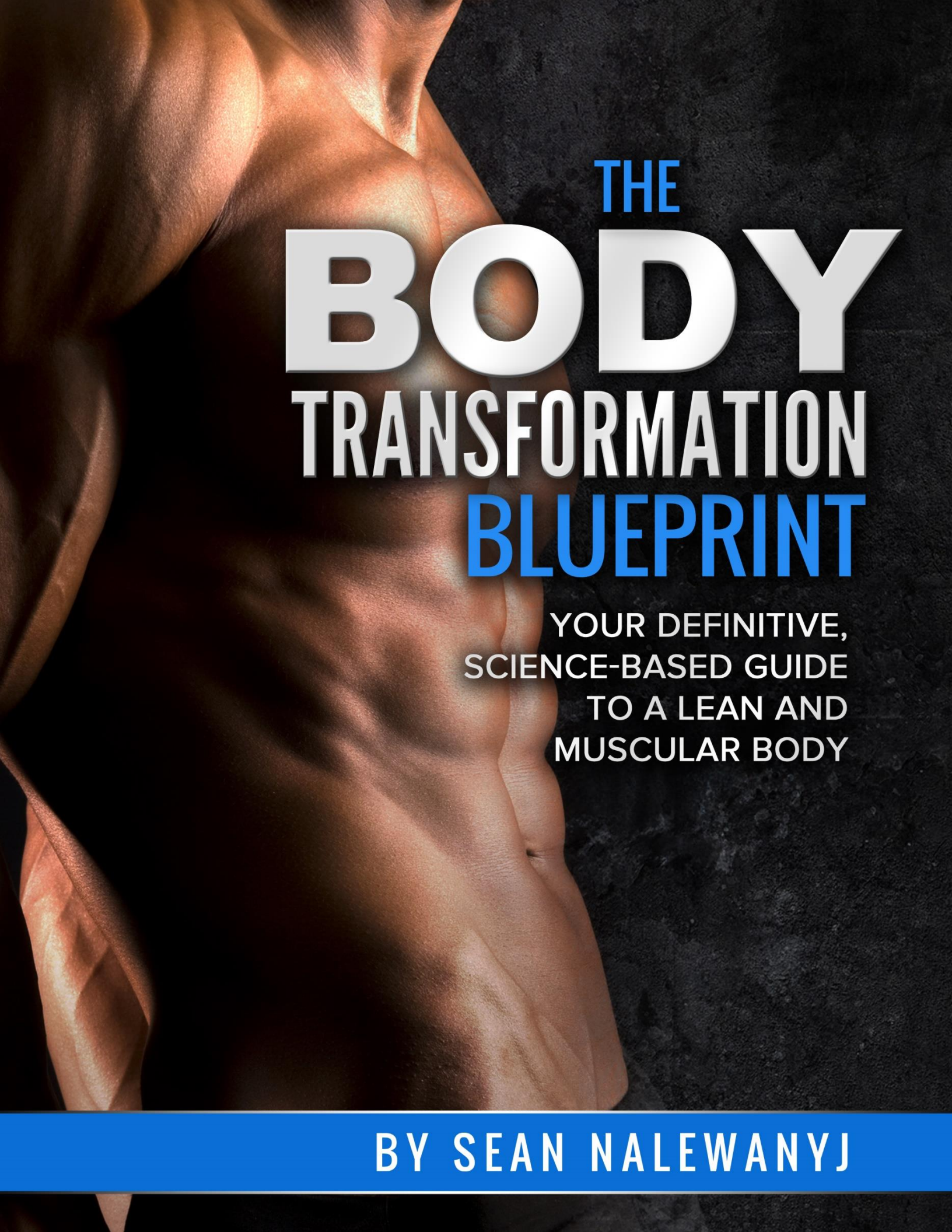
THE
BODY
TRANSFORMATION
BLUEPRINT
YOUR DEFINITIVE, SCIENCE-BASED GUIDE TO A LEAN AND MUSCULAR BODY
BY SEAN NALEWANYJ

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Before beginning any new exercise, nutrition or dietary supplement program you should consult a physician first. The information presented herein is not meant to treat or prevent any disease or to provide the reader with medical advice. If you are looking for specific medical advice then you should obtain this information from a licensed health-care practitioner.

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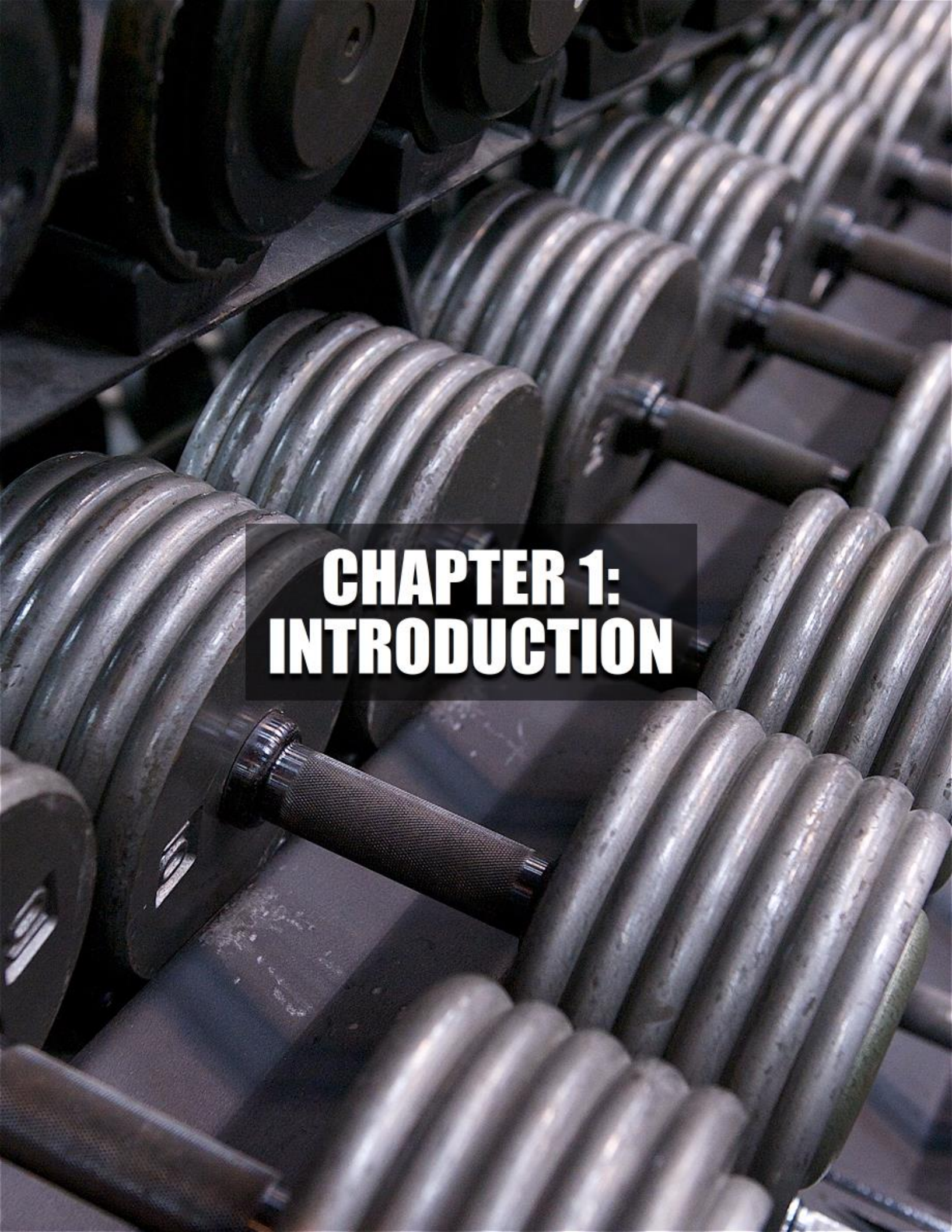


CHAPTER 1: INTRODUCTION

INTRODUCTION

No hype. No nonsense.

Take your body from where it is now to exactly where you want it to be, as effectively and efficiently as possible.

Welcome to The Body Transformation Blueprint. Your honest, definitive, step-by-step guide for building muscle, burning fat and maximizing your overall health, strength and well-being.

With the endless flood of contradictory misinformation and marketing gimmicks the fitness industry has become so overrun by these days, most aspiring trainees have been left more confused than ever when it comes to achieving their health and physique goals. Everywhere you look there's the next fancy workout system, fad diet or breakthrough supplement of the month, all claiming to have the "proven secret" to rapid muscle growth and fat loss.

Basic hard work, patience and consistency have been overtaken by an endless barrage of worthless "get-fit-quick" schemes, all created for no other purpose than to line the pockets of the bodybuilding and weight loss marketers behind them.

In fact, even those who genuinely *are* trying to put out useful training and nutrition information often mislead their audiences without realizing it. The Internet makes it easy for anyone to jump online and post any article or video they want, regardless of how truthful or accurate it is. In reality, the majority of so-called "online fitness gurus" are not legitimate experts and lack the knowledge and experience necessary to provide you with the proper guidance.

At best, following this information leaves you with modest results while causing you to waste a significant amount of unnecessary time, effort and money in the process. At worst, you're left with no results at all, possibly even at the expense of your health and safety.

Bad information simply gets passed around from person to person like a multiplying virus, with everyone repeating and regurgitating the same lies they've been told. Unfortunately, this makes it damn near impossible for the average fitness hopeful to know who to follow and who to trust.

Well, the good news is that it all ends here.

And it all *starts* here as well. The start of a brand new body, and a brand new life. Today, we're putting behind all the useless fluff and filler you've been fed on every random website, YouTube video, forum and social media page out there, and starting fresh.

No more worthless gimmicks, silly fads and blatant lies…

What you're getting here is the real, no B.S truth about achieving your ideal physique in a way that is effective, safe and sustainable over the long term.

You're here right now because you're motivated and ready to make a serious change, and The Body Transformation Blueprint will equip you with all of the tools and information you need to make it happen. The guidelines found within this manual are based on the most up-to-date scientific research in the areas of proper training, nutrition and supplementation, combined with over 15 years of my own practical, real-world bodybuilding and fitness experience.

Since its release, this system has continually improved and evolved, and prides itself on delivering a comprehensive yet easy-to-follow approach that anyone can understand and implement successfully.

No matter how difficult or frustrating your fitness journey has potentially been up until now, there *is* a proven, reliable, step-by-step method available to finally get the results you're after.

Contrary to what you may have been led to believe by every "expert" out there trying to hawk the latest breakthrough workout or diet plan, getting into great shape does not need to be an overly complicated process. It does require time, effort and patience to get there, but the actual methods themselves are fairly straightforward once you really understand how it all works.

You don't need to dedicate multiple hours in the gym 5+ days a week to a highly intricate, excessively complex workout routine…

You don't need to slave away to a boring, tedious nutrition plan and deprive yourself of entire food groups, macronutrients or the foods you love most…

You don't need to spend boatloads of cash on expensive pills, powders and other supplements…

And you don't need to abandon your social life and hobbies or revolve every waking hour around your fitness plan in order to make outstanding progress.

All it really takes is the ongoing application of a few key training, nutrition and supplementation principles, all of which will eventually transform into simple, routine habits once you get the hang of them.

The initial stages of your fitness program will certainly require some hard work and discipline as you slowly learn the ropes and get things off the ground, but once you've built that initial momentum, it's just a matter of basic consistency from there on out.

If you're still a complete beginner at this, you might look at the length of this manual and feel a bit overwhelmed. If building muscle and burning fat is in fact a relatively simple process, why is there so much information included here?

Well, unlike most other programs out there that simply tell you *what* to do without any real reasoning behind it, the goal here is to provide a full explanation of both what to do *and* why you're doing it. Rather than just handing you some random workout plan and diet and saying "go do this", I'm going to equip you with a <u>complete</u> understanding of how the muscle building and fat loss process truly works from the ground up.

This is not just another "12 week program" to be blindly followed before hopping over to another program, and then another. The Body Transformation Blueprint will lay out all of the information necessary so that *you yourself* will know how to structure a proper training and nutrition plan on your own without needing to constantly rely on others moving forward. It's the difference between merely handing you fish and teaching you *how* to fish.

Remember, building a great physique is not some sort of "quick fix" or overnight process – it's an ongoing lifestyle that you'll be adopting for many years to come. Spending a simple week or two digesting the information in this manual is a very small time investment in exchange for a highly valuable set of skills you'll be potentially applying for the rest of your life.

You're literally getting all of the most important principles I've learned in over 15 years of dedicated research and firsthand experience, all condensed into a simple, structured format that you can absorb in just a tiny fraction of that time. This will put you lightyears ahead of the game in comparison to the average person out there and will hugely increase your chances for success both in the short and long term.

(As a side note, for those who are very eager to begin and would rather just get started on the actual program straight away, a 25-page "Quick-Start Guide" is available in the member's area for this purpose. That guide includes all of the concrete, "actionable" training, nutrition and supplementation guidelines in one place without all of the additional information and detailed explanations behind them. However, if you do choose to go that route, I would still strongly recommend that you make your way through this manual over the coming days and weeks regardless, as it will put you in a much better position to fully maximize your results in the overall picture.)

We'll start off by discussing proper goal selection and show you how to accurately determine whether you should bulk, cut or recomposition first. You'll learn how long each phase should last along with realistic rates of progress you can expect to achieve based on various scenarios.

From there, we'll move into the "meat and potatoes" of the course by going over all of the concrete principles behind proper weight training, cardio, nutrition and supplementation. You'll know exactly what to do both in the gym and the kitchen to maximize your results, whether your primary goal is to bulk up and gain muscle, lean down and lose fat, or potentially do both at the same time.

The chapters that follow will outline the most reliable ways of tracking your progress from week to week and month to month, as well as how to properly transition between bulking, cutting and maintenance cycles as your goals shift over time.

This manual isn't just about teaching the concrete mechanics either. I'll also be giving some useful tips for combining your fitness program with an overall balanced lifestyle, as well as discussing a bit of the psychological side by sharing some important mindset shifts you can adopt for the very best results.

All of the information included will be presented using a balanced mix of both science and practicality. I'll explain what to do along with evidence-based reasoning for each principle, but without getting overly bogged down in excessive details. This is not intended to be a biology textbook, and my aim here is to teach you only what you need to know without unnecessarily overcomplicating things.

Once you've made your way through this manual, you can then move on to the structured workout system, meal plans and supplement guide included with the program, as these lay out the precise steps to take in a sequenced, step-by-step format.

From there, it all just comes down to basic execution on your part. As long as you follow everything as outlined and remain consistent from week to week, this program absolutely *will* work for you and *will* take you to your goal physique if you're willing to stick with it.

The guidelines given are based on the proven, research-backed science of gaining muscle and losing fat and have been used successfully by countless thousands of people from all around the world and from all walks of life.

The *only* way this won't produce the results you're after is if you don't put it into action. You can have all the knowledge and understanding in the world, but what really matters is what you do with it.

So, let's truly make it count this time. You wouldn't be here right now if this wasn't something you deeply desired and were serious about achieving. And now, the only thing you have to do is take the information given, consistently apply it, and the results are yours. Guaranteed.

What could be simpler than that?

Don't let this opportunity pass you by – this here is the critical turning point in your fitness journey and your life as a whole where that lean, muscular, head-turning body you've always wanted becomes a reality. You're about to learn *exactly* what you need to do both in and out of the gym to make it happen, and all you have to do is <u>do it</u>.

Let's get started.

CHAPTER 2: GOAL SELECTION

INTRODUCTION

The first critical decision you'll need to make on your body transformation journey is in determining what your initial starting aim will be. Should you focus on gaining overall muscle mass with a bulking phase? Should you lean down first with a cutting phase? Or should you attempt to "recomposition" by doing both at the same time?

This is something that many trainees get confused by right off the bat and end up sabotaging their results before they even begin. Bulking when you really should be cutting - or vice versa - will put you on an inefficient path from the start and significantly prolong the time needed to reach your ultimate physique goals.

Even worse, it could potentially leave you *more* out of shape than you were to begin with, causing you to lose motivation and quit altogether after just a few weeks or months when things don't go as you had hoped.

In this section, we'll make sure you're starting out with the proper plan of attack and maximize your chances for success by showing you exactly how to determine what your first primary goal should be. We'll discuss the differences between bulking, cutting and recompositioning, how long each phase should last, as well as realistic progress rates you can expect when it comes to muscle growth, fat loss and general physique transformation.

Let's begin.

BULKING VS. CUTTING

Should you bulk or cut first? This is the million-dollar question that every beginner wants to know, and it's very important that we answer it correctly in order to set you up for the most positive and efficient long-term results.

Although it is possible to "recomposition" by losing fat and gaining muscle at the same time if the conditions are right (we'll talk about this shortly), you'll still want to direct your primary focus onto one main goal and prioritize it for a set period. This means either eating in a calorie surplus to maximize muscle growth (consuming more calories than you burn), or eating in a calorie deficit to lose body fat (burning more calories than you consume).

The single most important factor in determining which route to take is your current body fat percentage. Always keep in mind that any time you eat in a calorie surplus to build new muscle, you're always going to gain some extra body fat along with it. It's impossible to divert 100% of your calorie intake toward muscle growth only, and although you can minimize fat gains by having the proper training and nutrition techniques in place, it's inevitable that you'll still gain some throughout the bulking process regardless.

For that reason, most trainees will be best off to commit to a focused muscle gaining phase only if they're sufficiently lean enough to do so first. Jumping straight into a bulk from too high a body fat level is one of the most common mistakes novice lifters make, potentially throwing their entire program off course right out of the gate.

Continue adding more and more fat on top of an already high body fat percentage, and there's a very good chance that you'll quickly become discouraged with how you look and feel as your bulk progresses. Although many beginners will claim that they "don't care" about gaining fat as long as they're building muscle along with it, they usually feel quite differently about it once they actually see the fat beginning to accumulate firsthand.

From there, they often feel "stuck" and are unsure of how to proceed. They don't want to bulk any further and risk additional fat gain, but since they had only gained a very small amount of actual muscle during their brief bulking phase, switching over to a cut doesn't seem very appealing either.

This causes many trainees to become demotivated and fall off course, often leading to a constant back and forth "yo-yo" approach between bulking and cutting that ultimately leads nowhere. They bulk for a short time but then feel excessively fat, and then cut for a short time (but without leaning down far enough) before going right back to bulking. The cycle goes on and on, and after several months (or even years) they've failed to make any appreciable progress in either direction.

Bottom line?

If you're currently above approximately 12-14% body fat as a male or 19-21% as a female, it is highly recommended that you place your initial efforts on fat loss first before transitioning into a focused muscle building phase. (We'll discuss how to estimate your body fat percentage shortly)

Although bulking from a slightly higher body fat level is not inherently "wrong" if one goes about it carefully and is aware of the potential consequences, it isn't advised in the vast majority of cases, especially for beginners. Getting down to these recommended body fat ranges first will allow you to stay relatively lean throughout your entire bulking cycle, keeping your motivation levels high and putting you in a much better position for healthy, sustainable long term progress.

You'll also obtain the benefits of increased testosterone levels (the most important muscle building hormone in the body) and improved insulin sensitivity (this maximizes the percentage of calories that are diverted to your muscle cells as opposed to fat tissue), both of which tend to decrease the higher your body percentage climbs. These two direct physical benefits will further assist you in adding lean mass while warding off fat gains during your bulk.

Of course, if your primary goal is to gain muscle and you're already sitting somewhere around the 12-14%/19-21% level or lower, you can go straight into a bulking phase and eat in a calorie surplus to start with.

RECOMPOSITIONING

You now know how to determine where your primary initial focus should be and why, whether it's maintaining a calorie deficit for fat loss or a calorie surplus for muscle growth. However, the issue of "bulking" and "cutting" is not quite that cut and dry, since under the right conditions, certain individuals will be able to recomposition ("recomp" for short) by gaining some muscle even while eating in a calorie deficit.

Fat is a stored form of energy, and the body can break down and utilize that energy to fuel the muscle building process, allowing for a simultaneous increase in lean mass and decrease in body fat. You won't gain as much muscle in a deficit as you would with a straight calorie surplus, but it can still occur to a significant degree nonetheless. (Keep in mind that you'll never recomposition while eating in a surplus. A surplus will always result in both muscle gain and some fat gain.)

There are three main factors that will influence your ability to recomp, the first being your level of training experience. The newer you are to weight training and the less muscle you've built in total, the more successfully you'll be able to recomposition. This is because heavy resistance training will still be a novel stimulus for your body, causing it to react much more responsively in terms of overall muscle growth. As you gain more lean mass and become more advanced over time, your ability to put on additional muscle will gradually decrease, especially while in a calorie deficit.

The second factor to consider is your body fat percentage. The more body fat you're carrying, the more effectively you'll be able to recomp since you'll have a higher amount of "stored fuel" available to support muscle growth. As you get progressively leaner, your body will begin fighting harder to hold onto its remaining fat stores (a certain amount of body fat is necessary for basic health purposes), making the recomposition process much more difficult (if not impossible) at that point.

The third factor at play is genetics. The reality is that genetics do play a significant role when it comes to gaining muscle (we'll talk about this in more detail shortly), and this will influence just how much lean mass any given person can gain while in a deficit.

Putting this information together, those who will be able to recomposition with the highest degree of success will be overweight beginners, particularly those with above average muscle building genetics. However, any beginner carrying at least moderate excess fat *or* anyone who is significantly overweight (regardless of experience level) should be able to recomp to a reasonable degree as well assuming they possess at least average genetics.

Another situation where recomposition will occur quite easily is in those returning from an extended training layoff. In this case, losing body fat while simultaneously re-gaining lost muscle will be fairly easy to achieve due to the benefits of "muscle memory", a topic that will be addressed more closely in a later chapter.

Those who will be least likely to recomposition are intermediate and advanced lifters who have already built up a strong muscular foundation, especially if they're within a low to moderate body fat range. In fact, those trying to cut to significantly low levels of body fat (below about 10% for men and 17% for women) will generally experience the opposite effect and begin losing muscle mass and strength the further and further they lean down.

In any case, the key takeaway here is that even if your current body fat does fall above the recommended 12-14%/19-21% figures and you need to start out with a cutting phase first, you should still be able to gain some lean mass throughout the process if you're still a novice lifter and/or are carrying a significant amount of excess fat.

This is why those with the common "skinny fat" body type are also best off to start in a calorie deficit despite the fact that they have low levels of muscular development to begin with. People with this build are often confused on how to structure their initial approach, since they don't want to carry out a cutting phase and end up looking overly thin, yet also don't want to bulk and put on additional body fat. However, since a skinny fat individual is likely to be a beginning lifter and is also carrying excess body fat, they should be able to recomposition successfully and gain some additional muscle as they lean down.

In addition, it's important to keep in mind that losing fat is a much faster process than gaining muscle is. We'll get into the specific figures shortly, but as an estimation, you'll generally be able to burn fat about 2-4 times faster on a pound for pound basis than you can build muscle. Packing on significant muscle mass is a much longer road for the average natural trainee, whereas with the proper training and diet in place, fat loss can happen relatively quickly from week to week.

For that reason, if you have excess fat to lose right now, getting rid of it right from the start is typically the smarter approach, especially considering that those with a typical skinny fat build won't have a huge amount of fat to lose in the first place. A properly structured cutting cycle will produce a marked improvement in your appearance within just a matter of weeks, giving you more confidence and motivation as you move forward through the process and eventually into your bulk.

It's also important to think in terms of the bigger picture and recognize that even if a cutting phase did cause you to appear a bit thinner than you'd ultimately like, this is just a temporary phase on the way to your ideal physique. Building a standout body is a long-term project rather than a quick fix, and you may simply need to make certain sacrifices in the short term if this is something you're truly serious about. Having a thin/lean build with some visible muscle definition is still an improvement over a thin/flabby build anyway, so you'll still be progressing in a positive direction regardless.

ESTIMATING BODY FAT %

We've now established that if you currently exceed approximately 12-14% body fat as a male or 19-21% body fat as a female, your first priority should be to lose fat with a calorie deficit. If you're at or below these figures already and are aiming to build additional muscle size and strength, you can go straight into a bulking phase to begin with.

Sounds fairly straightforward, but how do you determine exactly what your current body fat percentage is?

Well, the reality is that unless you were somehow able to dissect your entire body and precisely weigh every gram of fat, muscle, bone, water and other tissue, there's actually no way of calculating your precise body fat percentage down to the absolute figure.

No method of testing body fat is 100% accurate, and even a DEXA scan (typically considered as the "gold standard" measurement) can still be off by 1-2% or more. Other methods such as body fat calipers, scales, handheld devices or online calculators are often highly inaccurate, easily in excess of 5% give or take. If you're able to obtain a consistent reading with these methods then they can still be useful for tracking your relative progress from week to week, but they can't be relied upon for determining what your actual objective body fat percentage is at any given time.

In addition, since body fat percentage readings refer to the amount of fat you're carrying relative to your lean body mass – and since lean body mass is simply any form of body weight that is *not* fat – your hydration status, food volume in the stomach and intestines, levels of glycogen storage and other factors will all influence the final number to a certain degree at any given time.

This is why whenever someone tries to quote you their precise body fat percentage by claiming that they're 7%, 10%, or whatever else, always take it with a grain of salt. No one really knows for sure what their true percentage is, and most people tend to believe they're much leaner than they really are.

On top of this, the same body fat percentage can also appear quite differently from person to person depending on a variety of individual factors. This includes things such as their levels of muscle mass, vascularity, body fat distribution, subcutaneous water retention and more. One person may appear quite lean and defined at 14% body fat, while another person at the same percentage might not look nearly as impressive.

For these reasons, all body fat readings should simply be treated as rough estimates and are merely to be used as "educated guesses" to help you decide on the proper course of action, whether it's to bulk, cut or maintain. When we talk about "12-14% body fat" for men and "19-21% body fat" for women, this is simply a ballpark figure that we're using to describe an approximate level of overall conditioning.

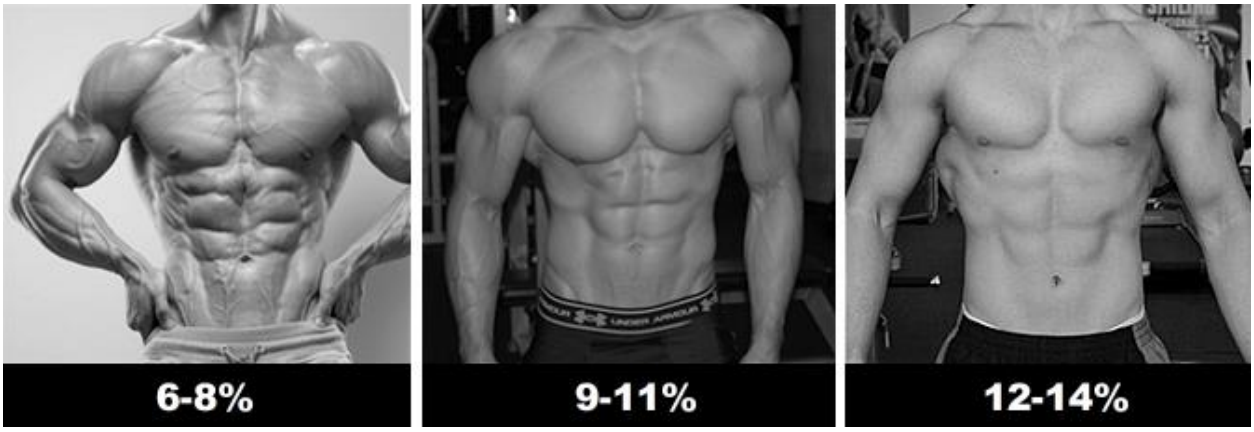
Being somewhere in those ranges would mean that your entire body is relatively lean without any obvious excess fat, but not to the point of being "ripped" or "shredded". At this body

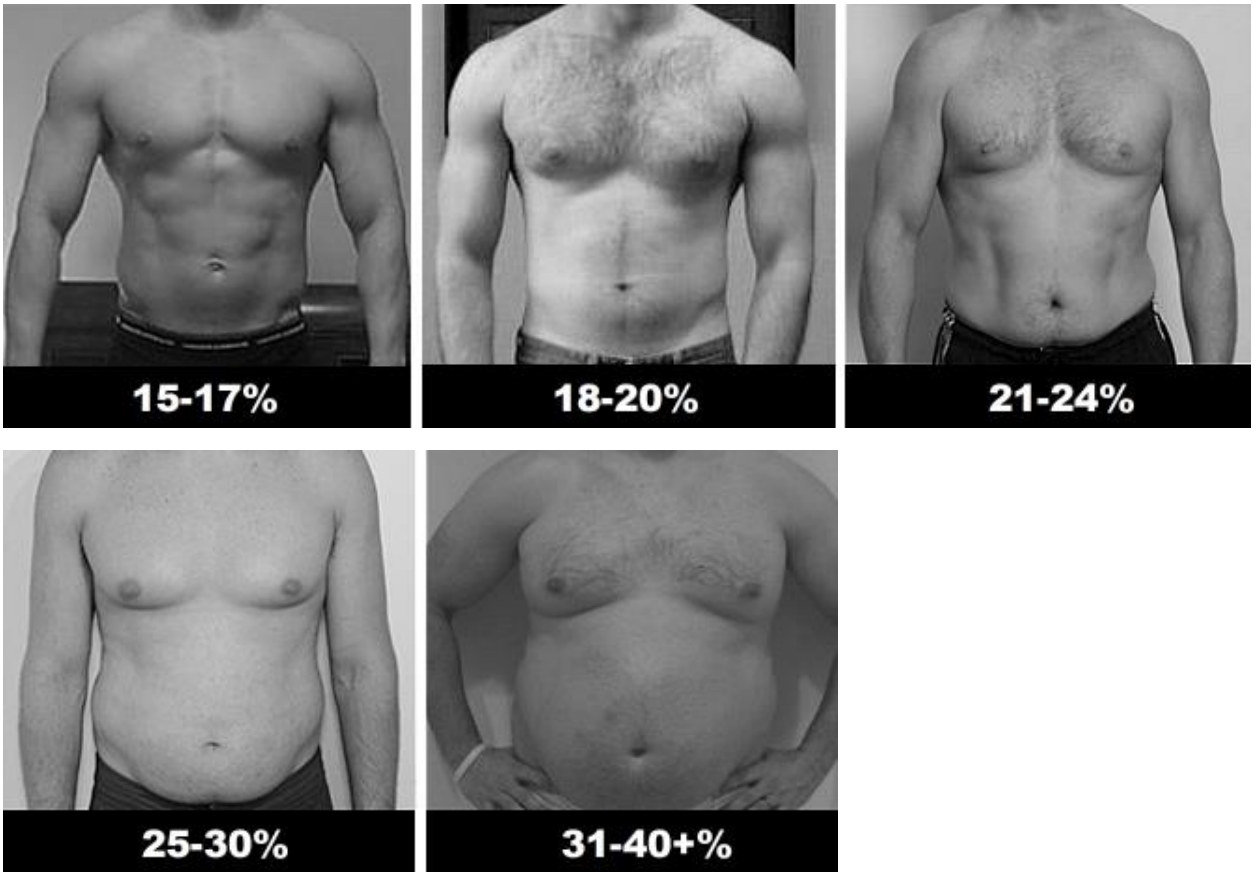
fat percentage, your stomach would be mostly flat and your abs would be visible when flexing under good lighting. You wouldn't necessarily have a full blown six pack, but in most cases you should at least see the outline of a "4 pack" with perhaps a small bit of lower ab fat still remaining. (Keep in mind that since women carry more total body fat in general than men, the abs won't necessarily be visible at the 19-21% level in every case. However, even if no clear ab definition can be seen, the stomach itself should still be fairly firm and flat as a whole.)

If you have an extra $100-$150 to spend and want to be as accurate as possible with this, booking an appointment for a DEXA scan is one option you can go with. Although it isn't perfect, DEXA has the smallest margin for error of any body fat testing method available and is accurate enough to be used as guiding tool for your bulking and cutting cycles. You simply lie on an x-ray table for about 10 minutes, and the machine takes a full dual x-ray to assess your body composition.

However, since getting a DEXA scan won't be practical for most people (nor is it necessary in most cases), simply "eye balling" your physique and comparing it to others at various body fat percentages will usually suffice. Remember, you don't need to be 100% dead on with this; you just need to ensure that you're accurate enough to know when either bulking or cutting is most appropriate.

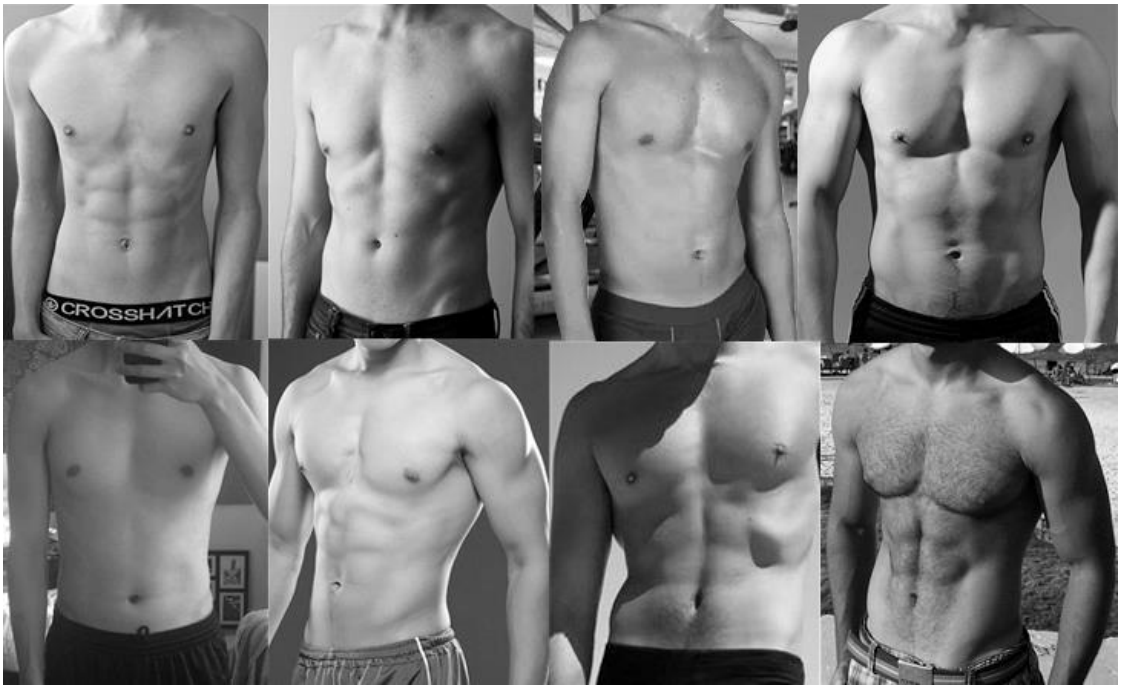
Here are a few examples of male physiques ranging from very low "ripped" body fat percentages up to those in the overweight category…



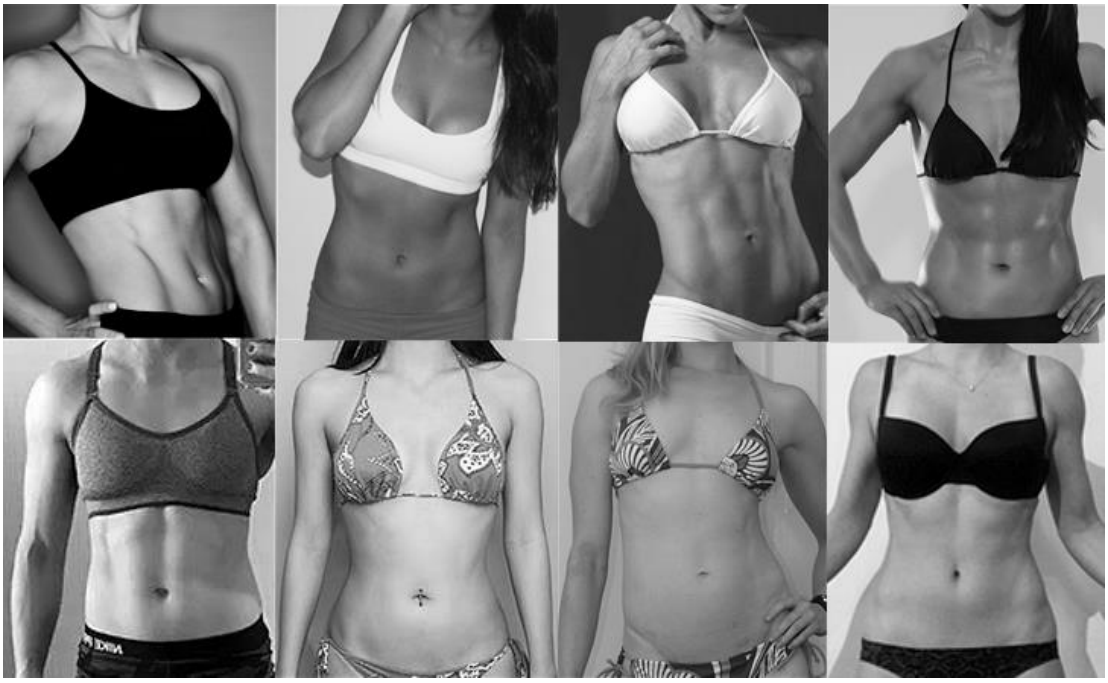


Here are a few examples of female physiques showing the same thing…

These are some more shots of what a "bulk worthy" male physique somewhere in the 12-14% range would look like, including examples of those with higher or lower levels of overall muscle mass…



And here are some more examples of female physiques approximately in the 19-21% range…



If your current physique looks similar in terms of overall leanness to the pictures above, then your body fat is probably low enough to where starting out with a lean bulk would be appropriate if your goal is to add more muscle size to your frame. If your body fat levels are clearly higher than this, then you'll want to begin with a cutting phase until you've achieved similar conditioning, also keeping in mind that you can likely recomposition to a certain degree as well if you're still a beginner.

For those who seem to be somewhere right on the borderline with no clear visible muscle definition but only a very small amount of excess fat (a very difficult body type to accurately estimate body fat percentage for), both bulking or cutting would likely be acceptable and you can simply make the decision based on what's more important to you. If you're mainly concerned with adding more mass to your frame and are truly okay with the idea of gaining some extra fat during the process (the key word there being "truly"), then you can go that route to start. Or, if you find the small bit of excess fat you're carrying to be bothersome and you'd rather do a quick cut to get rid of it first before bulking, that's fine too.

Neither approach is inherently right or wrong in this scenario, and the best option is likely going to be whichever one maximizes your motivation going forward and increases the chances that you'll stick with your program over the long term.

BULKING & CUTTING PHASE LENGTH

You now have your primary goal selected and know whether you should be starting your program out with a bulking phase or a cutting phase. Great, but how long should each of these phases last? How long should you continue bulking before switching to a cut, and vice versa?

Although you'll often hear set time frames for this such as "bulk for 12 weeks and then cut for 4 weeks" or "cut for 4 months and then bulk for 2 months", the truth is that there is no single set time for a bulking or cutting phase. How long you'll spend in each cycle before transitioning to the other completely depends on where you're starting out from and what your personal physique goals are.

For example, an overweight trainee with 80 pounds of excess fat to lose will obviously be cutting for a much longer period of time than someone with a "skinny fat" build who just needs to drop a quick 10 pounds. Similarly, someone who is naturally thin and wants to achieve a bodybuilder-like physique will need to bulk for much longer than someone with an average build who just wants to gain a moderate amount of muscle and achieve a more athletic look.

Many different factors will come into play that affect just how quickly or slowly you'll progress and exactly how much time is needed in each phase, so you'll usually have to take it week by week and assess things as you go. You can roughly estimate how long your bulking and cutting cycles will last by comparing your current physique to the progress rates I'll be covering in the next section, but these will only be approximate figures.

For these reasons, we won't be applying concrete time frames from the outset. Instead, you'll simply continue with whatever phase you're in until you reach a point where switching gears becomes appropriate.

If you're starting out with a cutting phase, this simply means continuing to lean down until you reach the recommended body fat figures of approximately 12-14% for men or 19-21% for women. Going slightly lower than this is fine if you're wanting to get a bit leaner based on personal preference (or if you're temporarily cutting down for a particular event such as a photoshoot, vacation etc.) but the upper end of those ranges would be the minimum figures to hit before your cutting phase can be considered complete.

Small diet breaks can be inserted throughout the process if necessary (more on this later), but at no point should you be "shifting into a bulk" and switching to a calorie surplus until you've leaned down to those recommended figures.

If you're starting out with a bulking phase, the length of time you'll spend eating in a calorie surplus and focusing on muscle growth will primarily depend on how much fat you've accumulated throughout the process. Remember that a certain amount of fat gain is inevitable any time you're trying to maximize muscle growth (though it can be minimized by

following the specific training and nutrition principles we'll be discussing), and periodic cutting phases can be utilized to bring those levels down if they reach an excessive point.

How high is too high in terms of body fat?

There is an element of personal preference at play here, since some people will be more comfortable carrying a bit more fat than others depending on whether they value more size over less definition or vice versa. As a maximum "cap" though, bulking past roughly 18-20% for men or 25%-27% for women would be advised against in most cases.

Allowing your body fat to climb excessively high during a bulk is virtually never a good idea (we'll cover the topic of "lean bulking" vs. "dirty bulking" in the nutrition section), and if you've reached that upper body fat limit, you'll want to transition into a deficit and strip off the excess fat before going back to bulking again.

If you'd prefer to stay on the leaner side throughout the entire bulking process, another option is to insert shorter 2-6 week "mini cuts" into the mix once your body fat gets a bit higher than you'd like. For example, rather than bulking from 12% all the way up to 19% and then performing a longer cutting phase to get back down again, you could instead bulk to, say, 16%, perform a brief mini cut back to 12%, and continue the cycle.

Either of these approaches is acceptable as long as you're giving yourself adequate time to properly bulk and to put on quality muscle before switching to a fat loss phase. Those who constantly switch back and forth between a surplus and deficit over very short time frames often end up spinning their wheels and reducing their overall progress in the bigger picture. In order to create an anabolic environment that optimally supports muscle hypertrophy and strength gains, you should ideally commit to at least 8-12 weeks of focused bulking as a minimum before switching into fat loss mode.

Of course, the other potential "end point" for a bulking or cutting phase is if you've achieved your goal physique and are satisfied with your current condition. At that point you can transition into a maintenance plan, which is a topic we'll discuss in a later chapter.

REALISTIC MUSCLE GROWTH RATE

At this point, you have the basic groundwork in place in terms of starting goal selection and bulking/cutting phase targets. Before we get into the actual training, nutrition and supplementation principles you'll be using to carry this out, you're probably wondering just how long this whole process is going to take.

What is a realistic rate of muscle growth and fat loss to expect from week to week, month to month and year to year, and just how lean and muscular can the average natural trainee ultimately get?

You'll be hearing this quite a bit throughout the manual, but the short answer is "it depends". This is because the specific results any given person can achieve will be influenced by many different factors, such as genetics, age, gender, experience level and program adherence. That said, there are approximate figures we can assign that will land pretty close on average and that can be used as rough general guidelines to go by.

Let's talk about muscle growth first. Despite how it's usually portrayed in over-hyped advertisements for bodybuilding "miracle" products, the simple fact is that building muscle is a relatively slow and gradual process for the average natural lifter. Over the course of several months or more those gains will accumulate and add up to a significant amount, but the changes you'll experience during any individual week or two will be quite minor. Head-turning body transformations don't happen over night, and it requires time, patience and consistent effort over the long term to truly pack on a significant amount of lean mass.

Assuming you're following a proper training and nutrition program and are implementing it consistently, a standard rate of overall body weight gain for a beginner would be approximately half a pound per week during the first year of lifting, or about two pounds per month. This takes into account both your gains in actual lean muscle mass as well as the additional increases in water weight, glycogen and body fat that come with a focused bulking phase. This may not sound like a lot, but extrapolate it over a 6-12 month period and you can see that the outlook is still quite positive over the longer term.

Those with above average genetics may be able to achieve gains at a slightly faster pace than this, but three pounds total per month should be considered the maximum upper limit regardless of the individual. If you're gaining any more than this then you're likely over-eating and are putting on a disproportionate amount of body fat relative to lean muscle. For most trainees in most situations, roughly two pounds per month is what you should be aiming for.

These are the figures that a complete beginner with no prior weight training experience should expect (or those who do have previous experience but weren't following a proper program and/or weren't consistent with it), but it's also important to understand that

building muscle is not a linear process. In other words, the longer you've been consistently training and the more total muscle you've gained, the more your rate of growth will naturally slow down.

When you first start out in the gym you'll make your "newbie gains" relatively quickly since weight training will be a new stimulus for your body and you won't be carrying a lot of muscle to begin with. In fact, a beginning lifter who does everything correctly should be able to achieve roughly 50% of their total genetic muscle building potential in the first year of training alone.

After that initial period is over and your body is holding on to a larger amount of muscle and has become more accustomed to the training stressors, the process will naturally decelerate. Muscle is metabolically "expensive" tissue that requires a large amount of energy and resources to build and maintain, and your body has genetic limits in place to prevent you from gaining too much.

If muscle growth were perfectly linear and it were possible to gain, say, 20 pounds of lean mass for every single year of training, a person with 10 years of lifting experience would be walking around with 200 pounds of extra muscle mass on their frame – quite obviously an unrealistic expectation.

As a general guideline, you should expect your rate of muscle growth to decrease by roughly 50% for every year of consistent proper training you have under your belt. In other words, out of 100% of your ultimate genetic potential, this is what you might expect to achieve from year to year:

Year 1: 50% of genetic potential
Year 2: 75% of genetic potential
Year 3: 85-90% of genetic potential

After 4-5 years of training and beyond you'd be right up near your natural limit, and although you'd still be able to make additional progress with continued effort, the level of diminishing returns would be very steep. At that point it would likely require multiple years of hard training and proper nutrition just to gain a few pounds of additional muscle.

For men with average genetics, a reasonable lifetime goal would be to gain somewhere around 30 pounds of total lean muscle mass. Those with slightly below average or slightly above average genetics might be looking at around 20 or 40 pounds respectively.

There will also be a small percentage of "genetic outliers" who will fall on the more extreme ends of the spectrum. This includes those with particularly poor muscle building genetics who may only be able to gain 10 pounds of muscle or less regardless of how perfect their program is, as well as those with exceptionally good muscle building genetics who may be able to gain upwards of 50 pounds or more even on a sub-optimal plan. However, this will only make up a very small minority of the population, with most typical natural lifters falling somewhere within that 20-40 pound range.

Also keep in mind that this figure is referring specifically to actual lean muscle mass as opposed to total body weight. If you feel comfortable sitting at a higher body fat level and carrying some additional water weight in order to achieve a fuller/thicker type of appearance, your total body weight itself can certainly increase by more than this amount. It really just depends on your personal goals and what sort of physique you're aiming for.

There are three main factors that will influence your individual rate of muscle growth and overall muscle building potential, the first one being genetics. Regardless of what anyone tells you, individual genetic makeup does play a very significant role in the muscle building process just as it does in most other areas of life. Some people will simply have an easier or harder time building muscle than others, and this is affected by various factors such as muscle fiber type, testosterone levels, growth hormone levels, insulin sensitivity, myostatin levels, individual recovery ability and more. The vast majority of people out there can build a significant amount of muscle given enough time and effort on a properly structured plan, but your individual genetics will no doubt influence just how much muscle you're ultimately capable of building as well as how quickly you can build it.

The second factor to take into account is bone structure. As a general rule, those who are larger framed will be able to carry more muscle mass in total than those who are smaller framed. However, also keep in mind that different amounts of muscle can appear very differently from an aesthetic perspective depending on an individual's unique body type. Height, limb length, muscle shape and muscle insertion points all play a big role in determining exactly how your newly built muscle mass will actually look, so this isn't necessarily a positive or negative thing.

For example, a lifter who is 5'4 with a smaller bone structure will still usually appear quite strong and muscular even if his lifetime muscle building potential is only 15-20 pounds in total. On the other hand, those same 15-20 pounds may not look nearly as impressive on someone who is 6'4 with longer limbs, and that lifter would need to gain more total mass in order to achieve an equally muscular look. So, even though a larger framed individual may be capable of building more muscle as a whole, they'll also *require* more mass in order to appear equally as muscular as someone who is smaller framed.

The third factor is age. Those in their late teens and twenties will naturally have the fastest muscle growth rate out of anyone since testosterone levels will be at their highest level during that time. Testosterone plays a central role in the muscle building process, and if you're still in your early teens or are in the 40-50+ range, you can expect to progress at a slower pace that continues to decrease the older you get.

The final factor to take into account is gender. Since women have significantly lower testosterone levels than men, this also impacts how quickly they can gain muscle as well as how much muscle they can ultimately carry. As a rough guideline, women can take the specific muscle building figures given above and reduce them by about half. This would mean a total lean weight gain of about 1 pound per month on average, with a lifetime muscle building goal of roughly 15 pounds of total additional mass give or take.

However, since women tend to be smaller framed than men on average and are typically not aiming for an overly muscular "bodybuilder" type of physique, this isn't necessarily a downside since they won't need to gain as much total muscle to reach their desired look in the first place. Even though females technically will build muscle at a slower rate than men, their relative progress in terms of A to B physique transformation will still fall into a similar range.

REALISTIC FAT LOSS RATE

That covers the muscle building side of the equation, but what should you expect when it comes to burning fat? How much fat can you lose from week to week, and just how lean of a body fat percentage can you realistically achieve and maintain on a year-round basis?

For starters, you can expect to progress at a much faster pace with fat loss in comparison to building muscle. While half a pound of weight gain per week would be a standard rate of progress for a muscle building beginner, fat loss trainees can reliably drop between 1-2 pounds per week with the right training plan and diet in place regardless of their experience level. This takes into account both decreases in actual fat mass as well as the losses in water weight and glycogen storage you'll experience.

You may lose weight at a faster pace of up to 3-4 pounds per week in the first week or two as your body flushes out excess water retention from the reduced calories, but it should stabilize at around 1-2 pounds per week after that.

Whether you land on the lower or higher end of that 1-2 pound per week range depends on three main factors, the first being your current body fat percentage. The more excess fat you're carrying, the more readily and easily your body will be willing to liberate that stored fat for energy and the faster you'll lose body weight overall. In fact, those who are significantly overweight can often lose fat at an even faster pace of around 3 pounds per week, at least in the beginning stages of their program.

As you become leaner and leaner over time, the rate of fat loss naturally slows down. This is because a certain amount of fat is required for proper health and functioning, and the body will begin making hormonal adjustments in an attempt to conserve the remaining amount. As a general guideline, fat loss will typically be fairly "smooth sailing" until a body fat percentage somewhere around the mid-teens for men and low twenties for women is reached. At that point you'll need to tighten your training and nutrition up a lot more closely to continue burning fat at a significant rate, with each percentage point becoming increasingly difficult to lose as you lean down further.

The second factor affecting your rate of fat loss is the size of your calorie deficit. In order to lose fat, you need to burn more calories than you consume. This is achieved by lowering your calorie intake and (typically, though not always) by increasing your activity level. The lower you set your calorie intake and/or the more physical activity you perform, the larger your calorie deficit will be and the faster you'll lose fat.

A moderate sized deficit is usually best for most trainees since it's much more realistic to sustain, but using more aggressive deficits in the short term is also a viable strategy for more advanced dieters who want to speed the process up a bit. We'll talk more about this in the

nutrition section, but for now, just know that a larger calorie deficit will allow you to lose fat faster but will be more difficult to maintain, and vice versa.

The third factor at play is genetics. Just like with building muscle, some people simply have an easier time getting lean and staying lean due to hormonal differences that make the process a bit smoother. There's really no use in getting hung up on this side of the equation though, since genetic factors are beyond our control and can't be changed anyway. Unless an individual has a legitimate medical condition that significantly impairs their ability to lose fat, virtually anyone can safely and efficiently get down to a lean body fat percentage and maintain it indefinitely with the right approach in place.

That brings us to the next question: just how lean of a body fat percentage can you realistically achieve and maintain over the long term?

With the endless images of ripped fitness models and physique competitors we constantly see on magazine covers and social media platforms, many people have been left with unrealistic expectations about the type of shape an average natural trainee should expect to achieve as a year-round condition. The reality is that the vast majority of people do not (and cannot) maintain very low body fat levels with "shredded abs" on a permanent ongoing basis. Unless you're an extreme genetic outlier or are using performance enhancing drugs, there are certain limits as to just how lean you can get before unwanted physical and mental side effects begin to kick in.

Remember, the human body requires a certain amount of body fat for optimal functioning, and when you overly restrict your calorie intake in order to reach those very low levels, it will quickly begin fighting back. You'll start to experience greater and greater levels of hunger and preoccupation with food, decreased energy levels and training performance, impaired mood and concentration, lowered levels of motivation, and decreased testosterone levels and libido among other things. These effects will continue to amplify the leaner and leaner you get.

Ask any competitive bodybuilder or physique athlete and they'll tell you that this is all just par for the course once they pass a certain body fat threshold and begin reaching stage condition. It can be maintained for a temporary period of time, but not permanently.

So, how lean is too lean?

While keeping in mind that body fat readings are just rough estimates rather than absolute figures, most men will be best to not drop any lower than about 10% body fat, with 17% body fat being the minimum for women. Temporarily leaning down further than this is acceptable over the short term, but when it comes to general year-round condition, those are the approximate "cut off points" to not exceed.

Keep in mind as well that these are the *minimum* recommended figures. Although everyone is a bit different, most people will feel their very best both physically and mentally by going slightly higher. The previously outlined ranges of 12-14% body fat for men and 19-21% body fat for women will usually strike a good middle ground between overall leanness and

muscularity while keeping your health and performance fully optimized. Where you specifically land within that range just depends on your preferred look and how you personally feel at different body fat levels.

These numbers might sound a bit high if you've been misled into thinking that 6-8% body fat is somehow a "normal" condition that everyone can reach, but it just doesn't work that way in reality. Most people hugely underestimate their true body fat percentage, and unless they've had a proper DEXA scan (which is still susceptible to a certain margin for error), you can usually bet that the number they're quoting you is not accurate. The truth is that a legitimate 12% body fat for a male or 19% body fat for a female is actually quite lean. Pair that level of conditioning up with some decent muscular development and you'll usually be left with quite an impressive looking physique.

Also keep in mind that most of the pictures you see on social media platforms like Instagram and Facebook are rarely representative of a person's typical everyday appearance. Instead, they're usually "optimized" by using the very best angles, lighting and filters, all of which make a significant difference to the final end-product. The person in the photo may also be in a condition they've temporarily dieted down for, and in many cases, the "natural" bodybuilders and fitness models you see are not being fully honest in that department either.

This could be a topic for a whole other discussion, but the bottom line is to not believe everything you see online or in magazines. Just because someone looks very lean and ripped in a particular photo does not mean they look that way in real life or that they maintain that condition all the time.

You can certainly achieve a lean and muscular body with impressive cuts, definition and visible abs, but no one is "shredded" year-round unless they're a genetic outlier or on drugs. All in all, somewhere around 10-14% body fat for men and 17-21% for women is realistic, with the mid to upper end of those ranges usually being ideal.

If you'd rather go for a "fuller" appearance at the expense of a bit more body fat, maintaining a body fat percentage even higher than this range is also fine. As long as you're remaining at what would be considered a "healthy" body fat level (at or below about 20% for men and 27% for women), the rest just comes down to personal preference. Some trainees are going for the leaner and more "aesthetic" look, while others want the bigger/bulkier appearance of a bodybuilder or powerlifter. It's an entirely subjective thing, and only you can decide what's best for you.

Regardless of which type of physique you might be aiming for, it's now time to begin covering the actual step by step guidelines you'll need to follow in order to achieve it. Proper nutrition is the subject we'll be covering first and foremost, since it's the main area where most fitness hopefuls tend to make their most critical mistakes.

Let's begin.


CHAPTER 3:
NUTRITION

INTRODUCTION

While a solid training plan may only require as little as 3-5 hours of your time per week, eating for consistent muscle growth and fat loss is something you'll need to do correctly on an ongoing basis throughout each day. Eat the wrong number of total calories, use an unbalanced macronutrient breakdown, or structure your diet in a way that isn't sustainable over time, and there's a very good chance that you won't end up getting the results you're after, if any at all.

In some situations (such as in the case of overly aggressive high calorie bulking) it can even be flat-out counterproductive to your physique and take you in the opposite direction of what you were aiming for. The famous quote says that "you can't out-train a bad diet", and by in large that's a pretty accurate assessment.

But while it is true that the nutritional side of things is where most people tend to go the furthest off course, the reality is that it's actually a fairly straightforward process when you break it all down piece by piece.

In fact, the primary reason *why* the majority of trainees get their eating plan wrong and eventually end up abandoning it is precisely *because* they make it way more complicated and difficult than it really needs to be. They attempt to follow some excessively detailed, unnecessarily restrictive dieting approach that by its very nature could never be sustained long term, and inevitably end up burning out and quitting after just a few weeks or months.

The truth is that meeting your daily nutritional needs to build muscle, lose fat and optimize your health mostly comes down to the consistent implementation of just a few relatively simple core guidelines.

You don't need to revolve your entire day around tracking macros down to the precise gram, eat nothing but 100% "clean" meals while totally depriving yourself of the foods you enjoy most, follow any weird, overly complicated dieting "rules", or be perfectly on point with your nutrition every single day of every single year. All you really need to do is get a *few* things right *most* of the time, and you'll achieve consistent progress from week to week on the way to your ultimate physique goals.

By putting the majority of your focus on the underlying basics and discarding the additional unnecessary "fluff", you'll achieve the same bottom line results but in a way that is far more enjoyable and sustainable in the long term.

If you're still brand new to this and have never monitored your calories, eaten a consistently healthy diet or paid any real attention to your macronutrient intake, some of the information outlined here may still seem a little daunting at first. However, just like learning any new skill or adopting any new habit, the most challenging part is always during the beginning stages. As you begin implementing the guidelines given and continue adjusting to them over the coming weeks and months, it will gradually become easier and easier to stick with.

When you were first learning how to drive a car, you had to remain conscious of every little detail at all times – where the gas and break pedals were, the position of your hands on the steering wheel, shifting from gear to gear, remembering to use your signals etc. Eventually as you gained more experience, things just became "automatic". You simply got in the car and drove from A to B without really needing to think about it.

Following a proper nutrition plan to gain muscle, burn fat and build a great physique is the same thing. In fact, that's how the majority of the "fitness game" works even beyond just the nutritional side. Put in the time and effort now to gain an understanding of how it all works and how to integrate it into your day to day to life, and it will soon become nothing less than second nature.

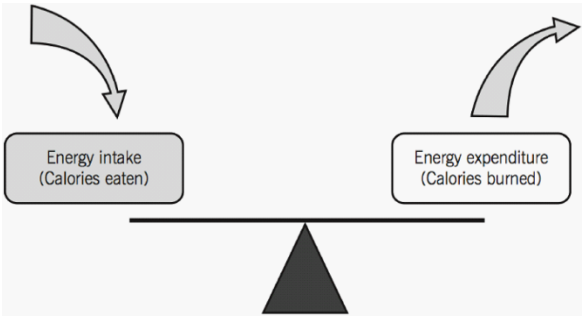
Let's begin by discussing the topic of daily calorie intake – the central foundation of any effective muscle building and fat loss diet.

CALORIE INTAKE

You may have heard elsewhere the idea that "calories don't matter". It's often claimed that all you need to do is follow a "clean diet" throughout the day, and your body will automatically shift into fat burning and muscle building mode regardless of whether you track your calories or not. In reality, this misguided way of thinking is one of the single biggest reasons why most people fail to achieve any significant results from their fitness plan.

You can base your diet around all the lean protein, unprocessed carbs, healthy fats, fruits and vegetables you want, but if your overall calorie intake is not consistently landing in the proper range each day, no amount of "healthy eating" is going to save you.

Calories absolutely do matter, and your total net calorie balance (how many calories you consume versus how many you burn) is by far the single most important factor in your entire nutrition plan.



In order to lose body fat, you need to maintain a calorie deficit by consistently burning more calories than you consume. This stimulates the body to break down its excess fat stores in order to obtain a source of energy to correct the deficit. Without a consistent calorie deficit in place, you're quite simply not going to lose any significant fat since your body will have no incentive to tap into its existing stores.

In order to maximize muscle growth, you need to maintain a calorie surplus by consistently consuming more calories than you burn. This provides your body with the additional raw materials and energy that are needed to synthesize new muscle tissue.

As we discussed in the previous section, it is possible to gain some muscle while in a calorie deficit in certain situations (since the body can use the calories in stored fat to fuel the muscle building process), but it won't be to the same degree that you'd get from a surplus. If your body fat percentage is on the low to moderate end and your primary goal is to bulk up and gain overall mass, a calorie surplus is a requirement.

It may not sound very "sexy", but it really is true: calories in vs. calories out *is* the central piece of the nutritional equation and is where your primary focus should be placed. Your macronutrient distribution, vitamin/mineral/fiber intake and other factors certainly play an important role as well, however, none of those other details will make any real difference if you're simply eating too much or too little based on your goals. Calorie intake is at the very top of the nutrition hierarchy, and everything else follows beneath it.

Sadly, many people make this basic, fundamental mistake for months and even years on end without realizing it, and then don't understand why they aren't making the progress they expected. They simply look at the foods they're consuming each day and consider it to be a "healthy" combination, and then assume that their lack of results must be due to something

else. At the end of the day, it was really nothing more than a simple matter of over or under-eating.

What *are* calories exactly? Simply put, calories are a measurement used to describe the amount of energy contained in the foods you eat and in the tissues on your body. For example, a chicken breast contains about 150 calories, while an apple contains roughly 100 calories. A pound of stored fat contains around 3500 calories, and a pound of muscle contains about 2500 calories.

Every day you consume a certain number of calories through your diet by taking in the three major macronutrients: proteins, carbohydrates and fats. Proteins contain 4 calories per gram, carbohydrates contain 4 calories per gram and fats contain 9 calories per gram.

In addition to the calories you consume through your diet, you also burn a certain number of calories each day through basal metabolism (natural processes that occur at rest such as breathing, digestion and circulation) plus your activity level (exercise, work, physical hobbies, walking, small movements you make throughout the day etc.). The underlying foundation of a successful nutrition plan is in striking the proper balance between your calorie intake vs. your calorie expenditure based on your primary goal.

How many calories should you be consuming each day to carry out a successful bulking or cutting phase?

The basic idea when trying to figure out your personal calorie target is to first determine your calorie maintenance level, which is the number of calories you require daily in order to maintain your current weight. Then, you'll add or subtract calories from your maintenance level to create either a calorie surplus (if you're in a bulking phase) or a calorie deficit (if you're in a cutting phase).

Before we outline the specific methods for doing this, it's important to keep in mind that all calorie calculations are just estimates at the start. There's no way to know for sure at the outset what any one individual's exact calorie needs will be, since it can vary widely depending on a variety of factors, such as lean body mass, activity level, age, hormonal differences and more. The idea is to simply make an "educated guess" to begin with, implement it, and then see how your body responds. From there, you can adjust your intake up or down depending on how much weight you're gaining or losing until you're landing in the proper weekly range based on your goal.

If your overall body weight has remained relatively stable over the previous week or two and your food intake does not tend to significantly fluctuate from day to day, the simplest method is to manually log your diet over the course of a week or so, add up all of the calories to find the daily average, and then use that as your estimated maintenance level. If your calories typically increase on certain days of the week (for example, weekend "cheat days" or cheat meals), make sure to incorporate this into the daily average as well. As long as you properly account for all of the foods/snacks/drink items you're consuming and tally everything up carefully, this method will usually provide the most accurate starting figure to work with.

On the other hand, if your body weight has been continually fluctuating and/or your daily diet does vary enough to where you aren't quite sure how to accurately measure a typical day's worth of food, your next best bet will be to use a pre-set calorie maintenance calculator.

Here are the three main calculators you can choose from along with the potential benefits and drawbacks for each…

Calculator #1: Basic Multiplier

To use the basic multiplier, simply multiply your current bodyweight in pounds by between 14-16, going with the higher or lower end depending on your approximate weekly activity level.

Sedentary = 14 *(little to no exercise)*
Lightly Active = 14.5 *(light exercise 1-3 days a week)*
Moderately Active = 15 *(moderate exercise 3-5 days a week)*
Very Active = 15.5 *(intense exercise 6-7 days a week)*
Extremely Active = 16 *(intense daily exercise and strenuous physical job)*

This is the simplest method out of the three and will usually work well as a starting point for those who are still within a healthy body fat range, meaning around 18-20% or lower for men and 25-27% or lower for women.

If you're above these ranges, this method will tend to over-estimate your calorie needs since body fat is relatively "inactive" tissue and doesn't burn nearly as many calories as lean muscle does. The extra body fat will add to your total body weight (thus increasing your calorie maintenance calculation) even though it technically doesn't increase your actual calorie requirements by a significant amount.

For example, if two individuals were both carrying 150 pounds of lean body mass, but one was only carrying 20 pounds of fat (170 pounds of total body weight) and the other was carrying 60 pounds of fat (210 pounds of total body weight), their calorie maintenance levels would actually be similar even though the calculator would register the heavier person as requiring a much higher intake.

For that reason, those who fall above the healthy body fat ranges will want to use one of the two methods below instead.

Calculator #2: Harris-Benedict Formula

This method takes height, sex and age into account on top of your basic bodyweight in order to give you a more fine-tuned caloric figure.

The first step with this method is to determine your basal metabolic rate (BMR), which is the total number of calories you burn at rest. This does not include additional activities such as weight training, cardio or physical hobbies – the BMR refers only to natural internal processes such as breathing, digesting food, regulating body temperature etc. Once you've

figured out your BMR, you'll then factor in your activity level using an additional multiplier to determine your calorie maintenance level.

Calculating Basal Metabolic Rate

Men: (10 × weight in kg) + (6.25 × height in cm) - (5 × age in years) + 5
Women: (10 × weight in kg) + (6.25 × height in cm) - (5 × age in years) - 161

Take that number and multiply it by...

Activity Multiplier

Sedentary: 1.2 *(little to no exercise)*
Lightly Active: 1.375 *(light exercise 1-3 days a week)*
Moderately Active = 1.5 *(moderate exercise 3-5 days a week)*
Very Active = 1.675 *(intense exercise 6-7 days a week)*
Extremely Active = 1.8 *(intense daily exercise and strenuous physical job)*

Calculator #3: Katch McArdle Formula

Katch McArdle is the most precise method of all when used properly since it takes into account the specific factor of lean body mass, which will result in a more accurate BMR reading. This is especially useful for those on the more overweight side, since the previous two methods will tend to over-estimate caloric needs if your body fat is quite high. The downside of this method is that it requires you to know your body fat percentage, which can be difficult to calculate accurately as we discussed in the previous section.

If you have had your body fat professionally tested (particularly if you've had a DEXA scan) or have a reasonable idea as to where you're sitting based on your own estimation, then you can use the following formula to calculate your BMR:

370 + (21.6 x Lean Mass in kg)

You'd then take the resulting figure and plug it into the same activity multiplier found in method #2 to determine your approximate calorie maintenance level.

Once again, lean mass simply refers to any type of body weight that is not fat. So, if you weighed 200 pounds at 25% body fat, you'd be carrying 150 pounds of lean mass and 50 pounds of fat.

Now that you have your estimated calorie maintenance level in place using one of the above methods, you'll then adjust this figure up or down to create either a calorie surplus for muscle growth or a calorie deficit for fat loss. Let's go over how to adjust for each one.

Calorie Surplus

You may have heard the phrase that you need to "eat big to get big", and while there is a certain amount of truth to this, most lifters who are just starting out and want to bulk up as quickly as possible end up taking it way too literally. Yes, you do need a calorie surplus in

place if you want to fully optimize your gains, but it's critical to understand that you can't "force feed" your body into gaining more muscle beyond a certain rate.

In other words, there's a set limit on how many excess calories your body can utilize over any given day for the purpose of building lean mass. Stuffing your face with more and more food is not going to magically speed up the process, and any calories you take in beyond a certain maximum threshold will simply be stored as fat.

The goal of proper muscle building nutrition is to consume *just enough* calories to optimize growth, and nothing more. That way, the maximum percentage of your calorie intake will be used for lean muscle growth, while the minimum amount will end up as body fat. This type of approach is referred to as "clean bulking" – creating only a small calorie surplus and focusing on quality lean gains while keeping body fat levels under control throughout the process.

This is a far superior approach in comparison to the commonly used method of "dirty bulking", where a large (and often totally unmonitored) calorie surplus is used and the lifter simply focuses on maximizing weight gain without any real regard for body fat levels. Not only does a large calorie surplus *not* improve your ability to build muscle at a faster rate (or at least, not to any significant degree), but it also increases the amount of time you'll need to spend dieting later on to get rid of the extra fat you've gained.

For example, if you were to put on 15 pounds of extra unnecessary fat during your bulking phase, that would mean anywhere from about 2-4 months of additional cutting once your bulk was over given a standard fat loss rate of 1-2 pounds per week. That's a significant amount of unneeded work you'd be creating for yourself, and it's also wasted time that you could have spent continuing to bulk and putting on muscle if you had just kept your calories under control in the first place. So, even if dirty bulking did allow you to build a very small amount of additional muscle from week to week, in the long run you'd still likely gain less in total since you'd have to spend a greater portion of the year cutting.

Let's also not forget that, as mentioned in the previous section, getting excessively fat during a bulk can also cause motivational issues if you become unhappy with how you look and feel midway through the process.

Bottom line?

By creating a smaller calorie surplus and keeping fat gains minimized, you'll still build muscle just as quickly (and probably even faster in the bigger picture), while looking and feeling better all year round, and maximizing the chances of sticking to your program over the long term.

How many calories should you consume above maintenance for a successful clean bulk?

The size of your calorie surplus partly depends on your experience level, since the longer you've been lifting and the more total muscle you've built, the smaller your overall muscle building potential will be and the fewer calories you'll require for optimal gains.

These are the approximate targets you can follow based on how many years of consistent, proper training you have under your belt:

Less Than 1 Year: 300 calories above maintenance
1-2 Years: 250 calories above maintenance
2-3 Years: 200 calories above maintenance
3-4 Years: 150 calories above maintenance
4-5 Years: 100 calories above maintenance

Keep in mind that no caloric figures are ever going to be 100% spot-on (nor do they need to be), but these are solid ballpark numbers that will work well in most cases as an initial starting point. Once you begin implementing your new daily calorie intake, you'll monitor the results from week to week to see how your body is responding and can then make potential adjustments if necessary. The details of how to do this properly will be covered in the progress tracking section found in chapter 8.

Calorie Deficit

When it comes to creating a deficit for fat loss, you'll be moving your calorie intake in the opposite direction and with a couple of key differences to take into account.

First off, unlike a calorie surplus where increasing its size beyond a certain point does not lead to more muscle growth, calorie deficits do increase fat loss in direct proportion to how large they are. The bigger your calorie deficit is, the faster you'll lose fat, and vice versa.

However, while large deficits (anywhere from around 700 up to as much as 1200 calories below maintenance depending on one's body weight) do allow you to burn fat at a faster rate, they're also a lot more difficult to maintain in comparison to a small to moderate sized deficit. As your deficit grows larger and larger beyond a certain point, you'll begin experiencing a variety of side effects that will make the diet far more difficult (if not impossible) to maintain over a prolonged period. This includes significant increases in hunger and cravings, decreased strength and energy, poorer mental performance, and lowered libido among other things. The combination of very low calories and weaker training performance will also make you more susceptible to muscle loss the longer you remain in that larger deficit.

It doesn't matter how effective your diet is in terms of objective fat loss – if it's simply too demanding to follow then you'll almost certainly burn out and quit before long. Not only will you stop losing fat, but there's a good chance that you'll re-gain most (if not all) of the weight you lost due to lasting hunger effects that cause you to over-eat in the weeks and months after the diet has ended.

For that reason, the goal in creating a proper calorie deficit is to find the right balance between both effectiveness and sustainability. In other words, it should be large enough to allow you to lose fat at a significant pace, but small enough that you're able to maintain it without excessive difficulty or the risk of post-diet binge eating.

What is a good middle-ground target that will allow you to achieve this and land in the recommended fat loss range of about 1-2 pounds per week?

For most people in most situations, a reliable figure to go by is 350-500 calories below maintenance. This is a big enough deficit to stimulate noteworthy fat loss from week to week, while maintaining (or possibly gaining) lean muscle and strength at the same time, and while doing so in a way that is maintainable over the long term.

Smaller deficits of below 350 calories will still result in consistent fat loss as well (technically speaking, any amount below maintenance will cause your body to burn fat to some degree), but come with two main downsides.

The first is the obvious fact that you won't see results as quickly. If you're already reasonably lean and only have a few pounds of fat left to lose then a smaller deficit can work just fine, however, those at a moderate to higher body fat level will often find the slower pace demotivating. After all, there's no reason to cut your progress down to half a pound of fat or less per week when you can comfortably lose at least a full pound or more by just going with a slightly larger deficit.

The second drawback is that there will be a larger margin for error in terms of caloric tracking. If you're only eating in a 200 calorie deficit, for example, small mistakes with food measurements or inaccurate caloric estimations when eating out can very quickly add up and potentially erase your deficit altogether.

To make a small calorie deficit work, you need to be very meticulous with your dietary tracking to a point that is usually not realistic for the average beginner. More advanced dieters can pull it off, but for novices (and even intermediates) it's usually better to give yourself more of a caloric "buffer" to account for potential tracking mistakes. You might think you're accounting for everything in your diet with perfect accuracy, but with so many individual foods choices and measurements taking place throughout the day, it's a lot easier to get it wrong than you might think.

It's also inevitable that you'll fall a bit off track with your diet and over-indulge at certain points (we're only human and this happens to even the most disciplined of dieters from time to time), and if your deficit is quite small then you could easily erase several days or even an entire week's worth of progress with a simple high calorie meal or two.

Although the intermediate and advanced caloric surplus figures outlined in the previous section do involve smaller amounts of only 100-200 calories above maintenance, calorie deficits are a different situation since there's the added element of hunger involved. When eating below maintenance, the chances of unconscious over-eating significantly increase (an extra scoop of food here, an extra small snack there etc.) and this makes a small deficit more difficult to accurately pin down in comparison to a small surplus.

To sum this up: more advanced trainees who are aware of the potential benefits and drawbacks can optionally go with a "fast cutting" approach (a large deficit of above 500 calories maintained over a shorter period) or a "slow cutting" approach (a small deficit of

below 350 calories for a longer period) if they have sufficient previous dieting experience in place to do so properly.

For the vast majority of people though – and especially beginners – a moderate approach of 350-500 calories below maintenance is an effective and sustainable figure to start off with. This amount will have you losing between 1-2 pounds per week on a consistent basis when combined with weight training and cardio (possibly slightly less if you're going with the lowest figure of 350 calories) and will give you a safer margin for error to account for potential calorie miscounting or accidental over-eating.

The upper figure of 500 calories below maintenance would be the recommended starting point for most typical fat loss dieters who are currently at a moderate to higher body fat percentage. With more total fat and body weight to lose, a 500 calorie deficit should be perfectly realistic to maintain while at the same time producing a weekly rate of fat loss that is large enough to keep motivation levels high. The deficit can optionally be reduced later on if overall hunger/energy levels are found to be a bit excessive, but 500 calories is a reliable deficit to begin with in the majority of situations.

Those at a leaner body fat percentage who only have a relatively small amount of fat to lose (around 10 pounds or so give or take) can optionally go with the lower end of 350 calories below maintenance. Going with the full 500 is still fine in this case if you'd rather drop the fat at a quicker pace, but just keep in mind that the leaner you are, the stronger your body's hunger response will generally be (as well as the other dieting side effects mentioned earlier) as you try to lean down further. A slightly smaller deficit can alleviate some of those effects, potentially allowing you to maintain your diet more easily as you lose those last few pounds of fat.

The downside of this approach is that the overall length of the diet will be increased, so the decision should be based on whether you'd prefer a slightly more difficult cutting phase that is over with faster, or a slightly easier cutting phase that requires a bit more time to complete.

In any case, you can use the calculations previously outlined to determine your initial calorie starting point for fat loss (keeping in mind that it's simply an estimate rather than a precise figure), and then use the progress tracking information in chapter 8 to learn how to adjust it up or down if necessary depending on how your body responds.

With your estimated caloric intake now in place for either bulking or cutting, you've taken the first (and most important) step toward structuring an effective daily eating plan. However, calories alone are certainly not the final word when it comes to proper nutrition. Net calorie balance is what will dictate whether you gain weight or lose weight overall, but is still not enough on its own to optimize body composition.

After all, 2500 calories from potato chips and ice cream is obviously not the same thing as 2500 calories from chicken breast, sweet potato and spinach. This is obviously an extreme example, but the point is that *where* you obtain your calories from matters as well. That's why the next step in the process is to take your total daily calorie intake and break it down into

the appropriate amounts of protein, carbohydrates and fats, and from the proper food sources.

In the case of a bulking phase, this will ensure that the majority of your weight gain comes in the form of lean muscle, with a minimal amount coming from fat. In the case of a cutting phase, it will ensure that the maximum amount of your weight loss comes in the form of body fat, while allowing you to maintain your lean muscle mass or possibly gain some.

Let's also not forget about the basic goals of optimizing physical and mental health, gym performance and longevity, all of which will be influenced by your specific food choices as well.

We'll start off by discussing protein.

PROTEIN

Protein is without a doubt the most "essential" of the three major macronutrients. Next to water, it's the most abundant substance in the body and can be found in every single one of the trillions of cells you are made up of.

Proteins are larger molecules that are composed of a chain of smaller components called amino acids. After protein is consumed and digested it will eventually be broken down into these individual amino acids to be used for literally thousands of different functions, such as hormone regulation, enzyme production, DNA replication, antibody formation and cell signalling just to name a few. Protein is also the main structural "building block" in the body that is used for the growth and repair of organs, skin, hair, eyes, and of course, muscle tissue. If your body were a house, think of protein as being the bricks.

Your body already requires a certain amount of protein for natural everyday processes, so your consumption must increase if you're training hard in the gym and are looking to maximize lean muscle growth. If you eat too little protein on a day to day basis, your body won't be receiving all of the amino acids it needs to construct the necessary muscle proteins for optimal gains.

Protein is also valuable from a fat burning perspective as well, since it has the highest thermic effect of any nutrient (you'll burn additional calories just from digesting the protein itself) and the strongest effect on satiety.

How much protein should you consume each day for optimal results?

While getting in sufficient daily protein is no doubt a key aspect of proper nutrition, most people way over-estimate how much they actually need. Although you will be consuming a "high protein diet" relative to the average sedentary person, you won't require nearly as much as what all those bodybuilding supplement companies trying to market their protein powders, meal replacements and "weight gainer shakes" may have led you to believe.

Just as there's a set limit on how many calories your body can utilize each day to build new muscle, the same thing holds true for protein. Just because *some* protein is good does not mean that more is automatically better, and consuming higher and higher amounts beyond a certain point is not going to provide any further muscle building benefit. It won't necessarily be harmful (higher protein diets do not adversely affect kidney or liver function in otherwise healthy individuals), but the excess will simply be oxidized for energy rather than contributing to additional muscle protein synthesis.

A wide variety of research has been conducted over the years on the subject of protein intake as it relates to body composition, and it appears that about 0.8 grams per pound of body weight daily is sufficient for producing optimal muscle building results. That would mean about 95 grams for a 120 pound person, 130 grams for a 160 pound person, and 160 grams for a 200 pound person – a far cry from the 1.5 or even 2 grams of protein per pound of body weight that are sometimes recommended.

Although the 0.8 gram figure will likely be enough for the vast majority of people, going slightly higher is still an option if you want to be 100% on the safe side and ensure that protein synthesis is being fully maxed out with virtually no chance for error. As an overall guideline, a safe and reliable figure for protein consumption that will optimize muscle growth and fat loss without going unnecessarily overboard would be anywhere between 0.8-1 gram of protein per pound of body weight daily.

Since protein needs are technically based on lean body mass, those carrying higher levels of body fat (above 18-20% for men and 25-27% for women) will be best off to calculate their needs based on the lower end figure of 0.8g/lb. Those most likely to benefit from the higher end of 1g/lb. would be leaner individuals (particularly when cutting), though this would still be a "just in case" type of approach and may or may not actually improve results to a noticeable degree. Of course, if you simply enjoy eating a bit more protein for the day based on personal preference, then bumping up your intake a bit for that reason is also fine.

That covers the question of protein intake, but what are the best food sources to derive your intake from?

There are two main factors that influence the overall quality of any specific protein source, the first being its amino acid profile. Certain protein sources contain higher concentrations of the "essential" amino acids (those that the body cannot manufacture on its own) which are more conducive to supporting muscle recovery and growth. The most important ones in this case are the branched-chain amino acids (l-leucine, l-valine and l-isoleucine), with particular emphasis on l-leucine since it is the primary "trigger" for muscle protein synthesis.

The second main factor when it comes to the quality of any given protein source is its bio-availability, which refers to the percentage of the amino acids that are actually absorbed and converted into usable proteins within the body. There are several different methods that are used for calculating this, including Protein Efficiency Ratio (PER), Biological Value (BV), Net Protein Utilization (NPU) and Protein Digestibility Corrected Amino Acid Score (PDCAAS). Knowing the ins and outs of each of these methods is not important, but the bottom line is that protein sources with a higher bio-availability will be superior on a per-serving basis than those with a lower bio-availability.

The highest quality proteins based on these two criteria are those derived from animal sources, such as eggs, poultry, beef, fish/seafood, pork and dairy products like milk, yogurt, cottage cheese and whey/casein protein powders, with each source providing varying amino acid profiles and absorption levels in the body. It's important to note, however, that while certain protein sources technically are superior on a gram for gram basis in comparison to others, this typically isn't something that needs to be worried about in the context of

sufficient total protein consumption for the day as a whole. This is because all proteins are ultimately broken down into individual amino acids, and your body only requires a limited amount of each specific one in order to fully elevate protein synthesis for the day. Once that maximum "cap" has been reached, consuming additional amino acids beyond that point won't produce further benefits.

In other words, if you're consistently eating somewhere between 0.8-1 gram of protein per pound of body weight daily, your requirements for all of the individual amino acids will typically be met automatically. For that reason, you can simply make your daily protein selections based on personal preference. Whether your primary sources are turkey and salmon, lean beef and egg whites or chicken and whey protein, it almost certainly isn't going to make any noticeable difference to your bottom line results in the overall picture as long as the total daily quantity is falling within the proper range.

The one exception to these protein quantity/quality guidelines applies to vegans or those who consume very little animal protein in general. Since most plant-based protein sources have a lower absorption rate in comparison to animal sources and will be lacking in at least one of the nine essential amino acids, sticking to the higher end of the daily protein range (closer to 1 gram per pound of body weight) from a wider variety of different sources (to ensure that all amino acid needs are being fully met) would be recommended for optimal muscle building results. Tofu, beans, lentils, chickpeas, edamame, green peas, tempeh, seitan, amaranth, quinoa, whole grains, meat substitutes and vegan protein powders are all good options to choose from.

The final question on the issue of proper protein consumption is in regards to protein timing (the number of individual protein servings that should ideally be consumed per day, and when), and this will be covered in the Meal Frequency & Timing section later in the chapter.

Before we get to that though, let's go over the other two macronutrients: fats and carbohydrates.

FAT

Back in the 70s and 80s, researchers claimed that dietary fat (particularly saturated fat) was responsible for a wide variety of health problems, including high cholesterol, heart disease and obesity. As it turned out, much of this was based on an incorrect interpretation of several flawed studies. In more recent years, extensive research conducted on low fat diets has confirmed that the original idea that "fat makes you fat" is nothing more than an outdated myth.

Despite the traditional recommendations of a low fat intake for improving fat loss and overall health, cutting fat consumption too low actually appears to have the opposite effect. Very low fat diets have been found to elevate blood triglycerides while lowering levels of good cholesterol (HDL), which in turn increases the risk of heart disease.

People on excessively low fat diets also tend to experience higher levels of hunger (making their diet harder to stick to), along with decreased mental well-being (greater anxiety and depression levels) than their higher fat counterparts.

There also appears to be a direct connection between adequate daily fat intake and improvements in body composition. This is primarily due to the role that dietary fats play in maintaining optimal testosterone levels, which is the most powerful muscle building hormone in the body. Consuming sufficient dietary fat (particularly the omega-3 fatty acids) also improves insulin sensitivity, increases activation of the mTOR pathway (a key activator of protein synthesis), reduces muscle catabolism and can even decrease muscle soreness and inflammatory joint pain.

Going too low on dietary fat is clearly not a wise idea, but what about going in the opposite direction? With the rise of various popular diets such as the ketogenic diet and other low carb variants, many people now consume very high intakes of fat as part of their bulking or cutting diet.

First off, it's important to keep in mind that the benefits of fat listed above are subject to diminishing returns the higher you go. Following the same theme as discussed in both the calorie and protein sections, just because "some is good" doesn't necessarily mean that "more is better".

For example, since dietary fat increases testosterone levels, many lifters mistakenly believe that eating more and more fat will bump those levels continually higher. However, this is only true up to a point, and once your daily fat intake has hit a certain threshold, consuming greater amounts won't increase testosterone levels further and lead to greater muscle growth.

The same thing holds true for fat loss. Despite the fact that some people are able to lose fat successfully while following a high fat diet, this isn't due to any special fat burning benefits associated with eating very large amounts of fat in and of itself. The data has shown that consuming a higher percentage of calories from fat does not lead to greater net fat loss beyond a limited point, and that very high fat eating plans (such as a ketogenic diet) do not produce any unique metabolic advantages.

For some individuals, a high protein/high fat approach is simply more effective at controlling appetite, which can then lead to better overall dietary adherence, at least in the short term. However, this is a highly individual thing, and for many others (in fact, for most others), very high fat diets that heavily restrict carbohydrates are generally not sustainable in the long term. They may work for a short while, but due to the extreme nature of the diet, they can only be maintained for a few weeks or months before being abandoned in favor of a more practical, balanced approach.

On top of this, the jury is still out in regards to the general health effects of consuming very high amounts of fat over a prolonged period. So, even if a very high fat diet did help you maintain a calorie deficit more easily by regulating cravings, it still may not be a worthy trade-off if it potentially puts your health at risk.

For most people in most situations, neither under-consuming nor over-consuming fat will be the ideal approach. "Extreme" diets that go very high on certain macronutrients while significantly restricting others are usually not realistic in the real world, and as with most things, a healthy middle ground is usually best.

As an general guideline that will work well for the majority of trainees, deriving about 25% of total calories from fat is a safe and effective daily figure to aim for. This will provide you with all of the muscle building, fat burning and overall health benefits that dietary fats have to offer while still leaving plenty of room for sufficient protein and carbohydrate intake. The precise gram amount doesn't need to be 100% exact (this is just an approximate figure), and landing somewhere roughly around this amount will be fine.

Going a bit higher is acceptable if you prefer it (up to about 30%-35%), but you shouldn't be going any lower than 20% as a minimum.

To calculate your daily fat intake, just take your total daily calorie intake and multiply it by 0.25 (this will give you the total number of calories to consume from fat) and then divide it by 9 (since fats contain 9 calories per gram) to get the actual gram amount.

For example, let's say your daily calorie intake was set at 2700. First you'd multiply this by 0.25, giving you 675 daily calories in the form of fat. From there, divide 675 by 9, giving you 75 grams of fat per day to consume.

Now that you have your daily fat intake set, let's go over the four main types of fat you'll be consuming with a brief rundown of each.

<u>Saturated Fat (SFAs)</u>

Saturated fats are often given the blame for a wide variety of health problems, with some people recommending that their intake be fully minimized as much as possible. On the other hand are those who take the opposite approach by claiming that saturated fat is completely harmless and can be consumed in whatever amount an individual pleases. As with most questions related to proper nutrition, the best answer tends to lie somewhere in the middle.

Without going into too much detail, the term "saturated fat" actually refers to a variety of fatty acids (palmitic acid, lauric acid, stearic acid etc.) each of which have differing effects in the body, some potentially more negative or positive than others. For that reason, using the blanket term "saturated fat" is not entirely accurate in the first place.

In addition, the specific effects that these fatty acids exert depends at least in part on the relative health and fitness of the individual. Those who are lean, active and eating a nutrient-dense diet don't seem to respond negatively to higher saturated fat intakes, while those who are overweight and follow a generally unhealthy lifestyle see much more pronounced effects on things like blood lipids and cholesterol levels. Saturated fat is also necessary for optimal testosterone production, so trying to completely limit it is not going to be a wise idea.

Examples of foods higher in saturated fats are animal meats, egg yolks, dairy products and coconut.

The bottom line here is that saturated fat is neither inherently "good" nor "bad", and if you're training consistently and eating a minimally processed, nutrient rich diet, it probably isn't something you need to specifically worry about as long as you're keeping things within reasonable moderation.

Monounsaturated Fat (MUFAs)

Monounsaturated fatty acids are most well-known for their cardiovascular benefits. It's believed that at least part of the health benefit of Mediterranean diets is due to the inclusion of large amounts of olive oil, which provides oleic acid (the primary monounsaturated fat) and is associated with a variety of positive health effects.

Monounsaturated fats can be found in high concentrations in avocados, nuts/nut butters, olives, seeds, and in plant oils such as olive oil, avocado oil, hazelnut oil, macadamia nut oil, safflower oil and almond oil. Aim to get in 1-2 servings of these healthy fats as part of your total fat intake each day.

Polyunsaturated Fatty Acids (PUFAs)

Unlike monounsaturated fats and saturated fats (which are technically not needed for basic survival), polyunsaturated fats are the "essential fats" that must be consumed in adequate amounts from your diet in order to prevent deficiency and serious health consequences.

The two main types of polyunsaturated fats are the omega-3 and omega-6 fatty acids, with the optimal ratio between the two (the one that humans ate throughout most of our evolution) landing somewhere between 1:1 and 1:4. However, modern diets have skewed this ratio significantly, with the average consumption now landing somewhere between 1:15

and 1:17 in favor of omega-6's. This is due to the much higher omega-6 content found in the current food supply as well as the very low level of omega-3's found in most typical diets.

Excessive intakes of omega-6 fatty acids have been associated with increased levels of inflammation and are often pointed to as a contributing factor in many modern diseases, though the research in this area is still mixed and inconclusive.

One thing is for certain though, and that is that the increased consumption of omega-3's virtually always leads to better health outcomes in a variety of important areas, such as improving cardiovascular health, lowering blood triglycerides, reducing blood pressure, boosting the immune system and improving mental health, just to name a few. In fact, a study by The Harvard School Of Public Health found that omega-3 deficient diets are the sixth highest killer of Americans, causing up to 96,000 preventable deaths every single year.

If there's one key point to take away from this section regarding the various types of fat, the importance of consuming adequate omega-3's as part of your diet would be it. Specifically, it appears that the omega-3 fatty acids EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid) are the ones of particular benefit.

Unfortunately, although The American Heart Health Association recommends consuming 1 gram of combined EPA/DHA daily (with some research showing benefits up to as high as 6 grams daily), the average Westerner takes in just 10-20% of that amount.

The best way to ensure adequate consumption of EPA and DHA is by consuming a few servings of fatty fish per week (salmon, mackerel, cod, herring, tuna, anchovy and sardines are all great sources) and/or by supplementing with a high quality fish oil, a topic we'll discuss in more detail in the supplementation section.

Certain plant based sources such as flaxseeds and nuts do contain a good dose of omega-3's as well, however, these provide ALA (alpha-linolenic acid) which has a very poor downstream conversion into EPA and DHA (as low as 5-10% in some cases).

Trans Fats

Last on the list are trans fats. These are created when vegetable oils undergo a process called hydrogenation (where hydrogen is bubbled through the oil) in order to partly solidify it and increase its shelf life – a method that works out great for food manufacturers, but not so great for consumers.

This is because when vegetable oils are hydrogenated, their chemical structure is changed into a form that the body is not properly equipped to deal with. Excessive trans fat consumption is tied to a wide variety of possible health problems, including increased inflammation, heart disease, depressive symptoms and insulin resistance.

Foods high in trans fat include processed baked foods like cakes, pies, cookies, donuts, muffins, margarine, fried fast foods, frozen pizzas and microwaved meals. Although many of these items will be listed as "0 grams of trans fat" on the nutrition label, keep in mind that any item containing less than 0.5 grams can technically be labeled as trans fat free.

There isn't really much debate on the issue here – trans fats have no benefits at all to humans and are purely negative from a health standpoint. This is not to say that "treat foods" such as those listed above must be totally avoided, but just be aware that foods containing higher concentrations of trans fat should be kept under limits if optimizing overall health is important to you.

The American Heart Association recommends no more than an average of 2 grams of trans fat per day.

CARBOHYDRATES

That leaves us with the final macronutrient of the three, and typically the most misunderstood one as well. Once fat was vindicated of its previously misguided label as an unhealthy "fat storing" nutrient, carbohydrates became the new enemy.

From the 90s onward, a whole slew of different low carb dieting approaches and "anti carb" advice began to take over. Eat that piece of fruit, bowl of oatmeal or serving of potatoes, and the body will supposedly be forced into "fat storing mode", insulin levels will skyrocket, and leaning down will become extremely difficult if not impossible.

The reality?

If you're otherwise healthy and are following a consistent training program, cutting your carbohydrate intake to very low levels will probably do you more harm than good when it comes to building muscle, losing fat and optimizing physical and mental performance.

Carbohydrates are the preferred source of fuel for the body and provide energy to your muscles and brain throughout the day. Consuming sufficient carbohydrates will keep glycogen levels full (glycogen is the stored form of carbohydrate found in the muscles and liver), allowing you to train at your full strength and endurance capacity in the gym. This applies not only during weight training and cardio workouts, but during any physically strenuous activity in general.

Keeping glycogen levels high will also give your muscles a fuller and more "saturated" appearance as opposed to the flat and "deflated" look that often accompanies low carb intakes.

In addition to this, heavily restricting carbohydrate consumption can also lead to reduced testosterone levels, increased appetite (due to lowered levels of leptin and serotonin), and higher cortisol levels leading to increased stress and anxiety.

Why all the fuss about carbs then?

Most of the claimed "fat storing" effects of carbohydrates revolve around the hormone insulin. Insulin is produced in the pancreas and is released into the bloodstream any time you consume carbohydrates, signalling the cells in bodily tissue to absorb the nutrients.

When insulin is released, it essentially tells the body to stop burning fat and to instead use the incoming food for energy while storing the excess. As the nutrients are absorbed, insulin levels gradually fall back to baseline until you eat again. So yes, technically speaking, insulin does cause the body to "store fat". This allows it to create energy reserves for later use, since

fat is essentially just a stored form of fuel. The process of fat storage is a completely natural evolutionary mechanism that is critical to health and survival.

However, this does not mean that insulin itself *makes you* fat. Although insulin is what actually shuttles the food you eat into your fat cells, your total net gains or losses in body fat will still be determined by *how much* food there is to store or not store. In other words, it still comes down to net energy balance in the overall picture, or how many calories you consume versus how many you burn for the day in total.

The key thing to understand here is that fat loss is not merely an "on/off switch". Rather, fat loss and fat gain are both happening simultaneously to a certain degree all throughout the day. Some fat is always being stored (particularly after you eat and while you're at rest) and some fat is always being liberated for use as energy (particularly in between meals and during exercise).

Over the course of the day as a whole, it's the total amount of fat stored minus the total amount of fat burned that will determine your bottom line results. As long as you're remaining in a net calorie deficit, you'll continue to lose body fat consistently without needing to specifically worry about keeping insulin levels low.

Insulin doesn't just act on fat tissue either – it's also responsible for transporting nutrients into muscle cells where they're needed for facilitating recovery and growth, and where they can be stored as glycogen for later use.

Another often overlooked point is the fact that carbohydrates are not the only nutrient responsible for insulin release. Proteins stimulate insulin release as well, and in some cases to just as high a degree as carbohydrates do. For example, beef has an insulin score of 51, which is around the same as that of brown rice or brown pasta. Fish measures even higher at about 59, similar to an apple or orange. Whey protein is also highly insulinogenic.

If insulin really were the primary cause of fat storage and needed to be minimized in order to lean down successfully, not only would a low carb diet be mandatory, but you'd also have to significantly reduce your protein intake as well.

Why then do some people report having a high degree of success after following a low carb approach?

In most cases the answer is pretty simple: carbohydrates contain calories, and anyone who decides to heavily restrict an entire macronutrient will generally end up decreasing their total calorie intake as a result. It's not the reduction of carbohydrates themselves that led to improved fat loss, but simply the reduction in total calories.

Another consequence of restricting carbohydrates is that protein consumption will naturally tend to increase, and since protein is the most satiating of the three macronutrients, this often leads to better appetite control in those who were consuming a lower protein diet to begin with. Protein also has the highest thermic effect of any nutrient (it burns the most calories during digestion) and of course aids in building muscle, leading to even more calories burned over the course of the day.

Take a person who regularly consumes moderate to high amounts of calorically dense refined carbohydrates (muffins, bagels, pastries, granola bars, sweets, sugary drinks etc.) and replaces them with lean protein and vegetables, and it's no surprise that the weight finally begins falling off.

Those who swear by low carb diets are often confusing correlation with causation – they lost fat due to decreasing their overall calories and achieving greater appetite control – not because carbohydrates are an inherently "fat storing" macronutrient in and of themselves.

In any case, the bottom line is that unless you have a very specific reason for doing so (such as being severely overweight and struggling with insulin resistance), there's no need to go out of your way to reduce your carbohydrate intake. Those who have previous experience with low carb diets and prefer them for whatever reason can optionally stick with it if they'd like, but the majority of people will perform best on at least a moderate carb intake and will be able to maintain their diet more easily that way as well.

How many carbohydrates should you consume each day?

Simple: whatever calories are left over after your protein and fat intake have been set.

To calculate this, just take your protein intake in grams and multiply it by 4 (since protein contains 4 calories per gram) and your fat intake in grams and multiply it by 9 (since fat contains 9 calories per gram). Add those two numbers together, and then subtract it from your total daily calorie intake to find the total number of calories that should be allotted to carbohydrates. Since carbs contain 4 calories per gram, you'll then divide that figure by 4 to get the total grams of carbohydrates to consume.

Of your total daily carb intake, you'll also want to ensure that an adequate portion is being derived from fiber. Although fiber itself is not an essential nutrient (meaning you can survive without it), it does perform a variety of important jobs in the body such as moderating appetite, lowering blood cholesterol levels, normalizing bowel movements and even reducing the risk of various cancers.

The average fiber consumption in the US for adults currently lands around 15 grams per day, an amount that falls quite a bit below the proper intake needed for optimal health. The guideline given by The Institute Of Medicine and the figure that should ideally be aimed for is to consume about 14 grams of fiber for every 1000 calories eaten.

Fortunately, if you're eating a well balanced diet and are obtaining the bulk of your daily carbohydrates from the proper sources, your fiber needs will typically be met automatically without the need to specifically track it. In any case, it is something to take into consideration if your current fiber intake is falling on the lower end.

That leads us to the next question: what are the "proper sources" that your daily carb intake should be derived from?

Although this is another topic surrounded by a ton of confusion and misleading information (with recommendations varying all over the map), it's actually quite simple and straightforward in the practical sense.

Dietary carbohydrates are broken down into three major categories.

The first are "monosaccharides": carbohydrate sources that contain just a single sugar molecule. Examples are glucose, fructose and galactose.

The second are "oligosaccharides": carbohydrate sources that contain a chain of 2-10 sugar molecules. Examples are sucrose (glucose + fructose), lactose (glucose + galactose) and maltose (glucose + glucose).

The third are "polysaccharides": carbohydrate sources that contain a chain of several hundred to several thousand sugar molecules. These are typically referred to as starches.

Regardless of which type of carbohydrate you consume, it will eventually be broken down into glucose, which is the simplest and most preferred form of energy for the muscles and brain. (A small percentage also ends up as fructose which is metabolized by the liver). Whether it's a banana, bowl of rice or a chocolate bar, the final product is ultimately the same – it all ends up as glucose in the end. In that sense, "a carb is a carb" no matter which food source it comes from.

This leads many people to ask the question: "if a carb is a carb, why can't I just hit my protein and fat needs for the day and then use ice cream, cake and cookies to fill up all of my carbohydrate macros?"

The reason for this is that although the majority of carbohydrates themselves are ultimately broken down into glucose, the foods they're "packaged up in" are not the same in terms of their nutritional content. Some carbs are found in high fiber, micronutrient dense foods such as fruits, vegetables, oats, potatoes, beans, whole grains etc., while some are found in less nutritionally dense, lower fiber foods such as typical "sweets" and other highly refined carb sources.

It's not the carbohydrates themselves that are the main cause for concern; it's all the "extra stuff" they either do or don't come with. You can't sit around eating processed, nutritionally void carbohydrate sources all day and expect to maximize your muscle growth, fat loss, energy and health, since you'll miss out on the valuable vitamins, minerals, phytonutrients and fiber your body needs for optimal functioning.

For example, consume 50 grams of carbohydrate in the form of sweet potato and you'll also be getting a good dose of vitamin A, vitamin C, B vitamins, potassium and fiber, whereas those same 50 grams of carbs in the form of candy and soda would deliver next to nothing in terms of additional nutrition.

This is why the bulk of your carb intake should ideally come in the form of minimally processed, higher fiber sources. These foods will provide your muscles and brain with the

carbohydrates needed to fuel your workouts and other daily activities, while also delivering the additional micronutrients needed for optimal health, recovery and performance.

Here's a good sample list of healthy carbohydrate sources that fall into this category…

Vegetables (all types)
Fruits (all types)
Oats
Potato/Sweet potato
Yams
Rice
Beans
Lentils
Quinoa
Couscous
Pasta
Pita
Whole grain bread
Whole grain cereal

Regardless of what specific combination of sources you use to meet your daily carb intake, one important guideline to incorporate is to consume at least 2 servings of vegetables and 1-2 servings of fruit per day. This would be the minimum amount, and if you can get in more then that's even better. Vegetables and fruits are especially micronutrient dense (as well as being a good source of fiber) and will help to ensure that all of your daily vitamin and mineral needs are being fully met.

One final issue that often comes up on the topic of carbohydrate selection is in regards to the glycemic index, which is a chart that rates foods from 0 to 100 based on how quickly they raise blood sugar levels after they're consumed. It's commonly recommended that people stick to "slow absorbing carbs" as opposed to "fast absorbing carbs" in order to keep blood sugar levels steady and prevent excess fat storage.

To put it simply, this isn't something you'll need to concern yourself with if you're otherwise healthy and are eating a balanced diet consisting mainly of higher fiber, minimally processed carb sources.

First off, the glycemic rankings of different carbohydrate sources are based on consuming them alone in a fasted state. You'll rarely be eating carbohydrates in isolation in a fasted state, and when you consume them as part of a complete meal with protein and fat added in (or when there's already food in your stomach), the absorption speeds are significantly altered.

Secondly, even if a "fast absorbing" carbohydrate did end up as stored body fat at a faster rate in comparison to a slower absorbing one (since the body won't be able to use all of it right away), this still won't negatively affect fat loss or fat gain for the day as a whole. It

makes no difference to your overall body fat levels if your carbs are stored now and burned later, or if they're burned immediately without being stored at all.

Total calorie intake versus total calorie expenditure is what will ultimately determine your net gains or losses in body fat over the course of 24 hours – not the "speed" of the carbs you consume. As long as you have a proper calorie deficit in place in the big picture, any dietary carbohydrates that are stored as fat will eventually be broken down for use as energy later on when they're needed.

When it all comes down to it, just focus on obtaining the bulk of your carbs from minimally processed, higher fiber sources such as those listed above, get in your veggies and fruits for the day, keep your total carbohydrate intake roughly around the prescribed level, and you'll be all set from there without the need for further unnecessary analysis.

WATER

In addition to consuming adequate amounts of protein, fat and carbohydrates each day, sufficient water intake is another aspect of a proper diet that shouldn't be overlooked.

The human body is comprised of roughly 60% water (with the brain and muscles being made up of 70-80% water) and every single system in your body requires it to function properly. Water plays an important role in digestion, detoxification, temperature regulation, cognitive function, nutrient transportation and absorption, kidney function and immunity among other things.

Aside from its overall health benefits, drinking enough water each day also has a direct effect on your ability to build muscle, burn fat and perform at your best in the gym. Not only will fully hydrating your muscle cells cause your physique to appear fuller and more defined in general, but it will also keep your strength and endurance levels maximized as well.

Research has shown that being even slightly dehydrated can decrease physical performance significantly, and always entering the gym in a fully hydrated state is one of the simplest things you can do to optimize the quality of your workouts. Since water intake also appears to have direct effects on mood and concentration, this may also have some positive carry over to your weight training and cardio sessions as well.

On top of all of this, water also plays a role in reducing the risk of injury by lubricating the joints and forming a protective "cushion" around them. Heavy weight training can undoubtedly subject your joints and connective tissues to quite a bit of wear and tear over time, and proper water intake can help to alleviate some of that stress.

Lastly, consuming adequate water each day can also help to reduce excess subcutaneous water retention (fluid that is stored directly beneath the skin), which will give your body a slightly harder and more defined appearance. When water intake is restricted, the body reacts by retaining a greater amount of fluid as a natural defence mechanism. A consistent intake of water throughout the day will have a natural "flushing" effect since the body will have no incentive to hold on to that additional fluid given the sufficient external supply it's receiving.

How much water should you consume each day?

You'll hear many different recommendations on what the "ideal" daily water intake is, such as "8 glasses", "half an ounce per pound of body weight", or the simple round figure of one gallon. The problem with these set guidelines is that proper water intake can vary significantly from person to person depending on a variety of factors.

Aside from differences in total body weight, the amount that an individual sweats throughout the day also plays a very important role. The more you sweat, the more water you'll need to drink to replace your losses, and this can add up to a very large amount over the course of 24 hours for some people.

The amount that you sweat will be influenced by several things, including your training frequency, intensity/duration of your sessions, activity level outside the gym and the type of climate you live in. A person who lives in a hot climate and trains six days per week is almost certainly going to require far more water than someone who trains three days per week and works a desk job in a cooler climate, even if those two individuals weigh the same.

The simplest way to gauge your water intake effectively is by looking at the color and smell of your urine throughout the day. If it's reasonably clear and odorless most of the time, this is a pretty good indication that your body is adequately hydrated. Whether it requires two and a half, four or six liters daily for you to reach that point, that's totally fine since it ultimately just comes down to the individual.

Once you've made the conscious decision to drink more water and have experimented with your intake over the course of a few days, you'll pretty quickly find out specifically how much you personally require. You might find yourself running to the bathroom quite frequently in the beginning, but this is partly due to excess water retention being flushed out and you'll find that your body adapts to the increased amount over time.

You can start your day off on the right foot by getting in around half a liter (two cups) of water fairly soon after waking. From there, just do the best you can to keep your intake relatively steady throughout the rest of the day. Taking a water bottle with you can also be a big help with this, as it will serve as a reminder and keep you accountable if you're continually forgetting to drink. It will also give you a concrete visual of exactly how much water you've been taking in at different points in the day.

Any type of liquid will ultimately count towards your daily water intake, whether it be pure water, juice, milk, zero calorie drinks, coffee, tea or anything else. Contrary to popular belief, caffeine is actually not an overly powerful diuretic, and caffeinated beverages still have a net positive effect on your hydration status. The only exception here would be drinks that are high in alcohol content, as those will have a dehydrating effect when consumed.

One word of caution to keep in mind though is that it's generally not a good idea to be consuming large amounts of calorie-containing beverages as a way of meeting your daily water needs, even if those drinks seem "healthy".

The calorie content of things like juice, sugary smoothies or sports drinks will add up very quickly if you aren't careful, since they're very easy to consume and don't satisfy hunger in the same way that solid foods do. Just a few glasses of these types of drinks can easily represent several hundred calories or more and can shoot your daily totals to an excessively high level without you even realizing it.

A controlled amount of these drinks is fine as long as you take the calories into account, but the majority of your intake should be in the form of regular plain water and other zero-

calorie options, especially while in a cutting phase where appetite control becomes especially important.

TREAT FOODS

If you're looking to optimize your muscle gains, fat loss, strength increases and overall health, there's no question that the bulk of your diet should be based around minimally processed, nutrient-dense whole foods the majority of the time. This will provide you with the proper balance of macronutrients, vitamins, minerals, fiber and phytonutrients needed to support optimal functioning, recovery and performance both in and out of the gym.

However, this certainly doesn't mean that these are the *only* foods you can eat if you want to get into great shape or that you must follow a "100% clean" diet at every single meal, 24 hours a day, 7 days a week.

You might think that the lean, muscular, in-shape person next to you at the gym is sitting around eating nothing but plain chicken breasts, brown rice and salads all day long, but this is virtually never the case in the real world, nor does it need to be. As long as you exercise some reasonable moderation and properly track things, you most definitely can build muscle and lose fat effectively while still indulging in your favorite higher fat/higher sugar foods from time to time as well.

One highly important nutritional mindset to develop is the understanding that your body does not view your diet within the context of individual food items. For example, one chicken breast, one cup of rice and one bowl of ice cream are not seen as separate entities. The body doesn't say "that's a chicken breast", "that's rice" and "that's ice cream". In addition, it doesn't say "those first two items are healthy" and "that last item is unhealthy". All the body really sees here is 44 grams of protein, 90 grams of carbs, 16 grams of fat, as well as an assortment of fiber and micronutrients all mixed together as one single mass of food.

A common theme that will be continually hammered throughout this manual is the fact that proper muscle building and fat loss nutrition is primarily a "big picture" game. It's not about any one single food, meal or day of eating – it's about your overall habits in the larger scheme. If you're eating an otherwise "clean" diet the majority of the time and then head out for a few slices of pizza with some friends, it's not as if a giant red light begins flashing within your body, fat storage goes into overdrive and your health instantly plummets.

Rather than labelling individual food items as "good" or "bad", it's far more accurate and useful to look at your overall diet as a whole and label *that* as "good" or "bad". The pizza only represents a small portion of your total nutritional intake for the day and week, and as long as it fits into your calorie and macronutrient targets in the larger scheme, you'll still be eating what would be considered a "good" diet even with it included in moderation.

Not only that, but your bottom line muscle building and fat burning results won't be negatively affected either. If your goal is to lose fat, you'll still be able to lean down just as

effectively even if some higher calorie treat foods are included so long as you're continuing to maintain a net calorie deficit. In the case of a bulking phase, just make sure that those additional high calorie items aren't pushing you above your total calorie surplus target for the day, and there won't be any need to worry.

This topic is always a reminder of the story of Mark Haub (professor of human nutrition at Kansas State University), who wanted to prove this by sticking to a diet consisting mainly of processed junk food such as Twinkies, Nutty Bars and powdered donuts (and simply focused on maintaining a calorie deficit instead) and ended up losing 27 pounds in ten weeks while improving all of his blood health markers at the same time. This is certainly not the type of diet that would be recommended for anyone to follow, but it does hammer home the key point that net calorie balance really is the ultimate bottom line in regards to total weight gain and weight loss.

Also keep in mind that despite their higher fat and sugar content, most typical treat foods still do contain usable macro and micronutrients nonetheless. So, unless we're talking about an item that truly is pure empty calories (such as soda or candy), you'll still get some nutritional benefit from these foods regardless and it's not as if every single calorie is a complete waste.

Exactly how much "treat food" is okay to include as part of your diet?

A reasonable guideline would be to have around 80-90% of your diet comprised of healthy, nutrient dense whole foods (lean proteins, high fiber/minimally refined carbs and healthy fats), and the remaining 10-20% from whatever foods you'd like assuming it fits into your daily calorie and macronutrient totals.

The "clean" 80-90% will ensure that your nutritional needs are being met in terms of optimizing muscle growth, fat loss, recovery and general health, leaving you with 10-20% of your daily intake to play around with however you'd like. For example, if you were consuming 2500 calories daily, you'd want 2000-2250 of those calories to be derived from nutrient dense whole foods, and you could then allot the remaining 250-500 calories to whatever foods you felt like.

This doesn't have to be distributed on an exact day to day basis either. If you'd prefer to stick with cleaner foods for a couple days or more at a time and then indulge with a higher percent of treat food over a shorter period, that's fine as well. The basic idea is to just make sure that in the overall picture you're landing somewhere around that 80-90%/10-20% breakdown.

This is a much more realistic, practical way of eating for most people and will maximize your chances of long term consistency by improving the enjoyment of your diet and ensuring that you don't feel excessively deprived or restricted. Remember, fitness is not a "12 week program" – it's an ongoing way of life that you'll be following for decades to come.

This is also why it's best to avoid the terms "cheat meal" or "cheat food" to describe this type of approach, since they imply that you're doing something "wrong" or outside of the

rules. Sure, if you're consistently over-indulging in these types foods and this is causing you to over shoot your calorie targets on an ongoing basis, "cheating" on your diet might be an appropriate way to label it. However, if the bulk of your diet is coming from otherwise healthy foods and you're simply treating yourself in moderation while staying within your caloric limits, it's nothing to feel guilty about nor will it impede your progress in any noticeable way.

All that said, there are two important caveats that should be mentioned here. The first is that, for some people, certain high sugar/high fat items can end up acting as "trigger foods" which then spill over into episodes of excessive over-eating.

If you're someone who finds that two cookies almost always ends up as four, and then six, followed by a variety of other high calorie foods thrown in against your better judgement, you'll probably be best off to reduce your treat food allotment to a lower percentage figure. Or, you can even go the route of completely abstaining from certain foods altogether, at least for a temporary period until you're able to get a better handle on your cravings.

Secondly, keep in mind that foods like cookies, chocolate, pizza, burgers etc. are incredibly energy dense, meaning they pack a very high number of calories into a relatively small volume of actual food. Although they do provide a nice element of psychological satisfaction due to their taste, they won't go nearly as far in the way of physically filling you up since you can only eat a smaller amount before you end up going overboard on total calories.

This is usually not a big issue for those who are bulking (in fact, it can actually help in some cases if you're having trouble getting in all of your required calories for the day), but those who are eating in a calorie deficit can sometimes run into issues with hunger if they allot too many calories toward these sorts of foods.

For example, a Starbucks chocolate chip muffin contains 440 calories in only 115 grams of actual food, whereas a full plate containing 125 grams of chicken breast, 200 grams of sweet potato and 300 grams of mixed vegetables equals out to the same calorie total. That means you're getting more than five times the food volume for the same number of calories if you were to go with the "cleaner" meal of protein/carbs/veggies rather than the muffin.

So, when incorporating treat foods into your diet, make sure to take this into consideration and aim to strike a good balance for yourself in the overall picture. This means hitting your total calories for the day and allowing a small amount of treat food in the mix if you desire, but also ensuring that your diet contains enough total "bulk" to keep you feeling full and satisfied throughout the day.

ALCOHOL

Another topic that should be addressed while we're on the subject of "treat foods" is in regards to alcohol consumption. Since it's not a protein/carb/fat (alcohol is technically its own macronutrient) and is usually viewed as being entirely detrimental to a fitness plan, many people aren't sure how much (if any) alcohol is okay to consume, or how to properly track it as part of their intake.

The truth is that, in the same way that a moderate amount of higher fat/higher sugar food is fine to eat if the calories are taken into account, a moderate amount of alcohol is also acceptable and won't impede your results as long as you keep it within reasonable limits.

As with most things in life, the devil is in the dosage rather than in the actual substance itself. Just because you're trying to build muscle and lose fat doesn't mean that going out and having some social drinks with your friends is off limits, or that a glass of wine or a beer or two is going to somehow stop your progress dead in its tracks.

As a general guideline, the equivalent of 1-2 standard drinks per day for a male and about half that amount for a female (or a larger number consumed less frequently but averaging out to around the same figure for the week) shouldn't be a cause for concern in terms of its effects on overall muscle growth and fat loss.

Contrary to popular belief, alcohol does not significantly lower testosterone levels unless a very large amount is consumed (even then the effect is temporary), nor does it significantly decrease protein synthesis or impair recovery after a standard moderate volume workout.

In fact, studies have shown fairly consistently that moderate drinkers actually live longer on average than non-drinkers (key phrase there being "moderate"), and that small amounts of alcohol can have a protective effect against a fairly wide range of diseases.

Just make sure to take the calories of your alcohol-containing beverages into account in the same way you would for any other food or drink item, and then subtract it from either your carbohydrate calories or fat calories for the day, or from a combination of both.

For example, if you consumed an alcoholic beverage containing 100 calories, you could subtract 25 grams of carbs from your daily intake since carbohydrates contain 4 calories per gram. Another option would be to reduce your fat intake by 11 grams, since fats contain 9 calorie per gram. Or, you can go the middle ground route with half from carbs and half from fat. None of this has to be perfectly spot on, but the bottom line is to simply add the alcohol calories in and subtract an equal amount from your regular diet while leaving your protein intake the same.

Also keep in mind that alcohol is fairly energy dense at about 7 calories per gram, and since those calories are consumed in liquid form and won't provide anything in the way of hunger

satiation (alcohol often has the opposite effect and increases appetite), it's quite easy to go overboard if you aren't staying mindful of your consumption.

This is especially true during a cutting phase when you have fewer calories to work with and where ingesting a high number of calories in liquid form is virtually never a good idea outside of once-in-a-while occasions. Alcohol is not inherently "fattening" in and of itself, but the total calories can add up very quickly, especially if you're consuming higher calorie drinks such as beer or are combining hard alcohol with sugary mixers.

If you are planning to enjoy a social night out where you'll be having more than just one or two drinks, you can "minimize the damage" by sticking with lower calorie options such as dry wines or spirits mixed with low calorie or zero calorie liquids.

If you're someone who is prone to over eating after having a few drinks, another strategy you can use is to lower your calorie intake earlier on in the day in order to "save up" some calories for later. This will create a "calorie buffer" to help you stay within your daily limits (or at least not go too far above them) if you do end up feeling quite hungry toward the end of the night. Do keep in mind though that if social drinking is something you do fairly rarely and if your diet is otherwise on point most of the time, letting loose once in a while and enjoying a higher calorie day without specifically tracking things is really no big deal in the grand scheme.

Most people probably don't need to be told this, but you'll also want to make sure to drink plenty of water throughout the evening as well as before going to sleep. Alcohol is very dehydrating, and making an effort to increase your water intake will go a long way in helping you to recover more quickly afterwards.

Drinking to get drunk is obviously not the best thing for you in terms of general health, but the effect from a pure muscle building or fat burning perspective would be minimal if it's only being done once in a while (no more than about twice per month) and if your overall program as a whole remains otherwise on track.

If you allow alcohol consumption to interfere with the consistency of your training and nutrition in the big picture, then there shouldn't be any surprise that your progress will be impeded in some way. If a night out of drinking causes you to significantly over eat in the hours and days that follow, skip workouts and/or damages your focus and motivation, then obviously it's something you'll need to carefully moderate or even abstain from altogether.

Every person is different, so you'll need to weigh out the benefits and drawbacks for yourself and decide exactly how alcohol consumption will be worked into your diet and lifestyle, if at all.

MEAL FREQUENCY & TIMING

The next step in mapping out your complete nutritional plan is in figuring out how to properly combine and distribute your meals throughout the day in terms of frequency (how often to eat) and timing (when to eat). An endless number of different meal frequency and timing strategies have popped up over the years, all claiming to have some special "secret" for daily calorie and macronutrient distribution that will produce dramatically better results in comparison to anything else.

The standard piece of advice in bodybuilding and fitness circles for many years was to consume "six small meals a day" spaced out every 2-3 hours, as it was claimed that this would keep the body in a permanent anabolic state and maximize the fat burning metabolism all around the clock. Things then moved in the opposite direction with the increased popularity of intermittent fasting, where no food is consumed for 16 hours of the day followed by a shorter "feeding window" where all calories (usually two large meals) are eaten. Others go somewhere in between with three or four moderate sized meals per day, while other strategies advise moving only specific macronutrients to certain time periods, such as with carb backloading where all carbohydrates are consumed in the evening hours after training.

Highly detailed nutritional recommendations are also commonly given for various specific times of the day, such as breakfast, pre-workout, post-workout and pre-bedtime, with lists of foods that should be eaten or avoided during those periods for the best results.

However, despite all the conflicting and convoluted advice you may have been exposed to over the years on this topic, the reality is that meal frequency and timing is not something that needs to be obsessed over or micro-managed. Beyond any specific number of meals, eating intervals or protein/carb/fat distributions, the vast majority of your results will simply be determined by meeting your overall calorie and macronutrient needs for the day as a whole. Consistently hit those daily nutritional targets using a balanced mix of mostly clean, minimally processed whole foods, and virtually any daily eating schedule will deliver great results when it all comes down to it.

Total calorie/macronutrient intake isn't the *only* thing that matters, but it's by far the most important factor on the dietary side of things and will probably make up anywhere from 80-90% of your bottom line progress. Anything you do beyond that is just a matter of optimization to fully maximize your results and round out that last 10-20%. Even then, the few guidelines you'll need to follow to accomplish this are fairly straightforward and won't require you to revolve your entire day around your diet or needlessly nit-pick every nutritional detail.

What are the additional meal frequency/meal timing guidelines to implement beyond just meeting your 24 hour calorie and macronutrient needs?

The first is to ensure that you're getting in at least three separate protein feedings for the day spaced out by around two to three hours or more each. The protein doesn't have to be distributed perfectly evenly between all of them, but each one should ideally contain at least 20-25 grams in order to make sure that muscle protein synthesis is being optimally stimulated at each serving.

Just as there's a set limit as to how much muscle the body can build over the course of any given day, there's also a set limit on how much it can build as a result of any single protein feeding. Once a certain "anabolic threshold" has been hit from a given meal and protein synthesis has been activated (this is primarily dependent on consuming a sufficient amount of l-leucine), any additional protein consumed from that meal will be subject to diminishing "muscle building returns" the higher you go. Doubling the amount of protein you consume at a particular meal, for example, will not automatically double the rate of muscle growth.

You can certainly still gain muscle effectively by condensing all of your protein down into a smaller number of larger meals (total protein quantity for the day is still the most important factor here), but for optimal muscle building results (particularly during a bulking phase), spreading your protein out over the course of the day into at least three individual "pulses" will result in better overall protein utilization for muscle recovery and growth.

More advanced trainees who are trying to squeeze out every ounce of hypertrophy possible (or those who simply prefer eating a greater number of meals just based on personal preference) can go even higher at 4-6 protein feedings per day, though the additional gain that would be produced from this would likely be very marginal (if anything). For that reason, going out of your way to increase your meal frequency beyond three per day would be considered as more of a "just in case" type of approach for the most serious of trainees who are looking to gain every potential muscle building edge they can.

If you really do prefer larger/less frequent feedings and would rather stick with a more condensed eating structure for whatever reason, do keep in mind once again that this will still produce significant muscle building results regardless. Consuming three separate meals and spacing your protein intake out during the day is not a "make or break" strategy by any means; it's simply what would be considered optimal if your goal is to build muscle and gain strength at the very fastest rate.

It should also be noted that while a slightly increased meal frequency may be useful in terms of optimizing muscle growth, it likely won't make any noticeable difference when it comes specifically to fat loss. Eating more often throughout the day does not measurably increase 24 hour basal metabolic rate (calories burned at rest) or the thermic effect of food (calories burned during digestion) and does lead to greater overall fat breakdown.

So, if cutting is your primary goal and you find that you can adhere more easily to, say, two bigger meals per day (such as with intermittent fasting), that will likely be the superior

approach for you regardless of any slight potential reduction in protein synthesis, since it will maximize the chances that you'll actually stick to your diet over the long term

The next meal timing optimization guideline is in regards to pre-workout and post-workout nutrition. Although the importance of these two periods tends to be over exaggerated in most typical "mainstream" fitness literature, getting in a proper meal before and after training is a useful dietary strategy nonetheless as it will provide your body with the calories and nutrients needed to maximize performance in the gym as well as subsequent recovery.

Despite all the highly detailed guidelines that are commonly outlined for this though –involving various "ideal" food sources and supplements that must be consumed in specific combinations and during certain precise time frames – proper pre and post-workout nutrition is actually very simple when you break it all down piece by piece.

In the case of pre-workout nutrition, simply pair up any basic protein source (whether it's a solid food or shake) with any basic carbohydrate source (whether it's a fruit or starch) and consume it within 1-2 ½ hours prior to your workout. Nothing fancy is required here, and virtually any protein/carb combination of your choice will get the job done just fine. For example, chicken/rice, fish/potatoes, tofu/quinoa, protein bar/banana, or a blended smoothie are all perfectly acceptable choices as a pre-workout meal.

This will provide your body with the amino acids necessary to ward off muscle breakdown during the session, along with the fuel needed to boost your strength and energy levels for optimal training performance. The inclusion of a pre-workout supplement for additional strength, energy and focus can also be utilized as an optional add-on, and this will be covered in detail in the supplementation section in chapter 6.

You can simply base the size and spacing of your pre-workout meal on personal preference in terms of what feels best for you, whether it's a smaller to more moderate sized meal and whether it's consumed closer to or further away from your session. One thing to keep in mind though is that the fat and fiber content of this meal should ideally be kept on the lower end if you'll be consuming it in close proximity to your workout, as these slow down the movement of foods from the stomach to the small intestine and will increase the chances of unwanted bloating and feelings of sluggishness during the workout.

What about training in a fasted state?

Some people choose to go this route either because they exercise first thing in the morning and don't have time to eat beforehand, or because they simply feel better training on an empty stomach in general. While this ultimately is an acceptable option if you really do prefer it, consuming a pre-workout meal of some kind is still recommended whenever possible, as intense weight training in a completely fasted state is not ideal in terms of

maximizing strength and endurance and may also have a slight catabolic effect on muscle tissue.

The potential negative impact of fasted training would likely be fairly modest in these areas overall (assuming your nutrition for the day as a whole is otherwise on point), but it is worth taking into account if your goal is to make the most significant progress possible. If you do want to keep your pre-workout meal as light and simple as you can, a small protein shake consumed alongside an easily digestible carb source (piece of fruit, small serving of oatmeal etc.) is a good option.

If you are planning to train on an empty stomach despite the possible downsides, ideally aim to get in 10 grams of an essential amino acid supplement 5-15 minutes before your workout to help prevent any unwanted muscle breakdown during the session.

Another common reason why people may opt to perform their workouts (particularly cardio) in a fasted state is due to the misguided belief that it will help them lose fat more effectively while they train. Since there is no food coming in to draw energy from, it would make sense on the surface that this should force the body to tap into its existing fat stores as a primary source of fuel.

However, the body is an extremely intricate and dynamic system, and its use of fuel during exercise is constantly changing based on a variety of factors involving many different hormones and enzymes. Attempting to burn a significant amount of additional body fat by simply exercising on an empty stomach is a huge over simplification of a far more complex bigger picture.

Fasted training does appear to increase lipolysis (the amount of fat that is broken down), but does not increase fat oxidation (the amount of fat burned). In other words, fasted training causes the body to break down more fat than it can actually use for energy. When it comes to fat loss, the limiting factor is fat oxidation and not lipolysis. In the end, those fatty acids that aren't used for fuel are simply re-stored as body fat.

Not only does fasted training not appear to increase fat loss during exercise, but it may actually have the opposite effect by lowering overall training intensity and reducing the total number of calories burned as a result. In addition, it appears that even if a higher percentage of fat is burned during an exercise session, the body will preferentially utilize more carbohydrates for fuel later on in the day anyway, and vice versa.

The bottom line here is that if you want to go the fasted training route based on personal preference (despite the potential downsides mentioned) then that is an option to consider, but if you're doing it as a way of improving fat loss, your efforts are likely going to waste for that purpose. When it all comes down to it, your net gains or losses in body fat will primarily be determined by total net energy balance in the big picture; not by minor fluctuations in fat or carbohydrate usage during short spans of 30-60 minutes.

Now, what about post-workout nutrition?

This is often considered to be the single most "critical" period of the day when it comes to meal timing, commonly referred to as the "anabolic window" where fast absorbing protein and carbohydrates should be quickly ingested to kickstart the muscle recovery and growth process. This is usually recommended in the form of a liquid post workout shake consumed within about 30 minutes after training, followed by a solid food meal or two in the hours that follow.

However, while consuming some protein and carbohydrates during the post-workout period certainly is a useful meal timing strategy for optimizing your overall results, it's far from the "do or die" scenario that so many make it out to be.

First off, it's important to keep in mind that protein digestion is a fairly slow and gradual process from start to finish, and it requires many hours before the protein in any particular meal has been fully broken down into its individual amino acid components and released into the bloodstream. This means that if you consumed a standard pre-workout meal within a couple hours of your session, the amino acids from that meal are still being absorbed by the body even after your workout has ended. For that reason, it's not critical that an additional serving of protein be consumed immediately post-workout.

Secondly, although there technically is an "anabolic window" of sorts where nutrient uptake into the muscle cells will be enhanced as a result of training, this period actually spans for quite a few hours and doesn't rapidly "expire" if you fail to slam a protein shake within 15 minutes of finishing your workout. A post-workout meal consumed within a couple hours after training will be sufficient, and even waiting slightly longer would not have any serious negative impact in the context of proper 24 hour nutrition.

Another post-workout nutrition concern that is often brought up is on the issue of glycogen replenishment. As mentioned earlier, glycogen is the stored form of carbohydrate found in the muscles and liver that the body uses as fuel during anaerobic activities like weightlifting. Many trainees believe that they must immediately consume a large serving of carbohydrates in the post-workout period to re-stock the body's glycogen levels that were depleted during the session.

However, a standard weight training workout only uses up approximately 30-40% of the body's stored glycogen, and even then, there's no need to immediately replenish that glycogen unless you were planning to train the same muscle groups again later that day. This would be a legitimate concern for hard-training athletes performing multiple exhaustive workouts over a relatively short period of time, but not for the average gym goer who is simply performing 3-4 standard weight training sessions a week with a bit of extra cardio mixed in. By consuming a basic post-workout meal and then resuming your regular eating plan afterwards, those glycogen levels will be automatically replenished on their own within a few hours without needing to specifically worry about it.

Putting all of this information together, proper post-workout nutrition should follow the same basic template as was outlined for pre-workout nutrition: just take any basic protein and carbohydrate combination of your choice and consume it within 1-2 ½ hours after your workout has ended. You don't need any fancy "post-workout shakes" as is commonly

recommended (though if you prefer a shake at this time then that's fine too), and eating a regular solid food meal such as steak/rice, chicken/potatoes, seafood/pasta or a higher protein plant-based combination will be just as effective. It certainly won't kill you if you wait 3 hours or 3 ½ hours, but you should ideally try to consume it a bit sooner if you can.

This post-workout meal will provide your body with the amino acids required to stimulate protein synthesis and support the recovery process, the insulin release needed to halt muscle breakdown, and the carbohydrates necessary to begin re-stocking glycogen levels. After you've consumed your post-workout meal, you can simply continue on with your regular nutrition plan from there.

When it comes to the topic of meal frequency and timing, the three basic guidelines we've just covered regarding daily protein distribution, pre-workout nutrition and post-workout nutrition are all you really need to know in order to maximize your overall results. How you lay things out beyond that is completely up to you and should simply be based on personal preference in terms of your individual schedule, appetite and what you enjoy most.

Before we move on to the next topic of this chapter, let's quickly round this section out by clearing up three other questions that are commonly asked on the issue of calorie and macronutrient timing…

Question #1: "Shouldn't I lower my calories in the evening in order to prevent fat gain since I'll be less active at that time?"

You can certainly cut back a bit if going lighter on food is more comfortable for you in the later hours, but it won't make any difference when it comes to your bottom line body fat levels. Net fat loss or fat gain will still be dictated by total calorie intake vs. calorie expenditure in the overall picture, and whether you burn more fat earlier in the day and store more later on or vice versa, the final result is still going to be the same. Your body is consuming X amount of energy for the day and is expending Y amount of energy, and that energy is going to be used up one way or another over the course of 24 hours.

When it comes to your total caloric intake and its effects on fat loss/fat gain, it's what happens in the larger picture over the course of the entire day or several days that truly matters – not what happens in the span of a few hours. Consuming a higher percentage of calories in the evening would result in a greater amount of immediate fat storage at that time (since you won't be as physically active), but it would still balance out overall since your body would have burned a greater amount of fat earlier on in the day when the calories were lower, as well as during the following morning and afternoon.

The only thing to consider here is that larger meals consumed very close to bedtime can often interfere with sleep quality, so it usually isn't best to load up on calories right before dozing off. A moderate sized meal within a couple hours of bed is usually the better approach for getting the deepest and most restful sleep possible.

Question #2: "What about morning nutrition? I thought breakfast was considered to be the most important meal of the day?"

This is yet another piece of "conventional" nutritional advice that is continually thrown around despite lacking any real evidence to support it. Given equal calorie/macronutrient intake for the day, it makes no real difference whether you eat immediately after waking up or push your first meal until a bit later on.

Breakfast does not "kick start your metabolism" in any special way as is commonly claimed (remember that meal frequency and timing has no effect on basal metabolic rate), and although fasting for a significant portion of the day is likely not ideal for maximizing muscle growth, waiting a few hours to eat after waking up isn't going to be a cause for concern.

In some people, skipping breakfast actually has a positive effect on appetite and results in fewer total calories being eaten for the day as a whole, and if your primary goal is to lose fat then this is something you can optionally experiment with.

Although observational research has found that breakfast eaters generally are healthier than non-breakfast eaters, these studies only demonstrate correlation rather than direct causation. In other words, these people aren't healthier *because* they eat breakfast – rather, the type of person who would be more inclined to eat breakfast would also be someone who follows a healthier diet and lifestyle in general. Breakfast eaters are more likely to come from a higher socioeconomic profile than those who don't and will be more likely to follow "traditional" health advice such as exercising, eating fruits/vegetables, and not skipping breakfast.

In fact, some evidence even suggests that skipping breakfast and pushing your first meal until later on can have certain health benefits such as reducing inflammation, improving cardiovascular health, decreasing blood pressure and lowering cholesterol. The jury is still out on just how significant these effects are, but the central point is that there's no real reason to assume that breakfast is "healthy" in any specific way, or that skipping breakfast will have a negative impact on health markers.

Most people don't know this, but the very statement that "breakfast is the most important meal of the day" was actually created by Caleb Jackson and John Harvey Kellogg in order to promote their newly invented breakfast cereals.

If you prefer to have a regular breakfast meal soon after waking up then that's fine, but pushing your first meal until a bit later isn't going to hurt you either. The best thing you can do is to test out both approaches for yourself and see which one you prefer.

Question #3: "That covers the topic of meal frequency and timing over a 24 hour period, but what about my nutritional intake on workout days versus rest days?"

While some will advise that you "cycle" your calories by consuming more on the days you train (since your body will require more energy to fuel your workouts and to facilitate recovery) and less on rest days (since you won't be as active), this is yet another unnecessary "micromanagement" strategy that will only make your diet more complicated than it needs to be.

If you'd rather eat a bit more on workout days and less on rest days just out of personal preference then you can go right ahead (assuming the daily calories still average out to the

same amount) but from a muscle building and fat burning perspective it's a completely optional way of structuring things.

People tend to categorize things in terms of individual days (for example, a "good" day of eating or a "bad" day of eating) simply because that's the primary way that we organize our time. However, whether your goal is to bulk up and put on muscle or to lean down and lose body fat, your results in either direction are not going to be measurably affected by a few hundred calories more or a few hundred calories less within small blocks of 24 hours.

Once again, fat loss and muscle gain are not "on/off" switches. It's not as if you're "building muscle" one day and then "maintaining muscle" the next, or "burning fat" one day and then "maintaining" the next. Rather, your body is in a constant state of both muscle growth and muscle breakdown, as well as a constant state of both fat burning and fat storage. It's the total sum of all of these processes in the bigger picture that will determine your bottom line body composition.

Also remember that muscle growth doesn't happen specifically in the gym or only on the days that you train. Muscle *breakdown* is what occurs in the gym, and the body then recovers and rebuilds those muscles larger and stronger over the course of the next few days. For that reason, sufficient calories and protein are needed not only on workout days, but also during rest days to support optimal recovery and growth.

Not only is expending your energy on cycling calories simply unnecessary, but it could even have a negative impact over the longer term by making your diet plan more difficult to follow. Constantly raising and lowering your calories from day to day requires more effort to accurately track in comparison to just maintaining a steady intake, and the more complicated your nutritional approach is, the less likely you'll be to stick to it over the long haul.

Your goal when structuring your diet should be to only make it as complicated as it absolutely needs to be, and to eliminate the inessentials. That way you can place all of your focus on the things that truly matter, and get the maximum benefit while utilizing your time and energy in the most efficient way.

NUTRITIONAL TRACKING

You now have all the key fundamentals in place for your bulking or cutting diet. You know how many calories to consume each day along with the proper macronutrient targets, recommended food sources, meal frequency/timing guidelines and flexible dieting principles.

The final step in tying this all together is in regards to proper nutritional tracking. In other words, just how closely will you need to monitor your diet each day to get the results you're after, and what is the best way to go about it? Should you track all of your individual macros down to the exact gram? Count total calories only? Or eat intuitively and just estimate things as you go?

There technically isn't one black and white answer here that will apply to every single person across the board, so let's go over the topic as a whole and discuss what type of approach will be appropriate based on a few different scenarios.

The first thing to keep in mind here is that, in the long run, most people will ultimately want to gravitate toward as "intuitive" an eating style as they reasonably can. It's not realistic (or necessary) that you'll be tracking exact calories and macros for the rest of your life, and if you can maintain a physique that you're happy with while eating based purely on feel, that's obviously the ideal situation since it's the most efficient method and involves the least amount of conscious effort.

Eating intuitively means that you'll simply eyeball your meals and base your food choices and portion sizes on your own estimations of the nutritional content, your body's hunger signals and your own personal fitness goals. You won't be specifically measuring all of your meals or logging your exact nutritional numbers throughout the day – you'll just keep it in your head and approximate things as you go.

However, while eating intuitively (or at least *mostly* intuitively) is the ultimate goal to shoot for over the longer term, it's typically only suited to more advanced trainees who have learned how to do it effectively through experience first. This means they've tracked calories and macros in the past (giving them a good idea as to which foods and portion sizes contain what), they know how their body responds at various calorie totals, and they know how to adjust their intake based on hunger levels and other feedback. If you're still in the novice to

intermediate stages of your program, you'll almost certainly be better off by monitoring your intake a bit more closely and utilizing a more structured method of dietary tracking.

Less experienced trainees who simply try to estimate things on the fly without any concrete tracking in place are usually getting ahead of themselves and will tend to over-eat or under-eat based on their needs. In fact, a lack of proper nutritional structure is one of the single biggest reasons why the majority of people ultimately fail to reach their fitness goals in the long run. Monitoring your diet with a reasonable level of detail will ensure that you're landing on the proper totals for yourself each day, and will also keep you accountable so that you can see firsthand when you're going too high or too low on calories or certain macronutrients.

Just how detailed should you track things for the best results?

One option is to just go the commonly used route of counting all your calories and macros down to the specific gram amount. Using this approach, you'll have exact daily macronutrient goals in place and will log how many grams of protein, carbs and fats you're eating in order to meet those specific numbers. Hitting your protein and carbohydrate targets within 10 grams give or take would be considered close enough with this method, with fat landing at 5 grams give or take.

The benefit of this approach is that it has the lowest margin for error. Counting exact macros will ensure that you're being as accurate as possible with your eating plan and aren't leaving anything to chance. It's also the fastest way to "learn the ropes" nutrition wise since it will give you the greatest feel for which foods and portion sizes contain what, putting you in the best position to eventually gravitate to a more intuitive style of eating.

The downside is that it does require a fairly high amount of focus and attention to detail (particularly in the beginning stages), since you'll have to log the specific macronutrient breakdown for every single food item you consume. Many people will find this to be a bit overwhelming (if not altogether unsustainable) since their days end up revolving so heavily around monitoring their diet. You can have the best nutrition plan in the world in terms of structure and effectiveness, but it won't do you any good if it ends up burning you out and causes you to quit longer term.

If you are someone who thrives on attention to detail and prefers the organizational aspect that comes with logging everything in a very precise manner, then tracking macros is still a viable option you can go with, at least to start. A certain percentage of people will do just fine with regular macro counting and will find the set structure to be more motivating since they'll know that they're accurately meeting all of their nutritional needs without any guesswork involved.

For most trainees in most situations though, a slightly looser "middle ground" approach is generally best, especially considering that hitting exact macros right down to a perfect gram amount is not necessary to build muscle and lose fat effectively in the first place. As long as your protein/carb/fat intake is reasonably balanced in the big picture and you're not actively

restricting or going overboard on any specific one, inter-changing the amounts a bit won't be a big deal assuming the overall calorie total is still on point.

As we already discussed earlier in this chapter, total calorie intake is by far the most critical principle in your nutrition plan beyond any specific macronutrient breakdown. Whether you eat exactly 185p/235c/80f or 165p/265c/75f or 175p/280c/65f is likely not going to make a noticeable difference to your results if it all still equals out to 2400 calories in the end as with this example.

For these reasons, a more sustainable (yet equally effective) nutritional tracking approach would be to place the majority of your focus on simply hitting your daily calorie target, and then just roughly estimating your macros by ensuring that you're meeting your minimum requirements for protein and fat. Protein and fat are the two "essential" macros that you must make sure you're getting enough of each day and to where going too low can have real consequences. Getting in enough carbohydrates is still important, but it's the most flexible macro of the three and will automatically fall into place if your protein and fat numbers are roughly around the right level.

As we outlined previously, you should be aiming for at least 0.8 grams of protein per pound of body weight daily and getting around 25% of your total calories from fat. Going a bit higher on protein and/or fat is fine (up to about 1-1.2 grams of protein is acceptable, as is up to 30-35% of calories from fat), but just make sure you're at least hitting those minimum recommended figures.

Usually if you just base each of your meals around a standard protein and carbohydrate pairing and then add in a couple sources of healthy fat throughout the day, your protein and fat minimums will tend to take care of themselves on their own. This is especially true if you're eating in a surplus since you'll have more total calories to work with and there will be less of a chance that you'll under-shoot your requirements. When eating in a deficit you'll want to be a bit more careful and consciously double check things since there will be a larger margin for error due to the lower calorie total involved.

In any case, this level of tracking – counting calories but only roughly approximating your macros – is detailed enough to produce optimal or very-near-optimal muscle building and fat burning results, but simple enough that you won't need to revolve your entire day around food and count everything in precise detail. This is much easier to do in comparison to logging every single gram of protein, carbs and fats you're eating and trying to make them land on an exact daily figure, and it's a more practical and realistic approach for most people to follow.

Make no mistake though – calories absolutely *are* important and they do need to be landing at the proper level throughout the week if you want to see significant progress. If you fail to track your calories accurately and end up with too large or too small a calorie surplus or calorie deficit, your results will no doubt be negatively affected or potentially even erased altogether. So, although a decent amount of leeway on the macronutrient side of things is fine, don't overlook the importance of calories as they truly are the "make or break" aspect of your nutrition plan.

If you're still a beginner then you may even find calorie counting alone to be a little tedious at first, but just keep in mind that it will become increasingly easier over time, particularly if you tend to eat similar foods and meals each day. Properly tracking calories is no different from learning any other skill, and if you're just willing to put in the work up front, you'll quickly find that it actually isn't very difficult to do.

Eventually as you gain more and more experience, hitting your calories and approximate macros each day will just become second nature, and further down the line you may not need to specifically track anything at all. This is especially true once you've come close to reaching your desired physique goals, since eating for maintenance is a lot easier to do than eating for active muscle growth or fat loss.

In order to find the specific nutritional breakdown for the foods you'll be eating and properly log your daily intake, you can use a nutrition tracking app such as MyFitnessPal or Cronometer, an online website like CalorieKing.com, and/or just check the nutrition labels on each item and log things manually. You can also utilize the step by step meal plans included with the Body Transformation Blueprint package, as those lay out full days of structured eating at various calorie levels that you can simply print off and follow.

It's also recommended that you purchase a basic food scale and use that to weigh out your meals when eating at home. This might sound a bit like micro-managing to some people, but it doesn't require any more work than using regular measuring cups and will ensure that you're getting in the proper portion sizes for each food item. Measuring cups and spoons measure volume rather than weight, and they can often be inaccurate depending on the shape of the item you're trying to measure or how tightly it's packed into the cup. This won't be a big deal if it only happens here and there, but add up these inaccurate measurements over the course of several meals a day for the entire week, and it legitimately can have an impact on your bottom line nutrition totals.

For example, one cup of brown rice should deliver about 195 grams of total weight and provide 216 calories. But measure out that one cup of rice using a regular measuring cup and then measure the actual weight using a food scale, and you'll often find that the amounts differ quite a bit.

Very calorically dense items such as nuts and nut butters are an even better example of this. One tablespoon of peanut butter should deliver 15 grams of total weight and about 100 calories, but since many people's idea of what constitutes a "tablespoon of peanut butter" can vary significantly (especially depending on how hungry they are), you could end up with as much as double the intended amount if you don't specifically weigh it.

A food scale will keep you accountable since there's no way to "cheat" the measurement, making it the ideal choice if you're truly serious about tracking your diet properly and optimizing your results. Any basic digital scale that measures both grams and ounces and that has a "reset to 0" feature will work just fine for this purpose.

EATING OUT

Accurate nutritional tracking is a fairly simple and straightforward process when preparing your own meals from home. You'll know all of the exact foods you're eating along with the precise quantities for each and can simply measure them on your scale to get the proper calorie and macro totals. Staying on point with your nutrition while eating out at restaurants and social gatherings, on the other hand, is usually a bit trickier. Many restaurants don't have nutritional information available for their meals, and it can often be tough to pin down exactly what's on your plate and how to fit it into your diet for the day.

Fortunately, with a bit of planning and a few simple techniques, you can enjoy eating out with friends and family (or simply on your own as part of your regular diet) without it being a source of stress and while still reaching your muscle building and fat burning goals in the process.

First off, just how closely you'll need to track your nutrition while eating out largely depends on how often you're doing it. If it's only a one or two time a week occasion, getting hung up on the precise nutritional totals won't be necessary. Rough estimations along with a bit of basic self control are all you'll really need, and as long as you're able to ballpark it somewhat accurately, that will be sufficient in the overall picture.

This is especially true if we're talking about infrequent special occasions like holidays, birthdays and once-in-a-while family get togethers. Heavily restrict yourself and begin obsessing over calorie going into your mouth and all you'll be doing is adding an extra layer of unnecessary stress that detracts from the whole experience. Remember, fitness should be used to enhance the enjoyment of your life rather than being a source of anxiety.

On the other hand, if you're eating out multiple days a week or even every single day, then yes, you'll need to dial things in more closely in order to keep your nutritional intake on track. Given that a proper calorie deficit for fat loss only involves eating around 350-500 calories below maintenance – and that a proper calorie surplus for muscle growth usually lands around 100-300 calories above maintenance – all it takes is a few tracking errors throughout the day to really throw those numbers off.

For example, if you're routinely eating a restaurant meal that contains 250 calories more than you thought (two extra tablespoons of cooking oil on its own is enough to do this), that could potentially cut your calorie deficit in half right there. Or, if your goal is to gain muscle, it could double the size of your calorie surplus and lead to excessive fat gain over the long term.

So, how exactly should you go about tracking your meals when you don't have access to the nutritional breakdowns and specific quantities? While keeping in mind that tracking calories in these situations will never be 100% perfect, here are the four main options you can utilize…

Option #1: Run an online search to see if the restaurant has nutritional information available for their meals.

Many restaurants (especially larger chains) post their menus and nutritional info on their websites. If you're able to find the calorie and macro breakdown of the meal you'll be eating, you're all set and can simply use that information. It still won't be 100% accurate in most cases since portion sizes often vary, but it'll be close enough and almost certainly more accurate than trying to estimate it on your own.

Option #2: If the restaurant has no nutritional information available, download a calorie-tracking app such as MyFitnessPal or Cronometer and see if you can find a similar meal in their database.

For example, if you were eating a chicken quesadilla, you could find plenty of other restaurants with a comparable version that would likely have a similar nutritional profile. This of course isn't going to be perfect, but it'll give you a rough estimate to go by and will be an acceptable method to use for meals that you're only having once in a while.

Option #3: If you can't find any results for a particular dish, estimate the portion size of each ingredient and look them up individually.

For the chicken quesadilla example, you'd look up the nutritional info for a tortilla, a similar portion of chicken, cheese and whatever else is included and then add them all together.

When you're making these sorts of calculations, keep in mind that it's almost always better to overestimate rather than underestimate. This is because restaurant meals often have a lot of "hidden calories" included from things like oils, sugars, sauces etc.

Option #4: If all else fails, just eyeball it and make your own judgment call as best you can.

If you're eating a meal that is more complex and contains many different elements that are hard to separate, you'll just have to estimate it on your own. Although this is often challenging for beginners, it's still better than nothing and is something you'll become more skilled at as you gain further experience.

As outlined in the previous step, you'll usually be better off to underestimate the calorie total rather than overestimate it, since most restaurant meals are typically higher calorie that you'd think. In any case, if you're only eating out once in a while, being off by a couple hundred calories is not going to be a cause for concern in the bigger picture and isn't something that should be stressed over.

If you are planning to head out and enjoy a higher calorie restaurant meal but want to keep your nutrition as closely dialed in as possible, one useful tip you can follow is to eat a bit lighter throughout the earlier portion of the day. As mentioned in the previous section regarding alcohol consumption, eating fewer calories at breakfast and during the earlier afternoon hours will create a "buffer" for later where you can enjoy a more calorie-dense meal with less of a chance of going overboard for the day.

Drinking water before and during your meal, starting off with a low calorie salad, and/or ordering some extra veggies on the side are a few additional ways to fill yourself up a bit while keeping the total calories more under control during your main meal.

COURSE CORRECTION

You can have all the nutritional knowledge in the world and a properly laid out, step-by-step plan to follow, but one thing remains certain regardless: sometimes you're going to go off track with your diet. Expecting your nutrition to be perfectly on point 100% of the time is simply unrealistic (nor is it even necessary in order to achieve your physique goals in the first place), and no matter how disciplined you might be, there will inevitably be times where you stray from your plan.

Maybe you were on the go and didn't have access to the proper foods, maybe you miscalculated the calories in a certain meal, or maybe you just flat out gave in to temptation and over-ate purely for the sake of it. In any case, what should you do to get back on course with things after going too high or too low on total calories for the day?

Well, the first and most important thing is to not beat yourself up and get overly stressed out about it. In keeping with the "big picture" theme we've mentioned several times already, always remember that your overall results will ultimately be determined by what you do *most* of the time over the longer term.

If you're regularly over-eating or under-eating and failing to meet your nutritional goals on a consistent basis, then yes, that certainly will add up and offset your progress in a measurable away, if not eliminate it altogether. However, if you're hitting your calorie targets with reasonably accuracy the majority of the time, a "bad" day of eating or two is not going to be enough to have any significant negative impact on your results. Muscle building and fat burning success is never going to be perfectly linear from A to B, and a few blips on the radar is no big deal so long as the general trend is moving in the right direction.

In order to cause any real measurable "damage" to your physique, you'd have to over-eat or under-eat by a pretty significant margin and do so for a longer term period of at least several days on end up to a week or more. Even then, you'd be able to reverse that damage fairly easily once your nutrition was back on track.

This is especially true if we're only talking about relatively modest amounts of around 500-1000 calories above or below your intended intake. For example, let's say your daily target for fat loss was set at 1800 calories and you instead ate 2300 on a particular day. In this case, adding 500 calories to your regular intake would essentially just mean that you ate at your calorie maintenance level, assuming you're following the standard recommended deficit of 500 calories below maintenance. There would simply be no fat loss or fat gain in this situation, and the day could just be considered a wash.

Even if you were to eat 1000 calories over your target, you'd still only be looking at a net 500 calorie surplus, which is hardly anything on its own when you consider that a single pound of stored fat contains about 3500 calories. Not only that, but even if you do eat above

maintenance on a particular day while cutting, it's not as if all the extra calories you consume will end up being stored as pure body fat. Since you'll be performing regular weight training as part of your program, at least a couple hundred of the extra calories you take in will be diverted to muscle growth as a result of having that training stimulus in place.

The same things holds true in the opposite direction for those whose primary goal is to build muscle but fail to meet their caloric surplus target. If you're in a bulking phase and under-eat for a short term period, the majority (if not all) of what you'd end up losing would actually be body fat rather than muscle mass assuming you're continuing to weight train and are consuming sufficient protein.

For all of these reasons, adjusting your intake in order to "make up" for falling slightly off course in the short term shouldn't be necessary in most cases. Instead, it's usually best to just acknowledge it as an inevitable part of the process, do the best you can to minimize how often it happens, and get back on track from there. If your body weight does suddenly shoot up the day after a "cheat meal" or two, also keep in mind that most of this is simply due to an increase in water retention from the additional carbs and sodium and is not a result of actual fat gain. Your physique may also appear a bit softer and "puffier" looking, but again, this is just simple water weight that will flush out on its own within a day or two of resuming your regular diet.

That said, if you're on a set deadline and are aiming to get into a specific shape by certain date, or if you thrive on a more "perfectionist" approach and would prefer to undo whatever very minor regression may have occurred, re-adjusting your calories the day or two after a slip-up is an option.

For example, if you're in a cutting phase and went over your target by 600 calories on a particular day, you could reduce your intake by 600 the following day or 300 the following two days in order to keep your total deficit fully on track.

Your calorie intake doesn't need to be perfectly consistent from day to day in order to build muscle and lose fat effectively, and what's much more important is your *average* calorie intake spread out over the course of several days. Whether you eat exactly 2000 calories every single day, or whether it's 1800, 2300 and 1900 over the course of three days (still averaging out to 2000 per day), your bottom line results aren't going to be affected in any noticeable way. You should ideally make an effort to keep things relatively steady overall, but a modest ebb and flow of a few hundred calories give or take from day to day won't be a problem.

Aside from adjusting your calorie intake, the other option to make up for a temporary period of over-eating is to perform some additional cardio to compensate. While simply reducing your food intake in the days that follow is usually the most efficient route since there's no extra time investment involved, using cardio to burn off some (or all) of the extra calories you ate is another viable method if you prefer it.

When it comes to course correcting after over-eating during a bulking phase, you'd need to create a calorie deficit equal to whatever number of calories you exceeded your daily calorie target by. For example, if you were bulking on 2800 calories and consumed 3800 instead, it

would require a 1000 calorie deficit over the course of the next day or two (or more) to "undo" any potential fat gain that may have occurred. This is definitely what would be considered as nutritional "micro-managing" and isn't something the vast majority of trainees should be bothering with in most cases, but technically speaking that is what you'd do if you were wanting to keep things 100% consistent.

In the case of under-eating, this will almost never happen while in a cutting phase since your hunger levels will be higher in a deficit and it's unlikely that you'll forgo the opportunity to eat if you still have calories remaining for the day. However, if this does happen for some reason and you feel particularly hungry the next day, you can increase your calories by whatever amount you had left over from the previous day. If you feel fine hunger-wise, then you can simply continue on as normal. Nothing negative will happen in this case, and you'll simply lose a tiny bit of extra fat from the larger deficit you had in place the day before.

If you're on a bulk and under-eat, you can slightly increase your intake the following day or two, though this should only be done up to a limited point. Remember that you can't "force feed" muscle growth, and your body can only make use of a finite number of calories over any given period even if you did eat a bit less the previous day.

So, if you fail to hit your calorie needs on a given day for bulking, you can slightly increase your calorie intake during the next 24-48 hours up to a maximum amount of double your prescribed calorie surplus. For example, if you're a beginner who is eating in a 300 calorie surplus, that would mean an extra 300 calories at most the following day, or an extra 150 over the course of the following two days.

CONSISTENCY TIPS

While falling off track with your diet from time to time is inevitable and shouldn't be a cause for concern in the bigger picture, it doesn't change the fact that you'll still need to be decently on point with your nutrition the majority of the time if you're serious about achieving real results.

Now that you've learned everything you need to know in terms of the step by step mechanics behind eating for effective muscle growth and fat loss, we'll finish this chapter off outlining a few important tips you can employ to maximize your overall consistency from week to week. It doesn't matter how perfect your calories and macros are or how "healthy" your diet is; if you don't carry out your plan in a way that is sustainable over the long term, your chances for success will be greatly diminished.

What are some things you can do to streamline your nutrition and make it as effortless to stick to as is reasonably possible? Below are twelve useful steps you can follow.

Tip #1: Adopt the proper "beginner's mindset".

If you haven't been paying much attention to your diet up until now and if tracking calories/macros and eating healthier foods is a new habit for you, it's important to recognize up front that it's going to take some time to adjust.

Don't expect to just jump right into it and have everything be 100% smooth-sailing from the get go. If you do, there's a good chance that you'll quickly become overwhelmed and discouraged. There is a learning curve involved here, and you have to be willing to "grind out" those initial stages to get a proper handle on things and really learn how it all works.

The first few weeks will probably involve moments where you feel a bit frustrated and confused trying to keep everything organized, but just keep in mind that this is completely natural and is something everyone has to go through. As time goes on things will gradually get easier and easier, and eventually it will just become an ingrained habit that you won't need to think too much about it.

Tip #2: Don't expect perfection from your diet.

We've touched on this in several sections now, but it's worth mentioning here one last time since it's so important. Proper nutrition comes down to what you do *most* of the time over the longer term, and as long as you're progressing in the right direction at an acceptable pace, minor dietary slip ups here and there are no big deal.

Many people start out very diligently with their eating plan for the first few weeks, but then the second one thing goes off course, they believe they've committed a huge sin and that their diet is doomed to fail. This is absolutely not the case, and if you allow yourself to become overly stressed out by simply missing a meal here and there, going over or under your calories on some days or unintentionally "cheating" on your nutrition plan at times,

you're eventually going to burn out and quit. Or, if you are able to stick to things despite having this sort of "overly obsessive" mindset towards nutrition, you won't be in a healthy place mentally and food will become a source of anxiety rather than something you enjoy.

You'll obviously want to do the best you can to minimize how often these dietary slip ups occur, but when they do inevitably happen, it's best to just accept it as normal part of the long term process, move on, and focus on what's in front of you rather than needlessly dwelling.

Tip #3: Optimize your daily meal layout.

As we covered in the previous section, simply hitting your total calorie and macronutrient needs for the day as a whole is by far the most important nutritional guideline beyond any set meal frequency/timing protocol. You should ideally be splitting things up into three separate protein feedings with a proper pre and post workout meal within reasonable proximity to your training sessions, but beyond that, it mostly just comes down to personal preference.

Despite all the misleading information circulating around that tries to state otherwise, the reality is that there is no such thing as any "special" sequence of meals and nutrients you must consume at precise times of the day to maximize your results. All this will really do is over-complicate your nutrition plan and force you to expend unnecessary mental energy trying to line up your food intake in a way that you potentially don't enjoy or that doesn't work well with your day to day lifestyle.

A far better approach is to take a look at your individual daily schedule, appetite and personal eating preferences, and then just lay your meals out in whatever way is as convenient and sustainable for you as possible. If you like larger/less frequent meals or smaller meals/more frequent meals, if you prefer eating more of your calories earlier or later in the day, or if there are certain time periods when it's easier or harder for you to get your meals in, that's all fine as long as you're meeting your total calorie and macro needs by the end of the day.

Relieving yourself of any one set "meal timing" burden and simply mapping out your meals based on your own individual circumstances will significantly improve your chances for long term dietary adherence.

Tip #4: Base your diet around the foods you enjoy most.

This might seem like an obvious piece of advice, yet so many trainees fall into the trap of thinking that certain foods are somehow "mandatory" to include in their diet. They come across a blog post or video that lists "The 10 Best Muscle Building Foods" or "5 Superfoods That Burn Fat Fast", and then unnecessarily force themselves to eat those foods even if they don't particularly enjoy them.

It is true that certain types of foods work well as part of a bulking or cutting diet since they're more "macro friendly" and nutrient dense, but there are an endless list of different

possible foods and food combinations you can use to meet your daily nutritional needs. Remember that your body does not view your diet in the context of individual food items; it only sees the big picture in regards to the total calories, protein, carbs, fats, fiber and micronutrients.

If you simply take the time to plan out a diet that includes the food sources you most prefer (and excludes the ones you don't), and that allows you to hit your daily calorie/macro needs at the same time, you'll have the best of both worlds. You'll be able to achieve a great physique *and* while following an eating plan that you genuinely look forward to and find satisfying. Force yourself to choke down canned tuna, broccoli, cottage cheese, brown rice or whatever other food you personally may not be partial to, and you'll most likely end up sick and tired of your diet and resenting the entire process before long.

Instead, just go through each main category of foods (protein, carbohydrates and fats) and pick a few options within those categories that you find most appealing. For example, if you prefer turkey versus chicken or salmon versus beef, use those as your primary protein sources. If you'd rather have sweet potato in place of rice for your healthy carb sources, or whole wheat pasta rather than whole grain bread, go that route. Don't like lettuce or asparagus? Choose from any one of the endless number of other vegetables available and find one or more that you'd rather eat.

No single food is a must, and no single food is going to produce any special muscle building or fat burning benefits that you can't obtain from other alternatives.

Tip #5: Include recipes in your plan.

If you prefer the simplicity of basic food combinations like chicken/rice, beef/potatoes, eggs/toast etc. then that's fine, but another great way to improve the enjoyment of your diet is by including a healthy recipe or two in the mix as well. The idea that an effective muscle building or fat burning diet should automatically be bland and boring is a completely outdated concept. Quotes such as "food is just fuel", "eat for results not for pleasure" or "nothing tastes as good as being in great shape" completely miss the simple fact that healthy, nutrient dense meals can also taste great if you plan them out properly.

A great place to start is by browsing through The Body Transformation Blueprint Cookbook, as this guide contains 220 different macro-friendly food recipes and smoothies (ranging from very simple ones that can be prepared in just minutes to more complex variations) that can be easily fitted into your nutritional totals for the day. Take some time and find a few that appeal to you, test them out, and you'll quickly find that they taste just as good as anything else you'd normally eat.

You can also run a basic online search using Google, YouTube or any other social media platform using terms such as "fitness recipes", "bodybuilding recipes", "bulking recipes", "cutting recipes" etc. to find even more options you can experiment with.

If you do prefer basic food combinations but are just looking for some simple ideas to enhance the flavor, here is a list of low calorie sauces and condiments that work well with

most standard protein/carb pairings along with the approximate calories per tablespoon for each:

- Salsa (4 cals)
- Reduced Sugar Ketchup (5 cals)
- Sriracha (15 cals)
- Low Sodium Soy Sauce (8 cals)
- Hot Sauce (5 cals)
- Low Calorie Salad Dressing (5 cals)
- Natural Tomato Sauce (5 cals)
- Taco Sauce (5 cals)
- Fish Sauce (10 cals)
- Oyster Sauce (9 cals)
- Tzatziki Sauce (15 cals)
- Mustard (5 cals)
- Worcestershire Sauce (15 cals)
- Vinegar (3 cals)
- Gravy (8 cals)
- Light Sour Cream (16 cals)
- Low Carb Steak Sauce (5 cals)
- Green Chili Sauce (5 cals)

Tip #6: Utilize a flexible dieting approach.

We won't go into detail on this one since we already discussed it earlier, but implementing the "treat food" guidelines from the previous section is another great way to improve overall dietary consistency. Nobody "eats clean" 100% of the time, and completely depriving yourself of the foods you enjoy most is impractical, unrealistic and will only leave you feeling excessively restricted in the longer term.

One of the most important mindsets to apply to your diet plan as a whole is to stop thinking about it as a "diet" in the first place. Proper nutrition is an ongoing way of life rather than some sort of "quick fix", and if 80-90% of your diet is comprised of healthy, nutrient-dense whole foods, allotting the other 10-20% to your favorite higher calorie foods is not going to harm your progress if it fits into your calorie and macronutrient totals for the day.

Tip #7: Follow an exact daily meal plan.

This certainly isn't a mandatory option or something you'll have to do forever, but if you're still a beginner or are having a tough time staying consistent with your diet, the easiest solution is to just map out exactly what you're going to eat each day, in what specific amounts, at what times, and then simply follow it to a T. This way there will be zero guesswork involved, and you can go about your day without having to put specific thought into every single meal you consume.

Not only will this ensure that you're landing in the proper calorie and macronutrient ranges for the day, but it will likely leave you feeling more motivated as well since you'll know that all you have to do is follow the plan in front of you to get the results you're after.

The way that you specifically employ this is up to you. For example, you can simply create one plan and eat the same things every day until you get tired of it and want to change things up for variety. Or, you can map out a 3-day or 7-day plan and rotate through it during the week. Another option is to lay out a few possible choices for each meal that have similar

macronutrient profiles (for example, three different breakfasts, three lunches, three dinners etc.), and then choose the option you most prefer based on how you feel that day.

The Body Transformation Blueprint Meal Plans also provide a wide variety of bulking and cutting plans ranging from 1200-4500 calories with five separate days of eating for each level, so a very easy way to get started is to just download those and follow along.

Tip #8: Plan your meals out in advance.

Rather than preparing every single meal individually throughout the day, another option is to set aside one or two days a week to pre-package your meals in bulk. That way, when it comes time to eat, you can simply reach into the fridge, grab your pre-made food and pop it in the microwave without having to go through the entire cooking and cleanup process every single time.

Most people find that having these concentrated periods of cooking and packaging once or twice a week is a more efficient approach for maintaining their diet long term, especially if they have a busy schedule or don't particularly enjoy cooking. You can either prepare entire meals and store them in the fridge or freezer in Tupperware containers, or just cook up a few of your main items in bulk to save some time.

Tip #9: Incorporate refeed days into your plan.

For those in a cutting phase, refeed days can improve dietary adherence in the long term by helping to offset the usual "dieting side effects" that come with an ongoing calorie deficit, such as increased hunger and reduced energy. These side effects are largely caused by a decrease in leptin levels, a key hormone that plays a central role in regulating metabolic rate, appetite and energy among other things.

A refeed day involves bumping your calories back up to your maintenance level, with the increase coming primarily in the form of carbohydrates. This helps to temporarily restore leptin levels and provides a nice physical and mental "reset" that can make the overall diet easier to stick to. Since you'll always have that upcoming day to look forward to where you can eat a bit more and enjoy certain foods you might otherwise typically limit (along with knowing that you'll just plain feel better as well), the cutting process won't feel as restrictive and the chances of unplanned "cheating" will be reduced.

Refeeds aren't a must for everyone (if you're consistently losing fat and hunger is not an issue then you can skip them if you'd like), but for most people, incorporating a refeed day once every 1-2 weeks is a good approach to follow. This is especially useful as you get down to a leaner body fat percentage (around the mid-teens for men and low-twenties for women) where increased hunger levels and feelings of reduced energy will become more pronounced.

Tip #10: Incorporate diet breaks into your plan.

A diet break is essentially a more prolonged "bigger picture" version of a refeed day where you'll go back to your calorie maintenance level for a full 1-2 weeks for every 1-3 months of consistent dieting. The basic premise of this is the same as it is for refeed days – to provide a physical and mental break from your diet and alleviate some of the side effects that inevitably kick in as a result of an ongoing calorie deficit.

You don't need to be perfectly on point with your calorie intake during your diet break, since taking a rest even from the process of dietary tracking itself has psychological benefits as well. Just try to keep things reasonably under control and eat somewhere roughly around your maintenance level without going excessively overboard.

The ideal frequency for a diet break primarily depends on your body fat percentage. The leaner you are, the more often you should ideally take them, and vice versa. As an approximate guideline, men between 10-15% body fat can employ a diet break once every 4-6 weeks, those between 15-20% can go with 8-10 weeks, and those above 20% can incorporate one every 12-14 weeks. Women can take the body fat figures above and add 7% to each of them to find their appropriate ranges.

Tip #11: Increase your accountability.

Consistently reporting back to someone (or multiple people) about how closely you've been following your plan can improve dietary consistency by keeping you more accountable for your actions. When you openly announce your goals and know that others are counting on you to follow through, there's a greater chance that you'll get it done regardless of how motivated or unmotivated you might feel.

Deriving your own discipline and motivation from within without the help of others is obviously important for longer term success, but using accountability as a short term strategy can be quite effective nonetheless. This can be done in several ways, such as joining online fitness forums or support groups, finding a training partner with similar goals, publicly logging your progress using social media platforms or apps, hiring a coach (though this should be done very selectively since the quality of fitness coaches can vary significantly), or just publicly announcing your goals to friends or family.

Tip #12: Start off small.

If the various guidelines outlined in this chapter seem a bit daunting right now (this would be especially likely if your current diet has been particularly unhealthy and disorganized for quite a while), then implementing just one or two things at a time may work better for you in comparison to trying to tackle it all at once.

For example, you could start by simply cutting out a couple high calorie foods or drinks that you tend to consume on a regular basis. If sugary sodas or fast-food meals are something you've become accustomed to, start by eliminating those in favor of healthier, lower calorie options.

After that, you could focus on cleaning up the rest of your food choices by implementing the recommended protein/carb/fat sources outlined in the previous sections.

Next, perhaps try adding more vegetables and fruit into your diet if it's not something you normally do.

From there, dial things in more closely by specifically tracking how many calories you're eating each day until it's consistently landing on the proper target.

Once that's under control, get a bit more detailed by counting your individual macronutrient numbers to ensure they're falling within the appropriate ranges.

There's no single way of going about this, but you get the idea here. If you'd rather just follow all of the recommended nutritional principles right from the start then that's totally fine, but taking a more gradual approach is a viable option as well if it feels more realistic for you.


CHAPTER 4:
WEIGHT TRAINING

INTRODUCTION

Now that you have all the proper nutritional principles in place and know exactly what to do in the kitchen to reach your fitness goals, it's time to cover the other side of the muscle building and fat loss equation by explaining what you'll need to do in the gym.

In the same way that you can't out-train a bad diet, good eating habits can only take you so far if you're following a sub-par training plan. If you want to gain muscle, lose fat and carve out the most impressive physique possible, an intelligently structured and properly executed weight training program is a must.

A moderate amount of additional cardio can be useful as a supplemental fat burning tool (this will be covered in the next chapter), but weight training is by far the most valuable form of exercise in your arsenal since it provides the basic stimulus needed for the body to build and maintain muscle mass. A well laid out weight training plan will maximize muscle hypertrophy and minimize fat gains during a bulking phase, or in the case of a cutting phase, allow you to maintain your existing lean mass as you drop the fat, or potentially even recomposition.

In this chapter we'll be covering everything you need to know from A to Z when it comes to laying out an effective lifting routine that produces optimal results from week to week.

We'll start by discussing the principle of progressive overload, which is the most important underlying concept upon which the rest of your training program will be built. From there, we'll dive into all of the individual factors surrounding proper workout structure, including volume, frequency, exercise selection, training splits, rep ranges, rest between sets, workout timing, duration, and more. Many common myths will also be dispelled along the way, along with some important injury prevention tips to improve training longevity and minimize the chances of potential setbacks throughout your lifting journey.

This all may seem like a lot of information to take in at once, but just as proper nutrition is a fairly simple process once you have all the fundamentals in place, proper training is much the same thing. You won't need to follow any fancy, highly complex workout routines to get the results you're after, nor will you need to spend hours and hours in the gym every single day and revolve your entire week around your lifting plan.

The goal here is to simply get into the weight room, put forth a good hard effort to complete the required work, and then get out to eat, recover, grow and enjoy the rest of your life without needlessly obsessing over the gym.

When it all boils down to it, achieving consistent muscle growth and fat loss from your workouts primarily results from the consistent application of a few basic, core principles. This is not to say that the workouts will be easy, but the actual methods themselves can be learned relatively quickly if you're willing to put in the effort.

So, let's not waste any time and get right down to it by discussing the concept of progressive overload, the single most critical guideline there is for achieving consistent results from your workout plan.

PROGRESSIVE OVERLOAD

As we covered in the previous chapter, total daily calorie intake is the single most important foundational principle when it comes to proper nutrition and forms the underlying basis of an effective eating strategy. When it comes to proper training, the principle of progressive overload should be treated in the same way.

There are many individual details that come into play when structuring a well laid out workout program, but none of them will make any difference to your results if you're not placing your primary focus on this core principle first and foremost.

To put it simply, progressive overload states that in order to induce muscular hypertrophy from week to week (hypertrophy is the technical term for growth), you must:

1) Trigger the body's muscle building response by training with a high enough level of intensity.

2) Consistently increase the workload over time in order to stimulate further and further gains.

It's critical to remember that, when it all comes down to it, building muscle is an evolutionary stress response and is your body's way of adapting itself to the demands of the environment. Whenever you train with weights, what you're actually doing is voluntarily inflicting damage on your muscles by subjecting them to mechanical tension that breaks down and tears the fibers. The body will then perceive this as a potential "survival threat" and react accordingly by rebuilding the muscles larger and stronger (assuming proper nutrition is in place) to better equip itself to deal with those stressors in the future.

It's a fairly simple concept, yet so many trainees completely overlook it and are oblivious as to what their actual purpose in the gym really is. They simply load up an arbitrary amount of weight on the bar and "go through the motions" for a prescribed number of reps, stopping their set far short of where they should be before taking a brief rest and moving onto the next one.

If you're truly serious about achieving significant results and transforming your physique to its full potential, then you need to get serious about your workouts. The bottom line is that if you're not consistently imposing demands on your muscles that are right up near (or beyond) their existing strength capacity, your body will have no incentive to change itself physiologically and no significant muscle growth will occur.

After all, if your body already has the existing resources in place to complete a given task without much difficulty, it already considers itself well adjusted to the current environment and has no need to adapt further. Muscle is metabolically "expensive" tissue and requires a large amount of energy and resources to build and maintain, and the body will only undergo this process if it has a very good reason to do so.

To put it simply, training intensity (the total percentage of available effort you exert on each set) is the underlying stimulus that sets the entire muscle building process into motion from the ground up. Without it, nothing else that you do in the gym will matter.

In fact, insufficient weight training intensity can even be directly counterproductive to your physique in some cases. This is because if you're eating in a calorie surplus but are not triggering a sufficient hypertrophy response during your workouts, those extra calories you're eating won't have anywhere to go except to your fat stores since the body will have no incentive to use them for building additional muscle. This is why some trainees can hit the gym consistently for several months and end up gaining mostly body fat with very little actual lean muscle to show for it. So, training with adequate intensity is not only critical for building muscle itself; it's also important in ensuring that body fat gains are kept to a minimum for those in a bulking phase.

However, while there is a minimum intensity threshold that must be reached in order to fully stimulate hypertrophy, this doesn't automatically mean that "more intensity is better" or that you should be training to all-out muscular failure on every single set. Pushing yourself *too* hard can actually backfire if you aren't careful, and it's important that your intensity level be properly moderated if you want to see the very best results.

The main reason for this is that your total training volume (how many sets and reps you perform per workout and per week) is another important factor that influences muscle growth. If your intensity level on each set becomes excessively high, you'll only be able to perform a limited amount of volume per session before the total workload becomes too great. While there's no doubt that generating sufficient mechanical tension is the single most important factor when it comes to stimulating muscle growth, the additional metabolic stress induced by simply performing more total sets and reps in general plays a role too.

The topic of training volume/frequency will be covered later on, but for now, just know that intensity and volume are both key activators of muscle hypertrophy and are directly interrelated – as one goes up, the other must come down. The goal of an effective hypertrophy workout is to find the proper middle-ground between the two where the intensity level is high enough to produce optimal gains, but not so high that it prevents you from getting in enough total volume.

This is not to say that very high intensity/low volume programs (otherwise known as "HIT", or "high intensity training") are ineffective for building muscle, as they can certainly still work well when applied properly. However, for the very best long term gains, dialing back the intensity slightly in favor of a few additional sets will typically be the superior approach.

It's also important to remember that weight training doesn't just overload your muscles – your joints and connective tissues are being stressed on each set as well. Injury prevention should always be treated as a primary factor in your workout plan (more details on this later), since your ability to train hard in the gym on a consistent basis hinges on the fact that your structural foundation is healthy enough to do so in the first place.

It doesn't matter how effective your training program is from a pure muscle building standpoint; if you're forced onto the sidelines with an injury (a very common occurrence due to improper workout structure), your entire program will be stopped dead in its tracks. For that reason, moderating your intensity is just as much about optimizing muscle growth as it is about keeping your joints safe and healthy over the long term.

With all of these considerations taken into account, a safe and effective intensity level to aim for would be to train approximately 1-2 reps short of muscular failure on the majority of sets you perform. Muscular failure is defined as the point in the set where you're unable to complete any additional repetitions in proper form despite your greatest efforts.

For example, if lifting with every ounce of available strength meant that you could perform 8 reps on the barbell squat with 175 pounds, you'd leave 1-2 reps "in the tank" and stop at the 6th or 7th rep rather than attempting that final "all out" 8th rep.

The last rep of each set should still be quite challenging and should require a good deal of physical and mental effort to complete, but super-slow "grinder reps" where the bar is just barely budging along (and where you're not even sure if you'll be able to finish it) should be avoided. If the lifting phase of that final rep takes any more than about 3-4 seconds to complete despite exerting maximum effort on the bar, you've probably gone a bit too far and should scale back your intensity level slightly.

In addition, high intensity techniques such as forced reps, rest pause reps, heavy negatives and drop sets should be avoided in most cases, only being seen as optional tools to utilize by more advanced trainees every once in a while. Regular straight sets taken 1-2 reps short of failure will be sufficient on their own to maximize the hypertrophic response in the vast majority of lifters, while also being safer on the joints as well.

Not every single set is going to be perfect (sometimes you might inadvertently stop 3 reps short of failure or accidentally end up going all the way to failure), but the goal is to fall roughly around this prescribed intensity level on the majority of your sets.

Also keep in mind that this 1-2 reps short of failure guideline assumes you're lifting with proper form at all times. If your form breaks down at any point in the set and you begin using large amounts of outside body momentum and sloppy technique to keep the weight moving, you're either lifting too heavy a weight to begin with or you should have stopped the set on a previous rep prior to your form slipping up.

If you're still a beginner, it will take some time to get a feel for things and learn exactly where the point of muscular failure is and how to properly anticipate it. Rather than just diving headfirst into the heavier weights, make sure to start off on the moderate side and slowly scale up your intensity levels over the first few weeks of lifting. Focus on developing proper technique first and foremost, and then gradually acclimate yourself from workout to workout by pushing the envelope a bit further each time. Each exercise and muscle group is a bit different, and there is a learning curve involved before you'll feel fully comfortable with every movement.

A final note on the issue of intensity (and just on proper training in general) is to make sure that you're applying this same guideline to every muscle group on the body rather than favoring certain areas over others. There's often a tendency, even unconsciously, to place more effort and focus on what would be considered the "showy" muscle groups (usually the upper body areas such as the chest and arms) while neglecting other areas that are deemed less important (and that are also more challenging to train) such as the back and thighs.

It's important to remember that every individual muscle plays a unique role in bringing your entire physique together, and many of the muscle groups that are typically given the most attention in the gym are actually not quite as "critical" as you might think in terms of creating the appearance of overall muscularity.

For example, although many trainees tend to place a huge amount of focus on building up their chest, the reality is that approximately 70% of your total upper body muscle mass resides in your back. Well built pecs are certainly an important addition to your physique, but adding quality size to your mid and upper back will usually have a much more dramatic effect on maximizing the overall width and thickness of your upper body.

The same thing holds true for arms. While the average lifter typically dedicates their main focus to pumping out set after set of curls in order to add mass to their biceps, it's actually the triceps that contain roughly two thirds of your upper arm muscle.

Not only does applying "selective intensity" to certain muscles over others create imbalances from a visual perspective, but it can also create structural imbalances that place you at risk for injury. For example, placing more focus on pressing movements for the chest as opposed to rowing movements for the back (a very common error that a high percentage of lifters make) can create instability in the shoulder joint that places undo stress on the rotator cuffs. Or, over-emphasizing quad exercises at the expensive of hamstring exercises can lead to imbalances in the knee joint. These are just two examples out of many.

Performing temporary "specialization" training cycles that hone in on specific lagging muscle groups is fine as you become more advanced, but for those who are still in the beginner to intermediate stages, every muscle group should be treated with equal importance and the focus should simply be placed on building up a balanced overall muscular foundation.

When it comes to the principle of progressive overload, everything we've discussed up until now has covered the "overload" side of the equation. However, while generating sufficient mechanical tension (intensity) during your sets is the primary underlying factor that stimulates muscle growth in any given workout, focusing in on this alone is not enough.

That's because if you want to experience *continual*, ongoing gains in size and strength from week to week, the total amount of tension you subject your muscles to must be consistently increased over time. If 12 weeks ago you were able to overhead press 100 pounds for 3 sets of 8 reps, and today you were still performing that exact same amount, your shoulders would have had no incentive to grow larger and stronger during that time. Your body would have already made the necessary adaptations to handle that specific workload and would have no need to build additional muscle unless presented with a more challenging task. It's only when

you increase the weight to 105 pounds, and then 110, followed by 115 and so on that the body will be forced to adapt further to the ever-increasing stress and continue to lay down more and more new muscle mass as a protective response.

When you eventually progress further into the more advanced stages and are lifting weights that are quite heavy for your body, moderating your loads on some exercises may become necessary in order to protect your joints and prevent injuries. This would particularly apply to smaller isolation movements that only involve a single muscle group and that place certain joints into a slightly more vulnerable position (such as chest flys, lateral raises, leg extensions, leg curls etc.), as you can typically only add weight to these lifts up to a limited point before further load increases become impractical or potentially dangerous.

At that stage, other methods of progression can be utilized beyond just lifting more weight in general, such as performing more total volume per workout, training each muscle more frequently throughout the week, reducing rest times in between sets, or adjusting your lifting form and rep speeds in order to make the same weight more mechanically challenging to train with.

However, for any trainee who is still able to safely increase the amount of weight they're lifting without any joint discomfort (particularly beginners and intermediates), the most effective and efficient way to stimulate further muscle gains is to simply focus on getting stronger, period. Steadily add more weight and reps to your exercises on a consistent basis, and muscle growth will simply occur automatically as a natural by-product of that process. All things equal, the person in the gym who increases their lifts by the greatest amount over the course of the year will almost always be the one who puts on the greatest amount of muscle as well, at least relative to their body frame and genetics.

This is why it's so critically important that you maintain a training logbook and objectively track your workout performance from week to week. Since the underlying basis for building muscle over time is to gain strength, it's imperative that you always pay close attention to your lifting numbers in the gym so that you know exactly where you stand at any given time and exactly what you need to do to improve further.

You should be making a written record of which exercises you performed, the weight lifted and reps executed on each set, and then striving for gradual, incremental strength gains on all of your lifts whenever possible. Every single time you enter the gym, you should be asking yourself "what did I do last workout?" and "what do I need to do this workout?", with the entire focus of your training being centered around consistently "beating the logbook" and getting a little bit better with each passing week.

Many people don't bother keeping written records of their workouts (often insisting that they simply "keep it in their head"), and this is precisely why such a large percentage of trainees never see the muscle building results they're after. No matter how good your memory might be, there is no more efficient way to maximize your progress than by having concrete numbers in place, as it will lay out all of your precise weight and rep targets for each session without any guesswork involved and will hold you directly accountable if you fail to reach them.

It will also allow you to see which lifts are increasing at an acceptable rate and which ones are stagnating so that you can make the appropriate adjustments to prevent plateaus and ensure that every muscle group is progressing to its full potential. On top of this, it's also very motivating to be able to look back at previous weeks and months of training and see firsthand just how far you've come. Maintaining a training logbook (either on paper or in your phone) requires very little additional effort, yet will pay dividends for your fitness program in the long term.

We've now established the importance of training for strength and the value of maintaining ongoing workout logs, but what is the best way to actually apply all of this in the gym? How often should you increase the weight on each of your exercises, and by how much?

The simple answer here is that you should aim to increase the weight on each exercise as often as you can while staying within your targeted rep range and maintaining proper form. "Proper form" is a key phrase that should not be overlooked here, since true progression means that your lifting technique remains exactly the same every time you increase the load. If adding more weight means that your range of motion begins shortening up, you start using excessive momentum, your rep speed increases and/or your form just gets downright sloppy, you're simply moving at too quick a pace and need to take things more slowly. Building muscle and gaining strength should be thought of as a marathon rather than a sprint, and it's crucial that you keep your ego in check and focus on small, incremental gains rather than trying to make huge leaps over night.

Not only is lifting heavier weights with inferior form *not* going to help you gain muscle more effectively (more on this topic later), but it will significantly increase your chances for injury as well by placing greater stress on your joints and connective tissues. If you ever feel unsure about a particular weight increase, you should always err on the side of caution and go a bit lighter rather than heavier.

In terms of the actual method for increasing the weight on your exercises over time, the general approach is fairly straightforward. First, you'll focus on increasing the total number of reps you can perform with a given weight until you're able to hit the upper end of your targeted rep range with that weight.

For example, if your targeted rep range was 5-7 per set and you squatted 200 pounds for 5 reps in a given workout, your next goal would be to perform 200 pounds for 6 reps, followed by 200 pounds for 7 reps. (If you're able to increase by 2 reps or more at a time in certain instances then that's of course fine as well.) Once you've reached the upper rep target with that specific weight, you'll then increase the weight on the following workout and continue training for additional reps again. In this case you would bump the weight up to 205-210 pounds (depending on how strong you felt that day), and continue with that weight until you could perform 7 reps again before further increasing the load and repeating the cycle.

It's important to note here that it's your performance on the <u>first</u> set of each exercise that should be used as the primary factor in determining when to increase the weight. Once you're able to hit the upper end of the rep range with a given weight on the first set, you

would then increase the weight on the first set of that exercise for the next workout. (In other words, it's not a requirement that you hit the upper rep target across every single set of an exercise before increasing the weight.)

From there, the amount of weight you use on the remaining sets of that exercise will be determined based on how many reps you performed on the previous ones. For example, if you were doing a rowing exercise using 60 pound dumbbells but were only able to manage 5 reps on the first set, decreasing down to 55's on the second or third set might be necessary to ensure that you're staying within the prescribed 5-7 rep range. If you're truly training 1-2 reps short of failure on each set, then you may see a slight drop in strength of a rep or two on subsequent sets of a given lift. On the other hand, if you were able to get 7 reps on the first set, you could keep the weight the same on the following sets since you should still be able to manage at least 5-6 reps with it.

There's no one "perfect" way of doing this, but the bottom line is to just make sure that you're training 1-2 reps short of failure on each set while staying within your targeted rep range, and if it becomes necessary to lower the weight on the second or third set in order to make sure you're able to meet the minimum end of the range, that's no problem. Much of this will ultimately just come down to experience as you get an increasingly better feel for things over time and learn how your body responds to training.

Once you have hit the upper rep target for a given lift and are ready to increase the weight on the following workout, the specific amount you'll be able to add primarily depends on how many muscle groups are involved in the exercise and how much total weight is being moved.

As a general rule, larger compound movements (such as squats, deadlifts, leg presses, chest presses, shoulder presses, pull ups, pulldowns and rows) will allow you to add weight at a faster pace and in larger increments in comparison to isolation exercises, usually between 5-10 pounds at a time. On those smaller isolation lifts (such as curls, triceps extensions, lateral raises, crunches, calf raises etc.) you'll typically need to spend more time with a given weight as you strive to increase the reps, followed by a slightly lower increase of between 2.5-5 pounds.

Remember that the more "isolated" a particular exercise is and the less weight you're lifting, the larger the percentage increase will be any time you try to add more resistance. For example, adding 5 pounds to a 175 pound bench press only represents a 3% increase, while that same 5 pounds on a 20 pound cable lateral raise represents a 25% increase. So, just make sure to be patient with your isolation exercises and aim for a slower, more gradual rate of increase, whereas with bigger compound movements the weights will generally climb up a bit faster. If you do find that the next weight increment on a particular exercise feels excessively heavy despite having hit the upper rep target with the previous weight, drop the weight back down and train for 2-3 additional reps before attempting to increase the load again.

Just how quickly you'll be able to increase your lifts as a whole will also be influenced to some degree by your individual experience level and whether you're currently in a bulking or

cutting phase. In the same way that muscle growth is subject to diminishing returns the longer you've been training, this also holds true for strength gains as well – the more weight you add to your exercises over time, the harder it will become to achieve further and further increases. Beginning lifters can expect to gain strength at the fastest rate of anyone, while intermediate and advanced lifters will generally require a bit more time with a given weight before they're able to increase the load further.

Total calorie intake plays a role in the strength gaining process as well. Those who are bulking and eating in a calorie surplus can expect to increase their strength more effectively than those in a calorie deficit, since their body will have more total energy and resources available to divert to both muscle growth and strength increases. That said, unless you're a more advanced trainee who is leaning down to fairly low levels of body fat (in which case your strength may stagnate or possibly decrease slightly toward the end of your cut), you should still be able to increase the weight and reps on your lifts even while in a fat loss phase. This is especially true if you're still a beginner and/or are carrying a fairly high amount of excess fat, in which case achieving significant strength progress should still be expected even though you'll be consuming fewer calories.

Regardless of your individual situation in terms of experience level and calorie intake though, the key point is to just strive for consistent strength progression as best you can. For most average lifters who are still in the beginner to intermediate phase and who are not exceptionally lean, some form of progression should be expected virtually every single week in the gym (every two weeks at the most), whether that means simply performing an extra rep with the same weight on each lift or slightly increasing the actual weight itself.

You should be able to bump up the weight on each exercise in some capacity roughly once every 2-4 weeks on average depending on the movement, and if you're going more than two weeks straight without any form of weight/rep progression at all, this would indicate that something in your plan is off and needs to be corrected. (The details of how to properly address strength plateaus will be covered in the Progress Tracking section in chapter 8)

Don't expect your strength increases to occur in a perfectly linear fashion (for example, it's normal to have "off" days here and there or experience some slight regression during certain periods where you may fall slightly off track with your program for whatever reason), but the general trend should clearly be moving upward on a month to month basis.

We've now covered everything you need to know about the foundational principle of progressive overload. This basic guideline is where the majority of your focus should be placed in the gym, as it's by far the most important factor in determining how much muscle you'll ultimately gain over the long term. The bottom line is that if you're training with sufficient intensity and are consistently getting stronger over time, you'll know your workouts are on the right track for the most part. If not, then you shouldn't be expecting to put on muscle to any significant degree either.

Let's now dive into more detail by outlining the specifics of how your workouts should actually be laid out and executed for the very best results. Progressive overload may form the underlying basis of your training routine, but it's far from the final word.

VOLUME / FREQUENCY

Properly configuring your weekly training volume and frequency is the first main step when it comes to laying out an effective workout routine for optimal muscle size and strength gains. When discussing volume and frequency, what we're specifically referring to is how many total sets and reps you'll perform for each individual muscle group per week (volume), and how often you'll directly train each muscle (frequency).

Although these are technically two separate questions, they both go hand in hand and work in direct relation to each other – as one goes up, the other must come down. The more total volume you perform per workout for a given muscle, the more recovery time you'll require in between sessions and the less frequently you'll be able to train that muscle throughout the week. On the other hand, the less volume you utilize during each session, the faster you'll recover and the more often you can directly train each individual muscle without the risk for overtraining.

The key is to strike the right balance between the two where you're performing the proper amount of total sets and reps for each workout to optimally stimulate muscle growth (not too much, and not too little), while also utilizing a high enough weekly frequency in order to maximize your overall rate of progress.

In terms of practical recommendations, it's important to keep in mind that there is no such thing as one single volume/frequency protocol that will be 100% perfect for every person in every situation. The ideal amount for any given trainee will be influenced to some degree by their individual genetics, experience level, recovery capabilities, joint health and other factors. As you accumulate more training experience from month to month and year to year, you'll gradually get a better feel for how your body responds at various volume/frequency levels, allowing you to fine-tune your approach over time.

Another significant contributing factor when it comes to proper volume/frequency configuration is the type of workout program being followed, in particular the level of training intensity that is being utilized. As the intensity level per set goes up, the amount of volume required to effectively stimulate hypertrophy (and to prevent the risk of injury and overtraining) goes down, and vice versa. For example, someone using lighter weights and training 3 reps short of failure on each set would need to perform a much higher amount of total work to generate a similar muscle building effect in comparison to someone training with very heavy weights all the way to complete failure.

In any case, regardless of the individual differences that do come into play here, there are still some general volume and frequency guidelines we can put in place that will work very reliably for the vast majority of trainees assuming they have roughly average genetics, are training at an intensity level of 1-2 reps short of failure on most sets, and are staying within the recommended hypertrophy rep range we'll be outlining later in this chapter.

When it comes to training volume, a safe and effective range to aim for would be to perform between 8-15 total sets per week for large muscle groups and 4-8 total sets per week for

small muscle groups. The large muscle groups include the quads, hamstrings, glutes, back and chest, while the small muscle groups include the shoulders, biceps, triceps, abs and calves. While it's certainly still possible to achieve significant results by training with a bit more or a bit less volume than this, these ranges are what would be considered optimal for most average trainees in most situations. This is a large enough workload to maximize muscle hypertrophy and strength gains for the week, but without including any unnecessary excess that could potentially inhibit recovery in between training sessions.

The primary reason why the small muscle groups are trained with less total volume is that they already receive quite a bit of secondary stimulation during compound exercises for your large muscle groups. There is a significant amount of muscular "overlap" that occurs when training those bigger muscles, and this needs to be properly accounted for when configuring your training volume for each body part. For example, the front delts and triceps are heavily involved in all compound exercises for the chest (bench presses, dumbbell presses etc.), with overhead presses for the shoulders also recruiting the triceps to a large degree. The rear delts and biceps are stimulated during all compound back exercises (pull ups, pulldowns and rows), while the muscles of the core come into play on virtually every exercise you perform in order to keep the body properly stabilized during training.

These volume guidelines might not sound like a lot if you've been accustomed to performing 25+ sets per muscle like so many high volume bodybuilding routines prescribe, but the simple fact is that as long as you train hard and focus on progressive overload, you don't need to perform a large number of sets and reps to get the results you're after. Going too high on total volume can actually become directly counterproductive to your gains, as it will push your body beyond its ability to properly recover in between workouts. Remember that although training with weights is what initially triggers the body's muscle building mechanism, the actual growth itself takes place while you're out of the gym resting and recovering.

There's a finite limit as to how much new muscle growth can be stimulated during any given training session or any given week, and continuing to stress your body beyond that maximum point will simply prolong your recovery time without producing any additional net gain. By properly moderating your volume and avoiding those unnecessary extra sets, you'll recover more quickly in between sessions and increase the total number of workouts per muscle group that you can perform for the week/month/year, thus creating the greatest number of individual "growth periods" and fully optimizing your long term rate of progress.

That brings us to the question of proper training frequency. How exactly should these volume guidelines be broken up throughout the week in terms of individual sessions per muscle group and total number of workouts performed in general?

While once again keeping in mind that individual differences do play a role in determining the ideal frequency for any given person, directly training each individual muscle group between 1.5-3 times per week would be considered the optimal "sweet spot" range for the vast majority of trainees. Research has shown that protein synthesis will remain elevated in a given muscle group for around 1-2 days after it's been trained, with up to 4 days being

required for complete muscular recovery and growth depending on how much volume and intensity was utilized. It should also be noted that muscular recovery is just one piece of the equation, as the joints and central nervous system require time to recuperate in preparation for the next workout as well.

In any case, taking the weekly guideline of 8-15 sets for large muscle groups and 4-8 sets for small muscle groups and then splitting it up over 1.5-3 individual training sessions per muscle will strike a good balance between overall volume/frequency for consistent muscle growth and strength gains. This means that on the lower frequency end of 1.5x per week you'd be performing about 5-10 sets for large muscle groups per workout and 3-5 sets for small muscle groups. At the higher end of 3x per week, you'd be doing between 3-5 sets for large muscle groups per workout and 2-3 sets for small muscle groups. At 2-2.5x per week the volume would fall somewhere in the middle.

There are a virtually endless number of different ways this could be potentially laid out in terms of a concrete weekly training plan, but there are three main "tried and tested" approaches that would be recommended in order to meet these volume/frequency guidelines in an organized and well structured manner that will work very well for most average lifters. (Keep in mind that the exact step-by-step workout routines in terms of days in the gym, exercises, sets and rep ranges are all laid out in detail in the Body Transformation Blueprint Workout System, so the information here is simply meant to give a generalized overview.)

Option #1 is to perform a basic full body workout 3 days per week. This is the simplest and most straightforward training approach to choose from, and as the name implies, involves training your entire body as a whole during each individual workout session. Full body workouts are very well suited to beginning lifters for the first 6-12 months of training (4 months is acceptable but would be considered the minimum time frame) as a way of maximizing their initial "newbie gains" and building up an overall size and strength foundation as quickly as possible. Since beginners are so highly responsive to weight training due to it being a novel stimulus – and since they'll also be able to recover more quickly in between workouts as a result of the relatively lighter weights they'll be lifting – hitting each muscle 3 times per week with a higher frequency approach is typically the best way to take advantage of this.

Option #2 is to perform an upper/lower split 3-4 days per week. With this structure you'll be training all of your upper body muscles on one day followed by all of your lower body muscles on the other, rotating back and forth throughout the week. Having separate upper body and lower body days will allow you to add in a wider variety of exercises and slightly more volume per session to further optimize the development of each individual muscle. Upper/lower splits are ideally aimed at intermediate trainees that have completed a consistent full body training cycle and who have achieved some notable muscle gains (approximately 10-15 pounds or more of quality lean mass for men and roughly half that amount for women) in the process.

Whether you go with 3 sessions per week (averaging out to 1.5 direct weekly workouts per muscle group) or 4 sessions per week (2 direct workouts per muscle) should be determined based on your individual training tolerance, how your body responds at lower or higher frequencies, as well as your specific goals and preferences. All things equal, whichever training frequency allows you to gain strength at the fastest rate will also be the one that builds muscle at the fastest rate (this is very important to keep in mind since it applies to any workout split you're following), so the best thing to do is experiment and see which one produces the best results for you in terms of maximizing progressive overload from week to week. The upper/lower structure can be followed for another 6-12 months (4 months as a minimum), before graduating to the next training split.

Option #3 is to perform a legs/push/pull split 4-5 days per week. This is the more advanced option of the three and is best followed by those with at least 1-2 years of proper lifting experience under their belt, ideally after having completed both the full body and upper/lower phases of training. This weekly structure further reduces the total number of individual muscles trained per session so that you can hone in more closely on each body part in terms of exercise variation and volume.

The legs workout will train your lower body muscles, the push workout focuses on your upper body pushing muscles (chest, front/side delts, triceps) and the pull workout hits your upper body pulling muscles (back, rear delts, biceps). While there are plenty of other potential 3-day training splits that could be used effectively as well, this particular one breaks your body up into systems of related muscle groups that work together on their respective movements, minimizing muscular overlap throughout the week and allowing for better recovery in between workouts as a result.

Whether you go with 4 sessions per week on this split (averaging out to 1.33 direct workouts per muscle group per week – just slightly below the minimum recommended 1.5x/week frequency guideline, but still close enough) or 5 sessions per week (1.66 direct workouts per muscle) once again depends on your individual training tolerance and is something that will need to be experimented with to find the ideal frequency. The recommended approach for this split would be to start off on the lower end at 4 days per week, optionally increasing to 5 if you find that you're easily recovering in between the workouts and you have the available time and energy to experiment with an additional weekly session.

There's no set "limit" as to how long the legs/push/pull structure can be followed for, as this will be an effective style of training even for those in the highly advanced stages of lifting. A consistent 4 month cycle is once again recommended as a minimum, with 6-12 months being ideal to achieve the highest rate of overall progress. At that point you can either move on to a different routine altogether, or continue with a legs/push/pull split but swap in different exercises for variety.

In order to maximize your muscle building results based on your individual level of experience, the three weekly training layouts outlined above will work very well as a default template during the first 1.5-3 years of lifting for virtually any trainee out there. It should be noted though that while a full body workout for beginners, upper/lower routine for

intermediates and legs/push/pull split for advanced lifters is certainly a reliable and highly effective structure to follow, the reality is that any of these training layouts will ultimately produce consistent muscle growth regardless of one's specific level of experience.

For example, advanced trainees can still achieve significant progress by utilizing a full body approach, as could a complete beginner following a legs/push/pull split. There are many other 2-3 day split variations out there that could be used effectively as well, and even a traditional 4-5 day bodybuilding "bro split" where each muscle is trained just once per week with higher volume can still produce great results as long as progressive overload is being achieved over the long term. Even performing just 2 total workouts per week can build significant muscle size and strength if they're being executed with the proper intensity and the total volume for the week as a whole is sufficient (such as 2 full body workouts or 1 upper body workout/1 lower body workout), though it usually does take a slightly more advanced trainee in order to truly pull this off effectively.

The ultimate goal is to lay things out in a way that produces the fastest progress overall (that's what the recommended training sequences outlined above are designed to do and why it's recommended that they be followed in order unless there is a specific reason to do otherwise), but just keep in mind that overall volume/frequency for the week as a whole combined with ongoing progressive overload is by far the most important muscle building factor beyond any one exact training split.

EXERCISE SELECTION

With your weekly volume and frequency ranges now configured, the next step in the process is to determine which actual exercises you'll use to meet those specific ranges for each individual muscle group. With all of the different areas of the body that must be properly trained for overall physique development, it's important that you gain a basic understanding of the various movement patterns performed by each muscle and how to effectively combine them into a well balanced workout plan.

There are two main types of exercises you'll be performing, that being either "compound" or "isolation" movements. Compound movements involve the use of multiple muscle groups at the same time (such as squats, bench presses, pullups etc.) while isolation exercises utilize only a single muscle group with minimal involvement from surrounding areas (such as biceps curls, calf raises or shrugs).

Compound exercises are the most efficient means of maximizing total body muscle growth and provide the greatest "bang for the buck" due to their high capacity for progressive overload and ability to target several muscle groups simultaneously. Because of this, they should always be given top priority and positioned first in your workouts while your strength and mental focus is at its peak.

After your compound lifts have been completed, additional isolation work can then be included to provide some extra volume for your large muscle groups as well as to target your other smaller muscle groups that can't be fully stimulated using compound lifts alone. For example, although the biceps and triceps are recruited during all compound movements for the back and chest, direct isolation exercises in the form of biceps curls and triceps extensions will still be necessary in order to completely optimize their development. Other muscles that require further isolation work for maximal growth include the middle and rear heads of the shoulder, upper traps, abs, calves and forearms.

A variety of different lifting tools can be used to perform both your compound and isolation exercises, including barbells, dumbbells, cables and machines. None of these options are inherently "better" or "worse" than the other, as they all have varying applications depending on the specific exercise being performed as well as the goals, equipment availability and potential injury limitations of the individual.

The basic foundational compound lifts (squats, deadlifts, horizontal presses, horizontal pulls, vertical presses and vertical pulls) are typically best performed using free weights due to the more natural range of motion and improved functional carryover they provide, with cable and machine exercises being added in for those movements that either can't be performed using free weights (such as leg presses, lat pulldowns, triceps pressdowns, face pulls etc.) or where the cable or machine variation provides a certain advantage, such as improving the resistance curve on a chest fly, providing lower back support during rows or allowing for easier loading on calf raise movements to give a few examples.

Far more important than the specific lifting tool you opt for though is that you're simply performing the correct movement pattern to target whichever particular muscle you're training. The reality is that there a nearly endless number of different ways a given exercise could be performed effectively, and there is no such thing as any single "mandatory" variation that you absolutely must include in order to achieve significant results.

For example, an overhead press for the shoulders could potentially be done from a standing position using a barbell, seated position using dumbbells, incline position on a hammer press machine, or even from a kneeling position using cables. While an argument could be made in favor of certain variations over others depending on the specific goal of the exercise, any of these choices will ultimately be effective as long as the shoulder is being trained through the same basic plane of movement and progressive overload is being achieved over time.

Certain default recommendations will be made for each muscle group that would be considered as the ideal choice for trainees whose primary goal is to fully maximize hypertrophy, but it's the correct combination of movement patterns that is by far the most important factor to consider when making exercise selections, with the difference between "effective" and "ideal" still being relatively modest in the bigger picture.

Due to the many smaller nuances involved in training any given muscle group in terms of its exact structure, functions and exercise selection options, an entire manual could be potentially dedicated to each one if every single factor were to be taken into account. For that reason, to keep the length of this section within reasonable limits, the goal here is to simply lay out the most important, practical information you'll need to know for each body part without getting overly bogged down in unnecessary details.

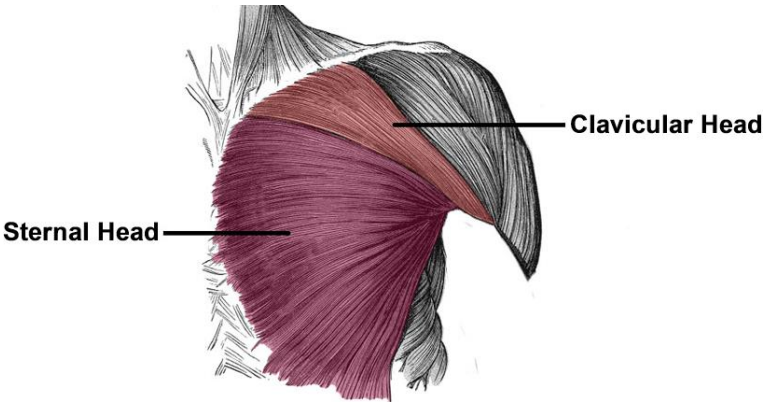
Also keep in mind that the exact recommended exercise sequences for each muscle group (along with step by step video tutorials for each) are all laid out in detail in The Body Transformation Blueprint Workout System, so you won't need to specifically organize and combine all of this information on your own. Instead, you can simply use this section as a general resource to acquire the proper understanding of how each muscle should be trained and why, as well as to learn about some additional exercises that can be optionally added to the default routines depending on your individual training goals and experience level.

It should also be noted that since there are literally hundreds of different exercises available that could potentially be performed for each muscle group, video tutorials have been provided only for those movements that are specifically included in The Body Transformation Blueprint Workout System. If you're interested in learning the proper form for any other exercises that are not included in the default training plans, those would have to be researched separately as it simply isn't possible to provide demonstrations for every single one.

With that introduction out of the way, let's go through each major area of the body (chest, shoulders, back, arms, abs, thighs/glutes and calves) and discuss the specific functions they perform and which exercises should be used to target them for the best muscle building results.

CHEST

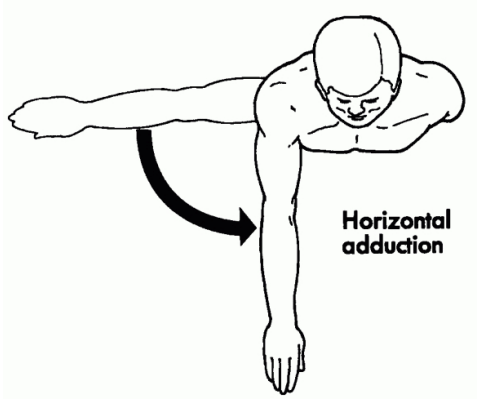
Generally regarded as one of the most sought-after "showy" muscle groups on the body to develop, the chest (pectoralis major) is separated into two individual heads: the sternal head (making up the "mid" and "lower" pecs) and the clavicular head (the "upper" pecs).



There is also the pectoralis minor that runs underneath the pec major, though this is a very small muscle (functioning to stabilize the scapula) and is not necessary to worry about for muscle building purposes.

Despite the huge amount of value most average trainees place on their chest training efforts – with the bench press often being treated as the single most important "cornerstone" upper body lift to focus on – the pecs themselves are actually not quite as large a muscle as most people think and should not be given any "special priority" over other areas as is so commonly seen. They certainly play an important role in the appearance of a muscular and well balanced upper body, but do not require anything fancy in terms of exercise selection and can be trained fully using just one or two basic movement patterns.

The primary function of the pec major is to press the upper arm across the front of the body, known as *transverse shoulder adduction*.



The two exercises that are used to target this function for chest stimulation and growth are horizontal presses and flys, both of which can be performed at either a flat, incline or decline angle.

Horizontal presses are a compound movement that train the chest with additional assistance from the anterior delts (front of the shoulder) and triceps. These exercises should be treated as the underlying foundation of any effective chest training routine, performed first in the workout before any isolated fly movements are included.

Horizontal presses can be executed in the form of a traditional barbell bench press, dumbbell press or as any number of other machine press or cable press variations. While any of these tools will ultimately be effective if utilized with sufficient intensity, proper form and progressive overload, the dumbbell press provides certain advantages that make it the top recommended default pressing movement for muscle building purposes.

In comparison to the commonly used barbell bench press, dumbbells move the pecs through a slightly larger range of motion, allow each arm to work independently (helping to prevent size and strength imbalances from side to side), and reduce strain on the shoulders due to the more natural arching movement involved. A barbell press can certainly still be used effectively as your primary chest exercise if you prefer it for some reason, but a dumbbell press will typically strike the best overall balance for most trainees in terms of maximizing chest stimulation while also minimizing the risk for injury. Keep in mind though that you aren't necessarily limited to a single pressing movement for your weekly chest training plan either, so utilizing a mixture of different variations is an option as well depending on how your program is structured.

In terms of angle selection (flat, incline or decline), this will depend on which specific area of the pec muscle you're wanting to emphasize. In order to maximize the tension on any given set of muscle fibers, the angle that the resistance is pulled at should run parallel to the angle of those specific fibers. (This applies not only to the chest but to every other muscle on the body as well.) As seen in the graphic above, the lower fibers of the chest run at a downward angle from their insertion point on the upper arm, while the middle fibers run horizontally and the upper fibers run at an upward angle.

Based on these differing fiber orientations, decline angles will direct a greater portion of the stress toward the lower pec region, with flat and incline movements emphasizing the mid and upper pecs respectively. Keep in mind that any chest exercise you perform will still activate the entire pec muscle as a whole regardless of the angle used, but the tension can be shifted slightly between the lower, middle and upper areas depending on how you position yourself during the lift.

Another common chest pressing exercise that is often utilized for building the pecs is the wide grip dip. However, since this movement primarily involves the functions of shoulder flexion and elbow extension, dips are actually more of a front delt and triceps focused exercise as opposed to a mass builder for the chest. Wide grip dips also place the shoulder joint into a much more vulnerable position that can lead to excessive strain over time, especially as you progress to heavier and heavier weights. Given that wide grip dips don't

provide any particular muscle building advantage for the pecs in comparison to standard horizontal pressing movements, they're typically best avoided in most cases due to the increased injury risk they carry.

After your horizontal pressing movements have been completed, a chest fly exercise can then be included to provide some additional volume for the pecs and train them through a slightly different movement pattern. Flys are an isolation exercise that stimulate the chest with minimal involvement from other muscle groups, and as with presses, can be performed using a variety of tools including dumbbells, cables and machines at either a flat, incline or decline angle. Any one of these choices will work effectively, though cable and machine variations are generally better suited to fly movements since they provide more consistent tension on the chest throughout the entire range of motion.

When flys are performed using dumbbells, the majority of the tension is taken off of the pecs toward the top half of the movement since the exercise is performed in a circular motion while the force of gravity is pulling downward in a straight line. The difference here will be fairly minor in the overall picture, but if possible, a cable fly (performed from either a standing, seated or lying position) or machine fly would be recommended for optimal pec stimulation. Depending on how much total volume you'll be training your chest with throughout the week, the other option once again is to just utilize a mixture of different variations.

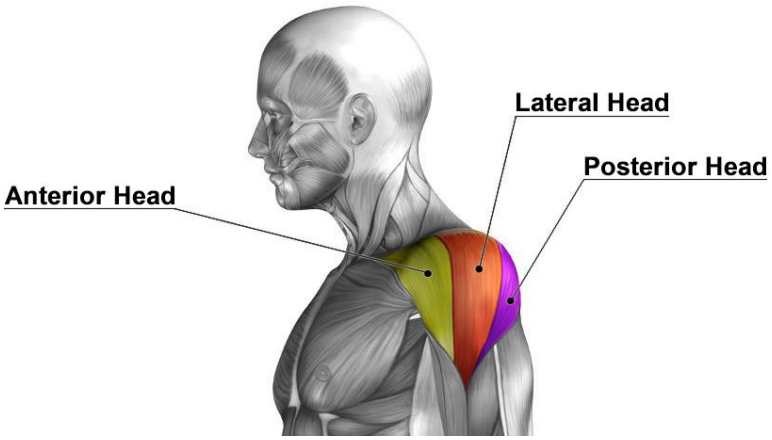
There are many ways that an effective chest workout could be structured using these exercises, but a reliable template to follow would be to include at least one horizontal pressing exercise and one fly exercise in your routine, with one movement being performed at either a flat or decline angle and the other at an incline angle to ensure full stimulation of all regions of the pec. This could mean a flat or decline press followed by an incline fly, or an incline press followed by a flat or decline fly.

More advanced trainees can optionally include a greater amount of exercise variety than this depending on their program structure and goals, while complete novices will typically be best off to focus on compound presses only during the beginning stages, adding fly movements in later on once an initial size and strength foundation has been built.

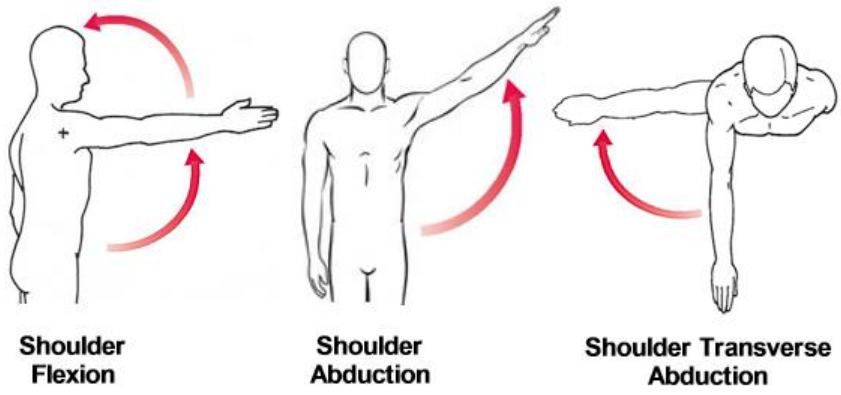
SHOULDERS

When it comes to creating the appearance of a wider, more powerful looking upper body, a well built set of shoulders will generally have the largest contributing effect of any muscle group, especially underneath a shirt. Muscular shoulders also help to create the appearance of a smaller waistline, accentuating the "v-tapered" look that all serious lifters strive for.

The shoulders (technically referred to as the "deltoids") are separated into three individual heads: the anterior head (front), lateral head (middle) and posterior head (rear).



Since the shoulder operates as a ball and socket joint, it has a very high degree of freedom and can perform a wide variety of different functions involving each of these three heads. In terms of the primary functions that should be focused on for muscle building purposes, the anterior head is mainly involved in *shoulder flexion* (lifting the arms out in front of the body and overhead), the lateral head performs *shoulder abduction* (lifting the arms out to the sides) while the posterior head performs *transverse shoulder abduction* (moving the arms backward and apart horizontally).



The most commonly used "bread and butter" movement pattern for training the shoulders is a basic overhead press. This is a compound exercise that primarily targets the anterior head (also referred to as the "front delts") and the triceps, with secondary involvement of

the lateral head. Overhead presses can be done in a variety of ways, most often as a standing overhead barbell press or seated overhead dumbbell press.

Either variation will target the shoulders effectively, but the seated overhead dumbbell press provides certain advantages that make it the more preferred option for overall shoulder hypertrophy. Having the arms positioned further out to the sides allows for increased lateral head involvement (an overhead barbell press is mainly a front delt focused lift due to the forward position of the elbows), with the use of dumbbells also producing a more natural arching movement that trains each shoulder independently for balanced size and strength gains. An overhead barbell press is certainly still an acceptable option as a primary overhead pressing movement, but dumbbells would be considered as the ideal "default" option in this case.

Since the anterior head is heavily worked during overhead presses and also receives a high amount of stimulation during all compound pressing movements for the chest, it typically does not require further isolation through the use of front raises. Although front raises are a very commonly performed exercise in most gyms, they likely won't contribute noticeably to your overall shoulder gains given adequate chest and shoulder pressing volume throughout the week.

When it comes to training the lateral head (also referred to as the "side delts"), the primary exercise to focus on would be a properly executed lateral raise. Although the lateral head is involved in overhead pressing movements to a certain degree, further isolation work will be required in order to fully maximize its development. Since the lateral head sits directly on the side of the shoulder and is the most prominent of the three deltoid heads, this is a very important area to focus on if you're looking to give your shoulders that wide and capped "3D" look.

Lateral raises can be performed using either dumbbells or cables, and while both variations will ultimately train the lateral head effectively, cables would be the preferred choice if possible due to the slightly improved resistance curve they provide. Unlike cables, dumbbells only activate the lateral head fully in the top half of the range of motion, with the tension gradually decreasing as the dumbbells are lowered back down to the starting position.

Another highly effective shoulder exercise that targets both the lateral and posterior heads (along with the muscles of the mid and upper back) are face pulls. Face pulls are essentially a rowing exercise where, rather than pulling the weight in toward the waist as is normally done during regular back exercises, the resistance is pulled higher up toward the face instead. Face pulls are a great movement not only for stimulating delt hypertrophy, but also for improving overall shoulder health by counteracting the common kyphotic ("hunched over") posture so common in weightlifters and those who spend a large portion of the day in a seated position.

Aside from lateral raises and face pulls, one other optional add-on for hitting the lateral head would be an upright row. While certainly not a "must" when it comes to effective shoulder training, upright rows can be experimented with by more intermediate/advanced trainees who are specifically wanting to incorporate more variety into their delt workouts. Just keep in mind that upright rows do place the shoulder joint into a slightly more vulnerable

position, and so they must be performed cautiously (meaning lighter weights for higher reps, a slower and more controlled tempo, and only pulling the elbows up to shoulder height and no higher) and should ideally be avoided by anyone with pre-existing shoulder issues.

The third and final area of the shoulder to take into account is the posterior head, also referred to as the "rear delts". The posterior head will be trained effectively through the use of face pulls as previously mentioned, and is also stimulated during vertical and horizontal pulling movements for the back such as pullups, pulldowns and rows.

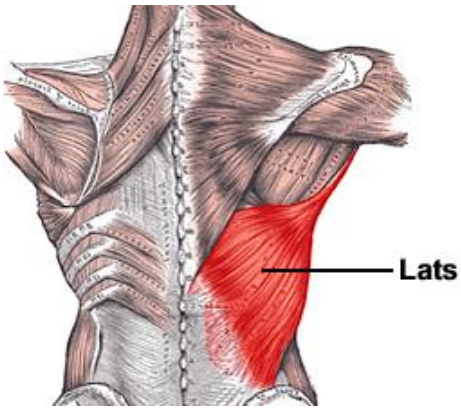
Beyond this, a rear lateral raise movement can also be included to isolate the posterior head further and fully round out your shoulder training plan. The ideal choices for this would be a bent over cable rear lateral raise, standing cable rear lateral raise or a rear lateral raise performed on a reverse pec deck machine. Dumbbells are an option for this exercise as well, though they won't activate the posterior head to as significant a degree due to the lack of tension in the mid to bottom portion of the range.

BACK

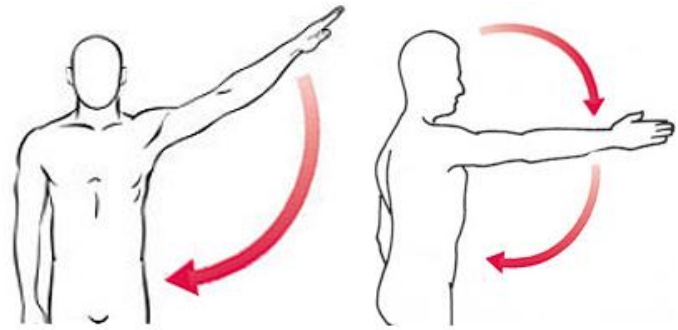
Although it can't be directly seen working in the mirror (and is often neglected in the gym for this reason), the back is a much larger and more valuable area to develop than most trainees realize. In fact, roughly 70% of your total upper body muscle mass resides here.

Simply referring to the "back" as being one single muscle group like so many people do is far from an accurate description, as the back is actually comprised of several different large muscles that all must be trained fully for complete development. A wide, thick back will have a significant contributing effect on the appearance of overall upper body muscularity (much more so than the typical "beach muscles" most lifters tend to focus on, such as the chest and biceps), especially when paired up with a well built set of shoulders.

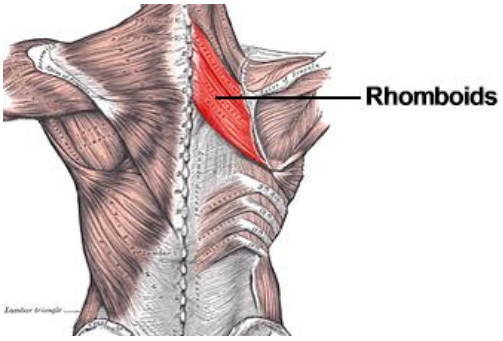
The first major area to take into account when structuring your back workouts is the latissimus dorsi ("lats" for short) which contribute primarily to the appearance of back width.

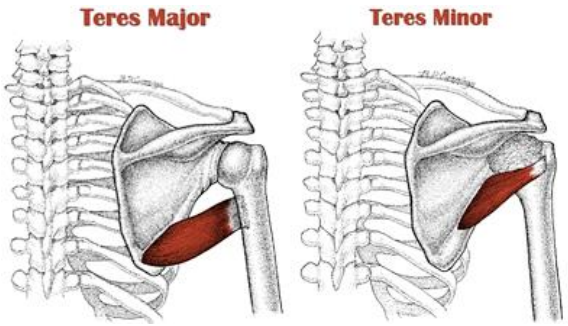


The lats are the single largest muscle found in the upper body and perform the primary functions of *shoulder adduction* (pulling the arms in closer to the body while out to the sides) and *shoulder extension* (pulling the arms in closer to the body while out in front).



Based on these two functions, the lats are best targeted for growth through the use of vertical pulling movements in the form of pullups and/or pulldowns, both of which can be performed using a variety of different grips (overhand, neutral or underhand) and grip widths (wide, shoulder width or narrow). Vertical pulls are a compound movement that not only recruit the lats, but involve many other muscles as well including the rhomboids, mid and lower traps, teres major and minor, rear delts and upper arm flexors (biceps and brachialis).

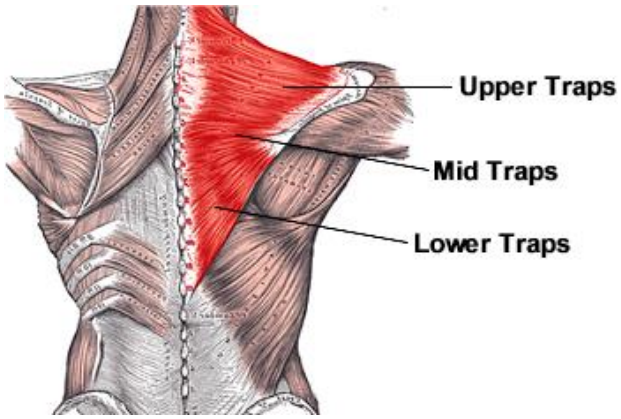




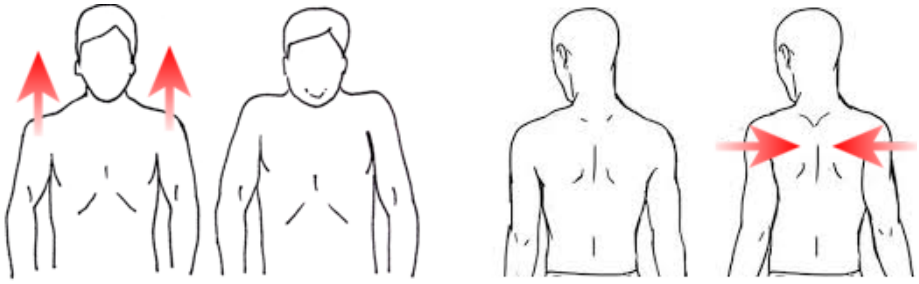
A wider grip with the elbows positioned further out to the sides will mainly target the function of shoulder adduction, while a narrower grip with the elbows positioned out in front of the body will target shoulder extension. A well rounded approach for lat training would be to combine both of these movements together using one pullup and one pulldown exercise in order to stimulate the lats through each function. This could mean a wider overhand grip pullup paired with a narrower neutral grip pulldown, or a narrower neutral grip pullup paired with a wider overhand grip pulldown.

The slightly wider grip overhand variations will activate the lats to the highest degree overall, so this would be the preferred choice for those on a more basic training plan (such as a beginner following a full body routine) who will only be utilizing a single vertical pulling exercise in their program. Underhand pullups/pulldowns can be optionally utilized as well, though this variation is not quite as effective for training the lats due to the greater involvement of the biceps in comparison to the overhand and neutral grips.

After the lats, the second primary muscle group of the back is the trapezius, or "traps" for short. The traps are a large v-shaped muscle that are separated into upper, middle and lower fibers and contribute mostly to the appearance of back thickness.



The upper fibers perform the primary function of *scapular elevation* (shrugging the shoulder blades upward), while the middle and lower fibers are primarily involved in *scapular retraction* (pulling the shoulder blades backward).



Scapular Elevation

Scapular Retraction

Compound rowing exercises are the most effective way to target the middle and lower fibers and can be performed using a variety of tools such as a barbell, dumbbells, cables or machines. Rows also activate the lats quite heavily, and similar to pullups/pulldowns, recruit several other muscles as well including the rhomboids, teres major/minor, rear delts and upper arm flexors.

While a wide variety of different rowing variations could be potentially used as part of an effective back workout, dumbbells would be the preferred choice here for the same reasons outlined in the chest and shoulder training sections, in that they provide a more natural range of motion and allow each side of the body to work independently for balanced size and strength development.

Rowing variations that keep the lower back supported also provide the added advantage of reducing stress on the lumbar region, allowing you to direct all of your focus onto training the targeted back muscles without the lower back becoming a limiting factor in the exercise. One arm dumbbell rows, seal rows or incline chest supported rows are all great choices for this, as are chest supported machine variations such as hammer strength rows. A standard bent over row using a barbell or dumbbells is still a viable option here, but just keep in mind that these exercises are more demanding on the lower back and are typically best avoided by those with any pre-existing injuries.

While on the topic of rows, it should also be noted that the face pull exercise covered in the previous shoulder training section is also a rowing movement and will activate the mid and lower fibers of the traps as well.

To finish off the traps, the upper fibers can be stimulated through the use of a basic shrugging exercise such as a barbell shrug, dumbbell shrug or a machine variation such as a smith machine shrug. Any of these options are acceptable, though one added benefit of the dumbbell version is that it allows you to hold the weight slightly out at your sides for reduced load on the lower back. Due to the significant strength of the upper traps and the very short range of motion involved, fairly heavy weights can often be utilized on shrugs which the lower back must also work to support.

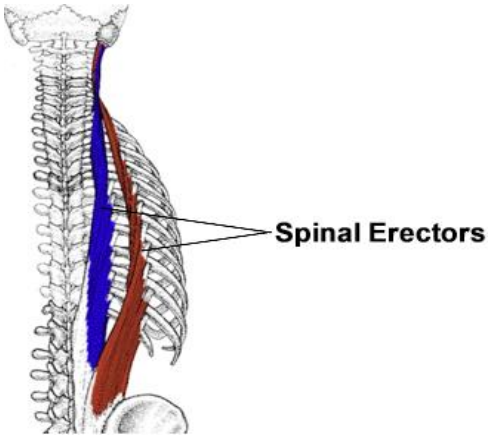
In order to target the muscles of the back effectively, a combination of the previously mentioned exercises – a pullup, pulldown, row, face pull and shrug – is typically enough to allow for complete stimulation and growth of all areas. For those looking to focus in even more closely on their back development with some added volume and exercise variety

throughout the week (this would particularly apply to more intermediate and advanced trainees), three other optional "add-on" exercises can also be considered.

The first exercise would be a rack pull to provide some additional work for the traps. Although conventional deadlifts are often used as a primary back exercise for this purpose, it's only the top half of the deadlifting movement that actually places a significant amount of stress on the muscles of the upper back. The first half primarily utilizes the quads and glutes, making traditional deadlifts just as much a lower body focused exercise as an upper body one. By eliminating the bottom portion of the range and taking the legs largely out of the equation, a rack pull allows you to direct the majority of the tension onto the upper back using the full loads these muscles are capable of, and without having the exercise interfere with recovery in between your leg workouts.

The second optional back exercise to consider would be a pullover, which is an isolation movement that targets the lats with minimal involvement of surrounding muscle groups. A freeweight dumbbell pullover, cable pullover or machine pullover are all acceptable choices here, though the cable and machine variations will provide a slightly improved resistance curve in comparison to dumbbells. Pullovers would not be considered an "essential" back exercise, but adding them in toward the end of your workout (after all compound pulling movements have been completed) is an option to provide some extra volume for the lats.

The final optional movement would be a hyperextension to target the spinal erectors. These are two large columns of muscle that extend up the entire spine and perform the primary function of *spinal extension* (straightening out the back from a forward bent position).



If you're already performing barbell squats, Romanian deadlifts and/or rack pulls in your workouts (all of which train the spinal erectors to a significant degree), then the use of a hyperextension probably won't be necessary. However, if you aren't including these movements in your plan or just want to perform some additional work for these muscles, hyperextensions can be added in toward the end of your back workout as well.

As a final tip on the subject of effective back training, one added lifting accessory that is often helpful in this area is a pair of lifting straps. These are essentially a thick set of leather, canvas or nylon that are wrapped around your wrists and then around the bar or dumbbell in order to secure your grip into place. (Lifting hooks can also be used for this same purpose)

By largely eliminating your grip from the equation, lifting straps help to reduce the involvement of the forearms and upper arm flexors during compound pulling movements (which can often end up taking on a disproportionate amount of the load on these

exercises) so that all of the focus can be directed toward fully activating the targeted back muscles. The lats and mid-back are typically the two most challenging areas on the body to develop a strong mind-muscle connection with, and this is one of the main reasons why such a high percentage of lifters tend to have under-developed backs. The use of straps or hooks is certainly not mandatory, but is worth experimenting with if you have a hard time feeling your back muscles working during pulling exercises or are just looking for a simple way to increase the stimulation further.

Straps and hooks are also highly useful on heavier lifts (such as shrugs and rack pulls) where your forearms may not be strong enough to hold onto the weight for the entire duration of the set. In this case, straps or hooks would be considered a necessity in order to ensure that your forearms don't become the limiting factor in the exercise. If you're forced to let go of the weight mid-set as a result of your grip giving out, the muscles of the back won't end up being trained to their true strength potential and the effectiveness of the exercise will be significantly reduced.

Some lifters shy away from the use of lifting straps or hooks because they don't want to impair the development of their grip strength, however, you can simply incorporate direct forearm exercises into your plan separately if this is a concern for you (we'll touch on this in the next section), as this will be the most effective means of increasing grip strength anyway.

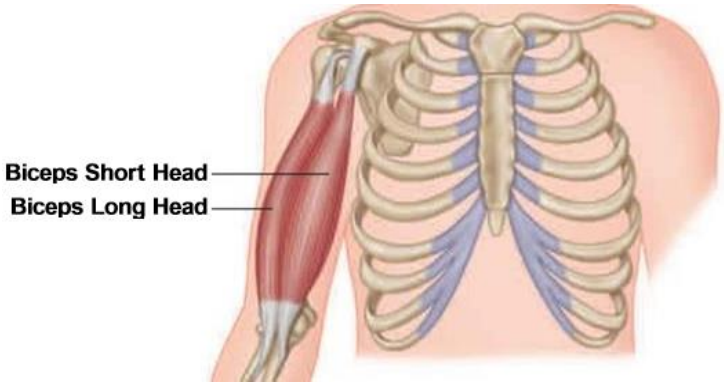
ARMS

The arms are another "showy" muscle group that tend to be treated with a very high level of emphasis by most lifters, often placed as a top priority in the average muscle building training plan.

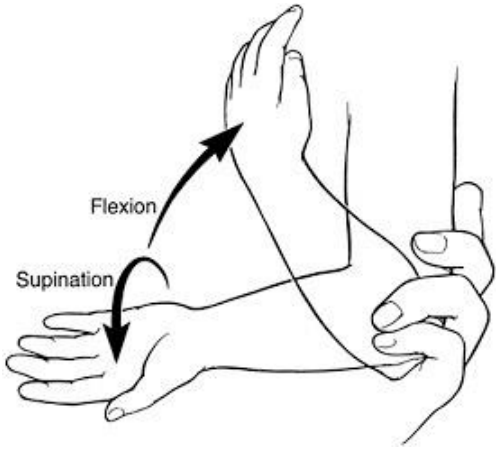
While there's no doubt about the importance of a well developed set of arms when it comes to building a strong and muscular looking physique, achieving consistent gains in this area is actually very straightforward and does not require anything fancy in terms of exercise selection or variety. In fact, despite the endless sets of biceps curls and triceps extensions you'll commonly see being performed in most average gyms, the reality is that the bulk of your arm growth (probably anywhere from 75-90%) won't even come as a result of direct arm isolation movements and will instead be produced automatically through compound chest, shoulder and back training.

This is because all horizontal and vertical pressing exercises already involve elbow extension (the primary function of the triceps) while all horizontal and vertical pulling exercises involve elbow flexion (the primary function of the biceps and brachialis). Due to the constant gripping involved in virtually every upper body exercise in general (and even certain lower body ones), the forearms will also be trained effectively just from your regular training plan alone. As you achieve progressive overload and add continual size and strength to your chest, shoulders and back, your arms will simply grow along with them. This doesn't mean that isolated arm exercises are unnecessary, but they should be treated as more of a "supplemental" aspect of your overall arm training approach to round out that last 10-25% of growth rather than being placed as the primary focus.

In terms of arm anatomy, there are four main areas to consider for muscle building purposes: the biceps, triceps, brachialis and forearms. Starting with the biceps, this muscle consists of two individual heads: the long head (outer portion) and short head (inner portion).



The primary functions of these heads are *elbow flexion* (curling the forearm toward the shoulder) and *forearm supination* (twisting the palm upward).



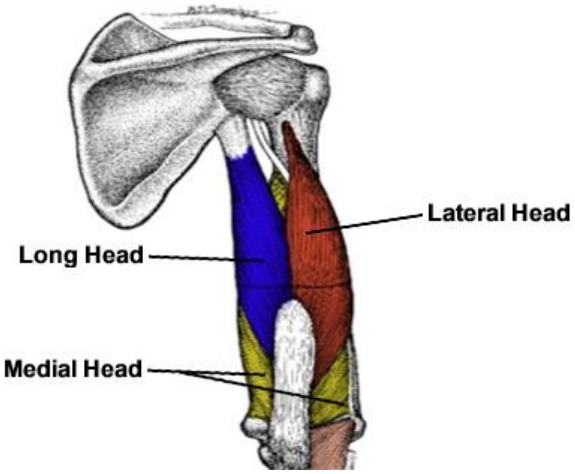
Although the emphasis can be shifted slightly between the long head and short head based on differing grip widths (a narrow grip to target the short head and wide grip for the long head), this generally isn't something to specifically worry about since both heads will be heavily involved during any curling movement you perform.

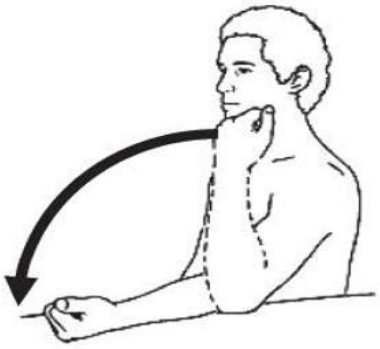
When selecting a primary biceps exercise for your plan, virtually any basic curl using a supinated grip (palms facing up) can be used effectively, whether it be a standard barbell curl, dumbbell curl, cable curl or machine curl. Your best bet here will be to experiment with a few different curling variations, selecting whichever one feels most comfortable and allows you to achieve the greatest level of biceps activation without wrist or elbow discomfort. Two highly recommended options to try out would be a single arm cable curl (due to the consistent tension it provides throughout the entire curling motion) and a seated dumbbell curl (the position of this movement allows for a deep stretch on the biceps in the bottom position and a very strong contraction at the top).

Since the biceps also perform forearm supination, a supinating dumbbell curl (where the grip starts off in a neutral position and the palms are twisted upward as the weight is lifted) can be added into your arm training plan as well to target this specific function. Supinating dumbbell curls can be performed from either a seated or standing position and can be done by curling both arms at the same time or in an alternating fashion.

All in all, 1-2 direct biceps exercises per week in combination with all of your compound back movements should be sufficient for optimal gains, with additional variety only being required by more advanced trainees who specifically want to focus in on their biceps either because they're a lagging body part or are simply a muscle they'd like to develop further.

The next upper arm muscle to take into account is the triceps. Although the biceps are typically regarded by most lifters as the most important arm muscle for bodybuilding purposes, it's actually the triceps that contain roughly two thirds of the body's total upper arm mass. The triceps are made up of three individual heads: the long head (inner), lateral head (outer) and medial head (mid-line, running underneath the long head and lateral head).





The primary function of the triceps is *elbow extension* (straightening out the arm). Any basic elbow extension movement will cause all three triceps heads to fire, but the emphasis can be shifted slightly from one head to another through the use of different angles and elbow positionings.

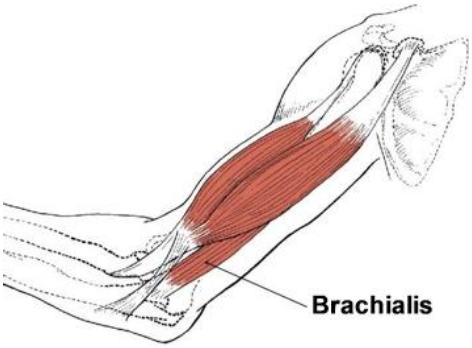
The largest head of the three is the long head, which is best trained using triceps extensions where the shoulder is in a flexed position. The ideal movement for this would be an overhead triceps extension, which can be performed using free weights (straight bar, ez-curl bar or dumbbells) or cables (using a rope attachment or performed one arm at a time by grabbing directly onto the cable itself). Any of these choices will work effectively, though the cable variations will generally provide a smoother range of motion that is less stressful to the shoulder, elbow and wrist joints.

Another alternative to this movement would be a lying triceps extension (otherwise known as "skull crushers") which also emphasize the long head, though not quite to the same degree as overhead extensions do. Lying triceps extensions can also be done using either free weights or cables, with cables being ideally recommended once again since they do tend to be a bit easier on the joints.

The next triceps head to take into account is the lateral head, which runs down the outer side of the upper arm and gives the triceps their "horseshoe" shape. Triceps pressdowns are the best way to target the lateral head for growth, with the most highly recommended variation being a rope pressdown where the hands are forcefully pulled apart at the bottom of each rep. That said, pressdowns can be done effectively using virtually any attachment (straight bar, v-bar, single hand attachment etc.) as long as it is held using a neutral or overhand grip, since the underhand grip is not quite as effective for maximally loading the triceps. The lateral head is generally the most challenging area of the triceps to establish a strong mind-muscle connection with, so it will likely require a bit of practice before you really feel this head being significantly activated during your exercises.

As for the medial head, this portion of the triceps already receives plenty of stimulation during all compound pressing movements for the chest and shoulders (as well as during triceps extensions for the long head and lateral head) and typically does not need to be directly focused on for that reason. However, for those whose triceps are a lagging body part (or who are limited in their use of triceps extensions, perhaps due to elbow injury), a close grip press (barbell or dumbbell) and/or narrow grip dip can be included to provide some additional volume for the medial head and for the triceps as a whole. Although chest-focused dips that utilize a wide grip and forward leaning position are often unsafe for the shoulder joints, triceps dips that are performed with a shoulder width grip and upright torso generally won't pose a problem when executed with proper form.

As a weekly recommendation, one overhead triceps extension or lying triceps extension for the long head combined with one pressdown movement for the lateral head should be sufficient for complete triceps stimulation when combined with horizontal and vertical pressing exercises for the chest and shoulders. From there, a close grip press and/or narrow grip dip can be optionally mixed in depending on your specific training goals.

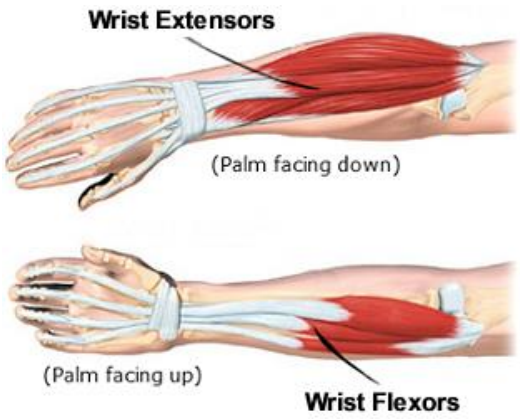


After the biceps and triceps, the third major muscle of the upper arm is the brachialis. The brachialis is not clearly visible on the surface of the arm (unless one is very lean and holding the arm in a flexed position), but runs underneath the biceps and helps to push them further outward for increased upper arm size.

Like the biceps, the primary function of the brachialis is to flex the elbow. Since the brachialis is already heavily involved in every curling exercise that is performed for the biceps, it does not need to be specifically isolated and will be fully developed through the use of basic curls alone.

The final muscle group to consider when it comes to maximizing overall arm development from top to bottom are the forearms. Although the forearms will already be stimulated for growth during any exercise where heavier gripping is involved, additional isolation work can be optionally included for those whose forearms are clearly a lagging body part or who are specifically aiming to maximize their forearm size and strength.

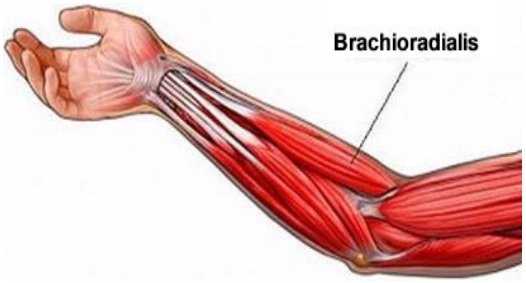
The first two areas to focus on for muscle building purposes are the wrist flexors (the muscles that run along the underside of the forearm) and wrist extensors (those that run along the top).



Since the primary function of these muscles is to flex and extend the wrist, the most common exercises most lifters use to target them are wrist curls and wrist extensions. However, since the strength of the forearm muscles (which are capable of handling extremely heavy loads) far exceeds that of the relatively weak joint they cross (the wrist), it's actually the wrist joint that ends up becoming the limiting factor during these movements. Not only does this result in far less than optimal hypertrophic stimulation of the wrist flexors and extensors, but it also places the wrists into a dangerous position that increases the chances for injury both to the joint and surrounding nerves.

In order to get around this and fully maximize the stress on the forearm muscles while also minimizing the risk of injury, wrist curls and wrist extensions are best avoided and instead replaced by gripping exercises, as these movements eliminate the wrist joint from the equation and allow the forearms to be trained using the full loads they're able to handle. Some effective options include farmer's walks (this exercise also train the traps and core to a fairly significant degree), dumbbell static holds (this simply involves standing stationary with a pair of dumbbells held at the sides), pull up bar holds (same idea, except that you'll be hanging from a pull up bar instead), and hand gripper devices.

Aside from the wrist flexors and extensors, the other major area of the forearm that can be isolated for further growth is the brachioradialis, which is a thick band of muscle that runs along the top/inner side of the forearm.

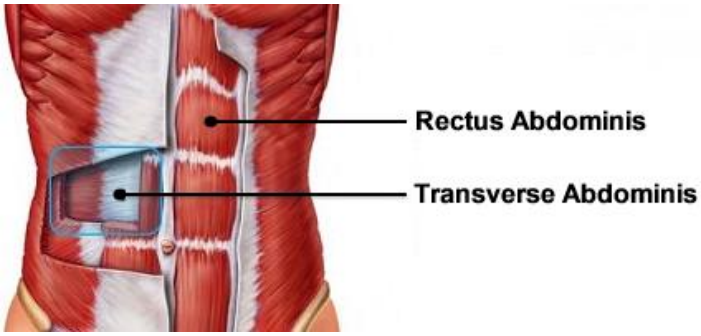


The brachioradialis assists with elbow flexion when the wrist is in either a neutral or pronated (palms facing down) position, making hammer curls (using either dumbbells or a rope attachment on a cable machine) and reverse curls (using a barbell, ez-curl bar, dumbbells or cables) the best choices for targeting this muscle.

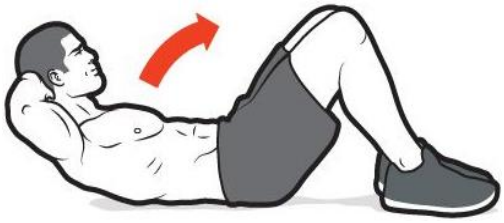
If you are planning to include some direct forearm work in your training plan, just make sure to save it until the very end of your workouts so that it doesn't interfere with your gripping strength on your other larger compound exercises.

ABS

The abdominals are broken up into two major muscles: the rectus abdominis and transverse abdominis.



The rectus abdominis makes up the visible "six pack" muscle on the surface of the abdomen and performs the primary function of *spinal flexion* (bending forward at the waist).



The transverse abdominis (or "TVA") runs underneath the rectus abdominis and wraps around the spine to protect and stabilize the core. Since the TVA is hidden from view and does not contribute to the appearance of a more "defined" midsection in any way, the primary focus for muscle building purposes should be placed on the rectus abdominis.

The question of whether or not the abdominals even require direct work in the first place is an often debated issue, with many claiming that large compound exercises like squats and deadlifts are enough to train these muscles effectively on their own. However, while it is true that the anterior core muscles are involved in these movements to a certain degree, the amount of direct stimulation they receive is still fairly limited overall. EMG data on the squat has consistently shown activation levels of 20% or less of maximum voluntary isometric contraction (MVIC) in the rectus abdominis, with deadlifts landing around 60%.

In fact, inducing a strong contraction in the rectus abdominis during a squat or deadlift would actually be directly counterproductive to the movement, leading to increased compression in the lower back and reduced spinal stability by forcing the spinal erector muscles to work excessively hard to counteract the shortening of the abdominal wall. The bottom line is that, while compound exercises like squats and deadlifts (as well as other basic lifts like pull ups, overhead presses, bent over rows, bench presses etc.) will all provide some amount of indirect work for the rectus abdominis, they can't be relied upon solely for the

purpose of abdominal training. If you want to develop your six pack muscles to their full potential and achieve the most impressive looking midsection possible, isolated ab work is a necessity.

That said, it's important to keep in mind that direct ab training itself will only make a noticeable difference to your physique if your body fat levels are low enough for the rectus abdominis to be visible in the first place. Isolated ab exercises are only intended to build up the underlying abdominal muscles in order to help them "pop out" more noticeably, but will have no effect on the stored fat in and around the midsection area.

There's no way to specifically target fat loss from one area of your body over another through resistance training (we'll discuss this in more detail later on in the chapter), and the only way to burn off any excess belly fat you may be carrying is by lowering your overall body fat percentage through a calorie deficit. If your body fat percentage is simply too high, that six pack will remain mostly (or entirely) hidden underneath the layer of fat sitting on top. Although the figures will vary from person to person depending on a variety of factors, a body fat percentage somewhere around the mid-teens for men and low twenties for women is when ab definition will begin to clearly show through.

There are a nearly endless variety of different exercises that could be potentially used to train the abs effectively, but since the primary function of the rectus abdominis is to flex the spine, the main go-to movement to focus on should be a basic crunching exercise. The simplest option here would be to perform a weighted crunch using a dumbbell or weight plate held at chest level, either performed laying flat on the floor, or for an improved stretch and contraction in the abs, on a swiss ball or decline bench. An even better variation would be a kneeling cable crunch using a rope attachment, as this provides a larger range of motion and keeps the abs under constant tension throughout the entire movement.

Aside from crunches, another highly effective exercise that activates the abs isometrically without any spinal flexion involved (as well as training the entire core musculature in general) are planks. While weighted spinal flexion should not pose a problem when done using proper form and moderate loads, those with pre-existing lower back issues who experience discomfort during crunches will be best off to stick with other alternatives. A basic straight plank can be used for this, as can a swiss ball plank (a more advanced variation that can be graduated to once the straight plank is no longer a challenge), or a swiss ball "stir-the-pot" which combines a plank with circular arm motions (an even more advanced but highly effective option for those who have built up the necessary strength to perform them).

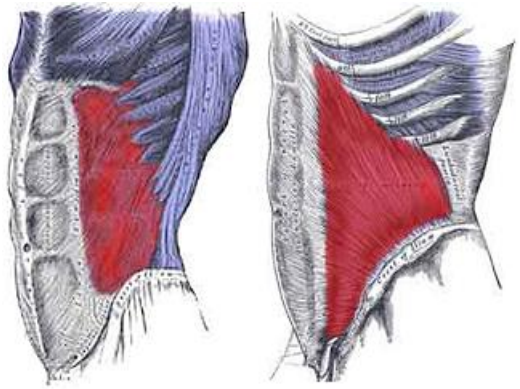
The final primary movement pattern for stimulating ab hypertrophy would be a leg raise. While any basic ab exercise you perform will train the entire rectus abdominis muscle as a whole, leg raises shift more emphasis onto the lower region which can often be a slightly more difficult area to target. These can be done in the form of a reverse crunch or lying leg raise, or as a hanging leg raise for those who are slightly more advanced. On all of these movements, a dumbbell can be held between the ankles for added resistance.

Keep in mind that the abs are a muscle just like any other and respond to progressive overload in exactly the same way, so any abdominal movements that you can already

perform easily using just your body weight should be increased in difficulty by utilizing added resistance. You wouldn't train your chest, arms or any other muscle group by sticking solely to very light weight sets of 25, 50 or 100 reps at a time, so there's no reason to train your abs this way either as is so commonly done.

A reliable template for weekly ab training would be to select one crunching exercise and combine it with either a planking movement or a leg raise depending on which one feels most effective for you in terms of abdominal activation. Performing all three movements throughout the week is an option as well for those who want to hone in more closely on their abs for maximum development, with some further potential add-ons to consider being ab wheel slides, dead bugs, double leg thrusts and side planks.

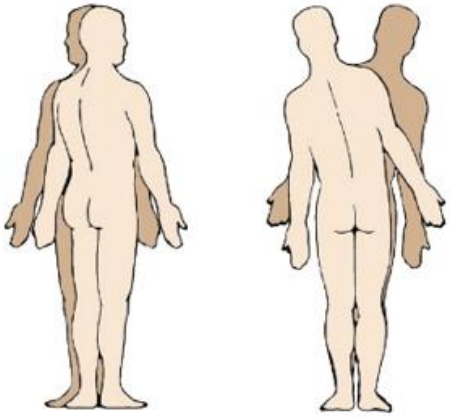
The other muscle group that is commonly brought up during discussions of abdominal training are the obliques, which are further separated into the external obliques and internal obliques. The external obliques are the visible "fish gill" muscles that run along either side of the rectus abdominis, while the internal obliques run underneath.



External Obliques *(Visible On Surface)*

Internal Obliques *(Sits Underneath)*

The obliques perform a variety of functions including *spinal flexion*, *spinal rotation* (twisting the torso from side to side) and *lateral spinal flexion* (bending the torso from side to side).



Spinal Rotation

Lateral Spinal Flexion

Since the obliques are already targeted during abdominal exercises such as crunches and leg raises due to the overlapping function of spinal flexion – and because they also receive additional indirect stimulation on compound lifts for your large muscle groups – they generally don't require further isolation work in order to be trained effectively.

It should also be noted that over-development of the obliques can potentially lead to the appearance of a wider, "blockier" looking midsection as the lower portion of the muscle closer to the waistline increases in size. For that reason, additional oblique work would only be recommended for those trainees who are specifically aiming to bring up the development of these muscles if they don't seem to be showing through noticeably despite being at a relatively low body fat level.

If that is the case, the two main recommended oblique movements to include would be a twisting cable crunch and/or a cable woodchop. Twisting cable crunches are performed in the same way as the standard kneeling rope crunch for the abs, except with added trunk rotation by bringing one elbow down to the opposite knee (rotating back and forth between each side) rather than crunching down in a straight line. If you don't have access to a cable machine, twisting crunches can also be performed lying flat on the floor or on a swiss ball or decline bench.

A cable woodchop is another highly effective oblique exercise that utilizes pure trunk rotation in order to hone in on this one function specifically. These can be done from a standing or kneeling position, pulling from either a high to low or low to high angle, and using a rope attachment or a single hand cable attachment. Experiment with a few different variations here to see which one feels most comfortable and allows you to feel the strongest level of activation in your oblique muscles.

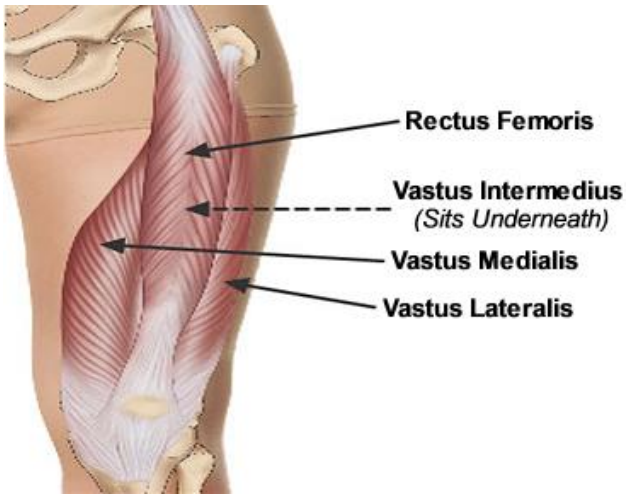
Side bends (using a dumbbell or weight plate) are another oblique exercise you'll commonly see being performed in the gym, however, these shouldn't be necessary if the previously mentioned ab and oblique movements are already being utilized, not to mention that they carry a slightly higher risk for lower back injury as well.

THIGHS/GLUTES

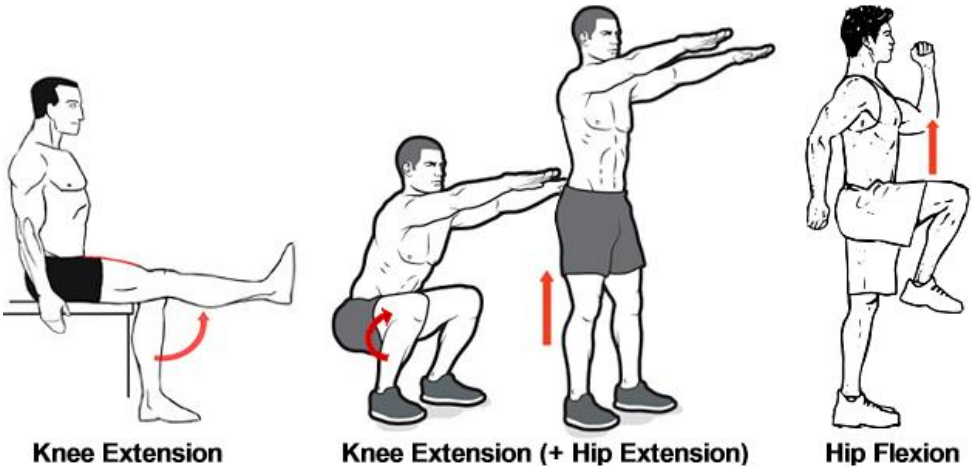
Due to their large relative size and significant strength capability, the muscles of the upper leg (quadriceps, hamstrings and glutes) are generally regarded as the most physically and mentally demanding muscle groups on the body to train. Compound lower body exercises allow for the use of very heavy weights, stimulate multiple major muscle groups at the same time, and place the entire body under a higher level of overall stress in comparison to virtually all other exercises. As a result of this increased difficulty, many trainees end up skimping out on their leg workouts (often without even truly realizing it) by performing less total volume, frequency or by not pushing their sets to the same level of intensity as they do on their upper body lifts.

In reality, a well developed set of quads, hamstrings and glutes play a much bigger role in the appearance of total body strength and muscularity than most people realize. Not only is it a clear sign of hard work and perseverance in the gym, but it also accentuates the much sought after "v-tapered look" by creating the appearance of a smaller waistline.

Beginning with the quadriceps (the front of the thigh), there are four individual heads that make up this complete muscle group: the vastus lateralis (outer portion), vastus medialis (inner portion), rectus femoris (middle portion) and vastus intermedius (middle portion lying underneath the rectus femoris).



The primary function of these heads is *knee extension* (straightening out the lower leg) with the rectus femoris also assisting with *hip flexion* (raising the knee up toward the torso).



The most fundamental movement pattern to target the quads for hypertrophy is the squat. Squats can be done in the form of a traditional barbell back squat, or as any number of other squatting variations including front squats, dumbbell split squats, hack squats, various types of machine squats, or other less common options such as zercher squats, barbell hack squats, pistol squats or goblet squats. While any squatting variation will ultimately train the quads effectively for increased size and strength when performed with sufficient load and intensity, the default go-to recommendation would be the basic barbell back squat. Assuming you have a squat rack available and no physical limitations preventing you from performing them, barbell squats will generally give you the greatest overall bang for your buck when it come to lower body training.

That said, despite working very well as a primary quad exercise (and despite how highly revered they are in bodybuilding and fitness circles, often touted as a "must have" lift that all serious trainees shouldn't go without), there's nothing inherently "magical" about the barbell squat and it isn't absolutely mandatory that it be performed in order to achieve significant quad hypertrophy. If for some reason you're unable to do regular barbell squats (whether it be due to equipment limitations or injury), selecting a different squatting variation is also acceptable.

Aside from squats, other highly effective compound quadriceps exercises include leg presses (either as a 45 degree leg press or seated leg press), lunges (barbell or dumbbell) and step-ups (barbell or dumbbell). One benefit of the leg press is that it allows for a slightly more "quad focused" workout since, unlike free weight squats, there is no balance or coordination aspect involved. This allows you to place all of the focus on moving the weight using pure strength from the quads only, without the muscles of the lower back becoming a potential limiting factor in the exercise.

When it comes to lunges and step-ups, one advantage to these exercises is that they allow you to train your quads effectively while placing less stress on the lower back, since the movements are performed one leg at a time and relatively lighter weights can be used as a result. This is especially true when performing these lifts with a pair of dumbbells held at the

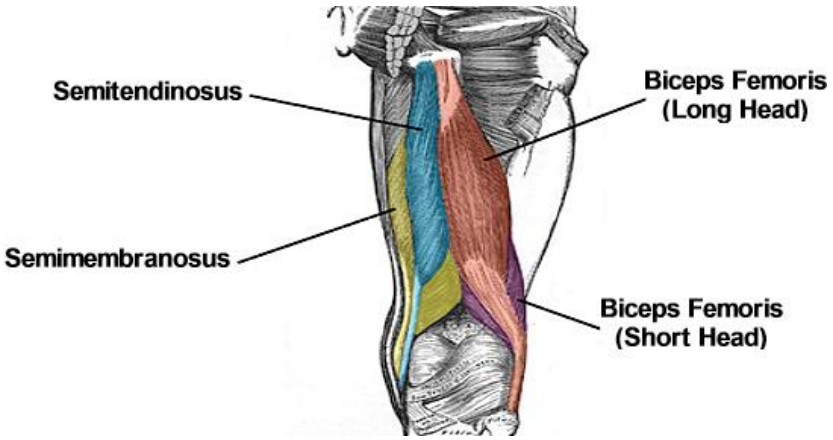
sides, since there is much less spinal loading involved in comparison to carrying the weight across the upper back.

One final quadriceps exercise to consider is the leg extension, which is a machine movement that trains the quads in isolation with minimal involvement from surrounding muscle groups. Leg extensions would not be considered an "essential" exercise to include in an effective quad training plan, but can be optionally utilized as a finishing movement at the end of your workout. The upside to the leg extension is that it provides a way to get in some extra volume for the quads without the added lower back fatigue and increased total body stress that the larger compound movements produce. Due to the much more demanding nature of heavier exercises like squats, leg presses, lunges etc., there's only so many sets of these lifts you can perform before the overall workload for the session becomes too high.

The leg extension is often criticized as being a potentially dangerous exercise that places excessive stress on the knee joints, and while it should ideally be avoided by any trainees with pre-existing knee issues, those with otherwise healthy knees shouldn't have a problem as long as proper form is being used. If you are going to include leg extensions in your plan, just make sure to perform the exercise using a more moderate weight for higher reps, and avoid the use of momentum in favor of a slower, more controlled lifting tempo.

An effective baseline template for weekly quad exercise selection would be to perform one squatting movement along with one other compound quad exercise of your choice (leg press, lunge or step-up), with leg extensions being optionally included depending on your specific goals and weekly training structure.

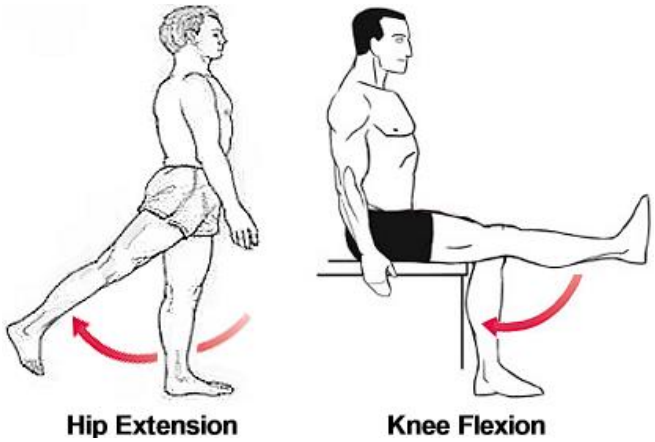
The second major muscle group of the thighs are the hamstrings, which are also separated into four individual heads. Listed from innermost to outermost, these include the semimembranosus, semitendinosus, biceps femoris long head and biceps femoris short head.



The hamstrings tend to be an underdeveloped muscle on many trainees, as it's commonly believed that compound quad focused exercises such as squats, leg presses and lunges are enough to effectively target them on their own. However, since the hamstrings only act as a stabilizing muscle during compound quad movements and experience little to no change in length throughout the range of motion, they actually receive very little hypertrophic benefit

from these lifts. Not only does under-training the hamstrings result in imbalanced thigh development in terms of overall muscularity, but being excessively "quad dominant" also moves the knee joint out of its optimal position and is a frequent cause of injuries to this area.

The primary functions of the hamstrings are *hip extension* (backward movement of the thigh) and *knee flexion* (backward bending of the knee joint).



All four heads are activated during both functions (the one exception being for the biceps femoris short head which does not assist with hip extension and can only be targeted through knee flexion exercises), and both movement patterns should ideally be utilized for complete, balanced hamstring development.

Hip extension is a compound movement that trains the hamstrings along with the glutes and spinal erectors. There are several effective exercises that can be used to target this function, the most highly recommended lift being the Romanian deadlift. Either the barbell or dumbbell variation is acceptable, though the added advantage to dumbbells is that they place a lower amount of stress on the lower back since the resistance can be held slightly out to the sides of the body rather than directly out in front. Conventional deadlifts also train the hamstrings with reasonable effectiveness, though not to the same degree as the Romanian version since the lower starting position of the hips removes tension from the hamstrings in the bottom portion of the lift.

If you're unable to perform Romanian deadlifts due to lower back discomfort, another effective option to test out would be a glute-ham raise. This exercise combines both hip extension and knee flexion into a single movement and places the hamstrings under a high degree of tension using little to no added resistance. The only downside is that many gyms don't have a proper glute-ham raise bench available, and it can often be tricky to find a place to properly perform them. In addition, those with pre-existing knee issues may find the movement slightly uncomfortable.

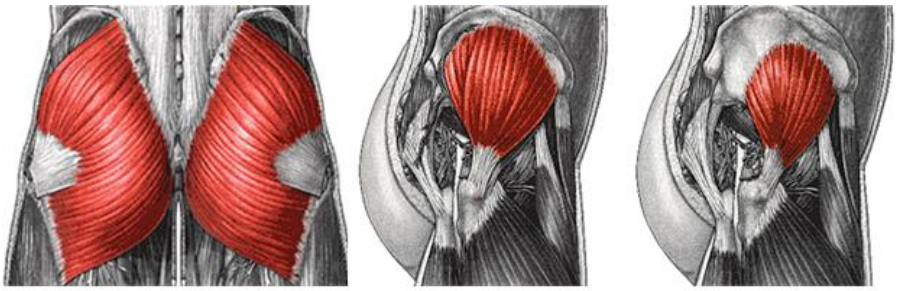
Aside from Romanian deadlifts and glute-ham raises, another hip extension variation that can be utilized is the reverse hyperextension, as this movement provides a large range of motion for the hips and can also be done with very little additional load placed on the lower

back. As with the glute-ham raise though, it can sometimes be difficult to find a good place to perform them depending on your training setup.

After your hip extension movement has been completed, an isolated knee flexion exercise should be included to target the hamstrings through their second primary function and to ensure full stimulation of the biceps femoris short head which will be inactive when performing strict hip extension only. A basic leg curl will be the best option for this, with either the lying, seated or standing versions all being acceptable choices. Given that there's no particular muscle building advantage associated with performing one type of leg curl over another, you can simply go with whichever variation feels most comfortable for you.

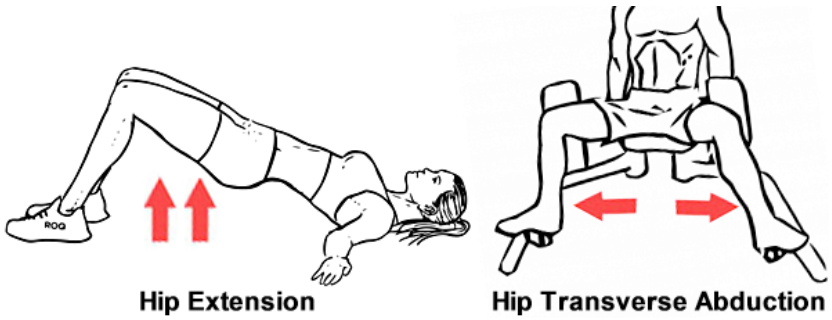
To fully train the hamstrings as part of your weekly lower body routine, just select one hip extension exercise and pair it up with one leg curling exercise. Additional work can be optionally included for the hamstrings depending on your specific training goals and experience level, but this will serve as a reliable baseline template to follow.

The last muscle group to consider after the quads and hamstrings is the glutes, which are comprised of the gluteus maximus, gluteus medius and gluteus minimus.



Gluteus Maximus | Gluteus Medius | Gluteus Minimus

The largest and most visible of these three heads is the gluteus maximus (in fact, the glute max is the single largest muscle on the entire body), and this is the main area that should be focused on for the goal of building bigger, more muscular glutes. The gluteus maximus performs a wide variety of functions and can be trained through the use of many different movement patterns, but *hip extension* (as we just covered) and *hip transverse abduction* (moving the thighs out to the side of the body while the hips are in a bent position) would be the primary functions to target for muscle building purposes.



Hip Extension | Hip Transverse Abduction

It's important to keep in mind that the glutes are already stimulated to a certain degree during compound exercises for the quads and hamstrings, such as squats, leg presses, lunges and Romanian deadlifts. As you progressively overload these lifts over time, the glutes will automatically grow larger and stronger along the way. However, since these exercises do not maximally load the glutes through their primary function of hip extension, those who are looking to fully optimize the development of these muscles will still need to include some additional direct work.

The single most effective movement for this purpose is the hip thrust, as this exercise fully stresses the gluteus maximus all the way through to full hip extension with only modest involvement of the quads and hamstrings. A basic barbell hip thrust would be the most highly recommended variation of this lift, though it can also be performed single-legged using a dumbbell or weight plate for added resistance.

Aside from the hip thrust, three other reliable choices when it comes to glute max training would be a hyperextension (with the upper back slightly rounded and toes pointed outward to specifically emphasize the glutes), glute kickback (using either a cable machine or kickback machine depending on what you have available), and/or a seated hip abduction movement to target the glute max through its other main function of hip transverse abduction. (If you don't have access to a seated hip abduction machine, this exercise can also be performed using resistance bands.) Every trainee is a bit different in terms of their individual body structure and preferences, so you'll ideally want to experiment with a few different variations of each exercise to see which ones produce the highest level of glute activation for you.

The amount of direct glute-focused work that should be performed (if any) primarily depends on the individual and their specific training goals. Female lifters tend to be more interested in developing this particular area of their physique, whereas men may not consider it a priority. If compound quad and hamstring training is already producing sufficient glute building results that you're satisfied with – or if achieving maximum glute hypertrophy is simply not a concern for you – additional glute exercises would not be considered a necessity. However, if significantly increasing overall glute size and strength is a primary training goal of yours, a hip thrusting movement done in combination with one or two other direct exercises (hyperextension, kickback and/or seated hip abduction) would be a reliable starting template to follow.

Those who really want to ramp up their glute training efforts even further can also perform some additional work for the gluteus medius, a smaller muscle (roughly half the size of the glute max) that makes up the upper portion of the glute area. Some effective choices for training the glute medius would be a standing cable hip abduction exercise (this movement can also be done from a side lying position using a resistance band), banded sidewalks and/or side lying clams.

As a final tip on the subject of glute training, it should also be noted that the emphasis can be shifted more toward the glutes during compound quad exercises such as squats, leg presses, lunges and step-ups by using a slightly wider stance and pointing the toes outward at a 45 degree angle. If achieving glute hypertrophy is a higher priority for you in comparison

to building your quads, these are two optional form adjustments you can make to better suit these movements to your specific goals.

To finish this section off, one other question that often comes up on the subject of lower body training in general is whether or not a weightlifting belt should be used to provide additional support for the lower back on heavier compound lifts like squats and deadlifts. Lifting belts work by increasing intra-abdominal pressure (imagine a balloon inflating inside of your stomach to get a visual idea of what this means) which helps to stabilize the spine when placed under larger loads.

All in all, weightlifting belts should simply be viewed as an optional tool specifically for more advanced trainees who have progressed to lifting weights that feel quite heavy for their body, or for those with pre-existing lower back issues who may benefit from the added support. In all other cases (especially for beginning lifters), the focus should be placed on building up an overall size and strength foundation first and foremost, only adding in a belt later on if it becomes truly necessary.

Keep in mind that your core muscles already act as an "internal lifting belt" of sorts, and you'll want to maximize the engagement and development of that natural belt first before relying on any additional external tools. The way to make use of your internal lifting belt is by learning how to "brace your core" any time you perform a big compound exercise. To do this, draw a big breath deep into your belly prior to each rep, lock the air in tightly and hold it, and then push your stomach outward as you perform the movement. (A good cue for this is to perform the same motion you would as if someone was about to punch you in the stomach.) Exhale once the rep is complete, and then repeat before the next one. When you engage your core properly like this, the deep abdominal muscles squeeze the viscera (an envelope that holds your organs) upward into your diaphragm and downward into the pelvis, increasing intra-abdominal pressure in the same way that a weightlifting belt does.

If you do decide to include an external lifting belt in your workouts, just make sure that you're using it properly or it may actually end up doing you more harm than good. This means wearing the belt tight enough to provide significant support, but loose enough that you're still able to draw a full breath into your stomach. As you draw in that breath, you should feel your entire trunk fill up with air and should feel pressure on the belt in all directions (not just the front). The purpose of the belt is to provide something extra to brace your core against during the lift (sucking the gut inward as many lifters do is actually the opposite of how a belt is properly utilized), so always make sure to leave enough space to allow for this. If you can't breathe properly, loosen the belt up a notch or two.

Also keep in mind that belts should ideally be used only on heavier sets involving 85% or more of your one rep max, and only on exercises where they're truly needed, in particular the squat, deadlift/rack pull, and overhead press. (As an added note, you should never wear a belt during exercises that are performed lying or seated.)

CALVES

The calves are a unique muscle in that, out of any muscle group on the body, they tend to be the one most heavily influenced by genetic factors. On the one hand are those individuals who possess naturally thick, muscular calves without ever needing to directly target them in the gym at all, while others seem stuck with only marginal development despite training their calves intensely multiple days a week.

One of the main factors influencing the growth capability of any given trainee's calves is the specific structure of their lower leg, in particular the length of the calf tendon. The longer the calf tendon is, the "shorter" the calf muscles will appear and the less potential they'll have for overall size increases since there will be less total mass to work with. A long calf tendon is very helpful for explosive movements like sprinting and jumping (due to the higher amount of elastic energy that can be stored), but is not ideal when it comes to the goal of building bigger, more muscular looking calves.

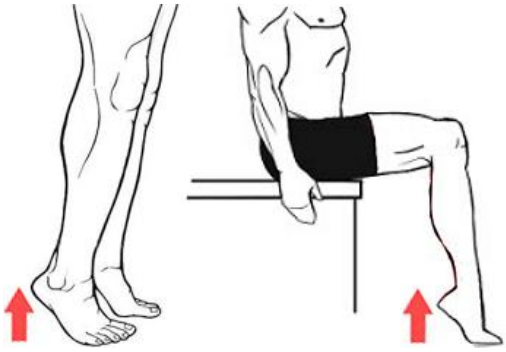
To make things even more challenging, the calves also tend to contain lower concentrations of androgen receptors relative to other muscle groups (these are the areas of the muscle where testosterone attaches in order to stimulate protein synthesis), and are made up of a higher distribution of slow-twitch fibers, making them less susceptible to growth in comparison to other more fast-twitch dominant body parts.

This doesn't mean that those with naturally thin calves can't still build them up to a significant degree given enough time and effort, but there's no question that getting the calf muscles to really "pop out" noticeably can be a much longer and more difficult road for some trainees. As with anything, the key is to simply make the best of what you have and work on maximizing your own potential based on your individual genetics and body structure.

In terms of anatomy, the calves are broken up into two separate muscles: the gastrocnemius and soleus. The gastrocnemius makes up the outer "diamond-shaped" portion of the calf muscle that is visible on the surface of the lower leg, and is further broken up into a medial head (inner portion) and lateral head (outer portion).

The soleus is a thick, flat muscle that runs underneath the gastrocnemius. Although it is largely hidden from view, the soleus is actually a relatively large muscle (containing slightly more total mass than the gastrocnemius) and helps to push the gastrocnemius further out in order to increase overall visible calf size.

Both of these muscles perform the same basic function of *plantar flexion* (pointing the foot downwards), though the angle of the knees will affect which area of the calf is specifically emphasized. The gastrocnemius takes on a greater percentage of the work when the knees are in a straightened position, while the soleus becomes the prime mover when the knees are bent.



The gastrocnemius also assists with knee flexion (which is why the calves can be felt working to a certain degree during leg curling exercises), though the effect here is fairly insignificant for muscle building purposes.

The calves also receive a small amount of indirect stimulation during compound lower body exercises like squats, leg presses and lunges, but since they only act as a stabilizing muscle and don't actually change in length throughout these movements, the resulting hypertrophic benefit is quite minimal.

In order to properly target the calves for increased growth, direct isolation work in the form of calf raises is a must and is the only real way to generate a significant muscle building response. Virtually any calf raise exercise that moves the calves through a full range of motion (heels fully extended at the bottom and calves fully flexed at the top) with the knees in a straightened position (to emphasize the gastrocnemius since it is the most visible portion of the calf muscle) can be used effectively as a primary calf training movement.

Some viable choices include standing machine calf raises, smith machine calf raises, single leg dumbbell calf raises, leg press calf raises, donkey calf raises (though these can be tricky to properly load unless you have a training partner available to assist you), or any other basic machine calf raise variation. The specific movement you choose can ultimately just come down to personal preference based on which exercise feels most comfortable for you and allows you to feel your calves working most effectively.

It should be noted that standing calf raise exercises where the load is placed across the upper back (such as standing machine calf raises or smith machine calf raises) do involve a much

higher degree of spinal loading, so those with pre-existing lower back issues will usually be best off to go with one of the other variations mentioned.

After your primary calf raise exercise has been completed, a seated calf raise movement can be included to specifically focus in on the soleus muscle. The most effective exercise for this purpose would be a seated machine calf raise due to the ease of loading involved, though a free weight variation using either a barbell or pair of dumbbells placed across the knees can be optionally used if you don't have access to a seated calf raise machine.

Since the calves are so heavily dependent on genetic factors, the number of different exercise variations included (as well as the overall volume and frequency utilized throughout the week) should be based on the individual goals of the trainee. Those with naturally muscular calves may opt for only a single calf raise exercise during the week (or perhaps may not even train them directly at all in some situations), while those with weaker calf genetics can increase that to two or three different variations using the higher end of the volume/frequency range if achieving maximal calf growth is a primary goal.

PROGRAM VARIATION

You've now gained a solid foundational understanding of the various functions for each individual muscle group and which weight training movements are best suited for targeting them. Once a specific set of exercises have been selected for your workout plan, another important question to answer is how long you should stick with those particular movements before changing things up and moving on to a different sequence of lifts.

A common recommendation you'll come across for this is that your exercise selection (as well as your rep ranges, rest intervals, exercise order and other workout variables) should be constantly switched around every few weeks (or even every single week) to prevent your body from becoming accustomed to one particular mode of training. Often referred to as the principle of "muscle confusion", this method is claimed to improve overall gains by continually providing a novel stimulus and "shocking" the muscles into further and further growth.

However, while varying your workouts from week to week might seem to make sense on the surface as a way of preventing stagnation, the reality is that following an inconsistent training approach like this is actually one of the most fundamental lifting mistakes you could make. The main reason for this is that by frequently mixing up your training variables every time you enter the gym, it will become far more difficult (if not impossible) to accurately track your strength gains in order to maximize progressive overload.

For example, if this week's chest workout consists of a low rep dumbbell press and medium rep cable fly, followed by a medium rep barbell press and high rep machine fly the next week, followed by something different yet again the week after that, you won't have anything concrete to measure your performance against. In all likelihood, you'll simply end up spinning your wheels and "program hopping" from one workout plan to the next, only progressing at a fraction of your true potential in the big picture, if at all.

As we discussed at the beginning of the chapter, progressive overload is the single most important baseline factor in your entire training program and is where your primary focus must be placed if you want to consistently build new muscle over time. Beyond any particular set of exercises, rep schemes, lifting techniques or training splits, the simple fact that you're continually getting stronger and building upon your past workout performance is the ultimate bottom line of everything you do in the gym. If your strength levels are steadily increasing then you'll know that your workouts are on the right track, whereas if they've significantly slowed down or plateaued, you'll know that something in your plan is off and needs to be adjusted. The only way to properly determine this is by having a structured program in place that you can clearly measure from session to session.

It's also important to keep in mind that the strength increases you experience during the first few weeks of performing a new exercise are largely dictated by neurological adaptations rather than direct muscular adaptations. In other words, your CNS is adjusting to the new motor pattern and becoming increasingly skilled at recruiting the existing muscle fibers you

already have in order to perform it more efficiently. By sticking with one specific set of exercises over a longer term training cycle, you can be sure that the strength gains generated are primarily coming from increases in actual muscle mass rather than simply being a result of improved neural efficiency.

As you gain more and more experience with a particular exercise over a consistent period of time, you'll also develop a stronger mind-muscle connection with it and become increasingly effective at activating the targeted muscle group using that specific movement. If you're constantly bouncing around from one exercise to the next, you'll never have a chance to truly master any one particular lift in order to derive the maximum benefit from it. When it comes to stimulating hypertrophy, performing a small handful of movements with a high degree of skill will get you much further in the long run in comparison to a large number of movements being done with mediocre technique.

For all of the reasons outlined above, it's strongly recommended that you ignore the misguided notion of "muscle confusion" altogether and instead commit yourself fully to one specific workout plan with pre-set training variables in place, only moving on to a different plan when it truly becomes necessary to do so. That way you'll be able to track exactly where your strength levels are at any given time, what needs to be accomplished in order to boost them further, and precisely when you've hit a legitimate sticking point that needs to be addressed.

There's no single "perfect" length of time that any one training program should be followed for, whether it's 8 weeks, 12 weeks, 6 months or more. However, the bottom line is that if you're continuing to achieve progressive overload on a given routine without any signs of significant slow down, you'll know the plan is working effectively and should simply continue on with it for as long as you're able to keep generating those ongoing strength gains. If and when your progress does begin to clearly plateau, you can then modify your approach in terms of exercise selection, volume, frequency, training split etc. in order to get things moving again.

Aside from plateaus in strength, another viable reason to shift from one workout plan to another would be to adjust your lifting approach as you progress through various stages of training as was discussed in the previous volume/frequency section. This could mean graduating from a full body beginner's routine to an intermediate upper/lower split, or an upper/lower split to a legs/push/pull routine as you become more advanced. (The specific instructions for how to go about this along with the exact training routines for each phase are outlined in The Body Transformation Blueprint Workout System.)

There's something to be said for the basic issue of psychological variety as well, and changing your workouts around at certain points purely to keep things fresh and interesting is an option as well if you find that this helps to increase your overall motivation and enjoyment in the gym.

While there are several possible scenarios where switching between training plans would make sense, the key takeaway here is that you should only do so after having properly committed to one pre-set program first (typically for at least 8 weeks as a minimum), and

making measurable strength progress on the exercises within that program before moving on. Varying your workouts significantly every week or few weeks like many lifters do is not only completely unnecessary for building muscle, but will be directly counterproductive to your size and strength gains over the long term.

REP RANGE & EXECUTION

Having a properly structured training program in terms of your weekly workout split, exercise selection, volume and frequency is of course critical to your muscle building progress. When you simplify it right down to the basics though, it's the individual sets and reps in the gym that are what ultimately count. In order to stimulate hypertrophy as effectively as possible, how many total reps should you perform per set, and how should those reps be executed in terms of overall form and speed?

When it comes to selecting a rep range, the first thing to keep in mind is that, given adequate training intensity and proper form, virtually any rep range will produce gains in muscle size as long as the set is taken close to failure and consistent strength increases are being achieved within that particular range. Sets utilizing as few as 3 reps all the way up to 30 or more will produce comparable hypertrophy on a set per set basis. That said, there does exist a general "hypertrophy sweet spot" where the majority of your training should be focused if the primary goal is to maximize muscle growth and improve body composition.

Very low reps in the 1-4 range will require you to perform a greater number of total sets to net the same muscle building effect, while also placing more overall stress on the joints and connective tissues. On the other hand, as you drift into higher rep ranges (around 15+) the cardiovascular system becomes increasingly involved in the exercise, muscle acidity levels rise, mental focus gradually declines and the chance for form slip ups increases, making it more difficult to properly train the targeted muscles up to their true point of failure without being limited by these additional factors. Since it's only the final few challenging reps of a given set that stimulate a significant hypertrophy response, high rep sets also contain a much greater number of "junk reps" that create additional physical and mental fatigue without contributing to your bottom line gains. These types of sets would be useful if you were training primarily for an endurance sport or were wanting to build up your cardiovascular conditioning, but they won't be the best choice if the main goal is to increase muscle size.

This is not to say that very low rep/maximum weight sets should never be utilized or that high rep "pump sets" are a complete waste of time, but if they are going to be included in your workouts, they should be viewed as supplemental add-ons and only make up a smaller percentage of the total sets you perform.

If the primary goal is to maximize gains in lean muscle mass (rather than to gain raw strength or build muscular endurance), landing somewhere in between the two ends of the spectrum at around 5-10 reps per set will be an effective middle ground figure to aim for. While training at the recommended intensity level of 1-2 reps short of failure, this means the weight should be light enough that you can complete at least 5 reps in proper form, but heavy enough that you can't complete more than 10. Going a bit higher at 11-12 reps is fine, but I wouldn't suggest going much beyond that as the primary rep range of your workouts.

5-10 reps per set is not too high, not too low, and places muscular hypertrophy as the primary adaptation while still producing significant gains in strength to allow you to progress

in weight efficiently over time. Staying within a more moderate rep range like this also reduces strain on the joints in comparison to very heavy low rep sets, and improves muscular overload in comparison to higher rep sets since cardiovascular capacity, muscle acidity and mental focus won't become limiting factors during the exercise.

Anywhere within this 5-10 rep range will ultimately be effective, with the use of a variety of different rep counts across your workouts being ideal. However, those exercises that place the joints into a slightly more vulnerable position (such as chest flys, lateral raises, overhead extensions, leg curls and leg extensions to name a few) are best performed with more moderate loads at the high end of the range for safety reasons.

Some lifters tend to shy away from performing lower reps down toward the 5-7 range, often because they don't directly "feel" these sets working their muscles as intensely in comparison to going a bit higher. As you drift beyond the 10 rep mark or so, a much stronger "burning" sensation is typically felt (this is due to an increase in hydrogen ion concentrations as ATP is broken down for energy), along with a greater "pumped" feeling in the muscles as larger volumes of blood and fluid become trapped within the tissue.

However, it's important to note that while "feeling the burn" and achieving a strong muscle pump might make it seem as though you're getting more out of each set, neither of these factors are central triggers for muscle growth on their own, nor should they be relied upon as indicators that you're having a successful workout. After all, if the underlying goal of any given set was to get your muscles to burn as deeply as possible and to create the largest resulting pump, grabbing onto a pair of ultra light dumbbells and performing hundreds of reps per set would be the most effective method of bodybuilding training available, something we obviously know not to be the case. In fact, even without using any resistance at all, simply flexing your muscles repeatedly while at rest could generate a similar effect.

Beyond any particular burning or pumping sensation you feel, the single most important muscle building factor in your workouts by far – and the one that should always be treated as the ultimate gauge for success – is that you're achieving progressive overload while maintaining proper form. As we covered in detail earlier, this is achieved by training roughly 1-2 reps short of failure on the majority of sets and consistently adding more weight and reps to your exercises over time (or utilizing other methods of progressive overload as you become more advanced). A certain amount of "burn" and "pump" will automatically result from this, but these are simply natural by-products of intense resistance training rather than being limiting factors in the growth process that should be directly strived for.

Aside from the issues of muscle burn and muscle pump, another seemingly appealing characteristic of higher rep sets is the increased levels of muscle soreness they tend to produce in the days that follow the workout. (Lower rep sets will generate soreness as well, but usually not to the same degree.) That tender, achy feeling that sets in around 24-48 hours after your session has ended often creates the impression that the workout must have gone well and that the targeted muscles have been effectively stimulated for growth. However, following the same theme as the burn and pump, delayed onset muscle soreness ("DOMS"

for short) is also not indicative of having had a successful workout and isn't something that should be specifically aimed for as a result of training.

Although muscle soreness does signify that a certain level of damage has been done to the tissue (most research suggests that DOMS is caused by an inflammatory response which then sensitizes pain receptors within the muscle), it does not necessarily mean that that damage will specifically lead to muscle hypertrophy. Virtually any form of repetitive muscular stress will leave you feeling sore afterwards to some extent, including activities totally unrelated to building muscle, such as playing sports, outdoor activities, martial arts etc. Thus, regardless of how sore or not sore you may feel after training, progressive overload should still be treated as the ultimate bottom line.

If you do find the resulting muscle soreness you're experiencing to be a bit of a nuisance in the days following weight training, certain techniques can be used to decrease it such as performing light "active recovery" cardio on your off days (we'll touch on this further in the next chapter), including some post workout foam rolling and stretching in your plan, and by ensuring that your nutrition, hydration, sleep and supplementation are all on point to optimize recovery.

It should also be noted that delayed onset muscle soreness is heavily subject to what is known as the "repeated bout effect", meaning that as you gain more training experience over time and your body becomes increasingly adapted to weightlifting, your levels of post workout soreness will gradually decline. It's not uncommon for complete beginners to become extremely sore following their workouts, whereas more advanced trainees may hardly get sore at all.

The final question that often comes up on the topic of proper rep range selection is the effect of lower reps compared to higher reps in terms of increasing muscle "bulk" versus improving muscle "definition". It's often said that lower rep ranges are best used for building overall mass, while higher reps should be included to "sculpt" the muscles and bring out further shape and detail. This is why many trainees will often switch from a heavier weight/lower rep program to a lighter weight/higher rep approach when transitioning from a bulking phase to a cutting phase.

However, despite how widespread this traditional piece of training advice has been over the years, the idea that "low reps build muscle" and "high reps define the muscle" is completely misguided at its core and has no real physiological basis behind it. This is because, when it all comes down to it, there really are only two things you can do to change your muscles: you can make them bigger, or you can make them smaller. There is no such thing as "bulky muscle" versus "lean muscle" (muscle mass is muscle mass, period), and there are no special rep ranges or lifting techniques that will allow you to "define" the muscles you're training by specifically burning fat off of them.

This idea is known as the fallacy of "spot reduction" and is one of the most common misconceptions that beginning lifters routinely get confused by. They'll perform endless sets of crunches and leg raises trying to reduce the fat around their midsection, for example,

without realizing that these movements are simply training the abdominal muscles underneath rather than burning the actual layer of fat sitting on top.

Always keep in mind that any time you train with weights, it's only the specific muscles involved in the exercise that are being targeted rather than the fat stores in and around that particular area. The process of fat loss only occurs on a total body scale as you maintain a calorie deficit by consistently burning more calories than you consume. As you remain in that deficit over time, your body will gradually break down fat from all areas until your entire physique has leaned down as a whole. However, there is no way to specifically "isolate" fat loss from one area over another, and exactly where your body pulls fat from (and in what order) is primarily determined by pre-set genetic patterns.

For that reason, weight training should always be treated solely as a method for building overall muscle mass, with proper diet and cardio being used to take care of the fat loss side of the equation. From there, the level of visible "shape" and "definition" your muscles possess will simply be a product of how much total lean mass you're carrying in combination with your body fat percentage. The more muscle you've built and the lower your body fat levels are as a whole, the more defined your physique will appear.

Tying this back to the topic of proper rep selection, this is why there is no need to deviate from the basic 5-10 rep hypertrophy range regardless of whether your main goal is to build muscle or to lose fat. Any time you wrap your hands around a bar, your primary aim should always be to generate the strongest muscle building stimulus possible, period. When you mistakenly switch to a light weight/high rep program in an effort to "tone" or "sculpt", all you're really doing is weakening the overall training effect by moving outside of the optimal hypertrophy zone and up into a more endurance focused rep range, and without any improvement in localized fat loss by doing so.

Now that we've answered the question of how many reps to perform per set and why, the other important factor to address is how those reps should be executed in terms of overall form and speed.

In order to optimize muscle hypertrophy and minimize injury risk, every rep of every set should always be carried out in a deliberate manner using proper technique, without the use of excessive momentum or "cheating" the weight up as you lift it. A moderate amount of natural body movement is fine throughout the exercise (we're not robots after all), but you should always have the general sense of being in complete control of the weight at all times rather than the other way around. This is especially important on the bigger compound lifts (such as squats, deadlifts, presses, rows etc.) since you'll be moving the greatest amount of total weight and because these exercises are more complicated to execute from a technical standpoint. Not only does all-out, maximum weight "ego lifting" significantly increase the strain on your joints and connective tissues, but it typically has a counterproductive effect on muscle growth as well by decreasing hypertrophic stimulation of the targeted muscle group due to the compromised form and technique.

Always keep in mind that the individual muscles themselves have no idea how much actual weight is on the bar in terms of objective poundage. The only thing they can directly

experience and respond to is the specific degree of mechanical tension they're being subjected to at any given moment. When you load the bar up with more weight than you can truly handle and begin heaving it around with sloppy technique and large amounts of momentum, that mechanical tension gets dispersed throughout other parts of the body, causing surrounding muscles to take over during the lift. By selecting a more moderate weight (one that still feels heavy for you but that you're able to lift under complete control), a greater amount of tension can be applied to the specific intended muscle group for improved stimulation and growth.

In addition, this also ensures that you're able to utilize a full range of motion on each rep, sufficiently activating the muscle fibers along their entire length. Fully lifting and fully lowering the weight (rather than pumping out tiny "half reps" or "quarter reps" like so many people in the gym commonly do), improves your size and strength gains by stressing the muscle both in its stretched and contracted position, both of which are important when it comes to hypertrophic signalling. Unless you're an advanced trainee who is strategically using partial reps to bring up weak points on certain lifts – or you're attempting to work around an injury – you should always aim to move the weight through the largest range you comfortably can while still maintaining full tension on the targeted muscle.

Lastly on the issue of proper rep execution is the question of rep cadence. In other words, how fast should you perform both the concentric and eccentric phases of each rep for the best results? Although virtually any rep cadence will ultimately be effective given sufficient intensity and a focus on progressive overload, research has shown that certain speeds are superior to others when it comes to optimizing muscle growth.

On the concentric phase of the rep (this is the "lifting" portion, such as the pushing motion of a bench press), maximum motor unit recruitment occurs within the muscle when the weight is moved as quickly as possible from point A to point B using full force. This means that there is no set time frame for the concentric phase, as your only goal is to lift the resistance using your full strength capacity while maintaining proper form and while consciously contracting the targeted muscle. The first few concentric reps of the set should move very quickly, with further reps gradually slowing down a bit as your energy stores run out and you come closer to reaching the point of muscular failure.

The eccentric phase of the rep (this is the "negative" portion, such as the lowering motion during a pull up) is a bit different, since the muscles will be anywhere between 20-50% stronger on this phase and will not be sufficiently challenged by simply dropping the weight back to the starting point at full speed. In order to actively stress the muscles during the eccentric portion (rather than just letting gravity do all the work), a slower cadence should ideally be utilized here. Not only will this help to produce additional muscular damage throughout the set, but it will also reduce the strain on the joints as well.

Beyond any exact number of seconds, the most important factor on the eccentric phase is that you lower the weight under deliberate control and consciously "fight" it on the way down. As a general guideline, 2-4 seconds should be sufficient to obtain all of the additional growth stimulating benefits of the negative without going unnecessarily slow.

REST BETWEEN SETS

With the proper guidelines now in place for executing an effective muscle building set in terms of rep range, rep speed and overall form, the next question to answer is how long you should be resting in between each of those individual sets throughout your workout.

Many programs will simply advocate the use of one pre-set rest interval that should be consistently followed on every exercise, ranging from as little as 30 seconds up to 3-4 minutes or more. Applying a single rest time across the board like this is far from the best approach, however, since the ideal amount of rest that should be taken is highly situational and can differ quite a bit depending on which specific exercise is being performed. The more muscle groups that are involved in a particular movement and the more total weight you're lifting, the more overall stress you'll be placing on your body and the longer your rest periods will need to be in order to keep performance maximized on each set.

For example, a set of heavy squats will be far more physically and mentally demanding as a whole in comparison to a set of weighted pullups, while a set of weighted pullups will be more challenging to perform than a set of biceps curls will be. Utilizing the same rest period for every exercise (regardless of the difficulty involved) can often end up sacrificing your strength on certain movements by forcing you to jump into the next set before you've had a chance to adequately recover from the previous one.

Remember that when it all comes down to it, effective muscle building training is ultimately about achieving progressive overload by continually improving your performance on all of your exercises over time. No set should be taken lightly, and your goal should always be to perform each one with 100% of your strength, energy and mental focus in tact. Intentionally using quicker rest times would certainly be useful if your training goals revolved around improving muscular endurance or cardiovascular conditioning, but in the world of muscle hypertrophy and strength this simply doesn't apply.

So, rather than setting a timer and automatically performing your next set after a specific amount of time has passed, a much better approach is to simply listen to your body and only move onto your next set once you feel fully physically and mentally ready to do so. Whether that means resting 3 minutes after a set deadlifts, 2.5 minutes after a set of dumbbell rows or 1.5 minutes after a set of lateral raises, just take as much time as you need to in order to feel completely re-charged and ready to give another maximum effort.

As a general guideline, you'll probably find that a rest period anywhere between 1.5-3.5 minutes is appropriate for most lifts when training at the recommend intensity level of 1-2 reps short of failure. However, if you do feel that you require a bit more rest after a particularly challenging set, that's fine too. The research has consistently demonstrated that taking longer rest intervals between sets produces superior muscle growth and strength gains in comparison to shorter ones, so if in doubt, always rest a bit longer rather than shorter. Not only will this improve your results when it comes to stimulating hypertrophy, but it will

also lower your chances for injury by reducing the likelihood of sudden form slip-ups that may occur when trying to lift heavier loads while in a mentally fatigued state.

In the interest of time efficiency, just make sure that you aren't taking any more rest than you truly need and always move right into your next set as soon as you feel physically and mentally recovered from the previous one.

TIMING & DURATION

You now have all of the key elements in place for executing an effective hypertrophy-based workout. You've learned all about the foundational principle of progressive overload, along with concrete guidelines for training volume, frequency, exercise selection, workout variation, rep range, rep speed, rep execution and rest between sets.

Two other questions that often arise on the subject of proper training are in regards to workout timing and workout duration. In other words, when is the best time of day to train for optimal strength and performance, and how long should your workouts ideally last for the best results?

When it comes to workout timing, the late afternoon to mid evening hours are when the body will be most primed for maximum strength and energy output from a pure physiological standpoint. This is due to the way the body's circadian rhythm works and how various parts of the central nervous system are activated throughout each 24 hour period.

Assuming you have a typical sleeping and waking schedule in place, positioning your workout somewhere between approximately 2pm-9pm would theoretically be the best time to train in order to take advantage of this. This is when core temperature will be in the ideal range for peak performance, muscle activation and blood flow will be optimized, joints and connective tissues will be less susceptible to injury, and reaction times will be at their quickest. If you operate on an irregular sleeping schedule, you'd need to wait about 5-6 hours after waking up prior to hitting the gym in order to derive the same benefits.

That said, the issue of optimal workout timing is not perfectly cut and dry, as there are several other factors to take into account here as well. For example, although the body may be less physically primed for maximum performance in the earlier morning hours, certain individuals may find that this is the time when they feel the most psychologically primed to train at their best. The mind can have a huge influence on the quality of your workouts, and if the morning time is when you feel the most driven and motivated to hit the weights, that alone could be enough to offset the less than ideal physical conditions and allow you to get in just as good a session regardless.

In addition, the body will tend to adapt its circadian rhythm to the time of day that you normally train. Begin consistently performing your workouts at, say, 10am, and your body will gradually start priming itself for physical exertion at that specific time. This adaptation is not perfect (the earlier in the morning you train, the less significant the effect will be), but it does come into play regardless.

Research has also shown that if caffeine is consumed 20-30 minutes prior to a morning workout, this alone can largely erase the physical drawbacks of those earlier sessions and boost performance back up to evening levels. Around 150-300mg would be a standard dose depending on your body weight and sensitivity to stimulants, either in the form of regular coffee, a high quality pre-workout or some other caffeine-containing beverage. It should be noted though that caffeine tolerance will develop over time if consumed every day without

cycling off, so this is still something that needs to be used in moderation in order to derive the full benefits.

Another factor to take into account is that of mental fatigue. The brain's willpower reserves are a limited resource and tend to deplete as the day goes on, especially for those following a particularly busy and intensive daily schedule. Because of this, it's possible that a 6pm workout could still end up being a lower quality session in comparison to a morning workout if you were feeling very mentally tired once the evening hours rolled around from all of the previous work you'd already completed that day.

Lastly, training too late in the day can potentially interfere with sleep in some individuals due to the temporary increases in heart rate, core temperature, cortisol and excitatory hormones (such as adrenaline and norepinephrine) that result from intense exercise. So, even if an 8pm workout results in a better session performance-wise, the benefits may be negated (at least in part) if that later session negatively impacts recovery and mental focus leading into the next day as a result of reducing your sleep quality.

As you can see, a case can be made for training at virtually any time of day once all of the various factors are considered. In terms of practical guidelines, the recommendation here would be fairly straightforward. First off, if you truly have no preference on the matter and if it's equally convenient for you to train at any time during the day, go ahead and schedule your workout somewhere within that "optimal" late afternoon to mid evening time frame. This is the time of day that will be most likely to deliver the highest quality sessions for you assuming you don't live a highly stressful lifestyle that interferes with your strength and energy levels in the gym as the day progresses.

On the other hand, if you definitely do prefer earlier morning workouts for whatever reason, going out of your way to re-arrange your entire schedule to accommodate a later session shouldn't be considered a necessity. Your body will adapt to those earlier workouts to a certain degree, a moderate dose of caffeine can be used for an added boost, and if the morning time is when you feel the most mentally motivated to train, that may be enough on its own to help you match the quality of a late afternoon to evening workout anyway. In addition, if you truly enjoy morning workouts (or if training later in the day really goes against your preferences or schedule), sticking to those earlier sessions will likely improve your overall program adherence and increase the chances that you'll stay consistent with your weight training plan over the longer term.

The only situation where re-positioning your workout would be advised (despite it being less convenient or less enjoyable for you) is if you're someone who is aiming to squeeze out every bit of muscle growth and strength gain from your workouts possible, fitness is an absolute top priority for you, and you're aware that such a switch may only produce a minor increase in results in the overall picture.

Now, what about workout duration? Is there an optimal length of time for an effective weight training session from the time you begin your first set until you complete your last one?

A common guideline you'll hear is that your workouts should not exceed 60 minutes at the most, since the body will go "catabolic" beyond this point due to increases in the muscle-wasting stress hormone cortisol. However, while it is true that intense resistance training for long periods of time (around 2-3 hours or more) does produce a spike in cortisol levels, these short term acute increases don't appear to have any measurable negative effect on body composition. If you're training with sufficient intensity and are centering your workouts around basic heavy compound lifts, it usually won't be possible for you to endure a 2-3+ hour workout anyway, nor is there any need to train for that long in the first place.

Assuming you aren't taking excessive rest periods in between sets and are moving reasonably swiftly through your session, you'll probably be looking at anywhere from about 45-75 minutes to complete a standard hypertrophy workout, excluding warmups. This is just an estimate though since the exact time frame will vary depending on several factors such as which muscle groups are being trained that day, how much total volume is being utilized, how you feel in terms of strength and energy levels at that particular time, the amount of gym traffic etc.

In any case, just make sure that you're completing all of the necessary work without getting distracted in between sets, and that you're able to maintain a high level of focus, strength and intensity all the way through from start to finish. As long as you're able to accomplish that, the exact time frame of your workouts isn't something that needs to be specifically tracked or treated as a practical concern in terms of its effects on bottom line muscle growth or strength gains.

DELOADING

While it might seem counterintuitive that taking breaks from training would actually assist you in building more muscle and strength over the long term, that's exactly what regularly scheduled "deloads" can help you accomplish. A deload is a one week period of rest that is taken from your normal workout plan in order to give your central nervous system, joints and muscles a chance to fully recover from the previous cycle of training.

Although conventional wisdom tells us that "the more work we put in, the better results we'll achieve", this is only true up to a limited point when it comes to building muscle and gaining strength. Intense resistance training is very stressful to the body as a whole, and you can only go so hard for so long before those heavy workouts begin taking their toll and eventually push you beyond your ability to optimally recover.

A strategically placed deload phase will help to prevent sticking points in your training and reduce the risk for injury by ensuring that you don't overwork yourself in the bigger picture. Not only will deloading give your muscles and joints a chance to rest, but it will also provide psychological benefits by allowing you to relax and re-charge mentally, helping to prevent burnout and keeping your motivation levels steady over the longer term.

What's the best way to go about incorporating deloads into your plan?

There are two main options you can choose from here, the first being to continue with your regular training program as is but reduce the amount of weight lifted on each exercise by 50%. Your training split, exercises, sets and reps will all remain the same, but you'll simply dial down the intensity level so that you're only lifting about half of your normal weight. This method provides a form of "active recovery", allowing you to remain in the gym and perform all of your regular movements for the week but without putting significant stress on your body.

The second option is to simply take time off from the gym altogether and give yourself a complete rest from lifting. A bit of light cardio is fine to include (just as it is with the first option as well), but all forms of weight training will be discontinued until the deload phase has ended.

Either one of these options is ultimately acceptable and will serve the same basic purpose, and you can simply choose the one you most prefer depending on whether you'd rather stay lightly active during your deload or just take a complete break from the gym to fully rest.

Regardless of which method you choose, a deload should ideally be implemented once for every 6-12 weeks of consistent training and last for a period of one week. Whether you'll be better off going with the lower or higher end of the range will be influenced by several factors, including your calorie intake (those eating in a surplus can typically get away with longer stretches of consistent training in comparison to those in a deficit), experience level (the more advanced you become, the more frequent your breaks should be due to the heavier weights being lifted), age (those in the 40+ age category are usually best off

incorporating deloads more often since recovery ability declines as you get older), and general lifestyle (those living a more stressful day to day life will likely benefit from more frequent deloads).

All pre-set numbers aside though, simply listening to your body and paying attention to your energy levels, motivation, joint health and overall rate of progress will be the best way to determine when a deload week is in order.

As a final note, since you won't have a weight training stimulus in place for muscle growth during your deload phase and will be less active overall, those in a bulking phase will be best off to lower their calories slightly during this period in order to prevent excess fat gain. You can achieve this by simply removing your regular calorie surplus from your daily intake. For example, if you're currently bulking on 3000 calories daily using a 300 calorie surplus, you'd drop down to 2700 calories during your deload.

Those in a cutting phase can either leave their intake at the same level (this should still keep you in a net calorie deficit but will reduce its overall size since you won't be burning calories from weight training), or apply a slight increase of 200-300 calories per day to put you closer to your maintenance level if you'd prefer to treat the deload period as a diet break.

INJURY PREVENTION

If you truly want to build muscle, gain strength and transform your body effectively, consistent hard training in the gym with a focus on progressive overload is the only real way to get there. This will place your muscles under the levels of stress needed to produce a significant hypertrophic response, and allow for ongoing gains from month to month as a result of the continually increasing workloads.

It's important to keep in mind, however, that those intense workouts don't just stress your muscles alone; your joints, tendons, ligaments and connective tissues also take on a good portion of the load as well. While this is simply the nature of intense resistance training and can't be avoided completely, implementing the proper cautionary steps can significantly minimize the resulting wear and tear along with the chances of sustaining an unwanted injury.

This is one the most overlooked aspects of a proper fitness program and doesn't get nearly the amount of attention it deserves. After all, your entire ability to build muscle and gain strength hinges on the fact that your joints and connective tissues are healthy enough to support the weights needed to do so. It doesn't matter how strong your muscles are; if the underlying foundation is weak, you'll be virtually guaranteed to run into problems eventually.

It may not seem like a big deal right now, but when you end up on the sidelines with an injured lower back, shoulder, elbow, knee or whatever else, you'll very quickly wish you had taken this area of your program more seriously. This is especially true when you consider that some injuries can potentially throw your program off track for several months, years, or even permanently in more extreme cases.

It's also important to remember that your goal here isn't simply to be in the gym for the next 6 months, 2 years, 5 years or even 10 – assuming you want to build a standout physique and maintain it for the long haul, weight training is an activity that you'll be performing week in and week out for literally decades to come. It may be hard to think that far down the road from where you are currently, but just keep in mind that bodybuilding and fitness is a life long endeavor and that how you train now will affect how well you're able (or unable) to train over the longer term.

What are some useful tips you can follow to maximize your muscle building and strength gaining results while also minimizing your risk for injury throughout the process?

Aside from incorporating regular deloads into your plan as we just covered, the first step is to ensure that you always perform a properly structured warm up prior to your weight training sessions. For most average lifters out there, a pre-workout "warmup" usually consists of nothing more than a few light reps before their first main exercise, or even worse, they completely skip the warm up process altogether and jump straight into the heavy weights immediately upon entering the gym.

This can often end up having serious consequences in the long run, as a well-rounded warmup routine is one of the most effective ways to improve the integrity of the joints and connective tissues during training and reduce the risk of injury. Properly warming up will prepare both your mind and body for the work ahead by raising core temperature, improving joint mobility, lubrication and range of motion, and activating the muscles and central nervous system for optimal strength, focus and performance.

There are many different ways that an effective warmup sequence can be performed, with a combination of dynamic stretches, self-myofascial release movements (such as foam rolling) and weight acclimation sets (light weight for high reps, gradually increasing to heavier weight for low reps) providing a good well-balanced approach. An effective warm up only requires about 10-15 minutes to complete (you can find the exact recommended routines outlined in The Body Transformation Workout System), but will go a long way in setting you up for consistent, injury-free progress from month to month.

Once you've made your way into the actual workout itself, the next key injury prevention step is to make sure that you're lifting with proper technique at all times and aren't going excessively heavy on any of your exercises. This should go without saying, but the bottom line is that if you're not able to lift the weight through a full range of motion while using correct form throughout the entire set (and without the assistance of a spotter), then the weight is too heavy for you and needs to be lightened up, period.

Heaving around large amounts of weight using momentum and sloppy technique will significantly increase the strain on your joints throughout the workout, and although you may not run into noticeable problems in the short term, this way of lifting will almost certainly take its toll eventually. If you're serious about building a great physique and maintaining it for years to come, it's imperative that you leave your ego at the door, learn the proper form for each exercise and then stick only to weights that you can truly handle while maintaining complete control at all times.

Aside from executing all of your sets using proper form, another important step when it comes to minimizing injury risk is in moderating your overall training intensity and keeping it within the appropriate limits. That means performing the majority of sets no further than 1-2 reps short of concentric muscular failure, and significantly limiting (if not entirely avoiding) the use of very high intensity techniques such as forced reps, cheat reps or heavy negatives.

While occasionally going all the way to failure or adding in an advanced lifting technique from time to time won't be a problem if it's being done cautiously (though this should only be implemented by more advanced trainees), doing so on a frequent basis will place your joints at a much greater risk for eventual injury. This is due not only to the sheer intensity level itself, but also from the increased chances of a sudden form slip up as you attempt to squeeze out additional reps while in a highly physically and mentally fatigued state. Training hard and pushing your body close to its existing strength limits is no doubt a critical aspect of optimally stimulating hypertrophy, but this can quickly backfire if you don't know when to hit the brakes and are consistently pushing the envelope too far.

Along with moderating your levels of training intensity, total training volume is another factor to take into account when it comes to keeping your joints and connective tissues healthy. Even if you are stopping the majority of sets 1-2 reps short of failure, performing too many total weekly sets in general can still lead to problems if you aren't careful. While every person will tolerate weight training a bit differently depending on a variety of factors (such as genetics, experience level, lifestyle, nutrition, sleep etc.), the guidelines given in the previous volume/frequency section should not be exceeded in the majority of cases unless it's being done for a very specific reason, such as for a temporary "overreaching" cycle carried out by a more advanced trainee or for a specialization phase to bring up a lagging body part.

This means directly targeting each muscle group between 1.5-3 times per week over the course of 3-5 weight training workouts, utilizing 8-16 sets for large muscle groups and 3-8 sets for small muscle groups. There will rarely be a need to go beyond these figures for the purposes of building muscle and gaining strength, and doing so under the misguided notion that "more is better" will often be directly counterproductive both for hypertrophy and overall joint health.

Also keep in mind that regulating your total training volume applies not only to weightlifting, but to cardio exercises as well. While low impact choices like walking, cycling or swimming shouldn't be a cause for concern even at higher frequencies, high intensity methods such as sprinting, plyometrics, heavy bag hitting etc. place the joints under greater levels of stress and should be more carefully moderated for that treason.

In terms of actual workout structure, another often overlooked injury prevention guideline is to ensure that your overall selection of exercises is properly balanced and that every muscle group is being trained with equal focus and intensity throughout the week. If one set of movement patterns is consistently over-emphasized at the expense of others, various joint and muscular systems can end up being pushed out of their optimal position and firing patterns.

Placing more focus on chest presses in comparison to rows (leading to possible shoulder instability), neglecting posterior chain exercises in favor of more quad-dominant movements (a common cause of knee problems), or training the abdominals without any lower back work to match (setting the lumbar area up for potential issues) are all very common examples of this. As a general rule, each movement pattern that you include in your training plan should be balanced out with an equal amount of its opposing movement pattern. For example, horizontal presses/horizontal pulls, vertical presses/vertical pulls, compound quad movements/compound hamstring movements etc.

Maintaining a well balanced joint and muscular system is not only a product of what you do in the gym, but is also heavily influenced by your day to day habits outside of it as well, in particular your resting posture. This has become an especially important issue in the modern era, where people commonly spend multiple hours every day working in a seated, hunched over position on their computers and laptops, further exacerbated by the usage of smartphones and other electronic devices. This can quickly lead to a whole host of

imbalances throughout the body, all the way from the neck right down to the ankles and feet. Remember that the entire musculoskeletal system is interconnected, and when dysfunction develops in one area, it usually has a cascading effect throughout the rest of the system.

All of the details surrounding proper posture (as well as how to treat various issues that may develop as a result of poor posture) are beyond the scope of this manual, but just keep in mind that how you move (or don't move) your body throughout the day has a significant contributing effect on the health of your joints, connective tissues and how efficiently your body functions during training. Being mindful of your daily posture and movement patterns, limiting how much time you spend sitting (along with taking regular breaks while working), and incorporating certain rehabilitative techniques such as self myofascial release (foam rolling, massage etc.), muscle activation exercises (for areas that are commonly inhibited like the glutes, core and mid-back muscles), and stretches can all be helpful injury prevention strategies in addition to all of the previously mentioned points.

One final tip to optionally consider when it comes to treating existing injuries and preventing future ones is the use of additional supplementation. Joint supplements should never be relied upon as a first-line treatment (keep in mind that joint pain can be caused by a wide variety of different factors and no supplement is guaranteed to provide benefits in every case), but they can be utilized as a form of extra "insurance" for those who want to take every possible cautionary step in this area of their program. Fish oil, curcumin, Boswellia serrata and/or Cissus quadrangularis would be the top recommended supplements in this category, with further information for each compound (including the specific benefits, dosage guidelines and recommended products) being discussed in The Body Transformation Blueprint Supplement Guide.

If you do find that you've run into issues with joint pain despite following all of the tips in this section closely, keep in mind that this is certainly not an uncommon occurrence and doesn't necessarily mean you've done anything blatantly "wrong" with your training. While taking the proper precautions will no doubt reduce the chances of this happening, the reality is that most lifters out there will still experience some form of injury (even if it's just a minor one) at some point throughout their training career. This generally just comes with the territory for anyone who is consistently pushing their body in the gym and is looking to take their physique and strength development to significantly above average levels.

If the pain is fairly minor and is only happening during a particular exercise, the first thing to do is experiment with different variations of that movement to see if you can find one that is more comfortable. That could mean switching from a barbell press to a dumbbell press, barbell squat to a dumbbell split squat, pullup to a pulldown, or freeweight curl to a cable curl just to give a few examples of many. No single exercise is a "must" for building muscle, and if you can find a comparable variation that still trains the targeted area effectively but without the added joint discomfort, you can switch to that movement for a temporary period while you work on treating the injury separately. In addition to making exercise substitutions, you can also try switching to lighter weights, higher reps and a slower, more controlled lifting cadence to further reduce the load on your joints.

In more serious cases where the pain is quite significant regardless of which exercise variation or rep scheme you choose, taking some time off from training the injured area altogether (or from the gym in general depending on how severe the injury is) will be your best bet in order to get the issue properly assessed and treated. Continuing to push yourself in these situations will almost always make things worse and can have potentially serious long term consequences depending on what type of injury you're dealing with.

Remember that building a great physique is all about what you do in the big picture, and taking a short break to allow yourself to heal is a much smarter option than ignoring the obvious signs and possibly setting yourself up for recurring problems down the road. You're only as strong as your weakest link, and failing to properly care for an injury can often have a reverberating effect throughout your entire training program, especially when dealing with joint systems that are heavily involved in most major exercises like the shoulders or lower back. So, while minor aches and pains can sometimes be worked through as long as you're careful and are taking active steps to fix the root issue, significant joint discomfort should be taken much more seriously and treated by a professional before you return to the gym.

TRAINING LAYOFFS

In the event that you do need to take a temporary break from your workout plan, what should you realistically expect in terms of potential muscle size and strength regression, and how long will it take to recoup any losses you might experience?

Aside from sustaining an injury, a layoff could also be the result of an illness, family issue, particularly hectic work or school schedule, or a period of travel where training either isn't possible or where you've simply decided to put your workouts on hold for the time being. While it might feel as though all of your hard earned progress is about to rapidly waste away the minute your break begins, fortunately this is not how things work in the real world. Dedicated lifters who take their fitness program seriously often feel quite stressed out by the idea of missing a week or two (or more) of training, but in most cases it won't be nearly as counterproductive as you might imagine.

The exact time frame will vary from person to person depending on a variety of factors, but assuming your nutrition is adequate (meaning you're eating roughly around maintenance calories and are consuming sufficient protein), losses in lean muscle mass generally won't kick in until about two full weeks of inactivity. Even then, the process will be fairy slow and gradual from week to week thereafter.

For that reason, if all you'll be doing is taking a short 1-2 week break from the gym, it's best to think of this as simply being a "pause" in your program rather than as something that will be directly counterproductive to your physique. Even after a full 3-4 weeks off without any training at all, the vast majority of your gains will still be left in tact aside from perhaps a very minor amount of muscle and strength loss.

One thing you likely will notice, however, is that your muscles won't look quite as full or defined in the mirror as your layoff progresses beyond the one week mark. Your physique will probably appear a bit smoother and "flatter" looking, and this may create the impression that you've suddenly lost a large amount of muscle within a very short period. However, in the case of a relatively short training layoff lasting no more than a few weeks, this will not be the result of any significant losses in lean muscle mass but will instead be due to other contributing factors, such as decreased fluid retention in the muscle cells, reduced glycogen storage and lowered levels of inflammation.

The psychological side of things can definitely come into play here as well, as it's very easy to skew your own perception of your body based on your beliefs. If you simply feel in your mind that you've become weaker and more out of shape as a result of your training layoff, chances are that that's exactly what you'll see when you look in the mirror even if the actual objective difference is only very modest.

Fortunately, all of the effects described above – both the gradual muscle and strength loss that will begin to occur after about two weeks of rest along with the temporary decrease in visible muscle fullness that may result – will all be regained at an accelerated pace upon returning to the gym thanks to the effects of "muscle memory".

Unlike the majority of cells in the body that contain only a single nucleus, muscle cells consist of many nuclei known as "myonuclei". When you train with resistance in the gym, new nuclei are added to the muscle cells, with smaller "satellite cells" accumulating around them to allow the muscle to grow larger over time. The number of nuclei within a muscle is one of the main factors that regulates its size – the more nuclei there are, the more potential there is for hypertrophy.

The key to muscle memory is the fact that once those myonuclei are created, they remain within the cell for a very long period of time afterwards even if no weight training is being performed. Exactly how long is not known, but some research suggests that they may stick around for as long as 4-5 years, and potentially even for life to a certain degree. When you're forced to take a layoff from the gym, the satellite cells slowly atrophy, but the nuclei remain. This is why you'll always regain muscle at a much faster rate the next time around, as the smaller satellite cells will be rebuilt relatively quickly once you resume training.

The bottom line on all of this is that, if you're serious about your fitness program and are committed to it for the long haul, training layoffs should simply be viewed as an inevitable part of the process and something that every lifter will have to go through during certain periods. If your training and nutrition habits are otherwise on point most of the time in the bigger picture, taking a few weeks off here and there will only make a very small temporary dent in your size and strength levels (assuming they make any dent at all), and whatever minor losses you do incur will be regained significantly faster than it took to originally build them.

If you have taken more than a 1-2 week period off from training though, it's important that you settle back into things mindfully rather than just trying to pick up in the gym exactly where you left off. Even if you didn't lose any actual lean muscle during your break, it's still possible that your strength levels will have gone down slightly as a result of decreased neural efficiency due to the period of inactivity.

There's no way to know exactly where your strength levels will be when you first return to the gym since it will vary depending on exactly how long your break was and what your nutrition, sleep and lifestyle were like during that time, so you'll just need to go by feel and use your best judgement. If in doubt, always err on the side of caution and go a bit lighter on your lifts rather than heavier, since even if you do select a weight that is a bit too light, you can simply increase the rep range to compensate.

This is especially important if your layoff was due to an injury of some kind, in which case you'll want to be extra cautious to ensure that you've properly healed and to re-acclimate yourself to progressively heavier training. Don't make the common mistake of trying to rush things in order to get right back to your previous strength levels over night, as this will only increase the chances that you'll end up right back on the sidelines.

In any case, once you've established your starting numbers, just aim for standard progressive overload from that point forward as you normally would, be patient, and you'll be right back to peak condition in no time and ready for further progress.

PROPER SLEEP

Getting a sufficient amount of deep, restful sleep on a consistent basis is a far more important factor when it comes to maximizing muscle growth, fat loss and overall health than most people realize. Although the subject of proper sleep is technically not a "weight training" topic in and of itself, there is a direct relationship between the two due to the key role that sleep plays in optimizing workout recovery and performance.

Not only will getting an adequate rest each night help you operate at your very best both in and out of the gym by maximizing energy levels, strength, mood and concentration, but it will also directly increase the output of several key muscle building and fat burning hormones including testosterone, growth hormone and IGF-1, all of which play a critical role in optimizing body composition. Maintaining proper sleeping habits also improves the efficiency at which your body utilizes fat for energy through a reduction in RER (respiratory exchange rate), and lowers levels of the fat storing stress hormone cortisol.

These are just a few of the many benefits that a proper nightly sleep has to offer, and if you find that you have a tough time falling asleep (or that you don't sleep deeply or for extended periods without waking up), you may end up in a pattern of chronic sleep deprivation that delivers the opposite of these effects.

How much sleep should you ideally be getting each night?

Since the optimal amount of sleep can vary from person to person depending on a variety of factors such as genetics, lifestyle, activity levels, stress etc., the simple answer is to just aim for whatever amount of sleep you personally require in order to feel fully rested and energized throughout the day without any noticeable excess fatigue. Somewhere between 7-9 hours per night will be appropriate for most people, though a smaller percentage of individuals may be able to operate fine on less than this or may even require slightly more.

Just make sure to listen to your body, and if it's obvious that you're lacking in energy, mental focus and are feeling generally under-rested throughout the day, improving your sleeping habits should be treated as a top priority. This is will provide significant benefits not only for your muscle building and fat burning program, but in virtually all other areas of your life as well.

It should also be noted that the total number of hours you sleep per night is just the first half of the equation – your actual sleep quality is another key factor to take into account as well and will heavily influence just how much benefit you obtain from each night of rest. If you're not falling into a deep enough sleep or are waking up frequently during the night, you won't properly pass through the various sleep cycles and may still end up excessively fatigued even if you are sleeping for a full 8 hours or more. Fortunately, there are quite a few steps you can take to help you sleep more deeply and for longer periods of time in order to get the very best rest possible.

Aside from the obvious step of performing regular weight training and cardio exercise throughout the week (something you'll already be doing by default and that will go a long way in improving your overall sleep quality), the first recommendation would be to maintain a consistent sleeping and waking schedule from day to day. Waking up and going to bed at the same time helps to regulate your body's internal clock and cues it to "expect" sleep at a certain time each night. Although this won't be possible for some people due to varying hours for things like work or school, just do your best to set a schedule and stick to it as closely as you can, even on the weekends.

The second step is to associate your bed with two things only: sleep and sex. If you have some late night work to finish or need to tackle some other type of "mind stimulating" activity, work on it at a desk, table, on the couch or anywhere else you can. Don't, however, merge your sleeping space and working space into the same area. Whenever you crawl into bed, you want your body to associate that environment with rest, relaxation and pleasure rather than stress and problem-solving.

In order to increase your natural production of melatonin (a key hormone involved in regulating sleep), you'll also want to cut off all electronics about 30-60 minutes before nodding off. Melatonin levels increase when it gets dark and signal the body that it's time for sleep, allowing you to nod off more easily and stay asleep for longer. Instead of watching TV, surfing the web or texting before bed like most people do, spend that 30-60 minute block doing some light reading, listening to an audiobook or using a relaxation technique such as meditation. If you insist on using electronics right up near your bed time, at least make sure to dim your screens and use an app that reduces the amount of blue light that is emitted from your devices.

The next tip for a better nightly rest is to avoid going to sleep too full or too hungry. As a general rule, consuming a very large meal right before bed will typically make it harder to fall asleep, as will trying to nod off on a completely empty stomach. Not only will a small to medium sized meal within 2-3 hours of going to bed allow you to sleep more comfortably, but the accompanying insulin release will also improve melatonin production as well.

Another useful guideline to create the very best sleeping conditions possible is to keep your room cool, dark and quiet. Maintain a room temperature of around 60-67 degrees, use blackout curtains or a sleeping mask to eliminate as much light as you possibly can, and get rid of sudden background noises by using ear plugs or droning them out with a fan, humidifier or some other type of "white noise" machine.

Lastly, steering clear of caffeine and other stimulants within 6-8 hours of sleep is another important step to help your body wind down for a proper rest. Keep in mind that even if you do happen to fall asleep just fine after an evening cup of coffee or pre-workout drink, the caffeine and other stimulant compounds they contain can still decrease your actual sleep quality. Because of this, you should try to limit your last stimulant containing beverage or supplement to the late afternoon hours.

CHAPTER 5: CARDIO

INTRODUCTION

Whether your primary goal is to bulk up and gain overall size or lean down and lose body fat, weight training should always be treated as the number one priority in your workout program by far. Weight training is responsible for the growth and maintenance of lean muscle mass, and when combined with a proper diet, is theoretically the only form of exercise you truly "need" in order to achieve a lean and muscular physique. If you're executing your workouts according to the guidelines covered in the previous chapter and are moderating your calorie intake to create a proper deficit or surplus, cardio itself is technically not mandatory for losing body fat or minimizing fat gains during a bulk.

However, just because cardio isn't an absolute "must" doesn't mean that it has no use at all or should be avoided, and most trainees will still be best off to include at least a bit of extra cardio throughout the week both for its supplemental fat burning effects and additional physical and mental health benefits.

In this section we'll be covering everything you need to know when it comes to incorporating cardiovascular exercise into your program in a way that is effective, time-efficient and as sustainable as possible over the long term. We'll discuss the potential benefits and drawbacks of including too much or too little cardio in your plan, along with concrete guidelines for proper cardio frequency, timing, intensity, duration and exercise selection.

By the end of this chapter you'll have all the pieces in place for your complete workout program and will know exactly how to combine your weight training and cardio together for the very best results.

Let's start off by discussing the specific benefits that cardio has to offer as well as the potential downsides of performing excessive amounts.

CARDIO PROS AND CONS

While there's no doubt about the critical importance of proper nutrition when it comes to dropping body fat and staying lean, how exactly does cardio fit into the fat loss equation and just how important is it for this purpose?

Although it is recommended that most people include a few cardio sessions throughout the week as part of a well balanced training program, the truth is that cardio as a whole generally is overrated from a pure fat burning perspective. This is certainly not to say that it's *ineffective* in this area, but many trainees (particularly those who are in a cutting phase) end up getting carried away with their total cardio volume for the week and place too much emphasis on it as a fat loss tool.

Contrary to what you might think, your body is not expending thousands of calories and rapidly melting off inches of body fat as you run on the treadmill or peddle on the stationary bike during a standard cardio session. Several factors do come into play that will affect the bottom line total (such as lean body mass levels, intensity, duration etc.), but most regular cardio workouts don't actually burn a huge number of calories in the bigger picture when it all comes down to it.

For example, if you were to follow a typical training approach by performing three cardio sessions per week at a realistic amount of 400 calories burned per session, that averages out to about 170 calories per day. This certainly would have a contributing effect on your overall weekly rate of fat loss, but when you compare that amount to many common food items found in a typical daily diet, you'll see that 170 calories is actually not an overly significant amount.

Just to give an idea, a large banana contains about 120 calories, a four ounce chicken breast is around 185 calories, and two tablespoons of peanut butter provides 200 calories. A pound of stored body fat measures in at roughly 3500 calories, meaning you'd need to perform somewhere between 7-10 standard cardio sessions just to burn off that one single pound.

Since fat loss ultimately comes down to maintaining a net calorie deficit by burning more calories than you consume, simply moderating your calorie intake is usually a much more efficient way of achieving this. After all, it requires a significantly larger time and energy investment to climb a stairstepper for 40 minutes or endure 8 rounds of high intensity sprints on a treadmill in comparison to just reducing the portion size of a couple food items in your diet. As long as your total food intake is remaining at a healthy level and your calories aren't dropping excessively low, it makes no real difference from a fat loss standpoint whether you burn more calories through exercise or consume fewer calories through your diet. The final net result will still be the same at the end of the day.

You could bump up your calorie expenditure further by raising the frequency, intensity and/or duration of your cardio workouts to increase their net fat burning impact, but since the benefits of cardio operate on a bell curve (to where performing too much beyond a certain point becomes counterproductive), you'll usually start running into problems if you try to do this. Regardless of how motivated you might be to achieve that lean and defined physique you're after, there are a few reasons why trying to speed up the process with very large volumes of weekly cardio is probably not the best idea.

The first reason is that excessive amounts of cardio can interfere with weight training recovery and performance. Every cardio session you perform is another stressor that you're introducing to your body in terms of muscle damage, joint impact and CNS fatigue, and you can only perform so much in addition to your weight training plan before the total workload becomes too high.

Low intensity forms of cardio (such as walking or light cycling) won't pose much of a problem in terms of recovery interference in comparison to higher intensity variations (in fact, they may actually *improve* recovery when performed in moderation), but the downside is that it requires a much longer duration of low intensity cardio to burn a significant number of calories. As you increase the intensity level in order to expend calories more efficiently, the total stress will start to add up very quickly throughout the week, especially if you're performing very demanding HIIT (high intensity interval training) sessions.

In addition, high amounts of lower intensity/longer duration cardio can end up having a competing effect with the size and strength adaptations that are produced as a result of weight training. When performing aerobic cardio, you're essentially training the body to generate minimal force over a prolonged period of time, whereas with weight training, the goal is to do the exact opposite by generating maximum force over a very short time frame. Those in a bulking phase may experience a slowdown in their overall size and strength gains as a result of this, while those in a cutting phase will become more prone to muscle loss.

The second drawback of performing very high amounts of cardio is the strong spike in hunger levels that many trainees often experience. Even though cardio does burn calories on its own, it also stimulates the body to seek out additional calories to replace what was lost by making certain hormonal adjustments that raise appetite and cravings.

Doing cardio five or more times per week like so many people in the gym often do can very quickly lead to a large increase in hunger that may make it even more difficult to maintain a calorie deficit in comparison to performing less total activity. This is not necessarily true for every single person (some do just fine by creating a larger percentage of their deficit through exercise) but it is a very common scenario nonetheless.

Many people fall into the trap of thinking that since they completed their daily cardio for the week, all they have to do now is "eat healthy" and the fat loss will take care of itself. However, if you simply replace what you burned during your cardio sessions by over-eating in the hours and days that follow (remember that "healthy calories" are still calories nonetheless), your total calorie deficit will be significantly reduced or even erased altogether.

Since most people don't truly monitor their calorie intake with a high degree of accuracy (even though they may think they do), this is very often exactly what ends up happening. They burn an average of 400 extra calories per day through their high frequency cardio plan, unconsciously make a few minor dietary choices that replace those same 400 calories, and end up right back at square one as a result. In more extreme cases, some people may actually end up *gaining* weight despite performing large amounts of cardio throughout the week due to their significantly increased levels of hunger.

The third downside to performing those marathon cardio sessions multiple days a week is the simple time and energy investment involved. You only have a limited amount of physical and mental resources available that you can utilize throughout any given day and week, and chances are that fitness (hopefully) isn't your whole life. You probably have work or school on your plate to some degree, a social life, and other interests outside of the gym as well.

Detracting from those other areas of your life with endless stair stepping and treadmill running is obviously not going to be a wise usage of your time and effort if you don't even really need to be doing it in the first place. Furthermore, if cardio is something you really don't enjoy and if it requires considerable discipline and willpower for you to complete, forcing yourself to perform it on a highly frequent basis will also increase the chances that you'll eventually burn out and fall off track with your fat loss program over the long term.

While the three downsides outlined above might paint a seemingly negative picture when it comes to cardiovascular exercise, it's important to note that these points apply only to those who are making the common mistake of performing too much. Just as an excessive amount of weight training can become counterproductive beyond a certain point, cardio works in exactly the same way. However, as long as the overall volume and frequency is kept within the appropriate limits, performing a moderate amount of cardio throughout the week can actually be quite beneficial and produce a variety of positive effects that shouldn't be overlooked.

The first obvious benefit of cardio and the one that most people aiming to improve their body composition primarily use it for is as a basic calorie burning tool. While it is possible to create your entire calorie deficit through dieting alone, utilizing a combination of both decreased food intake and increased physical activity is usually the superior approach for most people. The bulk of the deficit is typically best created by moderating calorie intake first and foremost (since this is the easiest variable to control and since performing too much cardiovascular exercise is often counterproductive as we just discussed), with some additional "supplemental calories" being burned through cardio.

This becomes increasingly important toward the end of a cutting phase when you're attempting to lose that last bit of stubborn fat, as dieting alone may not be sufficient to get down to the lower end of the body fat spectrum if that's what you're aiming for. In addition, you can only drop your food intake so low before you're no longer able to fully meet your daily nutritional needs for optimal health and performance, in which case creating the rest of your deficit through exercise will be necessary to reach that final level of leanness.

If your primary goal is to bulk rather than cut, cardio can be used to help moderate the size of your calorie surplus and keep it within the proper limits if you do tend to slightly overshoot your daily calorie target as a result of over-eating. If accurately hitting your required calorie intake without going overboard is not an issue for you (or if you even find it challenging to consume enough food throughout the day to reach it), you can simply stay on the low end of the recommended cardio frequency we'll be outlining and utilize cardio for its other benefits aside from burning calories.

On that note, the first upside to performing regular cardiovascular exercise beyond just maintaining a lean physique is to improve your overall metabolic conditioning. Muscle building and fat loss goals aside, let's also not forget about the value of simply maintaining sound cardiovascular health in general.

Typical muscle building style workouts that utilize low to moderate rep ranges and longer rest periods in between sets don't provide a lot in the way of effective cardiovascular work, and regular cardio exercise is a great way to make up for this and round out your complete training plan. Along with improving basic health and longevity, increasing your metabolic conditioning also provides a few other practical benefits both for your fitness program and day to day life.

First, it can assist you in the gym on larger compound exercises when they're taken into slightly higher rep ranges (since the cardiovascular system comes more into play on these types of sets), as well as helping you recover faster in between sets.

Secondly, maintaining reasonable conditioning during a muscle building phase will smoothen out the transition from bulking to cutting when cardio naturally becomes a more important part of your training program. Perform little to no cardio during your bulk and the process will become quite a bit tougher as you're forced to rebuild your cardiovascular strength back up from scratch.

Thirdly, your levels of cardiovascular endurance will have direct carry over to other physical activities you might perform outside the gym such as sports or outdoor hobbies, as well as basic day to day tasks such as climbing stairs, faster paced walking, or jogging/running. Looking great is one thing, but having a body that is healthy and functional in the real world is obviously important too.

Another often overlooked benefit of adding in some weekly cardio to your plan is that the lower intensity variations can improve muscle recovery and decrease soreness in between workouts. By gentling increasing blood flow to the muscles, some light cardio performed the day or two after a weight training session can help to remove metabolic waste products and optimize the recuperation process. For example, you could include some light cycling or stair stepping for your legs, or rowing or swimming for your upper body.

In addition to everything mentioned so far, performing cardio on a regular basis can also have a positive effect on improving sleep quality. Weight training has beneficial effects on sleep as well, but if you live a relatively sedentary lifestyle aside from three or four hypertrophy-based workouts per week, you're likely still not getting in enough total exercise

to fully optimize your sleeping patterns. As we covered in the previous chapter, maximizing sleep quality has positive implications both for training performance and recovery as well as boosting energy levels and focus in regular everyday life.

Aside from improving focus as a result of a better night's sleep, cardio has also been shown to boost overall brain health and cognitive function in general, both in the short term directly after a cardio session and in the long term as well. One of the key ways cardio does this is by raising levels of "brain-derived neurotrophic factor" (BDNF), which is a protein vital for the growth of neurons.

On the subject of cognitive health, plenty of research has also demonstrated significant reductions in anxiety and depression levels as a result of consistent cardio exercise in those who are prone to these ailments. Cardio assists in these areas by regulating serotonin and norepinephrine levels, two key "feel good" neurotransmitters in the brain. Some studies have shown that aerobic exercise can be just as effective as medication for treating mild to moderate depression in some cases.

In fact, cardio can essentially decrease the risk of almost every major modern disease known to man. This is true of exercise in general, but in combination with weight training, including some extra cardio during the week can further reduce the chances of a wide variety of health problems including heart disease, osteoporosis, diabetes, asthma, cognitive diseases like Parkinson's and Alzheimer's, and even various forms of cancer. The human body evolved to move, and remaining stationary for extended periods of time (especially in a seated position like so many of us do nowadays) is just not natural to our physiology.

So, what's the bottom line on the role of cardio as part of your overall training program?

Neither the hardcore daily cardio enthusiasts nor the "anti-cardio" camp have it quite right if the goal is to optimize body composition as well as general physical and mental health. Performing very large volumes of cardio will not be the best approach for most people for the reasons we discussed above, and excluding cardio completely is also not recommended due to the wide variety of health and fitness benefits it can provide. As with most things, a healthy middle ground approach will typically be best in the majority of cases.

Exactly how much cardio should you do (and when) to obtain all of the positive effects that cardio has to offer but without going unnecessarily overboard and potentially detracting from your muscle building and fat burning results?

Let's get into some practical guidelines by discussing proper cardio frequency and timing.

FREQUENCY & TIMING

The first thing to keep in mind on the issue of optimal cardio frequency is that there is no single "one size fits all" answer that will apply to every single person across the board. The ideal number of cardio sessions to perform per week will be influenced by your individual health and fitness goals, weight training volume/frequency, lifestyle outside the gym, genetics and more.

As an overall guideline that will work well for most average trainees in most situations though, 2-3 cardio sessions per week would be a safe and reliable figure to start out with, optionally increasing the frequency later on if you're deeper into a cutting phase and your rate of fat loss has stalled. This amount will provide the supplemental calorie burning and physical/mental health benefits that cardio has to offer, but without negatively impacting muscle growth, significantly raising appetite, or requiring a huge time and energy investment on your part.

When laying out your cardio sessions for the week, make sure to take into account any other physically demanding activities you might be performing as well, such as an active job, sports, martial arts, outdoor activities etc. As we'll discuss in the exercise selection portion of this chapter later on, any activity that gets your heart rate elevated and requires sustained physical exertion will ultimately burn calories and improve cardiovascular conditioning, and should thus be counted towards your overall cardio total.

For example, someone who plays soccer twice a week, goes hiking regularly or takes kickboxing classes on an ongoing basis would not be required to then perform an additional three sessions of "gym cardio" on top of that. Each of those activities would be counted as its own cardio workout in the same way that running on the treadmill or riding a stationary bike would (assuming the duration and intensity level is comparable), otherwise you may end up performing an excessive amount of total cardio for the week without realizing it.

When should these cardio sessions be performed for the best results?

Ideally, the basic goal should be to space your cardio out during the week so that it has minimal interference with your weight training performance and recovery. Resistance training should always take precedence over cardio in any program where the goal is to optimize body composition, and you should always strive to enter each workout with 100% of your physical strength and mental focus still intact.

This is why pre-workout cardio in particular is best avoided. Performing cardio immediately before hitting the weights will pre-fatigue your muscles and central nervous system, resulting in less energy leftover to divert to your weight training workout. Blood acidity levels will rise (particularly if performing a higher intensity form of cardio), increasing hydrogen ion circulation and further lowering the total amount of force production your muscles can generate. The combination of these factors may also raise your chances for injury due to compromised form and technique as a result of the increased physical and mental fatigue.

Cardio also produces an increase in the enzyme AMPK (responsible for stimulating fat breakdown) which interferes with mTOR signalling (a central trigger of muscle hypertrophy), creating a potential "interference effect" that negatively impacts overall muscle growth from the workout.

Performing a light 3-5 minute pre-workout cardio warmup won't pose any issues, but full duration sessions should be moved to another time of day, especially in the case of HIIT cardio due to its highly demanding nature.

If you do want to combine weight training and cardio into a single workout for the sake of efficiency, always make sure to perform your cardio post-workout rather than pre-workout so that your weight training performance remains unaffected. This would still not be considered 100% optimal due to the possible interference effect just mentioned (not to mention that your actual cardio performance may be hindered if done immediately after a full weight training workout), but the impact would likely be minimal in the bigger picture for most average trainees.

One other potential drawback of combining weight training and cardio together is that the total length per session may end up dragging on for an excessively long period of time. For example, when taking into account travel time to and from the gym in addition to your pre-workout warmup, a full weight training session followed by a longer duration cardio session could potentially require up to 2-3 hours to fully complete. For that reason, if you are going to perform your cardio post workout, moderate to higher intensity sessions done over a shorter period are generally the better choice in order to keep things within a more reasonable time frame.

Aside from performing cardio after weights, the other option (and the ideal one from a pure muscle building and fat burning standpoint) is to separate the two completely by a period of at least six hours or more. This could mean doing your cardio in the morning and weights in the evening, weights in the morning and cardio in the evening, or putting them on different days altogether.

Again though, just keep in mind that the difference between spacing your weight training and cardio further apart like this versus performing your cardio post workout will likely be fairly small in the grand scheme of things. Therefore, this guideline should only be treated as a practical concern for the most serious trainees out there who are looking to achieve every ounce of muscle growth possible, and who are aware that it may only produce a minor increase in bottom line results at best. In all other cases, just make the decision based on personal preference and what fits most conveniently with your schedule.

Lastly, it should be noted that the 2-3 cardio session per week guideline outlined in this section assumes that your goal is to put on muscle and gain strength either right at or very close to your maximum potential. If you aren't necessarily trying to become as muscular as possible and are instead aiming to achieve a leaner and more athletic appearance – or if you're performing cardio simply because you enjoy it or have practical use for it (such as improving conditioning for a sport) – then the amount of cardio you perform is ultimately up to you and doesn't necessarily have to be limited to three times per week.

For example, if you'd prefer to do some form of cardio every single day with the understanding that it probably will negatively impact your muscle gains to a certain degree, that's of course up to you and just depends on your own personal health and fitness goals.

On that same note, performing no traditional cardio at all and just sticking with weight training as your sole form of exercise is also an option if you truly aren't concerned with the physical and mental health benefits that cardio has to offer. Cardiovascular exercise is not mandatory when it comes purely to fat loss, and a well structured weight training plan in combination with proper diet can still get the job done assuming you aren't trying to reach very low levels of body fat. You'll need to drop your calorie intake a bit lower in order to obtain the same net result if you choose to go this route, but calories in versus calories out is still the primary factor at play when it all boils down to it and this technically can be achieved through dieting alone.

It's highly recommended that you include at least some cardio throughout the week as part of a balanced lifestyle (and we outlined a wide variety of good supporting reasons for this in the previous section), but every individual is different and can make that choice for themselves depending on their own personal situation and preferences.

DURATION/INTENSITY

We've now gone over all of the potential benefits and drawbacks associated with performing varying amounts of cardio and have established a recommended frequency of 2-3 sessions per week, either done post-workout, or for fully optimal results, spaced at least six hours away from weight training.

When it comes to the actual execution of these cardio sessions, what is the ideal duration and intensity level they should be performed at for maximum benefit?

First off, it's important to understand that the variables of cardio intensity and duration are inversely proportional and go hand in hand. The higher the intensity level is, the less total duration you'll require in order to burn an appreciable number of calories, whereas the lower the intensity level is, the more time you'll need to invest to generate the same net effect.

This usually leads to the very common debate between the effectiveness of HIIT cardio (high intensity interval training) versus LISS cardio (low intensity steady state). For many years it was widely recommended that cardio always be performed in an aerobic state (where oxygen supply meets oxygen demand), since fat becomes the body's preferred source of energy when exercising at a lower intensity pace. This is where the standard "fat burning zone" guidelines originated from, where it's often advised that you remain at around 60-70% of your maximum heart rate to optimize fat loss.

As the intensity level increases and lactic acid levels rise in the body, less fat is burned and more carbohydrates are utilized instead. Since HIIT cardio is much more glycolytic in comparison to LISS cardio, it would seem to follow that those traditional 40-45 minute low intensity sessions would be the most effective way to burn fat.

However, while it is true that LISS cardio burns a greater percentage of body fat during the actual session, HIIT cardio compensates for this by causing the body to expend additional calories for several hours even after the workout is over. Due to its much more demanding nature, high intensity cardio creates an oxygen deficit within the body (known as "excess post-exercise oxygen consumption", or EPOC for short), forcing it to continue expending energy even while at rest later on in order to correct the deficit.

When comparing the overall net effect between these two types of cardio, the bottom line fat burning impact appears to be quite similar, with most studies showing that high intensity cardio is slightly superior in terms of total calories expended as a whole.

Aside from the modest increase in calorie burning, the one other obvious benefit of high intensity cardio is the significantly greater time efficiency involved. While a standard low intensity cardio session will typically last for around 40-45 minutes, HIIT workouts often require less than half that amount, potentially going as low as just 5 minutes in total depending on the intensity level being utilized. If you want to get the greatest overall bang for your buck in the shortest time (especially if you lead an otherwise busy lifestyle), HIIT cardio is a great choice for this and can also be easily tagged onto the end of a weight training session for even greater efficiency.

The decreased duration does come at a cost though, most notably the fact that high intensity cardio is much more physically and mentally demanding to perform when done correctly. Give an all-out session of uphill sprint intervals a try utilizing 100% effort with minimal rest periods, and you'll quickly discover just how incredibly challenging this can really be even for a workout lasting as short as 8-10 minutes in total.

Not only are HIIT sessions just plain harder to execute in general, but the increased intensity level also creates a higher amount of muscular damage, joint stress and central nervous system fatigue in comparison to the lower intensity variations. HIIT cardio can almost be thought of as a "mini" weight training workout, since the basic structure (short bursts of high muscular force followed by a period of rest) is quite similar. As a result, HIIT cardio is more likely to interfere with recovery and impede performance on an upcoming workout if the weekly frequency is set too high or the sessions are not adequately spaced away from weight training.

This is why, even though low intensity cardio burns slightly fewer calories on average and does require a greater time investment, it still offers certain benefits in that it's less stressful to the body and won't interfere with your workouts in the same way as its HIIT counterpart. In fact, as was mentioned earlier on, a moderate amount of low intensity cardio can actually improve recovery in between workouts by increasing blood flow and clearing out metabolic waste products from the muscle tissue.

Taking all of these points into consideration, both forms of cardio each have their own unique pros and cons, and neither one is inherently "better" or "worse" than the other.

Another often overlooked fact is that the type of cardio you choose does not have to be strictly limited to a very high intensity/very short duration or very low intensity/very long duration structure. Cardio works more like a sliding scale, and going somewhere in between the two extremes is also a viable approach depending on your preference. For example, rather than a 10 minute HIIT workout or 45 minutes of LISS, you could also opt for a moderate intensity 25-30 minute cardio session either done at a steady pace or also using an interval structure.

So, what's the bottom line on selecting the appropriate style of cardio for your training plan?

Since high intensity/short duration, medium intensity/medium duration and low intensity/long duration forms of cardio will all produce a similar net result in the overall picture, most trainees will be best off to simply base the decision on personal preference and choose whichever form is the most enjoyable, convenient and sustainable for them as an individual.

If you prefer the time efficient nature of HIIT workouts and are comfortable with the high levels of exertion involved, go ahead and focus on HIIT as your main form of cardio. Or, if you'd rather dial the difficulty back slightly at the cost of a longer duration session, a medium or lower intensity form is also acceptable. Of course, you can also go the route of mixing your cardio variables up and performing different styles on different days of the week.

The key takeaway here though is that beyond any specific cardio structure in terms of intensity or length, the most important factor by far is that you simply get your cardio done for the week, period. This is especially important if, like many people out there, cardio isn't an activity you're particularly crazy about doing in the first place and if it's something you often feel tempted to skip. Setting up your cardio plan based on what is most enjoyable for you (or at least, what is most tolerable) will maximize the chances that you'll actually stick with it over the long term.

The only caveat to take into account here is that, when it comes specifically to high intensity interval based cardio sessions, you'll usually be best off to limit these to no more than twice per week if you want to keep your muscle size and strength gains fully optimized. Some people may be able to tolerate more than this without any problem (there will always be individual variation at play depending on genetics, training experience, lifestyle etc.), but in general, going beyond two HIIT sessions per week will make it much more likely that you'll start running into issues with recovery. (This is especially true if you're performing a slightly higher frequency weight training plan in the 4-5 day per week range.)

There's only so much HIIT cardio you can perform in combination with weight training before the total weekly workload becomes excessive, not only in terms of muscular recovery, but also when it comes to joint and connective tissue health. For that reason, if you'll be performing three or more cardio sessions per week as part of your training plan, the third session and beyond should ideally come in the form of a lower intensity variation in order to keep things properly balanced.

All of the concrete guidelines in terms of cardio structure (specific interval time frames, intensity recommendations, duration, etc.) can be found alongside the weight training routines outlined in The Body Transformation Blueprint Workout System.

EXERCISE SELECTION

The final question when it comes to incorporating cardio into your weekly training plan is in choosing the actual cardio exercises you'll use to meet whatever frequency/intensity/duration structure you'll be following. Are certain cardio machines or methods superior to others for getting in the most effective cardio workout possible?

While there will be some slight variation in caloric expenditure based on which cardio exercise you use (depending on the specific movement pattern and muscle groups involved), the overall difference between them will be modest enough to where this shouldn't be a practical concern or something to get overly hung up on. As long as the proper intensity/duration guidelines are in place for the session as a whole, virtually any form of sustained physical activity can ultimately be used as an effective form of cardio.

Therefore, following the same theme as outlined in the previous section, cardio exercise selection is usually best made with the primary goal of long term adherence in mind. In other words, the "best" cardio exercise for you will generally be whatever specific machine(s) or method(s) you most prefer and that maximize the chances that you'll stick with your cardio plan over the long haul.

Losing fat, building muscle and maintaining optimal health is all about what you do consistently in the big picture, and the small potential difference in calorie burning between various exercises is generally not enough to justify switching from one method to another at the expense of basic enjoyment, especially if there are certain cardio exercises you really dislike doing.

For example, if you're not a fan of indoor treadmill running and find it particularly daunting to perform, there's no good reason to force yourself to use it as one of your cardio methods. Doing so will only increase the difficulty of your workout plan unnecessarily and raise the chances that you'll eventually fall off track and quit. Your likelihood for long term success would almost certainly increase considerably if you instead opted for a cardio machine that you better prefer, whether it be a stairstepper, stationary bike, rowing machine, stairclimber, airdyne or elliptical. Put forth a good focused effort, get your heart rate and breathing sufficiently elevated, and any of these choices will be acceptable and accomplish the same basic goal when it all comes down to it.

If you find it somewhat tedious to be stuck in one pattern of movement for an extended period of time, another good option is to rotate through multiple cardio machines during the same workout. For example, a moderate intensity session could consist of 10 minutes on the treadmill, 10 minutes on a stationary bike followed by 10 minutes of rowing.

Furthermore, there's no absolute necessity to stick with traditional cardio machines either. Other cardiovascularly challenging activities such as jumping rope, swimming, hitting a heavy bag, body weight intervals or light barbell complexes could work just fine as well if you'd rather avoid the standard treadmill or stationary bike options.

If you'd prefer to go outdoors, there's no end to the number of possible choices there either, such as jogging, cycling, hiking, brisk walking, hill sprints, climbing or water activities. Or, if you're into sports, another good option is to find a drop in league or get some friends together and use that as one of your cardio methods for the week. A game of basketball, soccer, hockey, flag football etc. are all great ways to get the fat burning and cardio conditioning benefits you're after without even feeling like you're doing regular "cardio" to begin with.

Lastly, you could take a look at the list of classes offered at your gym or other local facilities and see if anything interests you there. Group cardio, spinning, a TRX class, MMA class or fast paced yoga would all be perfectly acceptable options as well if that type of cardio approach appeals to you.

The bottom line here is that if you just put the time and effort in to find a method that you enjoy doing (or that at worst you're neutral to), you'll obtain all the upsides that cardio has to offer, maximize your long term consistency, and possibly even learn a new skill or meet new people while you're at it. If you want to keep things simple and straightforward by utilizing basic gym cardio machines then that's of course fine, but just keep in mind that you're certainly not limited to these choices either.

Whatever specific cardio methods you do decide to go with, just make sure that, as we discussed in the last section, you space them out during the week so that interference with your weight training workouts is minimized. For example, if you were on the first day or two of recovery from heavy squats and Romanian deadlifts, performing uphill sprint intervals or explosive plyometrics probably wouldn't be your best choice in that case. Or, if you had an upcoming chest and triceps session in the next 24 hours, repetitive high intensity punching on a heavy bag would be better replaced by something more lower body dominant, just as an exhaustive session on a rowing machine would be ideally scheduled further away from your back workouts.

In any case, just do the best you can to plan things out so that if you are performing those more demanding HIIT style sessions, the cardio exercises you'll be utilizing don't heavily involve the muscles you've just finished training or are about to train.

A final point to consider on the issue of cardio exercise selection is that of injury prevention. Certain cardio exercises (particularly those that involve running or jumping) produce a higher amount of impact on the joints that is more difficult to recover from and that can have a cumulative wear and tear effect over time if you aren't careful. Not only can this eventually interfere with your ability to perform your cardio properly, but it can also have potential carryover to your weight training workouts as well.

If you have any pre-existing joint issues (or if you simply want to minimize the chances for future injury and maximize recovery for the week), mixing in some lower impact methods would be ideal (cycling, stairstepping, rowing and swimming are a few good examples) if you are planning to include some more demanding high impact methods such as jogging, sprinting or plyometrics in your routine.

CHAPTER 6: SUPPLEMENTATION

INTRODUCTION

The two primary aspects of your complete body transformation program (training and nutrition) are now set in place. You know exactly what to do in the gym in terms of both weight training and cardio as well as how to combine them with an effective nutrition plan based on your specific goals.

We'll now move on to the third and final component of your overall muscle building and fat burning approach, that being the area of proper fitness supplementation. For most average beginners – and even for those in the intermediate and advanced stages of training – this can be a particularly confusing topic.

With the endless selection of different supplements available all promising superior results over the next one, trying to separate fact from fiction within this multibillion dollar industry can be a pretty daunting task. Everywhere you look there's the next "breakthrough" product trying to reach out and grab your attention, backed by its flashy advertisements, "high profile" endorsements and seemingly convincing research studies.

In this section, we're going to cut straight through the hype and lay out the real, honest truth when it comes to safe, effective and cost-efficient supplementation.

First, we'll talk about the true role that supplements play as part of your program and whether or not they're even necessary to use in the first place.

Next, we'll go over some very important (and eye opening) information about the supplement industry as a whole, and why such a large percentage of the products available today are ultimately best avoided.

Lastly, we'll break down in step by step detail which specific supplements do have legitimate use and can be optionally added to your program for a small extra boost to your muscle gains, fat loss, training performance and general health.

Let's begin.

THE ROLE OF SUPPLEMENTS

The first question to address here is, quite simply, whether or not supplements are even necessary to include in your program at all. Based on the way that most companies portray their products in advertisements and other online content, many trainees have been lead to believe that supplements are some sort of "make or break" factor that they won't be able to succeed without.

However, when it all comes down to it, the reality is that supplements are not a mandatory aspect of an effective muscle building or fat burning program, and you most definitely can still achieve great results without them. Proper training and nutrition are by far the most important pieces of the equation when it comes to building a standout physique, and most people (especially beginners) way over-emphasize the role that supplements truly play in the process.

That said, just because supplements are not a *necessity* does not mean that they have no use at all or should be avoided. When properly selected and taken in the correct amounts and combinations, a few basic supplements can provide some legitimate benefits when used in conjunction with your regular diet.

The key is to just make sure that you're maintaining the proper perspective on things by understanding that supplements are exactly that: supplements. They are *supplemental* to your program and are only intended to provide a modest improvement to your results and insure that you have the very best conditions in place for optimizing your overall rate of progress.

What specific benefits can supplements provide?

First, they can improve the efficiency of your eating plan by helping you meet your daily nutritional needs in a more streamlined way. Protein powders are the most popular go to choice in this area, providing an easier means of hitting your total protein requirements in comparison to getting it all from solid foods only.

Secondly, supplements can provide concentrated doses of certain muscle building, fat burning and health promoting compounds that are difficult (or even impossible) to obtain in optimal amounts from regular whole foods. For example, you'd need to eat around one pound of red meat to obtain a standard 5 gram dose of creatine, whereas a creatine supplement can provide that same amount in one small teaspoon. Those who train hard in the gym multiple days per week also tend to be low on certain micronutrients that are drained from the body through intense exercise, such as magnesium and zinc. These are just a few examples of many.

Thirdly, they can help to improve the quality of your workouts when taken directly prior to training sessions. Although most typical commercial "pre-workout blends" on the market

are poorly formulated and excessively over-priced (more on this later), there are a few research-backed compounds available that can provide a useful edge in terms of increasing strength, energy and mental focus in the gym when consumed in the proper forms and doses.

So yes, if your goal is to fully optimize your results over the shortest period of time and with the greatest level of convenience, a few evidence-based supplements can certainly have their place in rounding out your overall fitness plan. Just don't expect them to work any miracles, and don't forget that they are by no means a replacement for proper training and nutrition.

In addition, only a very small handful of available supplements are even worth using in the first place, and you need to choose very carefully if you want to obtain the benefits that supplements have to offer in a way that is effective, safe and cost-efficient. Despite the endless number of different brands and products currently lining the shelves both online and off, the truth is that the vast majority of supplements being sold today will actually do very little to nothing when it comes to improving your muscle building and fat burning results.

Before we get into the actual list of concrete supplement recommendations, let's first talk a little bit about the industry itself to give you the proper perspective on how things really work, as well as certain "red flags" to look out for when making your supplement buying decisions.

SUPPLEMENT INDUSTRY REALITY

Prior to the 1990s, dietary supplements were classified in the same way as prescription drugs – manufacturers had to prove the safety and efficacy of their products before putting them on the market.

The "Dietary Supplement Health and Education Act" of 1994 changed all of that, separating supplements into a different regulatory category and significantly diminishing the FDA's power to monitor which products were approved for sale. As a result of this deregulation, the supplement industry literally exploded. Anyone and everyone was free to create and sell supplements of virtually any kind, and the marketplace began overflowing with every type of product imaginable.

Because of the high potential for profit combined with the intense competition, companies began employing all sorts of misleading tactics and deceptive "shortcuts" as a means of getting ahead. Outrageously false product claims, cheap low quality ingredients, shady cost-cutting manufacturing methods and even outright label fraud became widespread.

This continued to gather momentum over the years, leading to the current state of the industry as it is today. A state where the overwhelming majority of bodybuilding and fitness supplements found in the marketplace are, quite simply, over-priced junk.

Yes, there are a small handful of research-backed supplements available that *are* worthwhile and that can deliver a slight increase in the overall effectiveness and convenience of your program – however, the "good ones" are extremely few and far between, and it's very important that you properly educate yourself in this area first before going out and purchasing any specific supplements for your program.

What are some of the main problems you should be aware of in terms of how most supplements are currently manufactured and sold?

The first is the very simple fact that the bulk of actual ingredients included in most typical "muscle building" and "fat burning" formulas just flat out don't work as they're claimed to. Despite the hundreds of different compounds out there that are commonly promoted for their supposed ability to improve body composition and training performance, only a very small percentage of these are actually backed by legitimate scientific research to substantiate their effectiveness. The rest are either based on poorly designed, "cherry picked" studies that draw no reliable conclusions when examined closely, or they have no actual research behind them whatsoever.

No, all of those fancy looking bottles lining the shelves at your local supplement store were not formulated by an educated group of "supplement scientists" walking around in white lab

coats, carefully analyzing every ingredient, dosage and combination based on stacks of in-depth studies. In reality, the majority of what's out there is simply created and promoted by fitness marketers – people who may or may not even have the necessary knowledge or qualifications to design a safe and effective product in the first place, and who do nothing more than pump out new fad products each month based on the latest trends.

Since the supplement industry is only very loosely regulated by the FDA, virtually anyone with some money and a business idea can easily formulate and sell their own supplements even if they provide no real benefit to the consumer at all.

Even in the case that legitimate, scientifically supported compounds are in fact being used in a given product, simply including those compounds in the formula is not enough on its own. They also need to be present in their research-backed dosages in order to produce real, measurable benefits, and this is another area where a very high percentage of supplements come up short.

The average consumer sees a recognizable ingredient listed on a product label and assumes that this is good enough, when in reality the actual potency is far too low to produce any noticeable muscle building or fat burning effect. Furthermore, because companies are not required to list the specific amount of each individual ingredient on their labels (they can simply list the total amount for all the ingredients combined and hide it behind the term "proprietary blend"), you often have no way of even knowing what's truly in the bottle to begin with.

This has nothing to do with the company's desire to hide their "top secret formula" from their competitors (this is what a proprietary blend is theoretically supposed to be for), and in virtually all cases it's nothing more than a misleading tactic used for cutting down production costs. By using a proprietary blend, the company can list off a bunch of popular ingredients that look great on paper, but then sprinkle in only a very small amount of some or all of them in order to increase their profits. (This is commonly referred to in the industry as "pixie dusting")

Since they know the average consumer is simply responding to the marketing and is not going to conduct any independent research into the proper ingredient dosages, this is a very easy thing to get away with and is why some of the top selling supplements on the market still use proprietary blends on their labels to this day.

For example, a particular product might list off a 5 gram proprietary blend containing a combination of creatine monohydrate, beta alanine and citrulline malate. However, if you've taken the time to investigate the proper dosages for each ingredient (3-5 grams for creatine, 3-6 grams for beta alanine and 4-10 grams for citrulline malate), you'll be able to clearly see that the blend is heavily under-dosed.

When it comes to supplementation as a whole, let's also not forget about the basic issue of cost. It'd be one thing to spend five or ten dollars on a product that didn't work, but in most cases you'll be handing over 30, 40 or even 50+ dollars a month per product. This can add up quite a bit over the long term, especially considering that most trainees will be using

multiple products at any given time. The markups on most top selling supplements are absolutely through the roof, with companies often paying just a few dollars to produce each bottle and then selling it for 8-10 times the cost.

The supplement picture gets even more bleak when we start looking at the various cases of blatant label fraud that have popped up over the years, with many popular products being found to contain little to none of the actual ingredients claimed. You might think this sort of practice would only be limited to smaller no-name companies, but even some of the biggest supplement brands out there have been guilty of it too. A recent 2015 case involved one of the largest vitamin retailers in the world, where it was uncovered that only 5 out of 24 different products tested actually contained the herbs listed on the label, with cheap fillers like rice flour, wheat and asparagus making up the rest.

Amino spiking has become another huge issue in the protein powder category where companies routinely add cheap free form amino acids into their blends as a way of cutting costs and artificially raising the protein count. For labeling purposes, the protein gram amount listed on the product is based on the total nitrogen content, meaning that even though these isolated amino acids are technically not complete proteins, they'll still contribute to the total. An amino spiked powder might list "25 grams of protein per scoop" on the back, when in reality up to half of that could just be cheap, ineffective fillers that have no real muscle building benefits at all.

Aside from supplements being frequently under-dosed and mislabeled, some companies have even gone as far as mixing certain banned substances into their formulas to increase their effectiveness. You can run an online search to see a list of cases that have popped up over the years, including instances of amphetamines, steroid compounds and other dangerous stimulants being illegally added to various popular products. These sorts of cases are fairly rare overall, but it's just another reason to be cautious when making supplement buying decisions, especially if you're a competitive athlete who undergoes drug testing.

Even in the rare case that a particular supplement does overcome all of the previous obstacles we just outlined, you still have to consider the issue of underlying product quality. Most people are under the impression that every supplement company owns its own manufacturing facility and personally develops all of its products firsthand, when in reality almost all of them outsource the production of their formulas to third party contract manufacturers. There is nothing inherently wrong with this (it's common practice in many other industries as well), but it can become a legitimate problem when lower grade manufacturers are selected as a way of further decreasing production costs.

For example, are you receiving pure raw ingredients from verified high quality sources, or cheaper alternatives from overseas? Are your supplements being made in a cGMP/NSF certified facility, or one that uses unregulated, cheaper processing methods? Are the products third party tested? Are they free of harmful contaminants?

When supplement companies opt for inferior quality processing in the interest of greater profits, it's like playing Russian roulette with your body. You'll never know if the end product you're getting is truly effective, or even worse, if it's safe for you to consume.

SCIENCE-BASED RECOMMENDATIONS

Everything we've covered so far has no doubt painted quite a negative picture of the supplement industry as a whole, but it's very important that these various warnings be taken seriously – otherwise, you could easily end up wasting a ton of unnecessary money, time and effort in this area of your program trying to sift through what works and what doesn't. It's by no means an exaggeration to say that the vast majority of this industry does not have your best interests at heart, and most trainees would be much better off to exercise a higher degree of skepticism when it comes muscle building and fat burning supplementation in general.

By not doing the proper supplement research first (and simply buying into the marketing behind some random set of hyped up products instead), you'll also end up missing out on the potential benefits that a legitimate, science-based supplement plan really does have to offer.

So, now that we've talked a bit about the downsides when it comes to improper fitness supplementation, let's talk about the upsides of going about it the right way. While it is true that the bulk of supplements out there are ultimately ineffective and best left on the shelf, there are a select few available that can offer certain helpful benefits when taken consistently in the proper forms and doses.

Fortunately, you don't need to spend huge amounts of money or consume endless quantities of different pills and powders each day to get the results you're after here. Regardless of what you may have been previously led to believe, an effective supplementation plan only requires the use of a few simple, straightforward items and does not need to involve anything overly complex or fancy.

In this section we'll be outlining a list of effective, evidence-based products that can be optionally included in your plan as a means of maximizing dietary convenience and promoting direct benefits on body composition, training performance and general health. For each supplement we'll discuss its specific benefits and applications, proper dosing guidelines, common misconceptions to avoid, as well as recommended brands that offer high quality versions you can trust.

This will include certain "approved" third party brands, as well as supplements from RealScience Athletics, a company I personally founded in early 2018 as a way of combatting all of the misleading tactics so common in the supplement industry today.

RealScience Athletics takes a much different approach to most "mainstream" supplement brands out there by only providing a small list of select products that are 100% research-backed, clinically dosed, transparently labelled and manufactured with the highest quality cGMP certified methods available.

There are ultimately a variety of acceptable brands and products out there if you research carefully, but if you want to remove all the guesswork and know for certain that you're getting the highest quality and most cost-efficient options available, RealScience Athletics was specifically formulated with that goal in mind. (Body Transformation Blueprint members are also eligible for a 10% discount on their first order by using coupon code **BTB10**)

Since there are literally hundreds of different supplements on the market that could be potentially reviewed here, this particular section will only focus on the most foundational, highly recommended ones that would be considered the "staples" of an effective supplement plan. To learn about some "secondary" supplements that can be optionally added for those who already have the basics covered (and the extra money to spend) as well as a list of "non-recommended" supplements that are best avoided (and why), you can consult the Body Transformation Blueprint Supplement Guide for more information.

If this is your first time using supplements, incorporating them one at a time is usually the best way to go about it. That way, in the unlikely event that you do experience an adverse reaction, you'll be able to narrow down which specific item is causing it and can adjust accordingly. This is especially true for any stimulant-based ingredients, as these should always be introduced gradually and at the lower end of their dosage range to assess your tolerance first.

If you have any pre-existing medical conditions or are currently using any medications, always make sure to consult a doctor before using any of the supplements discussed. Lastly, if you're a competitive athlete, always test out any new supplements before practice first rather than incorporating them for the first time during a live game scenario.

PROTEIN POWDER

The first and most basic item on the list of recommended supplements would be a high quality protein powder. These can be used to make a variety of different shakes, smoothies, snacks and other recipes that will allow you to hit your daily protein needs with improved convenience.

Although protein powder is traditionally classified as a "supplement", it's technically more accurate to just view it as being a regular food product instead. That's because whether it's whey, egg, casein or a plant source such as pea, soy, brown rice or hemp, all protein powders are ultimately derived from whole foods and provide additional protein to your diet in the same way as any other source. The only real difference is that because of their concentrated form, they provide a much higher amount of protein per serving in comparison to other typical solid foods.

If you have no issues meeting your daily protein needs from a regular solid food diet (or would just prefer to go about it that way), then the use of a protein powder is by no means mandatory and your results won't be negatively affected if you choose to exclude it from your plan. However, if you enjoy the convenience factor that protein powders provide and/or the taste of the various high protein smoothies and recipes that can be created with it, including one in your program can be a great option to streamline your overall eating plan.

What's the most effective and cost efficient way of selecting a protein powder for your diet?

With literally thousands of different options on the market to choose from, this can quickly become a confusing choice. This is especially true when every company out there is hyping their product up as the best option available and giving an endless list of reasons as to why you'll make better gains with their powder as opposed to another.

However, as long as you're consuming sufficient total protein for the day as a whole (around 0.8-1 gram per pound of body weight), the truth is that the specific protein powder you go with is by no means a critical decision, and you almost certainly won't see a noticeable difference in your bottom line results by choosing one type over another.

This is because, as we discussed previously in the nutrition chapter, all forms of protein are ultimately broken down into their individual amino acid building blocks after they're ingested, and you'll easily be getting enough of all the different aminos your body requires for the day assuming sufficient total protein quantity is present.

Certain types of protein powder like whey, casein or egg technically are superior on a gram for gram basis in comparison to most plant-based sources due to their superior amino acid profile and absorption rate, but the differences in quality gradually become less and less

important as the total amount of protein you consume throughout the day increases. Your body can only build a limited amount of muscle over any specific time frame, and consuming a greater amount and variety of amino acids once that cap has been reached is not going to help you build muscle any faster.

The issue of protein quality would only become a legitimate concern if for some reason your daily intake was on the lower end of the scale (for example, 0.5 or 0.6 grams per pound of body weight), in which case you'd need to choose more carefully to ensure that you were getting the very most out of each serving. Assuming that you are consistently getting in the recommended 0.8-1g/lb. amount though, the particular type of protein powder you use is ultimately up to you and primarily just comes down to the issues of taste and cost.

In addition, some people's stomachs will tolerate certain types better than others (for example, if you're lactose intolerant then you likely won't do very well using a whey concentrate), so this is another factor to take into account as well.

The most popular form of protein powder available is whey, and this is the form that would be recommended as a reliable "default" option since it ranks highly for taste, mixes easily, is cost-effective and has even been shown to have certain health benefits such as reducing inflammation and raising levels of glutathione, a powerful antioxidant. If your protein intake is a bit closer to the "borderline" in terms of total daily consumption, it should also be noted that whey protein has the strongest amino acid profile gram for gram of any other source available (primarily due to its high l-leucine content – the primary amino acid involved in stimulating protein synthesis), along with an extremely high bio-availability within the body.

In terms of whey protein selection, the two main types you'll come across are whey protein concentrate and whey protein isolate. Both are exactly the same in terms of their actual protein quality, the only difference being that whey isolate is a more heavily filtered form and will contain a higher percentage of protein per scoop (about 90% in comparison to the 70-80% that concentrates provide), fewer carbs and fat, and will be virtually lactose free. Whey isolates also tend to mix up more easily and will generally be a bit better tasting since they're naturally blander and are easier to flavor.

However, given that the difference in carbs and fat is quite small (around 2-3 grams per scoop at the most) and since whey isolates are reasonably more expensive per serving, purchasing a 100% whey isolate is usually only necessary for lactose intolerant individuals or for those who are following a very strict cutting diet and want to absolutely minimize the carb and fat content. For everyone else, a good middle-ground option is to go with a whey protein product that utilizes a blend of both whey isolate and whey concentrate. That way you'll still be getting a nicely flavored protein powder that mixes up easily and contains minimal carbs and fat, but that is more cost effective per serving than buying a pure whey isolate.

There are plenty of acceptable whey protein products out there that will meet this criteria, but here are three reputable "tried and tested" options you can trust:

1) Optimum Nutrition 100% Whey
2) Dymatize Elite Whey
3) Cellucor COR-Performance Whey

(RealScience Athletics does not currently offer protein powders, though this will be added to our product line in the future.)

If you'd prefer a naturally sweetened powder (the three products above are sweetened with sucralose) then Optimum Natural 100% Whey or Body Nutrition Trutein are both good choices in this category.

For those who are lactose intolerant, a 100% whey isolate would be more suitable in order to avoid digestive issues, such as Dymatize ISO-100 or Allmax IsoNatural.

Lastly, if you follow a vegan diet or would just prefer a vegan powder for whatever reason, you can go with S.A.N Raw Fusion or VEGA Sport Performance, which all contain blends of plant-based sources such as brown rice, pea, artichoke, alfalfa and pumpkin seed. (These are of course suitable for lactose intolerant individuals as well)

If you'd rather go with a different brand or type of protein powder then that's fine too – just don't be fooled into thinking that one company's blend is going to somehow produce vastly superior muscle building results to another or that you need to pay multiple times the cost per serving for it. Again, virtually any form of protein powder from a reputable brand is ultimately fine and will produce the same basic effects as long as you're consuming enough total protein for the day as a whole.

Regardless of which specific form of protein powder you do decide to use, the only other thing to make sure of is that the product isn't "amino spiked". As we touched on earlier, amino spiking is a common cost-cutting technique where companies add cheap free form amino acids into the powder to artificially raise the protein total on the label. All protein powders will contain some amount of all the different amino acids since they're just a natural component of any complete protein source, but the problem arises when additional singular aminos are mixed in on top of the natural content. This exploits a "loophole" in the methods used for measuring protein levels and boosts the total reading even though it was achieved through the addition of dirt cheap (and relatively useless) non-essential amino acids.

You can tell if a given product is amino spiked by checking the "ingredients" section of the label. The first thing you'll usually see is the specific type of protein listed (whether it's whey isolate, whey concentrate, milk protein etc.) followed by a list of flavorings, sweeteners and other smaller add-ins like thickeners and mixing agents. If any individual amino acids are included amongst the list, you can be relatively certain that you're dealing with an amino spiked powder. The most common ones you'll typically see included are l-glycine, l-taurine and/or l-methionine, as their very low cost and naturally bland taste is perfect for cheaply increasing the protein total while also improving the flavoring of the product.

Another thing to look out for is added creatine and/or glutamine. These two compounds are also far less expensive to produce in comparison to complete proteins, and since creatine is a combination of three amino acids (l-glycine, l-arginine and l-methionine) and glutamine is an amino acid on its own, they'll also register as part of the protein total. Creatine itself is definitely a worthwhile muscle building supplement to try out (we'll discuss this shortly), but should always be purchased separately as it's typically only included in protein powders for the purposes of artificially skewing the protein total.

With that small warning out of the way, the final question to address on the issue of protein powder use is how much to consume each day, and when. Most people highly over-complicate this issue, typically viewing protein powders as some sort of "high tech" bodybuilding supplement that must be consumed in precise amounts at highly specific times of day to maximize the benefits.

However, since there's nothing inherently "special" about protein powders (they're just another source of protein to include in your diet like any other), there is no set requirement in terms of daily dosage or timing that must be followed. It really just comes down to how much protein you prefer eating in solid form versus liquid form (or in the form of protein powder recipes), and when it's most convenient and preferable for you to consume it.

For most people using a protein powder as part of their diet, anywhere from 1-3 scoops per day would be a standard amount depending on their body weight and total protein needs. Just keep in mind that if you're in a cutting phase and are eating in a calorie deficit, consuming a higher percentage of your daily protein in the form of solid food will generally be more satiating. For that reason, scaling back on your consumption of liquid protein shakes would probably be the better approach during a fat loss cycle if hunger is an issue for you.

In terms of protein powder timing, this is also just a matter of personal preference since there won't be any specific benefit to consuming it at one time of day over another. Whether you have it in the morning in the form of a protein breakfast smoothie, pre-workout for something a bit lighter on your stomach while you train, post workout for the convenience factor, or later in the evening as some sort of protein powder dessert, it really just depends on your individual schedule, hunger levels and what you enjoy the most.

A final point to keep in mind is that everything we've covered so far on the topic of protein powders also applies to protein bars and other pre-packaged "protein snacks" as well. These can be used as part of your diet in the same way and are especially helpful if you're on the go during the day and would prefer something in a more convenient solid food form.

The only real difference is that protein bars and snacks will generally contain higher amounts of carbohydrates and fat (unlike most powders which are essentially pure protein), so they'll function a bit more like a meal replacement on their own and will be more calorie dense in comparison.

There are an endless number of different options available in this category as well, and a few choices worth checking out include Quest Bars, Quest Cookies, Combat Crunch Bars or plant-based options such as MusclePharm Organic Protein Bars or VEGA Sport Bars.

MULTIVITAMIN

In order for your body to build muscle, lose fat and maintain optimal health and performance, it must be provided with a wide array of individual vitamins and minerals each day. This is an especially important issue for hard-training lifters and athletes, since they typically have higher requirements than the average sedentary person.

Eating a varied, minimally processed whole food diet will certainly go a long way in meeting a high percentage of your micronutrient needs, but is typically not enough on its own to fully maximize the positive effects that each individual vitamin and mineral has to offer. Certain micronutrients are drained from the body as a result of intense training, and some can also provide additional health and fitness related benefits when consumed in slightly higher amounts.

This is where the use of a high quality multivitamin comes into play, as it will help to cover up any potential "holes" in your diet while also increasing levels of the specific micronutrients that are the most difficult to obtain in optimal amounts from regular food alone.

However, while most trainees go the route of a standard "full spectrum" multivitamin in this area (one that includes a long list of every vitamin and mineral available combined in various forms and potencies), there are a few important reasons why these are usually not the ideal choice.

The first issue with traditional full spectrum multis is that by trying to cram so many different ingredients into a single serving (usually as a way of "hyping up" the label and making it seem as if you're getting a better deal than you really are), the individual dosages on some (if not all) of the various vitamins and minerals end up being sacrificed.

Supplement companies know full and well that the average consumer is not highly knowledgeable in the area of proper vitamin and mineral dosing (in fact, the formulators themselves may not even be particularly knowledgeable either), making it very easy to cut down the production cost by simply reducing the overall potency. For example, if your multivitamin only provides 100mg of magnesium as opposed to the optimal 200-400mg dose, or 500IU of Vitamin D as opposed to 2000IU, you'll only be receiving a small fraction of the potential benefits of each micronutrient.

Not only that, but to further save on costs, most typical multis also use the cheapest and lowest quality forms of many of the various vitamins and minerals, in particular the ones that are the most expensive to produce. It's critical to understand that not all micronutrient forms are created equally. Some are readily absorbed by the body in high amounts, while others are simply "flushed out" and barely utilized at all. If you're getting zinc oxide rather than a higher quality form such as zinc citrate, or vitamin B12 as cyanocobalamin rather than methylcobalamin (these are just two of many examples), most of that multivitamin tablet or capsule will simply be going to waste.

The third major problem with full spectrum multivitamins is the simple fact that you don't even *need* to be supplementing with every single vitamin and mineral in the first place. Just because one particular micronutrient has supplemental benefits doesn't automatically mean that every micronutrient does, as each vitamin and mineral has different effects within the body, varying applications for lifters and athletes, and can be more or less easily obtained in sufficient amounts from your regular diet.

If you're already following a reasonably healthy eating plan to support your fitness goals, a good percentage of your micronutrient needs are already being covered as is. Not only does this make supplementing with certain vitamins and minerals unnecessary from a cost perspective, but going too high on certain ones can even be detrimental to your health.

For example, getting enough vitamin A, C and E from regular food each day is typically not a problem for most people eating a minimally processed whole food diet. Going significantly above the RDA on these vitamins likely isn't going to benefit you, and some evidence even suggests that it can have a negative impact on training adaptations and increase mortality rates in the long term.

Most typical multis also throw in various mineral compounds that are already present in your normal diet in easily obtainable amounts, such as chromium, iodine, selenium, copper, phosphorus, manganese and more. Unless you have a specific reason to do so, there's just no need to be haphazardly putting more of these minerals into your body. Excessive selenium, for example, can increase the risk of developing type-2 diabetes, while high levels of copper have been associated with the onset and symptoms of Alzheimer's disease.

Which specific vitamins and minerals *do* have supplemental benefits, and what are the ideal forms and dosages for each?

First off, it's important to keep in mind that there's no single "perfect" combination of micronutrients that will apply to every person across the board, since the ideal protocol would ultimately depend on the specific diet, training program, lifestyle and genetics of the individual. That said, there are several important vitamins and minerals that the majority of trainees do tend to have lower than optimal levels of and that can provide additional assistance to your fitness program when taken in supplemental form.

Vitamin D

If there's one single micronutrient out there that you should probably be supplementing with, vitamin D would be it. The list of overall health and fitness benefits associated with improved vitamin D status is very lengthy, including strengthening the immune system, boosting cognitive function, improving mood and well-being, optimizing testosterone levels and increasing muscular strength and performance.

However, unless you live in a warm climate and spend multiple hours a day outside in the sun, there's a very good chance that your Vitamin D levels fall below the ideal range. In fact, some research indicates that as high as 25-42% of the population may be at risk for vitamin D deficiency.

Although the current RDA is set at just 600IU daily, most vitamin D research specialists agree that this figure is far too low and that 1500-2000IU is the more appropriate figure for those above the age of 18. The risk of vitamin D toxicity is also very low, with some experts identifying as high as 10,000IU to be the safe upper limit in otherwise healthy individuals.

Technically speaking, you would need to get blood work done in order to determine exactly how much Vitamin D you should be supplementing with daily. This is because each person will have differing baseline levels and because not everyone metabolizes vitamin D in the exact same way. That said, 2000-4000IU per day is a reliable amount for most people that will be both safe and effective for raising vitamin D levels into a sufficient range. This should ideally be consumed with a fat-containing meal to maximize its absorption, and although it can be taken at any time of day, some people anecdotally report that vitamin D interferes with their sleep when consumed in the later evening hours.

Magnesium

Magnesium is a co-factor in hundreds of important processes in the body and plays a key role in maintaining optimal energy production, heart health, digestion, detoxification, bone strength, mood and more. Of specific importance to those following a muscle building and fat loss program are its effects on keeping testosterone and IGF-1 levels elevated, as well as improving muscular performance and sleep quality.

Since magnesium is depleted from the body through sweat, those who regularly perform weight training, cardio and other intensive physical activities tend to have lower levels that can be improved through supplementation. The research supported dosage for magnesium lands between 200-400mg daily, taken with food either in the form of magnesium citrate, magnesium gluconate or magnesium diglycinate.

Zinc

Just like magnesium, zinc is another important mineral involved in testosterone production and immunity (along with hundreds of other processes related to general health) and is drained from the body through sweating. Several studies have shown that hard-training lifters and athletes are at risk for impaired zinc status, increasing the need for additional supplementation to prevent a potential deficiency.

15-30mg of zinc per day is an effective dosage to bring your levels of this mineral back into the proper balance, taken with food either in the form of zinc citrate, gluconate or picolinate.

Vitamin K

Vitamin K is an often overlooked yet highly valuable compound that refers to two different structures known as phylloquinones (K1) and menaquinones (K2). Although the standard RDA (75mcg) is sufficient for basic health, research has shown that higher amounts of Vitamin K above this level provide dose-dependent benefits for cardiovascular health, bone strength, insulin sensitivity and longevity.

Obtaining these levels through food alone is often very difficult (unless you regularly eat fermented soy), making additional supplementation a smart option for both gym-goers and sedentary individuals alike. Vitamin K doses vary quite a bit depending on the needs of the individual, but consuming somewhere between 500-1000mcg daily alongside a fat-containing meal is a good guideline to follow. The risk of Vitamin K toxicity is practically non-existent, with amounts as high as 45,000mcg being demonstrated as safe over the long term.

The four vitamins and minerals listed above (vitamin D, magnesium, zinc and vitamin K) would be considered as the most essential micronutrients to be taken for supplemental purposes for the average trainee, with two other optional add-ons being a vitamin B complex and/or calcium.

The B vitamins include B1 (thiamin), B2 (riboflavin), B3 (niacin), B5 (pantothenic acid), B6 (pyridoxine), B7 (biotin), B9 (folate) and B12 (cobalamin). They play a central role in converting food into usable energy and aid in an endless number of important biological processes related to the immune system, hormone production, cognition, growth/repair of cells and much more.

Although they can be found in abundance in whole foods, some data suggests that intense physical activity increases B vitamin requirements and that some athletes may have reduced levels as a result. Given the possibility of an additional health and performance benefit along with the very low cost and high safety profile, a basic B complex can be optionally taken to ensure that all of your bases are fully covered in this area.

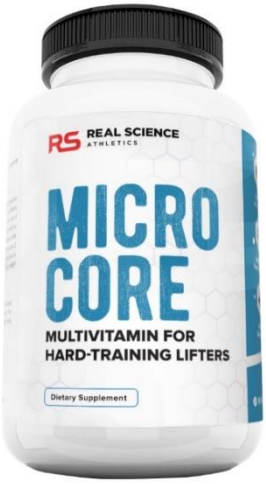
Calcium is another mineral to consider as well, since some people (particularly women) tend to fall short of the optimal daily amount. Calcium is highly involved in the maintenance of bone health, as well as assisting with cardiovascular health, moderating blood pressure and aiding in muscular contractions.

Those who regularly consume dairy products such as yogurt, milk, cheese or whey/casein protein likely get more than enough calcium from their regular diet, while those who exclude dairy may benefit from supplementation. Kale, spinach, broccoli, collard greens, kelp, soy beans and almonds are all fairly calcium rich foods as well.

Due to the significant dietary variance from person to person, calcium is best supplemented with on an "as needed" basis only if it's required to help an individual meet the recommended intake of about 1000mg daily. Since excessive amounts can lead to certain side effects such as abdominal cramping and constipation, calcium should not be supplemented with in high amounts unless there is a specific reason to do so.

One way to go about supplementing with the recommended micronutrients outlined above is to simply purchase them all on their own individually. You can either search for the proper forms online or check to see if a local supplement store has them available.

Another great option is the Microcore blend from RealScience Athletics, which combines all of them together into a single formula so that you can meet your daily vitamin and mineral needs as conveniently as possible without any guesswork involved.



Microcore takes the opposite approach of the common "full spectrum" multivitamin by focusing only on the select micronutrients that hard-training lifters truly require and delivering them in their highest quality forms and full potencies.

The formula includes vitamin D, magnesium, zinc, vitamin K and a full vitamin B complex and excludes all of the other vitamins and minerals that you don't need to be paying for or that are potentially harmful when consumed in excessive amounts.

Since dietary calcium intakes vary so widely (and since consuming too much can be potentially problematic), this mineral was excluded from Microcore and can be optionally purchased on its own depending on your own personal calcium requirements.

FISH OIL

Fish oil has been considered a staple health and fitness supplement for decades, and for good reason. This is because it contains the highly valuable omega-3 fatty acids EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid), two essential nutrients that produce a long list of benefits within the body related to optimizing overall health and preventing disease.

In fact, research has shown that omega-3 deficient diets are currently responsible for up to 96,000 preventable deaths in the US alone every single year. This is mainly due to the increased risk of heart disease that results from a low EPA/DHA intake, which is currently the leading cause of mortality worldwide. Fish oil improves heart health by raising levels of HDL (the "good" cholesterol), lowering triglyceride levels, reducing inflammation and moderating blood pressure.

Beyond giving you a healthier heart, it can also give you a healthier brain too. Fish oil has been research demonstrated to improve cognitive function, reduce age-related mental decline, prevent the onset of certain psychological disorders, and even decrease levels of anxiety and depression. On top of its cardiovascular and psychological benefits, fish oil has also been shown to improve bone health, boost immune system function, enhance skin health, improve vision and increase circulation.

A proper daily dose of EPA/DHA can also have positive effects on your ability to build muscle, burn fat and perform at your full potential in the gym. Fish oil consumption has been shown in research to increase activation of the mTOR pathway (a central trigger of protein synthesis), reduce cortisol levels (helping to prevent muscle breakdown), improve fatty acid oxidation and insulin sensitivity, decrease the effects of delayed onset muscle soreness and assist in reducing inflammatory joint pain.

Unfortunately, despite all of the potential benefits associated with adequate EPA/DHA consumption, the average person following a typical Western diet consumes just 10-20% of the proper daily amount. The American Heart Health Association recommends 1 gram of combined EPA/DHA per day, with some research showing benefits up to as high as 6 grams.

If you are in the minority of people who consume the equivalent of about one serving of fatty fish every day (roughly 100 grams), then you're likely already receiving enough EPA and DHA from your diet to maximize its benefits. However, keep in mind that eating very high amounts of fish rich in omega-3's also increases your risk of consuming an excessive concentration of heavy metals and other environmental toxins, making fish oil supplementation a good option to help get your daily dose without this potential downside.

Before you simply run out and grab the first bottle of fish oil you see off the shelf though, it's important to understand that not all fish oil is created equally. There are a few key differences that must be considered, most notably the specific type of oil you're getting and the manufacturing methods used.

The majority of popular fish oils on the market are delivered in the processed "ethyl ester" form, since this is the cheapest type for supplement companies to produce. Ethyl esters are created by removing glycerol molecules from the natural triglycerides found in the oil and replacing them with ethanol. While this form does provide a high level of purity and strong concentrations of EPA/DHA per gram, it isn't absorbed as effectively in comparison to other types since it is much harder for the body to break down for use.

Research has shown that fish oils in the natural (unprocessed) triglyceride form are absorbed more readily than ethyl esters, as well as being less susceptible to rancidification, meaning they won't go bad as quickly. Unfortunately, the low level of processing involved with natural triglyceride fish oils also means that they typically contain higher levels of contaminants and lower levels of EPA/DHA per gram.

It's not that these two forms of fish oil are inherently bad, but in order to obtain the benefits that each one has to offer while minimizing the downsides, the "re-esterified triglyceride" form (rTG) is what you should ideally look for. This form uses various enzymes to convert ethyl esters back into triglycerides, improving the bio-availability, potency and stability of the oil. Re-esterified triglycerides are slowly becoming the new standard in fish oil supplementation, providing an absorption rate that is superior to both the ethyl ester and natural triglyceride forms while still maintaining high levels of purity and strong EPA/DHA potency.

A good supplemental guideline to aim for is 1-2 grams of total EPA/DHA per day, going with the lower or higher end depending on how much (if any) fatty fish you consume from your regular diet. You can take your entire fish oil dosage all at once, but to maximize absorption and reduce the chances of unwanted "fish burps", splitting it up into two separate doses consumed in the morning and afternoon would be ideal. Although fish oil is not a stimulant, it does increase brain activity and so a slight stimulatory effect may be felt after supplementation.

There an endless number of different fish oil products on the market to choose from, but a very high quality option that matches all of the guidelines given above is the RealScience Athletics O3 Prime blend.

O3 Prime provides a 100% re-esterified triglyceride form fish oil sourced from Icelandic deepwater anchovy, as studies have shown that small, cold-water, non-predatory fish provide the healthiest source of oil available.

It's processed using a method known as "enhanced molecular distillation" to purify the oil further, and contains 565mg of combined EPA/DHA per serving delivered in enteric coated, lemon flavored softgels to eliminate the fishy aftertaste very common with other lower grade fish oil products.

As an added bonus, O3 Prime is also a proud member of "Friend Of The Sea", a strict certification that evaluates manufacturers to ensure that they're sourcing their oil using sustainable, environmentally friendly methods.

This includes the use of minimally destructive fishing methods, limiting how much can be caught from specific areas, avoiding critical habitat areas, prohibiting the use of growth hormones/GMO's/toxins, and minimizing carbon footprint.

CREATINE

Creatine is the single most researched sports supplement in the world and is backed by hundreds of studies demonstrating it to be a safe and effective compound for improving muscle growth and training performance. Of any bodybuilding supplement intended to produce a direct, measurable increase in strength and lean muscle gain, creatine has the strongest track record by far and has stood the test of time since its release in the early 1990s.

Although creatine is found naturally in foods like red meat and fish, you'd have to consume a very large (and unrealistic) quantity of these foods to fully saturate the body's creatine stores, making additional supplementation necessary in order to maximize its benefits.

The primary way that creatine works is by improving the efficiency of the body's ATP energy system, resulting in an increase in overall muscular strength. ATP (adenosine tri-phosphate) is the key energy molecule utilized during short, explosive bouts of exercise such as weight training. This energy is produced as the body "rips off" one of ATP's phosphate groups and converts it into ADP (adenosine di-phosphate). Supplemental creatine helps the body convert ADP back into ATP at a faster rate, allowing you to lift slightly more weight and squeeze out additional repetitions on your sets.

Since creatine requires additional water for it to be stored in the body, another added benefit is that it produces a slight increase in muscle "fullness" as it draws that extra fluid into the muscle cells. Some people worry that this will result in a "soft" or "bloated" looking appearance, but this is not the case since the added water is stored intra-muscularly rather than directly beneath the skin.

Don't expect anything overly dramatic as a result of creatine use (just as with any supplement for that matter), but it often can be a useful addition for those who are aiming to fully optimize their muscle building results. The reason why the term "often" is used in this case is because creatine supplementation does not affect every person in the same way, with up to 30% of the population being classified as "non-responders" who don't obtain any noticeable benefits.

However, given the very low cost of creatine supplements (anywhere from 2-4 cents per gram if you select the right product), you can experiment with it very inexpensively to determine whether or not it's worth keeping in your plan. If you don't experience any clear increase in strength or any changes to your visual appearance or scale weight after about 2-3 weeks of consistent use, there's a good chance that you're a non-responder (or at least, a minimal responder) and can simply discontinue using it.

What is the best form of creatine to use, and what is the optimal approach in terms of daily dosage and timing?

Despite the endless number of online articles and videos discussing the topic of proper creatine use (along with the thousands of different creatine products you'll find on the market), the reality is that effective creatine supplementation is very simple and straightforward when it all comes down to it. You don't need to spend your money on any fancy high-priced creatine blends, nor do you need to follow any complicated dosing protocols involving special "loading phases" or "creatine cycles" as is commonly recommended.

Just purchase any basic creatine monohydrate product (ideally in the form of "Creapure") and consume 3-5 grams (roughly 1 rounded teaspoon) once per day. You can mix your creatine with any liquid of your choice (juice, water, tea, coffee, protein shake etc.) and can take it at whatever time of day is most convenient for you. When it comes to maximizing the benefits of creatine supplementation, that's really all there is to it.

Ever since the original creatine monohydrate was released over two decades ago, a wide variety of "new and improved" creatine products have come along with it, all claiming to provide superior muscle building results to the basic monohydrate form. Creatine ethyl ester, creatine hydrochloride, buffered creatine (commonly sold under the brand name "KreAlkalyn"), creatine nitrate and creatine serum are just a few examples. Although they're often priced at anywhere from 3-10 times higher than monohydrate, the reality is that not a single research study to date has ever demonstrated any of these "advanced" creatine forms to be superior in way.

Creatine monohydrate has an extremely high bio-availability in humans of nearly 100% and will result in full creatine saturation of the muscles within a few weeks of continued use. It does not cause "bloating", "cramping" or other unwanted side effects as many companies will often claim (this is simply a marketing gimmick designed to sell you a more expensive creatine product), and has a solid safety profile backed by countless studies. There's really nothing more you can ask for from a creatine supplement, and until or unless further research comes out to show otherwise, monohydrate is still the most reliable and cost-efficient option available.

Just make sure that your monohydrate is sourced as "Creapure" (you'll see this listed on the label) as this is the highest grade form available and will ensure that you're receiving a fully purified product that meets label claim. There are many different Creapure based products out there to choose from, with Optimum Nutrition 100% Creatine being a reputable source to go with.

When it comes to the issue of creatine dosing, don't be misled by some recommendations you'll hear that advocate upwards of 10 grams of creatine or more per day – again, this is just another tactic used by companies to sell you more product that you don't really need, with 3-5 grams per day being easily sufficient for the vast majority of people.

Many companies will also commonly advise the use of a "creatine loading phase" (where 20 grams in total is consumed per day for the first 4-5 days in divided doses of 5 grams), but this is ultimately unnecessary as well. Although a loading phase technically will lead to faster

creatine saturation and produce the full benefits within a slightly shorter time frame, 2-3 weeks at the standard 3-5 gram per day dose will still get you to the exact same point regardless.

Going with the lower dose over a slightly longer period will make the overall process a bit easier since you won't have to consume such a large quantity of creatine in one day, and will save you a few extra dollars as well as an added bonus. Loading is still an option if you simply want to see results as quickly as possible and determine right off the bat whether or not creatine really works for you, but just keep in mind that it won't provide any additional muscle building benefit over the longer term.

There's also no need to perform a "creatine cycle" by periodically going "on" and "off" every few weeks or months as is also sometimes advised. Continually un-saturating and re-saturating the muscles with creatine is not going to give you any advantage beyond steady continuous use, and there is no evidence to suggest that ongoing creatine supplementation poses any health risks or causes any alterations to the body's natural production.

In terms of optimal creatine timing, the typical recommendations you'll hear stating that you should consume your creatine either pre-workout (to improve training performance) or post-workout (to maximize absorption) are also misguided. If you prefer taking your creatine supplement either pre or post-workout for whatever reason then that's fine, but it won't improve your results in comparison to taking it at any other time of day.

Creatine has no immediate, acute effects on strength and energy levels, and once your body has reached full saturation, that creatine will always be readily available for your muscles to use any time they need it. Because of this, there's no specific benefit to taking creatine right before your workout. And although consuming your creatine post-workout may allow for slightly faster absorption due to the increased nutrient uptake during this time, "faster absorption" doesn't provide any unique advantages in and of itself. The body is highly efficient when it comes to the process of creatine digestion, and regardless of when you consume your creatine supplement, the full dose will eventually be absorbed by the muscles one way or another.

Another important myth to dispel is the idea that your creatine must be mixed with a high sugar drink in order to be properly utilized, such as grape juice, Gatorade or dextrose powder. It's commonly recommended that simple sugars be used to "spike" your insulin levels, which will then increase the delivery of the creatine into the muscles. However, research has shown that total net creatine absorption remains unaffected whether it's taken on its own or alongside carbohydrates, not to mention that mixing your creatine with 20-30 grams of simple sugar each time will also add a good chunk of unnecessary empty calories to your daily diet.

As a final note, whether you mix your creatine with hot, warm or cold water is also a non-issue (your body will break down and absorb the creatine once it reaches your stomach regardless), and contrary to some old outdated advice you may still hear floating around, combining creatine with caffeine does not negatively affect its uptake either.

At the end of the day, all it takes to fully optimize the benefits of creatine is 3-5 grams of Creapure-based monohydrate once per day, taken at whatever time you'd like and mixed with any liquid you prefer. Any other "advanced" creatine guidelines or higher priced products being promoted to you are nothing more than marketing gimmicks and will simply be a waste of both your time and money.

PRE-WORKOUT

The final "approved" item on the list of recommended supplements would be a high quality pre-workout, the purpose of which is to maximize the overall quality of your training sessions by increasing your levels of energy, strength and mental focus. While a pre-workout would not be considered a mandatory inclusion in an effective supplement plan, a few basic ingredients prior to hitting the gym can certainly be a helpful addition for those who enjoy the extra "kick" they provide and who are serious about fully optimizing their training performance.

However, it's important that the terms "few" and "basic" not be overlooked here, as there's no need to turn your pre-workout supplementation plan into an overly complicated process involving an endless list of different ingredients costing 50 dollars a month or more.

The vast majority of fancy "commercial" pre-workout blends might seem appealing at first glance, but in most cases they're based on nothing more than over-hyped marketing and flashy packaging as opposed to legitimate supplement science. They typically follow the same theme as discussed in the multivitamin section by including an excessively long list of different ingredients that are mostly ineffective and under-dosed, often hidden behind a "proprietary blend" so that you don't even know what you're truly getting in the first place.

The average consumer takes a look at the product label and is impressed by the wide variety of "stuff" they're getting in each scoop, without realizing that the majority (if not all) is nothing more than a bunch of useless fluff and filler. Hundreds of different compounds on the market are currently being promoted as potential "pre-workout boosters", when in reality only a very small percentage of these are legitimately supported by reliable scientific studies.

Rather than trying to needlessly cram 8, 10, 12 or more different ingredients into your pre-workout blend (many of which may be providing no real benefits at all), a much more effective approach is to just focus in on a smaller number of compounds (those that are actually backed by solid research) and consume them in their full clinical doses and highest quality forms for maximum benefit.

Besides, the goal of a pre-workout supplement is not to heavily wire you up on multiple stimulants and leave you feeling like you're on the verge of a heart attack, but rather to simply provide a small, sustained boost of additional strength and energy to assist you throughout your training session. For that reason, there's no need to get carried away in terms of ingredient complexity in the first place.

While there are several different viable pre-workout compounds that could be potentially used here, three particular ingredients stand out based on their overall effectiveness, safety profile and cost.

Caffeine

Most people are already aware of caffeine's basic effects when it comes to increasing energy levels, mental focus and alertness. Caffeine has also been shown in research to directly boost muscular strength, cardiovascular performance and reaction times, along with lowering the perception of fatigue and discomfort during training.

In addition, caffeine offsets the natural decrease in strength that occurs during morning workouts as compared to afternoon/evening workouts, which is a useful benefit for those who prefer to train earlier in the day. As a small added benefit, caffeine also increases thermogenesis to help you burn slightly more total calories and fat during your training sessions.

A standard dose of caffeine for pre-workout purposes would be between 200-300mg. This amount is large enough to deliver the performance boosting benefits of caffeine, but small enough to eliminate the unwanted "jitters" or "mid-workout crash" that often accompanies larger doses. Everyone tolerates caffeine differently and will have varying levels of sensitivity to it, so it's best to experiment for yourself by starting off on the low end and gradually increasing the dosage until you find the amount that is most comfortable for you.

L-Tyrosine

This amino acid is one of the primary building blocks for important catecholamines involved in neuromuscular performance: dopamine, adrenaline and noradrenaline. Several studies have shown significant benefits associated with l-tyrosine supplementation regarding cognitive enhancement, improvements in concentration, as well as helping the mind cope more effectively in stressful situations. L-tyrosine also works synergistically with caffeine, since it increases catecholamine production while caffeine increases their release.

Effective dosages for l-tyrosine can fall into quite a wide range depending on a variety of factors, from as little as 500mg up to 6000mg or more. As part of a balanced pre-workout blend, a middle ground dose of around 2000-3000mg will work well for most people when paired with 200-300mg of caffeine.

Citrulline Malate

L-citrulline is an amino acid, while malic acid is a salt compound found in apples and other fruits. When combined as citrulline malate, these compounds work together to minimize muscular fatigue and improve training performance. By accelerating the clearance of ammonia and lactate (two metabolic waste products that impair muscle contractions), citrulline malate helps you perform additional repetitions during your sets and recover more quickly in between them as well.

Citrulline malate has also been shown to reduce post workout muscle soreness, which can improve recovery and maximize strength and performance on upcoming workouts. Along with these two benefits, citrulline malate may also improve aerobic exercise performance and increase nitric oxide circulation by raising blood levels of l-arginine.

The research supported dosage for citrulline malate typically falls between 6-8 grams, taken in a 2:1 ratio of l-citrulline to malic acid. Citrulline malate has no stimulant properties, though consuming very large doses can cause gastrointestinal discomfort in some people. Just to be on the safe side, it's usually best to start off with a slightly lower amount in order to assess your tolerance first.

While purchasing all of these ingredients on their own is one option, the PureForm pre-workout blend from RealScience Athletics is a great way to streamline the process and guarantee that you're getting the highest quality versions and proper doses for each one. PureForm provides a 100% naturally sweetened fruit punch flavored powder consisting of the highest grade forms of caffeine anhydrous (200mg), l-tyrosine (3000mg) and citrulline malate (6000mg) in each scoop.

As an added bonus, the formula also includes 200mg of the amino acid l-theanine, which works alongside caffeine to further increase mental focus, alertness and motivation, while at the same time "smoothening out" the caffeine buzz by inducing mental relaxation without any sedative effects.

The combination of l-theanine and caffeine is one of the most widely studied "nootropic stacks" available for promoting enhanced cognition, since the two compounds have synergistic effects when consumed together. The typical dose is either a 1:1 or 2:1 ratio of l-theanine to caffeine, as this strikes a good balance between increasing energy levels with the caffeine while achieving a clean "grounded focus" with the l-theanine.

However you choose to go about it, your pre-workout combination should ideally be taken 20-30 minutes before your training session for the best results.

Although many companies will simply encourage you to use their product as often as possible to maximize repeat buys, this is not the ideal way to use a pre-workout formula since overly frequent use will reduce the body's sensitivity to the ingredients over time. You can prevent tolerance from building by only using your pre-workout 2-3 times per week (4 times at the very most), minimizing your intake of other caffeine-containing beverages, and by cycling off for 1-2 weeks after every 6-8 weeks of continued use. The only ingredient this does not apply to is citrulline malate, since unlike caffeine/tyrosine/theanine, it does not have tolerance building properties even when used on a continuous basis.

You should also make sure to avoid consuming your pre-workout within 6-8 hours of bed to ensure that your sleep isn't disturbed, and if you have any pre-existing medical conditions or are using any prescription medications, consult your physician first before supplementing with any stimulant-based ingredients.


CHAPTER 7:
PHASE TRANSITIONING
PRESS

INTRODUCTION

Although you'll be starting your fitness program out in either a calorie surplus for bulking or calorie deficit for cutting, getting all the way to your ultimate goal physique will most likely not be a perfect "one-way" street. In most cases, there will eventually come a point where you'll need to change up your approach and transition from one primary goal to the other.

This could mean switching from cutting to bulking once you've leaned down far enough to start adding more overall mass to your frame, or shifting from bulking to cutting if your body fat has hit the upper end of the recommended range or you simply want to strip off a bit of fat based on your preferred look.

The other possibility is that you've reached your desired level of both muscularity and leanness and want to transition from either bulking or cutting into a basic maintenance phase to simply keep your existing body composition intact.

In any case, this section will outline the exact training and nutrition steps to follow for each scenario in order to keep your program on the proper track and optimize your results as you switch between various goals.

Let's go over it.

CUTTING TO BULKING TRANSITION

So, you've just finished up your cutting phase and have reached a sufficient level of leanness to begin bulking from (approximately 12-14% body fat or lower for men and 19-21% or lower for women), and now it's time to shift into "muscle building mode" and begin putting on some additional lean mass.

If you want to keep fat gains minimized and maintain the conditioning you achieved during your fat loss cycle moving forward, it's very important that you have a proper post-cutting plan in place. There's more to a proper cut-to-bulk transition than simply "eating more calories", and if you're just coming off of a prolonged calorie deficit, eating based purely on hunger and cravings is the last thing you should be doing during this period. This is how most people tend to go about it, and it's exactly why so many end up putting on an excessive amount of unwanted fat and undoing a good chunk of their cutting progress after their diet has ended.

The body is a very fine-tuned and adaptable system, and whenever you restrict calories over any reasonable length of time, several important adjustments are made to help you conserve energy and operate more efficiently on fewer calories. Remember, the basic hard-wired systems of your body aren't concerned with your desire for visible six pack abs or striated shoulders; all they're really trying to do is maintain a balanced state of homeostasis to ensure survival. This process is known as "metabolic adaptation" and is achieved through a variety of biological changes where key fat burning hormones such as leptin, testosterone and T3 are all decreased.

On top of this reduction in fat burning hormone levels, the process of "non-exercise activity thermogenesis" (or "NEAT" for short) also naturally decreases as a way to further reduce caloric expenditure. NEAT involves all of the smaller actions you take throughout the day that you probably don't think too much about, such as walking between places, climbing stairs, pacing, typing, fidgeting in your seat etc. These things might seem fairly insignificant when it comes to burning fat, but NEAT can actually account for several hundred up to a thousand calories or more burned per day depending on the individual.

Let's also not forget the simple fact that as you lose body weight, you won't be carrying around as much total mass in general. For example, moving a 200 pound body throughout the day obviously requires a greater number of calories in comparison to moving a 170 pound body.

In addition to everything mentioned so far is the basic fact that your appetite and cravings will have significantly increased as your body tries to motivate you to consume more calories to bring things back into balance. Not only will you just feel hungrier in general, but foods you otherwise wouldn't have been overly interested in will suddenly seem much more appealing as well, making it even more difficult to keep your total calorie intake under control.

The bottom line here is that once your cutting phase has ended, your body will be physiologically primed for maximum fat storage *and* your desire for food will be at its highest. This is why haphazardly increasing your calories without following a concrete plan is almost always a recipe for disaster.

Many trainees will try to justify eating those large quantities of post-diet food by falling back on the "it's okay, I need the extra calories because I'm bulking" mentality. However, as we covered in the previous nutrition chapter, it only takes a relatively small calorie surplus to maximize the body's muscle building potential over any given day, and any excess calories consumed beyond that point will simply be stored as fat. For that reason, aimlessly dumping an extra 1000+ calories on top of your previous intake will be both unnecessary and downright counterproductive to your physique.

If you're only going particularly high on calories for a short term period of a couple days or so just to reward yourself once your cut is over, that should be fine and won't cause any real damage as long as it doesn't spiral out of control beyond that. All in all though, the underlying approach of your cutting to bulking transition should be to increase your calories in a controlled manner so that you can move back to your maintenance level and into a surplus while maintaining the leanness you've achieved. It's impossible to completely prevent fat gains altogether (you'll always add *some* body fat when eating in a surplus no matter how you go about it), but the goal is to simply keep it minimized.

What's the most effective way to go about this?

One method that is commonly prescribed is known as "reverse dieting", where calories are gradually increased in small increments from week to week until the trainee eventually gets back to their maintenance level. While this approach might seem to make sense at first glance since it keeps calories very tightly monitored and ensures that you don't over-eat, a slow reverse diet won't be the best approach in the vast majority of situations.

This is because bumping up your calories by only 5-10% at a time (a standard weekly increase for a typical reverse diet) will actually keep you in a net calorie deficit for several more weeks even after your diet has ended. For example, if you're eating in a 500 calorie deficit and finish your cut at 1800 calories, a 10% increase would only add about 200 calories back to your intake, keeping you in a 300 calorie deficit overall. If you've already reached your desired level of leanness and are not aiming to lose any more fat, following a drawn out approach like this will only prolong the amount of time it takes to get your metabolism re-elevated and your hormones and appetite back in check.

Instead of slow reverse dieting, your goal instead should be to begin eating right back at your calorie maintenance level as soon as your cut is over. That way, your body can return to functioning at its peak as quickly as possible and you can move straight into your lean bulking phase without wasting any time. By definition, your calorie maintenance level is the intake required to maintain your current weight, so as long as you calculate it with reasonable accuracy then there's no danger of any sudden gains in body fat.

However, the one key thing to understand here (and the main factor that most dieters tend to overlook) is that your calorie maintenance level at the end of a cut is not the same as it was at the beginning. Since your body is now expending fewer total calories due to your down-regulated metabolism, decreased body weight and lowered levels of NEAT, your calorie maintenance level will have decreased as well.

For example, a common scenario might be a trainee who starts off with a maintenance level of 3000 calories and begins their cut at 2500 calories. They eventually finish their cut at 2000 calories, and then immediately jump right back to 3000 calories thinking it's their maintenance level, or even higher (perhaps up to 3200-3300 calories or more) as they attempt to add an extra surplus for muscle growth on top of it. In reality, their actual maintenance level may now be closer to 2500 calories as opposed to 3000, and their daily intake for muscle growth may be more like 2700-2800 calories rather than 3200-3300.

Always keep in mind that your calorie maintenance level is not a static number that never changes. Instead, it's a moving target that increases or decreases as your calorie intake and body weight move up or down. Because of this, it's very important that you make sure to re-calculate your new calorie maintenance level based on your body weight after your cut has ended.

You can use the same calculations found in the nutrition chapter in order to determine this, whether it be the basic multiplier, Harris Benedict formula or Katch McArdle formula. These calculations will never be 100% accurate since there are so many individual metabolic factors to take into account, but they should be close enough to provide a reliable figure you can start out with.

One other method you can use is to base your new calorie maintenance level off of the rate of weekly weight loss you were experiencing toward the end of your cut. For example, if you were losing around one pound per week in the final week or two of your fat loss phase, this would represent roughly a 500 calorie daily deficit since one pound of fat contains about 3500 calories. In that case, you could simply add 500 calories back to your current daily intake, which should put you right around your new maintenance level.

You'll likely experience a small amount of immediate weight gain once you bump your calories back up, but assuming you've calculated your new intake accurately, this is simply due to increases in muscle glycogen, water retention and overall food volume rather than being caused by any significant gains in body fat.

Give that initial increase a few days to settle in, and from there, monitor the scale with the goal of finding the calorie intake that causes your body weight to stabilize. It's normal for your weight to fluctuate slightly from day to day, but once it is remaining relatively consistent overall, you'll know that you've found your new maintenance level.

From there, you can complete your cutting to bulking transition by moving into a calorie surplus for muscle growth based on the figures given in chapter 3 of either 100, 200 or 300 calories above maintenance.

Also remember that once you increase your calories following a cutting phase, your resting caloric expenditure will begin to increase as your fat burning hormone levels come back into balance and your metabolism re-adjusts itself. So, even though your new calorie intake may seem a bit low at the outset, you should be able to gradually push it higher and steadily consume more food as the weeks go on without any accompanying gains in body fat. Just make sure to continue tracking your body weight closely from week to week, adding in an extra 100-150 calories to your daily intake whenever the scale clearly plateaus for a 1-2 week period.

BULKING TO CUTTING TRANSITION

That covers the process of properly switching from a cut to a bulk, but what if you're coming from the opposite end of the spectrum and will be transitioning from bulking to cutting? Perhaps you've been carrying out a prolonged muscle building phase and have reached the recommended body fat "cap" outlined previously (approximately 18-20% for men or 25%-27% for women), or you're simply at a level that exceeds your personal preference and want to do a quick mini-cut before going back to bulking.

While you certainly won't need to follow a long, drawn out process of very slowly adjusting your calories from week to week in this case either (as with reverse dieting, this is simply unnecessary and a waste of time), dropping straight from a full calorie surplus into a full calorie deficit over night is also typically not the best way to go about it.

Since your body will have become accustomed to your higher calorie intake for bulking, cutting your calories all at once can end up being a bit of a "shock" to your system, often resulting in a large upward spike in appetite along with a significant drop in physical and mental energy levels. This can make the first few weeks of your cut a lot more difficult to follow in comparison to dropping your calories at a slightly slower pace, decreasing the chances that you'll stay on the proper track with your new fat loss diet moving forward. A certain amount of hunger and energy loss while cutting is completely normal and is to be expected, but it should be fairly modest overall without interfering with regular day to day tasks.

By implementing a brief "pre-diet phase" where calories are tapered down a bit more gradually from a surplus into a deficit, these various "dieting side effects" can be offset in order to keep the transition as smooth and successful as possible. This phase is not 100% mandatory for everyone (more on this shortly), but if you're coming off of a prolonged bulk lasting several months or more and will be committing to a slightly longer term cut, it generally is a smart idea in the majority of cases.

The first step for this is to figure out what your starting calorie intake will be for your cutting phase. Just as your calorie maintenance level will have shifted downward slightly once you've reached the end of a fat loss cycle, it will have also shifted upward at the end of a bulk. This is because you'll be carrying around more total body weight throughout the day and will also have a higher basal metabolic rate due to greater levels of lean muscle mass, increased NEAT, as well as various hormonal adjustments that take place as a result of consuming more calories in general.

So, just as we covered in the previous section, you'll want to make sure to reconfigure your new maintenance level by entering your updated stats into one of the calorie calculators found in the nutrition chapter. Or, if your body weight had remained relatively stable during the final week or two of your bulk, no calculations will be necessary since whatever amount you were consuming in that period would represent your new maintenance calories.

Once you've estimated your current calorie maintenance level and have applied the necessary 350-500 calorie deficit to it (advanced trainees aiming for a more aggressive cut can optionally go with a slightly larger deficit if they'd like), you'll have your initial calorie intake in place for cutting. The next step is to calculate the difference between your previous bulking calorie intake and your new cutting calorie intake, divide the resulting figure by 3, and then decrease your calories by that amount each week over a 3 week period.

For example, if you finished your bulk at 3000 calories daily and were planning to start your cut at 2250 calories, that would represent a total drop of 750 calories. Divided by 3, this gives you a weekly decrease of 250 calories, meaning you'd drop down to 2750 for the first week, 2500 on the second, finishing off at 2250 on the third week.

From there, you'd monitor the scale and adjust your calories further if necessary depending on how your body weight is (or isn't) changing. If you aren't losing at least one pound per week consistently, you'll know that the intake is too high and needs to be decreased slightly. In that case, continue applying decreases of 100-150 calories every 5-7 days until the weight starts coming off at an acceptable pace. Or, if you find that you're losing weight very rapidly (more than 2 pounds per week consistently) and/or are feeling excessively hungry and physically drained, you can do the opposite by applying increases of 100-150 calories in order to slow things down to the appropriate level.

That takes care of the nutritional aspect of your bulking to cutting transition, but how should you adjust your cardio and weight training?

In terms of cardio, just take whatever additional weekly amount you'll be performing as part of your cut and add the extra sessions in evenly from week to week throughout the transition process. For example, if you were planning to perform two extra cardio sessions per week in comparison to what you were doing during your bulk, you would add in one extra cardio session for the first week and the second session on the second week.

On the weight training side of things, keep in mind that whether your primary focus is on gaining muscle or losing fat, your basic approach in the gym should remain exactly the same. The total weekly volume can be reduced slightly during a cut if you find that your strength levels are noticeably dropping (this will be covered in more detail in the next chapter), but as we discussed in the previous weight training section, it's very important to avoid the very common error of switching to a "light weight/high rep" plan as a way of somehow "defining" or "shaping" your muscles as you drop the fat.

There's nothing you can do to spot reduce fat from specific areas of your body by training those areas with weights, and resistance training is only intended to target the muscles that are involved in each exercise rather than the surrounding fat stores. Altering your weight training plan by utilizing lighter weights, higher reps, more isolation movements and shorter rest periods as is often done will only weaken the overall training stimulus and encourage the chances of muscle and strength loss during your fat loss cycle.

As a final note on the subject of transitioning from a bulk to a cut, it should be mentioned that while the pre-diet phase method given above would be recommended to most people in

order to moderate appetite and reduce physical/mental energy loss throughout the process, it's not an absolute *must* that it be followed in every single case. If you'd rather just go ahead and "tough out" the first few weeks of your deficit in order to lose the fat as quickly as possible (or if you have an upcoming event that you want to lean down for by a certain date), the pre-diet phase can optionally be skipped.

Muscle loss won't be a concern as long as your overall training and nutrition remains on point as a whole, so if you are willing to deal with the potential "dieting side effects" associated with a fast drop in calories, moving straight into a full deficit is one route you can go depending on your personal goals and preferences.

The one situation where the pre-diet phase generally is skipped for the most part is when a shorter term "mini-cut" is being implemented as opposed to a longer term fat loss phase. Just as the name implies, a mini-cut is a brief cutting cycle of about 2-6 weeks in length that is performed during a bulk in order to strip off some of the excess fat you've accumulated along the way.

Rather than bulking from, say, 12% body fat up to 18% and then back down again, the use of periodic mini-cuts might have you bulking from 12% body fat up to 15%, then back to 12% and so on. Neither approach is inherently right or wrong, and it just depends on the individual in terms of their preferred look and which method keeps them the most motivated throughout the process.

In any case, if you are going to be carrying out a shorter mini-cut lasting only a few weeks, going straight into your full calorie deficit is generally fine since the primary goal is to simply burn off a small amount of fat and then get right back to your muscle building phase. You can still implement a pre-diet phase with mini cuts if you'd prefer, but it generally isn't necessary if you want to keep things as efficient as possible.

MAINTENANCE TRANSITION

The final transitioning option is for those who have come to the end of a particular phase of training and are no longer aiming to put on additional muscle or lose further body fat, but instead just want to maintain their current body composition. Perhaps they've reached their goal physique and are satisfied with the results they've achieved (at least for the time being), or need to temporarily put their fitness plan on hold for some reason but don't want to regress during that time.

The good news is that this is quite a simple and straightforward process overall, since maintaining existing muscle mass is far easier to do in comparison to building new muscle, as is maintaining a given body fat percentage in comparison to leaning down further.

On the nutritional side of things, the only real adjustment that needs to be made is moving your calorie intake back to your maintenance level. You'll no longer require a surplus for muscle growth or a deficit for fat loss, and as long as you continue to meet your approximate macronutrient needs for the day and week (the most important factors being that you simply hit your minimums for protein and fat), eating at maintenance will keep your body composition intact as is.

Whether you're coming off of a cutting phase or a bulking phase, just make sure to re-enter your stats into the calorie maintenance calculator in chapter 3 (or use one of the other methods described in the previous two sections) and go back to eating at that particular level. Remember that your maintenance calories will probably shift slightly once your intake is re-adjusted (due to the metabolic changes that occur when eating in a deficit or surplus), so just use that initial calculation as a starting point and tweak it from there if necessary.

If your reason for switching to a maintenance plan is that you're satisfied with the overall level of muscularity and leanness you've achieved, chances are that you've already put in quite a bit of work up to this point and will be experienced enough to where tracking exact calories won't even be necessary in the first place. You'll have likely gained enough knowledge of nutritional tracking from the previous months (and probably years) of your fitness program and will know your body well enough to where you can simply eat based on feel and just roughly estimate things throughout the day.

However you choose to go about it though, eating at your approximate calorie maintenance level and meeting your rough macronutrient needs is all there is to it when it comes to basic physique maintenance.

On the training side of things, this is an area that can also be loosened up quite a bit and where you won't need to be as stringent with your exact workout protocol in terms of volume, frequency and general execution. The basic goal is to provide just enough stimulus to incentivize your body to hold onto its existing muscle mass, a task that is significantly easier to accomplish in comparison to stimulating brand new gains.

Just how much overall workload is needed for this?

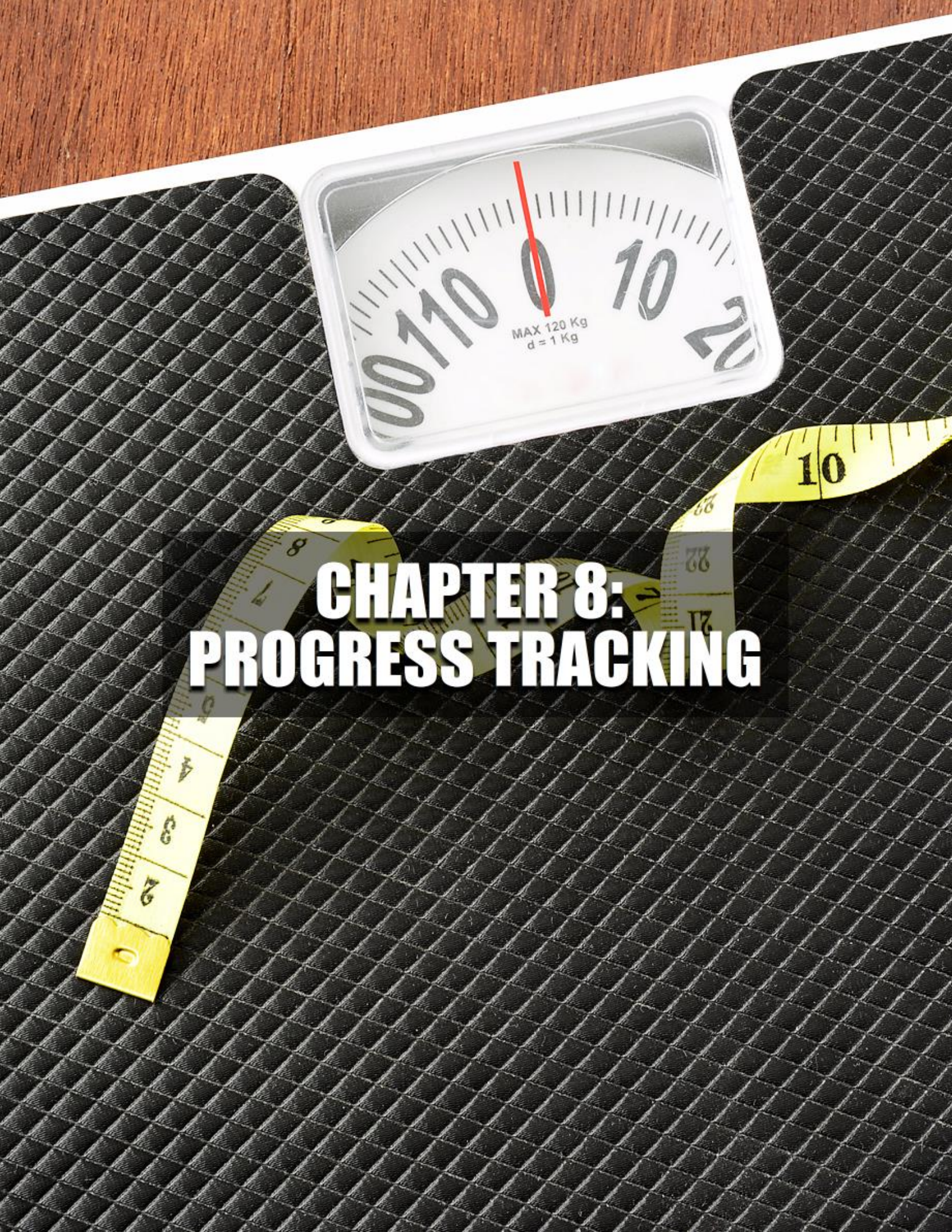
In the previous weight training chapter we had established a weekly volume range of approximately 8-15 sets for larger muscle groups and 4-8 sets for smaller muscle groups per week in order to maximize muscle hypertrophy. When the goal is to train for maintenance only, roughly 70% of the bottom end of each range should be sufficient. This would equate to around 5-6 sets for larger muscle groups and 2-3 sets for smaller muscle groups, hitting each muscle directly at least once per week. If you want to perform slightly more than this just to be fully on the safe side – or if you simply enjoy training for the additional physical and mental benefits it provides beyond just building muscle – then that's of course fine as well.

How you specifically choose to lay this out during the week in terms of your actual training split is mostly just a matter of personal preference. Since the number of sets you'll need to perform will be reasonably lower in comparison to a fully optimized hypertrophy plan, it's quite easy to fit everything in during the week without having to plan out all of your workouts with precise detail.

For that reason, you can simply structure your weekly routine in whatever way you enjoy most and that fits most conveniently with your schedule. Some viable options would include a full body workout, upper/lower split or push/pull split done 2 or 3 days per week, a legs/push/pull split done 3 days per week, or virtually any other basic 3 day split as long as the minimum weekly volume requirements are being met for each muscle. Or, if you prefer shorter weight training sessions done more frequently, any basic 4 or 5 day workout split hitting just 1 or 2 different muscle groups per session could be used as well.

As far as workout execution goes, you'll want to continue performing each set roughly 1-2 reps short of muscular failure to ensure that the training stimulus is strong enough to ward off any potential muscle loss. However, you won't need to strive for strength progression on your exercises any longer and can instead just focus on strength maintenance by utilizing the same loads on your lifts from week to week.

Aside from these volume/frequency/intensity guidelines, the rest of your workouts should remain the same in terms of basic exercise selection, rest between sets, rep ranges etc. as outlined in the weight training chapter.



CHAPTER 8: PROGRESS TRACKING

INTRODUCTION

You've now learned everything you need to know in terms of proper training, nutrition and supplementation to achieve your ultimate fitness goals, regardless of where you are now or what your specific desired physique is. If you simply follow everything as outlined in the previous chapters and remain consistent, getting the results you're after will be nothing more than a matter of time.

That said, if you want to achieve the very best progress possible in the absolute shortest period, avoid unwanted plateaus and keep your overall drive and motivation at its peak along the way, merely implementing your plan and then "hoping for the best" is not enough. Just as a business owner would track their financial gains/losses or an athlete would monitor their performance over time, you should also be tracking the results of your fitness program from week to week to get an objective look at how things are progressing.

This will ensure that you're building muscle and burning fat in the fastest and most efficient way, steering clear of certain key mistakes that might throw your results off track (such as going too high or too low on calories or over/under-training), and will help you identify specific areas of your program that require adjustments.

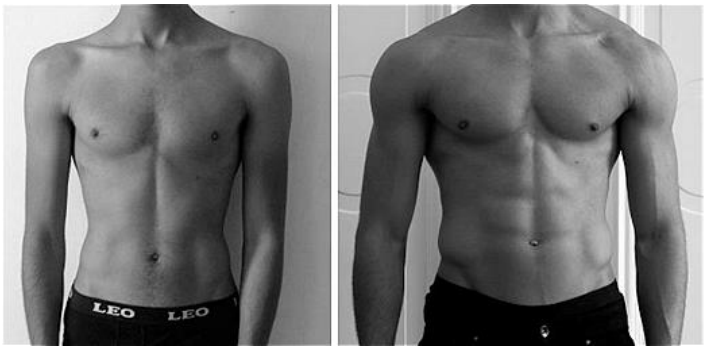
While some people can do just fine by simply eye-balling the mirror and scale to see how things are moving along, taking a slightly more detailed approach is highly recommended if transforming your body and achieving a standout physique is something you're truly serious about. It doesn't require a huge time or energy investment on your part, and could very well make the difference between success and failure over the long term.

In this chapter we'll be discussing exactly how to track your progress during both bulking and cutting phases, as well as how to adjust your training and nutrition appropriately if your results plateau or you encounter a particular obstacle along the way.

Whether your primary goal right now is to gain muscle or to lose fat, make sure to read through both sections either way since there is some overlap between the two and this will give you a complete understanding of how both processes work.

Let's get started.

TRACKING BULKING PROGRESS



If you're eating in a calorie surplus with the primary goal of bulking up and gaining muscle, objectively tracking your progress with reasonable accuracy will ensure that you're putting on mass at an optimal rate while keep body fat gains minimized throughout the process.

While there are quite a few individual metrics that can be used for this, the two most important factors being your changes in body weight and lifting strength. To put it simply, if your weight on the scale and strength numbers in the gym are both consistently increasing at the proper pace for the week and month, you'll know that your muscle building program is on the right track for the most part. On the other hand, if these two factors are remaining stagnant, you can be reasonably assured that you won't be gaining muscle to any significant degree and that certain adjustments need to be made to your program.

Additional progress tracking methods can be used to fine-tune things further (including body measurements, progress photos and body fat percentage readings), though these will usually fall into place on their own if your body weight and strength are continually going up within the appropriate ranges.

Let's now go into more detail by discussing how to implement each method correctly and how to tweak your program depending on what kind of results you're obtaining.

Body Weight

As we covered in chapter two, an expected rate of overall weight gain for a beginning muscle building trainee would be approximately half a pound per week, or two pounds per month. Those with above average genetics may be able to put on muscle at a slightly quicker pace, but three total pounds per month should be considered the upper limit regardless of the individual. These are the figures that should be aimed for during the first year of lifting, with the rate of weight gain slowing down by approximately 50% for every year of proper training and nutrition completed thereafter.

To track your changes in body weight, you'll want to weigh yourself on a digital scale first thing in the morning each day. Make sure to do this right after waking up and before eating, and ideally after using the washroom in order to keep the readings as consistent as possible. Because your body weight can fluctuate quite a bit from day to day depending on a variety of

factors (such as water retention, amount of food in your system, glycogen levels etc.) you'll be best off to take your average weight for the week as a whole and compare that to the previous weekly average rather than getting overly focused on the readings between individual days. You don't necessarily have to weigh yourself every single day, but at least once every 2-3 days would be recommended.

Since half a pound per week is a relatively small amount (and thus somewhat difficult to precisely track in the short term), and because the weight increases will get even smaller as you pass the one or two year mark of lifting, don't expect to be hitting these figures with 100% accuracy every single week. These recommended ranges are simply intended as approximate ballpark figures and are to be used in combination with the other methods we'll be discussing to paint an overall picture as to how things are progressing.

In any case, if you're landing roughly around the appropriate weight gain figure for the week and month, you'll know that your current calorie intake is set at the right level and that you have a proper surplus in place to support muscle growth.

If your body weight is increasing at a rate above the recommended level, this would indicate that your daily calorie target is set too high (remember that all calorie calculations are just estimates at the start and often need to be adjusted slightly after they're implemented), or that your calorie intake *is* set at the proper level but you're accidentally over-shooting it due to errors with your nutritional tracking.

The first step in this situation would be to conduct an honest "dietary audit". This is where you'll go through each day of eating in detail and precisely track every single meal, snack and drink you're consuming to see where you might be making mistakes and what your true calorie intake is really set at. Many people (especially beginners) end up consuming significantly more than they realize once everything is tallied up for the day and week as a whole, and this can easily add several hundred or more calories to what you thought was a much lower daily amount.

If you have added everything up carefully and have confirmed that you are hitting your calorie target accurately yet are still putting on weight at too quick a pace, decrease your daily calories in increments of 100-150 once every 5-7 days until your rate of weight gain falls back into the proper range. As we discussed earlier, your body can only synthesize a limited amount of new lean muscle mass over any given period, and the vast majority of body weight that is gained beyond the prescribed weekly/monthly ranges will simply be stored as fat.

Now, what if the opposite is happening and your body weight is increasing at a rate below the recommended level, or is completely stagnant and isn't increasing at all? This would indicate that either your calorie intake is set too low and needs to be increased, or you're simply under-eating without realizing it by not tracking your diet closely enough.

In the case that you've already been training for a consistent period and were achieving ongoing weight increases which have now plateaued, this just means that it's time to add more calories to your existing intake. Remember that as you gain more and more muscle

over time, your calories will need to be continually raised in order to maintain your newly built mass as well as to support further gains.

In any event, the bottom line is that if your body weight has remained stagnant for a 1-2 week period (or is still increasing but at an excessively slow space) – and you've "audited" your diet to ensure that your actual calorie intake is in fact meeting your intended daily target – you'll need to bump up your calories by adding in 100-150 every 5-7 days until the scale begins increasing at the appropriate pace.

You may be tempted to rush the process and very quickly add in more calories in order to start seeing faster gains, but it's important that you remain patient and only increase your intake at a gradual pace. Remember that any extra body fat you put on will be stuck with you for the remainder of your bulking phase and will only be lost once you shift into cutting, so going a bit slower rather than faster is almost always the best approach.

In addition to increasing or decreasing your calorie intake in order to land on the proper weekly weight gain figures, adjusting your overall activity level (in terms of regular gym cardio or other physical activities you're performing throughout the week) is a viable option as well. Remember that total net energy balance (calorie intake vs. calorie expenditure) is the ultimate bottom line when it comes to weight gain/weight loss, and if you're currently performing a very high amount of additional activity (making it harder for you to achieve a net surplus) or a very low amount (making it easier to eat in an excessive surplus), this is something you can potentially modify as well.

For example, if your body weight isn't going up and you're currently performing three cardio sessions per week in combination with several days of other active hobbies, you could reduce some of that additional exercise to bring your net energy balance back into the proper range for muscle growth. Or, if you're gaining fat at an excessive rate but are mostly sedentary outside of weight training, adding in some extra cardio at the gym or other physical activity during the week could be used to burn additional calories and reduce the size of your total surplus.

Adjusting your calorie intake will generally be the easiest method to track and implement (since calculating how many calories are being burned through exercise can be hard to judge accurately), but your overall activity level is something that can be optionally modified as well, particularly if it's falling on the very high or low ends of the spectrum.

Strength Levels

That covers the body weight side of the progress tracking equation, with the other primary factor to pay attention to being your gains (or lack of gains) in strength. As we talked about in the previous weight training chapter, utilizing sufficient training intensity and consistently adding more weight to the bar on your exercises over time (progressive overload) forms the underlying foundation of your entire weight training plan.

We won't go into further detail on the value of progressive overload since we already discussed it at length earlier, but the bottom line is that if your overall performance in the

gym isn't improving on a continual basis, you can be rest assured that you won't be gaining a significant amount of new muscle mass either.

This is why, along with monitoring the scale, your training logbook is another critical progress tracking tool to pay very close attention to. By objectively recording each of your workouts in terms of the exercises, weight, sets and reps executed, you'll be able to see firsthand how things are progressing over time and if certain adjustments are required.

If you're a beginner to intermediate trainee who has not yet reached the advanced stages of lifting (at which point significant strength gains will become increasingly harder to achieve), you should be expecting some form of strength progression virtually every single week in the gym, whether that simply means performing an extra rep or two with the same weight on a given exercise or increasing the actual weight itself. If you've gone two full weeks without any progression at all, something in your plan is definitely off and needs to be modified.

What should you do in those situations where you can't seem to improve the weight or reps on your lifts despite your best efforts? While there are a wide variety of factors that could potentially result in a strength plateau, it usually boils down to three main possibilities.

The first possibility is that you need to increase your calorie intake slightly. Once again, as you become increasingly muscular and stronger over time, your body will require additional calories each day both to maintain your existing muscle and to allow for further progress. Strength plateaus and body weight plateaus often go hand in hand, and this can usually be fixed relatively quickly with a simple calorie increase using the same guidelines outlined above.

Proper macronutrient intake plays an important role here as well, so along with ensuring that your total daily calories are on point, you should also double check to see that your macro numbers (particularly protein) are all meeting their minimum requirements.

The second possibility is that you aren't training with sufficient intensity. If you aren't pushing yourself hard enough by training 1-2 reps short of muscular failure on the majority of your sets, you won't be providing your body with a strong enough incentive to increase its muscle size and strength levels further. If your performance in the gym isn't steadily going up over time, examine your overall workout execution and be honest with yourself, as you may find that you're leaving a bit more energy in the tank on each set than you really should be.

The third possibility is that you aren't recovering properly in between workouts. Training with weights in the gym is what initially stimulates the muscle growth and strength gains you're after, but the actual adaptations themselves take place while you're out of the gym resting. If your training volume and/or frequency is set at too high a level, or you're including an excessive amount of additional cardio and/or other strenuous physical activity throughout the week, you may be hindering the recovery process without realizing it.

To ensure that your recovery is being fully optimized to allow for ongoing progress, make sure you're staying within the recommended volume and frequency guidelines given in

chapter four and that you're following The Body Transformation Blueprint Workouts as outlined without adding in unnecessary extra work. Also ensure that you aren't going overboard on total cardio exercise (no more than 2-3 sessions per week), and that your sleeping habits are fully up to par in terms of duration and quality since this is another area that will influence your performance in the gym.

If every area of your training, nutrition and lifestyle seems to be otherwise on point and your strength still isn't going up, another option is to try cutting back on your total training frequency to see if that helps. This would most likely be of positive benefit if you're currently following one of the higher frequency 4-5 day per week training plans, in which case you could try cutting back from 5 workouts per week to 4, or 4 workouts per week to 3.

You can also try slightly reducing your total sets per session so that you're falling more toward the lower end of the recommended weekly volume ranges for each muscle. Every person is a bit different in terms of their recovery ability from exercise and which specific volume guidelines will work best for them, so if you aren't seeing consistent strength progress despite executing everything correctly on paper, this is another area to experiment with as it's possible that you're just performing too much overall work in general.

While there are always unique situations that require further examination and fine-tuning, taking all of these factors into account should solve the vast majority of strength plateaus.

Another situation that can sometimes arise is when consistent strength gains are being achieved in the gym but there is no significant corresponding gain in muscle mass. If progressive overload is the central training principle involved in stimulating muscle growth, how would it be possible to be gaining strength on an ongoing basis without any size?

The reason for this is that muscle hypertrophy (an increase in contractile proteins that allows you to lift heavier weights) is not the only way that strength gains are produced by the body. As we touched on earlier, there's also a neural component involved where the central nervous system becomes increasingly efficient at recruiting motor units and making use of the existing muscle mass you already have. If you've been consistently gaining strength but your muscle size isn't increasing, this is the primary adaptation that is taking place.

While this technically can be caused by errors with your workout plan, it's almost always an indication that you simply aren't consuming enough calories to support muscular hypertrophy. You're making "neural gains" on your exercises that are causing your strength to go up (this is especially common for beginners since weight training is a new "skill" that their body is quickly becoming more proficient at), but you're not gaining the additional mass to go with it since you don't have the necessary calorie surplus in place to construct new muscle tissue.

If you find yourself in this situation, you can once again use the same calorie-increasing guidelines given above (100-150 extra daily calories added in once every 5-7 days until your body weight begins increasing at the proper pace) to get your intake up into a sufficient range for muscle growth.

Progress Photos / Measurements

Monitoring your changes in body weight and strength should be treated as the main foundation of your progress tracking approach. If both of these metrics are steadily improving at the proper rate, this is usually enough information to effectively guide you when used in combination with the obvious method of checking your overall appearance in the mirror. That said, two other progress tracking tools you can use to assess things further are progress photos and muscle measurements.

Since you'll be seeing yourself in the mirror every day, it may be hard to notice the subtle physical changes that are taking place, not to mention that our own perception of our appearance can often be skewed based on certain psychological factors. These two additional methods wouldn't be considered as mandatory, but if you're highly serious about your results and want to get the most objective, concrete picture as to how things are progressing, they certainly can be helpful in providing some extra information. These methods will also allow you to compare the development of each individual muscle group so that you can identify certain weak points that may need improvement.

Progress photos should be taken once every 2-4 weeks, first thing in the morning before eating or training, and with the conditions (such as lighting and distance from the camera) kept the same each time. Include a shot from the front, side and back, as well as pictures of yourself both flexed and unflexed. Not only is this helpful in getting a firsthand look at how your physique is changing over time, but it can also be quite motivating to be able to look back at your older pictures from down the road to see just how far you've come.

Just keep in mind that your changes in appearance will be fairly subtle from week to week, so if you're using shorter time intervals between your photos, don't be discouraged if the gains aren't overly dramatic from one set to the next. Building muscle is a fairly slow and gradual process that requires time and patience, and significant visual differences usually require several months to achieve.

In addition to taking progress photos, you can also use a measuring tape once every 2-4 weeks to assess how all of your major muscle groups are progressing. The areas you'd want to measure would be your chest, upper arm, forearm, neck, waist, thigh and calf.

To minimize your margin for error and get the most accurate readings possible, always take your measurements first thing in the morning unpumped and unflexed, measuring around the largest part of each muscle. The upper arm is the one area that is commonly measured in a flexed state (most people who share their arm size online are using a flexed measurement), so whether you measure yours flexed or unflexed is up to you.

There is no set guideline as to how many inches each muscle should increase by over any given time frame, as there are simply too many factors to take into account in order to give proper ranges for that. However, measurements can be used to identify which muscles are making consistent gains and which ones may be lagging behind, allowing you to potentially adjust your training if certain areas are not responding.

In addition, by tracking your waistline relative to your other muscles groups, measurements can also be useful as a general body fat monitoring tool. You'll always gain some fat while in a focused bulking phase, but if your waist measurement is increasing at a disproportionate rate in comparison to your other muscles, this would be a good indication that you're putting on body fat too quickly and need to adjust your calories or activity level slightly.

Body Fat Percentage

Now that we're on the subject of body fat, what about tracking your actual body fat percentage to make sure that it's remaining within reasonable limits as you put on muscle?

While knowing your exact body fat percentage would certainly be a useful metric for monitoring progress, the problem (as we discussed in chapter two) is that it's very difficult to obtain an accurate body fat reading with the current methods that are used for this purpose. Those that do provide the most accurate readings (such as DEXA scans) are fairly expensive and impractical for consistent use (not to mention that they can still be off by several percent regardless), while cheaper home methods are often very unreliable and can easily give you a reading well above or below your true percentage.

Assuming your body weight is increasing within the appropriate weekly/monthly range, strength levels are consistently going up in the gym, and your visual appearance and waist measurements don't indicate any obvious excess increase in body fat, this is usually enough information to discern that overall fat gains are being kept within a reasonable limit. Therefore, attempting to measure your exact body fat percentage throughout your muscle building phase is usually not necessary and isn't something the majority of people will need to worry about.

That said, if you do want to be as detailed as possible with your tracking and if staying lean during your bulk is of the utmost importance to you, you can optionally include an approximate body fat reading once per week to go along with your body weight. Don't put too much stock in the objective number you're given (for example, you may very well get a reading of 19% when you're in fact closer to 14%, or vice versa) but instead just aim to get consistent measurements and use those to track the relative increase over time. The readings will still not be perfectly consistent in the same way that measuring your body weight will, but you can simply use them to get a general idea as to how your body fat levels are changing from week to week and month to month.

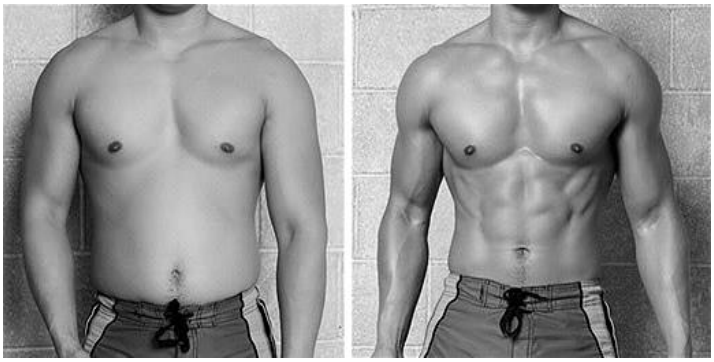
Since body fat percentages compare your total body fat mass to your lean body mass, and since lean body mass just refers to any bodily substance that is not fat, keep in mind that the amount of food and water in your system will also affect the readings. This is why you should always take your body fat measurements first thing in the morning before eating and after using the washroom, measuring yourself under the exact same conditions each time.

The most commonly used home methods include body composition scales, handheld BIA devices (bioelectrical impedance analysis) or calipers. Any one of these is acceptable, though body fat calipers will usually give the most accurate reading when used properly. Or, if you have the extra money available and want to get the most precise measurement possible, the

other option would be to do a DEXA scan but at a reduced frequency of perhaps every 1-2 months depending on your financial situation and how important these readings are to you.

A variety of factors can come into play that will influence just how much body fat you'll gain during your bulk, but as a general guideline, a net increase of about 0.5-1% body fat per month would be a reasonable range to stay at or below and would indicate that your bulk is being carried out successfully in terms of minimizing fat gains. If you're consistently gaining much more than about 1% per month, your total calorie surplus is either too large or you're not putting on lean muscle at a sufficient rate due to one or more errors with your training and/or nutrition approach.

TRACKING CUTTING PROGRESS



When it comes to tracking your progress during a cutting phase, the same metrics we covered in the previous section still apply but are simply utilized in a different way with the primary goal of fat loss in mind. Your changes in body weight and strength levels are still the main factors that will indicate how successfully (or unsuccessfully) your cut is going, with progress photos, measurements and body fat readings being used to provide additional information you can go by.

Let's discuss how to apply each of these methods properly during your cutting cycle in order to maximize your rate of fat loss while maintaining (or possibly even gaining) lean mass at the same time.

Body Weight

As discussed in chapter two, an expected rate of weight loss during a cutting cycle would be between 1-2 pounds per week, the vast majority of which will be in the form of body fat if everything is being implemented correctly. An initial drop of 3-4 pounds per week may occur in the first week or two of your new diet as your body flushes out excess water retention and food volume, but it should stabilize somewhere around the 1-2 pound range after that.

Those who are significantly overweight may be able to lose fat a bit quicker at around 3 pounds per week (at least in the beginning phases of their program), though this will be a lot less common and only apply to a fairly small percentage of individuals. 1-2 pounds should be set as the overall target for the majority of people, and if you're falling somewhere within this weekly range on a consistent basis, you'll know that your calorie intake is accurately set and that you're maintaining a proper deficit for fat loss.

On the other hand, if your body weight is decreasing at a rate below this level (or isn't decreasing at all), this would indicate that your calorie deficit is too small or that you're actually eating at your maintenance level without realizing it. This will occur either because you've set your daily calorie target at too high an amount, or your calories *are* properly configured but you aren't tracking your intake closely enough and are unintentionally over-eating.

If you had been losing fat initially but have now hit a plateau, this means that you need to drop your calories further (or increase your cardio frequency) in order to stimulate additional fat loss. Remember that your body will continue to adapt as you get leaner and leaner, and you'll gradually need to adjust your intake and/or expenditure to ensure that you're maintaining a net deficit over time.

What should you do if the scale has slowed down (or stagnated altogether) for a 1-2 week period and you're no longer losing fat within the recommended 1-2 pound per week range?

As discussed in the previous section, a "dietary audit" is the first step you'll want to take here. This is especially important during a cutting phase, since the increase in hunger you'll experience (an inevitable part of the fat burning process and something that should be expected to a certain degree) will make it far more likely that you'll unconsciously over-eat.

In the vast majority of cases, those who claim that they "can't lose fat" despite following a low calorie diet are actually consuming far more calories throughout the week than they realize. If you truly sit down and go through your diet step by step, accounting for every single food, drink, snack and "treat meal" you're consuming, you'll likely find that you've been eating quite a bit more than you had initially thought. When you consider that a typical deficit for fat loss is only around 350-500 calories below maintenance per day, all it really takes is a few simple mistakes in order for your calorie deficit to be significantly reduced or erased altogether.

For example, as mentioned earlier, if your idea of "one tablespoon of peanut" actually equals out to two tablespoons (this is a very common measuring error), that's 100 extra calories right there. Other items that get added into your plan without much of a second thought can also add up quite a bit in the bigger picture if you aren't careful. An extra glass of fruit juice, a handful of almonds, cream and sugar in your morning coffee, cooking oils or small high-calorie snacks added in here and there – all of these small choices can easily end up making the difference between consistent fat loss or complete stagnation once all the calories are taken into account.

Also keep in mind that your bottom line results will be determined by your *average* calorie intake for the week as a whole rather than in short windows of individual days. For example, if you ate in a 500 calorie deficit from Monday to Friday (a total of 2500 calories below maintenance), but then ate an extra 1000 calories above maintenance on both Saturday and Sunday, most of your deficit will have gone to waste. Even if you only ate 600 calories above maintenance on those days (a very easy thing to do if you're in the mindset of "rewarding" yourself on the weekend), that would still cut your total net deficit for the week roughly in half.

If after taking a closer look at your diet it does turn out that you weren't hitting your daily calorie target as accurately as you had thought, you'll need to get a bit more serious and tighten up your nutritional tracking to make sure that your intake is consistently landing at the proper level each day. Start weighing out your foods with a scale to confirm that all of the measurements are being done correctly, and ensure that every single food and drink item is being accounted for throughout the day and week without skipping over anything.

If you find that your calorie intake really has been matching your intended daily target and you're still not losing fat at the appropriate rate, this just means that your actual calorie target itself is too high and that it doesn't represent a true calorie deficit. To get down into the proper range for fat loss, gradually decrease your daily intake in increments of 100-150 calories once every 5-7 days until you're consistently landing in that 1-2 pound per week range. If your weight plateaus again in the future, apply this same process again.

In addition to decreasing your calorie intake, another option is to increase your calorie expenditure. Remember that fat loss ultimately comes down to your net energy intake versus net energy expenditure in the overall picture, and performing some additional activity throughout the week is another route you can take to increase your calorie deficit further. This would particularly apply if you're currently on the lower end of the spectrum in terms of cardio frequency, or if you just live a fairly sedentary lifestyle outside of the gym in general. For example, one more cardio session per week and a bit of extra walking on your off days could provide the additional boost needed to get you back into a sufficient net deficit.

Another option is to combine both of these variables together by slightly reducing your calorie intake and slightly increasing your activity level at the same time. For example, 100 fewer calories eaten per day and one additional cardio session performed per week.

Given that it requires a greater time and energy investment to actively burn more calories through exercise as opposed to just eating a bit less, reducing your calorie intake is usually the simplest and most efficient way to go if your fat loss has stalled. However, if you've a hit point where you don't want to drop your food intake any further (this would particularly apply if you're in the later stages of a cut and are already eating at a fairly low calorie level), you can go ahead and create the additional deficit through exercise instead.

On that note, do keep in mind that as you reach the low end of the spectrum in terms of body fat (around 10% for men and 17% for women), stimulating further fat loss will become much more difficult at that point. Hunger levels will rise significantly and energy loss will become increasingly pronounced as your body fights to hold onto its remaining fat stores, and you'll need to seriously buckle down and be exceptionally diligent with your training and nutrition if you're looking to get increasingly leaner.

Aside from potentially bumping up the frequency of your refeed days and diet breaks (this will help to offset some of the appetite increase and drop in energy/strength levels), there aren't any special "secrets" to losing additional body fat at that point other than just continuing to adjust your calorie intake and expenditure to create a further deficit. The basic law of calories in versus calories out still applies, the only difference being that it will be much more challenging to apply the leaner you try to get.

This is why, as we covered in chapter two, unless it's for a temporary event (such as a competition, photoshoot, special event etc.), cutting below 10% body fat for men and 17% for women isn't recommended in most cases. It won't be sustainable for the vast majority of people (aside from a small percentage of genetic outliers) and is ultimately counterproductive to overall health and well-being when maintained over the longer term.

Now, what if rather than losing body weight at too slow a pace, you're actually losing it at too quick a pace?

While this technically could happen in certain cases, it will be a lot less common since the increased hunger levels that result from your calorie deficit will naturally drive you to eat more food if you do begin to fall to an excessively low intake. However, if you've simply been "fighting through" the hunger and have found that you are dropping body weight at a level above the recommended ranges, this means your overall calorie deficit is too large and needs to be decreased slightly.

This can be accomplished by either increasing your calorie intake (adding 100-150 calories back in once every 5-7 days until your rate of weight loss slows down to the proper level), decreasing your calorie expenditure (reducing your cardio frequency or other physical activities throughout the week), or a combination of both.

Keep in mind though that if you do feel otherwise okay in terms of your energy, mood and appetite – or if you are experiencing a noticeable downswing in these areas but are willing to go ahead and "tough it out" in order to lose fat at an increased rate – there's nothing inherently wrong with utilizing a slightly more aggressive calorie deficit over the short term as long as your performance in the gym isn't decreasing. For that reason, the above point only applies to those who have unintentionally set their calories too low (or activity level too high) and are experiencing negative side effects that they'd like to eliminate.

That brings us to the next topic, which is what to do if you are losing weight within the recommended 1-2 pound per week range but are still experiencing significant levels of hunger regardless.

Before going further, it's important to understand that *some* level of background hunger during certain periods of the day is a completely normal part of the cutting process and can't be eliminated entirely. It required a consistent calorie surplus in order to put the excess fat on in the first place, and maintaining a consistent calorie deficit (which will always be accompanied by an appetite increase) is the only real way to get rid of it. However, if your hunger and cravings are kicking in to an excessive degree to where it's interfering with regular day to day tasks and is becoming increasingly difficult to maintain, there are a few steps you can take to reduce it down to a more manageable level.

First off, if you've been consistently losing fat toward the higher end of the recommend weekly range, the simplest option is to just reduce the size of your overall deficit and aim for the lower end closer to one pound per week. While losing fat at a faster pace is obviously desirable whenever possible, it won't do you any good if you can't maintain your program over the longer term due to excessive hunger. Losing only one pound per week may not sound like a lot on paper, but that still equates to a very reasonable amount of 12 pounds over a 3 month period and 24 pounds over a 6 month period.

If you have been averaging approximately one pound per week and hunger is still an issue for you, the next thing to do is double check your macronutrient intake to ensure that you aren't going too low on any particular one, especially protein. Protein is the most satiating of

the three macronutrients, and allowing your daily intake to drop below 0.8-1 gram per pound of body weight can cause hunger levels to spike while also encouraging muscle and strength loss at the same time.

Another area to look at is your fiber intake. Fiber absorbs water as it moves through your digestive tract and slows down gastric emptying (the rate at which food is moved from the stomach to the small intestine) which increases feelings of fullness. You should ideally aim for at least 14 grams of fiber for every 1000 calories eaten, and during a cutting phase this can be bumped up even higher to help further reduce hunger levels. Increasing your vegetable intake is a great way of accomplishing this, since they're not only high in dietary fiber but also very low in calories relative to their volume. This is especially true if you go with the non-starchy varieties which often contain as little as 100 calories per pound. Consuming vegetables with some (or all) of your meals throughout the day is a great way to fill yourself up while keeping the total calorie content minimized.

Besides consuming more vegetables, basing your diet around low calorie density foods is something you should be striving for in general (examples include lean proteins, fruits, whole grains, rice, oats, legumes, low-fat dairy etc.), since the more total food volume you can consume at the same calorie level, the more satiated you'll feel. Don't forget to pay attention to your water intake as well, as having a glass before, during and after meals and regularly throughout the day can also help to increase overall feelings of fullness.

Beyond your total calories, macronutrient breakdown, specific food choices and water intake, another variable you can experiment with is your meal frequency and meal timing structure to see which particular layout regulates your appetite most effectively. For some people that might mean 5-6 small meals, for others it might mean 4 medium sized meals, while others may prefer 2-3 larger meals. In addition, some people do best by consuming a larger percentage of their calories earlier on in the day with fewer calories consumed later, while some have greater success doing the exact opposite.

As a slightly more "advanced" option, you could also consider trying out an intermittent fasting style approach (no food for the first 6-8 hours of the day followed by an 8 hour "feeding window" where all calories are consumed), as a certain percentage of dieters find this type of eating structure to be particularly effective for moderating hunger levels. As we discussed in the nutrition chapter, differing meal frequencies won't affect your bottom line rate of fat loss if the total calories for the day are equal, so play around with some different layouts to see which one works best for you.

Incorporating regular refeed days (eating at your calorie maintenance level once every 1-2 weeks) and diet breaks (eating at maintenance for a full 1-2 week period for every 1-3 months of consistent dieting) can be helpful for regulating appetite as well by periodically re-elevating levels of leptin, a key hormone involved in decreasing hunger.

Bringing the training side of things into the equation, another important step in controlling appetite is to work on finding the proper balance for yourself between achieving your calorie deficit through reduced food intake versus increased energy expenditure. Both of these variables (eating fewer calories or performing more exercise) will stimulate hunger to a

certain degree, but everyone reacts a bit differently to each one. Some people are able to manage hunger more effectively by creating a larger calorie deficit through their diet and performing less activity, while others prefer to consume more calories from their diet but perform a higher amount of activity. If you've been having trouble getting your appetite down to a sustainable level, experiment with both approaches to see which one feels best for you.

Lastly, make sure you're getting a proper sleep each night. Not only does chronic sleep deprivation negatively impact your mental focus, physical strength, energy levels and motivation, but it also boosts your appetite as well due to increased levels of ghrelin (a hormone produced in the stomach that stimulates hunger) and decreased leptin.

We've now gone over what to do if you're losing body weight too quickly or too slowly during your cut and how to apply the appropriate steps to fix either situation. One final scenario that may arise is when your weight is decreasing at what seems like an excessively slow pace, yet you're clearly seeing significant improvements in body composition from week to week regardless. Perhaps you're only losing half a pound per week on the scale, but your waist measurement is consistently decreasing, your clothes are fitting more favorably and you can obviously see in the mirror and in progress pictures that you're getting leaner from week to week.

If you're clearly losing body fat but it isn't being reflected on the scale, this most likely indicates a successful recomposition where you're both losing fat and gaining muscle at the same time. Your body is breaking down its fat stores (causing you to become progressively leaner) but is using those calories to build additional muscle mass, in which case your overall body weight won't change to as significant a degree as someone who is primarily just losing body fat alone.

This is the most favorable situation for a fat loss trainee to be in, and your best bet here is to simply leave your nutrition and training in place as is, utilize the other progress tracking methods below to gauge your results, and only adjust your calories or cardio frequency if those other metrics begin to plateau.

Strength Levels

Although the main concern during a cutting phase is of course to lose body fat, maintaining lean muscle mass (or potentially even gaining some) should also be placed as a primary concern. The single best way to determine if you're doing this successfully is to monitor your changes in strength throughout your fat loss cycle.

To put it simply, if your strength numbers in the gym are continuing to increase from week to week (or at the very least are staying the same) and you're consuming sufficient protein each day, you can be reasonably assured that the vast majority (if not all) of your weight loss is coming in the form of body fat and that your lean muscle mass is being left intact. You usually won't gain strength to the same degree while eating in a calorie deficit in comparison to a surplus, but you should still be aiming for progressive overload as best you can throughout your cutting phase nonetheless.

Strength loss should only occur during more prolonged fat loss cycles where a large amount of body weight is being lost and/or where you'll be cutting to a very lean body fat percentage. Even then, the reduction still shouldn't fall much beyond a couple reps for smaller isolation lifts and a very slight reduction in weight on larger compound movements.

Just as your training logbook should be used as a primary progress tracking tool while bulking, it should also be treated with the same level of importance while cutting. You should continue recording all of your exercises, weights, sets and reps for each session, and then strive to improve upon those numbers whenever possible, or at least maintain them as a minimum. If you find that your strength is noticeably dropping throughout your cut and you're feeling excessively rundown and fatigued during your workouts, this would indicate that at least one of several potential factors in your program is out of balance and needs to be corrected.

The most common cause of strength loss while cutting is an excessively low calorie intake. You obviously need to maintain a calorie deficit in order to drop body fat, but going too low can start to work against you by negatively impacting recovery and preventing your body from getting the energy and nutrients needed for optimal workout performance. If you've been unable to maintain your strength levels despite continuing to train with adequate intensity, volume and frequency, take a look at your daily calorie intake and week to week rate of weight loss to determine if you require a slight increase.

Assuming your calorie intake is set at the right level, the next thing to consider is your daily protein, carbohydrate and fat breakdown to ensure that they're all landing roughly around the proper levels. You don't need to obsess over every single gram you're consuming at all times, but a significant imbalance between them can definitely have a negative effect on your strength levels if you aren't careful. Going too low on protein can impair recovery in between training sessions, cutting carbs to an excessive level can decrease workout performance, and dropping fat intake too far can cause testosterone levels to fall with it, further affecting recovery and potentially accelerating muscle and strength loss.

Your daily macronutrient breakdown doesn't need to be perfect, but during a focused cutting phase it does become more important to monitor since you'll have fewer total calories to work with and the chances that you'll under-consume one or more of them will increase.

On the training end of things, another common cause of strength loss during a cut is performing an excessive amount of cardio throughout the week. While a moderate amount of cardio can certainly be a useful addition to a well rounded fat loss plan, performing too much can quickly backfire and begin interfering with weight training performance. Keep in mind that your recovery resources will already be limited due to being in a calorie deficit, and you don't want to exacerbate this further by performing large amounts of unnecessary cardio on top of an already intensive weekly weight training plan.

Make sure to follow the cardio guidelines given in chapter five by starting off with no more than three cardio sessions per week, optionally increasing the frequency later on only if your fat loss stalls as you get deeper into your cut. Also keep in mind that this applies both to

regular gym cardio as well as any other physically strenuous activities you might be including during the week such as sports, active hobbies or a physically strenuous job, as all of these forms of exercise will ultimately burn calories and affect recovery to a certain degree.

If increasing your calorie intake, dialing in your macronutrients more closely, reducing your cardio frequency and moderating your overall activity level outside of the gym doesn't seem to be helping (and the rest of your training and nutrition is otherwise on point), the last step you can follow is to reduce your overall weight training volume and/or frequency for the week.

Since your body has fewer calories available during a cut to facilitate recovery (as well as less fuel to get through your workouts), performing too many total sets can begin to have a slight counterproductive effect, especially as you cut to lower and lower levels of body fat. Once again, this can be done by lowering your training frequency (for example, going from 5 weekly workouts down to 4, or 4 down to 3) and/or by reducing your total rep volume so that it falls on the lowest end of the recommended weekly ranges for each muscle.

As a final note, you should also take a look at your nightly sleeping habits since this is another area that can affect strength levels in the gym if the duration or quality is being compromised for some reason.

Progress Photos / Measurements

As we covered in the previous section, you can fine-tune your progress tracking approach a bit further by also taking regular photos and measurements to get some additional information as to how your cut is progressing. Photos and measurements become increasingly important in the case of a recomposition since they'll allow you to see firsthand how your levels of leanness and muscularity are changing despite the fact that your body weight may only be decreasing at a marginal pace.

If your waist measurement is consistently going down and you're clearly looking leaner and more defined in your pictures from week to week, your cut is most likely being carried out successfully regardless of the specific number on the scale. In this case, you can simply continue on at the same calorie intake and cardio frequency, only adjusting them later on if your waist measurement or visual appearance clearly begin to plateau.

Body Fat Percentage

The main reason why you'd want to track your body fat percentage during a cut is to ensure that the majority of your weight loss is coming in the form of body fat rather than lean muscle. However, this can usually be determined fairly easily without specifically needing to measure your precise body fat level.

If you're losing overall body weight within the recommended weekly range, strength levels are increasing (or at least being maintained), sufficient daily protein is being consumed, and your waist measurement is consistently going down, this is usually enough information on its

own to indicate that you're primarily burning fat and are not losing muscle. Thus, trying to track your exact body fat percentage for this purpose generally won't be necessary.

The other situation where knowing your body fat percentage would be useful is to help you determine when you've reached a low enough level to shift into a bulking phase. As we discussed previously though, most of the devices that are used to measure body fat have a fairly significant margin for error and can often be incorrect by as much as 5% or more. If you have a consistent body fat testing method available to measure the relative decreases over time (whether it's calipers, scales, handheld devices or a more involved method such as DEXA) then that can optionally be included as an additional progress tracking metric, but you shouldn't be relying on the readings as absolute figures.

For example, if you decide to shift into a bulking phase because your scale indicates that you've reached 12% body fat, this could legitimately throw your program off track if the scale has under-estimated your true percentage and you're in fact closer to, say, 16%. So, just use the body fat readings as a way of providing a bit of additional insight into your overall progress, with an approximate expected rate of fat loss landing somewhere around 0.25-0.75% per week depending on your current body weight, body fat percentage and the size of your calorie deficit. However, the final verdict on whether you should continue cutting, maintain your current physique or shift into a bulk should ultimately come down to your own estimation based on visual appearance in the mirror, in combination with how you look and feel at various levels of leanness.

IDEAL MEASUREMENT GOALS

We've now covered all of the guidelines needed to properly assess your bulking and cutting progress and to accurately adjust your plan over time for consistent long term results. Tracking your changes in body weight, strength, measurements, visual appearance, and (optionally) body fat percentage will ensure that you're achieving results to your full potential without leaving anything to chance.

There's one very important thing to keep in mind though as you begin concretely monitoring your stats on paper, which is that all forms of physique measurement are relative only to each individual trainee. In other words, there is no such thing as one set of "ideal numbers" to aim for that should be applied across the board to everyone.

We touched on this briefly in chapter two, but always remember that different body weights and muscle measurements can appear very differently from person to person depending on a wide variety of factors such as height, limb length, muscle shape and bone structure. For that reason, the progress tracking methods previously outlined should only be used as a way of monitoring your own individual body composition improvements rather than using them as a tool for comparing yourself to others.

For example, a smaller framed 5'6 individual could very well appear just as strong and muscular at a body weight of 170 pounds in comparison to someone at 6'4 who is 50 pounds heavier. Overall muscularity is a highly subjective visual thing rather than being based on any particular number on the scale, and the "ideal bodyweight" for you will be specific to your own body structure only.

Another significant contributing factor when it comes to body weight and measurement comparisons between any two people is their differences in body fat levels. Despite being objectively "smaller", leaner individuals will usually appear bigger and more muscular when shirtless or in a tank top since the added definition will create the illusion of more size. On the flip side, someone who chooses to remain at a more moderate body fat level will lose that definition when shirtless but will appear fuller and more muscular when clothed.

It would make no sense, then, for a trainee at a body fat of 10% to be comparing their arm size to someone at 15%. The individual at 10% may have an upper arm that is a full inch or more smaller, yet still appear just as big (or bigger) due to the added definition. Even if he does appear smaller, this isn't necessarily a negative thing anyway since it really just depends on what type of look that specific person is going for. Some are wanting to achieve a leaner and more "aesthetic" looking physique, while others would rather go for a fuller and thicker type of appearance at the expense of added body fat. Neither look is "better" or "worse"; it's just a matter of preference as to what type of body you aspire to and what you feel suits you best.

On top of all of this, also keep in mind that different body fat percentages can appear differently between any two individuals depending on factors such as their levels of muscle

mass, body fat distribution, water retention and vascularity. One person might look very lean and dry at 12% body fat, while another at that same level might not look nearly as defined.

The key takeaway from all of this is that the appearance of overall muscularity and leanness ultimately comes down to how you look in the mirror based on your own personal goals, rather than being based on any one set of concrete numbers. 150 pounds of body weight versus 170 pounds or 190 pounds could all produce the same type of look depending on one's individual body structure, as could 12% body fat versus 15% or 15 inch arms versus 17 inches.

Not only is getting overly hung up on your precise measurements unnecessary, but it can even have a direct counterproductive effect if you start "chasing" certain numbers simply because they happen to look impressive on paper. For example, weighing 200 pounds with 17 inch arms might sound like a great achievement for a natural bodybuilder, but the reality is that not everyone will be able to reach those numbers while staying relatively lean at the same time.

A larger framed 6'3 individual may be able to achieve those stats and remain in the 12-14% body fat range since they have more total size to work with, whereas someone at 5'9 might need to climb up to as high as 18-20% body fat or more in order to carry that much total mass. If the latter individual attempts to achieve those numbers despite the fact that their specific body structure doesn't really allow for it, they'll likely end up going way overboard on total calories trying to get there and ultimately produce a physique that doesn't fall in line with how they truly want to look.

This same idea could be applied to body fat percentages as well. For example, if for some reason you've become fixated on the idea of reaching 8% body fat, it may push you to excessively restrict calories and lean down to an unnecessarily low level even if 10% or 12% has already produced a physique you would have otherwise been satisfied with.

Getting too caught up in the "comparison game" as you scroll through your YouTube or Instagram feed can also throw you off mentally, especially if you're trying to stack yourself up against others who haven't taken their measurements accurately or are simply exaggerating them for the purposes of self promotion. Your favorite YouTuber might claim to have "18 inch arms" or be sitting at 7% body fat, when in reality their true measurements may actually be nowhere near those figures. This is an extremely common thing nowadays, so it's usually best to take any reported measurements online with a grain of salt rather than just taking them at face value.

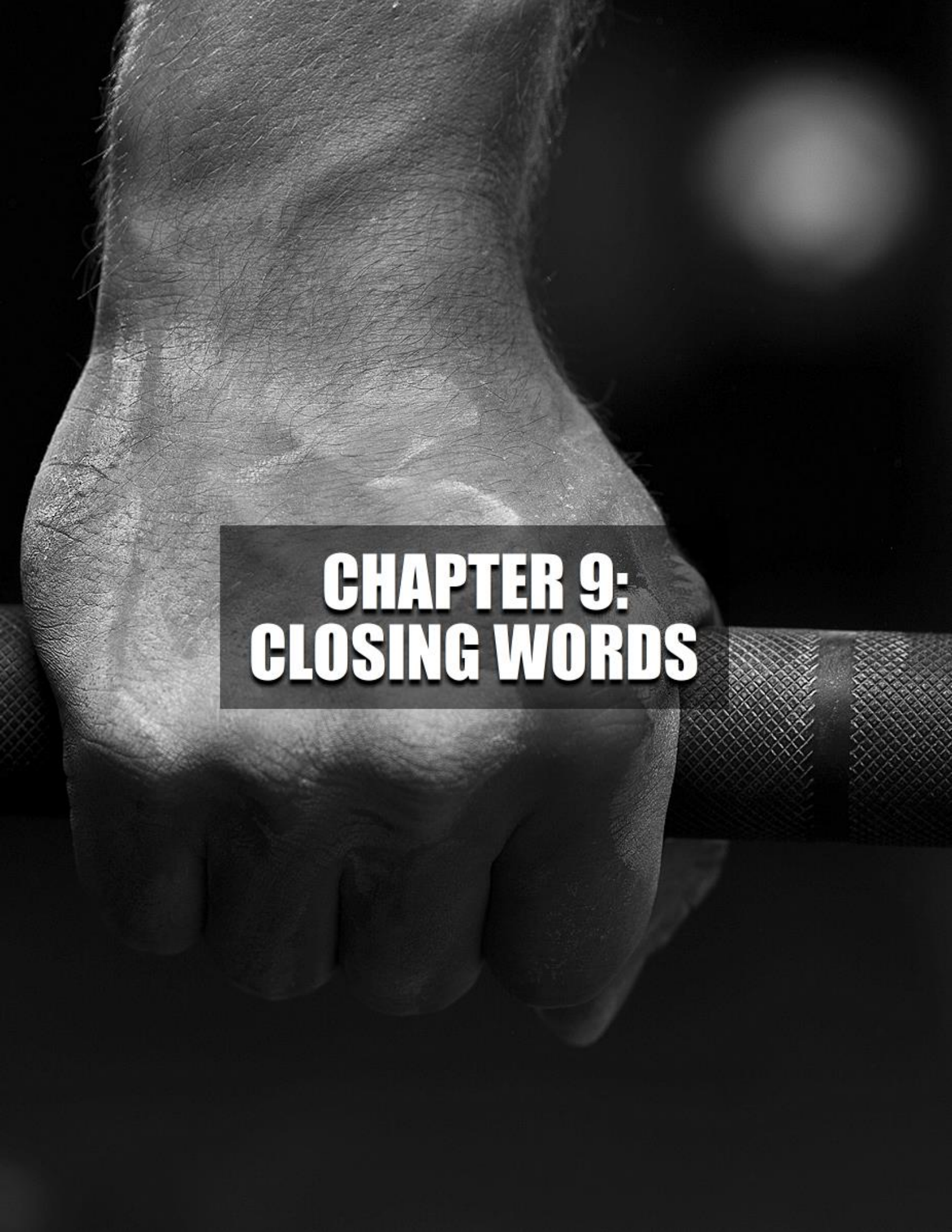
Let's also not forget the fact that most of the fitness images seen on social media platforms are usually fully "optimized" and don't necessarily represent how that individual looks on a normal day to day basis anyway. Pictures are typically taken under the most favorable lighting (this makes a huge difference in accentuating muscle definition) in a "pumped" state, along with using the very best poses and angles, showcasing only the very best photo among many that were taken. For these reasons, it's better to think of these photos as simply being a "highlight reel" rather than something you should be expected to live up to all the time in the real world.

Many photos are enhanced even further through the use of filters and other editing tricks, while some are even blatantly photoshopped to increase the size of certain muscles or decrease waist size. If that wasn't enough, many of the online fitness figures who claim to be "100% natural" are not being fully transparent in that department either, giving them a significant muscle building and fat burning advantage as a result of certain substances they may be using.

Social media platforms can be a great source of informative content and motivation when used consciously and in moderation, but using them as a way of comparing yourself to others will usually work against you in the long run for the reasons given above.

The only situation where these sorts of "measurement comparisons" would be useful is if you're looking at an individual at roughly the same height, body structure and body fat percentage as yourself, and who is using photos that clearly display their physique without excessive "enhancement" involved. In that case, you could use their stats (assuming those stats are accurate) to get an approximate idea as to what you'd need to aim for to achieve a similar look.

Beyond that, it's best to just focus on your own goals and work on achieving progress relative to your own body weight, measurements, body fat and desired physique. The scale, measuring tape and camera are a great way to monitor your fitness program from week to week and maximize your rate of progress, but in terms of objectively comparing your physique to those around you, they generally come up short in that area and should be used cautiously for that purpose.



CHAPTER 9: CLOSING WORDS

CLOSING WORDS

Congratulations on making your way through the complete Body Transformation Blueprint manual. The fact that you've read through this entire guide from start to finish shows firsthand that taking control of your body and health is something you're truly serious about and highly motivated to achieve.

You're now fully equipped with all of the tools and information you need to turn your fitness goals into a reality in the most effective, efficient and sustainable way possible. You've learned exactly what to do (and what not to do) in the areas of training, nutrition, supplementation and all of the smaller details in between, as well as how to correctly track your progress and adjust your approach over time for consistent long term results.

All that's left now is to take everything covered in the previous chapters and translate it into real life action both in and out of the gym. After all, knowledge on its own is just one piece of the equation; it's what you do with it that truly matters.

This might seem obvious, yet is something so many muscle building and fat burning hopefuls ultimately fail to follow through on. Perhaps they feel an initial burst of motivation only to have it quickly fizzle out the moment things become challenging and a particular obstacle is encountered, or they never truly get started at all, constantly jumping from one book and program to the next, always searching for the "next big thing" without ever committing to a structured routine for any real length of time.

What they unfortunately fail to realize (or simply don't want to accept) is that there is no "next big thing" when it comes to achieving a great physique. There is no top secret workout routine, revolutionary diet plan or miracle pill waiting just around the corner that will somehow create a "fast-track" to the lean, strong and muscular body they're after. Hard and focused training in the gym, proper nutritional habits and intelligent supplementation is the only true way to get there, carried out patiently and consistently from week to week, month to month and year to year. In the end, it simply comes down to putting in the work and applying the principles covered throughout this guide over the long term.

If there does exist any such thing as a legitimate muscle building and fat burning "breakthrough", it is found only in your commitment to this process. It's when you finally put all of the lingering self doubt, excuses and procrastination aside, fully accept the work that lies ahead, and decide once and for all that no matter what your current situation is or how much time and effort may be involved, that you *will* do what is necessary to achieve your goal regardless of what it takes. No more second guessing or committing half way – this is about going all in and making it happen, period.

If you're still a complete beginner who will be starting at this from the ground up – or if you've tried to build muscle or lose fat in the past but eventually fell off track and quit – then implementing all of the steps needed to achieve a significant physique transformation may seem like a daunting task right now. However, keep in mind once again that it's always the beginning stage of a fitness program that is the most challenging aspect by far. Adopting

brand new daily habits from scratch does require discipline and willpower to carry out, but maintaining those habits once they're already in place is a far easier task. Intense training in the gym, accurate calorie/macro tracking and consistent supplementation (along with all of the smaller details needed to keep your program running smoothly) will probably feel a bit unnatural and tough to keep up with at first, but all of these things will quickly transform into a mostly automated routine if you just stick with them for a few weeks and months.

Nobody starts out with their fitness program feeling completely confident and comfortable with everything involved, and it's important to keep in mind that even the most advanced and in-shape lifters you see at the gym all went through this same initial learning curve as well. It's easy to look at the finished product and assume that every "fit person" whose physique you aspire to is in some unique and unattainable class of their own, but they're ultimately no different from you and once began as a complete novice as well. They simply had a goal, followed a process, and obtained a result. Follow that same process, and you'll obtain the same result. Building muscle and losing fat is a step by step science that can be replicated by anyone willing to put in the effort, and given enough time, patience and persistence, achieving your goal physique is a virtual guarantee as long as you're willing to stay the course.

This certainly doesn't mean that it will be smooth-sailing all the way through, however. It's essential to recognize up front that your fitness success will not unfold in a linear fashion and will be filled with a variety of ups and downs, victories and setbacks along the way. You'll have good workouts and bad ones, consistent periods of flawless nutrition followed by periods where you fall off track, motivational highs and lows, and most likely an injury or two at certain points that will have to be dealt with. This is simply the nature of the game for anyone who decides to undertake it, and it's critical to accept this right from the start so that you don't become discouraged when those roadblocks do pop up throughout your journey. Many trainees make the mistake of viewing these occurrences as "failures", when in reality they're just an inevitable part of the one single path toward your goal. Consistency is obviously critical to your long term success, but it's best viewed from a bigger picture perspective with the understanding that you'll sometimes have to take one step backward in order to take two forward.

What really matters is that, regardless of the circumstances that may arise, you remember the commitment you made at the start, pick yourself back up, and continue taking right action regardless. Your emotional state will vary from day to day, week to week and month to month, but the basic steps that must be taken in order to achieve continual progress always remain constant. Getting to the gym and staying on point with your diet is easy when you're in a positive state, but what truly separates those who succeed from those who fail in the long run is how they conduct themselves when the "motivational high" just isn't there.

The plain fact is that the muscle building and fat burning process will not be enjoyable all of the time, and the majority of your results will simply be found in the routine, mundane day to day tasks. It won't be what you see in that hyped up, flashy motivational video packed with dramatic training footage, background music and inspirational quotes. It will be a matter of waking up each day and going through the basic motions, ticking off all of the

small training and nutrition check boxes along the way, one exercise and one meal at a time. It's not about hitting huge homeruns out of the park, but rather about aiming for consistent singles and then patiently allowing them to add up over time. Sometimes you'll be motivated and excited to put in the work – other times it will be the last thing you'll feel like doing – but the bottom line is that you just get it done regardless.

Yes, in some instances it will be appropriate to take time off from your regular training and diet, such as in the case of an illness, injury, unexpected life event or to simply give yourself a break every now and then. However, these situations should be fairly infrequent overall, and more often than not, the various excuses your mind may come up with to skip the gym or deviate from your eating plan are exactly that: excuses. The natural inclination will always be to seek comfort and take the path of least resistance, and it's critical that you learn to recognize this and rise above it for the sake of your greater goal. We all have days where we feel tired, strapped for time or not in the mood, but these are rarely valid justifications for avoiding the work that needs to be completed. If it's truly important to you, you'll find a way.

On those days when the temptation to veer off course does feel particularly strong and you'd like nothing more than to stay home and relax rather than hit the weights, the best course of action is usually quite straightforward: go and do it anyway. This may sound like overly simplistic advice, but one critical understanding you'll gain as you accumulate more experience is the fact that action is not merely the result of motivation – it's also the cause of it. In other words, if you feel completely unmotivated to train but begin taking action in spite of how you feel, the simple act of getting into the gym and beginning your session will often be the very catalyst that causes you to feel increasingly motivated. This then feeds back on itself as more motivation inspires further action, further action inspires more motivation, and before you know it, you're fully "in the zone", absorbed in the workout, and thanking yourself later on for having completed it.

Always remember that the state of mind you feel in the hours leading up to the gym is not the same state of mind you'll be in once you actually get there. Rather, all of the small actions you take leading up to your workout, during your warmup and through the first set or two of your session will gradually "shift" your state of mind in a positive direction, so that when it comes time to perform the bulk of the truly challenging work, you'll already be in that motivated state you were originally searching for. Most of the time, it's the *anticipation* of discomfort that is the real obstacle rather than the actual discomfort itself. Each workout is ultimately broken down into individual exercises, individual sets and individual reps, and the reality is that all you ever need to deal with is one single rep at a time.

This same mindset can be applied on the nutritional side of things as well. There's no need to overwhelm yourself by worrying in advance about all of the specific foods, calories and macros that will need to be consumed for the entire week, month and year – muscle building and fat burning nutrition ultimately takes place on a day by day and meal by meal basis, and all you really need to do is focus on eating well for the current moment, allowing the natural momentum of successive periods of proper nutrition to carry you forward over the longer term.

In the end, despite any potential challenges that may arise as you press forward throughout your fitness journey, you'll undoubtedly discover that the results are well worth the effort. Not only in terms of achieving your external goal of a lean, strong and muscular physique, but also in terms of directly enjoying the process itself. Training and nutrition should not be viewed as being merely a means to an end; there are profound benefits to be found in them for exactly what they are. The natural high produced from a hard-fought workout in the gym, the physical and mental well-being that comes from consuming a healthy and nutritious diet, the pride and satisfaction of watching your body (and mind) transform as a result of your own dedication and perseverance – all of these things can be embraced and appreciated in the moment regardless of whatever aesthetic results they happen to produce.

Adopting the "fitness lifestyle" is about far more than just building muscle and burning fat; it's something that improves you for the better both inside and out and has a permeating effect on all other areas. Once you truly dedicate yourself to this for the long term and ultimately succeed in reaching your health and physique goals, you'll see that this same process can be used as a stepping stone and applied to all aspects of life.

So, what are you waiting for?

All of the knowledge and power needed to make this change is right there inside of you just waiting to be put to use, and there is no better time to start than now. The path to the brand new body and life you've been envisioning has been clearly laid out step by step – all you have to do now is take the first one.

It doesn't matter how much fat you have to lose, how much muscle you're wanting to build, or how much progress you're looking to achieve when it comes to improving your overall health and fitness, because where you start out is irrelevant. It's where you *finish* that truly counts, and once you embark on this journey and watch the results gradually unfold, you'll soon begin to realize that you're capable of far more than you had previously imagined.

I sincerely thank you for placing your trust in The Body Transformation Blueprint, and I look forward to hearing about your success.

RESOURCES

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