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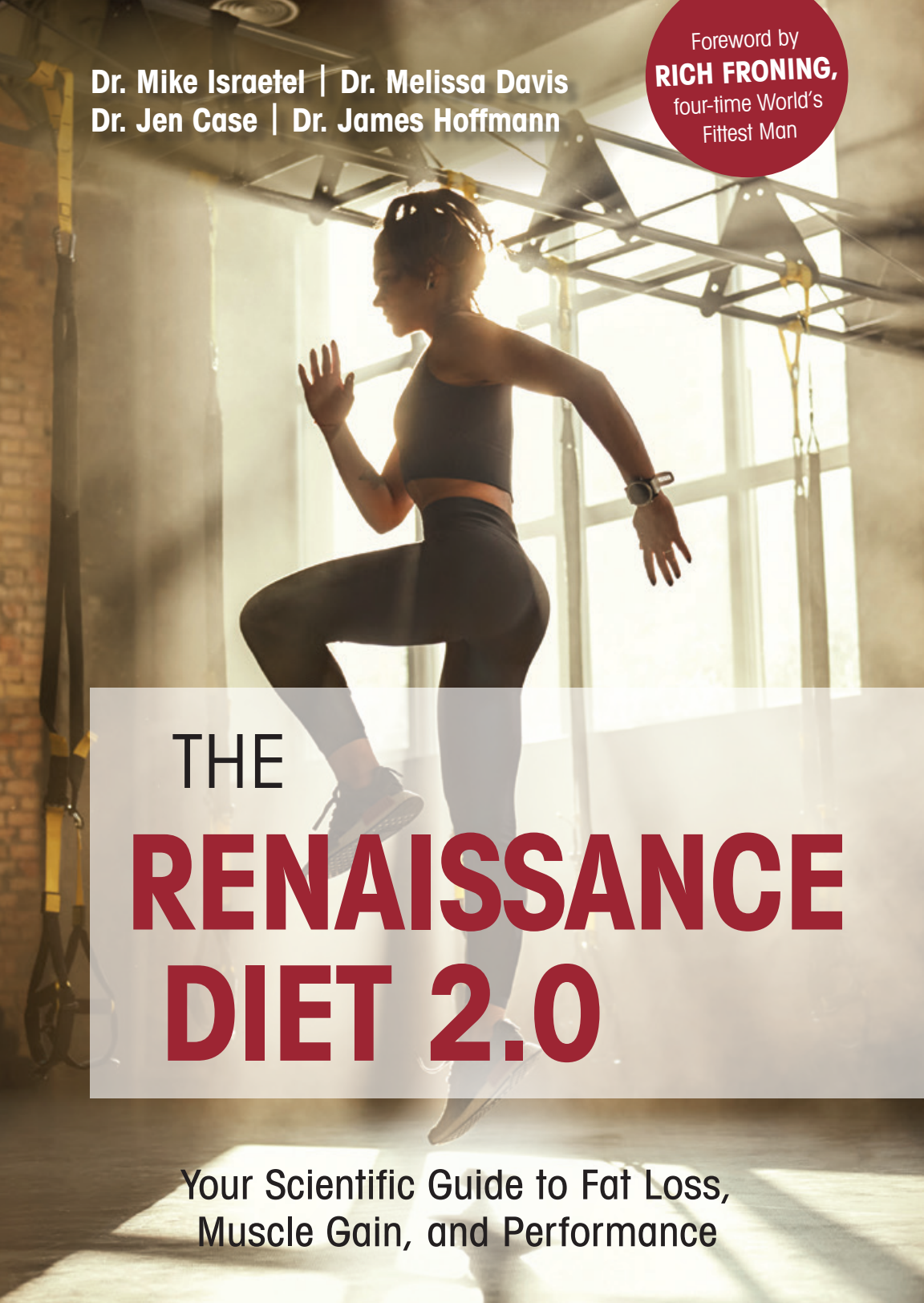
Dr. Jen Case | Dr. James Hoffmann

Foreword by **RICH FRONING,** four-time World's Fittest Man



THE RENAISSANCE DIET 2.0

Your Scientific Guide to Fat Loss, Muscle Gain, and Performance

MEYER & MEYER SPORT

The Renaissance Diet 2.0

The contents of this book were carefully researched. However, readers should always consult a qualified medical specialist for individual advice before adopting any new nutrition or exercise plan. This book should not be used as an alternative to seeking specialist medical advice.

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Foreword

My name is Rich Froning, and I would like to welcome you to the brand-new, revamped *Renaissance Diet 2.0.* I have been competing in fitness sport for nine years, and in those years I have won four individual CrossFit Games Titles, three Affiliate Cup Titles, and a second place in each category as well. Nutrition for performance, recovery, and body composition change has been integral to my success. Whether you are trying to qualify for the CrossFit Games, just shed some body fat or gain some muscle to improve your appearance and health, or anything in between, you are going to want to be aware of the tools available for your fitness journey. As far as such tools go, proper manipulation of diet is one of the most powerful.

Over my many years in sport, I have encountered countless trends, fads, and misconceptions in nutrition. Some pop up for only a short time, others last decades, and some even come and go every few years. Unfortunately, most meant to notably and sustainably change your appearance and performance do not work in the long term. I have seen too many well-meaning, motivated people get ripped off and denied their best results because they invested in a fad diet approach.

The Renaissance Periodization way is different. First of all, as you will soon read, there really is no such thing as "the RP diet." RP has just synthesized all available scientifically derived, research-backed principles of nutrition to create a detailed set of instructions that you can apply to your own diet or to the diets of clients.

This book is the most up-to-date, comprehensive resource on the science and practice of fat loss, muscle gain, and performance-improvement dieting currently available. For those who want the most detailed descriptions of how and why the dieting principles work, RP's team of professors, PhDs, coaches, medical doctors, athletes, and dietitians have provided just that, with a vast reference library for those that want to expand their understanding even more. Each chapter is summarized with the basics you need to know to understand the process, and several chapters are dedicated specifically to helping you design and execute your own diet based on your goals, step by step.

Happy reading,
Rich Froning
Four-Time World's Fittest Man

A Note From the Authors

When we wrote the original *Renaissance Diet*, it was the first comprehensive description of our diet approach based on the most up-to-date nutritional data available and on our experience with hundreds of clients. Our original book was one of the first to synthesize the current literature on nutrition for body composition and performance and to present it in an ordered, logical, and understandable manner. This early version of the *Renaissance Diet* was also the first to identify the most important factors for successful dieting and delineate their practical application.

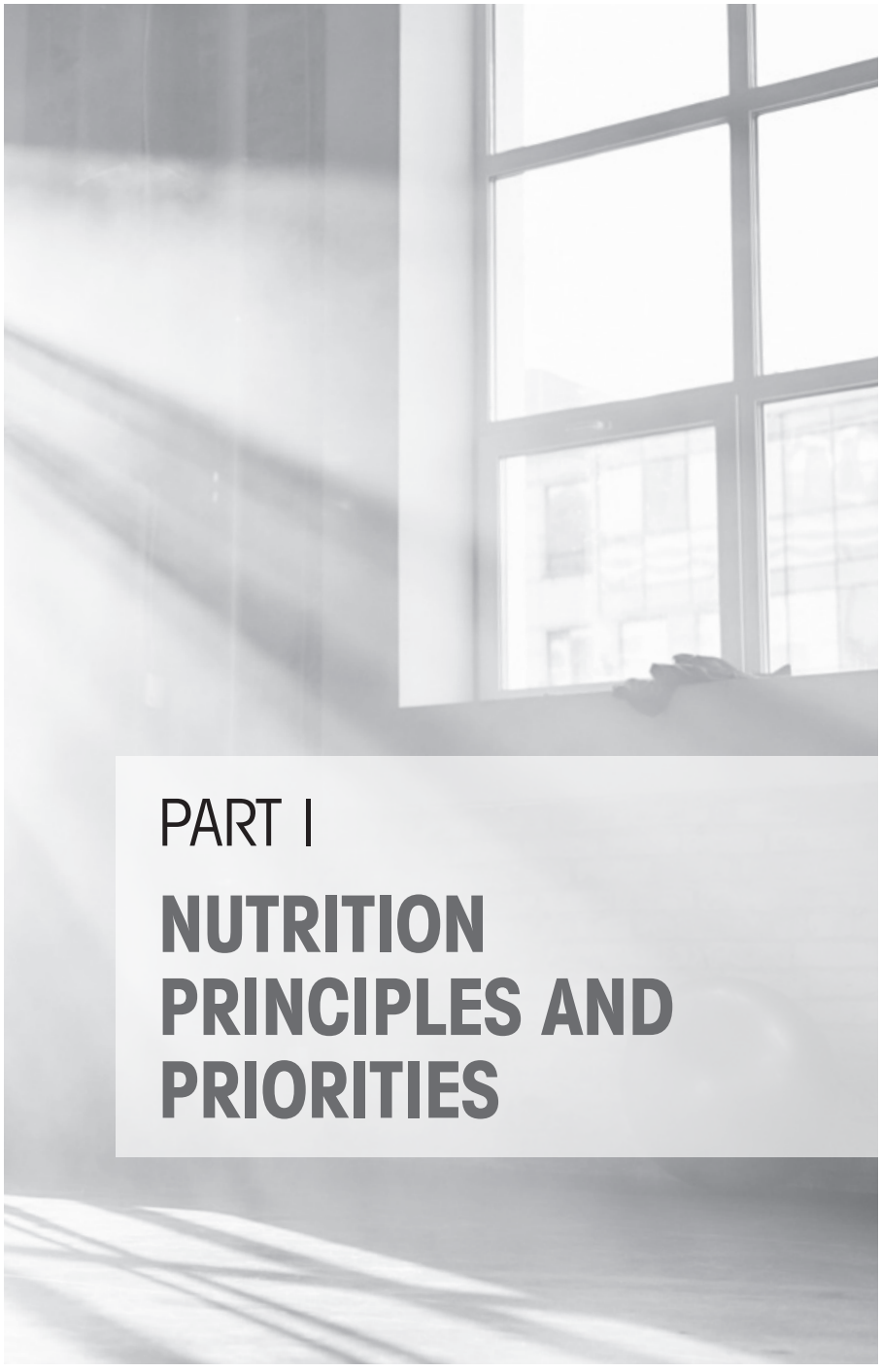
It has been a few years since the original *Renaissance Diet* was published, and two major things have changed since then: First, the interim years of scientific research have increased and refined our knowledge of how to lose fat, gain muscle, and improve performance. Second, through a combination of one-on-one coaching and digital products, Renaissance Periodization has now helped several *hundred thousand* people with their diets. These people range from those just trying to get in shape for the first time to world champion athletes. This collective coaching experience has refined our strategies and tactics with respect to the application of all our scientific knowledge. The summation of all this data and experience is now available to you, right here in this book.

This newest version of the *Renaissance Diet* is not only updated and refined, but also expanded. Special diet considerations and information on female-specific diet issues have been added along with information on gut health and an extensive section debunking some of the current and pervasive diet fads and fallacies. We put a great deal of effort into making this book bigger and better so that you can use it to become bigger, better, faster, stronger, leaner–whatever your goals call for.

We did this because we hate pseudoscience, scams, and quacks. We did it because we want to give you, our readers, our clients, and our friends in science, the best, most up-to-date information so that you can change your body, your performance, and your health for the better.

We sincerely hope you enjoy this book and will put the knowledge you gain from it to use in reaching your health and fitness goals.

Dr. Mike Israetel
Dr. Melissa Davis
Dr. Jen Case
Dr. James Hoffmann



PART I

NUTRITION PRINCIPLES AND PRIORITIES

CHAPTER 1

The Diet Priorities

There are countless diet options available these days. If you would like some evidence to back this statement, try looking up "fat loss diet." New diets that promise to help you lose fat, build muscle, and increase performance pop up online nearly every day. Some diets eliminate entire food groups while others focus on consuming solely those same food groups. In reality, the science of dieting has moved beyond the scope of just controlling food groups; you have likely heard of concepts such as macronutrients, total calorie intake, and meal timing. The scientific basis and reasoning behind the various available dietary regimens are not often made entirely clear. With so many opposing options, just deciding how to diet can be a frustrating and seemingly hopeless endeavor.

The good news is that there are five main principles, along with adherence to those principles, that contribute to any diet's effectiveness. Differences in implementing these principles account for all variations between diets and their outcomes. We can get lost in the superficial aspects of the many diet options available. One diet may require you to eliminate carbohydrates from your meals, whereas another calls for fasting. The intended outcome of each of these is generally weight loss. What might jump out at you is the lack of carbs or the fasting periods, but these are just superficial aspects–both these diet alterations are meant to achieve one goal: a calorie deficit. It is the calorie deficit that results in the weight loss, not the lack of carbs or meal timing.

Calorie balance is the first and most important of the diet principles, and any diet that works well will manipulate calories directly or indirectly. The other four diet principles can also alter superficial aspects of a diet. Once you have learned to see past these superficial aspects and identify each of the five underlying diet principles, you will be able to assess their roles and predict that diet's effectiveness.

Diets vary quantitatively across one or more of the following five principles:

1. **Calorie Balance:** How many calories you eat per day relative to how many you burn.
2. **Macronutrient Amounts:** How many grams of protein, carbohydrate, and fat you eat per day.
3. **Nutrient Timing:** When and how you spread your total food intake across daily meals.
4. **Food Composition:** The sources of macronutrients you consume.
5. **Supplement Use and Hydration:** How much and what type (if any) dietary supplements you consume and your level of hydration.

All these factors contribute to rates of weight loss or weight gain as well as differences in athletic performance. As we will learn, some of these principles are more powerful than others in determining outcome.

Although adherence is not a programmed aspect of a diet, it is critical. If the diet were a race car, adherence would be the driver; without a driver, the car does not race. A good driver can get the best possible performance with any given machine, but a bad driver can crash even the best car. Simply put, you cannot succeed on a diet you do not follow, regardless of how good the diet is.

When we wrote the first edition of this book some years ago, we took an extensive look at the research on dieting for fitness. We assessed effect sizes, which are measurements of how much change in outcome is observed when a specific variable differs between groups. Studies that varied calorie balance alone showed the most significant effects; studies that manipulated macronutrient intake (without altering calories) showed smaller but still significant differences in body composition changes. Altering nutrient timing (without changes to calories or macronutrients) resulted in very small differences in outcome. The effect of changes in food composition or

supplement use on fitness outcomes was undetectable in most cases. As a testament to the fact that adherence to any diet is a prerequisite for its success, metabolic ward studies, in which subjects do not leave the research facility and can only eat the food administered by researchers, are the gold standard in nutrition research because of the near perfect adherence that results from these conditions.

We qualitatively consolidated data from these investigations and came up with estimated relative effect sizes for the five principles of dieting:

Calorie Balance: approximately 50%
Macronutrient Amounts: approximately 30%
Nutrient Timing: approximately 10%
Food Composition: approximately 5%
Supplements and Hydration: approximately 5%

Again, these percentages only apply to the extent that an individual adheres to a given diet. A perfectly planned calorie balance, for example, will not have the desired effect if the dieter is not eating those planned calories.

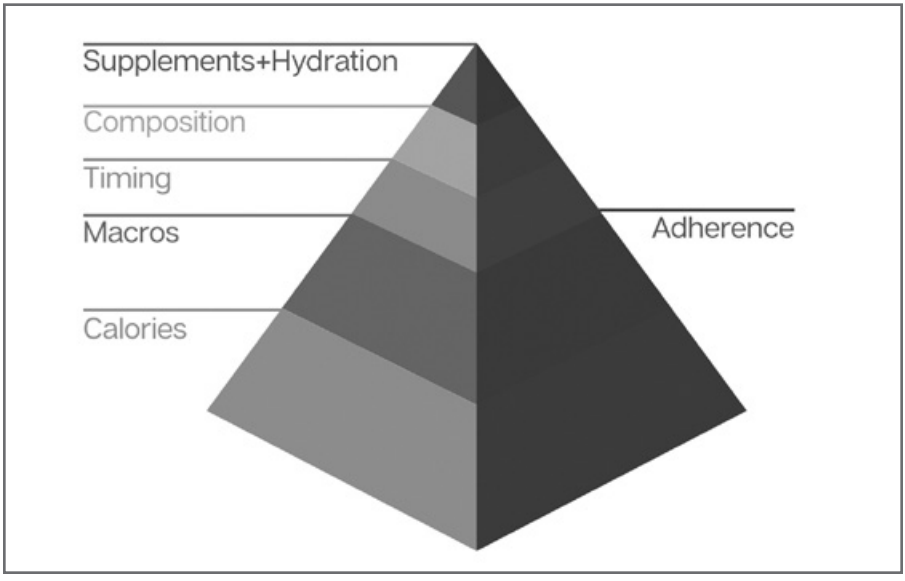


Figure 1.1 *The Diet Priority Pyramid depicts the relative importance of the diet priorities for body composition and performance outcomes.*

If you run a diet based only on calorie balance, you might expect to get about 50% of the potential effect of the diet on body composition and performance. On the other hand, if you based your diet on both calorie balance and proper macronutrient intake, you could get about 80% of the diet's potential results. If you took all the right supplements and ate only healthy food options, but did not worry about macronutrients, timing, or calories, you could not expect more than about 10% of the potential positive outcomes from the diet. We want to make it clear that this analysis is for body composition change and performance outcomes, *not health.* While paying attention to food composition (eating healthy foods most of the time) does not have a huge effect on appearance or performance, it does have a significant effect on health, as detailed in our book *Understanding Healthy Eating*.

AVOIDING PITFALLS AND USING THE DIET PRINCIPLES TO YOUR ADVANTAGE

The differential effects of diet principles provide useful guidelines for programming diets with specific outcomes in mind. Prioritizing the less powerful aspects (such as meal timing and supplements) and taking the powerful principles (such as calorie balance and macronutrient intake) for granted are common mistakes. Someone might eat with exact meal timing and take creatine and whey protein supplements, but if calories and macronutrients vary too much day to day, there simply will not be substantial results. Thousands of people start new fat loss or muscle gain diets every week, and many of them choose diets that are not based on the higher priority diet principles and thus experience minimal results.

Perhaps the most commonly neglected dieting principle is calorie balance. Thousands of people restrict various food types to consume only specific foods–unknowingly prioritizing one of the less important diet principles, food composition. Supplements are the most overemphasized principle. People buy countless bottles of pills and powders and take them religiously, expecting big results. While investing so much time and energy into the minor priorities, many of these well-intentioned dieters do not have the willpower leftover to invest in the big priorities that really matter. In a fat loss phase this can mean eating too much (very healthy) food to create a calorie deficit. In a muscle gain phase this can mean eating exclusively healthy food that is

high in fiber and not as appetizing, resulting in a failure to create a calorie surplus for weight gain. Both these failures often occur despite a diet with appropriate food composition, well-planned meal timing, and supplements.

Unfortunately, these mistakes often involve every bit as much effort as a successful diet. Every year, people find their dieting efforts largely wasted on unimpressive results, leading many to assume they are "hard losers," "hard gainers," or otherwise personally flawed. The true underlying problem is simply a mismanagement of dieting principles.

By getting to know the diet principle hierarchy, we can ensure that our hard efforts are being spent where they are most effective. As you read about each of the individual diet principles, please keep their hierarchical organization in mind so that when it comes time to program your diet, you can effectively manage the distribution of these factors to meet your goals.

KEY DEFINITIONS AND CONCEPTS

Some key concepts and definitions that will come up throughout the book are listed below. We will revisit many of these multiple times throughout the coming chapters, so be prepared to return for a refresher as needed throughout your reading:

Set Points

An adult's set point is the bodyweight that they are naturally inclined to maintain. Some people have a high set point and would become obese if they just ate and exercised as they pleased. Others have trouble maintaining sufficient bodyweight for best health when left to their own devices. Set points are genetic predispositions, but your body's preferred weight can be changed.

Settling Points

A settling point is the weight your body is inclined to maintain, taking into account your current *and historical* dietary and activity practices. Your settling point can be very different from your genetic set point. Enough added fat or added muscle maintained for periods of months to years can permanently push your settling point

above your genetic set point. In contrast, there is no convincing evidence as of this book that settling points fall permanently below genetic set points when weight is lost. The good news is that it is often the case that more overweight people have actually pushed their settling point far above their genetic set point as opposed to their having a very high genetic set point.

Muscle mass has its own independent set and settling points–some people are naturally more or less muscular regardless of diet and training, though these points are not affected as easily as those for general body\weight. Once more muscle has been gained and maintained for a year or longer, only a fraction of the original effort is needed to rebuild it if it is lost. Also, muscle takes much less effort to maintain than to build, a fact we can exploit in the construction of nutritional periodization.

Fat-Loss Phase

A period of dieting for the purpose of losing fat. A common secondary goal on such a phase is to minimize muscle loss to the greatest extent possible.

Muscle-Gain Phase

A period of dieting for the purpose of gaining muscle. A common secondary goal on such a phase is to minimize fat gain to the greatest extent possible.

Post-Diet Maintenance Phase

Also known as a "diet recovery phase," this phase occurs after a fat loss or a muscle gain phase, and its purpose is to maintain the changes made to body composition during the preceding diet. This period involves easing back into normal eating, slowly moving out of the deficit or surplus created by the previous phase. The purpose of this phase is also to reset metabolic and psychological homeostasis at a new bodyweight and establish new settling points. Post-diet maintenance begins at the end of a fat loss or muscle gain diet, and its duration will depend on the degree to which bodyweight and metabolism were changed by the previous phase. At the conclusion of post-diet maintenance, you can begin another weight-changing phase or move into long-term maintenance of the current weight.

Long-Term Maintenance/Balance Phase

In this phase of dieting, the individual's physiology and psychology have adapted to the current state of the body. This phase typically starts after the post-diet

maintenance phase and can last as long as the individual would like to maintain their results and live a healthy, active, and balanced life.

High-Volume Hypertrophy Training

High-volume hypertrophy training is needed to maintain muscle mass on a fat-loss diet or increase muscle mass on a muscle-gain diet. It consists of resistance training composed of multiple sets of exercises (8-20+ sets per body part per week), mainly in the 6- to 30-repetition range. This resistance training is ideally mainly composed of compound basics like squats, bench presses, rows, and so on–lifts that engage multiple joints and whole muscle groups. For more information, visit renaissanceperiodization.com and check out the eBook, *Scientific Principles of Strength Training.*

Low-Volume Strength Training

Low-volume strength training increases strength and power without changing muscle size. It is composed of fewer sets (5-15 per body part per week), usually in the 1- to 8-repetition range. This type of training is conducive to maintaining muscle during isocaloric periods (post-diet or long-term maintenance phases). It also has the added benefit of making the muscles more sensitive to the muscle growth effects of high-volume hypertrophy training for another fat-loss or muscle-gain diet.

Mesocycle

Mesocycle is a term used to describe training on a month-to-month basis–periods of dedicated training usually lasting between four to eight weeks. The mesocycle is comprised of a series of microcycles, or week-to-week training phases. Mesocycles are strung together to form training macrocycles, which are long-term periods dedicated to progressing toward a particular goal. Mesocycles (or several mesocycles with the same goal sequenced together) are also colloquially known as "blocks" or "phases" of training.

Fractional Synthetic Rate of Muscle Growth (FSR)

FSR generally refers to the rate at which a certain amount of amino acids from dietary protein are incorporated into skeletal muscle. In other words, this describes how much of the protein you eat is used to grow muscle and how fast.

Fractional Breakdown Rate of Muscle Growth (FBR)

FBR generally refers to the rate at which a certain amount of skeletal muscle protein is broken down for use in the body. In other words, this describes how much muscle tissue is lost during periods of insufficient training, insufficient energy availability, or insufficient circulating amino acids and how fast.

Partitioning Ratio

The P-Ratio describes the ratio of fat to muscle gained or lost on a diet. A favorable P-Ratio on a muscle gain phase would mean gaining larger amounts of muscle and very little fat. One of the reasons to periodize diet phases for muscle gain is to maximize the P-Ratio of each gaining phase so that more muscle than fat is gained over the long term.

Beginner, Intermediate, and Advanced Lifters

In this book we will define beginners as having around 0 to 3 years of structured lifting experience, intermediates as having roughly 3 to 6 years of experience, and advanced lifters as having 6+ years of experience. These are not precise timelines, but rather serve as a rough guide to classify lifting experience. In general, beginners gain muscle and lose fat more readily than intermediate and advanced lifters. Advanced lifters need more voluminous training to gain even a small amount of muscle compared to less experienced counterparts. While genetics and other factors play a large role in muscle growth responses, the relative differences between levels of experience are consistent. In other words, there may be outlier individuals who gain more muscle as advanced lifters than less genetically inclined beginners, but on average those early in their lifting career will have better responses to training than their more experienced counterparts.

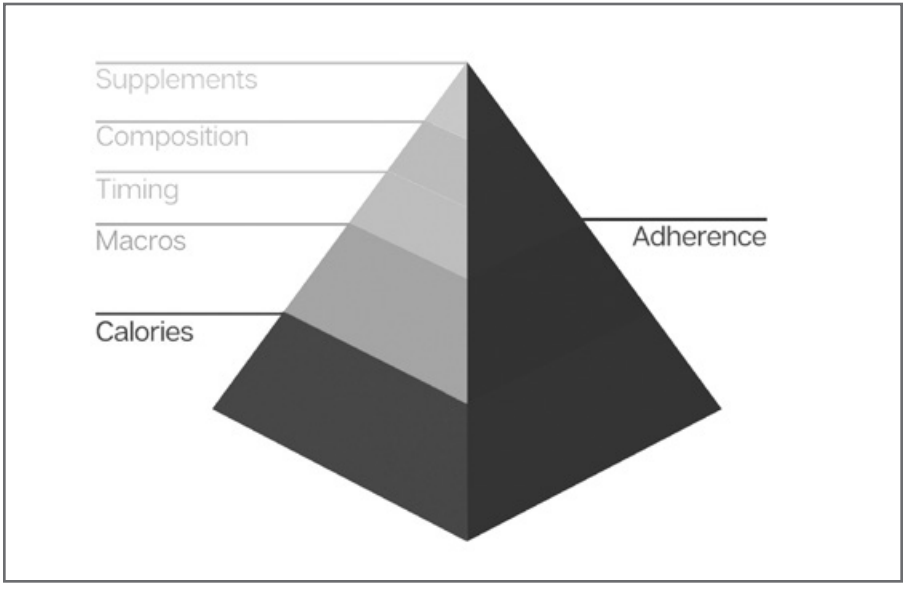
CHAPTER SUMMARY

- Diets to improve performance and body composition can be evaluated based on how they address the diet principles of calorie balance, macronutrient amounts, nutrient timing, food composition, and supplement use and hydration.
- Individual diet principles do not contribute to success equally, and diets that prioritize the less powerful factors are either less effective or doomed to failure.
- Better adherence increases any diet's effectiveness. Adherence is imperative for success.

CHAPTER 2

Calorie Balance

Any means of achieving a calorie deficit will result in weight loss, and any means of achieving a caloric surplus will result in weight gain. Whether or not that weight change leads to improved body composition depends on other factors, including macronutrient balance, which we will go over in the subsequent chapter. Calorie balance alone can alter weight irrespective of any other diet principles, making it the greatest priority in the diet hierarchy.



CALORIES

In the simplest terms, a calorie is a unit of measurement for energy. In the strictest sense, a calorie (which actually refers to a kilocalorie) is the amount of heat required to raise the temperature of one kilogram of water from 14.5 to 15.5 degrees Celsius. Interesting, but not very helpful when sitting down and deciding what to eat.

In nutrition, calories measure how much energy we get from food to either use or store in our bodies. Calories can be used to jump, run, operate your brain, recover from hard training, repair broken structures, or simply support the energy requirements of normal body function. An individual might use 2,000 calories a day to meet all of their energy needs, including everything from walking over to pick up the telephone to the firing of neurons in the brain to read this very text.

When someone needs 2,000 calories per day to function, but only consumes 1,700, they do not simply stop breathing or lose the ability to walk or think. The body has a back-up plan for when calories are scarce. Our ancestors did not have local grocery stores or refrigeration, so our bodies are adapted to deal with some periods of calorie deficit without extensive damage to health or function. In the previous example, the body can acquire the additional 300 calories it needs to sustain itself by breaking down some of its own tissues (most commonly fat) to release stored energy. There is a tremendous amount of stored energy in your adipose tissue. While your body does burn fats for fuel in the absence of sufficient food, it can also break down other structures, such as the proteins that compose your muscles. A variety of factors determine which of the body's tissues are broken down for energy and in what amount, but the primary factor deciding whether the body's structures will be accessed at all is calorie balance. When your body is getting enough food per day to meet all of its energy needs, we call this an *isocaloric* or *eucaloric* condition. Isocaloric conditions result in bodyweight maintenance–stable bodyweight over time.

When your body is not getting enough calories per day to meet energy needs, it must break down some of its own tissue for the missing energy. This dietary condition is termed *hypocaloric* and results in weight loss. If you take in more energy than you need, your body stores much of it as carbohydrate, protein, and fat molecules, with fat being the most common. We call this a *hypercaloric* condition, and as you may have already guessed, it results in weight gain.

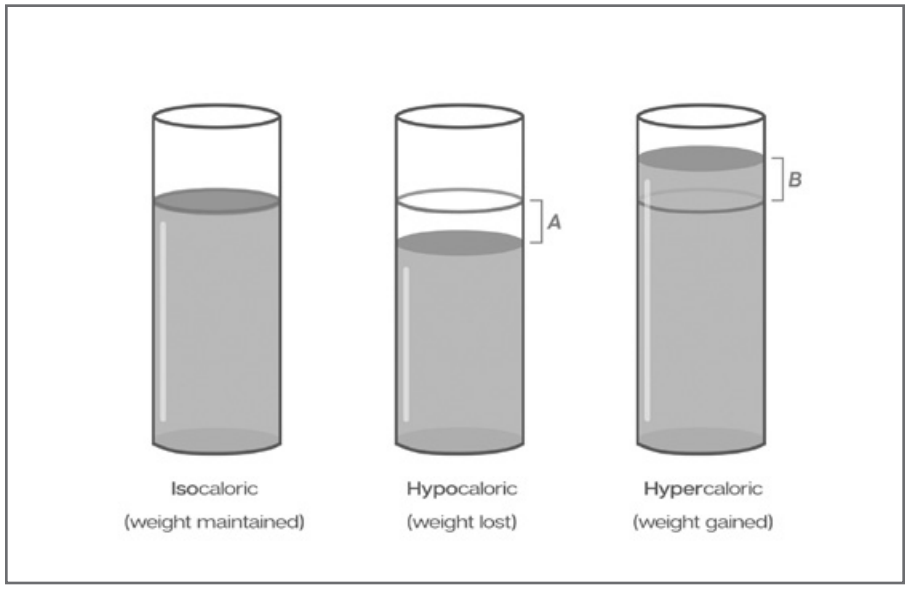


Figure 2.1 *On an isocaloric diet, calorie consumption matches the body's calorie demand. During a hypocaloric diet, fewer calories are being consumed relative to the body's daily demand (designated by bracket A) On a hypercaloric diet, excess calories are being ingested (designated by bracket B).*

CALORIES AND PERFORMANCE

Calorie balance is the most important principle for both body composition change and sport performance. Calorie intake affects sport performance by mediating energy availability, facilitating recovery, and influencing body composition (which indirectly affects performance).

At the onset of exercise, the body accesses a variety of fuel sources. Blood glucose from recent food intake is a readily available fuel source but is tightly regulated (in order to maintain glucose supply to the nervous system and keep you functioning). As exertion continues, non-tissue energy sources (carbohydrate stored as glycogen in your muscles) can continue to provide needed fuel at a rate sufficient to maintain athletic performance. Other glycogen stores in your liver act to moderate blood glucose levels as well. When these liver stores become depleted, blood glucose can drop,

leading to bouts of hypoglycemia–clearly not great for sport performance. Glycogen stores are built up in the muscles and liver over time as calories are consumed. If an athlete under-eats for intervals of a week or more, their ability to perform at a high level will degrade substantially, even for less energy-intensive activities.

Both blood glucose and glycogen provide energy more quickly and easily than breaking down your body's tissues. Your fat stores can provide energy for movement as well, but the rate of energy release in this case is much slower and cannot keep up with the energy demands of most sports. To put this in perspective, the breakdown of fat tissue for energy release does not even reach its peak rates until around two hours into an exercise session. Even its peak rates are not as efficient at providing fuel for sport performance as blood glucose and glycogen, making it a much less desirable option. In other words, reducing calories and relying predominantly on fat sources for energy almost always leads to poorer performance.

In addition to providing energy for activity, calories also provide the energy for recovery from training. The process of training for sport is, at least in part, tearing down and rebuilding stronger tissues. Gaining muscle and training for strength both involve induced tissue damage that, under the right conditions, leads to recovery and adaptation to a bigger, stronger state.

Even in cases where an athlete's current sport progress needs are entirely technical, fatigue and tissue damage will arise just from extensive practice and repetition. Many sports also involve contact, such as American football, rugby, and combat sports, which also results in tissue damage or minor injuries. All this damage must be repaired, and this process requires energy. In addition to providing energy for structural repairs, calorie intake can influence how much glycogen stores are refilled. In a hypocaloric state, most available energy is dedicated to basic bodily function. The body will allocate some energy to support repair and recovery processes, but these resources are limited; the process will be slower, and recovery will be incomplete. (If you are severely hypocaloric, you may not be able to rebuild tissue at all.) In a hypercaloric state, repair and recovery will be optimal thanks to a surplus of energy. (For more information about recovery, see *Recovering from Training,* available on our website renaissanceperiodization.com as an ebook or audible file.)

Body size is directly affected by calorie intake and influences performance. Calories, therefore, also indirectly affect performance via their influence on body size. Depending on your sport, your body needs to be within some margin of sizes for best performance. For example, if you are the best gymnast at 130 lb. but you only eat enough calories to support a body weight of 90 lb., your diet will be unable to support your best gymnastic performance. You will not have the energy or raw materials to build muscles big enough to perform at your best. If you are a runner, and you eat enough calories to weigh 210 lb. but your best power-to-weight ratio is at 160 lb., you are dragging around an extra 50 lb., inevitably slowing your running times.

CALORIES AND BODY COMPOSITION

Body composition describes how much muscle and fat makes up your body. Improving body composition usually refers to getting leaner, more muscular, or both. Conversely, poor body composition tends to mean low muscle mass, an unfavorable excess of fat, or both. As you might expect, the vast majority of diets attempt to improve body composition. Calorie balance is the *single biggest tool* for altering body composition.

Your body is primed by millions of years of evolution to prepare itself for impending famine, something that has been a feature of the human (and animal) experience for as far back as biologists can investigate. Millions of years of natural selection have left your body designed to store as much energy as possible to prepare for times of low food availability. When your body is exposed to the hypercaloric condition, it stores most of the excess energy as body fat. This is logical because in ancestral environments, times of plenty were inevitably followed by times of scarcity, and storing excess calories as fat in the former literally saved your life in the latter. If an athlete or dieter is on a hypercaloric diet today, the chances that their body will activate fat-burning pathways over fat-building pathways are quite low. When extra calories are around, fat gain is usually a result.

Muscle growth rates are *much smaller* than fat gain rates. This is again a side effect of our evolution. Muscle mass is metabolically costly; it requires more energy to build and maintain than fat mass. Thus, the body sees adding extra muscle as a

survival disadvantage under most circumstances. Only when there is a pressing need (increasingly difficult weight-bearing tasks) and a steady hypercaloric condition will any significant muscle mass be gained and even then to a lesser extent than fat. It is not uncommon for people to lose 15 lb. of fat in three months in a hypocaloric condition, but gaining 15 lb. of muscle in the same timeframe under hypercaloric conditions is virtually impossible. In fact, 15 lb. would be an impressive amount of muscle to build even in your first year of training.

For muscle to grow, there are two fundamental requirements: 1) the energy and raw material (amino acids from protein–the building blocks for muscle) with which to fuel the building of the muscle. Just like a frugal family will not get a new deck added to their home unless there is more money coming in than is needed for food and to pay bills, the body will not activate muscle growth pathways to any large extent until excess calories and plenty of protein are coming in. And 2) the stimulation of muscle growth from proper overload training. For the body to be convinced that metabolically costly muscle mass is worth adding, the consistent need for that muscle mass must be presented in the form of increasingly difficult resistance training.

It might seem obvious that results from concurrent body recomposition–simultaneous fat loss and muscle gain–pale in comparison to losing fat and gaining muscle in separate phases. This is because the most powerful methods for fat loss and muscle gain are diametrically opposed. For fat loss to occur at best rates, a hypocaloric condition is needed. When a hypocaloric condition is detected by body systems, it primes and prepares fat burning precisely to make up the impending deficit. In contrast, for best muscle gain rates, a hypercaloric condition and weight gain are needed. When a surplus of energy is coming in, the body is less resistant to packing on some metabolically costly muscle along with fat for energy storage. An isocaloric diet is the midpoint of the two-principle calorie balance paradigms and is not a powerful stimulator of fat loss nor muscle growth. Because our best tools for each are literal opposites, combining them gives us neither of each. Simply, if your goal is muscle gain, generate a hypercaloric condition. If your goal is fat loss, generate a hypocaloric condition.

There are specific, albeit rare and limited, instances when recomposition does occur. As we discuss these cases, keep in mind impressive social media transformation stories you might have seen in the past, and how one or more of these circumstances

may have been at play. Also consider that having recomposition as a goal in your own diet design is likely a fool's errand in most cases, or at the very least not an efficient game plan.

Case 1: New to Dieting

If an individual has been eating poorly for years and dives headfirst into controlling their calories, macros, timing, and food composition, the combined power of all of those novel effects can be quite large–in some cases large enough to build a bit of muscle while simultaneously burning fat under isocaloric conditions. In a hypercaloric condition, individuals new to serious dieting can even gain weight while losing fat. Individuals in hypocaloric conditions can gain muscle and get much stronger while undergoing rapid fat loss. Because these impressive transformations are built on the element of novelty to formal dieting, this ability diminishes after several months as the body adjusts to a state where composition changes occur slowly.

Case 2: New to Training

In the first several months of training, especially if resistance and cardiovascular styles are programmed in high volumes, the demand for muscle growth nutrients and energy can be so high that fat stores are burned in large quantities to meet the need. Those new to the training process can see results very similar to those new to dieting in terms of radical simultaneous muscle gains and fat losses. If someone starts both training and dieting formally for the first time, concurrent recomposition can be achieved for the first several months, seemingly in contradiction with our understanding of physiology. Such abilities will decrease within several months of training. For continued progress, separate hypocaloric and hypercaloric phases will be needed for efficient fat loss and muscle gain.

Case 3: Pharmacological Intervention

Anabolic steroids, growth hormone, and other powerful drugs can facilitate the simultaneous muscle building and fat burning. These drugs come with certain health risks and are very often illegal substances, but this does not mean that they do not play a role in many impressive transformations you may see online. When an individual starts using these types of drugs, they generally achieve rapid, concurrent recomposition. Just like with novel diet and training, the body eventually establishes a "new normal" and concurrent recomposition via drug use diminishes. Increasingly

higher doses of drugs or more powerful (with concomitant health risks) drugs are required at that point to continue concurrent recomposition.

Outside of these scenarios, concurrent recomposition is a relatively impractical goal. While concurrent recomposition is appealing on the surface, separate, dedicated periods of muscle gain and fat loss are much more efficient and dependable ways to alter your body composition. We will get into how to sequence such diets in chapter 9, but for now, if you see radical results in before and after photos, be aware that one or more of these exceptions to the rule might be at play. Do not assume whatever diet or training the photos are advertising will work for you or anyone else reliably.

CALORIE DEMAND FACTORS

Calorie needs can vary a great deal from one person to the next. A number of factors contribute to individual variation in daily calorie needs. The following is a list of some of these factors:

Body Size: Larger people have more cells and bigger cells, so it takes more energy to power their bodies.

NEAT: Non-Exercise Activity Thermogenesis, or NEAT, is the amount of calories you expend on daily tasks, including working, studying, walking to the store, moving your hands while you talk, and even fidgeting. Calorie expenditure by NEAT activities can vary from tiny to enormous and, in most cases, account for more daily calorie burning than formal exercise.

Exercise/Training: Any form of working out that you do requires energy, and the more you work out, the more energy you need.

Height and Body Proportions: Taller people usually have more surface area than shorter people of the same weight. It takes quite a few calories to keep body temperature stable with more surface area exposed to the environment. Likewise, any other physical features that increase surface area can increase metabolism.

Stress: Contrary to popular belief, stress actually boosts calorie burning via constant low-level activation of fight-or-flight pathways. It is not at all uncommon for people to gain weight when chronically stressed, but this is generally due to stress-induced excess eating or water retention from stress hormones. Stress on its own usually contributes to weight loss.

Recovery Demands: Not only does hard training burn calories directly, it causes damage to muscle tissues (deliberately) and depletes energy stores. What this means in the grand scheme of things is that your body will require extra calories to perform repairs.

Genetic Metabolic Factors: Some people have very efficient metabolisms and convert more of the energy from the food they eat into other usable forms of energy. Though metabolisms do not vary widely on average, over a long period of time these small variances contribute to the ease or difficulty of weight loss observed across dieters.

Percent Body Fat: Fat is a heat insulator and requires a bit less energy to be maintained than muscle. Thus, individuals who are leaner will have to burn more calories by a small fraction to stay the same weight than similarly sized people with more body fat and less muscle. On the other hand, carrying extra fat can cause movements to become less economical, thus increasing energy expenditure. A surplus of fat can also make thermoregulation in the heat more difficult, requiring additional energy expenditure.

Drug Intake: Stimulants like caffeine boost the metabolic rate to a small extent and burn a tiny amount of extra calories.

Sex: Due mostly to body size, muscle mass, and hormonal differences, men burn more calories than women. If body size and muscle mass differences are obviated, the remaining difference is very small, but still exists.