Today* poked fun at the 72% of Americans who claimed to eat a balanced diet. The implication: "How could 70% of you be overweight if you ate a balanced diet?" We could easily be overweight if the "balanced" diet we are told to eat by the government is actually out of balance.{210}

This imbalance exists in other guidelines as well. The American Heart Association Nutrition Committee calls a 40% carbohydrate, 30% fat, and 30% protein diet a "low-carbohydrate/very-high-protein diet." Since when does 40:30:30 indicate that anything is very high?{211}



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What could be the reason for this confusion? The answer lies in another myth that has been proven false: eating foods that contain fat leads to unhealthy cholesterol levels.{213}

Chapter 18

Eating Fat Will *Not* Hurt Your Cholesterol

"*Although low-fat high-carbohydrate diets are recommended…in an effort to reduce the risk of coronary artery disease, the results of short-term studies have shown that these diets can lead to…an* ***increased*** *risk of coronary artery disease."*

THE AMERICAN DIABETES ASSOCIATION{214}

As with other popular misconceptions about how our bodies work, confusion runs rampant about the word “cholesterol.” Ancel Keys played a key role in creating this problem. Along with his other claims, he needed a scientific sounding explanation for how foods containing fat kill us. Looking at his data, Keys noticed that people eating more foods that contain fat generally had higher total cholesterol.While there was—and still is—no proof that high *total*cholesterol causes cardiovascular issues, Keys called it the cause of their heart problems.{215}

Even while Keys was touting his new findings, the Federal Register (the official log of the federal government of the U.S.) was on record with the true scientific data at that time: “The role of cholesterol in heart disease has *not* been established. A causal relationship between blood cholesterol levels and these diseases has *not* been proved. The advisability of making extensive changes in the nature of the dietary fat intake of the people of this country has *not* been demonstrated.”{216}

Likewise, to this day, no studies have proven high *total* cholesterol causes heart disease. In the *American Journal of Medicine* T. Gordon reported, “*Total* cholesterol *per se* is *not* a risk factor for coronary heart disease at all.” Dr. Uffe Ravnskov analyzed 26 randomized and controlled trials which were designed to lower*total* cholesterol and, theoretically, the risk of cardiovascular disease and death. Ravnskov’s analysis put people into two groups:{217}

1. **Treatment Group**: People who ate less food that contain fat and/or took cholesterol-lowering drugs.

2. **Control Group**: People who did not eat less food that contain fat and did not take cholesterol-lowering drugs.

Across the studies, the total number of heart attack deaths was equal between the groups, and *more* people died overall in the group who ate *less* fat and/or took cholesterol-lowering drugs. Ravnskov concluded: “Lowering serum cholesterol concentrations does not reduce mortality and is unlikely to prevent coronary heart disease.”{218}

Average Outcomes Across the 26 Studies

	Treatment Groups	Control Groups
Fatal Heart Attacks	2.9%	2.9%
Total Death Rate	6.1%	5.8%

For foods that contain fat and cholesterol to be killers, three points must be proven:

1. Eating natural foods that contain fat leads to risky levels of cholesterol.

2. These levels of cholesterol *cause* cardiovascular disease.

3. The diet outlined by government's guidelines improves these cholesterol levels.

None of these things have been proven.

University of California's J.B. German summarizes the state of cholesterol research: "The approach of many mainstream investigators…has been narrowly focused to produce and evaluate evidence in support of the hypothesis that dietary saturated fat elevates LDL cholesterol and thus the risk of coronary artery disease. The evidence is *not* strong, and, overall, dietary intervention by lowering saturated fat intake does *not* lower the incidence of nonfatal coronary artery disease; *nor* does such dietary intervention lower coronary disease or total mortality."{219}

Eating SANE foods containing fat has never been proven to lead to risky levels of cholesterol. The effect of natural dietary fat on cholesterol has never been proven to cause cardiovascular disease. In fact, studies have shown the opposite. The high-starch, low-fat, and low-protein diet promoted by the government's guidelines has been proven to *worsen* the type of cholesterol that decreases the risk of heart disease (HDL cholesterol).

Here is where the confusion about cholesterol comes up. There are different types of cholesterol, and most of them are helpful or neutral. The two most commonly discussed are LDL (low-density lipoprotein) and HDL (high-density lipoprotein). They are required to produce new cells and hormones. Because of this critical role, even if we never ate any cholesterol, our liver or intestines would produce it.

When it comes to predicting heart health, the American Heart Association, International Diabetes Federation, and World Health Organization agree that *low* HDL cholesterol—not *high* LDL cholesterol—is what matters. Looking at disease and death rates at various levels of LDL and HDL cholesterol, researchers have found that people with *low* HDL run a much greater risk of heart disease.{220}

Relative Risk of Heart Disease {221}

(Total Cholesterol in Panrethesis)

85 mg/dl HDL	Very Low (185)	Very Low (245)	Very Low (305)
65 mg/dl HDL	Low (165)	Low (225)	Moderate (285)
45 mg/dl HDL	Low (145)	Moderate (205)	High (265)
25 mg/dl HDL	Moderate (125)	High (185)	Very High (245)
	100 mg/dl LDL	160 mg/dl LDL	220 mg/dl LDL

There are two things to note. First, *total* cholesterol is irrelevant. If someone tells you their *total* cholesterol is 185, what is their risk of heart disease? Looking at the preceding table, it is either very low or high, depending on how much of that 185 consists of HDL cholesterol. Similarly, if someone tells you their *total* cholesterol is 245, they either have a herculean heart or a hemorrhaging heart, depending on their HDL levels.

Second, note how increasing HDL cholesterol is more important for heart health than decreasing LDL cholesterol.

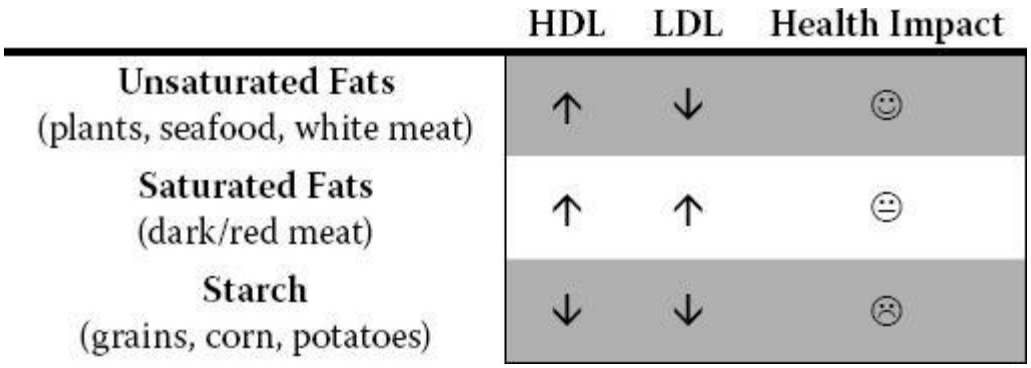
High HDL cholesterol protects us from heart problems more than dropping our LDL levels ever could. Heart-healthy diets are not about lowering *total* cholesterol. They are about raising HDL cholesterol.[{222}]

> "*There is a wealth of…evidence that increasing the concentration of HDL cholesterol through diet will lower the risk of coronary artery disease*."
>
> **R.P. MENSINK, MAASTRICHT UNIVERSITY**[{223}]

> "…*low HDL-cholesterol levels increase coronary heart disease risk*…[*programs*] *resulting in an increase in HDL-cholesterol levels could decrease the incidence of ischemic heart disease*."
>
> **J.P. DESPRES, LAVAL UNIVERSITY**[{224}]

The most effective way to raise our HDL levels is to eat more fatand less starch. Fat raises HDL. Starch lowers HDL.[{225}]

The Impact of Fat and Starch on Cholesterol and Health



Since lower HDL does more harm than lower LDL does good, any diet which tells us to replace SANE sources of fat with inSANE starch worsens our cholesterol. This is why D. Mozaffarian at Harvard University wrote: "[Focusing] on effects of total and saturated fat on…total and low-density lipoprotein [LDL] cholesterol may have failed to reduce coronary heart disease risk and inadvertently worsened…insulin resistance, and weight gain." Researcher A. Garg wrote the following in the *Journal of the American Medical Association*: "High-carbohydrate diets…caused persistent deterioration of glycemic control and accentuation of hyperinsulinemia [caused clogs], as well as increased…very-low-density lipoprotein [bad] cholesterol levels."{226}

Regrettably, under the government's guidelines, we are supposed to replace natural foods containing fat with low-fat-high-starch products to lower our *total* cholesterol. Why? Lower *total*cholesterol is meaningless, and lower HDL cholesterol is terrible for us. Researchers have demonstrated this for decades.{227}

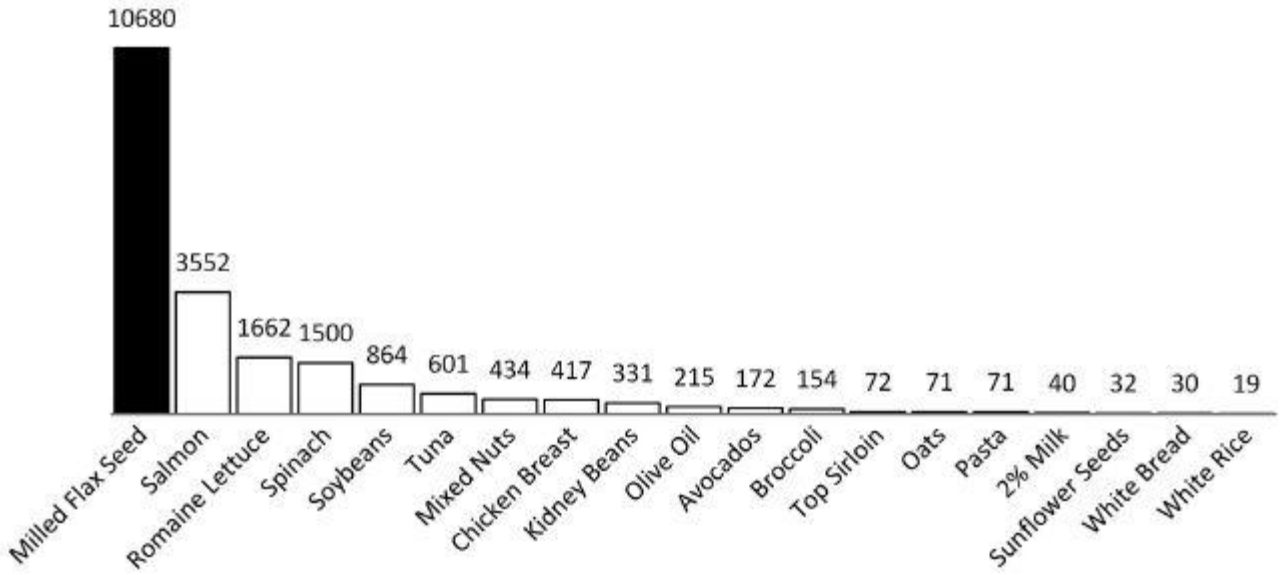
The February 1989 issue of the *Diabetes Care* journal put out by the American Diabetes Association contained a study comparing the government's diet with a more SANE way of eating. The study concluded, "VLDL [bad] cholesterol was significantly *increased*…High-density lipoprotein [good] cholesterol concentrations were significantly *decreased* after consumption of the 60% carbohydrate diet."{228}

Comparable results were found with the equally imbalanced U.K. dietary guidelines. In the words of University of Glasgow researcher S.R. Arefhosseini, "Following the U.K. dietary guidelines resulted in changes…more likely to favor an *increased*risk of coronary heart disease."{229}

Even saturated fats, about which so much has been said, are not cholesterol criminals. The American Heart Association found: "No adequately designed randomized controlled study in the general population has shown that…decreasing saturated fat…intake significantly decreases coronary heart disease mortality." Saturated fats aren't bad; they're just not the best type of fat. Unsaturated fats are better. Studies show a specific type of unsaturated fat—polyunsaturated fats, especially omega-3 fatty acids—protect our heart and help us burn body fat.{230}

Good Sources of Polyunsaturated Omega-3 Fatty Acids{231}

(Milligrams in 250 Calories)



What is the bottom line? Studies show that any diet telling you to replace SANE sources of fat with inSANE starches is unhealthy and fattening. M.L. McCullough at Harvard University made this point: "Limiting unsaturated fats, which is usually done by increasing carbohydrates…is detrimental…. Low-fat, high-carbohydrate diets provide a higher glycemic load, aggravate hyperinsulinemia [clogging], and may thus increase the risk of diabetes and coronary artery disease."{232}

Sadly, the government's diet tells us to do exactly what science says we should avoid.{233}

If you think this is troubling, wait until you see what happened when big business jumped on the government bandwagon.

Today's Typical Diet: Almost Completely inSANE

"'Give us this day our daily bread,' says the Lord's Prayer, and 2,000 years ago food derived from cereal grains [starches] were the staples of most peoples' diets. But in relation to our long human existence, dependence on bread is a very late phenomenon."

S. Boyd, Emory University[21]

Loren Cordain from Colorado State University found that a whopping 72% of what we eat today was not eaten for at least 99.8% of our evolutionary history.[22]

How Much of Today's Typical Diet Is Not Natural

Food	% Calories
Starches	**24%**
Whole Grains	4%
Refined Grains	20%
Added Sweeteners	**19%**
Sucrose	8%
High-Fructose Corn Syrup	8%
Glucose	3%
Refined Oils	**18%**
Salad, Cooking Oils	9%
Shortening	7%
Margarine	2%
Alcohol	**1%**
Dairy	**11%**
Milk	4%
Cheese	3%
Butter	1%
Other	3%
Total	72%

The diet we evolved to eat has been flipped on its head. Is it any wonder our health and fitness have been flipped on their heads as well? Over 70% of our diet is comprised of unnatural food. Over 70% of us have unhealthy and inflated waistlines. Coincidence or common sense? How can the government and food manufacturers invert the diet our ancestors ate for millions of years and expect good things to happen?

Part 5

Source: Big People, Big Profits

"*Why has the scientific evidence from long-standing obesity research not found its way into the minds of the public…? Perhaps it is because these views are shaped by a constant barrage of advertisements from the diet industry which has a multi-billion dollar interest in promoting the view that weight can be controlled through volition [willpower] alone.*"

J.M. FRIEDMAN, ROCKEFELLER UNIVERSITY{234}

Chapter 19

How Health Is Bad for Business

"*There is a lot of money being made…feeding both oversized stomachs and feeding those enterprises selling fixes for oversized stomachs…And both industries—those selling junk food and those selling fat cures—depend for their future on the prevalence of obesity.*"

W. WEIS, IN THE ACADEMY OF HEALTH CAREMANAGEMENT JOURNAL{235}

Everyone knows that Washington, DC is the home of lobbyists. We lament that they have too much influence over our elected officials. Yet it never occurs to many of us that some of the largest lobbying efforts in the country are made by firms representing the food industry. The days of the nice farming family growing their crops are long gone. Today our food is grown by huge agribusiness concerns. According to a 2007 report by Mary Hendrickson and William Heffernan at the University of Missouri, 83.5% of beef, 80% of soybeans, and 55% of flour are produced by the top four firms in those industries. A single company supplies the seeds for 90% of genetically modified corn and soybeans. {236}

Or consider the dairy industry. How did dairy products end up with their own food group while becoming a "required" part of a "balanced" diet? The $1.4 billion dollars spent on agribusiness lobbying may have played a part.{237}

That's why we need to watch where we get our nutrition information. Is the source driven by science or profits? When the answer is profits, we hear things like this from the Grocery Manufacturers of America—the people responsible for ensuring grocery stores are as profitable as possible: "Policies that declare foods 'good' or 'bad' are counterproductive." The Sugar Association agrees: "All foods have a place in a balanced diet." A similar platitude is offered by the National Soft Drink Association: "As refreshing sources of needed liquids and energy, soft drinks represent a positive addition to a well-balanced diet."{238}

None of these statements are backed by science. We will not become clogged if we treat ourselves to starch and soda occasionally. But does that mean starch and sweets should be *recommended* as part of a balanced diet? Food corporations know better than anyone what the facts are, but they are not going to condemn themselves. Quite the opposite. Food companies aggressively fight any scientific information that threatens their bottom line.

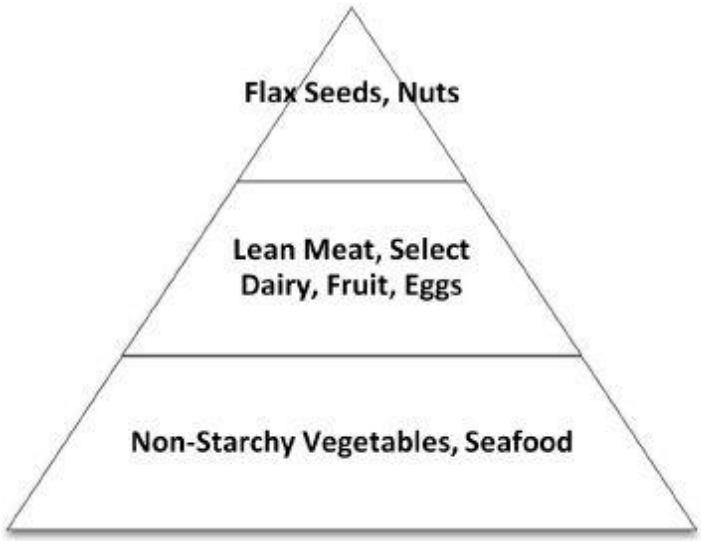
Sadly, the crowding out of sound science by money doesn't stop there. Nearly two-thirds, or 64 percent, of the members of national committees on nutrition and food receive compensation from food companies. David Willman at the *Los Angeles Times* reported: "At least 530 government scientists at the National Institutes of Health, the nation's preeminent agency for medical research, have taken fees, stock, or stock options from biomedical companies in the last five years." Both the food industry and our government are paid to keep profits high, not to teach us about nutritional science. A famous quote puts it plainly: "It is hard to get someone to believe one thing when they are paid to believe another."{239}

Marion Nestle, Michele Simon, and Michael Pollan have all written excellent books detailing how the food industry harms our health. I highly recommend reviewing their work. In the meantime, one short example is all we need to show how wellness stacks up against profits for the food industry.

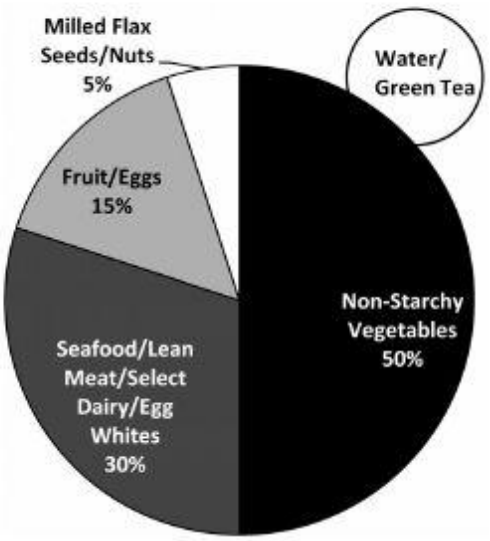
Science, millions of years of evolution, and common sense tell us that mother's milk beats out formula as the best food for babies. Basic human decency tells us that it would be wrong to persuade mothers who cannot afford sufficient quantities of formula to buy it anyway. Neither of these stopped the food industry from marketing infant formula to mothers in developing countries. This led to formula being diluted and contaminated, and, tragically, increased infant mortality. No matter. The food industry continued their promotional campaign, which included an advertisement distributed in Africa that depicted an African baby holding a container of formula with the caption: "The very best milk for your baby." Dr. Cecily Williams, a pediatrician who spent years working with African infants, reported: "Statistics have been collected to show that the death rate among artificially fed babies is much greater than that among breast-fed babies. And this is a death rate that shows a very marked class prejudice…. Misguided propaganda on infant feeding should be punished as the most criminal form of sedition…these deaths should be regarded as murder."{240}

In a world with more socially responsible corporations, we would have dietary guidelines focused on health instead of profits. They would look something like this:

A SANE Scientific Pyramid



A SANE Scientific Plate



Why has the food industry moved so slowly to answer the concerns of many nutritional scientists? At the risk of being repetitive, it's because the people generating the guidelines the industry adheres to

—the USDA—are not responsible for nutrition. They are responsible for a profitable food industry. That is why they are called the Department of Agriculture instead of the Department of Health, Nutrition, and Fat Loss. Dr. Marion Nestle, author of *Food Politics*, tells us: "The USDA is in the position of being responsible to the agriculture business. That is their job. Nutrition is not their job."{241}

Lest you think I am engaging in conspiracy theory, take a look at this chart. Note how the worse we do health-wise, the better the food industry does money-wise:

Food Quality/SANEity vs. Profitability

Type of Food	Quality/SANEity	Profitability
Sweeteners		★★★★★
Processed Starch	½	★★★★★
Whole Grain Starch	★½	★★★★
Oils	★★	★★★★
Dairy	★★½	★★★
Legumes	★★★	★
Fruits	★★★	★
Nuts, Flax Seeds	★★★½	★
Seafood/Lean Meat/Eggs	★★★★★	★
Non-Starchy Vegetables	★★★★★	★

Chapter 20

Sweeteners: More Profitable, Common, andDangerous than Ever

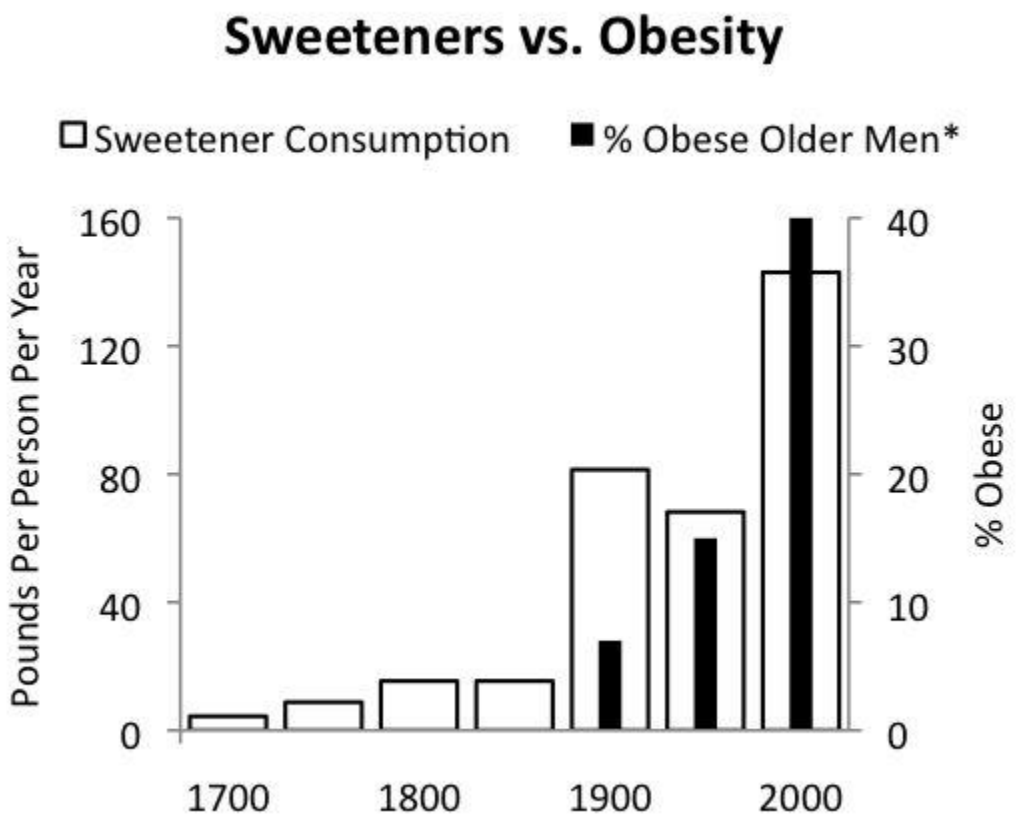
"*If only a small fraction of what is already known about the effects of sugar were to be revealed in relation to any other material used as a food additive, that material would promptly be banned."*

JOHN YUDKIN, UNIVERSITY OF LONDON{242}

The most common and powerful weapon in the food industry's arsenal is added sweeteners. Researcher Michael F. Jacobson, with the Center for Science in the Public Interest, said, "Carbonated soft drinks are the single most-consumed food in the American diet." The problem has gotten so bad that at the turn of the millennium the average American ate over 150 pounds of sweeteners per year because food companies add them to at least the following products: {243}

- baked or processed foods
- most anything not refrigerated
- low-calorie snacks
- "weight loss" products
- beverages
- "protein" bars
- low-fat salad dressing
- dairy products
- cough syrups

Thanks to this sweet saturation, the average American is eating a little under a half-pound of added sweeteners *per day*. That is a cup of clog every day. Two centuries ago, people ate about one-tenth of that. During the previous 99.8% of our evolution, our ancestors ate none.[244]



Why is this such a problem? Barry Popkin of the University of North Carolina at Chapel Hill pointed out that as early as the 1950s, research "showed that the link between sugar consumption and coronary heart disease…was stronger than the link between heart disease and the consumption of saturated fats from animal foods." This work, however, was ignored.[245]

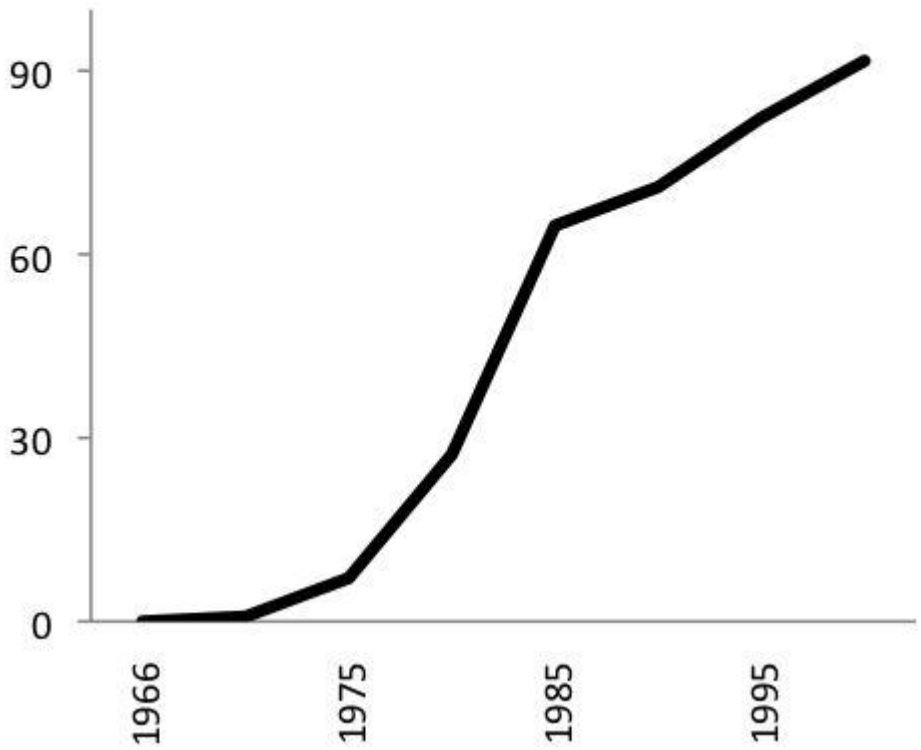
How did this inSANEity happen? Food that has all of its fat processed out tastes bad. It is hard to sell bad-tasting food. So food companies add sweeteners when they remove fat. Combine thegovernment's "food containing fat is evil" guidelines with $36 billion of "we have yummy low-fat food" marketing, and the result is that nearly a fifth of the average American's total calories come from sweeteners.[246]

The worst part is that we have no practical choice under the *Dietary Guidelines* regime. If foods that contain fat are off the table, then almost everything else has been stuffed with sweeteners. As a general rule, if it is not coming directly from a plant or an animal, then it has been sweetened. Even if it does not taste sweet, it has been altered with at least one of the following:

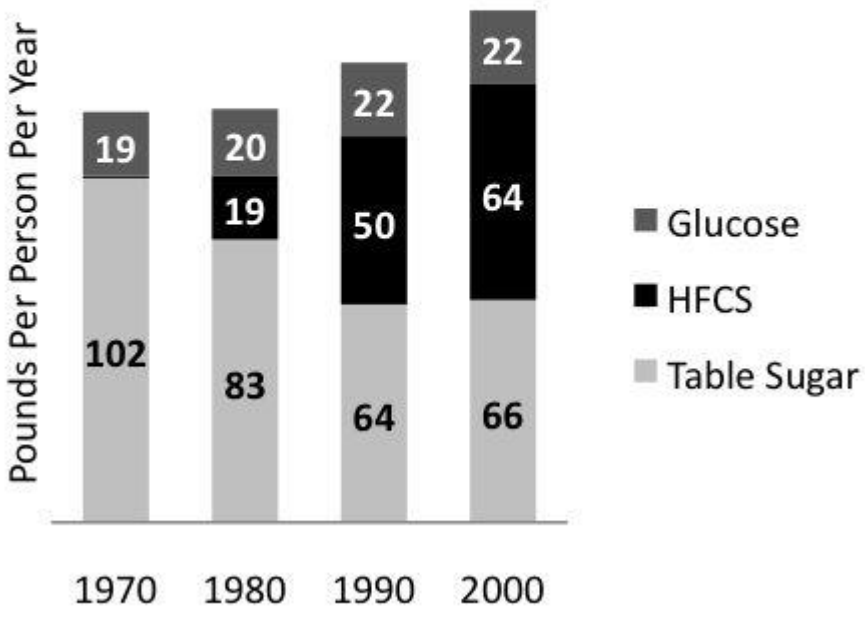
- Agave Nectar
- Barley Malt
- Beet Sugar
- Brown Sugar
- Buttered Syrup
- Cane Crystals
- Cane Juice Crystals
- Cane Sugar
- Caramel
- Carob Syrup
- Castor Sugar
- Confectioner's Sugar
- Corn Sweetener
- Corn Syrup
- Corn Syrup Solids
- Crystalline Fructose
- Date Sugar
- Demerara Sugar
- Dextran
- Dextrose
- Diastatic Malt
- Diatase
- Ethyl Maltol
- Evaporated Cane Juice
- Fructose
- Fruit Juice
- Fruit Juice Concentrates
- Galactose
- Glucose
- Glucose Solids
- Golden Sugar
- Golden Syrup
- Granulated Sugar
- Grape Sugar
- High-Fructose Corn Syrup
- Honey
- Icing Sugar
- Invert Sugar
- Lactose
- Malt Syrup
- Maltodextrin
- Maltose
- Maple Syrup
- Molasses
- Muscovado Sugar
- Panocha
- Raw Sugar
- Refiner's Syrup
- Rice Syrup
- Sorbitol
- Sorghum Syrup
- Sucrose
- Sugar
- Syrup
- Treacle
- Turbinado Sugar
- Yellow Sugar

Memorizing this list isn't necessary. However, it is important to know that *any* form of caloric sweetener causes clogs. Put differently, our fat metabolism system does not care where caloric sweeteners come from. To our metabolism, apple juice is basically the same as soda, since they both contain about thirty grams of sugar. A "weight loss" bar with thirty grams of sweeteners in it causes the same clog as a candy bar with thirty grams of sugar in it. "Heart smart" cereal is worse than breakfast pastries because they are both full of sweeteners, but folks feel bad eating more than two pastries while they will happily fill bowl after bowl with "enriched" sweetened cereal for breakfast.

It's also important to understand that the sweetener high-fructose corn syrup is especially common and fattening. This substance's high sweetness and low cost makes it one of the most ubiquitous ingredients in low-calorie and low-fat products. Combine this with the guidance to avoid calories and foods containing fat, and we end up unintentionally eating 10,475% more high-fructose corn syrup than we did in 1970.[247]


Grams of High-Fructose Corn Syrup Eaten Per Person Per Day
90
60
30
0
1966
1975
1985
1995

{248}



{249}

Eating all that high-fructose corn syrup is particularly harmful. To use the example of a clogged drain, think of eating high-fructose corn syrup as pouring quick-drying cement down your drain. Rats fed high-fructose corn syrup consistently get fatter and sicker than rats fed the exact same amount of sugar. The problem gets worse. Beyond leaving us hungry, clogged, and overweight, high-fructose corn syrup makes other food fill us up less. High-fructose corn syrup does not have low Satiety. It has *negative* Satiety. It leaves us hungrier than if we did not eat it. It alters our baseline levels ofSatiety hormones and drives us to eat more and more over time.{250}

As if this wasn't enough, studies at Princeton University show: "Laboratory rats given a high-sugar diet and then withdrawn from sugar experience changes in both behavior and brain chemistry similar to those seen during withdrawal from morphine or nicotine." Related research reports: "We have clearly shown sugar addiction in rats…causing brain and behavioral effects analogous to a little dose of amphetamine [stimulants]." In short, added sweeteners are addictive.{251}

When you switch to a SANE diet, you will experience the effects of sweetener addiction for the first couple of weeks. You feel like you are going through withdrawal because, well, you are. It takes the body a couple of weeks to overcome the chemical dependence caused by the sea of sweeteners we have been led to eat. But the switch is worth the effort. After all, who wants to be an addict?

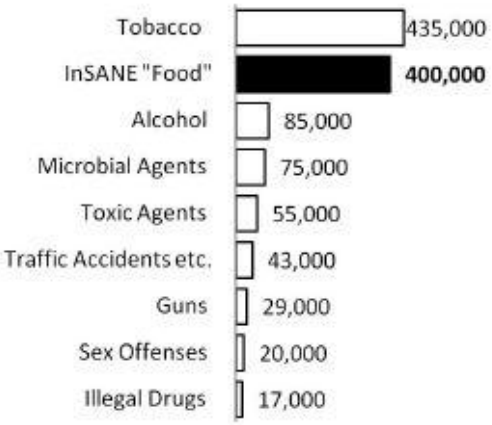
Sweeteners: The New Cigarettes?

In 1998 Coca-Cola offered schools $10,000 to advertise Coke discount cards to their students. Deeply in need of the funds, Greenbrier High School in Augusta, Georgia, invited Coke employees to lecture in classes and added the analysis of Coca-Cola to its chemistry curriculum. The school went on to make all 1,230 students dress in red or white shirts and to spell-out “Coke” while they snapped photos to send to Coke execs.{252}

Considering how harmful and addictive sweeteners are, why was the Coke stunt considered harmless fun while it would be illegal to do the same thing with other harmful and addictive substances?

Sweeteners and tobacco are both harmful and addictive. Yet the promotion of the former is encouraged while the promotion of the latter is highly regulated. The rationale cannot be that tobacco is so much more harmful. Tobacco only kills 8 percent more people. Both industries are even run by the same companies.{253}

Annual Deaths Caused by...[14]



A Brief History of Big Tobacco Taking Over the “Food” Industry

- 1970—Philip Morris buys Miller Brewing
- 1978—Philip Morris buys 97% of Seven-Up
- 1985—R.J. Reynolds buys Nabisco Foods
- 1985—Philip Morris buys General Foods
- 1988—Philip Morris buys Kraft, Inc.
- 1990—Philip Morris acquires Jacobs Suchard
- 1993—Philip Morris buys Nabisco cereals
- 2000—Philip Morris buys Nabisco Holdings

Sweeteners and tobacco are even rationalized the same way by industry insiders. Here is how both describe the safety of their products:

Tobacco	InSANE Food Products
“I believe nicotine is not addictive.” **Philip Morris Tobacco Company president**[15]	“Soft drinks do not cause pediatric obesity, do not reduce nutrient intake, and do not cause dental cavities” **National Soft Drink Association**[16]

They share the same marketing tactics:

Tobacco	InSANE Food Products
"The base of our business is the high school student." **Lorillard Tobacco Company**[17]	"We always, always have kid related programs." **Vice President, McDonald's**[18]

And finally, on health:

Tobacco	InSANE Food Products
"We believe the products we make are not injurious to health." **Tobacco Industry Research Committee**[19] "We accept an interest in people's health as a basic responsibility, paramount to every other consideration in our business." **Tobacco Industry Research Committee**[20]	"Actually, our product is quite healthy. Fluid replenishment is a key to health…Coca-Cola does a great service because it encourages people to take in more and more liquids." **Coke's CEO**[21] "The soft drink industry has a long commitment to promoting a healthy lifestyle for individuals—especially children." **The National Soft Drink Association**[22]

With so much in common, it seems odd that one of these is treated like the plague while it is fine for the food industry to spend hundreds of millions of dollars per year advertising sweets to children. Particularly when psychologists have shown that before the age of eight, children do not see commercials as marketing, they see them as fact.{254}

Consider the study from the *Journal of Marketing* that showed 70% of six-through-eight-year olds believe fast foods are healthier than food prepared at home. Researcher Kelly Brownell at Yale reports: "A study of Australian children ages nine to ten indicated that more than half believe that Ronald McDonald knows best what children should eat." He went on to report: "The average American child sees 10,000 food advertisements each year, just on television. Children watching Saturday morning cartoons see a food commercial every five minutes. The vast majority are for sugared cereals, fast foods, soft drinks, sugary and salty snacks, and candy…Between 1976 and 1987, the ratio of high- to low-sugar ads increased from 5:1 to 12.5:1."{255}

What's the moral of the story? Food companies are not going to stop with sweeteners. Nor can we rely on our government for help. They are the very source of the guidelines that leave us no practical choice other than to be slathered with sweeteners. It is up to us to end this inSANEity.

Chapter 21 shows how we can get our SANEity back.

It's All About Results—A Pragmatism Primer

> *"The efficacy of any treatment of obesity can be appraised only by the permanence of the result."*
> – H. Burch, Baylor University[25]

Pragmatists are results-oriented—they believe something is right or wrong based on its results. People can try anything they want and the true worth of the program is revealed by its results. If it works, it is right. If it fails, it is wrong. Consider Communism, for example. A pragmatist asks how Communism worked out in the real world and lets that settle the argument about its merits.

When it comes to fat loss, the pragmatic view is: "Does the fat-loss program cause you to lose body fat and keep it off forever without compromising the rest of your life? If so, then it is right. If not, then it is wrong." Unfortunately, this commonsense approach is not common practice. Despite the decades of data and tens of millions of heavy diabetic people that prove traditional weight-loss programs wrong, those people have been brainwashed into thinking that they failed because they didn't lose any weight, not that the traditional weight-loss programs failed them.

If a program fails, it is the program's fault. Programs are designed to deliver results. If it failed to deliver results, the program failed, not the person.

Think about software programs. If you cannot figure out how to use a software program, it is not because you failed. It is because the software program failed. Good software is easy to use. That is what makes it good software. It delivers excellent results for you. What good is any software program if it does not serve you?

Similarly, if you cannot stick to a fat-loss program forever, it is not because you are a failure. Good fat-loss programs are easy to use. That is what makes them good. They deliver excellent results for you.

Consider Oprah. She is one of the strongest and smartest women ever. Now look at Oprah's weight-loss efforts. Thinking pragmatically, thinking about results, what do we know about the weight-loss programs Oprah tried? If they were right, Oprah would be thinner and spend less time and money trying to burn body fat. She is far from a failure at anything. The programs failed her.

If Oprah hires someone to design her house and the house collapses, we would not blame Oprah. And if Oprah hires someone to design a piece of software and she cannot figure it out, the software designer is at fault. So, if Oprah hires someone to design a weight-loss program and she does not lose weight, the program failed—Oprah did not.

Results are all that matter. People do not fail fat-loss programs. Fat-loss programs fail people.

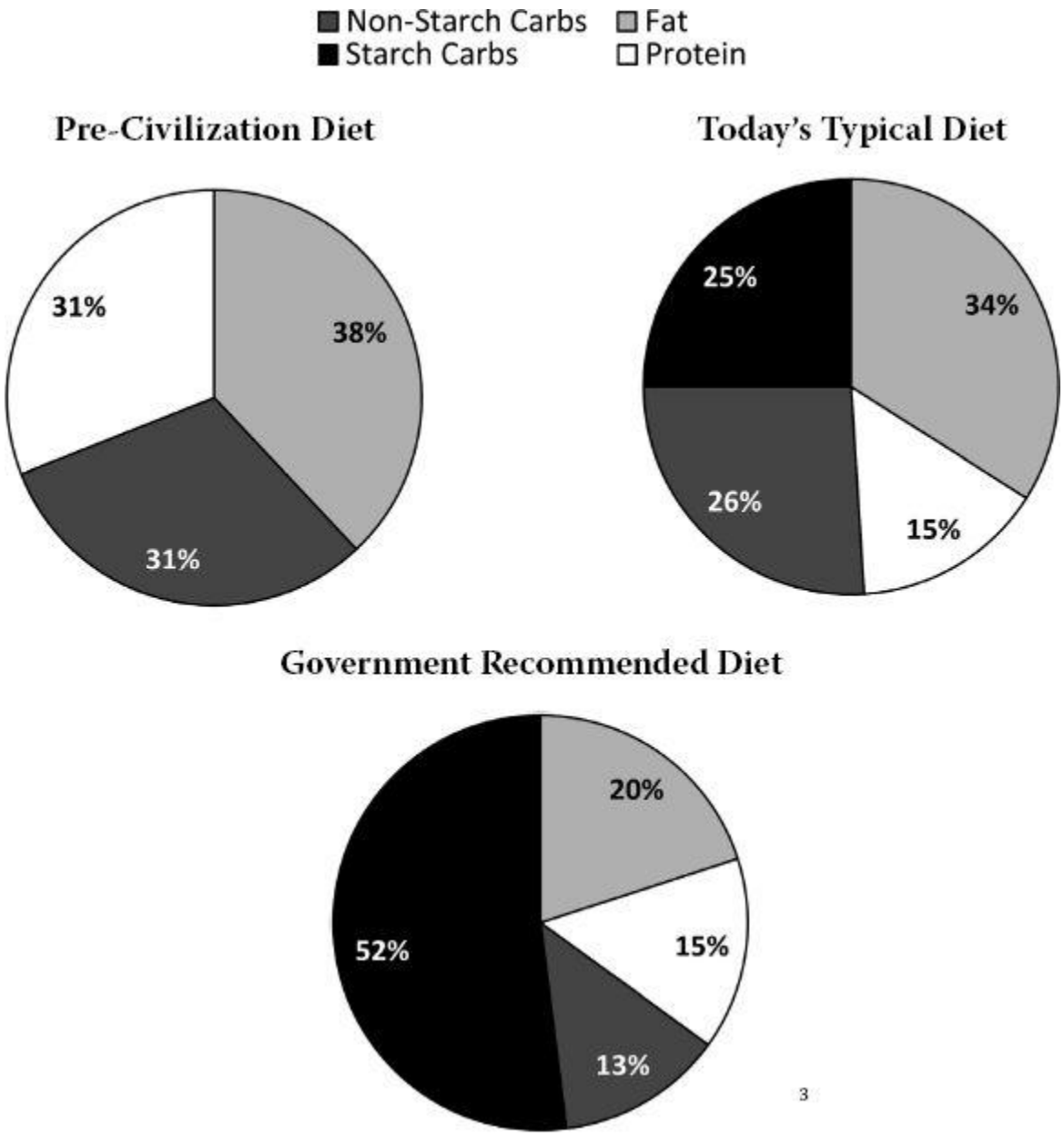
Chapter 21

How Humanity Can Get Its SANEity Back

> "*We found marked improvement…after advice to follow a Paleolithic [SANE] diet compared with a healthy Western diet…The study adds to the notion that healthy diets based on whole-grain cereals and low-fat dairy products are only the second best choice in the prevention and treatment of type 2 diabetes.*"
>
> **S. LINDEBERG, UNIVERSITY OF LUND**[256]

How do we avoid this inSANEity? We need to be pragmatic and ask: Is there any way of eating that is proven to keep folks free from obesity, diabetes, heart disease, and cardiovascular disease—aka the "diseases of civilization?"

Yes. We can eat the way we did before civilization. We can eat so much SANE food that we are too full for inSANE food.[257]



Unless our fat metabolism system completely transformed itself in the last 0.02% of our evolutionary history—the 12,000 years since we first started farming, filling it with food that it is not designed to digest will cause a clog. University of London researcher John Yudkin notes: "For a fairly considerable [evolutionary] alteration to occur in a population, something between 1,000 and 10,000 generations [25,000 to 250,000 years] are needed…. If there have been great changes in man's environment that occurred in a much shorter time…there are likely to be signs that man has not fully adapted, and this will probably show itself as the presence of disease." More simply: We did not change, but the quality of our diet did. It is making us heavy, diabetic, and sick.{258}

A study from the University of Texas Southwestern Medical Center at Dallas showed that our modern diet increases nearly all the risk factors for the diseases of civilization when compared to a pre-starch and sweetener diet. Similar work at the Haimoto Clinic and Duke University Medical Center has shown a more natural diet to be the best diet available for clog clearing. In a University of Melbourne study, middle-aged Australian hunter-gatherers started out lean and free from type 2 diabetes, then switched to a diet inspired by the government's guidelines and became overweight and type 2

diabetic. Then they reverted back to their natural diet. In only seven weeks, the tribesmen lost an average of 16.5 pounds.{259}

The list of clinical studies proving the same results goes on. But the bottom line is, as S. Boyd from Emory University tells us: "Following a diet comparable to the one that humans were genetically adapted to should postpone, mitigate, and in many cases prevent altogether, a host of diseases that debilitate us."{260}

Let's turn now to how we can do that. Part 6 and part 7 show you how to eat more and exercise less —smarter.

Part 6

Solution: Eat More—Smarter™

"*Treating obesity will come not from repetition of anachronistic preconceptions [outdated theories] but rather from the rigorous scientific approach."*

J.M. FRIEDMAN, ROCKEFELLER UNIVERSITY{261}

Chapter 22

How to Eat More—Smarter

"*Good news: The FDA has approved pills that help you lose weight by making you feel full. The recommended dosage is five thousand pills a day."*

CONAN O'BRIEN

You and I already know that we can eat more—smarter—by consuming more, higher-quality calories. But we first need to know what the highest-quality calories are, where we can get them, and why eating *more* of them helps us to burn body fat. Fortunately, we already know the answers to all of these questions.

We know that four factors determine calorie quality:

1. **S**atiety – How well calories prevent overeating

2. **A**ggression – How likely calories are to be stored as body fat

3. **N**utrition – How many nutrients are provided per calorie

4. **E**fficiency – How many calories can be converted into body fat

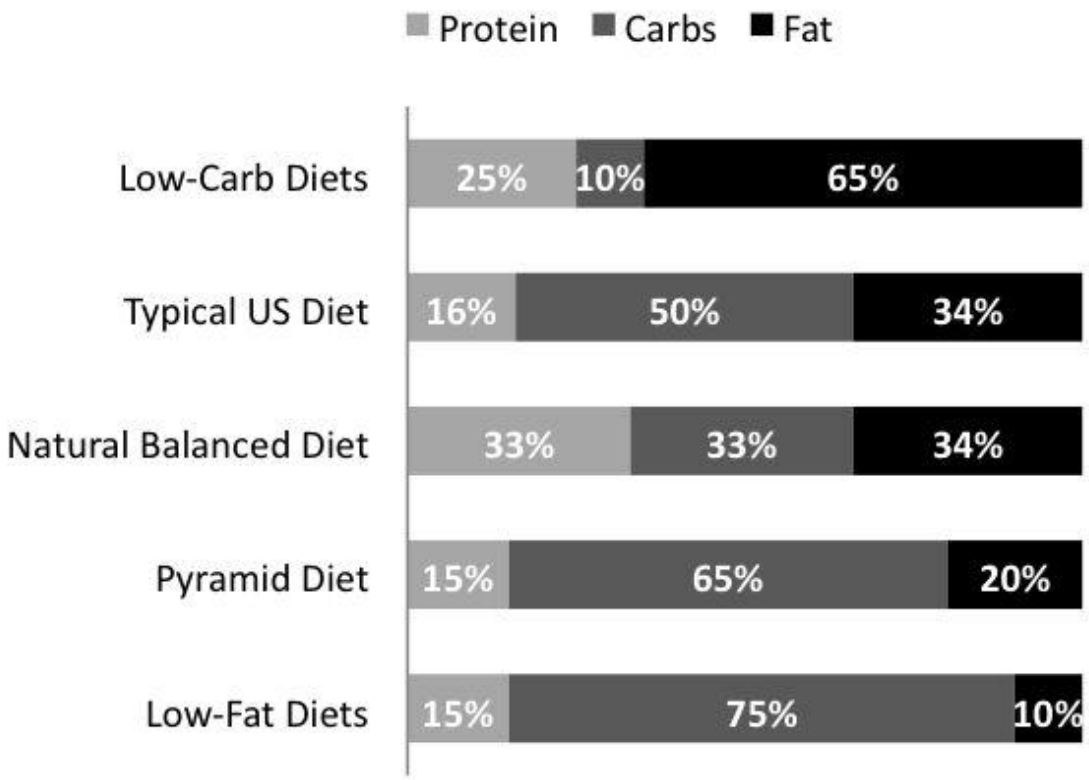
We know SANE calories come from the water-, fiber-, and protein-packed foods found in nature. That makes sense. Why would anything or anyone "design" us to run on a low-fat-low-protein-high-starch diet which was not possible for 99.8% of our evolutionary history?

Finally, you and I know we want to eat *more* SANE natural food because that's the easiest way to avoid inSANE unnatural starches and sweets. Now for the day-to-day details.

First and foremost: Do not diet. Dieting is restricting yourself abnormally for a short period of time. As D.S. Weigle at the University of Washington tells us, "energy-restricted diets are a physiologically unsound means to achieve weight reduction." You're better off switching over to eating more of the right foods. As E.C. Westman of Duke University reminds us, "The persistence of an epidemic of obesity and type 2 diabetes suggests that new nutritional strategies are needed if the epidemic is to be overcome." Your "new nutritional strategy" is neither abnormal nor short-term. You'll simply eat the way our ancestors ate for 99.8% of our history. You'll get back to normal eating so that your biological processes can get back to functioning normally.{262}

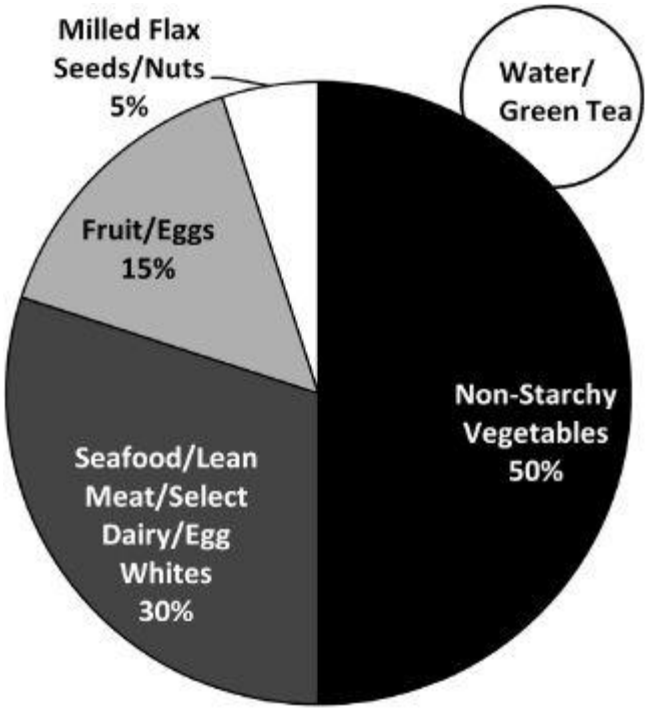
Still, when people see you dropping pounds of body fat while eating more, they will ask what diet you are on. If you have to give an answer, say you are on the *Natural Balanced Diet*. Natural because you are eating the food you evolved to eat—food that comes directly from the earth. Balanced because natural food automatically provides a perfect ratio of protein, fats, and carbohydrate—about a third of each.

Protein, Carbohydrate, and Fat in Common "Diets"



Consistent with the principle of not dieting, you will not be counting calories or using rigid meal plans. You will eat non-starchy vegetables, seafood, lean meat, fat-free or low-fat cottage cheese, fat-free or low-fat *plain Greek* yogurt, eggs, berries, citrus fruits, milled flax seeds, and nuts—in basically that order—and make your plate look like this:[263]

What a Natural Balanced Plate Looks Like



Rigid step-by-step plans do not work in the real world. Imagine trying to learn addition by memorizing every possible combination of numbers. Beyond being ridiculous, it's useless in real life. You and I learned addition by understanding the general rules and thinking logically from there. Permanent reduction of body fat is no different. Let's learn the general rules of eating more—smarter—and take it from there.

Here is the general idea for the types of food we should be eating relative to common diets:

Types of Food to Eat Relative to Common Diets

	Vegetables & Fruits	Seafood, Meat, & Eggs	Milled Flax Seeds & Nuts	Dairy & Beans	Oils	Starch	Added Sweeteners
Low-Carb Diet	Low	High	High	Low[1]	High	None	None
Typical U.S. Diet	Low	Medium	Low	Medium	High	High	High
Natural Balanced Eating	**Very High**	**High**	**Medium**	**Medium**	**Low**	**None**	**None**
Pyramid Scheme	Medium	Low	Low	Medium	Low	Very High	Low
Low-Fat Diet	Medium	Low	Low	Medium	None	Very High	Low

{264}

Here are the nutrients we will get relative to the typical U.S. diet:

A Natural Balanced Diet vs. the Typical U.S. Diet{265}

	Natural Balanced	Typical U.S.
Carbohydrate	Less	More
Sugar and Starch	Much less	Much more
Fruits	More	Less
Non-Starchy Vegetables	Much more	Much less
Protein	More	Less
Fat	Equal	Equal
Unnatural Trans-Fats[2]	Much less	More
Natural Unsaturated Fat	More	Less
Natural Saturated Fat	Equal	Equal
Antioxidants	Much more	Much less
Fiber	Much more	Much less
Vitamins & Minerals	Much more	Much less
Body Fat Stored	Much less	More
Food Eaten	More	Less

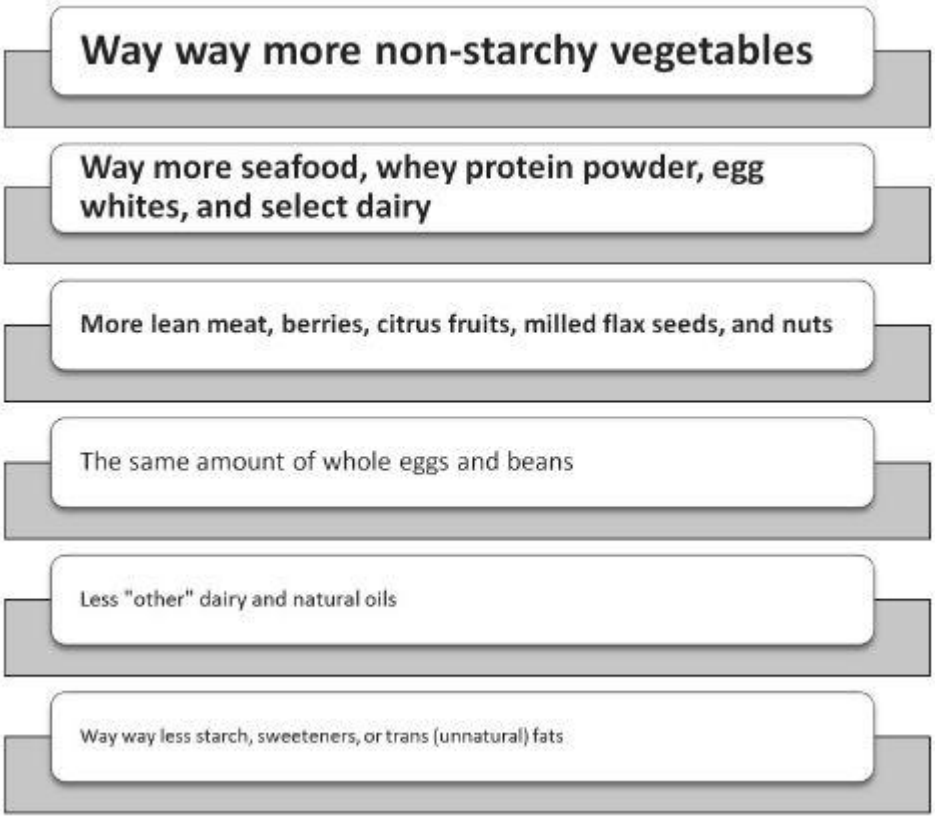
{266}

Review the last row of the last table. I am not saying eat *more* for shock value. Researchers estimate that prior to the advent of starch and sweeteners, our ancestors ate about five pounds of food per day. Thanks to all the water, fiber, and protein, SANE foods are literally larger than inSANE foods. Our shopping carts, refrigerators, and plates will be much fuller when we replace inSANE foods with SANE foods.{267}

No more tiny, sweet, starchy breakfasts. You can have luscious omelets overflowing with non-starchy vegetables and lean meat or generous protein-packed smoothies. No more flaccid sandwiches for lunch and soggy starch for dinner. Enjoy a triple serving of delightful seafood or succulent lean meat accompanied by a mountain of non-starchy vegetables. Let's add milled flax seeds to everything we can and enjoy nuts and fruits—focusing on berries and citrus fruits—as wonderful on-the-go snacks. Add some fat-free or low-fat cottage cheese or some fat-free or low-fat *plainGreek* yogurt as needed, and you will be satisfied and slim.

That is all there is to it from the eating side of things. It is not complicated. It cannot be complicated. How could it be? Staying healthy and fit is the most basic ability anyone could ever have.

There are specific tips and tricks later in the book to help you get back to normal eating in today's abnormal world, but for now eat more—smarter—by eating:



Freed from the myths and marketing at the heart of the obesity epidemic, the solution is simple: Return to normal. Eat as much as you want, whenever you want, as long as the food is coming from SANE sources so that you get a natural, balanced amount of carbohydrate, protein, and fat, while staying satisfied.

Chapter 23

A Natural Balanced Amount of Carbohydrates

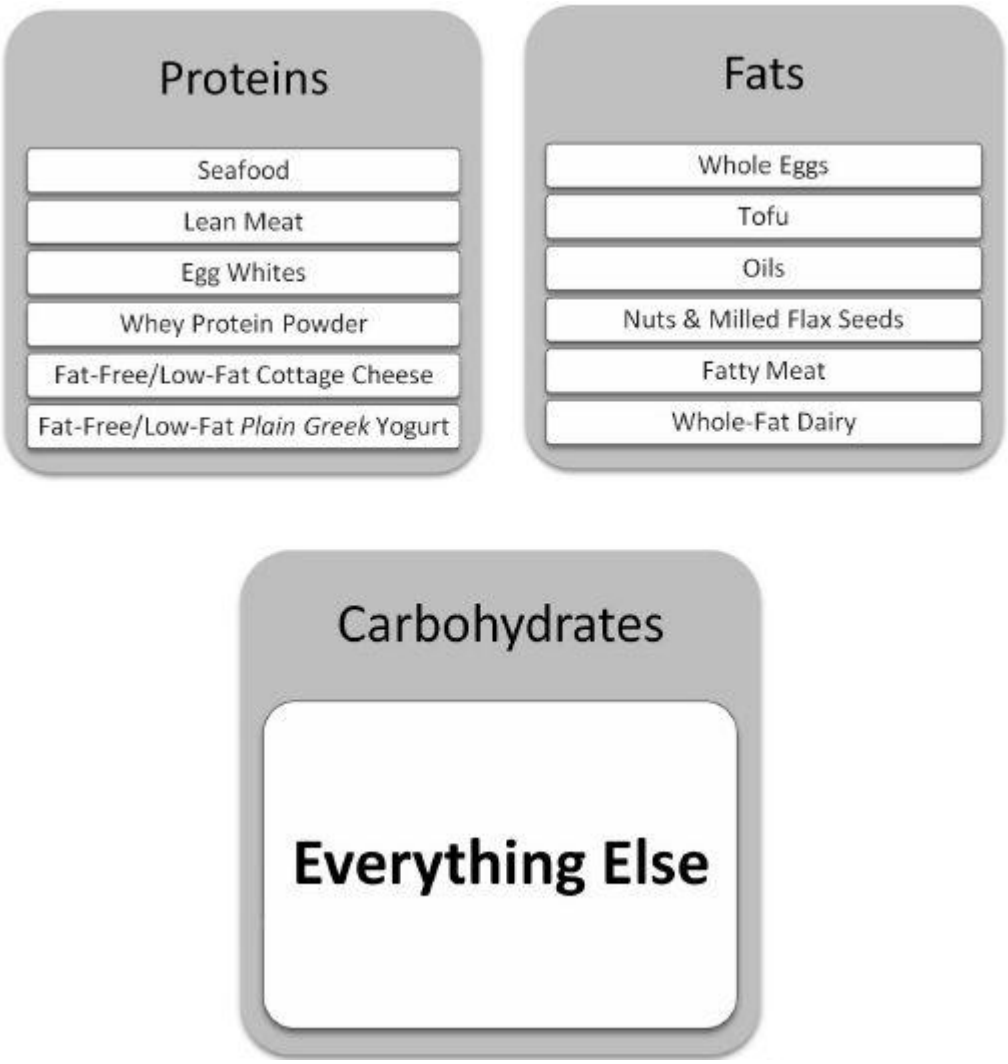
"*Diets should be moderate in carbohydrate, moderate in fat, and protein should contribute 25% to 30% of energy intake.*"

D.A. SCHOELLER, UNIVERSITY OF WISCONSIN-MADISON{268}

No matter how misinformed they are, people will say you are on a low-carbohydrate diet when they see you taking in a natural balanced amount of carbohydrates. Eating a large amount of non-starchy vegetables is the single most important aspect of eating more—smarter. These types of vegetables *are* carbohydrates. Therefore, eating more—smarter—is not a low-carb diet. People make this mistake because they do not realize that the vast majority of the foods making up their "balanced" diet are carbohydrates.

Defining carbohydrates as foods with most of their calories coming from carbohydrate, fats as foods with most of their calories coming from fat, and protein as foods with most of their calories coming from protein, we end up with:

Common Proteins, Fats, and Carbohydrates



For example, the calories in whole milk come from 30% carbohydrate, 21% protein, and 49% fat. Whole milk is mostly fat, so it is a fat. The calories in skim milk come from 53% carbohydrate, 42% protein, and 5% fat. Skim milk is mostly carbohydrate, so it is a carbohydrate. How about the so called “good source of protein” beans? They are 76% carbohydrate, 21% protein, and 3% fat. Beans are a carbohydrate. Broccoli is a carbohydrate with 71% of its calories coming from carbohydrate. So are bananas—93% carbohydrate. The point is that grains, potatoes, rice, breads, pasta, beans, fruits, vegetables, and most dairy products are carbohydrates. That does not leave much to put in the non-carbohydrate bucket other than seafood, meat, eggs, tofu, oils, nuts, whey protein powder, milled flax seeds, fat-free or low-fat cottage cheese, and fat-free or low-fat *plain Greek* yogurt.

With the vast majority of foods being carbohydrates, most people eat diets very high in carbohydrate and then call anything that is not very high in carbohydrate a high-protein or a high-fat diet. That is a mistake. Avoiding a diet very high in carbohydrate is not the same as going on a low-carbohydrate diet. No low-carbohydrate dieting for us. Just a natural and balanced intake of carbohydrate.

Also, try to avoid the complex differentiation between simple carbohydrate and complex carbohydrate. This distinction only causes confusion. For example, SANE fruits contain simple carbohydrates, while inSANE starches contain complex carbohydrates. The key to long-term fat loss and health is eating more water-, fiber-, and protein-rich SANE foods. The only water-, fiber-, and protein-rich SANE carbohydrates are non-starchy vegetables and fruits.

While non-starchy vegetables and fruits made up a substantial proportion of our ancestors' diet, protein was also vital for them. Perhaps they did not take down a woolly mammoth every time they needed some protein, but they found other sources. You too can use those sources in your natural balanced diet.

Chapter 24

A Natural Balanced Amount of Protein

> "*Exchange of protein for carbohydrates has been shown to improve blood lipids…. Higher protein diets have been associated with lower blood pressure and reduced risk of coronary heart disease."*
>
> **T.L. HALTON, HARVARD UNIVERSITY**{269}

Eating a natural amount of protein—at least one gram of protein per pound of body weight per day—is critical to getting our biological functions back to normal.{270} Why? First, high-Satiety protein fills us up and keeps us full, so we have no room for low-quality food. Second, our fat metabolism system will burn body fat instead of muscle. As researcher D.K. Layman from the University of Illinois tells us: "Use of higher protein diets reduces lean tissue loss to less than 15% and when combined with exercise can halt loss of lean tissue during weight loss."{271}

Some people say that eating at least a gram of protein per pound of body weight hurts the kidneys and liver. This is not borne out, however, in clinical testing. For instance, A.H. Manninen at the University of Oulu concluded: "Simply stated, there is no scientific evidence whatsoever that high-protein intake has adverse effects on liver function." T.L. Halton at Harvard University addresses the other part of the argument: "There is little evidence that high protein diets pose a serious risk to kidney function in healthy populations."{272}

On the other hand, guess how many studies show positive health benefits and body-fat loss stemming from a more balanced intake of protein? Dozens. A typical report comes from Loren Cordain at Colorado State University: "There is now a large body of experimental evidence increasingly demonstrating that a higher intake of lean animal protein reduces the risk for cardiovascular disease, hypertension, dyslipidemia, obesity, insulin resistance, and osteoporosis while not impairing kidney function." That's because researchers have shown that humans evolved to get about a third of our calories from protein. Dr. Cordain goes on: "So called …'very high protein diets' (30% - 40% total energy) actually represent the norm which conditioned the present day human

genome…The evolutionary template would predict that human health and well-being will suffer when dietary intakes fall outside this range."[273]

How could a basic part of human evolution harm rather than help us? Emory University researchers S.B. Eaton and M. Konner made the point well when they noted, "It would be paradoxical if humans… should now somehow be harmed as a result of protein intake habitually tolerated or even required by their near relatives."[274]

> "*…the Nurses' Health Study is the only large prospective study to have examined the link between dietary protein and cardiovascular disease….The group of women who ate the most protein…were 25% less likely to have had a heart attack or to have died of heart disease…eating a lot of protein doesn't harm the heart.*"
>
> **W.C. Willett, Harvard University**[275]

> "*Seafood and poultry have been associated with lower rates of coronary heart disease and cancer….*"
>
> **M.L. McCullough, American Cancer Society**[276]

How did the myth that protein is bad for us get started in the first place? The myth came out of studies where animals that were fed extreme amounts of protein experienced problems. However, rather than proving more protein is harmful, these studies prove that until we exceed two grams of protein per pound of body weight per day, we will get only healthier and slimmer by upping our protein intake.[277]

To put two grams of protein per pound of body weight into perspective, an inactive 150-pound person would not enter the protein danger zone until they ate eleven chicken breasts per day, every day. That would total two grams of protein per pound of body weight, and would mean that 60% of their total calories were coming from protein. That is a terribly imbalanced diet and an unnatural amount of protein.[278]

Bad things happen if we eat too much of anything. Luckily, it is nearly impossible to eat too much high-Satiety protein. Additionally, a natural increase in our protein intake will improve our cholesterol, triglycerides, and insulin regulation, while lowering our risk of cardiovascular disease. And it does not matter if the protein comes from lean meat. In fact, low levels of animal protein have been associated with an *increased* risk of strokes.[279]

Let's focus on meat for a moment. There is nothing wrong with eating high-quality meat. Besides the fact that meat was a cornerstone of our diet for most of our evolutionary history, there is no clinical data showing that meat is unhealthy. The *Journal of the American Medical Association* reviewed 147 studies on the impact of diet on health. They found zero correlation between meat consumption and cardiovascular disease. Separately, researchers found that people in England have eaten about the same amount of animal fat—the source of most of the concern with meat—since 1910. Meanwhile,

the number of heart attacks increased 1,000% between 1930 and 1970. It looks like animal fat is not causing the climb.{280}

Similarly, during basically the same period of time in the U.S., a similar increase in heart attacks occurred while the amount of animal fats being consumed dropped. Meat is not unhealthy. It is a fantastic source of protein and therefore a key part of a natural balanced diet. J.H. O'Keefe at the Mid America Heart Institute listed all of the advantages: “Diets high in lean protein can improve lipid profiles and overall health…Lean animal protein eaten at regular intervals improves satiety levels, increases thermogenesis [calorie burning], improves insulin sensitivity [clears clogs], and thereby facilitates weight loss while providing many essential nutrients.”{281}

Last but not least, at some point one of your more annoying coworkers will bring up some misguided magazine article arguing that protein promotes osteoporosis. This myth comes from the fact that digesting protein requires more calcium than the digestion of fat or carbohydrates. Certain individuals claim this finding shows that eating a lot of protein will suck calcium from our bones. That is inaccurate.

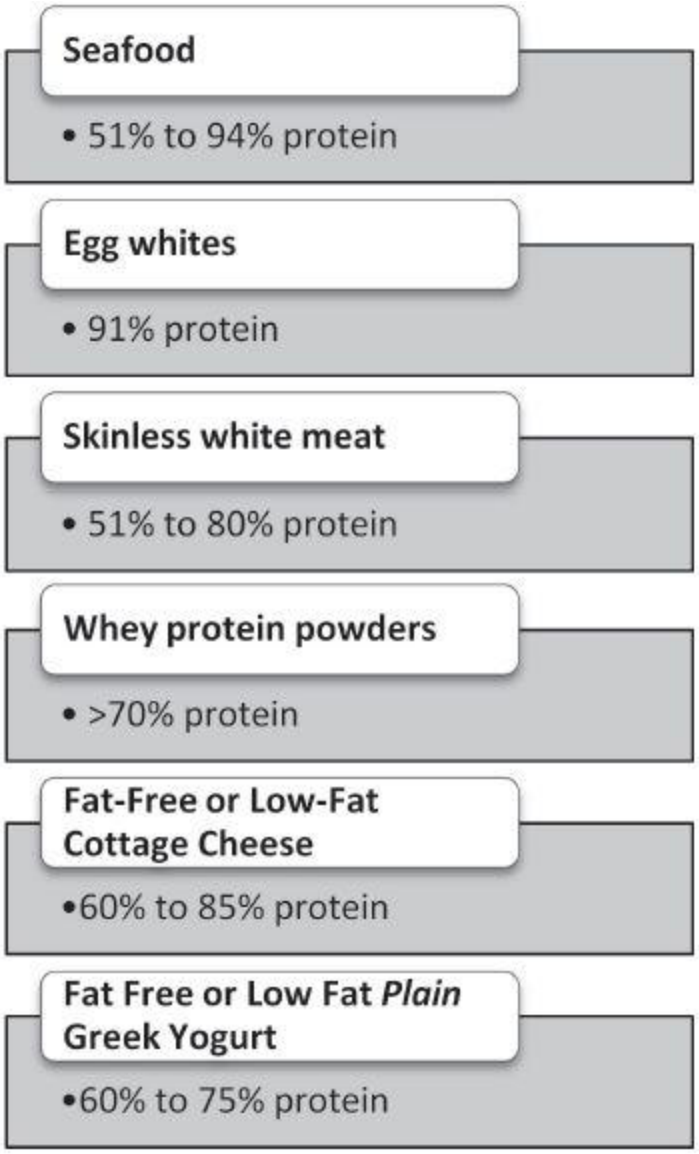
First, you will not be eating *a lot* of protein. You will be eating the amount humans evolved to eat. Second, you will have no need to grab calcium from your bones since a natural balanced diet provides at least 150% more calcium than the typical U.S. diet.{282}Third, protein digestion does not negatively impact bones if intake of the mineral phosphorus is increased, and a natural balanced diet does that. Finally, while more protein increases the need for calcium, it also increases the body’s ability to absorb calcium. When more protein is taken in, the body automatically makes better use of calcium. Studies show that a natural level of protein*increases* bone density by raising levels of the protein IGF-1.{283}

> “*With respect to adverse effects, no protein-induced effects are observed on net bone balance or on calcium balance in young adults and elderly persons. Dietary protein even increases bone mineral mass and reduces incidence of osteoporotic fracture.*”
>
> **M.S. WESTERTERP-PLANTENGA, MAASTRICHTUNIVERSITY**{284}

Good Sources of Protein

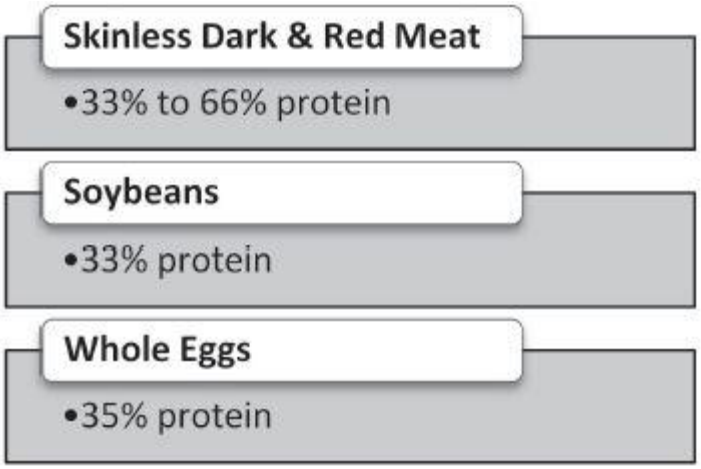
The only drawback with protein is the misinformation about good sources of protein. For our purpose, we will define good sources of protein as common foods with more calories coming from protein than from fat or carbohydrates. In this category there are only six good sources of protein.

The Six Good Sources of Protein



Beyond that are three other pretty good sources of protein. They are given that designation because quite a few of their calories come from fat. Which is fine. Natural fats are good for us. We should be getting about a third of our calories from fat. But let's call a spade a spade. If 43% of the calories in soybeans—aka tofu—come from fat and 33% come from protein, we are eating mostly fat when we eat soybeans. Again, that is fine. Soybeans are SANE. But it does not make sense to call something that is mostly fat or carbohydrate a good source of protein. Pretty good is reasonable though.

The Three Pretty Good Sources of Protein



Everything else is not even close to being a good source of protein. Dairy products other than the cottage cheese and *plain Greek*yogurt are mostly fat and sugar. Beans are mostly carbohydrate. Nuts are mostly fat. Again, being mostly fat or carbohydrate does not necessarily make these foods inSANE. However, they cannot be called good sources of protein.{285}

What is the other part of a natural, balanced protein plan? Is it the word dreaded by all people wishing to banish body fat? Yes, the remaining part of the diet which kept our ancestors healthy and slim for millions of years is fat. Chapter 25 recaps the facts.

Chapter 25

A Natural Balanced Amount of Fat

> "*Simply lowering the percentage of energy from total fat in the diet is* unlikely *to…reduce coronary heart disease incidence."*
>
> **F.B. HU, HARVARD UNIVERSITY**{286}

Overcoming the fear of eating fat is critical to eating a natural, balanced ratio of nutrients. We should never again skip SANEsirloin steak and non-starchy vegetables in favor of inSANE whole wheat spaghetti with whole wheat garlic bread. Fat is delicious, Satisfying, unAggressive, and impossible to overeat unless combined with starch or sweeteners. That is why most people end up losing weight on low-carbohydrate, high-fat diets like *Atkins*. Basically, any diet that discourages dietary fat encourages weight gain.{287}

You and I have already reviewed the research disproving that foods that contain fat are fattening, but let's quickly recap. If we set aside the myths we've been told for the past forty years, there is no reason to think that fat is bad for us. Natural foods contain fat. Natural foods were the only thing our ancestors ate for 99.8% of our evolution. How could the only foods available to us for 99.8% of our evolution harm us? If anything, we must have evolved to thrive on foods that contain fats.

Furthermore, the*theory* that fat is fattening has never been proven, despite over a billion dollars worth of research attempting to do so. Ironically, researchers *have* proven that unsaturated fats help burn body fat. Finally, a decline in the proportion of fat in our diet has been accompanied by the largest spike in obesity and disease rates in history.{288}

A great many scientific studies show that worrying about eating fat is at best a distraction, and at worst harmful and fattening. Consider the research done just at Harvard Medical School:{289}

- "The emphasis on total fat reduction has been a serious distraction in efforts to control obesity and improve health in general."

- "Within the United States, a substantial decline in the percentage of energy from fat during the last two decades has corresponded with a massive increase in the prevalence of obesity. Diets high in fat do not appear to be the primary cause of the high prevalence of excess body fat in our society, and reductions in fat will not be a solution."

- "Among European countries, no association was observed between the national percentage of energy from fat and median body mass index in men…a clear inverse relation was observed in women."

- "Limiting unsaturated fats, which is usually done by increasing carbohydrate…is detrimental. This is consistent with metabolic studies indicating that replacing unsaturated fats with carbohydrate increases triacylglycerol and decreases HDL cholesterol. Furthermore, low-fat, high-carbohydrate diets provide a higher glycemic load, aggravate hyperinsulinemia [clogging], and may thus increase the risk of diabetes and coronary artery disease."

- "Studies and…trials have provided strong evidence that a higher intake of [omega-3] fatty acids from fish or plant sources lowers risk of coronary heart disease."

Chapter 26 shows you how to eat SANE, natural, not necessarily fat-free foods, while feeling more satisfied and energized than ever.

Chapter 26

Five Steps to Eating More—Smarter

"*Moderate replacement of dietary carbohydrate with low-fat, high-protein foods in a diet containing a conventional level of fat significantly improved…cardiovascular risk profiles in healthy…subjects."*

B.M. WOLFE, UNIVERSITY OF WESTERN ONTARIO{290}

A common assumption is that switching over to a healthier lifestyle means spending a lot more money and time on food. That's not true, at least not the way the eat more—smarter—program works. It focuses on enabling you to eat more SANE food while spending as little time and money as possible. While growing your own vegetables and buying organic food is great, I am going to assume that spending any more than twenty minutes and $10 on food per day is not practical. Eating more—smarter—is based on general principles that work in real life.

Also keep in mind that obesity has been linked to a long list of ailments:{291}

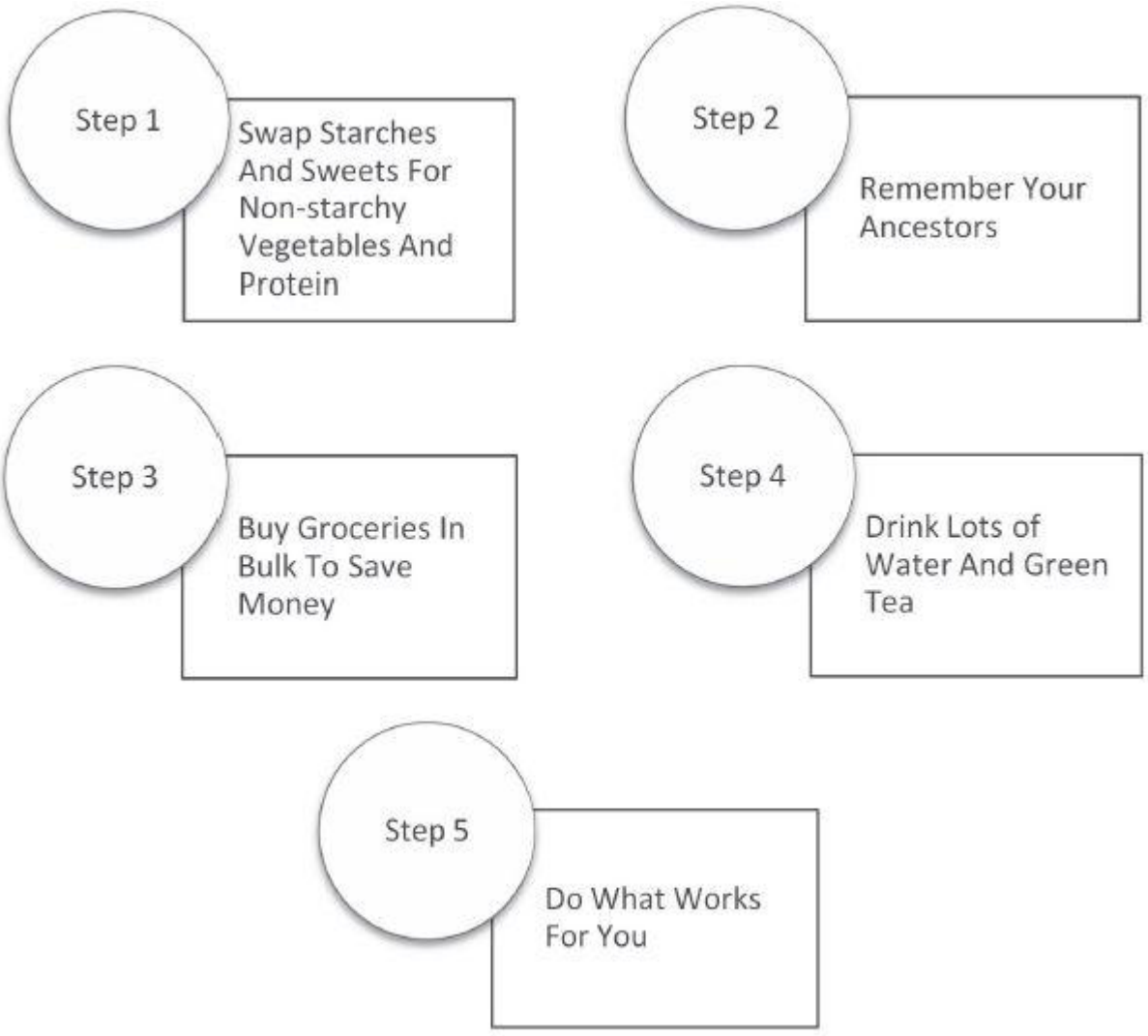
- Depression
- Discrimination
- Osteoarthritis
- Rheumatoid Arthritis
- Birth Defects
- Breast Cancer
- Cancer of the Esophagus
- Colorectal Cancer
- Renal Cell Cancer
- Cardiovascular Disease
- Impaired Respiratory Function
- Carpal Tunnel Syndrome
- Chronic Venous Insufficiency
- Daytime Sleepiness
- Deep Vein Thrombosis
- Type 2 Diabetes
- Gallbladder Disease
- Gout
- Heart Disorders
- Hypertension
- Impaired Immune Response
- Infections
- Infertility
- Liver Disease
- Low Back Pain
- Obstetric and Gynecologic Complications
- Chronic Pain
- Pancreatitis
- Sleep Apnea
- Stroke
- Surgical Complications
- Urinary Stress Incontinence

Philip A. Wood at the University of Alabama at Birmingham states plainly "that obesity increases risks of disease as much as 20 years of aging does." With excess body fat linked to such major problems, there's no need to worry about minor dietary issues before we've switched from inSANE food to SANE food. As researcher John Yudkin from the University of London puts it: "There is no point in worrying about imaginary dangers. If you do, you will be likely to go on overlooking the real dangers."{292}

A good example of this principle is artificial sweeteners. Has a typical intake of artificial sweeteners been proven to be fattening? No. Has a typical intake of sugar and high-fructose corn syrup been proven to be fattening? Yes. If you crave sweets, do not worry about replacing sugar and high-fructose corn syrup with artificial sweeteners. Of course, eliminating all sweeteners would be ideal. But there is no need to worry about the *possible* negative effects of artificial sweeteners before you've freed yourself from the *proven*negative effects of actual sweeteners.

The Five Steps to Eating More—Smarter

These steps are designed to help you develop excellent health along with a world-class physique. If your goals are more modest, then you don't need to follow these rules precisely. Do what works for you. The key is letting the scientific facts guide you to make sure that you accomplish your goals as efficiently as possible.



Step 1: Eat So Many Non-Starchy Vegetables and So Much Protein That You Are Too Full for Starches and Sweets

If it is a non-starchy vegetable, overeat it. I am talking ten or more servings of non-starchy vegetables per day (lists of non-starchy vegetables, protein, fruits, nuts, and seeds are coming up in a few pages).

While it is absolutely not required, eating ten or more servings of non-starchy vegetables per day is easier if you use a blender to make vegetable and fruit smoothies. Don't use a juicer. It removes fiber and healthy nutrients. Use a blender and mix a lot of any green vegetable with fresh or frozen berries or oranges. Add some vanilla-flavored whey protein powder, cinnamon, and vanilla extract, and the smoothie is quite tasty.

If fresh non-starchy vegetables are not available, frozen ones are fine. Wheat grass and other powdered green "super foods" are convenient but taste bad. If you can tolerate wheat grass-like powders, I recommend buying them in bulk online (I use znaturalfoods.com). The finer the consistency of the powder, the easier it is to mix and drink. Get the finest powder you can find.

Avoid canned vegetables and canned fruits if at all possible. Focus on fresh or frozen, deeply colored, non-starchy vegetables that grow above ground. When it comes to fruits, focus on berries and citrus. They are the most SANE options.

When it comes to protein, the most effective (body fat-burning) way to eat enough protein is to divide your protein intake into at least five 30-gram servings evenly spaced throughout the day. Fortunately, this is easy. Here is one way to do it.

- **Step 1:** Add eight egg whites to breakfast. Scramble them. Microwave them. Whatever. This shot of pure protein jump starts your fat metabolism system and sets you up to burnbody fat all day. A whey protein shake also works. Make sure the shake has less than ten grams of sugar in it, and at least thirty grams of protein in it. Prep time: five minutes.

- **Step 2:** Drink a whey protein shake between breakfast and lunch. Same sugar and protein recommendation as above. Prep time: five minutes.

- **Step 3:** Eat a double portion of protein along with a triple serving of non-starchy vegetables for lunch. Prep time: no additional time. You have to do something for lunch anyway.

- **Step 4:** Drink another whey protein shake between lunch and dinner. Same sugar and protein recommendation as above. Prep time: five minutes.

- **Step 5:** Eat a double portion of protein along with a triple serving of non-starchy vegetables for dinner. Prep time: no additional time. You have to do something for dinner anyway.

Total Prep Time = Fifteen minutes

Total Positive Impact = Dramatic

If you enjoy the convenience of whey protein powders, I recommend getting sample packets online or at a local supplement store until you find one that you like. Good supplement stores give out sample packets of whey protein for free. If they do not, they are likely shady and I recommend going to a different supplement store. When you find one you like, buy it in bulk online. I use vitaglo.com, Amazon.com, or supplementwarehouse.com.

Other inexpensive and convenient forms of protein are canned tuna, canned salmon, egg whites, frozen salmon burgers, frozen turkey burgers, fat-free or low-fat cottage cheese, fat-free or low-fat *plain Greek* yogurt, and canned chicken. When it comes to seafood and meat, canned is fine. I am not a fan of what canning does to the taste of the food, but it is less expensive and more convenient.

Putting these recommendations all together, the first step to eating more—smarter—is as simple as doubling the amount of seafood, lean meat, eggs (eat three egg whites for every whole egg), fat-free or low-fat cottage cheese, or fat-free or low-fat *plain Greek*yogurt, and tripling the amount of non-

starchy vegetables that you would typically eat at each meal. This guarantees you will be too full for starch or sweets while never leaving the table feeling deprived.

When eating a double serving of protein and a triple serving of non-starchy vegetables is not practical, mix a scoop or two of whey protein and some milled flax seeds with water and drink it before the meal. Blend it with some ice if it is convenient.

Of course nobody can to do this all the time, but the more non-starchy vegetables and protein that you eat in place of starches and sweets, the healthier you will be and the more body fat you will burn.

> "*Cutting back on carbohydrates [specifically starches and sweets] and replacing those calories with protein lowers the levels of triglycerides that increase the risk of heart disease and also boosts HDL, the protective form of cholesterol."*
>
> **W.C. Willett, Harvard University**[293]

> "*Diets with increased protein have now been shown to improve adult health with benefits for treatment or prevention of obesity, osteoporosis, type 2 diabetes, Metabolic Syndrome, heart disease."*
>
> **D.K. Layman, University of Illinois**[294]

Step 2: Remember Your Ancestors

Unless hunters and gatherers hunted or gathered it, we are not designed to digest it and it will create a clog. If anything other than cooking or blending is required between the plant or animal and your stomach, then it does not belong in your stomach to begin with.

Here is a quick quiz to illustrate this rule. Circle how we get the foods listed. The answers are in the next footnote.

The "Is It Actually Natural" Quiz

Food	How Humans Get It		
Fruit	Process/Manufacture	Gather	Hunt
Bread	Process/Manufacture	Gather	Hunt
Rice	Process/Manufacture	Gather	Hunt
Vegetables	Process/Manufacture	Gather	Hunt
Seafood	Process/Manufacture	Gather	Hunt
Meat	Process/Manufacture	Gather	Hunt
Nuts	Process/Manufacture	Gather	Hunt
Flax Seeds	Process/Manufacture	Gather	Hunt
Pasta	Process/Manufacture	Gather	Hunt
Sweets	Process/Manufacture	Gather	Hunt
Cereal	Process/Manufacture	Gather	Hunt
Eggs	Process/Manufacture	Gather	Hunt

The exceptions to this rule are whey protein powder, fat-free or low-fat cottage cheese, fat-free or low-fat *plain Greek* yogurt, and starchy vegetables. Whey and select dairy are SANE, so enjoy them even though they were not available to our hunter-gatherer ancestors. On the other hand, even though starchy "vegetables" such as potatoes and corn were available to our ancestors, these foods should be avoided.{295}

One more note about "processing." The only kinds of "processing" which do not cause clogs are freezing, cooking, canning (for meat and seafood only), and grinding/blending. There is nothing wrong with frozen vegetables, frozen fruit, canned tuna, salmon, or chicken, and ground meats. Pre-cooked and canned seafood and meat are also fine, but precooked or canned vegetables and fruits should be avoided unless they are your only option.

When in doubt, look at the ingredient list. If it is more than three items long—excluding spices—or contains anything that could not be hunted or gathered, then it is inSANE. For instance, Costco sells these wonderful frozen salmon and turkey burgers. The ingredients are basically salmon or turkey along with some seasoning. That is good food. I grill a bunch every few days and take them to work since they are excellent "desk food." Costco also sells fish sticks and chicken nuggets with ingredient lists about a long as this paragraph and chocked full of unnatural substances. Those are not good.

Step 3: Buy Groceries in Bulk to Save Money

A great way to affordably eat a lot of high-quality food is to buy it at bulk wholesalers like Costco or Sam's Club whenever possible. By buying in bulk, you will be able to eat more higher-quality food while spending about $10 per day on food. That is a great deal.

Here is the actual grocery list my wife and I take to Costco every *other* week. That is the other nice thing about buying in bulk. It dramatically reduces the amount of time you have to spend grocery shopping.

This is a lot of food. Fortunately, it only costs about $10 per person, per day, and we do not need to buy all of it every time we go to the store.

Non-Starchy Vegetables

- 2 bulk packages of mushrooms
- 3 bulk packages of red peppers
- 1 bulk package of all natural tomato sauce
- 5 bulk packages of romaine lettuce
- 5 bulk packages of spinach
- 2 bulk packages of frozen mixed vegetables
- 2 bulk packages of frozen green beans
- 1 bulk package of celery
- 2 bulk packages of sugar snap peas
- 1 bulk package of carrots

Seafood

- 2 bulk packages of salmon
- 1 bulk package of canned tuna
- 1 bulk package of salmon burgers

Meat/Eggs

- 1 rotisserie chicken
- 1 bulk package of eggs
- 1 bulk package of ham steaks
- 1 bulk package of turkey burgers
- 1 bulk package of ground turkey

Fruit

- 1 bulk package of grapefruit
- 1 bulk package of oranges
- 3 bulk packages of frozen blueberries
- 3 bulk packages of frozen mixed berries
- 1 bulk package of frozen strawberries

Nuts/Seeds

- 1 bulk package of mixed nuts
- 1 bulk tub of natural peanut butter
- 1 bulk tub of soy nuts
- 2 pounds of milled flax seeds (ordered online)

Other

- 1 bulk package of 2% fat cottage cheese
- 1 bulk package of unsweetened cocoa powder
- 1 bulk package of black beans
- 1 bulk package of fat-free or low-fat *plain* Greek yogurt

Step 4: Drink Lots of Water and Green Tea

Studies show that the more water we drink, the more body fat we burn. More water decreases the concentration of various substances in our blood, which consequently increases our *ability*to burn body fat. Additionally, more cold water increases our *need*to burn body fat. Studies show we burn about two calories for every ounce of cold water we drink.[296]

> "*…increases in drinking water were associated with significant loss of body weight and fat over time…"*
>
> **J.D. STOOKEY, CHILDREN'S HOSPITAL OAKLANDRESEARCH INSTITUTE**[297]

Water is all good. Eight glasses of water a day is required to burnbody fat effectively. More is better. If your urine is not clear, if you are ever thirsty, or if you have room to drink things other than water—or green tea—then you could be slimmer and healthier by drinking more water.

The easiest way to drink an optimal amount of water is to fill up a gallon jug in the morning and to make sure it is empty two hours before you go to bed. Another great way to boost your water intake is to fall in love with green tea—the only beverage as beneficial as water.

Green tea comes from the same plant as black tea (the tea most common in the U.S. and Europe) but it is processed differently. Its unique processing leaves green tea with a large amount of a substance called polyphenols—especially ECGC (*epigallocatechin gallate*). From a health perspective, the polyphenols in green tea have been shown to help prevent:

Weight Gain

- Weight Gain
- Cancer
- Hypertension
- Cardiovascular Disease
- Dental Issues
- Insulin Resistance
- Virus Infections
- Bone Issues
- Parkinson's Disease
- Alzheimer's Disease
- Kidney Stones
- Eye Issues
- Atherosclerosis
- Low HDL Cholesterol
- Inflammatory Bowel Disease
- Diabetes
- Liver Disease
- Bacterial Issues[8]

The body fat burned by green tea well outweighs the body-fat-burning effects of the small amount of caffeine in it (which is one-fifth the caffeine in a cup of coffee).Researchers suspect green tea's unique body fat burning effect has to do with the interaction of green tea's polyphenols, caffeine, and the hormone noradrenaline. To maximize all the benefits green tea has to offer, drink *ten* bags worth of it per day.{298}

Now you may be thinking, "Ten bags of green tea on top of all that water? I am going to spend all day in the bathroom, be really jittery, and will not have any money left. Isn't that too much fluid, too much caffeine, and too much money?" Luckily, this is not an either/or proposition:

- **Hydration**: All the green tea we drink counts toward our water goals. If you drink ten eight-ounce cups of green tea, that counts as ten eight-ounce cups of water. Also, you can brew a lot of green tea in a little water. For example, I brew eight bags of green tea at a time in eight ounces of water. I let it sit for a few minutes, add ice, and drink it through a straw—key for keeping teeth white. Do that once in the morning and once in the afternoon, and you are good to go.

- **Caffeine**: Decaf green tea is as healthy and helpful as regular green tea. If you crave caffeine like me, a bag of regular green tea only contains 30 milligrams of caffeine, and up to 300 milligrams of caffeine per day is harmless. Ten bags of green tea per day gives us 300 milligrams of caffeine per day.{299}

8 oz. Unless Otherwise Noted	Caffeine (mg)
1 Max Strength Nodoz Pill	200
Brewed Coffee	150
One Bag Black Tea	80
Monster Energy Drink	80
Rockstar Energy Drink	80
1.5 oz. Espresso	77
Red Bull Energy Drink	76
Full Throttle Energy Drink	72
One Bag Green Tea	30
Decaffeinated Coffee	7
One Bag Decaf Green Tea	3

{300}

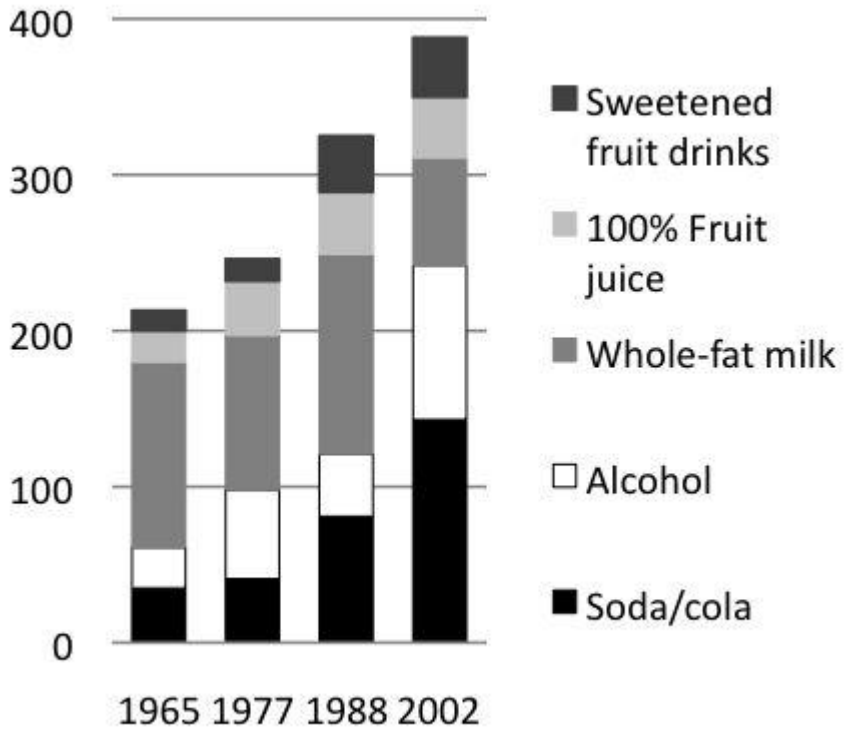
Overspending: It is cheap and easy to buy regular or decaf green tea in bulk. I have Amazon.com ship a bulk container of green tea to me automatically every month for $0.08 per bag—including shipping and handling.{301} That is less than a dollar a day to get all the benefits green tea has to offer. The monthly delivery part is also good because the fresher the green tea, the better it is for us.{302}

Also keep in mind that there is a big difference between drinking tea for enjoyment and drinking green tea for health. Tea is like wine. Just as there is $5 wine and $500 wine, there is $0.08 green tea and $8.00 green tea. If you already enjoy more expensive tea, keep it up and add drinking at least ten bags of less expensive green tea to your day.

If you do not like green tea hot, add ice and drink it cold. If you do not like caffeine, drink decaf. If you do not want to stain your teeth, drink it through a straw. If you do not like the taste, add some lemon juice or drink it with something SANE you do like. And stick to sipping green tea instead of swallowing green tea supplements. Studies show that most green tea supplements are not as good for us as natural green tea.{303}

Finally, drinking more water and green tea makes it easier to avoid drinking inSANE calories. The easiest way to create a clog is to drink inSANE calories. If it is not water, green tea, or something else calorie-free—aka coffee without cream or sugar—or something you personally blended from SANE foods—drinking it will destroy the fat metabolism system fast and furiously.{304}

Calories Drank Per Person Per Day in the USA



{305}

"*The average American today gets more than 450 calories a day from beverages… beverages provide twice as many calories today as they did in 1965….*"

ROBERT PAARLBERG, HARVARD UNIVERSITY{306}

Step 5: Do What Works for You

It is perfectly reasonable to reach this point and say, "I cannot do*all* of that" or "I do not want to do *all* of that." No problem. Eating smarter does not mean being perfect. You merely need to be armed with the information necessary to look and feel good. You can apply as much or a little of it as you like, depending on how much body fat you want to lose and how much better you want to feel.

What most people find is that they start doing the basics outlined here—swap as many starches and sweets as possible for non-starchy vegetables and protein—love the results, and then want to go further.

Here is a handy table to guide you to your specific fat loss goal.

How to Achieve Your Fat Loss Goal{307}

How to Become Obese	• Only eat at least thirty grams of protein with dinner • Eat mostly starch and sweets • Eat dessert all the time • Eat unlimited low-quality food all the time Which amounts to eating this daily: • 10+ servings of starch or sweets • 0-1 thirty gram servings of protein • 0-1 servings of non-starchy vegetables • 0 servings of berries or citrus fruits Do not exercise.
How to Become Overweight	• Eat at least thirty grams of protein with lunch and dinner • Trade starch and sweets for protein and non-starchy vegetables at most dinners • Get too full for dessert sometimes • Eat unlimited low-quality food twice a week Which amounts to eating this daily: • 8 servings of starch or sweets • 2 thirty gram servings of protein • 2 servings of non-starchy vegetables • 1 serving of berries or citrus fruits Do not exercise.
How to Become Typical	• Eat at least thirty grams of protein with breakfast, lunch, and dinner • Trade starch and sweets for protein and non-starchy vegetables at dinner • Get too full for dessert at more than half of your meals • Eat unlimited low-quality food twice a week Which amounts to eating this daily: • 4 servings of starch or sweets • 3 thirty gram servings of protein • 4 servings of non-starchy vegetables • 2 servings of berries or citrus fruits Exercise traditionally.

How to Become Fit	• Eat at least thirty grams of protein with breakfast, lunch, dinner, and two hours before dinner • Trade starch and sweets for protein and non-starchy vegetables at lunch and dinner • Get too full for dessert most of the time • Eat unlimited low-quality food once a week Which amounts to eating this daily: • 2 servings of starch or sweets • 4 thirty gram servings of protein • 7 servings of non-starchy vegetables • 3 servings of berries or citrus fruits • 1 quarter cup of milled flax seeds Exercise less—smarter.
How to Become Hot	• Eat at least thirty grams of protein every four hours • Almost always trade starch and sweets for protein and non-starchy vegetables • Almost always be too full for dessert • Eat unlimited low-quality food twice a month Which amounts to eating this daily: • 1 serving of starch or sweets • 5 thirty gram servings of protein • 9 servings of non-starchy vegetables • 4 servings of berries or citrus fruits • 1 quarter cup of milled flax seeds Exercise less—smarter.
How to Become a Fitness Model	• Eat at least thirty grams of protein every three hours • Always trade starch and sweets for protein and non-starchy vegetables • Almost always be too full for dessert • Eat unlimited low-quality food once a month Which amounts to eating this daily: • 0 servings of starch or sweets • 6 thirty gram servings of protein • 12 servings of non-starchy vegetables • 5 servings of berries or citrus fruits • 1.5 quarter cups of milled flax seeds Exercise less—smarter.

Before we turn to exercising less—smarter—here are some SANE food lists to help you achieve your specific fat loss goal as deliciously as possible.

Non-Starchy Vegetables (10+ servings per day){308}

- Alfalfa Sprouts
- Artichoke
- Arugula
- Asparagus
- Avocado
- Bean Sprouts
- Beets
- Bell Peppers
- Bok Choy
- Broccoflower
- Broccoli
- Brussels Sprouts
- Cabbage
- Carrots
- Cauliflower
- Celery
- Chard
- Chives
- Collards
- Cucumber
- Dandelion Greens
- Eggplant
- Endive
- Escarole
- Garlic
- Green Beans
- Kale
- Leaf Amaranth
- Leeks
- Lemon Grass
- Mixed greens
- Mushrooms
- Mustard Greens
- Onion
- Parsley
- Peas
- Peppers
- Pumpkin
- Romaine Lettuce
- Sauerkraut
- Shallot
- Snow Peas
- Spinach
- Squash
- Sugar Snap Peas
- Tomatoes
- Turnip Greens
- Zucchini

Protein (5+ servings per day)

- Bison
- Catfish
- Chicken
- Clams
- Cod
- Cornish Hen
- Crab
- Croaker
- Egg Whites
- Eggs
- Elk
- Extra Lean Beef
- Eye of Round
- Fat Free or Low Fat Cottage Cheese
- Fat-Free or Low-Fat Plain Greek Yogurt
- Flank Steak
- Flounder
- Haddock
- Halibut
- Ham Herring
- Lamb
- Lobster
- Mackerel
- Mahi Mahi
- Mussels
- Octopus
- Oysters
- Perch
- Pollock
- Pork
- Rabbit
- Rump Roast
- Salmon
- Sardines (& Anchovies)
- Scallops
- Sea Bass
- Shad
- Shrimp
- Sirloin Steak
- Sirloin Tip
- Snapper
- Sole
- Soy Protein Powder
- Soybeans
- Squid (Calamari)
- Swordfish
- Tenderloin
- Tilapia
- Tofu
- Top Loin
- Top Round
- Trout
- Tuna
- Turkey
- Venison
- Whey Protein Powder
- Whitefish

Fruits (4+ servings per day)

- Apricots
- Avocado
- Blackberries
- Blueberries
- Cantaloupe
- Cherries
- Grapefruit
- Guava
- Honeydew Melon
- Kiwifruit
- Mango
- Orange
- Papaya
- Peaches
- Pear
- Pineapple
- Plums
- Raspberries
- Strawberries
- Tangerine
- Watermelon[20]

Nuts and Seeds (4+ servings per day)

- Almonds
- Brazil Nuts
- Cashews
- Chestnuts
- Chia Seeds
- Hazelnuts
- Hemp Seeds
- Kola Nut
- Macadamia Nuts
- Milled Flax Seeds
- Peanuts
- Pecans
- Pistachios
- Pumpkin Seeds
- Sesame Seeds
- Squash Seeds
- Sunflower Seeds
- Walnuts[21]

That is how to make eating more—smarter—inexpensive and easy. If this part of the program sounds promising, just wait till part 7 when we review the research on exercising less—smarter.

While we already know that the key to long-term body-fat burningis unclogging, and that the key to unclogging is healing our hormones, what we are about to cover is that the most potent prescription to heal our hormones is high-quality exercise. A little high-quality exercise clears clogs more effectively than a lot of traditional exercise thanks to its extreme potency. Let's find out how to make it work for you.

What About Cultures Whose Diets Revolve Around Rice?

"Attempting to get at truth means rejecting stereotypes and clichés."
HAROLD EVANS, JOURNALIST

At some point you will be talking about the solution to our fat-loss struggles and someone will say: "What about cultures whose diets revolve around rice? If starch is fattening, why aren't these cultures the heaviest in the world?"

Here is what I say: "If a rice-centric diet is working for a culture, that is great. But a starch-centric diet is not working for us, so why not try a more SANE approach?"[4]

You could also use some statistics to spin their stereotype around. Specifically, the top rice- and grain-producing cultures in the world are China, the United States of America, and India. Rank those cultures by starch produced per person and you get:

Starch Centric Cultures

Now add in data from the Food and Agriculture Organization of the United Nations, and you'll find the amount of starch in the average Chinese or Indian diet is lower than the amount of starch in the average American diet.[22]

I would also mention how anecdotal cultural comparisons gloss over all sorts of factors. For example, the average person in America has six times the income of the average person in China and fourteen times the income of the average person in India. Hundreds of millions of people being too poor to afford anything other than a cup or two of rice a day may play a large role in these countries' lower obesity rates.[23]

Bottom line: Clichés confuse the issue. "Countries around Asia are starch-centric and slim" is a cliché. The countries American Samoa, Kiribati, and French Polynesia are the first, second, and third heaviest countries in the world.[24]

Encourage the uninformed to skip stereotypes and to stick with science.

4 And that is a big "if." About 200,000,000 people in China are overweight.

Part 7

Solution: Exercise Less—Smarter™

To see the exercise videos go to:
http://thesmarterscienceofslim.com/reader-only-resources/
and enter the password: time

"*About almost any subject, there are the facts 'everyone knows' and then there are the real ones."*

ERNEST G. ROSS

Chapter 27

How to Exercise Less—Smarter

"*We thought the findings [regarding exercising less—smarter] were startling because it suggests the overall volume of exercise people need to do is lower than what's recommended."*

M. GIBALA, MCMASTER UNIVERSITY[310]

Traditional fat-loss programs require five to ten hours of exercise per week. This requirement alone accounts for much of their 95% failure rate. Who has that much spare time?

Fortunately, scientists have discovered a smarter alternative: a form of high quality exercise that unclogs us in just ten to twenty minutes per week.

Let's quickly compare traditional exercise with this higher-quality alternative. Traditional exercise is rooted in the false *Calories In - Calories Out* theory of fat loss. It aims to burn calories and is done frequently, for a long time, and uses a little resistance. On the other hand, high-quality exercise is rooted in the science of the set-point. It aims to clear our hormonal clog and is done infrequently, for a short period of time, and uses a lot of resistance. This unique approach to exercise has been proven not only to heal our hormones, but also to give us all the benefits of traditional exercise—and then some—320% more efficiently.[311]

High-quality exercise is a smarter and more productive way to think about exercise. But before getting into the details, it is important to address a common fear: that using the amount of resistance required to increase the quality of exercise makes women look like men and men look like bulldogs. The best way to address the fear of using more resistance during exercise is to understand your body.

Everyone has a gene called GDF-8, and it controls a substance called myostatin, which controls the amount of muscle we have and how much it develops naturally. The base levels of myostatin and muscle in basically all women and most men make it impossible for them to naturally build *bulky* muscles. It does not matter how much resistance we use. The majority of us—especially women—do not have the genes to build bulky muscles using any form of exercise.{312}

> "*Gradually, weight lifting [resistance training] changed the way I looked. The alteration was not dramatic, but I loved it. My back became broader, which makes my hips look smaller; my arms and legs are firmer and more shapely. I never grew big muscles, but they are defined; you can see their outlines. I feel different, too, more confident of my body's strength and of my ability to do almost any movement in daily life with little effort."*
>
> **GINA KOLATA, REPORTER FOR THE NEW YORKTIMES**{313}

It is useful to think about muscle size as being much like muscle speed. Few people are fast because few people have "fast genes." No matter how much most people run, they will never get faster than their genes allow. However, if people do have the genes for speed, they will naturally be faster than most people without ever training. Similarly, few people can become bulky because few people—particularly women—have "bulky genes." No matter how much most people resistance train, they will never develop more muscle than their genes allow them to.

When people say, "I do more repetitions with less weight because I do not want big muscles," they have a point…it is just the wrong point. Not only will doing all those low-quality repetitions prevent them from getting big muscles, it will prevent them from getting any substantial benefit from their exercise.

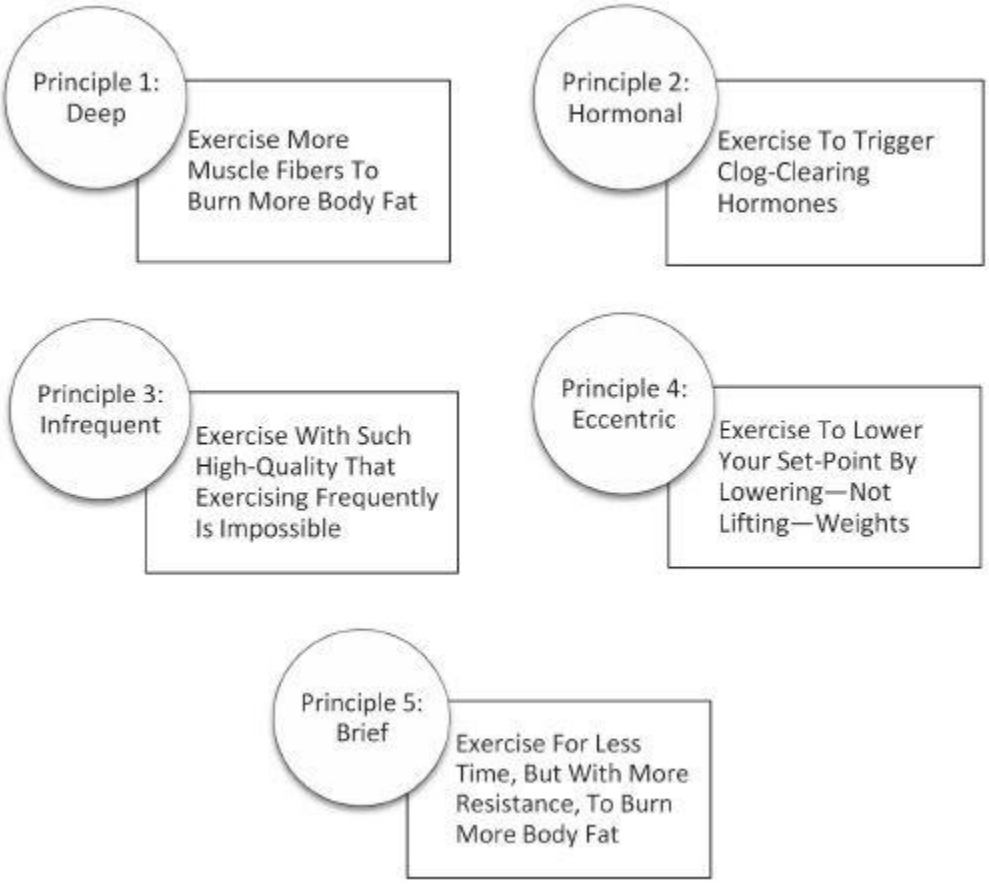
The point of exercise is to work the most muscle possible so that the most clog-clearing hormones get released (see chapter 28 and chapter 29). The less force an exercise requires, the less muscle it works. Combine this with the fact that it is impossible to naturally develop bulky muscles, unless you were born with bulky muscles, and you can see why doing a lot of reps with a little weight isn't optimal. In an effort to avoid something which will not happen anyway, high-reps, low-weight exercisers doom themselves to poor results.
{314}

One last point to help us overcome any remaining fear of resistance training. Beyond being hard to develop, muscle tissue is small. This is why trainers will tell you, "Muscle weighs more than body fat." While muscle does not in fact weigh more than body fat, muscle does take up less space. This is why most female fitness models are about 5'6" and weigh 140 pounds. People look at them, and judging by their size, think they weigh 110 pounds. They do not. See those defined legs? That is quite a bit of muscle tissue taking up a little space, while clearing out quite a bit of clog.{315}

With our fears replaced with facts, let's move on to the specifics of high-quality exercise.

The Five Principles of High-Quality Exercise

In the same way we use SANE calories to increase the quality of our diet, we use deep, hormonal, infrequent, eccentric, and brief movements to increase the quality of our exercise.



Like all the advice in the book, this form of exercise is based on scientific findings. For example, Y. Izumiya of Boston University studied mice in a clinical setting and learned that development of the specific type of muscle fibers targeted by high-quality exercise "can regress obesity and resolve metabolic disorders in obese mice." The researcher then described how these muscle fibers cleared hormonal clogs by improving "insulin sensitivity and [causing] reductions in blood glucose, insulin, and leptin levels." Most encouraging, Dr. Izumiya noted: "These effects occurred despite a *reduction* in physical activity."{316}

High-quality exercise is the key to exercising less—*smarter*. Let's dig into the first principle.

Chapter 28

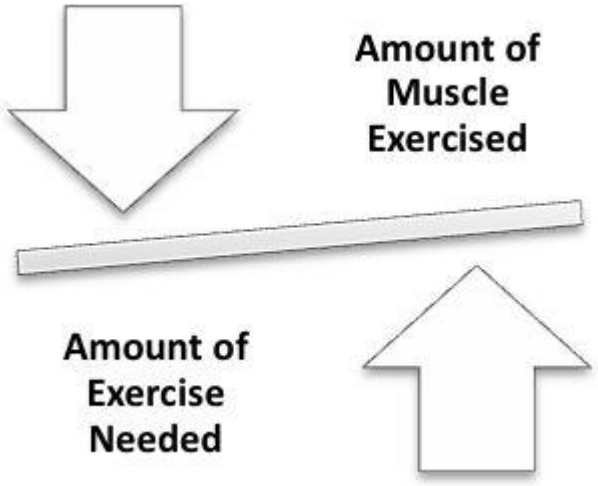
Principle 1 – Deep – Exercise More Muscle Fibers to Burn More Body Fat

"*These findings indicate that type II muscle [Deep muscle fiber] has a previously unappreciated role in regulating whole-body metabolism [unclogging]…. These data also*

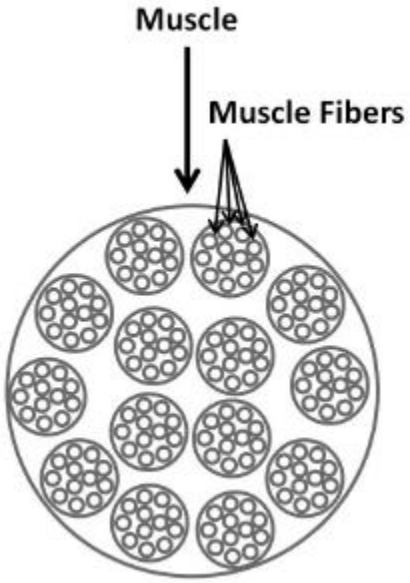
suggest that strength training [resistance training]…may be of particular benefit to overweight individuals."

Y. IZUMIYA, BOSTON UNIVERSITY{317}

Why do people bike to burn body fat instead of drawing pictures of bikes to burn body fat? After all, both activities exercise muscles. They bike because of the *amount* of muscles it exercises. Riding bikes exercises a lot of muscle (the large leg muscles) while drawing bikes works a little muscle (the small hand muscles). The more muscle exercised, the better our results. Obvious, you say.

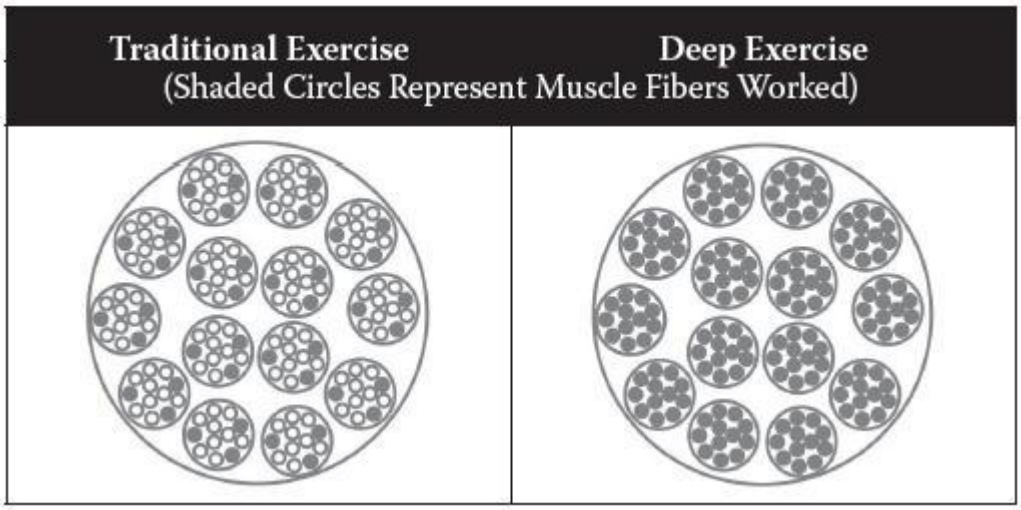


Here is what is not so obvious. Just as we get more results in less time by working more muscles within our body, we get even more results in even less time by working more of the muscle fibers which make up our muscles.



In addition to going broader—working more muscle—we can also go Deeper—working more muscle fibers.

(Shaded Circles Represent Muscle Fibers Worked)



Just as working more muscle generates better results in less time, working more muscle fibers within more muscles generates even better results in even less time. That is why studies show that high-quality Deep exercise clears clogs and burns fat in only ten to twenty minutes per week. That's the kind of exercise regime that can fit into anybody's schedule.

Exercising More Muscle Fibers Burns More Body Fat Faster

The Deep principle is as simple as it gets. The physiology of our muscle fibers, and how exercising *less*—but Deeper—works more of them, is complicated, but the basic concept is easy once you understand three basic principles of how our muscles function:

1. We have different types of muscle fibers that do different things.

2. The Deeper the muscle fiber, the more force it generates and the less endurance it has.

3. Working our Deepest muscle fibers works all of our other muscle fibers.

Just as we have different muscles to do different things, we have different muscle fibers to do different things. Type 1 fibers on the surface of our muscles generate a little force for many hours. They keep us walking around all day. Type 2b fibers buried deep within our muscles generate a lot of force for a few seconds. They enable us to lift furniture briefly.

	Little Force for a Long Time
Shallow	Type 1 Fibers
	Type 2a Fibers
	Type 2x Fibers
Deep	Type 2b Fibers
	Lots of Force for Little Time

The great advantage of exercising Deeply is that when you and I work our Deepest muscle fibers, we automatically work the rest of them. Why does it work that way? If we ask our body to move something, our muscles first try to generate enough force with our shallow Type 1 fibers. If those do not generate enough force, our muscles dig Deeper and get our more forceful Type 2a fibers to help. Still not enough? Bring out the stronger Type 2x fibers. More? Here come our most powerful Type 2b fibers.

This *orderly recruitment* of muscle fibers means it is impossible for us to work our Deepest Type 2b fibers without working all of our muscle fibers. This aspect of our physiology makes exercise simpler because now we know how to work more muscle fibers. We focus on activities that require enough force to exercise our Deepest—most forceful—fibers. It also happens to flip how we think about exercising to burn body fat on its head.{318}

The more force a muscle fiber generates, the more energy it uses. Similarly, the more muscle fibers exercised, the more energy used. Put these together and you can see why any exercise working our Deepest fibers—and therefore all of our muscle fibers—cannot be done for long. I am talking seconds. Not minutes. And definitely not hours. Activities such as jogging fire only a few of our least forceful fibers and therefore use so little energy that we can keep them up for hours. On the other hand, activities such as forceful resistance training fire all our fibers and use so much energy that we can only keep them up for seconds. The more muscle we use, the faster our energy runs out, and the less we can exercise.

How the Physiology of Our Muscle Fiber
Flips Exercising to Burn Body Fat on Its Head

Once we understand how our muscles work, why exercise more? That requires exercising less forcefully, working less muscle, and getting worse results. Shouldn't we exercise less—but more forcefully—so we work more muscle and get better results?

Yes.

R.N. Carpinelli at Adelphi University says, "There is little scientific evidence, and no theoretical physiological basis, to suggest that a greater volume [quantity] of exercise elicits greater increases in strength or hypertrophy [results]."{319}

So why are we told to work less muscle fibers for a longer time? More exercise time means more profits. More exercise equipment, more personal training sessions, more aerobics classes, more gym memberships, more overeating after we exercise, more supplements to get us through the exercise, more medical care to take care of the injuries we get while exercising, and on and on. More exercise is better for the food, fitness, and pharmaceutical industries, but worse for us.

Enough with worrying about increasing the *quantity* of exercise we are getting, so that others increase the quantity of money they are making. Let's focus instead on increasing the *quality* of exercise we are getting by exercising less, but more forcefully. By exercising more muscle fibers. By exercising Deeper.{320}

Important Note: Exercising Deeply and forcefully does not mean putting a lot of stress on our joints, ligaments, etc. The techniques you and I will use to exercise forcefully are "lower impact" than walking. Anyone can exercise forcefully if they have the right information.

Chapter 29

Principle 2 – Hormonal – Exercise to Trigger Clog-Clearing Hormones

> "*We work out entirely too much. We waste time. A friend of mine runs marathons. He always talks about this 'runner's high,' but he has to go twenty-six miles for it. That is why I smoke and drink. I get the same feeling from a flight of stairs."*
>
> **LARRY MILLER**

Traditional exercise is all about "burning calories." Traditional exercise is all wrong. High-quality exercise ignores the quantity of calories burned by exercising. It focuses on triggering the release of the clog-clearing hormones that lower our set-point.{321}

All we need to harness these hormones is to apply the first exercise principle: Deep. By exercising more muscle—especially our deepest Type 2b fibers—we trigger more clog-clearing hormones.Here is the simplified version of how this works.{322}

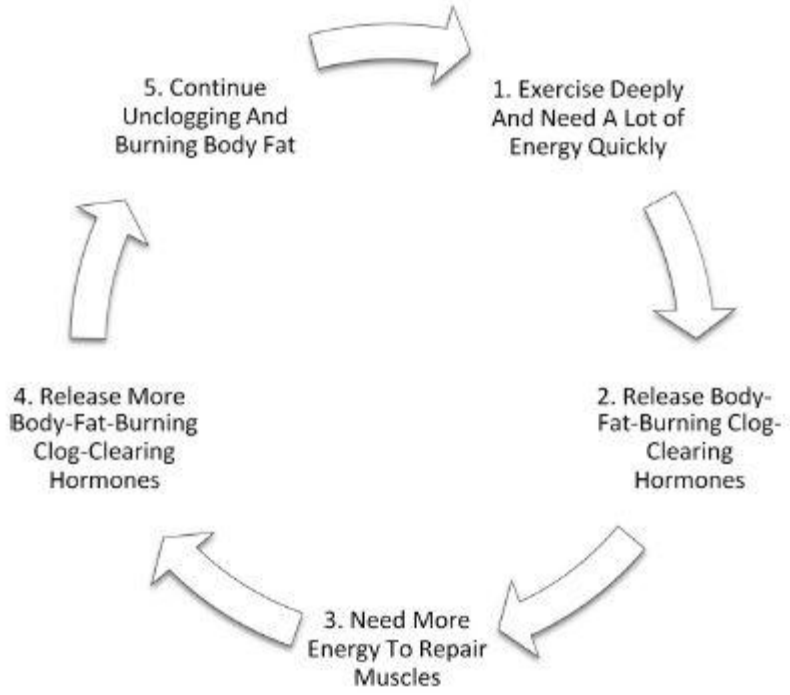
One of the reasons our fat metabolism system slows down and burns muscle before it burns body fat is because burning body fat is hard. Until we get the right combination of hormones, we are not burning through anything meaningful other than muscle tissue.

The other reason is that our fat metabolism system does not want to burn body fat. It is unfortunate for fat loss, but it makes perfect survival sense. Our fat metabolism system stores body fat to protect us from starving. If it burns body fat, it cannot protect us. Therefore, it avoids burning body fat unless it has no other option.

"Hard to do" plus "do not want to do" generally equals "it's not happening." That is, unless our fat metabolism system has no other option. The way to achieve this is simple: require it to expend a huge amount of energy quickly. Exercise Deeply. Work all muscle fibers.

As we know, when our fat metabolism system needs a lot of energy it can do four things: Make us eat more. Slow down. Burn muscle. Burn body fat. However, when we exercise Deeply, we eliminate three of these options. Making us eat more will not work because digestion takes a long time. It is too late to slow us down because the energy demands have already been made. Burning muscle is out of the question since high-quality exercise stimulates muscle rather than destroying it. Left with no other option, our fat metabolism system is forced to produce hormones which free up energy stored as body fat.{323}

How Deep Hormonal Exercise Burns Body Fat Long Term



Forget calories. Focus on hormones. Clear your clog. Lower your set-point. Burn body fat forever.

Chapter 30

Principle 3 – Infrequent – Exercise with Such High Quality that Exercising Frequently Is Impossible

> "*This novel time-efficient training paradigm can be used as a strategy to reduce metabolic risk factors in young and middle-aged sedentary populations who otherwise would not adhere to time-consuming traditional aerobic exercise regimes."*
>
> **J.A. BABRAJ, HERIOT-WATT UNIVERSITY, EDINBURGH**{324}

If we cut grass lower, we can mow our lawn less often. That is not some too-good-to-be-true gimmick. That is common sense. The more grass we cut off, the more time is needed to grow it back. Similarly, by exercising our muscles Deeply, we can exercise less often. The more muscle fibers we exercise, the more time we need to recover.{325}

How long your muscles take to recover is a great way to tell if you are exercising Deeply enough. If you are able to exercise on Monday and then do the same thing a day or two later, then you are not exercising Deeply. If Monday's workout is forceful enough to exercise all of your muscle fibers, they will not be ready to go again one, two, three, four, or even five days later. Deep Type 2b muscle fibers need at least six days to recover.{326}

So, if we are exercising often, we are either not exercising Deeply or not giving our clog-clearing hormones enough time to fix our fat metabolism system. Either way we are spending more time exercising and burning less body fat. Enough of that. Let's do a little high-quality exercise and then sit back while our unclogged fat metabolism system burns body fat for us.

Chapter 31

Principle 4 – Eccentric – Exercise to Lower Your Set-Point By Lowering Weights

> "*Exercise with a maximal-eccentric [lowering] component can induce increases in muscle…with shorter durations of work than other modes [traditional resistance training].*"
>
> **M. WERNBOM, GÖTEBORG UNIVERSITY**{327}

High-quality resistance training does not require lifting weights. You are going to focus on lowering weights.

Every resistance training exercise has two parts: lifting the resistance and lowering the resistance. Lifting the resistance is called the *concentric* portion of the exercise. Concentric is when the muscle contracts. Lowering the resistance is called the*eccentric* portion of the exercise. Eccentric is when the muscle extends. Lifting weights—the concentric action—gets more attention from your buff friends, but lowering weights—the eccentric action—gets more results.{328}

While lifting weights helps boys feel like men, safely and slowly lowering weights works muscles up to 50% Deeper. That enables more muscle fibers to be worked and more clog-clearing hormones to be triggered. More clog-clearing hormones mean more results in less time. Mark Roig at the University of British Columbia ran tests and concluded: "Eccentric training performed at high intensities [with high-quality] was shown to be more effective in promoting increases in muscle."{329}

Focusing on the eccentric—lowering—portion of resistance training works so well because it allows our muscles to generate more force. To test this principle, walk up a flight of stairs and then walk back down them. Notice how the trip down was easier? That is because you are doing eccentric—lowering—actions on the way down. Since our muscles can develop more force on the trip down—eccentric actions—it is easier than the trip up—concentric actions. Lowering your body down the stairs is easier than lifting it up the stairs because your muscles are literally stronger on the way down. Researcher N.D. Reeves at Manchester Metropolitan University states: "Muscles are capable of developing much higher forces when they contract eccentrically compared with when they contract concentrically."{330}

Once we know that muscles generate more force when lowering resistance, and that the Depth of exercise is determined by the amount of force muscles are asked to generate, we can see that it is ineffective to focus on lifting resistance.

Forget lifting resistance. Lower it. Here's how.

How to Exercise Eccentrically

Exercising eccentrically is simple:

1. Get warmed up by walking briskly or riding a bike for a few minutes.

2. Pick a resistance you cannot lift with one arm or one leg—depending on the exercise—but can easily lift with both arms or both legs. Let's say 20 pounds.

3. Lift the resistance with both arms or both legs. Each arm or leg lifts half the weight—10 pounds in this example.

4. Lower the resistance with only one arm or one leg for ten seconds. Each arm or leg lowers all the weight—20 pounds in our example—slowly.

5. Repeat until it is impossible to lower the resistance with only one arm or one leg for ten seconds. If this takes more than six repetitions, gradually add resistance until it only takes six repetitions.

With this technique you can exercise Eccentrically in the comfort of your own home and bend most resistance training machines at your local gym to your every Eccentric whim. But before we go get Eccentric, there are two important rules to keep in mind.

First, if we choose to exercise Eccentrically on resistance training machines at our local gym, then we should only use machines that work both of our arms or both of our legs *together*. This is the only way to have less resistance on the way up and more on the way down. If we pick machines that work our arms and legs independently, we will lift and lower the same amount of resistance. That defeats the whole purpose. Think about it this way. Say you grab a gallon of milk in each hand, lift them above your head, and then drop the one in your right hand to increase the resistance for your left hand. That does not work because lifting milk jugs works your arms independently. However, if you lifted one milk jug with each arm, but then lowered both jugs with only your left arm, you would lower more resistance with your left arm than you lifted with your left arm. Resistance training machines which work both of our arms or both of our legs together do the same thing.

Second, exercise Eccentrically only when *little, if any, balance is needed*. Just as you would not pick up a giant flat-screen TV with two hands and then let go with one, you should only exercise Eccentrically when minimal balance is needed.

Let's put the two rules together: We could do a push-up with our knees on the floor (to reduce the resistance), and then lift our knees and lower ourselves (to increase the resistance). Our arms*work together* to lift a shared source of resistance (our body), and*little, if any, balance is needed*.

We will cover complete “at home” and “at the gym” Eccentric exercise programs in chapters 34 and 35, but for now, Deep, Hormonal, and Infrequent Eccentric exercise is as simple as one, two, three:

1. Lift resistance with both arms or both legs. Lower resistance slowly with one arm or one leg.
2. Pick exercises which work both arms or both legs together.
3. Pick exercises which require minimal balance.

Chapter 32

Principle 5 – Brief – Exercise for Less Time, but with More Resistance, to Burn More Body Fat

> “*Vigorous exercise favors negative energy and lipid [fat] balance to a greater extent than exercise of low to moderate intensity. Moreover, the metabolic adaptations taking place in the skeletal muscle in response to the HIIT [high-quality Brief exercise] program appear to favor the process of lipid oxidation [fat burning].”*
>
> **A. TREMBLAY, LAVAL UNIVERSITY**{331}

To recap: the first principle—Deep—revealed how we get more results by exercising more muscle, less, instead of less muscle, more. The second principle—Hormonal—showed that exercise is most effective when it triggers hormones that burn body fat automatically, long term. The third principle—Infrequent—demonstrated that exercising enough muscle fibers to trigger a Hormonal response is extremely taxing and therefore cannot be done often.

Then along came the fourth principle—Eccentric. It covered the technique used to make resistance training Deep, Hormonal, and Infrequent. Now it is time for the fifth principle—Brief. It covers the technique used to make cardiovascular exercises Deep, Hormonal, and Infrequent. Conrad Earnest at the Pennington Biomedical Research Center reports: “Interval [Brief] training will provide a more powerful stimulus for improving insulin sensitivity [unclogging] than low-quality-high-quantity cardiovascular exercise.” But for the technique to make sense, we need to update the way we think about cardiovascular exercises.{332}

Contrary to popular belief, cardiovascular exercises and resistance training exercises are not completely different. Traditional cardiovascular exercises are resistance-training exercises that require little force and work only our weakest muscle fibers.

Say we get on a leg press resistance training machine, add no resistance, and move our legs up and down for thirty minutes. Did we do resistance training or cardiovascular exercise? Who cares? Our

muscles did not have to generate much force, so we did not exercise Deeply or Hormonally, and that is all that matters. Or say we get on a stair stepper cardiovascular exercise machine, add no resistance, and move our legs up and down for thirty minutes. Did we do resistance training or cardiovascular exercise? Who cares?

Now let's say we get on a stationary bike, increase the resistance so much that the only way we can generate enough force to move the pedals is to lift our butt off the seat. Let's say we then pedal as hard as we can for thirty seconds, at which point we have to stop because we cannot move the pedals anymore. Did we do:

1. Resistance training?

2. Cardiovascular exercise?

3. Neither?

4. Both?

5. It does not matter—our muscles had to generate a lot of force and therefore were exercised Deeply and Hormonally?

Answer: 5. Our fat metabolism system does not respond in terms of resistance training exercises or cardiovascular exercises. It responds in terms of how many muscle fibers an exercise works. So the question of the day is: "How do we make cardiovascular exercises work more muscle fibers?"

Easy. Make them require more force. Perform high-quality Brief cardiovascular exercise.

High-Quality Brief Cardiovascular Exercise - How and Why

High-quality Brief cardiovascular exercise is simple:{333}

1. Hop on an upright stationary bike—the ones that look like regular bikes, not the ones that look like recliners.

2. Pedal at a moderate pace, with moderate resistance, to get warmed up.

3. Increase the bike's resistance so you can pedal only by standing up on the pedals and pushing down on them as hard as you can.

4. Pedal like that for thirty seconds. If you can pedal for longer than thirty seconds, increase the resistance until you cannot.

5. Rest for two minutes.

6. Repeat the steps 4 and 5 three times.

7. Smile, because that took ten minutes and you are done with cardiovascular exercise for the week.

Sounds too good to be true? Let's look at the studies.

University of Virginia researcher B.A. Irving took two groups of women and had them do traditional low-quality cardiovascular exercise or high-quality Brief cardiovascular exercise. The two groups burned the same number of calories exercising, but the high-quality Brief cardiovascular exercise group spent significantly less time exercising, while losing significantly more belly fat.{334}

McMaster University researcher M. Gibala separated people into high-quality Brief cardiovascular exercise and traditional cardiovascular exercise groups. Over the course of the two-week study, the Brief cardiovascular group exercised for two-and-a-half hours while the traditional cardiovascular exercise group exercised for ten-and-a-half hours. At the end of the study both groups got the same results even though the high-quality Brief cardiovascular exercise group spent 320% less time exercising than the traditional cardiovascular exercise group. The researcher put it like this: "We thought there would be benefits, but we did not expect them to be this obvious. It shows how effective short intense [high-qualityBrief] exercise can be."{335}

Many more studies show the same encouraging results and further prove that hours of exercising per week are not needed to help our weight and health. Consider this small sample:{336}

- "Vigorous [high-quality Brief] activities are associated with a reduced risk of coronary heart disease, whereas moderate or light [low-quality] activities have no clear association with the risk of coronary heart disease," says H.D. Sesso at Harvard University{337}

- "The intensity [quality] of effort was more important than the quantity of energy output in deterring hypertension and preventing premature mortality," found R.S. Paffenbarger Jr. of Stanford University{338}

- "There is an inverse association between relative intensity [quality] of physical activity and risk of coronary heart disease," states I.M. Lee, also at Harvard University.{339}

- "Vigorous-intensity [high-quality Brief] activities may have greater benefit for reducing cardiovascular disease and premature mortality than moderate-intensity physical activities [traditional exercise]," noted the American Heart Association{340}

- "Exercise training reduces the impact of the metabolic syndrome [the clog] and that the magnitude of the effect depends on exercise intensity [quality]," discovered P.M. Haram of the Norwegian University of Science and Technology{341}

Even day-to-day cardiovascular benefits, like not being out of breath after walking up a few flights of stairs, are achieved faster with high-quality exercise. Edward Coyle's research at the University of Texas found: "Interval [high-quality Brief] training in untrained people can markedly increase aerobic endurance…. This serves as a dramatic reminder of the potency of exercise intensity [quality]….

Interval [high-quality Brief] training is very time efficient with much 'bang for the buck.'" Old Dominion University researcher D.P. Swain adds: "Vigorous intensity [high-qualityBrief] exercise has been shown to increase aerobic fitness more effectively than moderate intensity [traditional] exercise, suggesting that the former may confer greater cardioprotective [health] benefits."{342}

Time Saving Tip: Since high-quality Brief cardiovascular exercise only takes ten minutes per week, going to a gym to do it may not make a lot of sense. To save yourself time and money, consider investing in your own upright stationary bike. Simple upright stationary bikes cost less than $150.

High-quality cardiovascular exercise has clearly emerged as the right way to help lose weight faster. You can trade quantity for quality and get more for less by increasing the force of yourexercise. You can also grab back all that time spent pounding the pavement with those six o'clock jogs. The new way to wellness is Brief.{343}

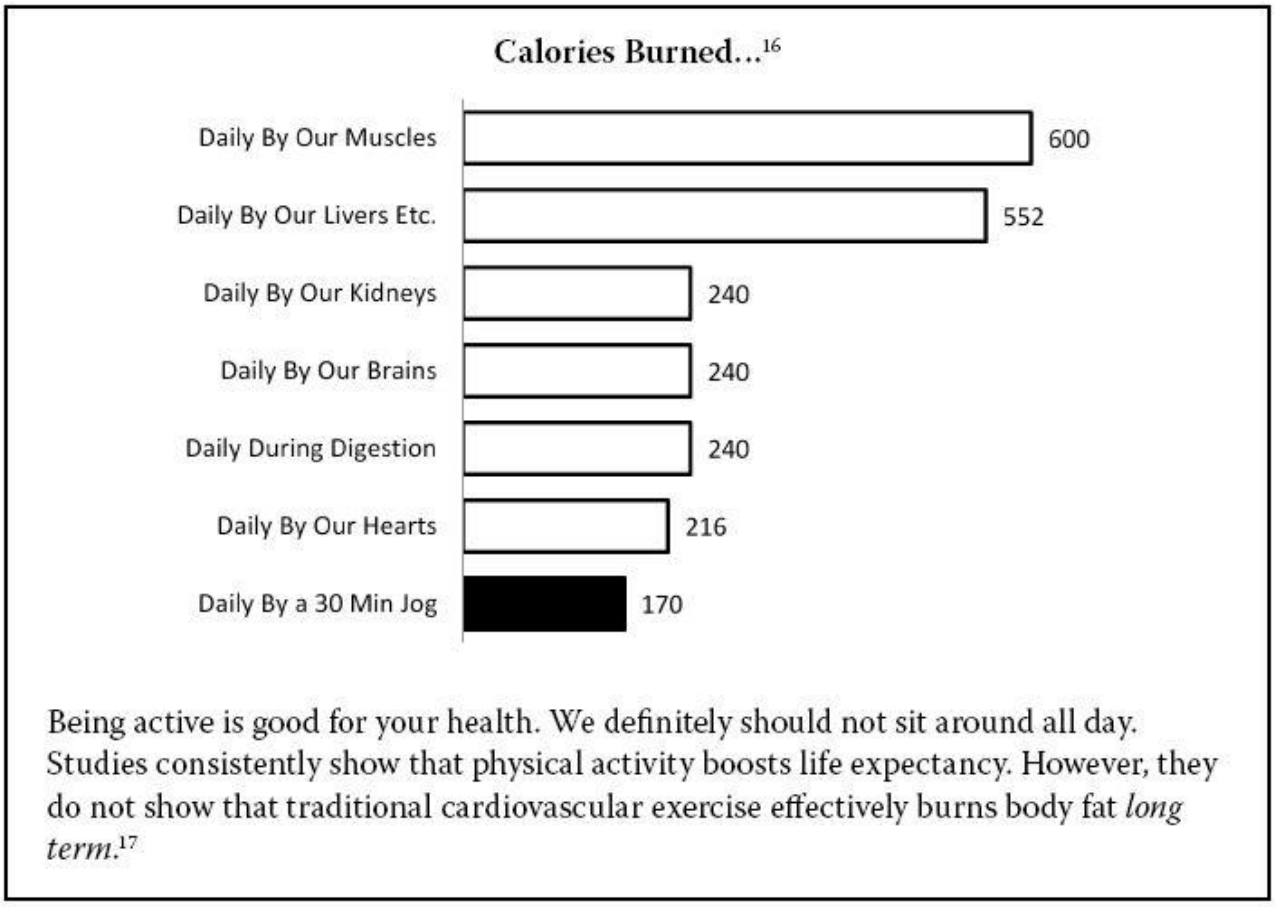
Traditional Cardiovascular Exercise Is a Terrible Way to Burn Body Fat

"For Americans to begin losing weight through [traditional cardiovascular] exercise, the current USDA exercise guideline would have to be increased by almost 200%.... Americans would need to start exercising at least two hours a day, six days a week."

ERIC J. OLIVER, UNIVERSITY OF CHICAGO[14]

Traditional cardiovascular exercise helps people to be more active, but it is not a useful way to unclog. Traditional cardiovascular exercise does not touch the clog. At best, it increases our need to eat more, slow down, and then burn something. It is not even good at that job. Thirty minutes of jogging only consumes 170 more calories than we would have burned spending thirty minutes of quality time with our family and friends.

Putting 170 calories into perspective, our livers burn over three times that amount per day. In other words, you and I would have to do 90 minutes of traditional cardiovascular exercise every single day to burn as many calories as our liver does every day. Three-quarters of the calories we burn every day have nothing to do with moving, let alone traditional cardiovascular exercise.[15]



Chapter 33

The High Quality Exercise Program: More for Less

"*Muscular strengthening activities…promote the development and maintenance of metabolically active lean muscle mass, which is particularly important for enhancing glucose metabolism [unclogging].*"

AMERICAN HEART ASSOCIATION{344}

Inspired by author Michael Pollan, here is the high-quality exercise program summed up in seven words: *Exercise Forcefully. Not Too Often. Mostly Eccentric.*

The high-quality exercise program takes at most twenty minutes per week, so it cannot be complex. Sure, there are all sorts of ways to exercise forcefully, not too often, mostly Eccentric. Plenty of people at your local gym are happy to take your money to complicate things. However, if you want a simple, proven plan, then use four Eccentric exercises, for ten minutes once per week, along with ten minutes of high-quality Brief cardiovascular exercise once per week (this can be done at home or at a gym).

Here is the program. It is simple because staying healthy and fit is simple once we know the science. The next few sections cover the details.

- Day 1: 10 minutes of high-quality Eccentric resistance training
- Day 2: Relax and recover
- Day 3: Relax and recover
- Day 4: 10 minutes of high-quality Brief cardiovascular exercise
- Day 5: Relax and recover
- Day 6: Relax and recover
- Day 7: Relax and recover

After the discussion about needing a week to recover from high-quality exercise, you may be wondering why you would do both high-quality Eccentric resistance training and high-quality Brief cardiovascular exercise each week. Great catch. Two high-quality workouts per week make sense only for people new to high-quality exercise.

It is important to put safety first and ease your way into high-quality exercise. So it will take a while before you work your muscles Deeply. Since your Deepest muscle fibers will not be getting exercised right from the start, two high-quality workouts per week are fine. Once you are comfortable exercising as Deeply as possible, you can skip the high-quality Brief cardiovascular exercise.

Here is how you can tell when to cut back to one high-quality workout per week:

1. Do high-quality Eccentric resistance training and write down the amount of resistance used. For example: “Did six Eccentric shoulder presses with 20 pounds.”
2. Rest for two days.
3. Do high-quality Brief cardiovascular exercise.
4. Rest for three days.
5. Do high-quality Eccentric resistance training with the same resistance used last time.

If steps three and five are possible, you are not exercising Deeply yet and should stick with two high-quality workouts per week. If you were exercising Deeply, your high-quality Brief cardiovascular exercise would have gone badly. Your exhausted Type 2 muscle fibers would not have worked well. If you somehow dragged your exhausted muscles through the high-quality Brief cardiovascular exercise, they would be unable to meet the demands of high-quality Eccentric resistance training three days later.

As you are getting used to high-quality low-quantity exercise, two ten-minute workouts per week are fine. When you are comfortable exercising as Deeply as possible during Eccentric resistance training, you will only need one ten-minute workout per week. For women there is an extra bonus. "There is a special sense of empowerment with strength [resistance] training. You do not feel as intimidated by being in a room full of men, or by many of the tasks that face us in our daily lives. Carrying groceries, carrying a child, opening heavy doors--these are things that for some women are really burdens. With strength [resistance] training, a relatively small woman can see a big difference," reports Jan Todd at the University of Texas at Austin{345}

This does not mean you have to give up all other forms of exercise. You can still do whatever additional exercises you like, but only after high-quality exercise, and only if it does not compromise your ability to do high-quality exercise. Or you can skip traditional exercise all together. The point is not that traditional exercise is bad and should be avoided. It's just not needed once we know how to exercise less—smarter.

Ten Minutes of High-Quality Eccentric Resistance Training

If you are familiar with resistance training, you are familiar with sets and reps. If you are not familiar, you are better off because sets and reps are irrelevant. Muscle fibers do not care how many sets or reps we do. Ralph Carpinelli at Adelphi University says: "There are fifty-seven studies…that show no statistically significant difference in the magnitude of strength gains or muscular hypertrophy [results] as a result of performing a greater number of sets."{346}

All our muscle fibers care about is how much force they need to generate. So let's focus on making as many muscle fibers as possible generate as much force as possible, doing whichever set of the following exercises we would like, *once* per week.

More exercises provide little if any value. Think about doing more exercises to make your set-point lower as being like heating boiling water more to make it hotter. In both cases we would just be wasting energy.{347}

For each exercise, raise the resistance at a controlled speed with two legs or arms, and then lower it with one leg or arm for ten seconds. Repeat that six times per leg or arm. If you can do it a seventh time, increase the resistance. Each exercise takes about two and a half minutes—a little over a minute per arm or leg. After each exercise, move immediately to the next one. Ten minutes later, get on with your day.{348}

Specific instructions on how to do these Eccentric exercises are coming up in the next two chapters, but if you have ever sat down, opened a door, pushed something, or lifted anything above your head, you are most of the way to being an Eccentric exercise expert.

Keep in mind that while the Smarter workout is simple, it is not easy. We are trading quantity for quality, and that is hard. For example, go back to the staircase, walk up it normally, and note how you feel. Now wait a few minutes and walk up the same staircase two steps at a time. Notice how that is more tiring? In both cases you did the same quantity of exercise, but taking two steps at a time requires more force and works more muscle fibers.

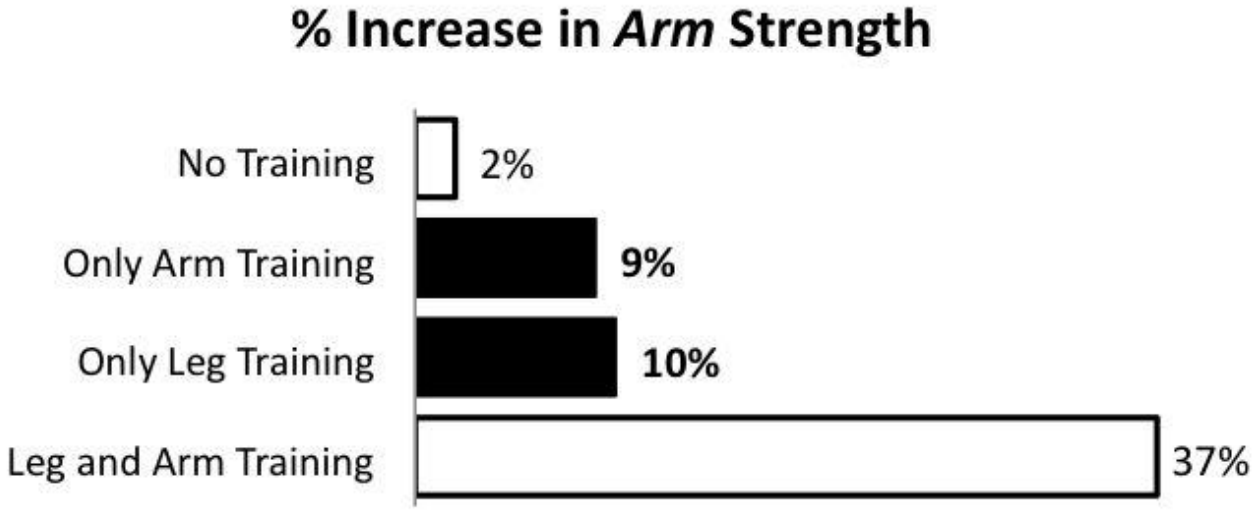
Ten minutes of high-quality Eccentric resistance training should be like walking up a dozen stairs at a time. You will generate more force and work more muscle fibers than you ever have before. At the end of each exercise you will be exhausted. It will not be fun, but the results are incredible. Plus, it is encouraging to know that you only have to do it once per week for ten minutes.

You do not need to do arm- and ab-specific exercises. Our goal is to work as many muscle fibers as possible, and arm- and ab-specific exercises work few muscle fibers. Besides, our four Eccentric exercises work our arms and abs along with a bunch of other muscles, and the Hormonal impact of these “big” exercises benefits our arms and abs more than bicep curls or crunches ever could.

In my favorite study of all time, researchers at the University of Southern Denmark divided people into two groups. The first group only trained one of their arms. The second group trained only one arm exactly the same way as the first group, but also trained both legs. With this creative setup, researchers could see what impacted people’s arm muscles more: direct arm training or the hormones triggered by all the muscle fibers worked using leg exercises. They could answer the following questions. How much stronger does an arm get if people:{349}

- do not train it? [untrained arm + untrained legs]
- train only it? [trained arm + untrained legs]
- do not train it, but do train their legs? [untrained arm + trained legs]
- train it and train their legs? [trained arm + trained legs]

Here are the results:



Clearly training legs along with arms is our best bet, but the fun part is the middle two bars. Resistance training only the legs increased *arm* strength more than resistance training only the arms. Why? Leg training worked more muscle and therefore triggered more whole-body-transforming Hormones than arm training. All those whole-body-transforming Hormones benefit seemingly unrelated muscles more than exercising those muscles directly. That is why we will work our biggest muscle groups (legs, back, chest, and shoulders) directly and our small muscle groups (arms, abs, etc.) indirectly. By focusing on the big things directly and the little things indirectly, we will take care of the little things better than we could any other way.

But doing abdominal-only exercises before we lower our body fat percentage to the mid-teens is like worrying about how shiny a ring looks while wearing a boxing glove over it. The fastest way to "get abs" has nothing to do with exercising our abdominal muscles. You have to uncover your abdominal muscles—that is, unclog and drop your set-point.

Chapter 34

How to Do the Four Clog-Clearing Exercises at Home

To see the exercise videos go to:
http://thesmarterscienceofslim.com/reader-only-resources/
and enter the password: time

"*An increase in fast/glycolytic muscle mass [Deeper muscle fibers] can result in the regression of obesity and metabolic improvement [unclogging].*"

Y. IZUMIYA, BOSTON UNIVERSITY[350]

Here is how to get a Deep workout without buying a gym membership. Combine the specific steps covered in this chapter with the general Eccentric guidelines covered in chapter 31, and you will be exercising Deeply, Hormonally, Infrequently, and safely, within minutes. The next chapter covers how to exercise Eccentrically on resistance training machines.

You need to keep in mind two points while exercising Eccentrically. First and foremost, nothing is more important than safety. The quickest way to compromise clog-clearing is to get hurt. Eccentric resistance training is designed specifically to minimize injury—it is slow and controlled, requires minimal balance, and you can spot yourself—but you still need to ease into it and to keep perfect form.

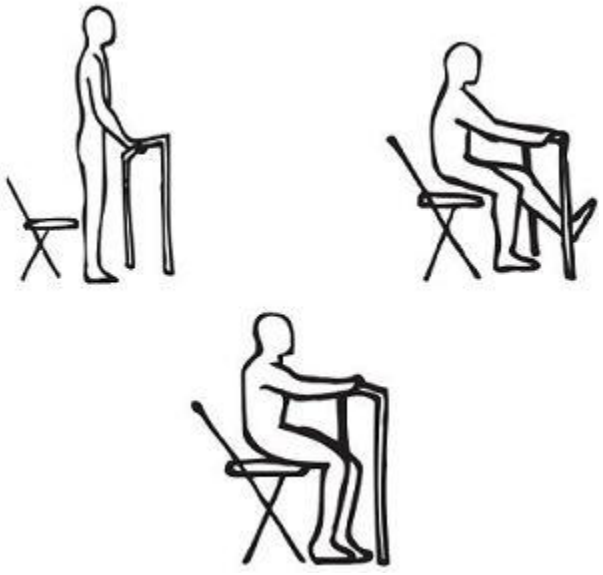
Second, once you have the hang of safely executing the four clog-clearing exercises, you have to push yourself as hard as you safely can. You are trading quantity for quality, so it is particularly important that you maximize the quality of these exercises. If you do not, you will have thrown quantity *and* quality out the window. That is not exercising less—smarter. That is just exercising less.

You have to push yourself as hard as you safely can and then continue to push yourself more and more by gradually adding resistance at least every couple of workouts. As you improve the quality of your health and fitness, you must improve the quality of your exercise to keep progressing.{351}

You will only exercise for ten to twenty minutes a week, so be sure to make it count.

Assisted Eccentric Squats

Muscle groups worked: legs and butt.



1. Stand with your feet shoulder-width apart in front of something sturdy that you can hold on to with both hands. I use a railing or a doorknob. Put a chair behind you.

2. Grab the sturdy thing in front of you and lean back until your arms are fully extended. Stand with all of your weight on one of your heels. Make sure to keep your head and shoulders back while sticking your chest and butt out.

3. Keeping all of your weight on one of your heels, and keeping yourself balanced by holding onto that sturdy thing in front of you, sit down using only the one leg you put all of your weight on. Use your non-weight-bearing leg to keep your balance and to ensure that you can lower yourself slowly and safely for ten seconds. If you can lower yourself for longer than ten seconds, then you are using your other leg too much. If you cannot lower yourself for ten seconds, then you are not using your other leg enough.

4. Make sure that your knees never stick out farther than your toes while you are lowering yourself.

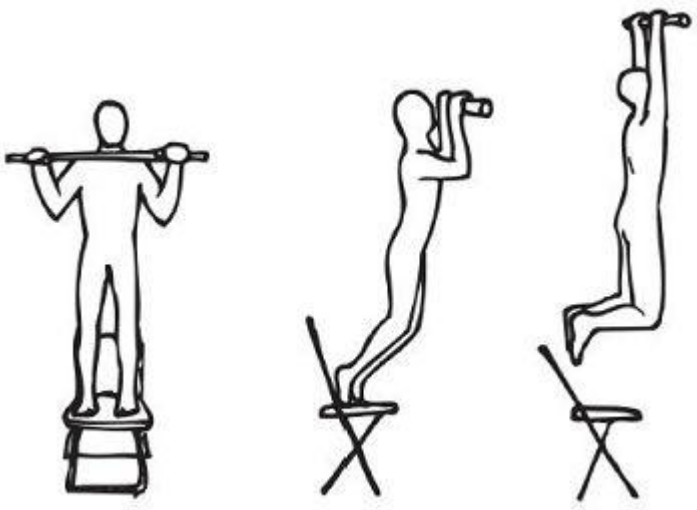
5. Stop lowering yourself with one leg once your butt touches the chair. Keep holding on to the sturdy thing in front of you. Stand back up using both legs.

6. Repeat this five more times and then do the same thing with your other leg.

7. As you get stronger, remove the chair and try to squat down as far as you comfortably can without your heel lifting off the ground or your knees sticking out farther than your toes.

Assisted Eccentric Pull-Ups

Muscle groups worked: back and arms.



1. Find something sturdy to hang from. It should be no lower than your chin if you are standing on the ground, and no higher than your chin if you are standing on a chair. Common options include: jungle gyms/swing-sets, construction scaffolding, tree branches, or I-beams in your basement or attic.

2. Stand on the ground or on a chair so that your chin is slightly above the thing you are going to hang from.

3. With your arms slightly wider than shoulder-width apart, put your hands on top of the thing you are going to hang from. Grip it as tightly as you can. Stick your chest out and squeeze your shoulder blades together.

4. With a firm grip, start to bend your legs so that you begin to hang from whatever it is you are holding on to. The more you bend your legs, the more challenging it will be to hang on.

5. Bend your legs enough that you cannot hang on for longer than ten seconds. If you can hang on for longer than ten seconds, bend your legs more. If you cannot hang on for ten seconds, bend your legs less. Depending on your strength level, you may not need to use your legs at all.

6. While you are hanging on, your back and arms will get tired and you will slowly lower down until your arms are fully extended. If your arms fully extend in less than ten seconds, you are using your legs too little. If your arms fully extend in more than ten seconds, you are using your legs too much.

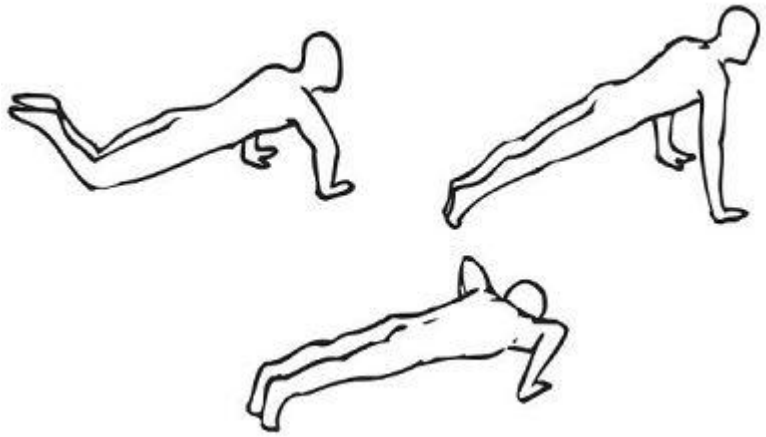
7. While your arms are extending and you are lowering down, keep your shoulders back, chest out, look up, and keep your arms as even with your torso as possible—that is, do not let your arms creep out in front of you.

8. After your arms have fully extended, keep hanging on and stand up to get your chin back above the bar.

9. Repeat five more times without resting.

Assisted Eccentric Push-Ups

Muscle groups worked: chest, shoulders, and arms.



1. Lie face down on a clean floor and put your arms out to your sides so that your hands are even with your upper chest and slightly wider than shoulder-width apart.

2. Keeping your knees on the floor, push yourself up through the palms of your hands until just before your elbows lock. You will now have only your knees and your hands touching the floor.

3. Lift your knees off the floor and shift your weight to your toes. You will now have only your toes and hands touching the floor.

4. With your shoulders back and your chest out, slowly lower yourself until just before any other part of your body touches the ground. Hold that position for ten seconds. Make sure you keep your body in a straight line throughout the movement. Do not let your chest or hips bow down.

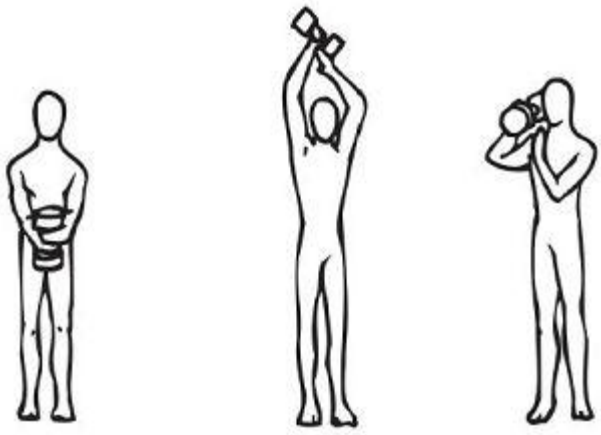
5. After ten seconds, put your knees back on the floor and push yourself back up like you did originally. Once you have lowered yourself six times—for ten seconds each time, without resting in between —you are done.

6. If you cannot lower yourself six times—for ten seconds each time—put your knees back on the floor until you can.

7. If you can lower yourself more than six times—for ten seconds each time—do not ever let your knees touch the floor. Always have just your hands and toes touching the floor. If that is still too easy, put your toes on something six to twelve inches off the ground. If that is still too easy, put your toes on something six to twelve inches off the ground and put something heavy on your back.

Assisted Eccentric Shoulder Press

Muscle groups worked: shoulders and arms.



1. Find something that you can safely lift above your head using both arms. You should also be able to safely hold it above your head with one arm. This means it should be small. Ideally you would use a dumbbell. Hold it in both hands.

2. Lift it above your head using both hands. You should now be standing with your shoulders back and your chest out, holding something above your head with both arms extended as much as they can without locking at the elbows.

3. Very carefully release one hand but keep it close to whatever you are holding above your head to help lower it if needed.

4. Keep the arm supporting the resistance to your side—that is, do not let it creep in front of you—and slowly lower the resistance for ten seconds, always keeping your other hand close by.

5. If you can lower the resistance for more than ten seconds, you need something heavier. If you cannot lower the resistance for ten seconds, you need something lighter.

6. Repeat this five more times—without resting—and then do the same thing with your other arm.

Chapter 35

How to Do the Four Clog-Clearing Exercises at a Gym

To see the exercise videos go to:
http://thesmarterscienceofslim.com/reader-only-resources/
and enter the password: time

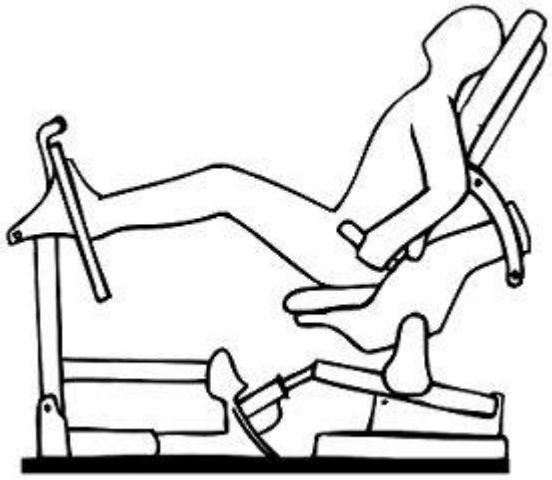
"*My gym has two-pound weights. If you are using two-pound weights, how did you even open the door to the gym? What's your dream? To pump up and open your mail?"*

DAVE ATTELL

Before you get Eccentric at your local gym, keep in mind that every brand of exercise machine is slightly different. Read the instructions on the machines you will be using to learn specifically how to lower the resistance, raise the resistance, position the seat, and position the handles. Also, remember to inhale deeply before lowering resistance and to exhale when lifting resistance. Finally, all of the general Eccentric guidelines from before still apply. Get warmed up. Pick resistance you cannot lift with one arm or one leg, but can easily lift with both arms or both legs. Lift the resistance with both arms or both legs. Lower the resistance with only one arm or one leg for ten seconds. Repeat until it is impossible to lower the resistance with only one arm or one leg for ten seconds. If this takes more than six repetitions, gradually add resistance until it only takes six repetitions. Push yourself as hard as you can while staying safe.

Eccentric Leg Presses

Muscle groups worked: legs and butt.



1. Sit on the leg press machine with your back against the pad. Make sure to keep your head and shoulders back, while sticking your chest out. Think about how military personnel stand at attention. Do that with your head, shoulders, and back while sitting on the machine. This protects your back from injury. Never, ever, round your back forward during any exercise.

2. Put your feet on the platform. Space your feet slightly wider than shoulder-width apart—whatever is most comfortable for you. Make sure your feet are high enough on the platform that your toes stay higher than your knees when you lower the resistance.

3. When you lower and raise the resistance, make sure your knees stay lined-up with your feet. Do not bow your legs in or out. Make sure your knees never stick out farther than your toes.

4. Always push on the platform through your heels, while keeping your abs tight and your back against the pad, with your shoulders, back, and chest out.

5. Lower the resistance for ten seconds with one leg, as low as you comfortably can without your back coming off the pad or your heels lifting off the platform.

6. When you lift the resistance—with both legs—avoid locking your knees at the top of the movement. Right before you begin to lock your knees, start lowering the resistance with one leg again.

7. Repeat this five more times—without resting—and then do the same thing with your other leg.

Eccentric Rows

Muscle groups worked: back and arms.

1. Sit on the row machine and put your chest against the pad, if there is one. Either way, make sure to keep your back perpendicular with the floor with your head and shoulders back, while sticking your chest out. Imagine trying to pinch a playing card between your shoulder blades. Do that with your back and shoulders while you lift and lower the resistance.

2. Put your feet flat on the floor or flat on the machine's platform. Keep them there.

3. When you lift and lower the resistance, keep your torso still. Use only your back and arm muscles to lift the resistance. Do not move your torso to generate momentum to help your back and arms.

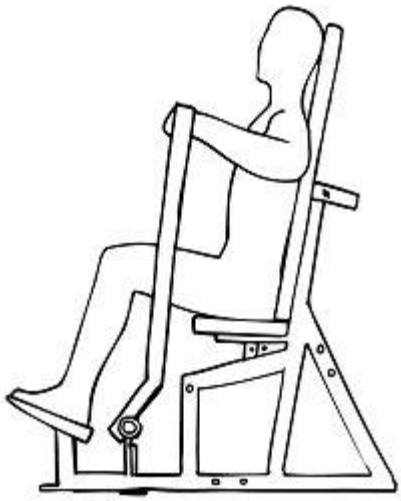
4. Lift with both arms, then lower the resistance for ten seconds with one arm until your arm extends as far as it can, without causing you to round your back or to lock your elbow. Repeat "shoulders back, chest out" in your mind during this and all other exercises.

5. Just before your elbow begins to lock, use both arms to lift the resistance again.

6. Repeat this five more times—without resting—and then do the same thing with your other arm.

Eccentric Chest Press

Muscle groups worked: chest, shoulders, and arms.



1. Sit on the chest press machine with your back against the pad, like you did with the leg press machine. Make sure to keep your head and shoulders back, while sticking your chest out.

2. Put your feet flat on the floor or flat on the machine's platform. Keep them there.

3. When you lower and lift the resistance, make sure you keep your shoulders and head back, abs tight, and chest out. Do not lift your lower back off the pad.

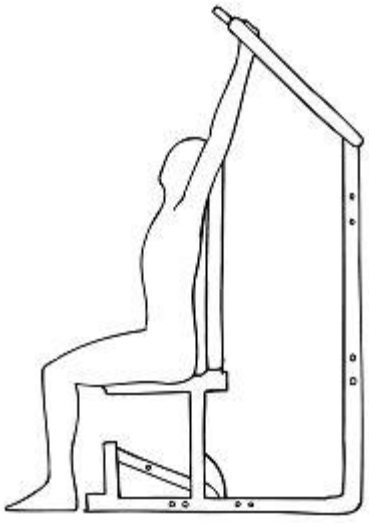
4. When you lift the resistance with both arms, extend your arms as far as they will go without locking your elbows or moving your shoulders forward. Just before your elbows begin to lock, start slowly lowering the resistance.

5. Lower the resistance for ten seconds with one arm until your hand is about even with your rib cage.

6. Repeat this five more times—without resting—and then do the same thing with your other arm.

Eccentric Shoulder Press

Muscle groups worked: shoulders and arms.



1. Sit on the shoulder press machine with your back against the pad like you did with the chest press machine. Make sure to keep your head and shoulders back, while sticking your chest out.

2. Put your feet flat on the floor or flat on the machine's platform. Keep them there.

3. When you lower and lift the resistance, make sure you keep your shoulders and head back, abs tight, and chest out. Do not lift your lower back off the pad.

4. When you lift the resistance with both arms, extend your arms as far as they will go without locking your elbows or moving your shoulders up. Just before your elbows begin to lock, start slowly lowering the resistance.

5. Lower the resistance for ten seconds with one arm until your hand is about even with your shoulders.

6. Repeat this five more times—without resting—and then do the same thing with your other arm.

Chapter 36

Ten Minutes of High-Quality Brief Cardiovascular Exercise

"*The efficacy of a high intensity [high-quality Brief cardiovascular] exercise protocol, involving only ~250 kcal [calories] of work* each week*, to substantially improve insulin action [unclog] in young sedentary subjects is remarkable."*

J.A. BABRAJ, HERIOT-WATT UNIVERSITY, EDINBURGH[352]

Since you already know how to pedal on an upright stationary bike and since we already covered how to use an upright stationary bike Briefly but more forcefully, you are ready to go do high-quality Brief cardiovascular exercise:

1. Hop on an upright stationary bike.

2. Get warmed up by pedaling at a moderate pace with moderate resistance to get warmed up.

3. Increase the bike's resistance so you can pedal only by standing up on the pedals and pushing down on them as hard as you can.

4. Pedal like that for thirty seconds. If you can pedal for longer than thirty seconds, increase the resistance until you cannot.

5. Rest for two minutes.

6. Repeat the steps 4 and 5 three times.

The key thing to keep in mind when doing high-quality Brief cardiovascular exercise is that we are not doing *high-quality* Brief cardiovascular exercise if we get on an upright stationary bike and flail around uncontrollably for thirty seconds. Sounds silly, but that is exactly what will happen if you do not bump the resistance way up on the bike. Assuming you are not a highly trained athlete—moving your body very quickly will eventually lead to an injury. However, after you add resistance, you can move at a normal, controllable, and safe rate, while working as forcefully as you possibly can.

As a general rule of thumb, *high-quality* Brief cardiovascular exercise is not about moving faster. It's about trying to move more resistance.

Smarter Success

Before we wrap things up, please download your free companion ebook *Smarter Success*. This quick read sets you up for long-term success as you put *The Smarter Science of Slim* into practice.

http://TheSmarterScienceOfSlim.com/Smarter-Success

Inside you will find:

- Details on when you can expect results and how to measure them.

- A five-step plan to get you started eating SANEly and exercising eccentrically.

- Access to reader-only resources such as recipes, meal plans, serving size guides, how-to videos, workout logs, grocery lists, and more.

Conclusion:

Fighting Body Fat With Biological Facts

> "*True scientists put the solution to a medical problem first and not the preservation of their own hypothesis, no matter how clever the hypothesis may seem or how proud of themselves they may be for creating it.*"
>
> **UFFE RAVNSKOV, M.D., PH.D.**{353}

If two billion people can be selective about what they eat, so can you. Take the dietary restrictions of the Islamic, Hindu, and Jewish religions, add diabetics and vegetarians, assume a third of these people skip the restrictions, and we end up with about two billion people worldwide who eat in a way that is much tougher than eating more—smarter. Also, most people spend an average of over twenty-four minutes per day driving to and from work. Everyonehas ten to twenty minutes per *week* to spend driving hormonal clogs from their body. We have all done more difficult and less beneficial things than eating more and exercising less—smarter. Now, armed with the right information, you have the ability to burn body fat forever.{354}

As you start becoming slim, people will ask questions that mask their envy. "Don't you like food?" is a common remark. Eating more—smarter—is the opposite of disliking food. You are eating more food. Your disapproving peers are the ones trying to eat less of it. Sure, you are selective about what you eat, but to say that means you dislike food is like saying that being selective about what you listen to means you dislike music. Dr. Seuss put it best when he noted that "those who mind do not matter and those who matter do not mind."

Beyond specific food-related jabs, the envious will generally try to bring you back to "normal." The best way to deal with the constant coaxing is to keep some simple logic in mind: If you do not want what everyone else has, you should not do what everyone else does. Put differently: If you do not want typical results, you should not do what is typically done.

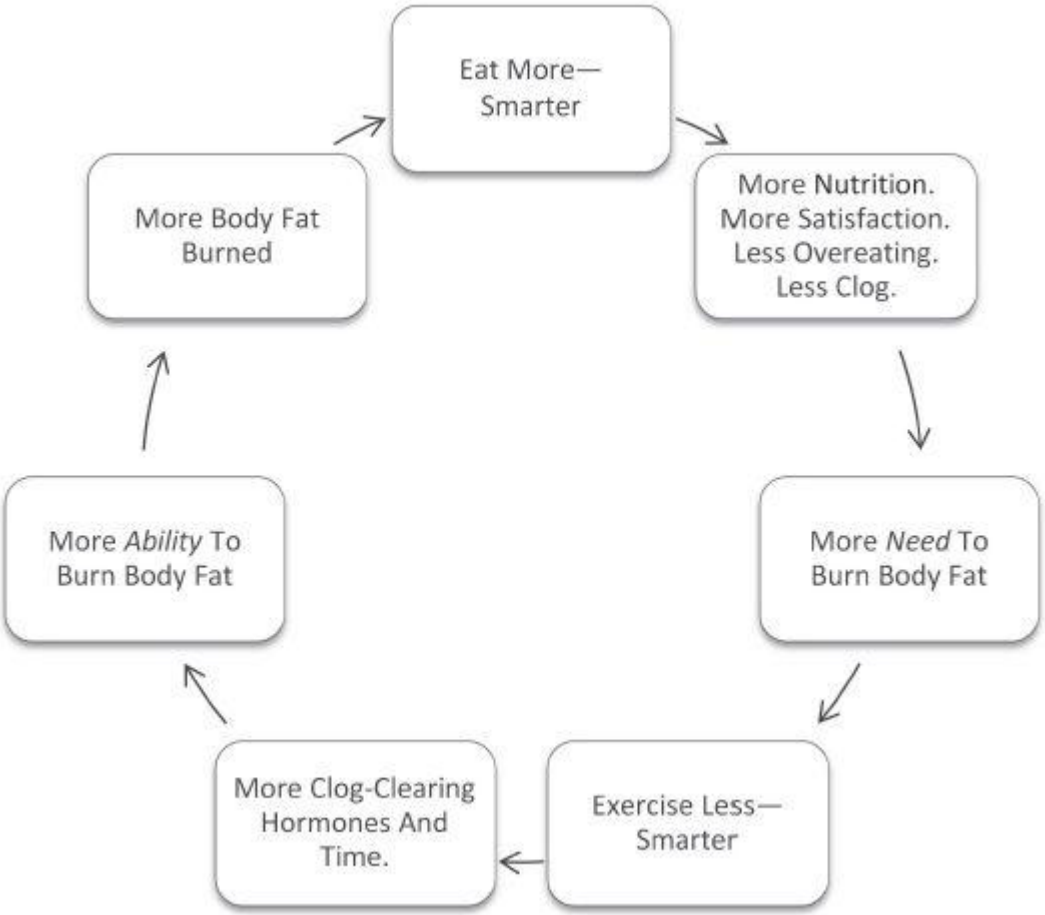
As we have seen throughout this book, eating more and exercising less—smarter—is based on scientific findings, not on opinion. It is not an opinion that our fat metabolism system regulates our weight automatically. Calories do have different qualities. Hormones are as important as calories. Starches are more harmful than helpful. Added sweeteners cause metabolic chaos. A balanced intake of natural carbohydrate, protein, and fat is healthy. And it is not an opinion that we get better results by exercising more muscle.

Speaking of science, here is the summary of the smarter science of slim:

- Gaining or losing body fat is controlled by our fat metabolism system. It automatically regulates our body fat levels around a set-point. Gaining body fat is the result of a hormonal clog in our fat metabolism system that raises our set-point.
- Long-term fat loss comes from clearing this hormonal clog and lowering our set-point. Long-term fat loss comes from making our fat metabolism system work like the fat metabolism systems of people who eat whatever they want and do not get fat. Long-term fat loss comes from improving our basic biological functions. We improve them by increasing the *quality* of calories we eat and the *quality*of exercises we do.
- Temporary fat loss comes from ignoring our clog while fiddling with the *quantity* of calories we eat and exercise off. Temporary fat loss comes from making our fat metabolism system think it is starving. This approach causes us to slow down, hold on to body fat, burn muscle, and gain back more body fat than we lost.
- Studies show that *Calories In – Calories Out*, *A Calorie Is a Calorie*, *Calories Are All That Matter* and the rest of the manually-balance calories mythology fails because it ignores the set-point, calorie quality, and our hormonal clog. Traditional fat loss theories ignore all of the factors controlling fat loss. That is why studies show they fail 95% of the time.
- By focusing on calorie quality, we eat as much SANE—high-Satiety, low-Aggression, high-Nutrition, and low-Efficiency—food as possible, and sit back while our body takes care of itself. Our hormones get healed, our clog clears, our set-point drops, and we burn body fat all day, automatically.
- Eating SANE food is simple. We eat natural foods packed with water, fiber, and protein. We eat the way our ancestors ate for 99.8% of our evolutionary history. We eat the way people ate before obesity and all its related diseases became a problem. We eat normally instead of typically. We eat pragmatically for our good instead of profitably for corporate greed.
- Sadly, our government promotes disproven, imbalanced, and unnatural *Dietary Guidelines* that encourage the inSANEeating that in turn causes the obesity, diabetes, heart disease, and cardiovascular disease epidemics.
- Big food, fitness, and pharmaceutical corporations pile on the inSANE “food” and spread misinformation because the worse we do, the better they do.
- We do not burn more body fat by exercising more. We burn more body fat by unclogging. We unclog by working more muscle fibers and triggering clog-clearing hormones. This type of deep and hormonal exercise is performed by moving eccentrically, briefly, and infrequently. Exercise helps us burn body fat forever when we do less of it—smarter.
- Eating less and exercising more lead to what we didn’t want - weight gain. Eating more and exercising less—smarter—leads to what we want - weight loss.

 Eating more—smarter—provides the unique combination of more nutrients, more satisfaction, and more clog clearing, while preventing us from overeating. Add in exercising less—smarter—and we stimulate our clog-clearing hormones. More nutrients plus less overeating and less clog quickly convince our fat metabolism system to lower our set-point and burn body fat for us automatically. Since we are eating*more* while exercising *less* than ever, we easily can keep this up long-term.

The Smarter Science of Slim



The science is simple. The lifestyle is easy. The results are amazing.

Here's to a lifetime of fighting fat with facts instead of getting frustrated by fat-loss fiction.

Afterword:

Spread the Word

"*We cannot solve problems by using the same kind of thinking we used when we created them.*"

ALBERT EINSTEIN

In the past, the "truth" was determined by profitability. This does not have to be the case anymore. The truth can be determined by science. You and I simply need to get the word out.

Please help spread this scientific news using every outlet available to you. Let me know how I can help (TheSmarterScienceofSlim.com/contact). And please make sure you credit the researchers who spent years of their lives discovering this data.

If every one of us spends a few seconds sharing this scientific news, we can create a healthier and happier world.

P.S. If you'd like more guidance during your first five weeks of eating more and exercising less—smarter, check-out *The Smarter Science of Slim Workbook*. In addition to providing a specific five-week program which will lower your set-point weight, it also provides simple tools which can help you overcome subconscious roadblocks which could derail your fat-loss efforts regardless of how much science you know.

You can find additional information on this book's companion websites:

TheSmarterScienceOfSlim.com and JonathanBailor.com.

Finally, as eating more and exercising less—smarter—makes you healthier, hotter, and happier, I would love to hear about it. Please share your good news with me at

TheSmarterScienceofSlim.com/contact.

Appendices

Appendix 1: Food Groups' SANEity Scores

Appendix 2: Products That Make Long-Term Fat Loss Easier

Appendix 3: A Higher-Quality Diet with the Least Effort Possible

Appendix 4: How to Eat Before and After Workouts

Appendix 5: A Summary of the Five Benefits of Eating More–Smarter

Appendix 1

Food Groups' SANEity Scores

The quality of a calorie is calculated by averaging how Satiating, unAggressive, Nutritious, and inEfficient it is. Here are the scores from each of the four calorie quality factors, averaged and stacked ranked.

Type Of Food	Satiety Rating	unAggressive Rating	Nutrition Rating	inEfficiency Rating	SANEity Rating
Non-Starchy Vegetables	5	5	5	4	★★★★★
Seafood/Lean Meat/ Egg Whites/Whey Protein/Select Dairy	5	5	4	5	★★★★★
Nuts, Flax Seeds	3	5	3	2.5	★★★½
Fruits	3.5	3	4	2	★★★
Legumes	4	3	3	3	★★★
Most Dairy	2.5	2	2	2.5	★★½
Oils	2	5	0	0	★★½
Whole Grain Starch	2.5	0.5	1	1	★½
Processed Starch	1	0	0	0.5	½
Sweeteners	0	0	0	0	

Appendix 2

Products That Make Long-Term Fat Loss Easier

Note that I am not receiving any compensation from anyone for these recommendations. None of them are required for you to lose fat in long-term. They simply save you time and money in the long-term.

Whey Protein Powder

Many supplement companies advertise that their whey protein is best. Do not believe the hype. Just make sure your protein powder does not contain a bunch of extra ingredients. Any product with more than two grams of sugar per twenty-five grams of protein is low-quality and should be avoided.

When choosing flavors, think about how you are going to eat the protein. If you plan to blend it with fruits and vegetables, then I recommend vanilla, strawberry, or some other fruit flavor. Other flavors

are risky with fruits and vegetables. If you plan on mixing the whey protein with only water, ice, and milled flax seeds, get whatever flavor sounds appealing to you.

Membership at a Bulk Wholesale Store

With the cash-back my wife and I get thanks to our “executive” membership, Costco ends up paying us a few dollars per year for our membership.

High-Quality Blender

If you want to make smoothies, a good blender costs between $300 and $400. If you blend frequently, cheap blenders cost you more over the long run because they have to be replaced every year.

You will also find that high-quality blenders are significantly better at making tasty smoothies. Cheap blenders break food into small chunks, and it is no fun drinking grainy, chunky smoothies. High-quality blenders create smooth and delightful smoothies.

For example, if you put spinach into a $100 blender, you will get bits of spinach. However, if you put spinach in a $400 blender, you will get smooth spinach juice. Or consider whole flax seeds. Cheap blenders mix them up and leave you with whole flax seeds. High-quality blenders liquefy them. If you had a grainy, chunky, and overall bad experience with blending in the past, blame the blender and give smoothies another shot with a better blender.

I use a Vitamix blender, which costs about $400. There are other great ones out there. I chose the Vitamix because it has an impressive seven-year warranty and comes with a large jar—to blend a lot at once—and a handy plunger—to push food down in the blender without splattering all over the place. If your time is scarce, I think a $400 blender is worth the investment. If it lasts you seven years—which it will if it has a seven-year warranty—that is $57 a year.

Natural Peanut Butter

Try to buy your peanut butter from a store with a peanut butter machine—a machine that pulverizes peanuts into perfect natural peanut butter right before your eyes. This way the oil doesn’t separate out, and you don’t have to remix your peanut butter before you eat it.

Buying *natural* peanut butter is critical. The ingredients should read: peanuts. Traditional peanut butter contains added sugar and hydrogenated fats. Added sugar is bad news and hydrogenated fats are as bad for us as high-fructose corn syrup.

Bulk Unsweetened Cocoa

If you like chocolate, buying unsweetened cocoa in bulk is a great cost saver. Amazon.com’s Subscribe and Save service is the way to go here. Unlike chocolate, pure cocoa is one of the most SANEfoods in the world. I mix chocolate protein powder, natural peanut butter, cocoa, cinnamon, flax seed oil, and Splenda to make chocolate-peanut-butter fudge that takes care of my sweet tooth while keeping me SANE. It can also be baked into SANE brownies.

Stevia or Splenda

If you would like to sweeten certain foods, use Stevia (natural sweetener) or Splenda (artificial sweetener). Both are much healthier than sugar, high-fructose corn syrup, or any other traditional sweetener.

Indoor Grill

A must-have for easy meat and seafood preparation. George Foreman's is the most common. There are other great ones. My only recommendation is to get one where you can detach the grilling "plates" for easy washing.

Stand-alone Freezer

If many people in your house are going SANE, a stand-alone freezer is helpful. All this freezer space allows you to buy non-starchy vegetables, meat, seafood, and fruit in bulk, and saves you money and time.

Appendix 3

A Higher-Quality Diet with the Least Effort Possible

If you want to try going SANE with even less effort, you can follow these three steps.

- Step 1: Buy whey protein powder, wheat grass powder or something like it, and milled flax seeds.
- Step 2: Mix a heaping scoop of the whey protein, a heaping tablespoon of the milled flax seeds, and two heaping tablespoons of the wheat grass with as much water as you like, and drink it before breakfast, lunch, and dinner.
- Step 3: Eat as SANEly as possible at breakfast, lunch, and dinner.

With as little time and effort as possible, this will dramatically increase the SANEity of your diet.

Appendix 4

How to Eat Before and After Workouts

"*Studies show that carbohydrates combined with…protein creates a better muscle refueling and building response."*

NANCY CLARK, AMERICAN COLLEGE OF SPORTSMEDICINE{355}

We can enhance the results of deep, hormonal, infrequent,eccentric, and brief exercise by making two simple additions to ourSANE diet. First, consume about thirty grams of whey protein powder immediately before all workouts. Second, consume about thirty grams of whey protein powder, and eat two servings of fruit, immediately after all workouts. And I mean *immediately*afterwards. Not a half hour later. Take the food with you and eat it the second you finish your workout.{356}

Important Note: If you would like to splurge on starch or sweets, do it immediately after high-quality exercise to minimize clogging.

{357}

Appendix 5

A Summary of the Five Benefits of Eating More—Smarter

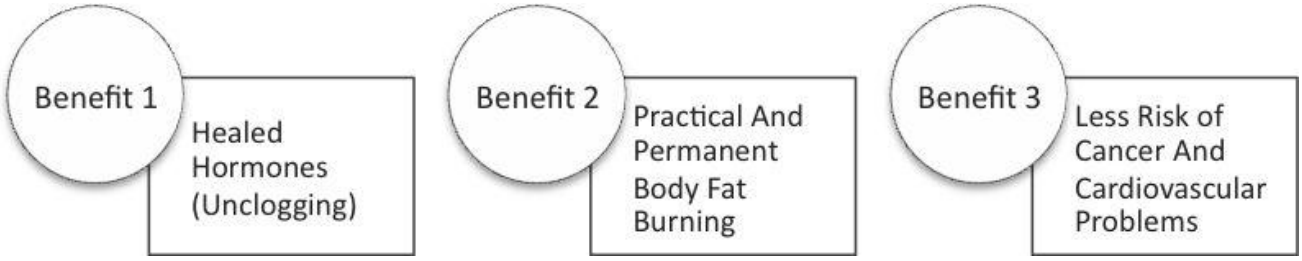
"*U.S. dietary guidelines advocate a low-fat, high-complex-carbohydrate, lower-protein diet although several recent studies have reported that replacing a portion of carbohydrate intake with dietary protein and/or fat may be as, if not more, effective in promoting weight loss and reducing disease risk."*

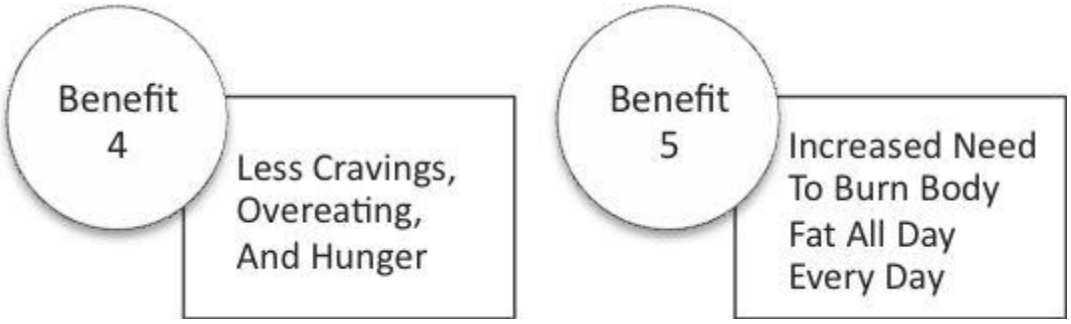
P.J. ARCIERO, SKIDMORE COLLEGE{358}

Giving our fat metabolism system more of the fuel it is designed for makes all sorts of good things happen. In a study of over 105,000 people, the American Cancer Society found: "The dietary pattern represented by the AHEI [a more SANE way of eating] predicted lower incidence of major chronic disease in men and women."{359}

I discovered thousands of pages worth of research that confirm the health benefits of eating more—smarter. Consider just the additional fiber from SANE food. David Ludwig, at Children's Hospital Boston, found "[Fiber intake is] inversely associated with insulin levels [and] weight gain." Tulane University researcher Lydia Bazzano adds: "A higher intake of dietary fiber, particularly water-soluble fiber, reduces the risk of coronary heart disease."{360}

Here is a quick summary of the top five benefits of boosting our biology by eating more—smarter.





Benefit 1 – Healed Hormones (Unclogging)

"*A weight loss diet with moderate carbohydrate, moderate protein results in more favorable changes in body composition…[and] insulinemic response [unclogging] compared to a high carbohydrate, low protein diet suggesting an additional benefit beyond weight management to include augmented risk reduction for metabolic disease."*

D.A. Lasker, University of Illinois{361}

"*Even short-term consumption of a paleolithic type [SANE] diet improves blood pressure and glucose tolerance, decreases insulin secretion, increases insulin sensitivity and improves lipid profiles [clears clogs]."*

L.A. Frassetto, University of California, SanFrancisco{362}

A higher quantity of high-quality food causes the fat metabolism system to produce less body-fat-storing hormones and more body-fat-burning hormones. This helps to us clear our hormonal clog, lower our set-point, and burn body fat automatically, like naturally thin people. University of Illinois researcher D.K. Layman tells us: "Evidence is convincing that reduction in total dietary carbohydrates to less than 40% of total energy is the most effective way to improve glycemic regulations [to unclog]." With about a third of our calories coming from non-starchy vegetables and fruit, a third coming from natural fats, and the other third coming from lean protein, we will heal our hormones and clear our clog quickly and easily.{363}

Benefit 2 – Practical and Permanent Body Fat Burning

"*A balanced carbohydrate/protein [SANE] diet results in greater improvement in body composition…than a program comprised of a traditional diet…regimen commonly recommended for weight loss."*

P.J. Arciero, Skidmore College{364}

"*Additional protein consumption results in a significantly lower body weight regain after weight loss.*"

M.S. WESTERTERP-PLANTENGA, MAASTRICHTUNIVERSITY[365]

If anyone ever says they have a program, pill, or product that enables you to burn more body fat faster and longer, ignore them unless they have third-party studies to prove it. Here is a sampling of studies that prove you will burn body fat more practically and permanently than ever before by eating more—smarter.[366]

Study 1

The Journal of Nutrition published a 2003 study where women were put into two groups: let's call them inSANE and SANE. The inSANE people followed the government's guidelines. The SANEgroup ate a more balanced ratio of protein, carbohydrate, and fat from more natural foods. Both groups ate the same quantity of calories per day. The only difference between the groups was the quality of their diets.

After ten weeks, the SANE group lost 75% more body fat than the inSANE.[367]

Study 2

The International Journal of Obesity published a study in 2004 in which people were put into two groups, eating as many calories as they wanted to. The only thing that varied between the groups was the SANEity of their diets. The study lasted one year. Keep in mind that everyone in the study ate an unlimited quantity of food. The only thing that varied was the quality of their calories.

After six months, the more SANE group lost nearly 80% more fat. After twelve months, the more SANE group had lost 50% more body fat and shrunk their bellies 367% more. Beyond being visually appealing, a 367% greater decrease in belly size is important since abdominal fat and waist circumference—rather than total body fat—are what most accurately predict weight-related health issues.[368]

Study 3

In 2009, the journal *Cardiovascular Diabetology* reported that researchers found a SANE diet burned body fat 35% more effectively than exactly the same number of calories from lessSANE sources. Researchers also noted that the SANE diet was "more beneficial with respect to cardiovascular risk factors." The researchers concluded: "Since mean energy intake and energy expenditure did not differ between the two groups, the differences in [weight reduction, belly fat lost, and blood pressure] are most likely due to differences in macronutrient relations [calorie quality]."[369]

Study 4

In 2007, the journal *Applied Physiology, Nutrition, and Metabolism* reported a study in which researchers divided people into four groups. All of the groups ate the same number of calories but varied how SANE their diets were and how much they exercised.

- **SANE + Exercise**: This group ate a SANE diet and exercised three times per week.
- **Almost SANE + No Exercise**: This group ate an almost SANE diet and did not exercise.

- **InSANE + Exercise**: This group ate a mostly inSANE diet and exercised three times per week.

- **InSANE + No Exercise**: This group ate an inSANE diet and did not exercise.

Here are the results:

Pounds Lost in Twelve Weeks

Look at the middle two bars. The *quality* of calories, not the*quantity* of exercise, played the biggest role in burning body fat. Put differently, adding exercise to an inSANE diet led to less body fat being burned than skipping exercise altogether, while eating a more SANE diet. The researchers noted that a SANE diet "was superior to a low-fat, high-carbohydrate diet [the government's diet] either alone *or when combined with an aerobic/resistance-training program* in promoting weight loss."{370}

Study 5

Last but not least and more related to the permanent fat-loss side of things, in 2006 the journal *Nutrition & Metabolism* researchers followed up with people a year and a half after a weight-loss study. The people in the more SANE group still weighed 15 pounds less, even though they had stopped eating the SANE diet from the study.{371}

Benefit 3 – Less Risk of Cancer and Cardiovascular Problems

> "*One of the more surprising findings from nutrition research over the past decade is that people who regularly eat nuts are less likely to have heart attacks or die from heart disease than those who rarely eat them."*
>
> **W.C. WILLETT, HARVARD UNIVERSITY**{372}

> "*These prospective data suggest that consumption of seafood at least once per week may reduce the risk of sudden cardiac death in men."*
>
> **C.M. Albert, Harvard University**{373}

Let's get straight to the point. Eating more non-starchy vegetables has been associated with drops in the risk of nearly all diseases. Eating more fruit and nuts contributes to a reduced risk of cardiovascular disease. Eating more seafood and chicken drops our risk of heart disease and cancer.The list goes on. As you would expect, eating high-quality food leads to high-quality health.{374}

Benefit 4 – Less Cravings, Overeating, and Hunger

> "*The difference in intake was striking with the lower protein group consuming 621 more calories."*
>
> **T.L. Halton, Harvard University**{375}

We covered this in detail when we discussed Satiety, but here are a few other interesting findings. Studies at Temple University show high-quality calories causing a "spontaneous reduction in energy intake" to an appropriate level for healthy and sustained fat loss. Other research reveals getting a natural balanced amount of protein—about a third of calories—causes people to effortlessly avoid hundreds of excess calories per day. By eating more good food, it is easy to avoid bad food while keeping the fat metabolism system from thinking that it is starving.{376}

Benefit 5 – Increased Need to Burn Body Fat All Day, Every Day

> "*Higher protein diets increase loss of body weight and body fat and attenuate [slow] loss of lean tissue when compared with commonly recommended high carbohydrate low fat low protein diets."*
>
> **D.K. Layman, University of Illinois**{377}

While eating less of the same old inSANE diet drops our need to burn body fat, eating more of a SANE diet increases it. Consider an American University of Beirut study. There was a SANE diet group and a group that adhered to governmental dietary guidelines. After a month, the SANE group lost six pounds more than the inSANEgroup and still needed 250 more calories per day than the relatively heavier inSANE group. In other words, they lost weight without losing their need to burn body fat.

Chalk one up for eating a natural balanced diet that communicates "burn body fat" instead of "slow down, hold on to body fat, and burn muscle."{378}

Glossary

Ability to Burn Body Fat: When our body is capable of efficiently burning body fat for energy.

Example – An unclogged fat metabolism system has the*ability to burn body fat*.

Added Sweeteners: Substances that contain calories and are infused into foods to "enhance" taste. The most inSANE and clog-causing substance in the world.

Example – Sugar, high-fructose corn syrup, and evaporated cane juice are common *added sweeteners*.

Aggression: A measure of how likely calories are to be stored as body fat.

Example – Starches and sweets are basically pure glucose and therefore provide an abundance of *Aggressive* calories.

Amino Acids: What our bodies initially convert protein into.

Example – Excess *amino acids* must be converted into glucose and then converted into fatty acids before they can be stored as body fat.

Balance Scale Analogy: The myth that people can practically regulate the calories they take in and burn off with enough precision to impact their weight in the long term.

Example – The second chapter of the USDA's *2010 Dietary Guidelines for Americans* promotes the *balance scale analogy*. The chapter is titled: *Balancing Calories to Mange Weight.*

Balanced Diet: Eating about the same amount of calories from protein, carbohydrate, and fat.

Example – The government's guidelines and graphics tell people to get about 65% of their calories from carbohydrate, 20% from fat, and 15% from protein. That is not a *balanced diet*.

Body-Fat-Burning Hormones: Substances such as epinephrine, adrenaline, noradrenaline, growth hormone, ACTH, glucagon, thyroid hormone, and lipase that enable the fat metabolism system to burn body fat.

Example – High-quality eating and exercise trigger *body-fat-burning hormones*.

Body-Fat-Storing Hormones: Substances such as insulin that enable the fat metabolism system to store body fat.

Example – Low-quality eating triggers *body-fat-storing hormones*.

Brief Exercise: A key characteristic of high-quality cardiovascular exercise.

Example – By doing forceful *Brief exercise* on a low-impact cardiovascular exercise machine for ten minutes per week, Jane felt and looked better than when she did five hours of traditional cardiovascular exercise per week.

Caloric Sweeteners: The type of sweeteners proven to cause clogs in the fat metabolism system and to destroy our health. Also see*Added Sweeteners*.

Example – Non-caloric sweeteners such as Splenda and Equal are not great for us, but they are not nearly as bad for us as*caloric sweeteners.*

Calorie Quality Factors: The four measurements which determine if a calorie is high- or low-quality: Satiety, Aggression, Nutrition, Efficiency.

Example – *A Calorie Is A Calorie* cannot be true given the*calorie quality factors*.

Calorie Quality: What determines if a calorie will clog or clear the fat metabolism system. What determines if a calorie will trigger body-fat-burning or body-fat-storing hormones.

Example – Low *calorie quality* is the cause of long-term body fat gain.

Calorie Quantity Theory of Fat Loss: A myth that gaining body fat is *caused* by eating too many calories and exercising away too few calories, and that burning body fat is *caused* by eating less calories and exercising away more calories.

Example – According to the *calorie quantity theory of fat loss*, Jane will gain about 1,000 pounds over the next ten years if she eats about 1,000 too many calories per day.

Cholesterol: A substance produced by the liver or intestines or acquired from food that is required for the production of new cells and hormones.

Example – "In [a famous cardiovascular disease study] the more saturated fat one ate, the more *cholesterol* one ate, the more calories one ate, the lower people's serum [total]*cholesterol*…." – W.P. Castelli, Framingham Cardiovascular Institute{379}

Clog: An analogy that explains the fat metabolism system's inability to respond to hormonal signals that cause it to burn—rather than store—excess calories.

Example – The cause of weight gain is a *clog* in the fat metabolism system.

Clogged Fat Metabolism System: When the hormonal signals that otherwise automatically regulate body weight around a set-point do not function properly.

Example – Studies show that even when obese people eat nothing, their *clogged fat metabolism system* prevents them from burning body fat effectively.

Deep Exercise: An activity that requires so much force and works so many muscle fibers that it can only be done for a matter of seconds, once per week.

Example – A great *deep exercise* you can do at home is to increase the resistance on a stationary bike so that you have to push on the pedals as hard as you can in order to move them.

Deep Muscle Fibers: The parts of muscles that trigger the most clog-clearing hormones and that can only be exercised by making the muscle generate as much force as possible.

Example – Slowly lowering as much resistance as possible for ten seconds works your *deep muscle fibers*.

Dietary Guidelines: A government document that was first released in 1980—and has been rereleased every five years since—that recommends a high-carbohydrate-low-fat-low-protein diet which is only practical if you eat unnatural amounts of starches and sweeteners.

Example – Combine the governments' *Dietary Guidelines*with the profitability of highly-processed high-carbohydrate-low-fat-low-protein starch and sweetener based foods, and we get the weight and health problems we have today.

Diseases of Civilization: Obesity, diabetes, heart disease, cardiovascular disease, and other diet related diseases which were not a problem before starches and sweeteners became the cornerstone of our diet.

Example – The remaining hunter-gather populations stay free of the *diseases of civilization* well into old age.

Eccentric Exercise: A technique that enables us to safely increase the quality of resistance training by allowing us to use more resistance when muscles are stronger and less resistance when our muscles are weaker.

Example – Because it is so safe, *eccentric exercise* enables everyone to make their muscles generate more force.

Efficiency: A measure of how many calories from a given food could ever be stored as body fat.

Example – Only about a third of calories from protein can ever be stored as body fat, thanks to their low *Efficiency*.

Exercise Quality: Determined by the amount of clog-clearing hormones triggered by an activity.

Example – Focusing on *exercise quality* rather than exercise quantity is one of the keys to long-term health and long-termbody fat loss.

Fat Metabolism System: An analogy that explains how a series of hormonal and neural signals regulate food intake, energy expenditure, and body fat.

Example – When our *fat metabolism system* becomes clogged, we are prone to store body fat regardless of how many calories we eat.

Fat Super Accumulation: The primary long-term side effect of eating less.

Example – After eating less, rats gained body fat twenty times faster than normal. They experienced *fat super accumulation*.

Glucose: The primary source of fuel for our bodies. What carbohydrate is immediately converted into during digestion.

Example – We gain body fat from eating low-quality foods that trigger the creation of more *glucose* than our body needs at any point in time.

Glycemic Index: A measure of a food's Aggression.

Example – Foods with a high *glycemic index* are more likely to be stored as body fat since they are converted into glucose faster than foods with a low *glycemic index*.

Glycemic Load: A measures of a food's Aggression combined with the calories in a portion of it.

Example – One of the reasons starches and sweets are so fattening is because of their high *glycemic load*.

Government Guidelines and Graphics: A set of disproven dietary principles and pictures which encourage a diet made up of 65% carbohydrate—much of which comes from starch—20% fat, and 15% protein.

Example – While they have become prettier over time, the *government's guidelines and graphics* still recommend the same harmful and fattening diet.

High-Fructose Corn Syrup: An especially clog-causing caloric sweetener.

Example – Starches, sweets, and most dairy products are common sources of *high-fructose corn syrup*.

High-Protein Diet: Getting more than about a third of your calories from protein.

Example – If someone who needs 2,400 calories per day consistently eats eleven chicken breasts per day, they would get 55% of their calories from protein and would be eating a*high-protein diet*.

High-Quality Brief Cardiovascular Exercise: Accomplished by increasing the resistance on cardiovascular exercise machines so much that the exercise can only be done for a few thirty-second bursts per week.

Example – Adding resistance to an upright stationary bike until you can only move the pedals by standing up and pushing as hard as you can is the first step to *high-quality Brief cardiovascular exercise*.

High-Quality Eccentric Resistance Training: Accomplished by lowering as much resistance as possible for ten seconds.

Example – Using exercises that require no balance and use a shared source of resistance, you can do *high-quality Eccentric resistance training* by using both limbs to lift the resistance and one limb to lower it.

High-Quality Exercise: An activity that is done infrequently, for a short period of time, using a lot of resistance, and provides all the benefits of traditional cardiovascular exercise, but much more efficiently, and unclogs the fat metabolism system.

Example – The key to long-term body fat loss is not a lot of low-quality exercise. The key to long-term body fat loss is a little *high-quality exercise*.

High-Quality Foods: See *SANE Foods*.

Hormonal Exercise: An activity that unclogs the fat metabolism system.

Example – Eccentric leg press is a very *hormonal exercise*.

Hormones: The substances that control our set-point, fat metabolism system, and many other bodily systems. The substances significantly influenced by the quality of the food that we eat.

Example – Calorie quality significantly influences *hormones*.*Hormones* control our fat metabolism system and set-point. Therefore, we can significantly influence our fat metabolism system and set-point by controlling the quality of our calories.

Imbalanced Diet: Getting more than about a third of calories from carbohydrate, protein, or fat.

Example – The diet recommended by the government's guidelines and graphics is a grossly *imbalanced diet*.

inSANE Foods: Water-, fiber-, and protein-poor foods that have low Satiety, high Aggression, low Nutrition, and high Efficiency.

Example – Starches and sweets are *inSANE foods*.

Insulin: A hormone that enables body fat to be stored while preventing body fat from being burned.

Example – When we eat inSANE starches and sweets, we produce too much *insulin* and lose the ability to burn body fat effectively regardless of how much we starve ourselves.

Insulin Resistance: When the body must produce excess insulin to get energy into our cells.

Example – When we are *insulin resistant*, we are clogged-up with excess insulin and cannot burn body fat effectively.

Internal Starvation: When the fat metabolism system is so broken down that it encourages us to overeat to compensate for all the calories it is leaking into our fat cells.

Example – When insulin can only effectively get energy into fat cells while removing our ability to burn stored energy for fuel, we experience *internal starvation*.

Lean Meat: Meat that has at least 80% of its calories coming from protein.

Example – White-meat skinless turkey and white-meat skinless chicken are the most common sources of *lean meat*.

Low-Carbohydrate Diet: Getting less than about a third of your calories from carbohydrate.

Example – *The Atkins Diet* is the most famous *low-carbohydrate diet*.

Lowered Set-Point: The result of eating more and exercising less—smarter. What happens when the hormonal clog is cleared. The key to practical and permanent fat loss.

Example – A *lowered set-point* will do automatically what is completely impractical to do manually: burn body fat all day, every day.

Low-Fat Diet: Getting less than about a third of your calories from fat.

Example – The government's *Dietary Guidelines* and graphics promote a *low-fat diet*.

Low-Quality Exercise: An activity that is done frequently, for a long period of time, using little resistance, and improves health, but does not unclog the fat metabolism system.

Example – Jogging and walking are *low-quality exercises*.

Low-Quality Foods: See inSANE Foods.

Macronutrients: The three primary sources of calories.

Example – The three *macronutrients* are carbohydrate, fat, and protein.

Manually Balance Calories Theory of Fat Loss: The myth that people can effectively burn body fat long-term by consciously regulating the amount of calories they take in and exercise off.

Example – Anyone who thinks eating less and exercising more is an effective long-term approach to burning body fat believes the *manually balance calories theory of fat loss*.

Milled Flax Seeds: An extremely SANE food that provides an incredible amount of nutrients—such as omega-3 fatty acids—which are otherwise hard to get.

Example – An easy way to incorporate *milled flax seeds* into your diet is to add a tablespoon or two to smoothies.

Monounsaturated Fats: The second most healthy type of fat.

Example – Meat, fish, select dairy, nuts, avocados, olive oil, and canola oil are good sources of *monounsaturated fats*.

Natural Balanced Diet: Eating about an equal amount of carbohydrate, fat, and protein from foods that can be hunted or gathered.

Example – The easiest way to clear your clog and lower your set-point is to eat a *natural balanced diet*.

Natural Food: The foods that humans ate for 99.8% of their evolution. The foods that humans ate prior to agriculture and civilization. The foods that help us to avoid the diseases of civilization.

Example – Non-starchy vegetables, seafood, meat, fruit, eggs, flax seeds, and nuts are *natural foods*. Organic bread, organic cereal, and organic pasta are not *natural foods*.

Need to Burn Body Fat: When the fat metabolism system has insufficient calories from food, but sufficient nutrition to avoid slowing down or burning muscle.

Example – It is easy to create the *need to burn body fat*instead of the need to slow down and burn muscle when we eat more SANE foods. SANE foods provide an abundance of Satiety and Nutrition in relatively few unAggressive and inEfficient calories.

Non-Caloric Sweeteners: Any substance that is sweet and does not contain calories. The healthier alternative to caloric sweeteners.

Example – The most common *non-caloric sweeteners* are acesulfame potassium (Sunett, Sweet One), aspartame (Equal, NutraSweet), neotame, saccharin (Sweet 'N Low), sucralose (Splenda), stevia (Sweet Leaf, Honey Leaf), and tagatose (Naturlose).

Non-Starchy Vegetables: The most SANE vegetables. Essentially, anything other than corn, potatoes, turnips, yams, parsnips, radishes, and most other root vegetables.

Example – Common *non-starchy vegetables* include: Broccoli, carrots, cauliflower, celery, cucumber, eggplant, lettuce, mushrooms, onions, peas, peppers, spinach, squash, and zucchini. Generally speaking, vegetables that grow above ground—except corn…which is a starch—are non-starchy vegetables.

Nutrients: The substances in foods that our bodies need to function optimally.

Example – Protein, vitamins, minerals, and essential fatty acids (aka omega-3 and 6 fatty acids) are key *nutrients*.

Nutrition: A measure of how many nutrients are provided per calorie of a given food. Primarily determined by the amount of water, fiber, and protein in a food.

> Example – Water-, fiber-, and protein-packed non-starchy vegetables contain more Nutrition than any other type of food.

Omega-3 Fatty Acids: An exceptionally healthy type of polyunsaturated fat that is very difficult to eat enough of, unless you eat milled flax seeds.

> Example – You can easily ensure that you get enough *omega-3 fatty acids* by adding a tablespoon of milled flax seeds to everything you can. They have very little taste, so adding them to food does nothing but make you healthier and slimmer.

Polyunsaturated Fats: The healthiest type of fat.{380}

> Example – Milled flax seeds, salmon, herring, sardines, mackerel, halibut, tuna, swordfish, and walnuts are good sources of *polyunsaturated* fats.

Raised Set-Point: Abnormal levels of hormones that make the fat metabolism system think abnormal levels of body fat are normal. When the hormonal systems that normally keep us thin get clogged-up by inSANE low-quality foods and then malfunction.

> Example – Once we are hormonally clogged, we have a*raised set-point* and will stay heavy, in the long term, 95% of the time, no matter how many calories we cut or exercise away.

SANE Foods: Water-, fiber-, and protein-packed foods that have high Satiety, low Aggression, high Nutrition, and low Efficiency.

> Example – The easiest way to eat the most *SANE foods*possible is to eat as much as you want, whenever you want, from foods you could hunt or gather.

Satiety: A measure of how likely calories are to prevent us from overeating.

> Example – Non-starchy vegetables and seafood have higher*Satiety* than any other foods.

Saturated Fats: The third healthiest fat. Note: The only unhealthy fat is unnatural trans-fat (an artificial form of fat added to starches and sweets).

> Example – Healthy amounts of *saturated fats* are found in SANE foods such as seafood, lean meat, select dairy, nuts, and seeds.

Select Dairy: Dairy products that have more than 60% of their calories coming from protein and do not contain any added sweeteners.

Example – The most common examples of *select dairy* are fat-free or low-fat cottage cheese and fat-free or low-fat *plainGreek* yogurt.

Set-Point: The weight our fat metabolism system automatically works to keep us at, regardless of the quantity of calories we take in or exercise off.

Example – Eating less and exercising more fail 95% of the time because they fight against our *set-point*.

Smarter Eating: Eating so much more SANE high-quality foods that you are too full for in **SANE** low-quality foods.

Example – Thanks to *smarter eating*, Jane cleared her clog, dropped her set-point, and automatically stayed slim for the rest of her life, much like a naturally thin person.

Smarter Exercise: See *High-Quality Exercise*.

Smarter Science of Slim: Eating so much high-quality food and doing so little—but such high-quality—exercise that you are able to clear your clog and lower your set-point practically and permanently.

Example – The *smarter science of slim* is a proven and practical way to burn body fat long term.

Starch: A food that is basically pure glucose.

Example – Sugar is unhealthy and fattening because it is nothing more than glucose. So is *starch*. Whole grain *starch*sprinkles a little fiber, vitamins, and minerals on glucose. Whole grain *starch* is like adding a sliver of a vitamin and a dash of a fiber supplement to soda.

Starchy Vegetables: A food that is basically pure glucose. The type of vegetables we should avoid.

Example – *Starchy vegetables* include any form of corn and potato, as well as turnips, yams, parsnips, radishes, and most other root vegetables. Avoid corn and non-sweet potatoes completely. Everything else can be enjoyed in moderation.

Sweeteners: See *Added Sweeteners*.

Traditional Cardiovascular Exercise: Activities that can be done for a long time, require little force, exercise only a small fraction of our muscle fibers, release little if any clog-clearing hormones, and must be done for hours to impact our health and weight.

> Example – The most common forms of *traditional cardiovascular exercise* are walking, biking, and jogging.

Traditional Exercise: See *Low-Quality Exercise*.

Traditional Weight Loss Approach: Eat less food and spend more time exercising. Became mainstream in the 1970's. Ignores the three things that control long-term weight: the set-point, calorie quality, and a hormonal clog in the fat metabolism system.

> Example – Studies show that the *traditional weight loss approach* fails long-term 95% of the time.

Unclogged Fat Metabolism System: A bodily system that balances calories with 99.83% accuracy. {381}

> Example – An *unclogged fat metabolism system* does automatically what we could never do manually, long term.

Unnatural Diet: Eating foods other than those eaten for 99.8% of human evolution.

> Example – Eating starches and sweets is eating an *unnatural diet*.

Weight Lifting: See *High-Quality Eccentric Resistance Training*.

Whey Protein Powder: A high-quality, inexpensive, SANE, tasty, and convenient source of protein that is derived from milk.

> Example – Drinking thirty grams of *whey protein powder*mixed with a tablespoon of milled flax seeds, two tablespoons of finely ground wheat grass, and water before breakfast, lunch, and dinner is the easiest way to eat a more SANE diet.

Online Resources, Extras, and Bonuses

For more science, please visit TheSmarterScienceofSlim.com andJonathanBailor.com. They both have all sorts of free tools, recipes, videos, articles, etc.

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To easily find specific topics in this book, visit the searchable digital version at http://books.google.com. Simply search for the *Smarter Science of Slim* and then search within it for the given topic.

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THE SMARTER SCIENCE OF SLIM

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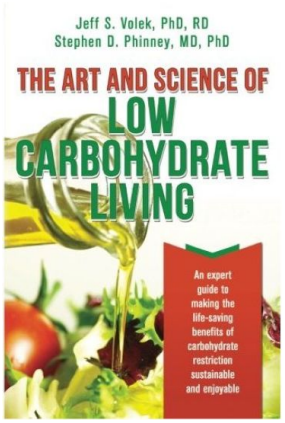

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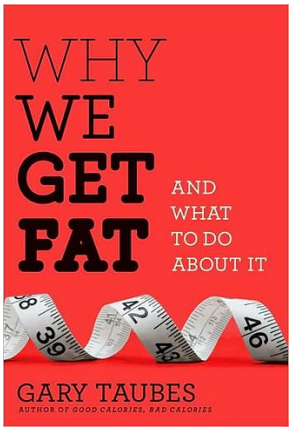

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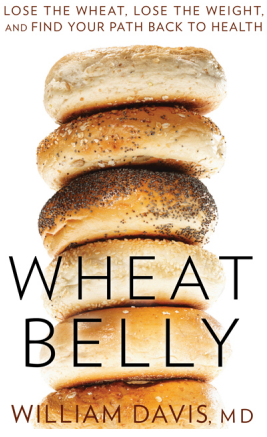

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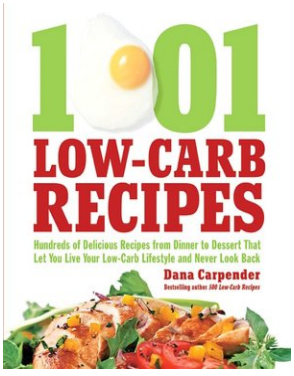

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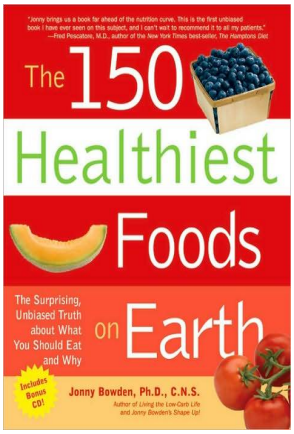

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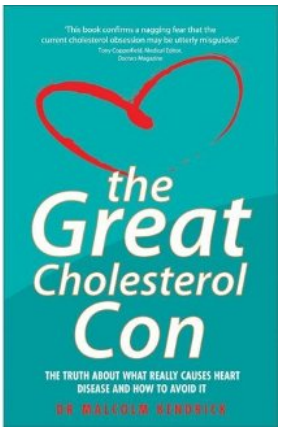

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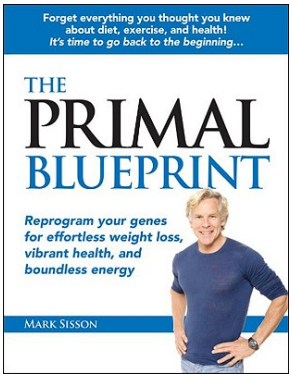

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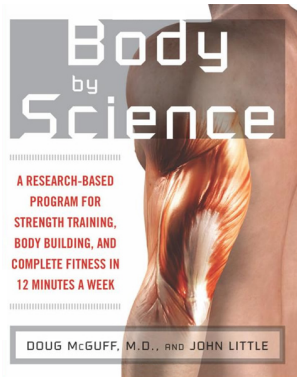

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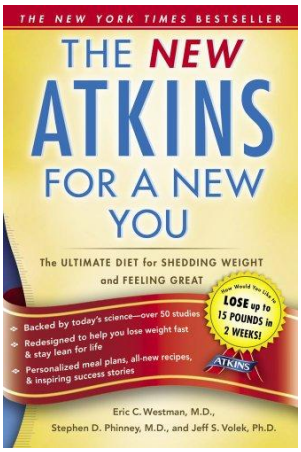

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