MUSCLE MASTERY PRO

Transform Your Body – Build Strength, Unleash Growth!

Suitable for:

- **All Fitness Levels**

Table of Content

- Introduction
- Chapter – 1 Muscles and Strength Building – An Overview.
  - "Muscles" – Introduction and Types
  - The Physiology behind the Growth of Muscle Mass.
  - What is "Strength Building"?
  - "Muscle building" and "Strength Building" – The Correlation.
- Chapter – 2 Muscle Building for Beginners – Basic Training Program.
  - How to start Bodybuilding?
  - The Jargon of Bodybuilding.
  - Basic Training Program to Gain Muscle.
- Chapter – 3 Strength Building for Beginners – Basic Training Program.
  - What is strength training?
  - Strength Training - Basic Program for Beginners.
  - Essential Strength Training Tips for Beginners.
  - Why are you not getting stronger?
- Chapter – 4 Nutrition for Maximizing Strength and Muscle Mass.
  - Carbohydrates for getting bulkier and stronger.
  - Role of fats in muscle and strength gaining.
  - When and how much to eat?
  - Common Nutritional Tips for Effective Muscle and Strength building.
- Chapter – 5 Best Upper Body Workouts.
  - How does the upper body workout program work?
  - Best Warm-up Exercises before starting a workout program.
  - Best Upper Body Workout Exercises.
- Chapter – 6 Best Lower Body Workouts.
  - The Simple Science of Effective Lower Body Training.
  - Best Warm-up Exercises to do before starting Lower Body Workouts.
  - Best Lower Body Workouts.

- **Chapter – 7 Muscle Soreness, Tissue Damage, and Recovery.**
  - What is Muscle Soreness and its causes?
  - What Can Cause Tissue Damage?
  - How muscle heal and recover from injury?
  - How Muscle Damage Maximizes Bodybuilding Progress?
- **Chapter – 8 Body Building Tactics for Women.**
  - How to start bodybuilding for women.
  - Best Body Toning exercises for women.
  - Muscle Building Diet Chart for Women.
  - Top Mistakes to avoid when you opt for Body Building.
- **Chapter – 9 Role of Protein in Muscle Growth.**
  - What is protein and its importance?
  - Why do you need protein to build muscle?
  - How Much Protein Do You Need?
  - When should you take Protein?
- **Chapter – 10 Role of Steroids in Muscle Building.**
  - What are Steroids and how do they work?
  - How Effective Are Steroids?
  - What are the positive effects of steroids?
  - What are the negative effects of steroids?
- **Chapter – 11 The Truth About Supplements.**
  - Bodybuilders' supplements.
  - Do bodybuilding supplements really work?
  - The efficiency of Whey Protein as Body Building Supplement.
  - Pros and Cons of Supplements.
- **Chapter – 12 Tips for Accelerating Muscle and Strength Development.**
  - Workout Tips for Optimizing Muscles and Strength Gain.
  - Nutritional Tips for Enhancing Muscle Mass and Strength.
  - Lifestyle changes for Improvising Strength and muscle mass.
- **Chapter – 13 Weight Training Home Gears.**

- Set up your home gym with these basic pieces.

- **Chapter – 14 Do's and Don'ts of Muscles and Strength Building.**
  - Dos of Bodybuilding.
  - Don'ts of Bodybuilding.

- **Chapter – 15 Experts' Recommendations for Boosting Strength and Muscle Mass**
  - Experts' Muscle Building Tips on Training.
  - Experts' Muscle Building Tips on Nutrition.
  - Experts' Muscle Building Tips on Lifestyle.
  - Experts' Tips That Combine Lifestyle, Nutrition, & Training.

- **Conclusion**

Introduction

Bodybuilding is probably the healthiest activity that any individual can perform.

Among many things that people want in their life, building muscles and gaining strength is on the top. Gaining muscles is not just an indicator of strength but also an overall fitness of the body.

You most likely don't want to be all show and no go. You're looking to get stronger and build a better-looking body that can also get things done. Achieving that requires a comprehensive mixture of both muscles- and performance-based training. That's what separates this book from the rest: It gives you the best of both worlds, whereas most books on building muscle are essentially bodybuilding books that neglect the performance and conditioning components.

The training strategies, workout routines, and nutritional tips will challenge you on multiple levels so you will build the physique you're after while improving your overall athleticism. So, not only will you look better, but you can also be better at every athletic pursuit in your sight.

It won't be easy. Hard work and consistency are what you need for growth and improvement. Whatever the methods employed, there can't be a shortcut in their approach to gain muscles. It is an exercise that requires time and patience on your part.

You cannot gain the muscles all of a sudden. All said and done, there are few tricks or secrets that can surely make your task that much easier. These secrets have been widely accepted by many fitness experts world over and can be tried out by anyone.

This book will help you get the muscle—and far more. The training concepts and workout programs along with nutritional tips will improve your athletic performance and boost your conditioning while you pack on muscle and enhance your strength.

The information in this book is intended for both the beginners and experienced fitness seeker and will safely guide him or her to the intermediate and early advanced stages of development.

Keep in mind that it is not important to gain muscles and strength but also to retain them as long as possible. After following a number of methods to reach there, it becomes all the more important to keep repeating the methods at optimum levels.

We hope that you enjoy the journey as much as the destination.

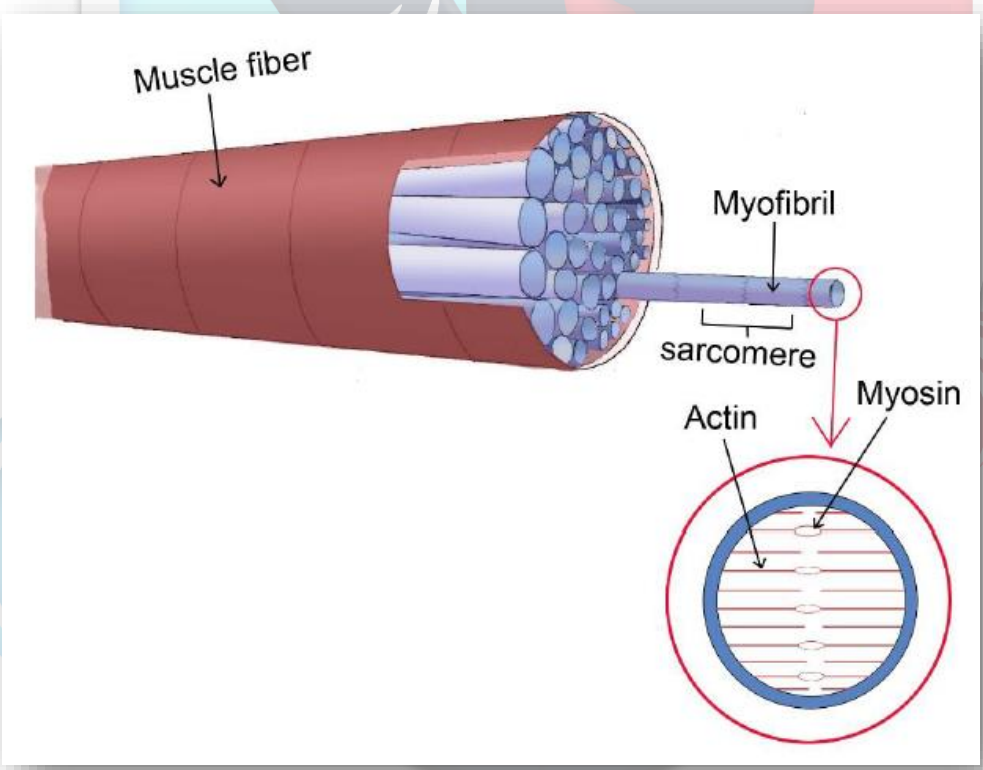
Chapter 1

MUSCLES & STRENGTH BUILDING – AN OVERVIEW

Building and maintaining muscle mass is an important component of a well-rounded fitness program. Some people, however, tend to avoid this aspect of fitness because they are afraid that extensive technical knowledge is required to understand how to build muscle and strength. These fears are groundless and unnecessary. But before we dive in deep, let's start with the basics…

1.1 "Muscles" – Introduction and Types:

Muscle is a soft tissue found in most animals. Muscle cells contain protein filaments of actin and myosin that slide past one another, producing a contraction that changes both the length and the shape of the cell. Muscles function to produce force and motion. They are primarily responsible for maintaining and changing posture, locomotion, as well as the movement of internal organs, such as the contraction of the heart and the movement of food through the digestive system via peristalsis.



The human body has three types of muscle tissue-

- skeletal
- cardiac
- smooth

They differ from one another in their microscopic anatomy, location, and control by the nervous and endocrine (hormonal) systems.

Cardiac muscle tissue forms most of the heart.

Smooth muscle tissue is located for the most part in the abdomen around and in most of the organs.

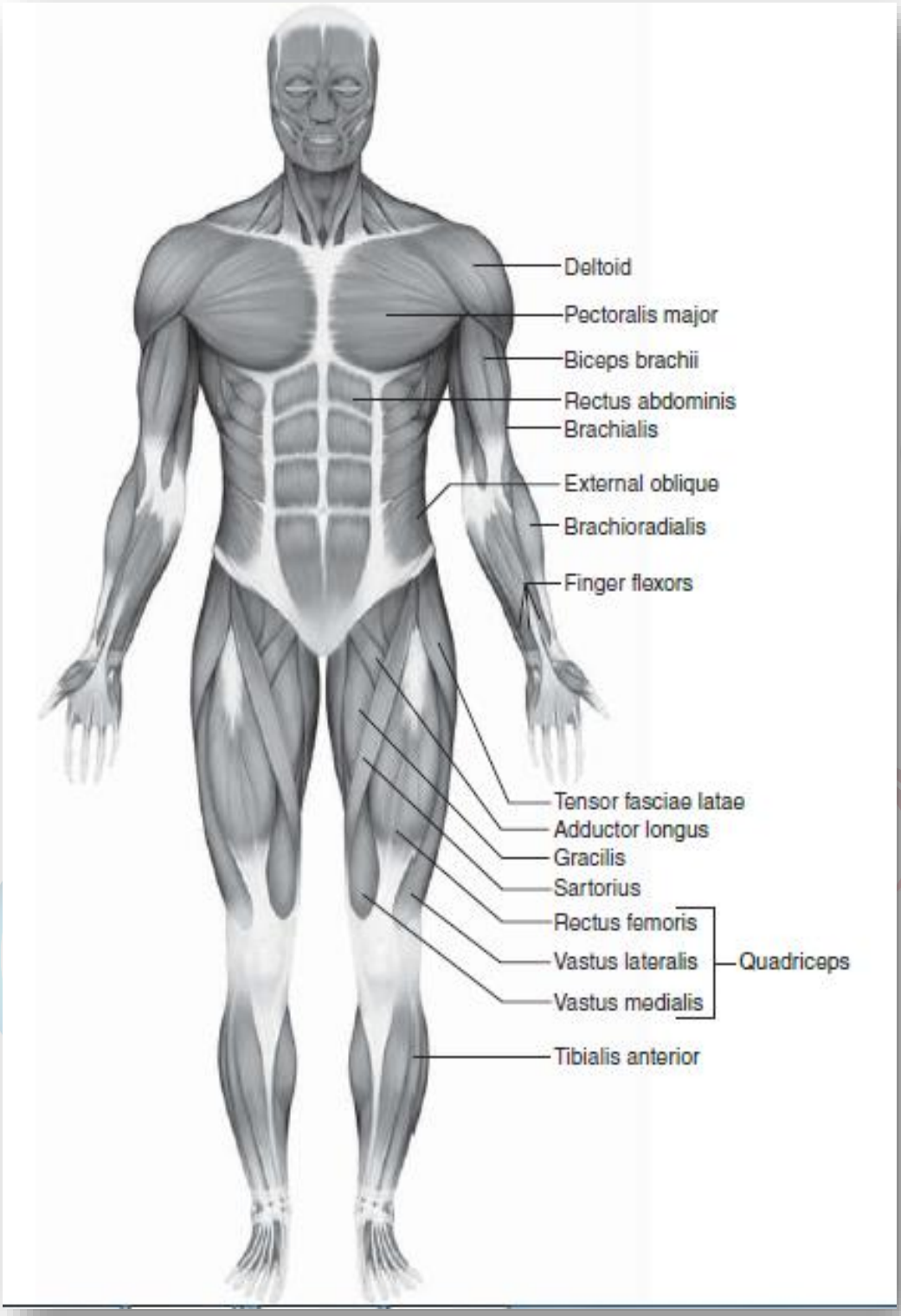
Skeletal muscle is quite different; it can be made to relax and contract voluntarily and is therefore under our control. It is known as voluntary as opposed to involuntary muscle. Skeletal muscle is so named because it is attached primarily to bones and therefore contraction of various muscle groups enables us to move about voluntarily.

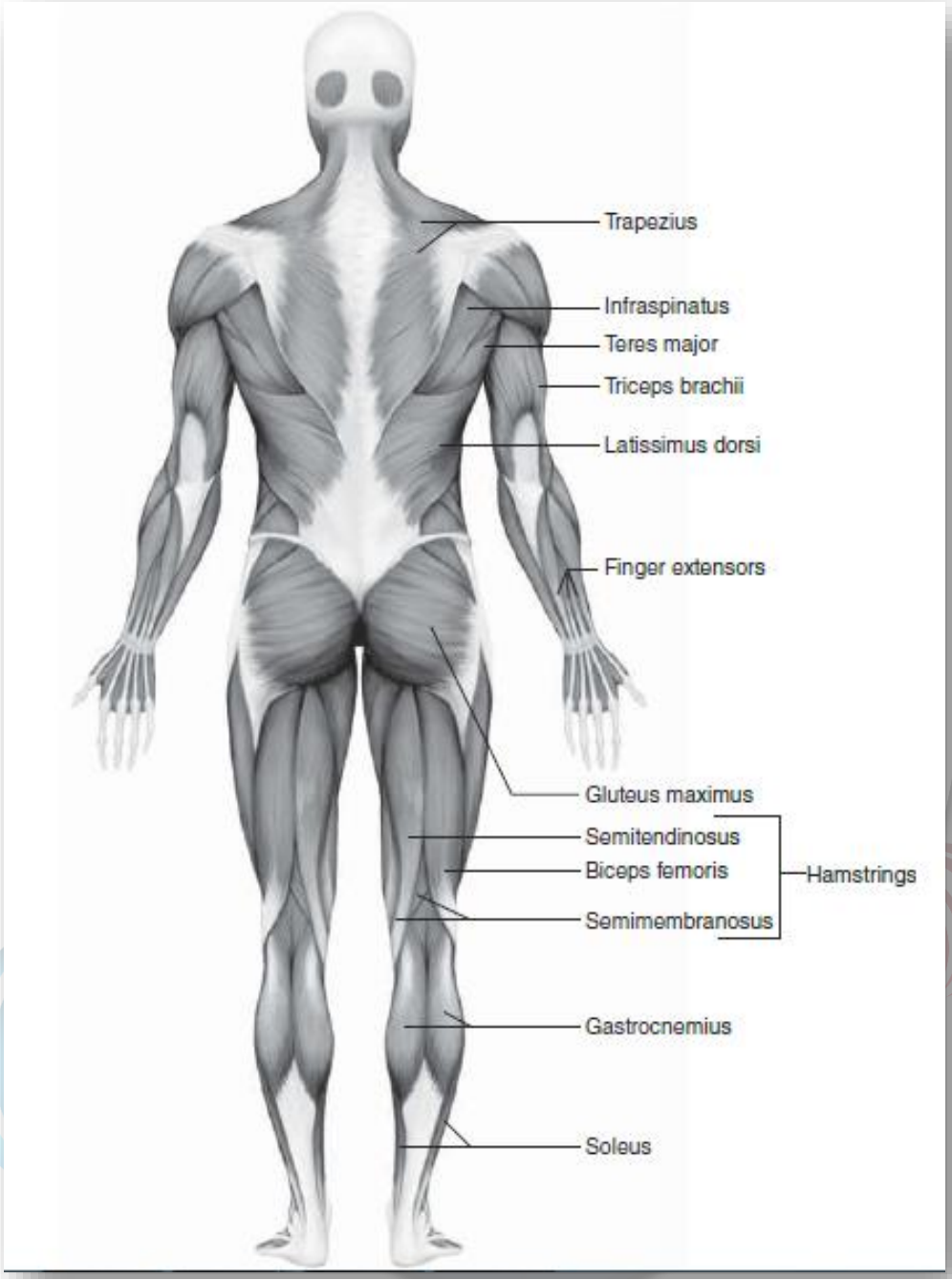
1.2 Diagrammatic Representation of Major Skeletal Muscles:

The muscles that move the human skeleton vary greatly in shape and size and extend to every part of our bodies. The muscular system contains over 600 skeletal muscles alone, which make up about 40% of our mass. Blood vessels and nerves run to every muscle, helping control and regulate each muscle's function.

Muscles are always attached at two or more places. When the muscle contracts, the attachment points are pulled closer together; when it relaxes, the attachment points move apart.

Muscles contract and relax to move bones. Muscles contract when messages travel from nerves to muscles and trigger chemical reactions. These reactions change the internal structures of muscle fiber cells, a process that shortens the muscle. The muscle fibers relax when the nervous system signal is no longer present, thus reversing the shortening.


Deltoid
Pectoralis major
Biceps brachii
Rectus abdominis
Brachialis
External oblique
Brachioradialis
Finger flexors
Tensor fasciae latae
Adductor longus
Gracilis
Sartorius
Rectus femoris
Vastus lateralis
Vastus medialis
Quadriceps
Tibialis anterior



1.3 The Physiology behind the Growth of Muscle Mass.

After you work out, your body repairs or replaces damaged muscle fibers through a cellular process where it fuses muscle fibers together to form new muscle protein strands or myofibrils.

These repaired myofibrils increase in thickness and number to create muscle hypertrophy (growth). Muscle grows whenever the rate of muscle protein synthesis is greater than the rate of muscle protein breakdown. This adaption, however, does not happen while you actually lift the weights. Instead, it occurs while you rest.

When weightlifters engage in intense exercises using heavy weight they actually cause microscopic damage to the muscle fibers themselves. They "tear" the fibers.

This initially results in some necrosis of the damaged muscle fibers and initiation of an inflammatory response in the area. Inflammation causes an increased blood supply to the damaged area which brings with it a host of substances that play an integral role in repair and actual growth.

In an attempt to repair or replace the damaged fibers the body responds by activating "satellite cells". These are cells on the outside of the injured muscle fiber. Each satellite cell has one nucleus and has the ability to replicate by dividing. These cells, which are similar to stem cells, subsequently mature into normal muscle cells.

They then fuse to each other and to the existing muscle fibers to form new muscle strands called myofibrils. The muscles thus increase in size as more fibers are created.

It is this activation of the satellite cells that mature into muscle fibers that makes muscles grow in size.

Activating these satellite cells may be the difference between what allows certain "genetic freaks" to grow massive muscles and what makes other people "hard-gainers."

Therefore, the more you can activate these satellite cells, the more you'll be able to grow.

1.4 What is "Strength Building"?

Strength building as the name suggests it is the process of enhancing overall body strength. It can be achieved by strength training just like muscle building.

Strength training is a type of physical exercise specializing in the use of resistance to induce muscular contraction which builds the strength, anaerobic endurance, and size of skeletal muscles.

In simple words, a method of improving muscular strength by gradually increasing the ability to resist force through the use of free weights, machines, or the person's own body weight. Strength training sessions are designed to impose increasingly greater resistance, which in turn stimulates the development of muscle strength to meet the added demand.

When properly performed, strength training can provide significant functional benefits and improvement in overall health and well-being including:

- Increased bone, muscle, tendon, and ligament strength, and toughness,
- Improved joint function,
- Reduced potential for injury
- Increased bone density,
- Increased metabolism,
- Increased fitness
- And improved cardiac function.

Training commonly uses the technique of progressively increasing the force output of the muscle through incremental weight increases and uses a variety of exercises and types of equipment to target specific muscle groups.

Strength training is primarily an anaerobic activity, although some proponents have adapted it to provide the benefits of aerobic exercise through circuit training.

1.5 "Muscle building" and "Strength Building" – The Correlation.

Muscle building is absolutely related to resistive exercise such as lifting weights.

Public and private gyms are more popular than ever. The reason is that significant numbers of the population have realized the physical and emotional benefits of regular exercise in addition to muscles growth and strength improvement.

The Centers for Disease Control and Prevention recommends that all adults get at least 30 minutes of moderate exercise five days a week. Although pumping iron is critical for muscle growth, studies have shown that even a consistent commitment to walking is associated with a decreased risk of mortality and decreased lifetime medical expenditures.

In addition to building skeletal muscle, the benefits of regular exercise include:

- Improved cardiovascular health
- Improved cholesterol profile
- Decreased chance of developing diabetes
- Weight control,
- Decreased incidence of some cancers and
- A better mental outlook on life which translates into an improved ability to deal with adversity

Although exercise has its own benefits, here we are talking about is 'muscles and strength building'. As said there are different types of muscles but we will talk

exclusively about skeletal muscles. Skeletal muscle is composed of thread-like myofibrils and sarcomeres that form a muscle fiber and are the basic units of contraction.

There are 650 skeletal muscles in the human body contract when they receive signals from motor neurons, which are triggered by a part of the cell called the sarcoplasmic reticulum. Motor neurons tell your muscles to contract and the better you become at having those signals tell your muscles to contract, the stronger you can get (strength magnification).

When someone like a power-lifter is able to lift very heavy weight despite not looking very muscular, it's due to their ability to activate those motor neurons and contract their muscles better.

This is why some power-lifters can be relatively smaller compared to bodybuilders but can lift significantly more weight. Motor Unit recruitment also helps to explain why, after practice, certain movements become easier to perform and most of the initial strength gains will be when you first start to lift weights.

Muscle growth tends to occur more steadily after this initial period of strength gain because you are more easily able to activate the muscles.

1.6 What Is Muscular Strength?

You might think that muscular strength is simply how strong you are. For example, how much you weight you can carry, how many pounds you can lift at the gym or how many push-ups you can do during a workout. But a true muscular strength definition is a little bit more complicated than that.

According to the American Council on Exercise (ACE), muscular strength is the maximal force a muscle or muscle group can exert during a contraction. Muscular strength is usually measured with a one-rep maximum (1-RM) test. During a 1-RM, an exerciser performs one repetition of a single exercise to see how much weight he or she can lift.

But there are other factors that affect how strong you are and how much strength you have to complete daily chores or exercises.

ACE provides definitions for these terms that are related to muscular strength:

- **Muscular endurance.** The ability of your muscles to exert force against resistance over a sustained period of time.
- **Muscular power**. The combination of muscular force and the speed of movement

For example, the number of push-ups you can do in one minute depends in part on your muscular strength but also on your muscular power and muscular endurance.

1.7 How is Muscular Strength Tested and Measured?

Repetition maximum testing is the standard for measuring muscle strength. It is abbreviated as 1RM. To do a repetition maximum test, Kramer and Fry (1995) established a protocol that is widely used. The bench press and the leg press are most often tested for determining upper body and lower body muscular strength. You can check your performance against bench press standards compiled by Dr. Lon Kilgore.

To do a 1RM test, you would warm up with a weight you estimate to be about half of the maximum you could lift in the exercise, for 5 to 10 repetitions.

Then you take a brief rest and add weight to bring it up to a load you can lift three to five times, at about 75% of maximum.

Now you add a small amount of weight and lift it once. If you can lift that with good form, wait three to five minutes, add more weight and try again.

You repeat this sequence of adding weight, attempting the lift, and resting until you reach the maximum and you can't lift the next incremental weight with good form.

Strength measurement in physical therapy and rehabilitation uses a simpler method of opposing a pressure. It is used to grade whether a muscle is functioning normally or not.

The therapist can also use a dynamometer to measure the strength of a specific muscle.

1.7 Why Is Rapid Muscle Growth Unlikely?

Muscle hypertrophy takes time and is relatively slow for the majority of people. People will generally not see visible growth for several weeks or months as most initial changes are due to the ability of your nervous system to activate your muscles.

In addition to that, different people have different genetics, which ranges from the hormonal output, muscle fiber type, and number, along with satellite cell activation, that can all limit muscle growth.

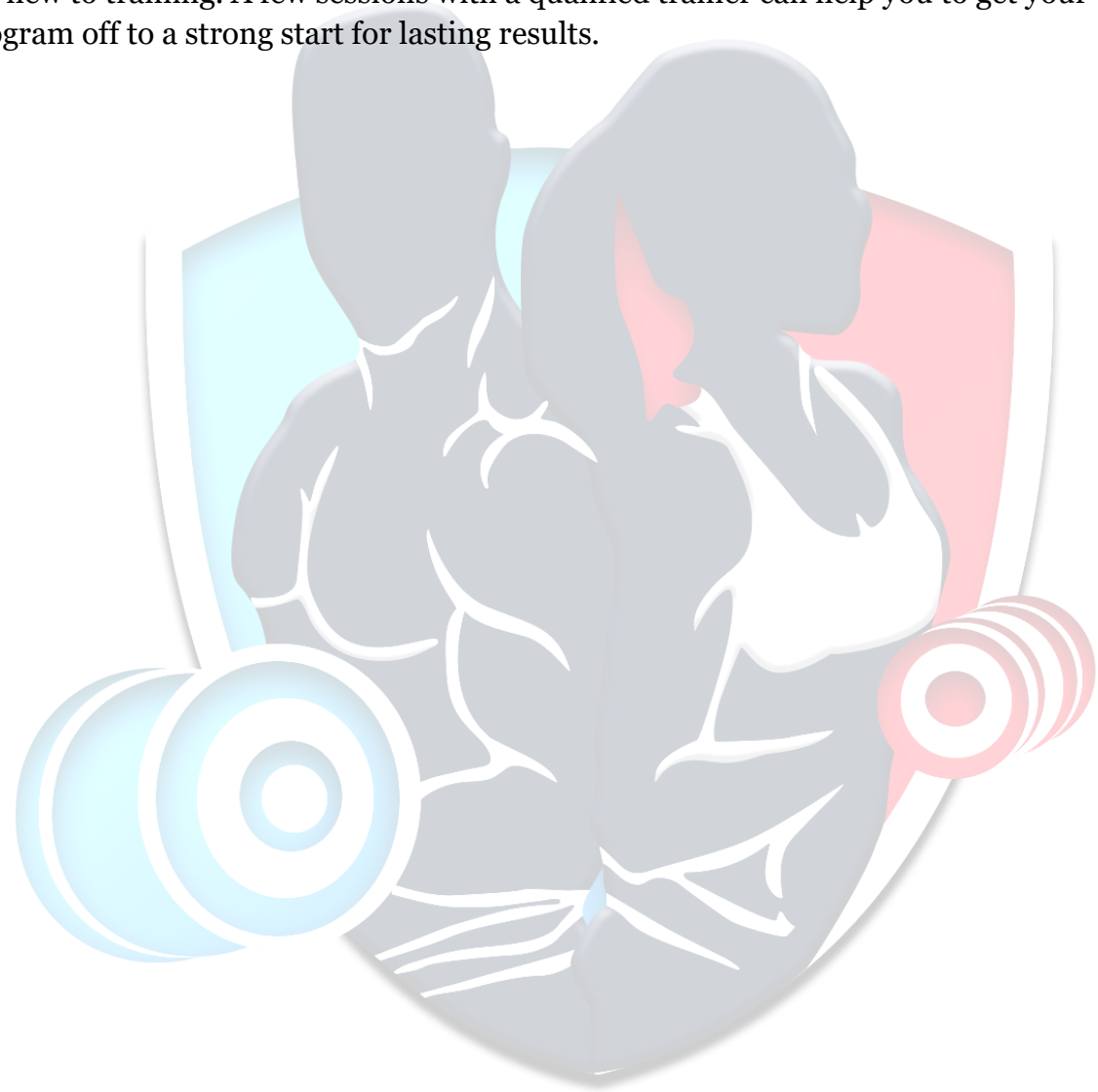
To ensure you're doing your best to grow muscle, muscle protein synthesis must exceed muscle protein breakdown. This requires that you take in an adequate source of protein (especially essential amino acids) and carbohydrates to help facilitate the cellular process of rebuilding broken down muscle tissue (we will discuss it in detail in upcoming chapters).

Visible muscle growth and evident physical changes in your body's muscle structure can be highly motivational which is why understanding the science behind how muscles actually grow is important.

Conclusion:

These are the basic factors for muscle growth and repair. Be patient, stay active, work hard, but don't overdo it and hurt yourself. If you do strength or resistance training 2-3 times per week, you build strong muscles to stand taller, burn more calories and improve the quality of your daily activities and movement.

Before you get started, talk to your healthcare provider to make sure there aren't restrictions or modifications that you should follow to stay safe. And ask for help if you are new to training. A few sessions with a qualified trainer can help you to get your program off to a strong start for lasting results.



Chapter 2

MUSCLE BUILDING FOR BEGINNERS – BASIC TRANING PROGRAM

There is no comparison. Today's top bodybuilders boast muscles that are far bigger, better defined, and more symmetrical than those of their counterparts just a few decades ago. In many ways, this is the golden age of bodybuilding.

Advances in training techniques and nutrition have made it possible for more people to achieve a rock-hard physique that once seemed out of reach. Granted, building a great body isn't simple. It still takes dedication, persistence, and patience, but today there's a roadmap—a set of proven training principles—to help you on your journey.

2.1 Who Is A Beginner?

A beginner is anyone with less than a year of serious training experience. Don't gloss over the 'serious' part. There are many people who have been going to gyms for years who are in fact still beginners because of their lack-luster approach. If there's a question of whether or not someone is a beginner, then they are in fact a beginner.

A beginner workout routine should be easy to follow, simple and practical. A Beginner is a blank canvas, so with the correct approach they can quickly establish good training habits, build a base of strength, and add real muscle mass.

Building your desired physique isn't all that complicated. But simple doesn't mean easy.

This is all too evident with the beginner. Many newbies want to skip over the time-tested trench training and go straight to advanced techniques, marathon workouts, and stockpile a king's collection of supplements.

But the opposite has never been truer. You can't carve a pebble; you need to build a foundation of granite before you get mucked up in all the details of advanced lifters.

As a beginner, you need a solid, basic workout program to help you build muscle.

2.2 How to start Bodybuilding?

When you begin weight lifting, you need to address two basic questions:

1. Where should I train?

2. Should I train alone or with a partner?

The beginning phase of bodybuilding is the most important one. If you start to train wrong way, without a proper knowledge you will fail or you'll be training for months without significant gains. If you'll do it right you'll be making progress for a really long time and you'll be very satisfied with results. It's not hard to find a workout on the internet, there are millions of them, but it's extremely difficult to find the right information about how to start.

You should not expect huge improvements overnight, but muscle mass will slowly grow over time. It's really important to have patience, to stick to your workouts and diet, and results will definitely show!

To make the whole process simpler here are the basic rules, that will build full-body strength, set fire to calories, and introduce you to all the tools you need to start bodybuilding from now on.

Rule 1 - Determine your goal:

Determine what your goal is. Anyone can start off in bodybuilding, but we all have different reasons. For example, "Markus Ruhl", "The German Giant", and "The bodybuilding freak", as his fans called him. Try to create reasonable goals.

Whatever the reason why you decide as a bodybuilding beginner to start (lose fat, gain weight, build muscle, become a fitness model, become a professional bodybuilder, or just get in shape) you have to determine your goal before you start your journey as a bodybuilding beginner, whether you are a female bodybuilder beginner or male beginner because it will be much easier for you to achieve it and maybe it inspires you to a higher goal.

You need goals. We all do. But when you're sore, hungry, and about to start a difficult workout, you'll especially need them—and you'll need them to be relevant to you.

And it is also recommended to write down your goals so that you have a clear vision of what you aspire and what you are doing to achieve it.

Rule 2 - Prepare yourself to start:

Now, here are the answers to the above two questions.

Ans.1 - Find a gym:

As a bodybuilding beginner you have to find a gym around your neighborhood and it will be much better if you can go to it by foot because it will help you to defeat all excuses about not going, and the Gym atmosphere is a very important key for your success because it helps you to concentrate more which means better results for you .

Ask yourself what is better for you. If you are a beginner female bodybuilder or a male beginner, train in a Gym full of big muscle bodybuilders or train in a Gym that has a personal trainer who will help you to achieve your goal.

Don't just say you're going to start going to the gym. It doesn't work. Make things more concrete by setting up as many nudges and reminders as possible to help keep you from

backing out. Your reward will be better health, feeling like a million bucks, and no longer fearing to take your clothes off with the lights on.

Ans.2 - Find a training partner:

Bodybuilding sport has a lot of challenges, not every bodybuilding beginner can deal with it , in fact 90% of the bodybuilding beginner didn't achieve their goals whatever it is to lose fat, build muscle, gain weight, become a fitness model, etc. because they didn't have the amount of support and motivation all bodybuilding beginners really need.

Only 10% can survive and achieve their goals. Imagine a beginner female bodybuilder; will she succeed if she trained without any help? Of course not, but not everyone can pay for this personal trainer quite so quickly. That's why the training partner is so important. Especially for bodybuilding beginners.

Take your friend who has the same goal to train with you or you can find a lot of training partners in the Gym. You choose what happens. The point is your training partner will give the support and motivation you need to achieve your goal.

Rule 3 - Get some help:

As a bodybuilding beginner, you have to look for help. Many gyms offer the services of a personal trainer who can access you and tell you your body type, what kind of food you have to eat and advise a training plan that will match your goals.

Also, you have to ask your doctor about your diet and tell him about the bodybuilding training program you will start to have all the benefits from both sides, especially for a beginner female bodybuilder, because she needs very special care.

Rule 4 - Get some knowledge:

One of the most important steps you have to take as a bodybuilding beginner is a knowledge.

Gather as much information as you can about a lot of topics which are very important and related to your goals such as nutrition and how it affect your progress, body types and what kind of nutrition suitable for you, bodybuilding supplements and how and when you can take some.

Find bodybuilding training program for you according to your goal, and your body type and as a beginner female bodybuilder or beginner's male bodybuilder.

Rule 5 – Target total body workouts:

Don't let that scare you. It simply means you need a workout plan that targets your biggest muscle group with the best exercises.

Why? Because of such exercises:

- Releases maximum amounts of anabolic hormones like growth hormone and testosterone
- Helps lift maximum weights and hence generate maximum tension {tension = muscle growth} and
- Creates an incredible amount of metabolic stress {stress = muscle growth}

Take care of these 3 things and your muscles will have no choice but to grow.

These are the basic rules that will help you getting started and staying motivated towards your goals.

2.3 The Jargon of Bodybuilding.

Bodybuilders are a genuine subculture of the population. Consequently, they often use an idiom that, to outsiders, can sound as foreign as Caesar's Latin. Terms such as reps, bi's, tri's, supersets, pre-exhaustion, forced reps, and negatives are common usage among devotees, but they can leave the initiate looking for the nearest encyclopedia! To help you get started let's define few of them:

- **Rep -** The contraction or extension of a given muscle group against resistance, typically performed from a starting position of full extension to a finishing position of full contraction, and subsequent return to the starting position. We call a series of such movements, naturally enough, repetitions— from which we get the singular form, rep.
- **Set -** A collection of repetitions (anywhere from one to one hundred or more). Generally, a brief rest of thirty to ninety seconds is taken at the end of a set in order to catch one's breath and provide time for the muscle group involved in the set to partially recuperate.
- **Curl -** Any movement that involves pulling the resistance in toward the body with either the arms or the legs.
- **Clean -** No, this doesn't have anything to do with personal hygiene. Rather, it is the lifting of the barbell or dumbbell from the floor to the chest in one quick motion.
- **Poundage -** The amount of weight or resistance that you will be using in your exercises.
- **Limit weight -** The heaviest amount of resistance that you can lift for one repetition.
- **Routine -** The sum total of reps, sets, and exercises in any given workout or training session.

2.4 Basic Training Program to Gain Muscle:

This program is perfect for those who do not usually practice fitness but want to increase muscle mass, slim people who want to gain some muscle, athletes needing more muscle mass or people who want to have a muscular body.

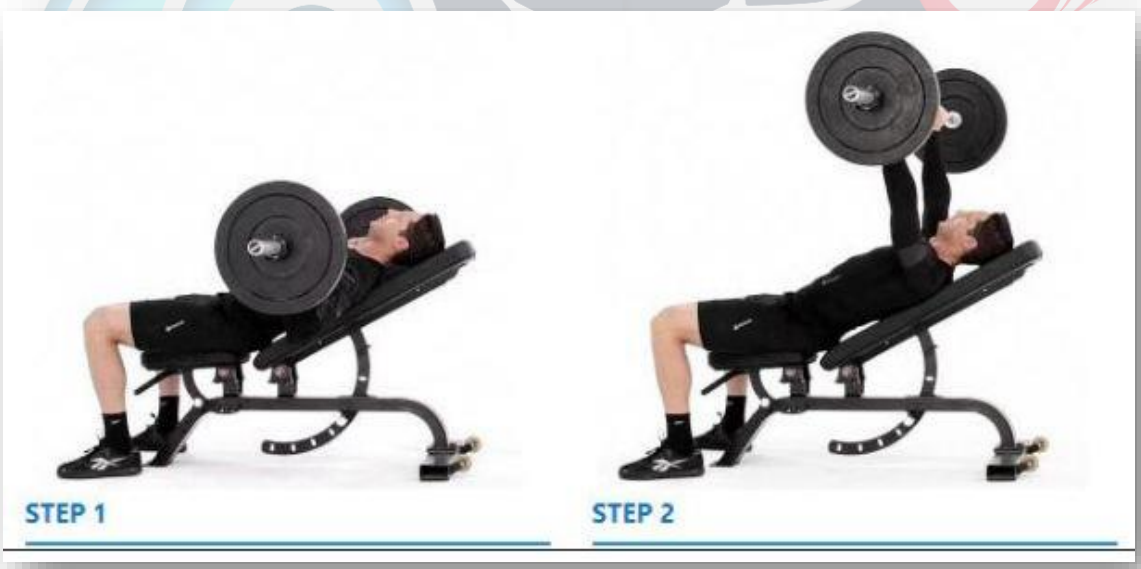
This is just an example and most prevalent training program, so feel free to make changes according to your convenience and let's not forget to get experts' advice for optimum results.

1. **Monday / Chest and Biceps**

- Start with a 5-10 minutes warm-up running on a treadmill or using a bicycle.
- Afterward, a warm-up for 5-20 minutes the muscle groups to be trained using little weight, until you can feel your muscles hot and ready for more weight.
- Stretch correctly before training.

First Chest Exercise – Incline Bench Press: Sets 3, Reps 12, Rest 2Min.

- Lie down on an incline bench. Gripping the bar with a medium-width grip, lift the bar off the rack.
- Hold it straight over your head, keeping your arms locked. This is the starting position for the exercise.
- Inhaling slowly, move the bar down toward your upper chest.
- After a slight pause, push the bar back to the starting position. Exhale while doing so. Arms should be locked. Squeeze your chest and hold for a second before bringing the bar down again.
- Repeat the process for the desired number of repetitions.



Second Chest Exercise – Peck Deck: Sets 3, Reps 12, Rest 2Min.

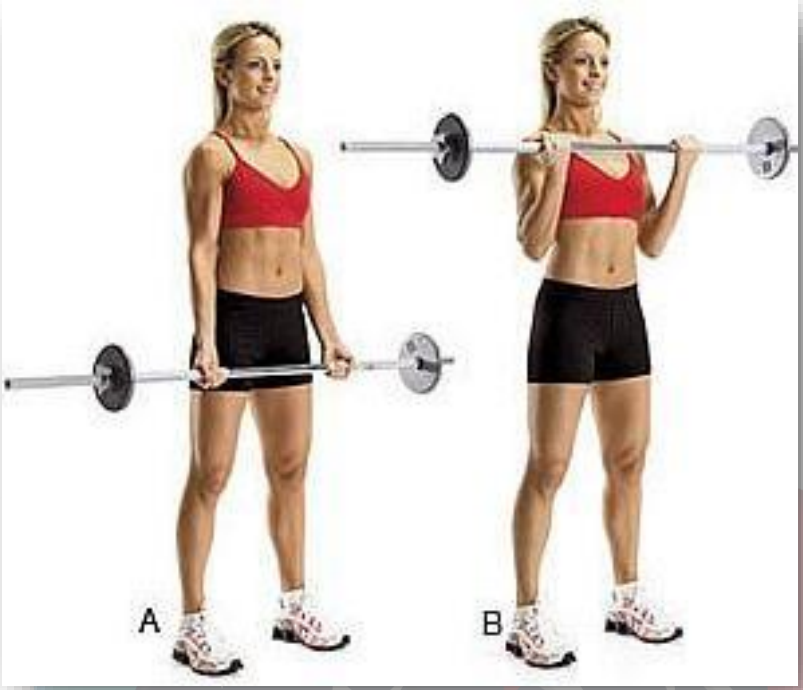
- Sit down on the bench and place your back flat against the back of the bench.
- Position your forearms on the vertical pads with your hands gripping the provided handles. This is the starting position.
- Begin exercise by squeezing your chest and bring your arms together so that they meet together out in front of your chest.
- Reverse movement slowly back to starting position. Repeat as necessary.

First Bicep Exercise – Dumbbell Bicep Curl: Sets 3, Reps 12, Rest 2Min.

- Hold a dumbbell in each hand and stand with your feet as wide apart as your hips.
- Let your arms hang down at your sides with your palms forward.
- Pull your abdominals in, stand tall, and keep your knees slightly bent.
- Curl both arms upward until they're in front of your shoulders.
- Slowly lower the dumbbells back down.

Second Bicep Exercise – Standing Barbell Bicep Curl: Sets 3, Reps 12, Rest 1Min.

- Take hold of an Olympic bar or a barbell at shoulder width apart. Your palms should face forward.
- Stand up keeping your torso and back straight, feet together, arms totally extended, and elbows close to the body. This should be your starting position.
- Holding your upper arms stationary, as well as keeping the elbows at your sides and eyes facing forward, curl the weights up until the bar is at your shoulder level.
- Squeeze the biceps at the contracted position, and slowly bring the barbell back to the initial position.
- Repeat for the desired amount of repetitions.



2. **Tuesday / Rest**

Optional Training:

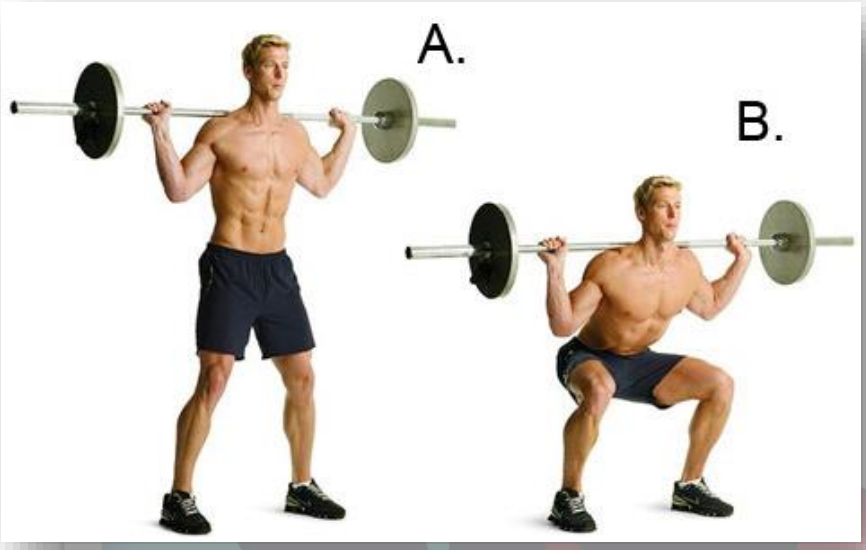
- 20 minutes of low-intensity cardio training.

3. **Wednesday / Legs & Shoulders**

- Start with a 5-10 minutes warm-up running on a treadmill or using a bicycle.
- Afterward, a warm-up for 5-20 minutes the muscle groups to be trained using little weight, until you can feel your muscles hot and ready for more weight.
- Stretch correctly before training.

First Leg Exercise – Barbell Squats: Sets 3, Reps 12, Rest 2Min.

- Begin with a barbell on your back. The chest should be up and the head forward.
- Descend by flexing the knees, refraining from moving the hips back as much as possible. This requires that the knees travel forward. Ensure that they stay align with the feet. The goal is to keep the torso as upright as possible.
- Continue all the way down, keeping the weight on the front of the heel. At the moment the upper legs contact the lower legs reverse the motion, driving the weight upward.

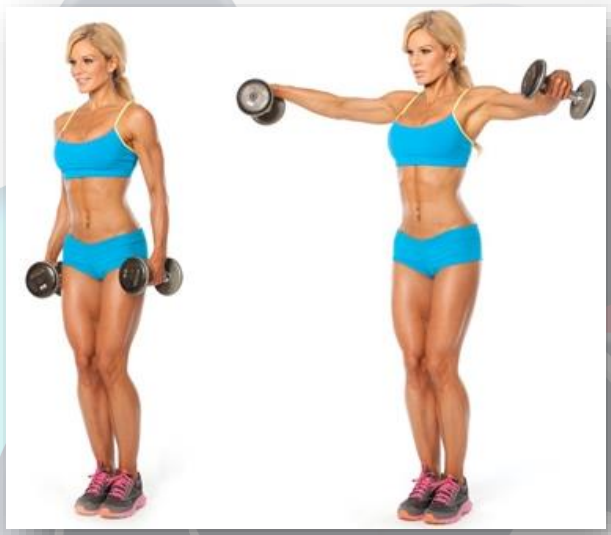


Second Leg Exercise – Leg Extension: Sets 3, Reps 12, Rest 3Min.

- Sit on a leg extension machine. Position your legs under the pad and grasp the side bars with your hands. This is the starting position.
- Extend your legs to the maximum, exhaling as you do so. Pause a second in this contracted position.
- Lower the weight back to the original position as you inhale. Make sure your legs don't go past the 90-degree angle point.
- Repeat for the desired number of reps.

First Shoulder Exercise – Side Lateral Raises: Sets 3, Reps 12, Rest 2Min.

- Stand or sit with dumbbell in each hand at your side.
- Keep your back straight, brace your core, and then slowly lift the weights out to the side until your arms are parallel with the floor, with the elbow slightly bent.
- Then lower them back down, again in measured fashion – you'll find it all the harder if you avoid speeding up.



Second Shoulder Exercise – Barbell Shoulder Press: Sets 3, Reps 12, Rest 1Min.

- Hold the barbell with an overhand grip of your hands right above your head.
- Position your hands so that your elbows are settled at an angle of 90 degrees.
- Lift the barbell with your extended arms to a height above your head.
- While inhaling, pull the barbell down to your shoulder level slowly.
- Squeeze your shoulder muscles and hold the barbell for a moment.
- While exhaling put the barbell back to the initial/starting position.

4. **Thursday / Rest**

Optional Training:

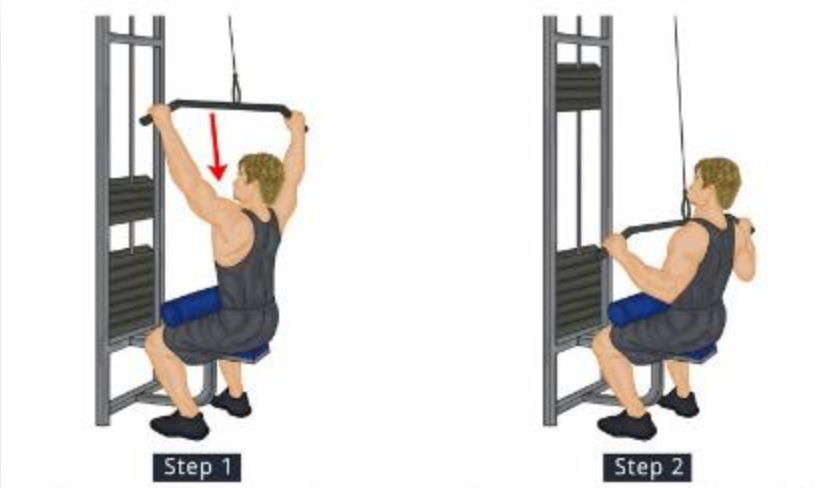
- 20 minutes of low-intensity cardio training.

5. **Friday – Back & Triceps**

- Start with a 5-10 minutes warm-up running on a treadmill or using a bicycle.
- Afterward, a warm-up for 5-20 minutes the muscle groups to be trained using little weight, until you can feel your muscles hot and ready for more weight.
- Stretch correctly before training.

First Back Exercise – Wide Grip Lateral Pull-down: Sets 3, Reps 12, Rest 2Min.

- Position yourself at a lat pull-down machine so that your thighs are under the leg pads.
- Grasp the bar with your arms fully extended, palms facing forward, and your hands wider than shoulder width apart.
- Curve your back approximately 30 degrees and protrude your chest. This is your starting position.
- Exhale as you lower the bar straight down to your chest.
- Contract your back muscles for a moment and then inhale as you reverse the motion back to the starting position.
- Repeat for a complete set.



Second Back Exercise – Seated V-Bar Cable Rows: Sets 3, Reps 12, Rest 2Min.

- Attach a V-bar to a rowing machine and sit on the bench with your feet on the foot rest and your knees slightly bent.
- Grasp the V-bar so that your palms are facing forward.
- Extend your arms as you lean backward, achieving a 90 degree angle between your waist and your legs. Slightly arch your back so that your chest protrudes. This is your starting position.
- Without moving your torso, exhale as you pull the V-bar towards your body until it nearly touches your chest.
- Contract your back muscles for a count and then inhale as you slowly return the V-bar back to starting position.
- Repeat for a complete set.

First Tricep Exercise – Two Arm Bent over Dumbbell Tricep Extension: Sets 3, Reps 12, Rest 2Min.

- With a dumbbell in each hand and the palms facing your torso, bend your knees slightly and bring your torso forward, by bending at the waist, while keeping the back straight until it is almost parallel to the floor.
- Keeping the upper arms stationary, use the triceps to lift the weights as you exhale until the forearms are parallel to the floor and the whole arms are extended.
- After a second contraction at the top, slowly lower the dumbbells back to their starting position as you inhale.
- Repeat the movement for the prescribed amount of repetitions.

Second Tricep Exercise – Standing Dumbbell Tricep Extension: Sets 3, Reps 12, Rest 1Min.

- Stand upright, feet shoulder width apart, with a dumbbell in both hands.
- Hold the dumbbell perpendicular to the floor with your hands under the top plate, palms facing upward.
- Carefully raise the dumbbell overhead. This is your starting position.
- Keep your upper arms stationary as you inhale and lower the dumbbell behind your head.
- Exhale as you raise the dumbbell back to the starting position.
- Repeat for a complete set.

6. **Saturday / Rest**

Optional Training:

- 20 minutes of low-intensity cardio training.

7. **Sunday / Rest**

- Complete rest day. Use it to regain strength.

The above exercises use the standard free weights and equipment found in most gyms. All exercises can be done at home if you have the appropriate home gym equipment. A medical examination and clearance are wise if you've been sedentary for a lengthy period. Take care with injured or dysfunctional joints. Get medical advice before starting any muscle building program.

Conclusion:

Like said, it is an example of the basic training program of muscle building for beginners. How far you want to go in bodybuilding is ultimately a matter of your desire and disposition. Regardless, at no time are the gains any quicker or more enjoyable than during the first six months of starting a training program. It is at this juncture that bodybuilders, whether young or old, first become truly aware of their bodies and notice profound changes starting to happen. As the bodybuilder becomes more experienced, that detection is less-novel, but I suppose that, on the whole, it’s just as enjoyable.

Chapter 3

STRENGTH BUILDING FOR BEGINNERS – BASIC TRANING PROGRAM

Getting comfortable with a steady running routine is definitely something to be proud of, but when you're on that cardio grind day-in and day-out, you might be ready to change things up and take on a new challenge. Time to throw some strength training into the mix. It can be a little intimidating at first if you don't know where the hell to start, but understanding the basics can help you feel confident in your refreshed fitness routine.

Strength training or resistance training, both are the common name of the exercises performed for enhancing body strength. So when I say strength training, do not get confused because we are talking about strength building exercises only.

If you're just starting to work out, you've probably heard you should strength train. Or was it resistance train? Or lift weights? Ack. It's all a little confusing, but it's easy to get started. Let's dive in...

3.1 What is strength training?

Strength training is a popular term for exercises that build muscle by harnessing resistance—that is, an opposing force that muscles must strain against. Strength training is sometimes called resistance training, progressive resistance training, or weight training.

Resistance can be supplied by your body weight, free weights such as dumbbells and weighted cuffs, elasticized bands, or specialized machines. No matter what kind of resistance you use, putting more than the usual amount of load on your muscles makes them stronger. Because the muscles being exercised are attached to the underlying bone, these exercises can actually strengthen your bones as well.

Weak muscles can make even minor exertion— such as walking a few blocks, climbing stairs, or simply getting out of bed—difficult. Equally important, weak muscles compromise balance. Often a debilitating cycle is set in motion when a fall or disabling condition such as arthritis curtail activity. It's natural to adapt to limitations, but many people find that the less they do, the less they are able to do as time goes on. But people can regain their abilities and reverse the cycle with exercises that rebuild lost muscle and recapture a reasonable range of motion.

3.2 Strength Training - Basic Program for Beginners.

The second you walk into the weight room, you're faced with a million questions:

- How much weight should I lift?
- Once I actually find a dumbbell I can pick up, how many reps should I perform?
- How many sets?
- Does it even matter?

If you're a newbie, either to weightlifting or exercise in general, figuring this stuff out can feel as intimidating as the no-necks grunting over there by the squat rack.

Well, those questions do matter. The pattern of sets and reps you use to structure your strength workout can make the difference between wasted gym time and awesome progress.

There is a need for foundation and structure in beginning. It starts by learning the feel and getting comfortable with the movements. Aim for precision as much as possible, but understand that in these primordial stages, your form will most likely be imperfect.

3.2.1 Best workouts for strength training:

#1 Running Treadmill - Do 1 set, 5-10 minutes.

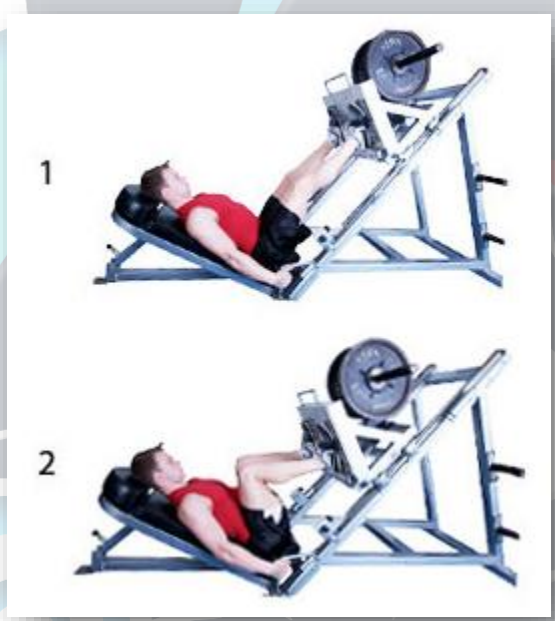
- To begin, step onto the treadmill and select the desired option from the menu.
- Most treadmills have a manual setting, or you can select a program to run.
- Maintain proper posture as you run, and only hold onto the handles when necessary, such as when dismounting or checking your heart rate.

#2 Leg Press - Do 1 set, 8-12 reps.

- Using a leg press machine, sit down on the machine and place your legs on the platform directly in front of you at a medium (shoulder width) foot stance.
- Lower the safety bars holding the weighted platform in place and press the platform all the way up until your legs are fully extended in front of you.

- Make sure that you do not lock your knees. Your torso and the legs should make a perfect 90-degree angle. This will be your starting position.
- As you inhale, slowly lower the platform until your upper and lower legs make a 90-degree angle.
- Pushing mainly with the heels of your feet and using the quadriceps go back to the starting position as you exhale.

Tip: Ensure to lock the safety pins properly once you are done. You do not want that platform falling on you fully loaded.



#3 Triceps Pushdown - Rope Attachment - Do 1 set, 8-12 reps.

- Standing upright with the torso straight and a very small inclination forward.
- Bring the upper arms close to your body and perpendicular to the floor.
- The forearms should be pointing up towards the pulley as they hold the rope with the palms facing each other. This is your starting position.
- Using the triceps, bring the rope down as you bring each side of the rope to the side of your thighs.
- At the end of the movement, the arms are fully extended and perpendicular to the floor.
- The upper arms should always remain stationary next to your torso and only the forearms should move. Exhale as you perform this movement.

- After holding for a second, at the contracted position, bring the rope slowly up to the starting point. Breathe in as you perform this step.

#4 Single Leg Deadlift – Do 3 sets of 6 reps per side, rest 1-2 min.

- Hold a kettlebell in one hand, hanging to the side.
- Stand on one leg, on the same side that you hold the kettlebell.
- Keeping that knee slightly bent, perform a stiff-legged deadlift by bending at the hip, extending your free leg behind you for balance.
- Continue lowering the kettlebell until you are parallel to the ground, and then return to the upright position.

#5 Ab Crunch Machine – Do 1 set, 8-12 reps.

- Select a light resistance and sit down on the ab machine placing your feet under the pads provided and grabbing the top handles.
- Your arms should be bent at a 90-degree angle as you rest the triceps on the pads provided. This will be your starting position.
- At the same time, begin to lift the legs up as you crunch your upper torso.
- Breathe out as you perform this movement.
- Be sure to use a slow and controlled motion. Concentrate on using your abs to move the weight while relaxing your legs and feet.
- After a second pause, slowly return to the starting position as you breathe in.

This workout is designed for overall health and fitness gains of a healthy individual who has never lifted weights before, or who is very inexperienced at it.

You may note that the majority of exercises are machine based; this is intentional as an unconditioned beginner, has less integrity in the joints, less stability in the core which supports the entire body during training; and this makes one more apt to be injured when attempting to lift free weight (dumbbells, barbells) when just starting out.

Perform this workout at least two times per week, significant strength and fitness gains are obtained with only two workouts per week.

Also, the above-mentioned workouts are just for example. You can perform exercises you want or recommend to you by your trainer.

3.2.2 Guideline for Beginners:

If you're new to exercise think about these things before you start:

- Ease into exercise with a simple cardio program and a total body strength training routine. If that's too much, just start with cardio and let that be enough.
- You may need extra recovery days to allow your body to rest and heal. It's normal to be sore when you try new activities, but if you can't move the next day, that means you overdid it and may need to back off your next workout.
- A typical beginner program will include about two to three days of cardio and two days of strength training.
- Learn how to monitor your intensity. Most beginners will start working out at a moderate intensity. That means you're at about a Level 5 on this perceived exertion scale from 1 to 10, or you can use the talk test. If you can carry on a somewhat breathy conversation while you're working out, that's usually a moderate intensity.

3.2.3 Sample Workout for Beginners

Below is a sample program that gives you an idea of what a typical schedule would look like for someone just getting started, or getting back to, exercise.

Day	Schedule
Monday	Cardio: 10 to 30 minutes.
Tuesday	Total body strength and core training. You can choose from the above-mentioned strength workouts
Wednesday	Rest or gentle yoga/stretching
Thursday	Cardio: 10 to 30 minutes. You can do the same workout you did on Monday or a new one.
Friday	Total body strength and core training. It's a great idea to do the same workout you did on Tuesday so you can practice the exercises and build the strength and endurance to do more.
Saturday	Rest or, optional, cardio: This is a great time to do something less structured like take a walk or a leisurely bike ride.
Sunday	Rest

3.3 Essential Strength Training Tips for Beginners:

Strength training can be intimidating to a fitness newbie, especially if you've never operated one of those machines with the pulleys and levers, or you don't want to go toe-to-toe with that tan, grunting guy. However, strength training is a crucial part of getting fit that just can't be ignored.

If you're a strength-training beginner, these tips will get you going in no time.

1. **Do a cardio warm-up:**

   It's important to get your heart rate up before starting your strength-training routine. Begin with a 5-minute warm-up of brisk walking, light jogging, or dynamic stretching. Dynamic stretching uses controlled movements to loosen up your muscles and increase your range of motion. Try doing some walking lunges or butt kicks.

2. **You can start with just your bodyweight:**

   Strength training means using resistance to create work for your muscles. So even if your mind jumps straight to those hardcore machines and massive weights, there are a lot of ways to create this resistance that require minimal equipment (or none at all). Bodyweight workouts can be an incredibly effective way to strength train. No matter what you do, the most important thing is to find something that challenges you.

3. **Begin with two days a week and build up:**

   Start with two days for two to three weeks, then adds a third day. You should strength train three to five days per week, but work your way up—starting off at five days a week might shock your body. Aim to complete 20-minute sessions, then gradually add on time in ten-minute increments until you're working for 45 to 60 minutes. Of course, this doesn't mean you should skip cardio.

4. **Fit in a post-workout stretch if you can:**

   Now that you've got the training part down, it's time to stretch it out. Stretching while your muscles are warm can help improve your flexibility, not to mention it just feels phenomenal after you've pushed yourself hard.

   A light cool-down is also great for calming the nervous system. While dynamic stretches should be your go-to during a warm-up, the cool-down is where static stretching comes in—this means holding a stretch for 20-30 seconds.

5. **Learn proper technique:**

In order to prevent injuries, you must know proper form and technique. Proper technique will make sure that you're working the right muscles without straining. If you're a true beginner, it can be beneficial to invest in a single training session. A trainer can show you the correct positions, grips, and motions while also helping you create a basic strength-training routine.

6. Determine the right amount of weight for you:

Different exercises will require different weights, but there are some markers that can help guide you towards the right resistance, whether you're using dumbbells, kettlebells, or a barbell. Go for a weight that feels heavy enough to challenge you, but not so heavy that you sacrifice your form.

7. Don't forget to rest:

Strength training causes tiny tears in the muscles, which then heal stronger than before. These tears are good, but only if you allow them time to heal properly. The average person needs 24 to 48 hours of rest to heal in between workouts so make sure you allow yourself that time. People are often more gung-ho at the beginning of their workout program and sometimes overdo it. Listen to your body. Soreness is fine, pain is not.

3.4 Benefits of Strength Training:

1. Adds More Muscles And Burning More Calories.
2. Builds Stronger Bones.
3. Reduces Heart Problems
4. Reduces Risk Of Diabetes
5. Helps in Weight Loss
6. Enhances Physical And Mental Well–Being

3.5 Why are you not getting stronger?

Just like other aspects of a healthy lifestyle, strength-training progress can be unpredictable. If after several weeks (or months) of steady progress, you might reach a wall where you just can't seem to get any stronger. However, don't throw in the towel just yet. Strength training involves a lot of complex elements that have to work in sync to deliver significant results. Here are a few common culprits that could be sapping your strength gains--and how to fix them.

1. **You're Not Resting Enough:**

In order for your muscles to repair themselves, you should value recovery just as much as your workouts. Always rest your muscles for 24-48 hours after strength training to give them ample time to rebuild and recover. Getting less than 7-9 hours of shut-eye each night is asking for some serious chronic fatigue that will set you up for impeded performance and slower muscle recovery.

2. **You're Not Pushing Yourself Enough:**

It's easy to get trapped in your comfort zone in the weight room. But, if you can perform more than 15 repetitions of any given exercise without feeling fatigued by the end of your set, it's time to up your weight by about 5%. Make sure that your last rep of each set is very challenging, but still possible to complete with good form.

3. **You're Doing the Wrong Number of Sets and Reps:**

If building strength is your goal, lifting fewer reps of heavier weights is the way to go. Lifting lighter weights at higher rep schemes will help you build muscular endurance, but it's not the strategy to use if you want to focus on muscular strength.

4. **You're Not Training All Your Muscle Groups Evenly:**

In order to build full-body strength, it's important to make sure you're giving the same amount of attention to all of your major muscle groups. If you work for certain muscle groups more while neglecting others, you up your risk for injury. Plus, your strength will be disproportionate. At a minimum, make sure you're working your arms, shoulders, legs, core, chest, and back with equal intensity and frequency to gain strength all over.

5. **You're Not Eating the Right Foods:**

In order to get the best results from your diet, focus on high-quality calories. If you're eating unhealthy foods that have very little nutritional value, your energy levels will suffer during your workouts, and your muscles will not be able to recover, repair and become stronger. We will discuss more nutritional habits in the upcoming sections.

Conclusion:

Strength training makes the body strong. It has more energy to perform day to day activities. It improves flexibility and balance. Try the routine that suits you the most but don’t go too extreme otherwise you will get injured.

Strength training like other exercises must be done after consultation with your physician, and the classes should be with certified instructors. If you want to go solo on the same, the initial investment is only a pair of dumbbells and good shoes.

Chapter 4

NUTRITION FOR MAXIMIZING STRENGTH AND MUSCLE MASS

When people think of bodybuilding, they consider weight training the key component, but nutrition is almost as important in achieving the physique you want. Just as you need to understand your muscles and how they work, you need to be aware of the basics of nutrition: protein, carbohydrates ("carbs"), and fat. Each plays a critical role in your diet.

In bodybuilding, "diet" simply means your overall eating habits. To add muscle, you have to consume a lot of calories. You can't get huge by eating like a bird.

"Train big, eat big, sleep big"—that's the advice some people give.

There's no single perfect diet for everyone, just as there's no perfect weight training regimen for everyone. As you learn about nutrition, you'll be able to craft an eating plan that helps you achieve your fitness objectives.

Now let's focus on the three basic macronutrients: protein, carbs, and fat.

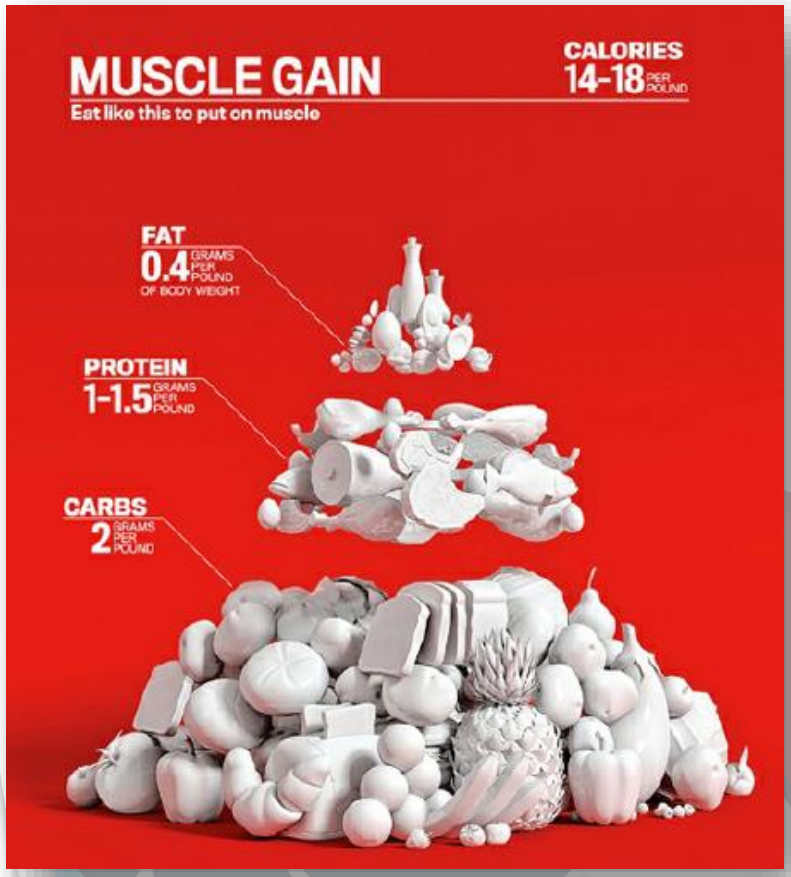
4.1 Protein in the diet for muscle and strength building.

Though we have a separate section in this book where we will discuss exclusively the role and importance of protein for bodybuilding because we are discussing nutrition we cannot leave this essential macronutrient.

Of the three macronutrients, protein is the most critical for bodybuilders. Protein is responsible for growth, maintenance, and repair of muscle tissue, which is why top bodybuilders constantly monitor their protein intake.

In general, a bodybuilder needs twice as much protein as the average person. The best sources of protein are eggs, fish, poultry, meat, and dairy products—the animal proteins. Plant proteins—from foods like rice, beans, corn, peas, and nuts—are not as easily assimilated into the body as animal proteins.

The U.S. government recommends that the average person eat 0.36 grams of protein every day for each pound of body weight. For a 180-pound man, that's about 65 grams of protein per day. If that person is a bodybuilder, conventional bodybuilding wisdom says that he or she should consume twice that, because it's believed that too little protein will lead to greater muscle soreness and fatigue after a workout.



4.2 Carbohydrates for getting bulkier and stronger.

Carbohydrates are the body's main source of energy. About 50% of a bodybuilder's calories should come from carbohydrates.

Carbs fall into two categories: simple and complex.

Simple carbs provide a quick burst of energy. When they are digested, they turn into glucose, a major source of energy that can be burned rapidly.

Complex carbs, on the other hand, fuel the body over a longer period of time.

Everyone needs both types of carbohydrates, but bodybuilders should focus on complex carbs because they provide a more sustained energy supply throughout the day.

Complex carbohydrates are broken down further into fibrous and starchy carbs. Sources of fibrous carbs include asparagus, green beans, broccoli, lettuce, mushrooms, spinach, and zucchini.

Examples of sources of starchy carbs are red beans, corn, oatmeal, peas, pasta, potatoes, rice, and tomatoes.

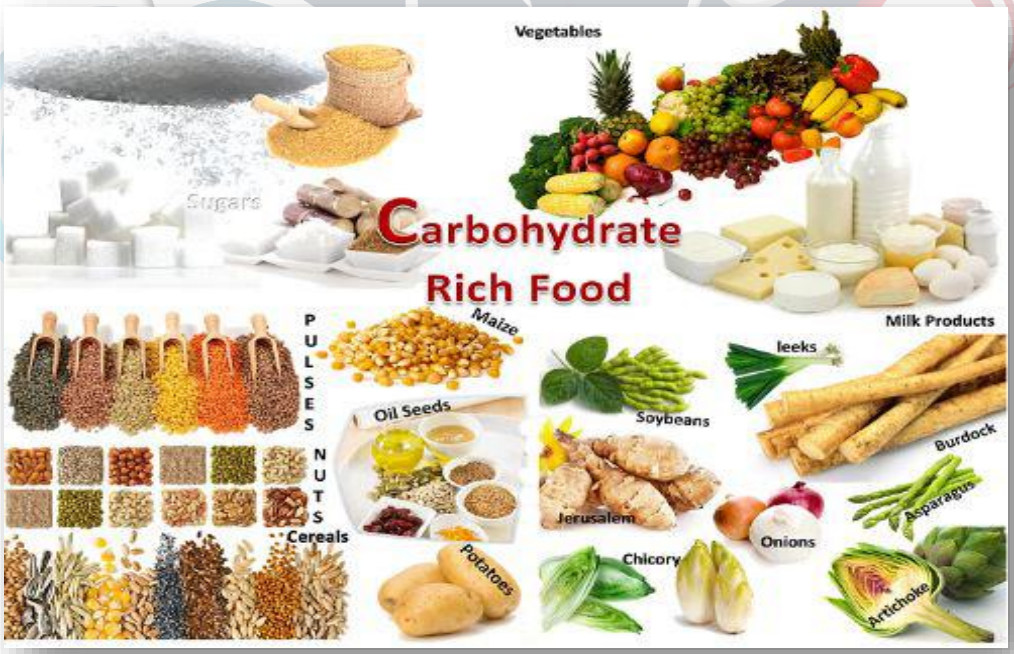
All carbohydrates break down into glucose, raising your blood sugar levels faster than any other nutrient. As a result, the pancreas releases insulin to remove surplus sugar from the bloodstream and maintain normal levels.

Research, including a study at the University of Washington School of Medicine, has found that exercise— particularly strength training—increases insulin sensitivity in the muscles. So if you've just worked out, more of the carbs you eat afterward will be carried by insulin directly to your muscles for replenishment. (Incidentally, this goes for protein too, which is why it's helpful to consume a mixture of protein and carbs after training—we'll discuss this later.)

On the other hand, if you've been sitting on the couch watching football, those carbs will just get stored around your waist.

For this reason, we recommend that most of your carbs come before, during, and shortly after training. It also means that you need to eat fewer carbs when you want to get lean—you need to keep insulin levels low. For muscle gain, Meadows prefers to add carbs (shakes included) to meals around training time first, before adding them to other meals.

Eat two grams gram of carbohydrates per pound when you want to put on muscle.



4.3 Role of fats in muscle and strength gaining.

Of all the macronutrients, fat has the worst reputation. People hear the word “fat” and think obesity, but fat plays a vital role in a well-balanced diet.

It should comprise about 10% to 15% of your food intake.

Fat is a secondary source of energy, but it has twice as many calories per gram as protein or carbohydrates. It’s easy to understand why people gain weight by eating too much fat.

In addition to providing energy, fat cushions and protects the major organs and insulates the body against extreme cold. It also helps maintain healthy skin and hair and transports vitamins A, D, E, and K throughout our bodies.

There are three different types of fat:

- Saturated
- Unsaturated
- Polyunsaturated.

Saturated fat has been linked to high cholesterol levels and an increased risk of heart disease. Foods high in saturated fat often taste good, but your diet should not include large amounts of this type of fat. Saturated fat is found primarily in animal products such as beef, lamb, pork, butter, and most cheeses.

Foods high in unsaturated fat include avocados, cashews, peanuts, peanut butter, olives and olive oil. This type of fat is preferable to saturated fat.

The third type, polyunsaturated fat, is present in almonds, pecans, walnuts, most margarine, mayonnaise, and soybean oil. Medical research has shown that some people who eat large amounts of polyunsaturated fat along with small amounts of saturated fat have lower cholesterol levels than others.

Aim for 0.4 grams per pound of your body weight daily to start.

4.4 Vitamins and Minerals for body and strength building.

Vitamins are organic substances that contribute to many important bodily functions. We all need specific vitamins in certain amounts for optimum health. However, most nutritional experts believe that no one—not even a bodybuilder— needs vitamins in massive amounts.

Some people take huge doses of Vitamin C to try to prevent colds, but this is generally not considered beneficial, and the result is simply high-priced urine.

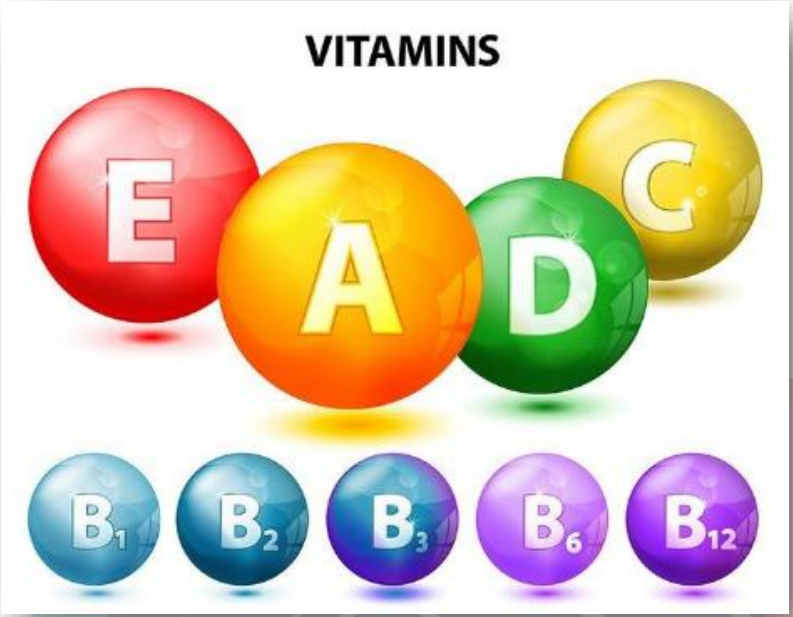
Vitamins fall into two categories: water soluble and fat soluble.

Water-soluble vitamins cannot be stored in the body, and excess amounts are eliminated in urine. Because they can't be retained, water-soluble vitamins need to be taken daily if you don't get enough of them in the food you eat.

Fat-soluble vitamins, unlike water-soluble ones, can be stored. They can, therefore, be taken less often. Important fat-soluble vitamins are A, D, E, and K.

Unlike vitamins, minerals are inorganic substances. They promote the growth, maintenance, and repair of tissue. Minerals also assist in muscle contraction and the functioning of the nervous system.

Some common minerals are calcium, magnesium, and potassium. Like vitamins, minerals are needed in relatively small amounts.



4.5 How many calories should you consume in a day?

How many more calories you need depends on your metabolic rate and on the intensity and frequency of your workouts. There's no single answer for everybody, but as a bodybuilder, you need more calories than a sedentary person in order to achieve muscle gain.

Some people have a much higher metabolism than others, meaning that they burn many more calories than other people with the same activity level. In general, the harder you train, the more calories you need. Top bodybuilders don't train at the same intensity year-round. It's impossible to do so—both mentally and physically.

You should learn to be flexible in the number of calories you consume. For instance, if you're not going to the gym often to work out, you need to reduce your food intake.

If your calorie intake matches your workout intensity, you shouldn't develop a weight problem.

Don't automatically increase or decrease your calorie intake at the beginning. Start your workout program, continue eating as you normally would, and then see if you gain or lose weight. If you're losing weight (and you don't want to), you can afford to take in more calories.

On the other hand, you may find that you're not losing weight even with intense workouts. Because muscle weighs more than fat, it's possible— even common—to add muscle and lose fat without dropping weight.

Bodybuilders must learn to personalize their eating habits and calorie intake just as they fine-tune their workout regimens.

4.6 When and how much to eat?

Ideally, most men who are looking to get or stay lean and weigh around 180 to 200 pounds (82 to 91 kg) will shoot for about 400 to 500 calories per meal, take in about 200 to 300 calories per snack, and consume pre- and post-workout shakes.

Of course, if you are active during the day or looking to pack on a lot of sizes, you'll want to increase your daily caloric intake.

If you want to get more scientific with your approach to eating, I highly recommend keeping a food journal and writing down exactly how many calories you consume each day. Breaking down the meals and foods into protein, carbohydrate, and fat will be even more helpful. After calculating how many calories you consume in an average week, you can recalibrate your plan by tweaking your calorie consumption.

Another point to keep in mind is that you'll want to increase your protein intake while decreasing your overall carbohydrate intake if your protein intake is not in line with daily average requirements.

Also, to allow your body to process the meal that you just ate before your next feeding, you need to wait about three or four hours, depending on the size of the meal and your activity level. If you just trained you can have a protein shake before and after your workout and then another meal about an hour after that. Your body is primed and ready to metabolize the fuel that you're giving it within the three-hour window surrounding your workout.

4.7 Add Muscle and lose fat - sample meal plan.

Anyone looking to lose body fat while trying to add muscle should work with this sample layout and daily meal plan:

7:00 a.m.: Breakfast

- Spinach egg omelet (two or three whole eggs or three whites and one whole egg)
- Spinach and mushrooms sautéed in olive oil over medium heat
- Coffee or tea (optional)

10:00 a.m.: Midmorning snack

- 1/4 cup of almonds or walnuts
- Hummus and vegetables

12:30 p.m.: Lunch

- Grilled chicken breast
- Black beans or lentils (optional)
- Mixed greens salad with 1 tbsp olive oil or flax oil and lemon

3:30 p.m.: Midafternoon snack

- Greek or Icelandic plain yogurt
- 8 ounces (237 ml) of green or Yerba Mate tea (optional)

5:30 p.m.: Workout

- 30–45 minutes of training

6:30 p.m.: Post-workout shake (consumed immediately following your workout, only on workout days)

- Protein shake (30-40 grams of whey or vegetarian protein powder)
- One piece of fruit
- 12–16 ounces (355–473 ml) of water

7:30 p.m.: Dinner

- Grilled salmon (cooked in olive oil)
- Broccoli or another green or colorful vegetable

10:00 p.m.: Pre-bed snack (optional)

- Cut up vegetables and hummus

Note: The supplements which have been suggested in the above sample meal plan is to be discussed in upcoming chapters.

4.8 Common Nutritional Tips for Effective Muscle and Strength building:

Here we'll touch on some of the broad "dos" and "don'ts" of food selection and preparation.

- Pay attention to the ratio of carbohydrates, protein, and fat in your meals. Ideally, your diet should consist of about 50% carbs, 35% protein, and 15% fat.
- Choose fresh fruits and vegetables instead of canned or frozen ones. The latter often contain sugar, salt, and preservatives that can be harmful.

- Select fresh meats instead of processed meats (like lunch meat) for the same reason that you choose fresh fruits and vegetables.
- Eat white meat (such as chicken breasts) instead of dark meat (such as chicken thighs), because white meat has less fat. Remove the skin to further reduce the fat.

- Eat fish, which typically has even less fat than white meat. A popular choice for bodybuilders is tuna, which is inexpensive and easy to take with you, select tuna that's packed in spring water, not oil.
- Broil or bake your meat, poultry, or fish. Never fry it.
- Don't overcook vegetables, because overcooking destroys many of the vitamins and minerals they contain.
- Buy low-fat or no-fat versions of dairy products like milk and yogurt.
- Use fewer egg yolks, because they're high in fat and cholesterol. You don't have to give them up entirely.
- Choose whole grain bread, which has more fiber and are more nutritious than bread made with white, processed flour.
- Avoid toppings that are high in calories and fat. When eating meats, avoid gravy. With pasta, stay away from sauces made with heavy cream.
- Pick fruit instead of candy if you want to eat sweets. Go easy on fruits and fruit juices, because they're still rich in sugar and calories.

- Add variety to your diet. Eat a wide range of healthy foods. The more you enjoy your food, the more likely you are to stick with good eating habits.
- Eat nuts and dried fruit for a quick snack but in moderation.
- Always eat breakfast. Some people skip breakfast to try to cut calories, but that's not wise. You need a good supply of fuel to start your day. Otherwise, you may find yourself low on energy and be tempted to eat junk food.
- Wait at least one hour after eating to work out so that your food can be properly digested.

Learn to discipline yourself so you don't succumb to impulsive eating. We all "fall off the wagon" sometimes and eat foods that aren't a part of our recommended diet. Just try to make sure that you do so only occasionally, and then resume your eating plan.

Conclusion:

Your body is literally made up of the foods that you consume, so if you're consistently downing unhealthy beverages and carbohydrate, then you can expect to see your pants size grow and your energy levels drop.

On the other hand, if you're eating lively foods like vegetables, berries, nuts, good fats, beans, and lean protein, you will be able to accomplish your muscle mass and strength goals. And overall, you'll look and feel amazing!

Chapter 5

BEST UPPER BODY WORKOUTS

Most of us don't do full-body workouts anymore. Instead, we split up our body into parts that we train on different days; hence the term "split routine." Yet there exists another way—to train the entire upper body one day and the lower half another—and there are several advantages to it.

Working the whole upper body one day allows you to come back a few days later and work it again. Say you normally train your chest once every five days. You could hit it twice in three days, doubling the muscle-building stimulus simply by switching from body-part workouts to an upper-body split.

Upper-body splits are also ideal for strength building, allowing you to focus workouts around the main lift and then working all the muscles that play a part in making that lift stronger.

5.1 How does the upper body workout program works?

It turns out that when you look at some of the most effective muscle- and strength-building programs, they share a common trait: The total number of reps for the main exercises usually adds up to around 25. Shoot for this number and your gains will add up too.

Spend the first three or four sets warming up so that only the last two are done with heavy weights.

A moderate number of low -rep sets provide a blend of intensity and volume, which has always been associated with size and strength gains. Almost any combination will work: five sets of five, six sets of four, or eight sets of three all allow you to put some work in with big, challenging loads, and that's as much math as any meathead should have to do in the gym.

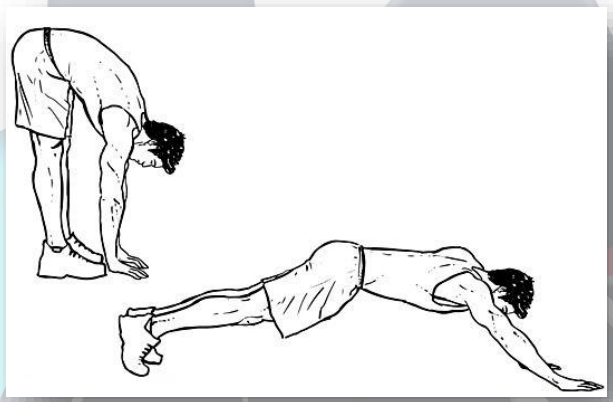
It is recommended that if the first time you perform the workout, you'll hit 25 reps for the main lifts by completing five sets of five. If you repeat the workout, perform six sets of four reps. In the next session, do eight sets of three.

Note: Do not perform this workout more than twice a week, and allow at least three days before repeating it.

5.2 Best Warm-up Exercises before starting a workout program.

The warm-up is a necessary part of the training that is often not given the time or effort that it deserves. In the gym, we all have time constraints and are eager to start training as soon as possible, but you will get a great deal more from your training session if you commit to a structured warm up regardless of the content of your session. Here we will look at how best to warm up the upper body prior to an upper body strength session.

1. **The inch-worm**
   - Stand with your feet at hip width. Hinge forward at the waist and touch the floor with your palms. Bend your knees, if necessary.
   - Walk your hands forward until you are supporting all your weight on your hands and toes. Your body should make a straight line and your hands should line up with your shoulders. Hold this position for 10 seconds.
   - Walk your feet forward to meet your hands. Keep your palms on the floor and bend your knees, if necessary.



2. **Jumping Jacks**
   - Stand with your feet hip-width apart and your hands by your sides.
   - Tighten your core and shift your weight onto the balls of your feet.
   - Quickly jump out with one leg to each side, raise your arms overhead at the same time, and land on the balls of your feet.
   - Without resting jump both feet back together while lowering your arms to your sides.
   - Repeat this motion by rapidly jumping in and out and raising your arms overhead for 30 to 60 seconds.

3. Medicine Ball Slams

- Stand with your feet about shoulder-width apart and hold a medicine ball with both hands.
- Raise the medicine ball overhead.
- Quickly flex your core, sit back with your hips, and exhale while slamming the ball from overhead onto the mat between your feet by rapidly bringing both arms down and over your body. (Do not let go of the medicine ball at any time; hold on tight so that it doesn't bounce back up at you!)
- Stand back up to the starting position and raise the medicine ball back up overhead.

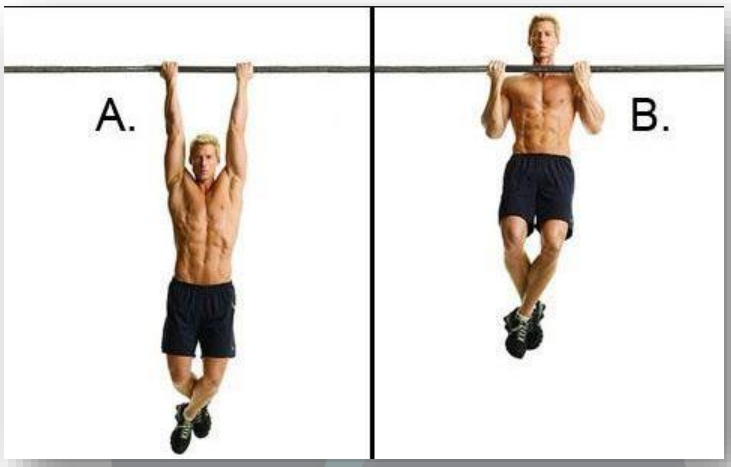
5.3 Best Upper Body Workout Exercises.

1. Overhead Press - Sets: 5, Reps:5, Rest:90 Sec.

- Set the bar up in a squat rack or cage and grasp it just outside shoulder width.
- Take the bar off the rack and hold it at shoulder level with your forearms perpendicular to the floor.
- Squeeze the bar and brace your abs.
- Press the bar overhead, pushing your head forward and shrugging your traps as the bar passes your face.

2. Pull-up - Sets: As many as needed, Reps:50, Rest:60 SEC.

- Hang from a pull-up bar with hands just outside shoulder width and palms facing away from you.
- Pull yourself up until your chin is over the bar.



3. Neutral-Grip Floor Press - Sets:4, Reps:8, 8, 6, 5, Rest: 180 sec.

- Grasp a dumbbell in each hand and lie back on the floor.
- Rest your triceps on the floor with elbows close to your sides and palms facing each other.
- Press the weights over your chest and then lower your triceps back to the floor, but do not rest them.
- Pause for a moment under tension and begin the next rep.

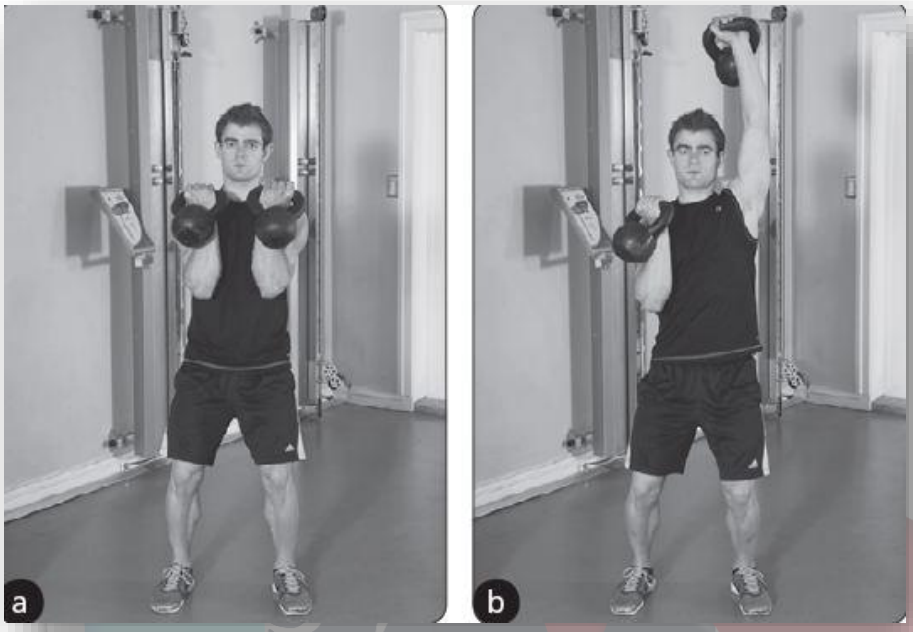
4. Zottman Curl - Sets:3, Reps:8, Rest:60 sec.

- Stand holding a dumbbell in each hand with palms facing your sides.
- Keeping your upper arms in place, curl the weights, rotating your palms to face your biceps in the top position.

- Turn your palms to face down, and then lower the weights slowly, as in a reverse curl.
- That's one rep.

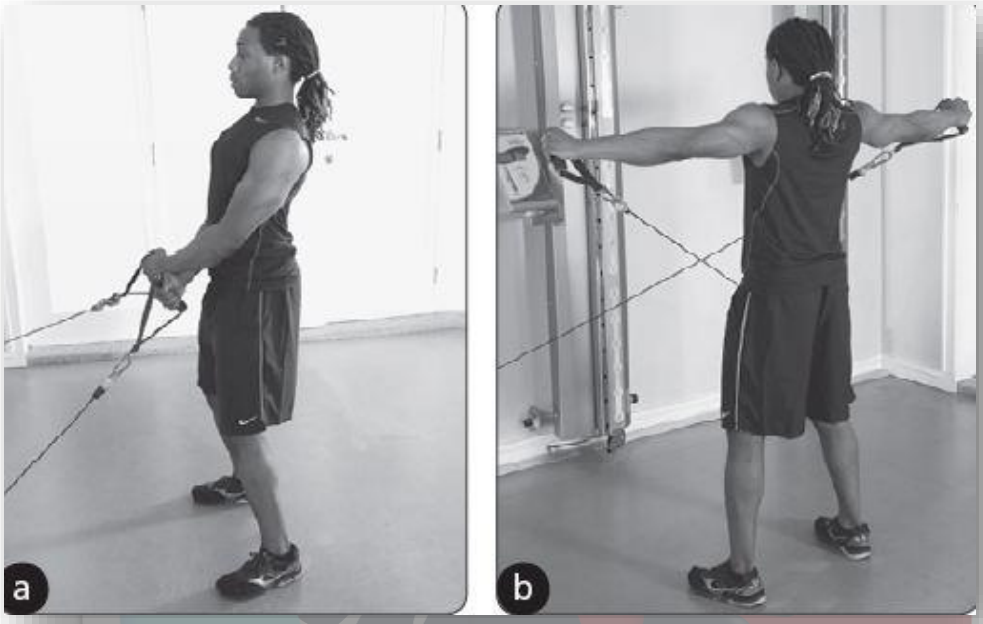
5. Kettlebell Alternating Shoulder Presses – Sets:3, Reps:16, Rest:60 sec.

- Stand with your feet shoulder-width apart and hold a pair of kettlebells by your sides.
- Keep your knees bent and your core engaged throughout the set.
- Lift both kettlebells so that they face away from your shoulders and your palms face your chest and shoulders.
- Press one kettlebell directly overhead by rotating your arm so that the kettlebell faces away from your body but remains right above your shoulder.
- Do not arch your back while pressing overhead.
- Slowly decelerate the weight back to the starting position with your palm facing your chest and shoulder.
- Maintain form and alternate repetitions.



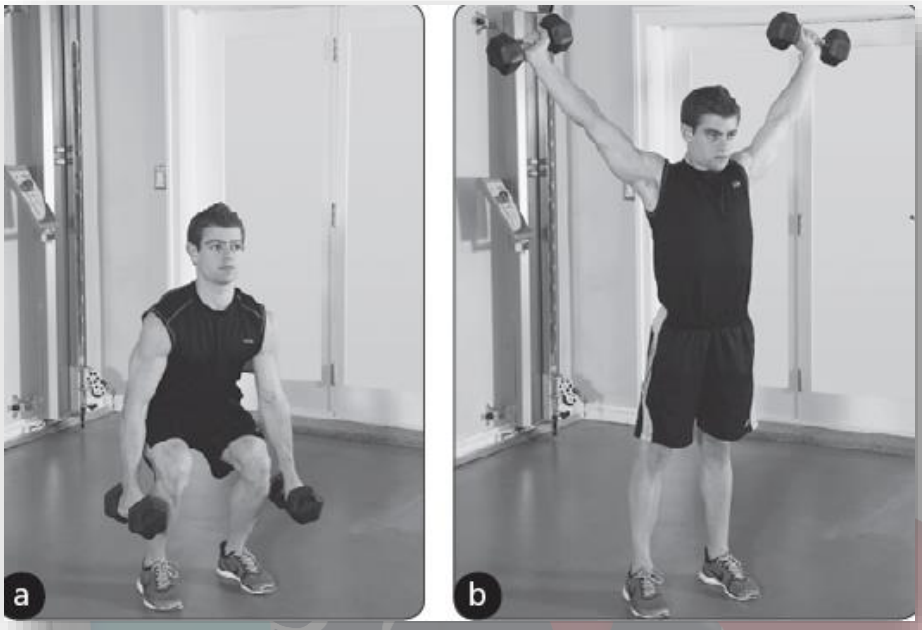
6. Cable Criss-Cross Raises – Sets:3, Reps:10, Rest – 60 sec.

- Grab both handles by reaching across with your right hand to grab the left handle and with your left hand to grab the right handle.
- Stand up to your starting position with your feet about shoulder-width apart (no wider).
- The cables should now be crisscrossed in front of your hips to form an X.
- Tighten your core before you raise the handles so that you do not arch your back.
- Keeping your wrists straight and having only a 10-degree bend in your elbows, raise both handles up to the sides of your body. You finish at the top with your shoulders, elbows, and wrists all on the same plane and forming a straight line.
- After briefly pausing at the top, slowly decelerate your arms down without allowing your core to disengage or your shoulders to lose tension. Stop at the point where the handles reach the outsides of your hips.



7. Dumbbell Squat to Standing Reverse Flys – Sets 3, Reps: 10-15, Rest 60 sec.

- Hold a pair of dumbbells apart in front of your hips.
- Sit back on your hips and heels into a deep squat, hold your chest high, and hold the dumbbells beside your knees.
- As you stand back up to the starting position raise both dumbbells up in the air at a 45-degree angle over your shoulders and have your palms facing away from you.
- As you get to the top of your movement you should have both arms raised over your shoulders as if you were holding your arms up in the victory.
- Slowly decelerate the weights back down in front of your body as you squat back down into your next repetition.



8. Bench Leg Lifts to Hip Thrusts – Sets:3, Reps: As many as possible, Rest: 60 sec.

- Lie on your back on a bench with your hips half on and half off the edge of the bench.
- Hold on to the bench beside your head.
- Begin by stretching your legs out straight and then lifting them up in a leg lift movement until your feet come right above your hips (keep your knees straight throughout the set).
- Push your upper back deeper into the bench and thrust your hips up in the air with your legs moving toward the ceiling.
- Slowly lower your hips back down to the bench.
- Finally, lower your legs back down toward the floor. Just before your legs touch, lift them back up and repeat.

5.4 Top 10 Tips and Benefits of the Upper-Body Workout:

1. Sometimes you just need a break from the grind, and the Upper-Body workout routine will be an enjoyable return to your college training days.
2. These workout programs will help you develop bigger and stronger shoulders, triceps, biceps, and forearms while not neglecting your other main muscle groups, including your legs.
3. To keep your joints safe and to maximize your results, try to include varied repetition schemes and multiple-angle movements.
4. The Upper-Body workout was to be designed in a way to burn body fat so that you don't miss out on any of the metabolic effects of the other workouts.
5. Remember to focus on using your elbow as the fulcrum and your forearm as the lever during each biceps curl or triceps extension.
6. You're going to be amazed how much your core is worked even though you aren't doing any standard crunches or abs exercises.
7. If a movement is a brand new to you, be sure to ease into it with a lighter weight until you master the form.
8. Keep in mind that great-looking, well-defined arms are more than just a nice way to fill out your T-shirts. They function as secondary muscle groups in all your major compound lifts.

9. After four to six weeks of consistent training with the Upper-Body workout routine, you will notice powerful strength and mass increases in the overall look and function of your upper-body muscles.
10. The Upper-Body workout is a fantastic program that you can add to your training regimen once a year to spice up your old routine or work on any neglected smaller groups!

Conclusion:

By strengthening the muscles that attach to your wrist, elbow, shoulder joints, abs and back, you are helping to keep those potentially vulnerable spots strong and stable when performing some of your main strength and power lifts.

Having said that, you should be careful when training the upper body so, as not to neglect the larger muscle groups. We also want to make sure that we don't do any excessive, repetitive-motion movements that could put your joints at risk for injury.

Chapter 6

BEST LOWER BODY WORKOUTS

No matter how hard you can punch, if you lack strength and power in your lower body, then you're going to be missing a very important piece of the puzzle.

Whether you want to run faster, Whip/Nae Nae better or simply feel stronger walking up the stairs, it never hurts to give a little more love to your butt, hips, and thighs during a workout.

Neglect your lower body too often and you risk losing mobility — that thing that allows you to plop down on the floor to play with your kids, or get up and out of even the cushiest chair with ease.

6.1 The Simple Science of Effective Lower Body Training.

There are many ways to train the muscles in your lower body.

You can do bodyweight exercises, machines, or free weights. You can use lighter weights for more reps or heavier weights for fewer. You can train your lower body once, twice, or thrice per week, or even more frequently.

But whatever you prefer, there are two major things that you should always keep in your mind while performing lower body workouts.

1. You want to do a lot of heavy compound weightlifting.

The reason heavy compound weightlifting is so powerful is simple: it's the best way to progressively overload your muscles.

That is, it's the best way to increase tension levels in your muscles over time, which is the primary driver of muscle growth.

This is why your number one goal in your resistance training should be to increase whole-body strength, and why the strongest people in the gym are also generally the biggest.

2. You want to make sure your weekly volume is right.

By "weekly volume," we are referring to the total number of reps that you perform for each major muscle group each week.

If you do too little work on any muscle group, it'll progress slower than it could, and if you do too much, you'll eventually run into problems related to overtraining.

Now, the first thing that you should know about training volume is this:

"The heavier you train, the lower your weekly volume needs to be."

The reason for this is it takes your muscles and body longer to recover from heavy weightlifting than lighter training. This is why popular powerlifting programs look so austere compared to the nonsense you find in most bodybuilding magazines.

6.2 Best Warm-up Exercises to do before starting Lower Body Workouts.

To prevent injury, improve exercise form and make your workouts more effective, it's important that you warm-up properly before exercising. Try this set of dynamic warm-up exercises next time you want to prepare your muscles, tendons, and joints for additional strength training.

1. **Butt Kicks – 60 sec.**

- Stand with your legs shoulder-width apart. Your arms should be bent at your sides.
- Flex the right knee and kick your right heel up toward your glutes.
- Bring the right foot back down.
- As the right leg comes down, flex your left knee and kick your left foot up toward your glutes. ...Repeat.

2. **Reverse Lunge Front Kick – 60 sec.**
   - Take a step back with your right foot and lunge.
   - As you come up kick your right leg up.
   - Repeat this movement with your left leg and keep alternating legs until the time is up.

3. **Lateral Step-Out Squat – 60 sec.**
   - Stand up straight, feet shoulder-width apart.
   - Keeping toes pointed straight ahead and knees over toes, lower into a standard squat.
   - Hold that squat position as you take two steps to your right.
   - Pause, then take two small side steps to your left.

6.3 Best Lower Body Workouts.

1. Romanian Deadlift – Sets:3, Reps:25, Rest – 60 sec.

- Hold a barbell with a shoulder-width grip and stand with feet hip width.
- Bend your hips back as far as you can.

- Allow your knees to bend as needed while you lower the bar along your shins until you feel a stretch in your hamstrings.
- Keep your lower back arched throughout.

2. Weighted Back Extension - Sets:4, Reps:12, Rest:0 sec.

- Lock your legs into a back extension bench and hold a weight plate against the back of your head.
- Allow your torso to bend forward so that your hips are bent almost 90 degrees, but do not lose the arch in your lower back.
- Extend your hips so that your body forms a straight line.

3. Weighted Sit up - Sets:3, Reps:25 Rest: 60 sec.

- Lie on the floor holding a weight plate at your chest.
- Bend your knees 90 degrees with feet on the floor.
- Tuck your chin to your chest and sit up all the way.

4. 1½ Bulgarian Split Squat - Sets:3, REPS:8 × 1½ reps (each side), Rest: 180 SEC.

- Stand lunge-length in front of a bench.
- Hold a dumbbell in each hand and rest the top of your right foot on the bench behind you.
- Lower your body until your rear knee nearly touches the floor and your front thigh is parallel.
- Come back up halfway and then lower to the floor again.
- Now come all the way up. That's one "1½ rep."

5. Hamstring Curl – Sets:4, Reps:10, Rest:120 sec.

- Sit on the machine with your back against the back support pad.
- Place the back of the lower leg on top of the padded lever (just a few inches under the calves) and secure the lap pad against your thighs, just above the knees.
- Then grasp the side handles on the machine as you point your toes straight and ensure that the legs are fully straight right in front of you. This will be your starting position.
- As you exhale, pull the machine lever as far as possible to the back of your thighs by flexing at the knees.
- Keep your torso stationary at all times. Hold the contracted position for a second.
- Slowly return to the starting position as you breathe in.

6. Barbell Hip Thrust – Sets:3, Reps:5, Rest:120 sec.

- Begin seated on the ground with a bench directly behind you.
- Have a loaded barbell over your legs. Using a fat bar or having a pad on the bar can greatly reduce the discomfort caused by this exercise.
- Roll the bar so that it is directly above your hips, and lean back against the bench so that your shoulder blades are near the top of it.
- Begin the movement by driving through your feet, extending your hips vertically through the bar.
- Your weight should be supported by your shoulder blades and your feet. Extend as far as possible, then reverse the motion to return to the starting position.

7. Dumbbell Side Bend - Sets:4, Reps:12(each side), Rest:90 sec.

- Hold a dumbbell at your side with one hand, palm facing in.
- Bend your torso to that side as far as you can, allowing the weight to pull you down.

- Do not let your body twist so that you bend forward.

8. One-Leg 45-Degree Cable Romanian Deadlift - Sets:3, Reps:25, Rest – 60 sec.

- Stand tall on one leg, holding the cable handle in your opposite hand.
- Keeping your back and arm straight, hinge at your hip and bend forward toward the floor.
- Keep your weight-bearing knee bent at a 15- to a 20-degree angle.
- As you hinge forward, allow your non-weight-bearing leg to elevate so that it remains in a straight line with your torso.
- Once your torso and non-weight-bearing leg are at about a 45-degree angle to the floor, reverse the motion by driving your hips forward toward the cable to stand tall again, thus completing the rep.
- Perform all repetitions on one side before switching sides.

Tip: The range of motion is shorter when using the cable than when using the dumbbell because the force you're working against is at a higher point. Whereas the dumbbell pulls you toward the floor, the cable pulls you toward its anchor point at a 45-degree angle.

6.4 Single-Leg Versus Double-Leg Training.

The debate about single-leg versus double-leg exercise is like arguing about whether one should eat only carrots or only broccoli. In reality, each vegetable offers a unique flavor and provides a certain set of nutrients, so just include them both in your diet to make it more tasty and nutritious!

As for single-leg and double-leg exercises, the double-leg exercises (e.g., squats, deadlifts) place you in a wider base of support and force you to use both your legs and your hips, together, to coordinate many muscles in order to move big loads, which is very metabolically taxing.

In contrast, unilateral leg-training exercises force you into a narrow base of support, which works your legs and hips in a slightly different manner; a manner that's often closer to how your legs work during sports since many athletic actions (i.e., running and cutting) are single-leg dominant.

Of course, they also force you to focus on controlling and using one side at a time, which is great for strengthening your weaker, less coordinated side.

Therefore, using both types gives you a wider range of benefits; in addition, having both types to choose from provides a much larger pool of exercise options for adding variety to your lower-body workouts.

In summary, since both unilateral and bilateral leg training help you improve muscle and strength—and since both offer unique, complementary benefits— it makes sense to incorporate both into your lower-body workouts in order to make them more well-rounded and effective.

6.5 Importance of Lower Body Workout Program.

Your lower body is home to some of the biggest muscles in your body. Focus on workouts that challenge your bottom half and you'll be rewarded with strong glutes, athletic quads, healthy hammies and toned calves. But it's not all about looking good. As evidence, we present reasons to train your lower body:

1. You'll be a better athlete.
2. You'll reduce your risk of injury.
3. You'll burn more calories.
4. You'll improve your balance.
5. You'll run faster and longer.
6. You'll increase your metabolism.
7. You'll relieve lower back pain.
8. You'll increase your range of motion.
9. You'll have superhero efficiency for everyday tasks.
10. You'll improve your bone health.

Conclusion:

Although muscles like your arms, back, shoulders and core are more noticeable when you train them regularly; to those who are missing lower body workouts- you are making a big mistake.

Setting aside training sessions to work on your lower body, will help you develop and maintain strong quads, glutes, hamstrings, and calves- some of the biggest muscles in the body. Plus- who wants a big arm and chest muscles on top of skinny legs?

Not only will you start to look better physically; but you will start to feel the effects of the many other benefits of training and partaking in lower body exercises can have.

Chapter 7

MUSCLE SORENESS, TISSUE DAMAGE AND RECOVERY

Starting a workout program can be challenging, making the time to exercise, creating a balanced routine, and setting goals are hard enough, but add to that the muscle soreness that comes with adapting to that regimen, and it may be difficult to stay on track.

We've all been there: You've crushed a tough workout only to be rewarded with stiff, aching muscles the morning after.

For some individuals, sore muscles are a reward after a hard workout. In fact, some people aren't happy unless they're sore after their workout, while others could live without it. Either way, all of us have probably experienced muscle soreness at one time or another. In this chapter, we will review the causes of muscle soreness, the anatomy of tissue damage and recovery.

7.1 What is Muscle Soreness and its causes?

After participating in some kind of strenuous physical activity, particularly something new to your body, it is common to experience muscle soreness, say experts.

"Muscles go through quite a bit of physical stress when we exercise," says Rick Sharp, professor of exercise physiology at Iowa State University in Ames.

"Mild soreness just a natural outcome of any kind of physical activity," he says. "And they're most prevalent in beginning stages of a program."

Sore muscles after physical activity, known as delayed onset muscle soreness (DOMS), can occur when you start a new exercise program, change your exercise routine, or increase the duration or intensity of your regular workout.

When muscles are required to work harder than they're used to or in a different way, it's believed to cause microscopic damage to the muscle fibers, resulting in muscle soreness or stiffness.

DOMS is often mistakenly believed to be caused by a build-up of lactic acid, but lactic acid isn't involved in this process.

So, what causes muscle soreness?

Despite the prevalence of DOMS, the exact mechanisms that cause it are not totally understood. Currently, most think it’s a result of microscopic tears in the muscle and surrounding connective tissue as a result of eccentric exercise.

The eccentric phase of a movement occurs when a muscle is lengthening (sometimes referred to as doing “negatives”). Classic examples would be lowering a dumbbell back to its starting position during bicep curls or running downhill.

But the actual cause is swelling in the muscle compartment that results from an influx of white blood cells, prostaglandins (which are anti-inflammatory), and other nutrients and fluids that flow to the muscles to repair the "damage" after a tough workout.

The type of muscle damage we are referring to is microscopic (it occurs in small protein contractile units of the muscle called myofibrils) and is part of the normal process of growth in the body called anabolism.

And DOMS isn't just about soreness. Symptoms can include weakness, stiffness, and sensitivity to touch. The discomfort usually starts to appear within 12 to 24 hours after exercise, peaks after 24 to 72 hours, and should disappear within three to five days.

7.2 How can I treat DOMS?

It used to be thought that speeding recovery and preventing DOMS was as simple as increasing protein, fats, and carbohydrates intake. This can certainly help overall recovery, but won't have a dramatic impact on soreness.

No therapy that consistently increases the speed at which DOMS is relieved has been found, but some therapies may work if applied right after exercise.

Tips to Cure DOMS:

1. **Active recovery Session**

We first read about this from Chad Waterbury: his recommendation is to pick 20% of your max and do 2 sets of 40-50 reps for partial mid-range reps. For example, if you have sore legs do 40-50 bodyweight squats without locking out. The goal is not to create a training effect but to flush blood through the affected muscles.

2. **Get your post-workout shake in**

Protein is the big one, and timing does appear to make a difference when it comes to DOMS. If you're fancy, you can throw in some glutamine and BCAA too, with a number of other benefits.

3. **Stay Hydrated**

We don't need to convince you of the benefits of water, although surprisingly it doesn't appear to have an effect on DOMS.

4. **Walking**

Walking is a good way to flush blood into the muscle. Do it fasted to get a fat loss kick too.

5. **Caffeine**

Caffeine, taken the day after training has been shown to improve force output of sore muscles in addition to attenuating soreness.

6. **Contrast baths/showers**

Other studies have shown that, at least in trained athletes, cold water baths or alternating hot-and-cold water baths may have a positive effect on recovery time. Before you start filling your tub with ice, though, note that these studies didn't examine pain relief, only performance recovery.

7. **Train again**

Often if you have a few days off, then have a heavy session, you can be more sore than normal. Paradoxically when we are doing any high-frequency training (training between 6 and 10 times per week) soreness disappears (repeated bout effect).

8. **Eat more, sleep more**

Sometimes if you're sore all the time, it's simply that you didn't eat enough. Up the protein & carbs.

Take adequate amount of rest. Sleep about 7-9 hours will help in relieving sore muscles.

9. **Fascial stretches pre/post-workout**

Fascial stretches help with muscle soreness when used pre and post workout. However, go easy with these. Stretching feels good but overdoing it when you're already sore can increase DOMS, according to some data.

10. Foam rolling/massage

Finally, with the weakest evidence basis (and least fun) is foam rolling 2 hours post-exercise, or better, still get a sports massage. The rationale is that it may interrupt some of the mechanisms that induce DOMS.

The intended soft tissue work is not to eliminate DOMS per se, but to keep your tissue in decent enough quality long term, to prevent dysfunctional patterns, tightness and muscle adhesions.

11. Ice

Applying ice is shown to reduce perceived soreness, but doesn't aid in muscle recovery and may impede it in the long term. Ming Chew also advises against ice, to avoid causing fascial restriction.

DOMS doesn't generally require medical intervention. But you should seek medical advice if the pain becomes unbearable, you experience heavy swelling, or your urine becomes dark.

7.3 What Can Cause Tissue Damage?

When the body sustains damage from trauma, disease or simple wear and tear, it normally results in the formation of a lesion or cartilage gap on your joint surface.

Cartilage is the smooth "Teflon like" tissue that covers the ends of your bones and allows your joints to move smoothly against each other.

When cartilage is damaged or has worn away the bone underneath is exposed resulting in a lesion that causes pain and discomfort. One way of treating this lesion is to use the body's own healing mechanisms to create a clot which will eventually turn into tissue and cover the lesion (exposed bone).

The marrow in your bones is full of stem cells, growth factors and other biological building blocks that can form new tissue. This response is similar to the healing process of a "scar", specifically, the way a scab grows over a cut.

Tissue Damage can be caused by numerous unexpected events such as:

- A Sprain
- Tendon Tear

- Arthritis
- Fibromyalgia
- Traumatic Events (Car accident)
- Infections
- Any activity runs the risk of injury.

When a wound presents itself, either internally or externally, they are often the result of a void or loss of tissue. In medicine, wounds are also referred to as lesions, defects, scars or tears.

As part of the body's normal healing mechanisms, a biological process begins to repair the damage. In order to strengthen the body's own healing mechanisms, allograft tissue or some type of biological therapy is used to cover the wounded area, fill the tissue void and/or accelerate the healing process.

Grafts function like a "biological blanket" by reducing adhesions or scarring and the scaffold can act as a new layer to augment the closure of the wound.

When a cartilage gap or arthritic bone occurs, it can be very painful and debilitating.

7.4 How muscle heal and recover from injury?

Your muscles heal very differently than your bones. If you fracture a bone, as long as it is set and fixed in place properly, it will tend to heal so thoroughly that it will become stronger than it was before the fracture!

Bone tissue heals with calcium and other minerals, components of bone, in a process that creates a bond that is as strong or stronger than the original bone structure.

Lloyd, for example, breaks his leg and strains (pulls) several muscles in a skiing accident. The fractured bone is set, his leg is placed in a cast, and after the requisite amount of time, the cast is removed. It's as good as new or even better—the bone anyway…

Your muscles, however, do not actually heal with muscle tissue, but with "foreign" substances including collagen. The resulting scar tissue is weaker, less elastic, and highly prone to re-injury. Once a muscle is damaged, it can become the source of a great deal of pain.

The standard medical response to muscular injuries is still mostly painkillers, anti-inflammatory drugs, and rest. The medication does little more than numb the pain and suppresses the inflammation. The symptoms are effectively reduced, but these are the symptoms of the injury—not the injury itself.

Drugs can actually slow the healing process, and too much rest can be counterproductive as well since muscle tissue needs a certain amount of movement as it heals, and will begin to atrophy (shrink) if not used.

Unfortunately for Lloyd, the casting and immobilization of his leg, which was crucial for the proper healing of the bone, was not exactly what his injured muscles needed.

Now over a year has passed, including several months of vigorous physical therapy sessions, and x-rays show that the bone has completely healed and there are no other complications.

Lloyd however, notices that although his injured leg seems to be just as strong as it was before the accident, it is nowhere near as flexible, and he finds himself in pain whenever he runs or cycles, two activities he was able to perform painlessly before the skiing accident.

7.5 What muscles need in order to heel as fully as possible?

In order for a car to go forward properly, all of its tires need to be aligned in the same direction (unless it's turning). In a similar manner, for your muscles to function properly, all of their fibers need to be aligned in the same direction.

When you have a muscle that has been injured, however, the initial repair process creates a "patch" of random scar tissue fibers.

Like a weak link in a chain, the random alignment of these new fibers becomes a "weak link" in your muscle, leaving it highly susceptible to re-injury.

For an injured muscle to regain maximum strength and flexibility, the scar tissue needs to become aligned and integrated with the muscle fibers.

Oddly, our bodies do not have an efficient internal mechanism for accomplishing this. It's somewhat haphazard, gradually improving over time but often not resolving completely, which can become quite a problem.

The problem is that the nervous system essentially "overreacts" to even microscopic areas of scar tissue, by keeping the muscle in a shortened, inflamed, and usually painful state.

The inflammation process is the first stage of healing and by keeping the muscle short, the nervous system is trying to protect it from further harm, these reactions, however, can continue well past the point of being productive—in fact, they can continue indefinitely.

Even a small muscular injury can lead to a chronic pain pattern which persists for months or even years, because the nervous "system stays on alert," waiting for the scar tissue to heal completely and become aligned with the surrounding muscle tissue.

7.6 How Muscle Damage Maximizes Bodybuilding Progress?

Anyone who has trained intensely with weights will have experienced localized muscle pain, often referred to as Delayed Onset Muscle Soreness (or DOMS).

Indeed, the pain we experience post training can provide valuable feedback to ensure we feed, rest, and modify our workouts to provoke optimal muscle mass gains.

Unlike the burn of a workout or the deep chronic stabbing pain of an injury, post-training muscle soreness, which may occur 24 to 72 hours after training and may last from 2-3 days, is characterized by stiffness, swelling, and strength loss.

Often viewed as a sign of a good workout, muscle pain has become an accurate, albeit non-scientific barometer, of whether a target muscle has received adequate stimulation.

Weight training newcomers are especially aware of the searing muscle pain associated with ultra-hard workouts; for them, such pain may be so severe that they suspect an injury has occurred.

This pain may even have radiated into a joint, giving the impression that connective tissue damage has taken place.

But rather than blame their trainer for pushing them too far, and being dissuaded from continuing their training efforts, they must realize that such pain is actually a sign of progress.

The major goal of serious trainers is to ensure that our muscles, between workouts, adapt to the imposed training stress to prevent chronic injurious muscle damage and to minimize further soreness. Prolonged soreness following training may reflect a failure to properly recover between workouts.

Bodybuilding training, done properly, is heavily associated with the production of pain.

In fact, many who train for muscle growth specifically seek muscle soreness both during their workouts and in the days following their training. However, only one type of pain will encourage the gains we seek.

Indeed, the soreness we experience during our workouts does not contribute to DOMS. Instead, rather than the lactic acid influenced chemical changes within the muscle, it is the structural changes resulting from actual muscle damage that create the conditions for growth.

Though it's hard to say whether the extent of post-training muscle soreness is an indication of the amount of muscle damage incurred, it is true that a degree of pain does signal an adaptation process during which the muscle changes its structure to prevent further soreness from the same movement (the so-called "Repeated Bout Effect").

But because our muscles, over time, increasingly adapt to our training efforts to prevent further damage and pain, we must negate this process by exponentially increasing the intensity of our workouts.

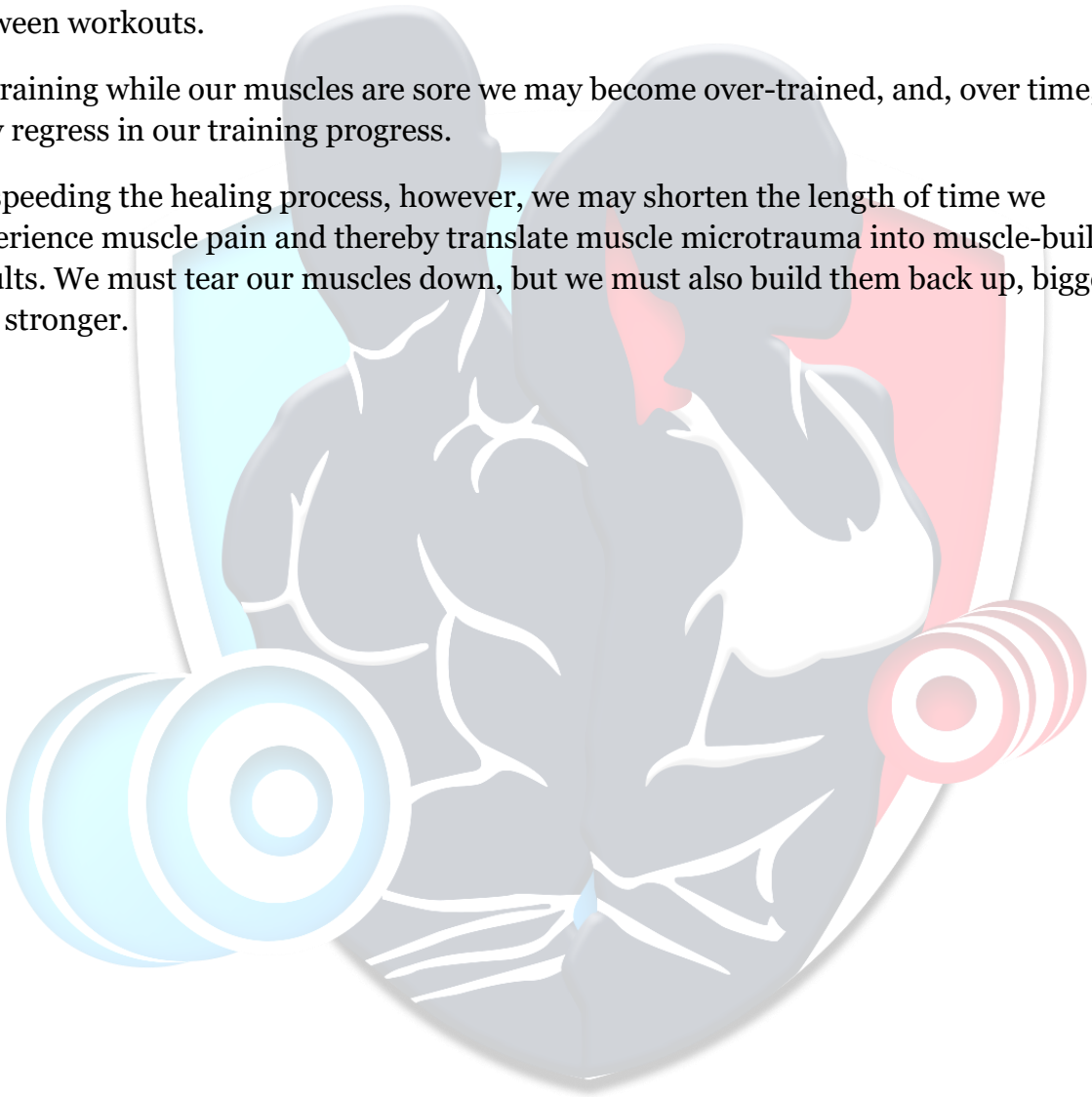
This is most easily done by increasing weight lifted, varying reps and sets, adding new exercises, improving technique, or incorporating intensity techniques such as rest/pause and supersets.

Conclusion:

We have determined what muscle damage is and why it's needed. The key to ensuring we prosper from it is to bring about the conditions that enable us to fully recover between workouts.

By training while our muscles are sore we may become over-trained, and, over time, may regress in our training progress.

By speeding the healing process, however, we may shorten the length of time we experience muscle pain and thereby translate muscle microtrauma into muscle-building results. We must tear our muscles down, but we must also build them back up, bigger and stronger.



Chapter 8

BODY BUILDING TACTICS FOR WOMEN

If you are a female considering a bodybuilding regimen, it is important to understand you have a few physiological disadvantages compared to your male counterparts.

You have much lower levels of the hormone testosterone than men, which make it challenging to gain muscle. You also have much higher levels of estrogen than men, which cause you to retain more fat.

However, by applying key strategies to your lifestyle, workouts, and diet, you can acquire a shapely, muscular physique.

8.1 How to start bodybuilding for women.

Many women worry that bodybuilding will somehow transform them into Hulk-ettes, so they spend hours doing cardio in order to maintain their "feminine" figure.

The truth is, women just don't have the hormonal support to gain muscle mass like men. The hormone testosterone is responsible for large increases in muscle mass. Women's testosterone levels are a fraction of men's. That means you can bench press without concerning yourself about how much chest hair you might grow.

There are women, typically professional bodybuilders, who look masculine. It takes many, many years of dedication and a particular lifestyle to achieve this sort of muscularity.

You're right about one thing, though: training with weights will increase your lean muscle mass.

That's a good thing! The more muscle you have, the more calories your body will burn. The more calories you burn, the leaner you'll get. Increased muscle mass will also add shape to your arms, take inches from your tummy, and even add some roundness to your booty!

1. **Schedule your workout plan:**

- Perform three weight-training sessions per week.
- Hitting your whole body each time.
- Base your routine on compound exercises such as squats, lunges, and deadlifts.
- These burn the most calories, hit more muscles and give the best bang for your buck.

If you're not sure of any exercise techniques, ask a trainer at your gym for assistance.

2. **Plan your nutrition chart:**

Multiply your body-weight in pounds by 10 to get the minimum number of calories you need each day, advises champion female bodybuilder Jamie Eason.

You then need to add 300 to this if you have a sedentary lifestyle, 500 if you're moderately active or 800 if you're highly active.

Aim to get your calories from nutrient-dense foods such as lean meat and fish, low-fat dairy products, beans, fruits, vegetables, whole-grains, nuts, and seeds. You may need to play around with your calorie intake slightly until you find the perfect balance.

3. Set small attainable goals:

If you've never lifted weights before, trained at very high intensities or followed a strict diet plan, then going from where you are now to a female bodybuilder is a long road.

It will be tough, but see that as a challenge rather than a disadvantage. Set both outcome-based goals such as adding half a pound of muscle a week or competing in a local show in six months.

Aim for behavioral goals such as making it to the gym five times per week or sticking to your diet for an entire fortnight.

8.2 Best Body Toning exercises for women.

If you want a body that works as great as it looks (and vice versa), this total-body routine is the answer. You'll not only hit max muscle, which ups your metabolism but also strengthens your core and hones your balance to protect injury-prone spots.

For a head-to-toe hard body, do these moves twice a week. Where applicable, opt for a weight at which you can barely eke out the last rep of your final set with perfect form.

1. **Test the water squat and bicep curl:**
   Works: biceps and entire lower body

- Grab a pair of 8- to 10-pound dumbbells and stand on a one- to two-foot-high step or bench with your feet together and your arms at your sides with palms facing forward.
- Lift your right foot off the bench and squat down a few inches.
- Press back up and curl the dumbbells up to your shoulders. That's one rep.
- Do three sets of 12 to 15, then repeat on the other side.
- Rest for 30 seconds between sets.

2. **Take a walk:**
   Works: triceps and core

- Place a Bosu on the floor and sit on the dome's center.
- Place your palms on the ball alongside your hips with your fingertips facing forward, and place your heels on the floor about two feet from the base of the Bosu.
- Straighten your arms and lift your hips off the ball.
- Lift both your right hand and your left foot a few inches.
- Hold for one second, then lower and repeat with the other hand and foot.
- That's one rep. Do three sets of 15 to 20, resting for 30 seconds between sets.

3. Rotational lunge and shoulder press:
Works: shoulders and entire lower body

- Grab a pair of 8- to 12-pound dumbbells and stand with your feet together and your arms at your sides.
- Take a giant step back with your right leg, landing with your toes turned out.
- Sink into a lunge until your left thigh is parallel to the floor, then lower the dumbbells and your torso until the weights are on either side of your left ankle.
- Straighten your left leg without locking your knee and stand up, bringing your right leg forward so your legs are together.
- At the same time, press the dumbbells overhead with your palms facing each other.
- That's one rep. Do 12 to 15 reps, then repeat on the other side. That's one set.
- Do two sets, resting for 30 seconds between sets.

4. **Warrior three tricep extension:**
   Works: core, back, glutes, and hamstrings

- Grab a pair of 8- to 10-pound dumbbells and stand with your arms at your sides.
- Place your right toe on the floor about two feet behind you and bend forward from the hips.
- Keeping your right leg straight, raise it off the floor until your body forms a T and your arms hang straight down from your shoulders.
- Row the dumbbells toward your ribs until your elbows pass your torso.
- Lower the dumbbells and return to start. That's one rep.
- Do 12 to 15 reps, then repeat on the other side. That's one set.
- Do two, resting for 30 seconds between sets.

5. **Plank with front raise:**
   Works: shoulders and core

- Grab a pair of 5- to 8-pound dumbbells and get in plank position with your hands on the weights directly below your shoulders and your palms facing each other.
- Brace your abs, and keeping your left arm straight, raise it in front of you to shoulder height.
- Return to plank, then repeat with your right arm. That's one rep; do 12 to 15.
- Complete three sets, resting for 30 seconds between sets.

6. **Sumo squat side knee raise and side crunch:**
   Works: arms, core, and entire lower body

- Standing with your legs wider than shoulder-width apart, hold a medicine ball in front of your body.
- Squat until your thighs are almost parallel to the floor.
- Keeping your right knee bent and rotating the hip so your inner thigh faces forward, stand up on your left leg and lift your right leg out until your knee is past your hip.
- At the same time, circle the ball clockwise until it's above your right shoulder and crunch your upper body to the right.
- Return to start. Do 12 to 15 reps, then repeat on the other side. That's one set.
- Do three, resting for 30 seconds between sets.

7. **Swiss thigh and fly:**
   Works: chest, core, and inner thighs

- Grab a pair of 8- to 10-pound dumbbells and lie on your back with your arms extended directly above your shoulders, palms facing in, and a stability ball between your legs.
- Keeping your legs straight, raise them so the bottoms of your feet face the ceiling.
- Keeping your elbows slightly bent, slowly lower the dumbbells out to the sides so they're in line with your shoulders.
- At the same time, slowly lower the ball to within a few inches of the floor.
- Slowly raise the dumbbells and the stability ball back to start. That's one rep.
- Do three sets of 12 to 15 reps, resting for 30 seconds between sets.

8.3 Muscle Building Diet Chart for Women.

While the average woman might base her eating plan on trying to lose weight, if you compete in bodybuilding or figure competition, your diet focus will often be on gaining weight. You don't want to gain fat, though -- rather, you want to increase lean muscle mass while still retaining a feminine shape.

The key to achieving your ultimate physique is to consume the right number of calories and macronutrients while adjusting your food intake to support your intense training regime.

Step #1 – Muscle Building Calories:

For muscle building, you need to eat a diet that is not in deficit, but it is not necessary to overeat either. By overeating, you will put on unnecessary fat weight, which will be harder to lose later.

Aim for a diet that maintains (or adds a safe and healthy amount of weight) and one that helps switch your body composition to be leaner and more muscular.

A daily calorie intake that is about 12 to 15 times your body weight is usually a good starting point, depending on your current weight, your activity level and the amount of weight you want to gain or maintain.

If you're very thin, you may even want to consider multiplying your weight by 15 to 18 times your body weight.

Step #2 - Macronutrient Breakdown:

All three macronutrients will be important when it comes to building muscle. Protein is needed to repair, rebuild and put on muscle, while carbohydrates will help fuel workouts, glycogen replenishment and stimulate insulin for nutrient delivery and protein synthesis.

Lastly, essential fats are needed for hormone development. This means a balanced macronutrient ratio is critical. Go for a diet that consists of 40% protein, 30% carbs, and 30% fats.

Step #3 – Choose Your Nutrients:

Proteins

Choose from lean cuts of meat, poultry, dairy, and fish, but don't be afraid to eat meats that provide some fat as well. Saturated fat from eggs and red meat provide a source of cholesterol that can help balance important hormones needed for growth!

Carbs

Complex carbs are important, but it's ok to also eat a few simple ones too. Although the nutrient timing and the post-workout anabolic window is in question by many researchers, eating simple carbs after training does help muscle building by stimulating insulin release. This shuttling hormone helps direct nutrients to the muscle to help with glycogen replenishment and protein synthesis.

Fats

Studies have shown that eating a diet that is higher in protein and fats can lead to increases in lean mass and strength, with a more favorable body composition over those following higher carbohydrate, low-fat diets. Eating meat will provide some of your fat sources, but other sources include nuts, seeds, and even dairy.

Step #4 – Build Your Plan

Example:

- 120 pounds x 15 = 1800 Calories
- 40% Protein = 720 calories (4 calories per gram) = 180 g
- 30% Carbs = 540 calories (4 calories per gram) = 135 g
- 30% Fats = 540 calories (9 calories per gram) = 60 g

Meal	Plan
Meal 1	½ cup of Oatmeal 1 whole Egg with 1 cup Egg White ½ cup Mixed Berries
Meal 2	100 g Chicken Breast ½ cup Brown Rice ½ cup Mixed Veggies
Meal 3	1 scoop Protein Powder 1 apple 1 tbsp Natural Peanut Butter
Meal 4	100 g Lean Sirloin 1 cup Mashed Sweet Potato 1 cup Broccoli
Meal 5	150 g Salmon 1 cup Spinach Salad 1 tbsp Olive Oil 1 tbsp Balsamic Vinegar
Meal 6	1 cup Non Fat Greek Yogurt 1 tbsp Natural Almond Butter

8.4 Top Mistakes to avoid when you opt for Bodybuilding.

Here we are about to reveal the most common mistakes we see women make time and time again in the gym. Take a look and see if any of these blunders look familiar.

1. **Doing the same workout every single day:**

If you haven't been working out for very long, you might not realize that when you break down a muscle it needs time to rest and repair itself.

If you work it every day it will never have the chance to recover, and therefore it will never get any stronger or any more "toned." It's important to give each muscle group a rest of at least 48 hours between workouts.

An example of a good 4-day split would look something like this:

- Monday: Chest/Biceps
- Tuesday: Legs
- Wednesday: Rest
- Thursday: Shoulders/Triceps
- Friday: Back
- Saturday: Rest
- Sunday: Rest

2. **Fear of the dumbbell:**

It seems so many women still hold the old common misconception that they will get too big if they lift weights. Ladies, you will never turn into the Incredible Hulk simply by picking up a dumbbell. Nor will you be able to make any significant changes in your body by merely doing hours of cardio.

Muscle tissue is ravenous! You'll be able to get away with consuming quite a few more calories if you get diligent with the weights.

3. **Not drinking:**

If you watch a competitive bodybuilder in the gym, you'll probably notice they'll often be carrying a gallon jug along with them.

Why's water consumption so important? It flushes toxins. It helps to keep joints healthy. It prevents dizziness and fainting. It keeps metabolism higher. It reduces fatigue. Need we go on?

4. **Cardio, Cardio, Cardio:**

Too much cardio increases cortisol in the body. This results in the tearing down of muscle tissue. The less muscle you have, the slower your metabolic rate.

Keep it sane, ladies. I personally like to keep my cardio to 3-to-4 days a week, 30-to-40 minutes at a time.

Everyone's body is different, of course, so you'll need to do a little investigating to find out how much cardio is right for you.

5. **Trying to shrink the waist with abdominal abuse:**

So many people still believe they can shrink their waists by excessively training their abs. You may create the illusion of a tighter stomach because the underlying muscle will give shape to the fat layer on top, but you can't reduce the fat itself by crunching.

In order to reduce the fat layer on top of the abdominals, you must follow a healthy diet and do your cardio. Training your abs 2-to-3 times per week maximum will ensure you'll have something sexy to look at once the fat has been reduced.

6. **Not consuming post-workout protein:**

If you've just had a good workout and broken down your muscle tissue, how do you expect the muscle to begin the repair process? Most gyms even offer protein shakes, but it's easy enough to make your own.

Again, everyone is different, so you'll need to do a little investigating to figure out the right amount of protein, carbs, fats, and glutamine you should be taking in post-workout.

Conclusion:

Train and eat properly and adequately for losing weight to gain muscle, creating a lean, taut physique that is strong and healthy. Don't worry about creating a masculine appearance, either. It takes specialized training, a genetic predisposition and, sometimes, supplements to look like a female bodybuilder.

Chapter 9

ROLE OF PROTEIN IN MUSCLE GROWTH

In order to see the best gains from your training program, proper nutrition is essential. This means the proper intake of calories, the proper ratio of macronutrients - protein, carbs, and fats - and the proper timing of these macronutrients.

As well, this also means understanding and maintaining a positive nitrogen balance. Many bodybuilders - beginners and otherwise - do not understand the basics of good nutrition from a bodybuilding standpoint.

When it comes to muscle building, you will find no shortage of advice on what to eat, how to train and what sort of supplements you should be taking. Unfortunately, there are lots of misconceptions and one of the biggest misconceptions is about the role of protein in bodybuilding. Let's clear it out step by step...

9.1 What is protein and its importance?

Proteins are macro-molecules containing chains of amino acids. Quality protein helps you get the essential amino acids that your body needs for protein synthesis but can't produce on its own.

Protein is the most important macronutrient when it comes to gaining mass through resistance training. Muscle is mostly made up of protein and water, so in order to gain muscle mass, consuming the right amount of protein is an absolute requirement. In addition to this, "the rates of muscle protein degradation and synthesis increase in response to high-intensity resistance exercise."

Protein is used by the body to build, repair and maintain muscle tissue. Protein is comprised of amino acids, usually referred to as the "building blocks of protein". There are approximately 20 amino acids, 9 of which are considered essential because the body cannot make them, they must be supplied by the diet.

Protein is essential for growth and the building of new tissue as well as the repair of broken down tissue - like what happens when you work out. When you hear the term "positive nitrogen balance", it refers to being in a state of having enough protein available for the needs of the body and the needs of building muscle.

For the most part, we are told to eat sufficient protein (every 3-4 hours) to maintain a positive nitrogen balance because your body is actually in an anabolic, or building up phase in this state, where a negative nitrogen balance, from lack of adequate protein, indicates a catabolic or tearing down state.

This is why protein (and eating enough throughout the day) is so important: lack of adequate protein and your body begins to break down tissue to meet it's daily protein needs.

9.2 Why do you need protein to build muscle?

Proteins are made up of amino acids that are the basic building blocks of all proteins. Your stomach digests the proteins with hydrochloric acid that breaks them down into simpler forms that are easier to absorb in your intestines.

When proteins get absorbed into the bloodstream, they are sent to various parts of your body to perform various functions, including repairing muscle tissues, support your immune system, and transport oxygen in your red blood cells.

Your skeletal muscles' job is to move your body and to provide stability for body posture. Muscles grow by increasing the muscle cells' mass and cross-section fibers that pull muscles together and separate them during contraction and stretching.

According to Dr. Len Kravitz, who is a kinesiology professor at the University of New Mexico, protein helps build muscles only if there is a need to produce more contractile proteins or repair damaged tissues, such as from wounds, blunt trauma, and burns.

The need also occurs during strength and anaerobic training, such as weight-lifting and sprinting, when your muscles have to adapt to the stress of exercise by recruiting more contractile proteins to do more work.

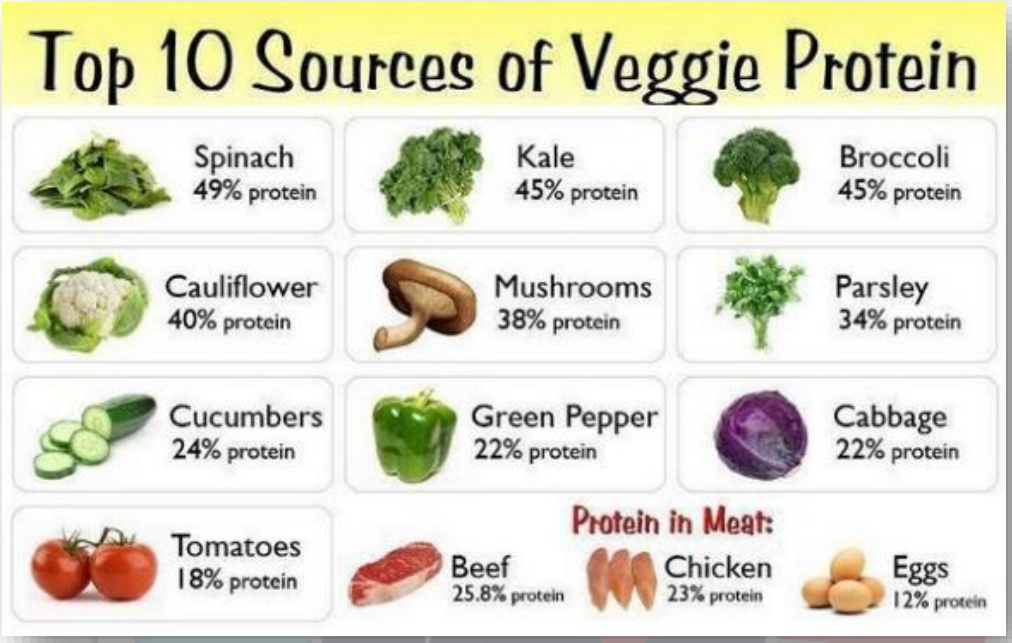
Your body needs 20 different amino acids to form usable proteins. It can produce 12 of these amino acids, yet it could not produce the remaining eight types, which are called essential amino acids.

These amino acids must be obtained from animal sources, such as meats and dairy products, contain complete proteins that your body can use. Plant-based foods do not contain all the essential amino acids.

According to Matthew Kadey, who is a registered dietitian with The Ontario College of Dietitians Member of Dietitians of Canada, you can combine different plant foods to create complete proteins, such as beans and rice. This allows vegetarians to get the proteins they need to build muscles.

So the bottom line is when it comes to building muscle, it's a protein that you need most.

- Your body needs complete proteins every 3 to 4 hours in order to ensure that there are enough amino acids available for muscle building.
- Your body needs a certain combination of 9 different amino acids in order to build muscle.
- Without those amino acids, no muscles!



9.3 How Much Protein Do You Need?

Lately, it seems like every popular diet is a high-protein plan.

And even people who aren't on a so-called diet are generally trying to eat more lean meats, nuts, seeds and low-fat dairy in an effort to boost their metabolism, build muscle and lose weight.

Much of the confusion comes down to what the current recommendations on protein actually are. The most common target people typically hear is 0.8 grams of protein per kilogram of body weight, and that works out to 0.36 grams of protein per pound of body weight or, in a 165-pound adult, about 60 grams of protein per day – about the equivalent of 3 cups of Greek yogurt, or one whole chicken breast.

But 0.8 is just the recommended daily allowance, or RDA, for protein intake for the average healthy adult, and contrary to popular opinion, the RDA isn't exactly recommending how much you should eat per day. The RDA of protein is defined as the minimum amount you need. It doesn't mean it's a healthy optimum.

Meanwhile, the current dietary guidelines say we should get between 10 to 35 percent of our daily calories from protein.

If you follow the 0.8 rule, that should put you at right about 10 percent, and Harvard University estimates that most people currently get about 16 percent of their calories from protein. And according to research published in The American Journal of Clinical Nutrition, even the top 5 percent of protein consumers don't approach the 35-percent mark.

But many people may need to inch their way a bit closer to 35 percent. Namely, weight-loss warriors, exercisers and both children and older adults.

For instance, a 2015 review published in Applied Physiology, Nutrition, and Metabolism shows that people get about 25 percent of their calories from protein. If you're eating 2,000 calories a day, that's about 125 grams daily. Each gram of protein contains four calories.

Meanwhile, the American College of Sports Medicine recommends that to increase muscle mass in combination with physical activity, you need to consume between

- 1.2 and 1.7 grams of protein per kilogram of body weight per day, or
- 0.5 to 0.8 grams per pound of body weight.

That equates to about 80 to 135 grams in a 165-pound adult. Oliver C. Witard, the exercise metabolism researcher at the University of Stirling in Scotland, advises consuming, even more, namely those trying to hit new PRs.

“For athletes seeking optimum performance, a recommendation of 1.6 to 2.0 grams of protein per kilogram of body weight may be beneficial," he notes. Contrary to some previous concerns over the risks of excessive protein intake, 2.0 grams per kilogram is not “too high” and is not harmful.

9.4 When should you take Protein?

The body has to be in a positive nitrogen balance whole day round for various reasons, be it repair and growth or post workout, which makes consumption of protein a whole day process. However, it’s important to have protein at these times.

- **Pre-workout:** Research suggests protein taken about 30 minutes before exercise may prime your system with the nutrients you need for growth and recovery.
- **Post-workout:** Undeniably, this is the most important time for protein. Of the many factors influencing the body’s ability to recover from intense training, post-workout nutrition is one of the most critical.
- **Before bed:** While you sleep, your system doesn't, and requires nutrients to carry on metabolic activities. Moreover, on the days you train, it's important to have protein before bed as the bulk of recovery takes place while you are catching some sleep.
- **Between meals:** Protein between meals promotes satiety, keeping serious hunger and cravings at bay for longer periods of time. Protein keeps your insulin levels stable thereby sparing you trips to the snack- vending machine during mid-morning and afternoon.

Getting up in the middle of the night to have a serving of protein might sound freaky but can be of immense help to keep your body in positive nitrogen balance.

9.5 What is a good protein source?

Protein can help you shed those unwanted pounds -- and keep your belly full. But it's important to eat the right amount and the right kind of protein to get its health benefits.

- **Seafood**

Seafood is an excellent source of protein because it's usually low in fat. Fish such as salmon is a little higher in fat, but it is the heart-healthy kind: it has omega-3 fatty acids.

- **White-Meat Poultry**

Stick to the white meat of poultry for excellent, lean protein. Dark meat is a little higher in fat. The skin is loaded with saturated fat, so remove the skin before cooking.

- **Milk, Cheese, and Yogurt**

Not only are dairy foods like milk, cheese, and yogurt excellent sources of protein, but they also contain valuable calcium, and many are fortified with vitamin D. Choose skim or low-fat dairy to keep bones and teeth strong and help prevent osteoporosis.

- **Eggs**

Eggs are one of the least expensive forms of protein. The American Heart Association says normal healthy adults can safely enjoy an egg a day.

- **Beans**

One-half cup of beans contains as much protein as an ounce of broiled steak. Plus, these nutritious nuggets are loaded with fiber to keep you feeling full for hours.

- **Pork Tenderloin**

This versatile white meat is 31% leaner than it was 20 years ago.

- **Soy**

Fifty grams of soy protein daily can help lower cholesterol by about 3%. Eating soy protein instead of sources of higher-fat protein -- and maintaining a healthy diet -- can be good for your heart.

- **Lean Beef**

Lean beef has about two grams more saturated fat than a skinless chicken breast. Lean beef is also an excellent source of zinc, iron, and vitamin B12.

- **Protein on the Go**

If you don't have time to sit down for a meal, grab a meal replacement drink, cereal bar, or energy bar. Check the label to be sure the product contains at least six grams of protein and is low in sugar and fat.

- **Protein at Breakfast**

Research shows that including a source of protein like an egg or Greek yogurt at breakfast along with a high-fiber grain like whole wheat toast can help you feel full longer and eat less throughout the day.

9.6 Effects of Protein on Lean Mass.

Protein consumption does three things related to lean mass.

First, protein breaks down into amino acids. Amino acids are the building blocks for virtually every tissue in the body, including muscle.

If you don’t provide enough essential amino acids (EAAs) through your diet, your body won’t have what it needs to maintain health and support the maintenance of bone and muscle tissue.

Certain diseases increase amino acid needs, which is why it’s difficult to maintain muscle when one is sick. Though muscle is not an intended storage space for amino acids, in extreme circumstances, the body will break down its own muscle tissue to supply amino acids to other areas of the body.

Second, protein consumption stimulates protein synthesis.

Third, it reduces protein breakdown.

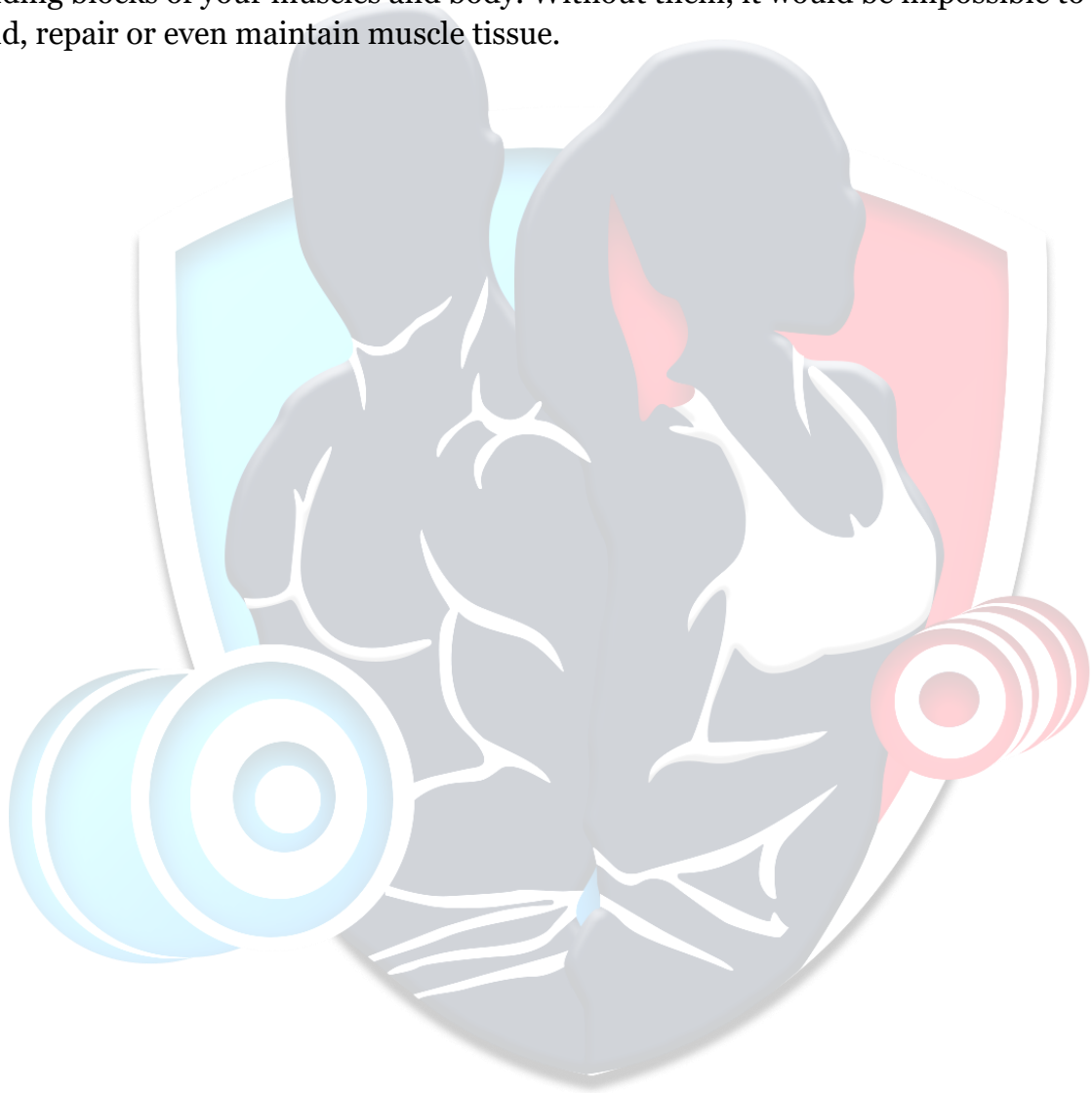
Protein synthesis is the process of assembling amino acids and building tissue, like a muscle. At the same time as the body is building up proteins and tissues, it also breaks them down.

When the rate of protein synthesis is greater than protein breakdown, the body produces a net increase in lean body mass. When protein breakdown exceeds synthesis, the body loses lean body mass.

Conclusion:

Protein is the building block of the body. When you train, the muscle tissue gets damaged and needs to be rebuilt through protein synthesis. This process is the basis of building muscle. Protein also affects your body composition by regulating hormones and water retention.

Delivering your body a constant supply of Protein throughout the entire day is essential for optimum muscle growth. Protein is made up of amino acids. Amino acids are the building blocks of your muscles and body. Without them, it would be impossible to build, repair or even maintain muscle tissue.



Chapter 10

ROLE OF STEROIDS IN MUSCLE BUILDING

Steroids have been used in the world of fitness and bodybuilding for their muscle growth-enhancing effects for quite some time. The benefits versus the risks debate of doping (steroid use) is an ongoing debate and are likely to remain in this state of limbo for the foreseeable future.

There are certainly some of you who know of steroids users and have seen the effects of muscle gain and 'roid rage' (not to mention the endless list of other negative side effects) in action. Although, many have noted that the reason for steroids being a 'taboo topic' is that there is a vast amount of research still needing to be conducted in order for the long-term side effects of the drugs to be further explored.

10.1 What are Steroids and how do they work?

Steroids are basically synthetic testosterone, which is a male hormone.

Steroids help in protein synthesis and also promote muscle development.

The term 'steroid' has a number of different meanings. Simply put, steroids, which are often hormones that your body produces naturally, are chemicals. Steroids, or hormones, produced by our bodies aid in the functioning of tissues, organs, and cells.

On the other hand, steroids can also refer to forms of medicines that are man-made (synthetic).

The dictionary defines steroids as part of a large class of organic compounds containing a characteristic chemical structure that consists of four rings of connected carbon atoms. This includes alkaloids (naturally occurring chemical compounds such as morphine), hormones and vitamins.

When we stay "steroid," what we really mean is "anabolic steroid," which is a man-made substance that has similar effects to testosterone in the body, including increased muscle growth and recovery, strength, and leanness.

Steroids accomplish this through various different mechanisms, but the net result is the same: protein synthesis rates are greatly increased or protein degradation rates are greatly reduced or both, which results in rapid muscle growth.

The mechanisms whereby body fat levels are reduced or suppressed vary from drug to drug and aren't worth diving into here, but just know that's part of the "package" that steroids deliver.

While testosterone itself is the best-known steroid, there are many others that are quite popular among athletes and bodybuilders, like…

- Nandrolone

- Stanozolol
- Trenbolone
- Oxandrolone
- Deca Durabolin
- Dianabol
- Methandrostenolone
- Boldenone
- Oxymetholone
- Drostanolone

Why so many different types of drugs, you wonder?

Because each has unique profiles in terms of potency, toxicity, side effects, and synergism. They and others are combined in various ways to create different types of steroid "cycles" for different purposes and goals.

10.2 How Effective Are Steroids?

Many steroid users would like you to believe that their superhuman bodies are more a result of hard work than drugs, but this just isn't true.

Yes, it takes a lot of hard work to build a top-tier physique but it also takes a lot of drugs.

The reason for this is quite simple: you can only build so much muscle and get so lean naturally.

But before we talk about natural limits to muscle growth and fat loss, let's take a brief look at the facts of how powerful steroids really are.

One study conducted by scientists at Maastricht University found that, during a period of ten weeks or less, the average muscle gains in people doing resistance training while on anabolic steroids ranged between 4 to 11 pounds. The most impressive amount of muscle growth researchers found was nearly 16 pounds of lean mass gained in just 6 weeks of weightlifting with steroids.

If those numbers don't boggle your mind, consider this: the most accurate science-based models of natural muscle growth predict that men can gain no more than 20 to 25 pounds in their first year of weightlifting (and women can gain about half that).

Thus, with the right steroid cycle and training and diet regimen, you can do in just 2 to 4 months what would take a year to accomplish naturally.

Muscle growth and strength aren't the only benefits of steroid use–they also help keep you lean.

Research shows that testosterone directly inhibits the creation of fat cells, which helps explain why higher levels of testosterone are associated with lower levels of body fat, and lower levels of T with higher body fat percentages.

And, as we've mentioned, that's just testosterone. Several other steroids also promote a leaner, more muscular physique and, when combined properly, are incredibly powerful in this regard.

10.3 How Much Muscle Can You Build Naturally?

How many times have you heard actors say they gained 30 or 40 pounds of muscle for a film in a matter of months? You sit there in disbelief, wondering what type of diet and training program they were on, who their trainer is, and what you have to do to bulk up and mimic their ripped physique by next month.

Well, we're here to break it to you easy: It's virtually impossible for somebody who's been training regularly to gain 30-40 pounds of muscle in a couple of months or even a

year. The only person with the ability to potentially gain 18-20 pounds of muscle in a year is a gym newbie—someone who's never lifted weights or trained before.

Why? Their genetic muscular potential hasn't been activated yet. In other words, they haven't even approached their greatest gains.

An experienced trainee, on the other hand, has hit or neared his potential, making lean muscle, fat-free gains much slower.

According to Aragon, advanced trainees near their genetic potential are lucky to gain 0.25% to 0.5% of their total body weight gain as fat-free muscle per month. That makes the 10-pound-gain claims of already ripped celebrities seem outrageous, right?

It's rare to see a natural bodybuilder or fitness enthusiast close to their genetic muscular potential gain more than 2-3 pounds of lean muscle in a year. This is why it's an accomplishment when experienced bodybuilders manage to gain 7-10 pounds of fat-free muscle in a year.

Provided that they follow a sensible, structured diet and training program, a 150-pound beginner fitness enthusiast in Aragon's model can potentially gain 18-27 pounds of lean muscle per year. A 170-pound intermediate fitness enthusiast can potentially gain 10-15 pounds of muscle.

Any time you're on a bulking program where your goal is to put on muscle, it's inevitable that you're going to gain a little fat. Just make sure that fat gain is minimal.

Once you can separate the myths from the truth about natural muscle gains, you'll be on your way. Train hard, eat healthily, be patient, and it will happen!

10.4 What are the positive effects of steroids?

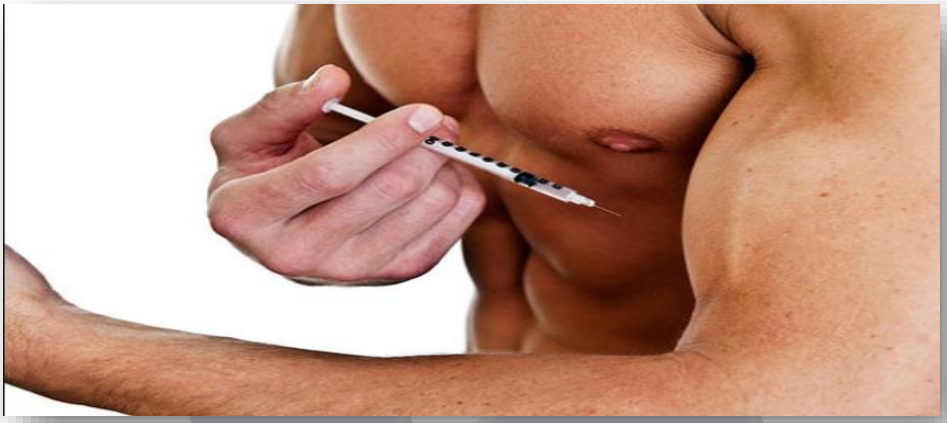
Everything has a good and a bad effect. We have heard the saying that excess of everything is bad. This is implemented for the steroids too. Steroids are the drugs that are used for the development of human body. Steroids have a very bad reputation in the society and have been the topic discussion.

Steroids are known to have several positive effects on the human body, and when administered in the right proportions by licensed professionals they are unlikely to cause much harm to the individual. Some of these positive effects of steroids are discussed below:

- Steroids are known to increase recovery times in individuals dramatically. Cortisol is a hormone which is produced by our body to help it handle stress. Cortisol is responsible for causing damage to muscle tissues and slowing down the time taken for a human body to recuperate. Steroids are known to regulate

the production of this hormone when an individual's body is stressed. This helps bodies to recover from sustained injuries a lot faster than normal and allows more stamina while an individual is exercising.

- Another positive effect steroids are known to have is that they increase the muscle size of the user. Steroids multiply the nitrogen content in the human body. Increased nitrogen levels facilitate higher production of protein in the body which is a critical factor in the development of more muscles. Muscles will start to develop without exercising them but a rigorous training regime could produce dramatic results.
- Steroids are also known to greatly reduce body fat in the human body. Although no particular reason for this has been determined, general speculation suggests that steroid users lose body fat because of a sustained increased in their metabolism rate. Several medical experts have reported that steroids tend to accelerate the power producers in cells known as 'Mitochondria' that are known to oxidize fat. According to them, this increased production of 'Mitochondria' is how steroids help users cut down on their body fat.
- Steroids have the notorious reputation of causing several medical complications in human beings, but many fail to give credit to these drugs for their contribution in the treatment of several dangerous medical conditions. 'Teriparatide' is a steroid being used to treat 'Osteoporosis'. It tends to prevent fractures by strengthening the bones of the patient. Arthritis and several other forms of cancer are known to be treated with controlled administration of steroids in the patient's body.
- Steroids are also responsible to regulate an overactive immune system which may cause unnecessary inflammations.
- Steroids have proved to be a positive accelerator of red blood cell production. Red blood cell concentrations are directly dependent on the blood's oxygen-carrying capacity and an increase in production will clearly have numerous advantages for the body, including the treatment for anemia. This positive effect, however, is always mentioned but and not duly acknowledged.
- Steroids greatly enhance athletic performance for the user. Users will experience more energy and stamina levels after they have used steroids. They will also find the training and the ability to push towards new limits during training easier. An unprecedented intensity is felt by the user.



- Steroids also improve a user's physical strength and his endurance levels. This is one of the reasons why bodybuilders are greatly attracted toward steroids.
- Steroids are a boon for males who are having sexual performance problems. Testosterone replacement therapy is a procedure that involves introducing testosterone to those bodies which are not capable of producing them anymore at the required levels. The testosterone is administered through steroids. Since testosterone production differs from person to person, there is no set standard for the amount of testosterone a body needs to produce. However, external testosterone administration has helped males and have shown positive acceptance among users.
- Steroids are given to HIV positive and cancer patients. Steroids have helped to restore appetite and have even helped to regulate decreasing muscle mass in HIV and cancer patients. Due to this, such patients have the opportunity to be in better health and have an enhanced feeling of well-being.
- Steroids introduce the user to an unprecedented improvement in physical prowess which can influence some of them to abuse steroids in the quest for perfection. This is how they are likely to end up experiencing the many side effects of steroids.

10.5 What are the negative effects of steroids?

Anabolic steroids are powerful hormones. They affect the entire body. Some of the side effects are common to all users. Other side effects are specifically related to your sex and age.

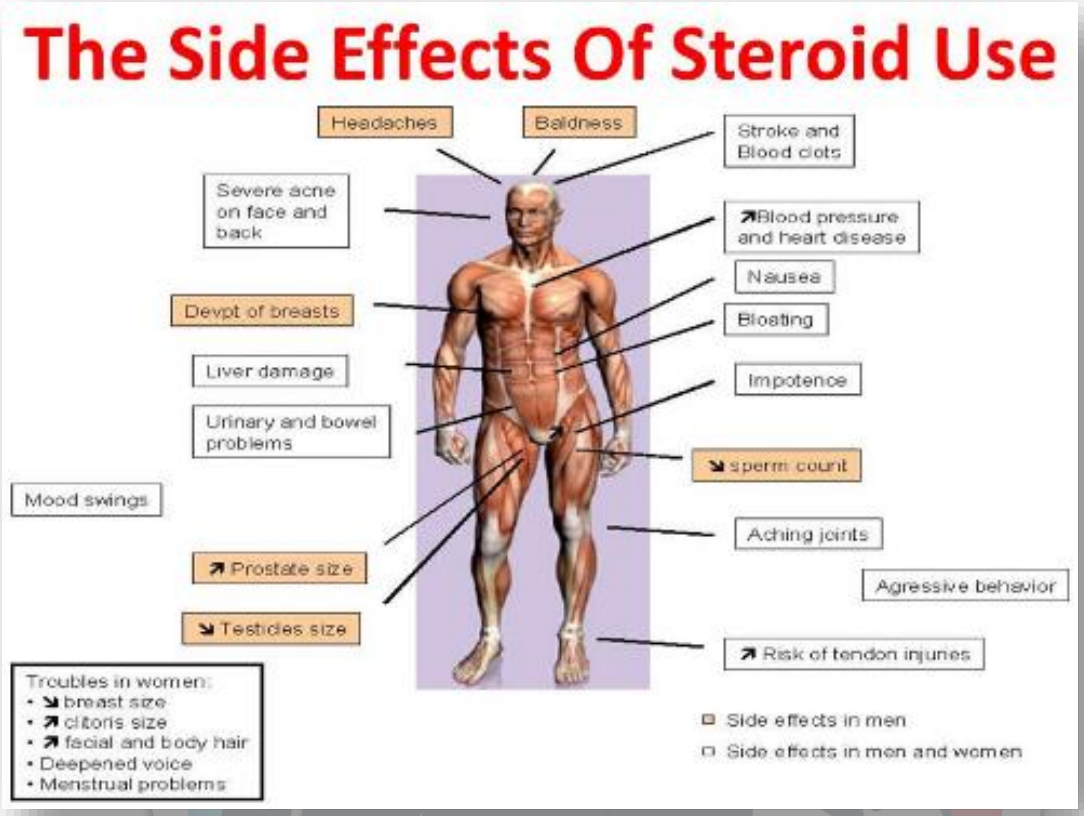
Steroid use can alter the normal hormonal production in the body. Most side effects can be reversed if the drugs are stopped, but some, such as a deepened voice in women may persist. Common side effects of steroids may include:

- Hair loss
- Oily hair and skin, severe acne all over the body
- Liver disease (cysts and tumors are commonly seen)
- Heart disease (stroke and heart attack)
- Kidney disease
- Mood changes, increased aggression (roid rage), suicidal tendencies, depression, and irritability
- Hypertension (high blood pressure)
- High cholesterol
- Gynecomastia (this is the abnormal development of breasts or mammary glands in men, also known as 'man-boobs')
- Infertility in men and women
- Testicles shrinking
- Azoospermia (this is semen that does not contain sperm)
- Menstrual irregularities (this is seen in women who use steroids)
- Stunted growth in teens
- Risk of bacterial or viral infection as a result of unsterile injections
- Excess body and facial hair
- The deeper voice in women (and men), this is known as dysphonia

The side effects of steroids are a result of the excess amounts of testosterone administered to achieve muscle growth, aerobic capacity, and power which affects almost every organ and system in the body. Any drug that affects or changes the homeostasis (the inner workings and systems of the body) of one's natural state, will have an impact.

Along with the side effects of steroids, it is important that you keep the following points in mind:

- Not every person doping (using steroids) will experience all of the side effects
- Some steroid users will experience some of the side effects and not suffer from a number of others
- There may be some steroid users who experience very little side effects, and some who do not experience any, bear in mind, most users will experience at least one of the below side effects
- The severity of the side effects will vary between individuals
- The side effects are dependent on several different factors and depend on the individual's own body
- For these reasons, these side effects are referred to as potential side effects



Conclusion:

The fitness industry is riddled with athletes taking steroids, and many fitness competitions for bodybuilding for both men and women are not regulated and do not test the athletes for steroid use.

The playing field is then open for those wishing to gain a competitive advantage through the use of steroids. The mentality then begins to form amongst said athletes of "short-term gain and long-term reward" when it comes to competing, however, a number of steroid users still ignorantly ignore the various long-term side effects of steroids and believe themselves to be immune.

By taking steroids, we are fighting the natural process of our metabolism and bodily functions, upsetting the balance of hormones and in turn, taking a shortcut that denies our body of the natural strength, muscle and growth path that it was genetically designed to take.

Chapter 11

THE TRUTH ABOUT SUPPLEMENTS

A visit to the health food store can be an overwhelming experience. It's tough to figure out what to choose from among the dizzying assortment of dietary and nutritional supplements on the shelf. From vitamins to minerals to weight loss pills, there are thousands of options to choose from. But do you really need any of them? Do they really work, and if so, which ones are best? Let's find answers to all of these questions one by one…

11.1 Bodybuilders' supplements.

Bodybuilders use supplements to enhance their diet and improve their performance. To gain muscle it is essential to train well and eat well. Many bodybuilders feel that their normal diet can be improved with supplements and choose to do so.

Criticisms have been made that the use of dietary supplements leads to steroid use but there is little evidence to back this up. Unlike steroids, bodybuilding supplements do not change the natural hormone levels of the bodybuilder. For this reason, they are much safer.

Different supplements provide different results and work in different ways. Here is an introduction to the most popular.

Below there is a list of top 5 supplements that most nutritionists believe is good investments:

1. **Protein Powder:**
   Your body needs protein and lots of it. It is the building block of muscle. Without enough protein in the body, muscle mass will not increase. During your weight training workouts, your muscles are getting broken down. In order to rebuild and repair your muscles, your body needs protein. It is as simple as that.

   Protein powder is a really convenient and inexpensive way to get extra protein in your diet. All bodybuilders and fitness enthusiasts need to eat at least 1 gram of protein per pound of bodyweight per day. Getting this much protein from food alone can be tough. But by adding a couple protein drinks per day you'll easily be able to get extra protein in your diet.

Protein powder is also a lot cheaper than most high protein foods, so by getting some of your daily protein intakes from a protein powder, you can cut down on your grocery bill.

2. **Creatine:**
   Creatine increases protein synthesis and minimizes protein breakdown. This can increase lean muscle mass, improve performance in high-intensity exercise, increase energy levels, and speed up recovery rates.

   Creatine is naturally found in many foods such as meat and fish, but to get the best benefit bodybuilders and athletes should supplement their diets with creatine.

For your money, the best creatine supplement to use is Pure Creatine Monohydrate powder. This will work just as well as the more expensive and heavily advertised creatine supplements that are available but at a fraction of the cost.

3. **EFA's:**
   Essential Fatty Acids are the "good fats". They are important for immune system development, digestive support, healthy brain function, soft and smooth skin, circulatory health, and anti-aging benefits.

Essential Fatty Acids are necessary fats that humans cannot synthesize, and must be obtained through diet. EFAs are long-chain polyunsaturated fatty acids derived from linolenic, linoleic, and oleic acids.

Foods such as fish, flax seeds, olives, and nuts are great sources of EFAs. But if you do not consume enough of these foods in your diet on a regular basis you should supplement with fish oil and/or flax seed oil supplements.

4. **Greens:**
   Studies show that phytonutrients such as chlorophyll, polyphenols, carotenoids and other antioxidants help protect the body from free radical damage. Greens are rich in phytonutrients which help support the body's self-defense mechanism, detoxify and nourish the body. A serving of Greens is approx. the equivalent to 8-10 servings of fruits and vegetables, they are one of the best antioxidant supplements available.

We all know that we are supposed to eat 8-10 servings of fruits and veggies each day, but very few people actually do this on a daily basis. That's why I consider Greens a must-have supplement for overall health and well-being.

5. **Multi-Vitamins:**
It makes sense to get the Daily Recommended Values for vitamins and minerals just in case you don't get them from food. Many people run short on some key nutrients, possibly raising their risk of heart disease, weakened bones, nerve damage, as well as slowing down their muscle growth.

Taking a multi-vitamin, multi-mineral supplement daily is a good way to provide your body with potent antioxidants and supply your muscles with key vitamins and minerals that they need to perform optimally.

11.2 Do bodybuilding supplements really work?

When stepping through the doors of your local nutrition supplement store or navigating to the nearest fitness website, you can easily be whisked away to the wonderful world of muscle-building supplements.

Giant cans and bottles of powders, liquids, and capsules feature pictures of enormous biceps, abs you could do your laundry on, and butts as hard as concrete. Those muscular body parts look great, but the question is: do these muscle-building supplements actually help? Or do they just make expensive urine?

It turns out that these supplements may just change the way you feel while you're working out. Many of the ingredients in pre-workout supplements are intended to give athletes the perception that their workout is supercharged.

You've got ingredients that are going to increase blood flow, increase heart rate, increase focus, increase blood flow to the skin and give you a little tingle.

But those physical effects don't make people bigger, stronger or faster.

And although some of these supplements' ingredients — such as caffeine, creatine, and beta-alanine — have been shown to modestly enhance performance in extreme athletes and bodybuilders, they only give people an edge if they are pushing themselves to the limit.

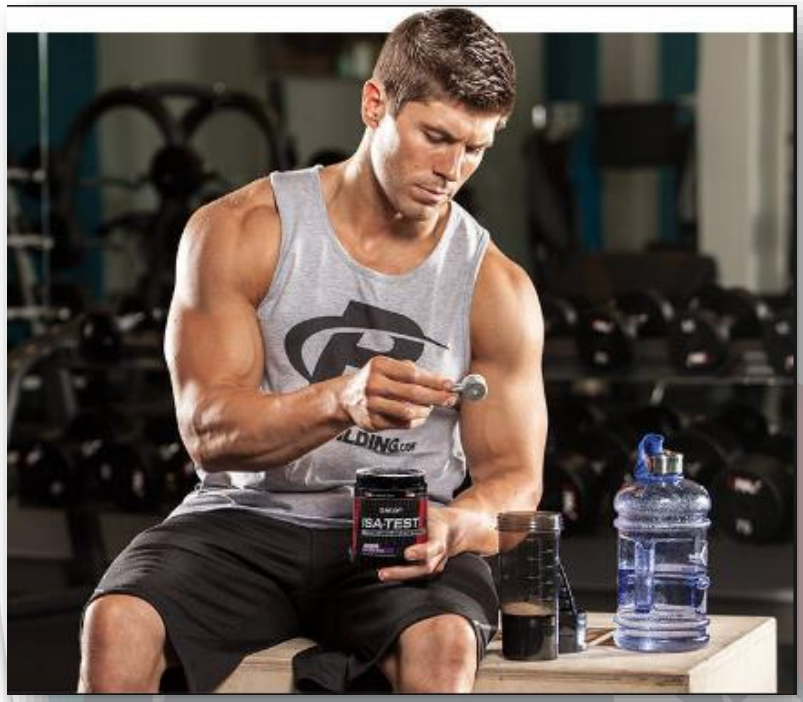
And some supplements on the market may contain illegal and dangerous additives, such as amphetamine-like stimulants. Even supplements that contain only legal ingredients can include high levels of caffeine, which can have a negative effect on the heart, recent testing by one independent lab found.

We already know that muscle is created by an increase in the size or number of muscle fibers, which happens in response to loading and subsequently tearing and re-building the muscle. Most muscle building supplements are designed to either:

- Allow a greater load to be placed on the muscle by increasing the ability of the muscle to produce a force; or
- Increase a muscle's ability to recover, rebuild, and form new fibers.

Supplements the magic elixir that's going to put you over the top, turn you into the best right?? Probably not, if you're relying on supplements to do the work you will probably never make it to the top, but nevertheless, there are a few supplements that have stood

the test of time and can be extremely effective in helping you in your performance and physique goals. We suggest food first before using supplements!



11.3 The efficiency of Whey Protein as Body Building Supplement.

Whey protein is the term used to describe a group of milk proteins that are isolated from whey, which is the leftover product of milk after it is coagulated during the cheese making process. Most people think that whey protein is just the typical amino acids we know about but contains a lot of other molecules.

Whey protein (WP) supplementation has recently gained popularity amongst athletes as it is reported to improve athletic performance. WP is a popular dietary protein supplement intended to provide improved muscle strength and body composition due to a greater compliment of essential amino acids and branched chain amino acids and to result in a greater biological value.

Additionally, WP supplementation has shown to reduce oxidative stress through increasing endogenous glutathione production and improve compromised gut health associated with intense exercise.

If you are following any sort of exercise program, whether it's based around weights, cardio or endurance training, then you may need more protein than the UK government's current recommendation of 55g per day.

Whey offers a quick and easy way to increase your daily intake, especially after your training session when you might not be inclined to cook and eat a full meal. But it's important to remember the clue is in the name of supplements – they are designed to fill in the nutritional gaps of a complete and varied diet.

Like all proteins, whey protein is made of building blocks called amino acids. Protein in the body is primarily used for muscle growth and to repair tissues. When people digest food, they break down the proteins into amino acids and then use those amino acids to build new proteins.

Bodybuilders prize whey protein as a good source of the amino acids leucine, isoleucine and valine. Together these amino acids make up the BCAAs (3-branched chain amino acids) that are important in building muscles.

Early studies have shown taking whey protein supplements before or after exercise can improve muscle strength, lean muscle growth, and immunity.

Among other protein supplements, small studies show whey protein may have an edge at increasing muscle mass. But the timing of taking whey protein supplements can change how effective they are.

It is recommended to eat a low-fat, high-carb snack that is moderate in protein content before exercise, to make fuel available to the muscles.

Protein digested after exercise provides the amino acids the body needs to repair and build new muscles. Eating whey protein right after exercise could be especially useful because whey protein has a high level of leucine, an easily absorbed amino acid.

The safety of whey protein supplements depends largely on the dose. Most Americans eat twice the protein they need, according to the National Institutes of Health (NIH). Excess protein of any kind will be stored as fat in the body and can increase the risk of dehydration.

Too much protein may also increase a person's risk for calcium loss and osteoporosis. That's because acids are released into the bloodstream when protein is digested, and the body uses calcium to neutralize these acids.

Athletes can safely eat more protein than people who are not physically active. In fact, an athlete who does not get enough protein will sustain some muscle damage and take longer to recover.

While the majority of people prefer whey protein supplement, we want to remind everyone that whole foods sources of whey protein may be superior in terms of nutrient synergy than WP supplementation.

11.4 Pros and Cons of Supplements.

Muscle mass supplements can be beneficial for helping you reach your physical fitness goals quickly, but they are not without disadvantages.

Pros:

1. **Increase in muscle mass:** Resistance training helps build muscles. With the right amount of exercise and supplements, you will see an increase in muscle mass. Whey protein, L-carnitine, and creatine are some of the supplements needed to build muscle.
2. **Gives you an energy boost:** Bodybuilding supplements can also give you an energy boost when working out. They can also help intensify your resistance training. Supplements ensure you will have enough energy after an intense workout.
3. **Helps your body burn more fat:** Supplements can also help suppress appetite, which helps in your dieting goals. In addition, they can increase your body's metabolism to burn calories.
4. **Strengthens the muscles and improves its flexibility:** Supplements are designed to promote the growth of muscle tissue, reduce the risk of muscle loss, or catabolism, and optimize the synthesis of protein. The right nutrients will help you build stronger and more flexible muscles.
5. **Helps build and repair muscles and other bodily functions:** Dietary supplements repair muscles and other bodily functions. In fact, they are responsible for strengthening your bones by adding mass to them.

Cons:

1. **Possible damage to kidneys:** Excessive use of these supplements can cause kidney damage. High doses and prolonged intake of creatine can affect renal function. The recommended dose of creatine and other supplements should be between 2 and 5 grams daily.
2. **Causes diarrhea and upset stomach:** Some ingredients found in these supplements can cause an upset stomach or diarrhea. They tend to irritate the gastrointestinal tract after consumption.
3. **Increases heart rate and raises the blood pressure:** Although these supplements can help improve your body metabolic rate, they can also increase your heart's rate and blood pressure. Other stimulants are also added to increase blood flow and performance. It is better to cross-reference each ingredient before purchasing them. Double check if the product is on the list of banned products by the Therapeutic Goods Administration (TGA).
4. **May cause infertility and emotional imbalance:** Certain ingredients in some supplements may cause infertility. Signs of hormonal imbalance include depression, fits of rage and mood swings. If you experience these symptoms, it is best to stop taking the supplement.
5. **Users may develop sleep disorders such as insomnia:** Most of these supplements, especially the pre-workout ones, have higher doses of stimulants in them. Avoid these pre-workout supplements if you want to have a good night's sleep.

Conclusion:

It is all about choosing the supplements carefully, many trained professionals will advise you to take those products that are very natural for your body, creatine, protein, amino acids etc if taken in the right quantity will never affect your body and will offer you additional strength.

Remember, before using supplements it is important to weigh everything and ask for expert advice. Keep in mind that not all supplements are harmful. The right research and informed decisions will help you achieve your ideal body.

Chapter 12

TIPS FOR ACCELERATING MUSCLE AND STRENGTH DEVELOPMENT

Muscle plays a vital role in supporting overall health and wellness, especially into old age. More muscle means that you have a healthy body. So what should you do to have strong muscle and increase the muscle mass? Although you tried to apply the ways, it did not work for you. Don't panic! Here we are presenting few essential tips to maximize your muscles and strength gains.

12.1 Workout Tips for Optimizing Muscles and Strength Gain.

When trying to build mass and strength, you need to keep it simple and follow a few basic rules. Once you can adhere to these rules – and the proper program – you will find that it is easier than you think to build massive muscles.

1. **Warm up properly:** As you gain experience, your muscles, tendons, and ligaments will be subjected to much more stress than when you first started. To reduce the chance of injury, increase your warm-up time proportionally.
   As you advance from beginner to intermediate status, three to four light and medium warm-up sets of your first weightlifting exercise of the day, after five to 10 minutes of a general warm-up on the bike or treadmill, can help adequately prepare muscles for the heavy lifting ahead.
2. **Save abs for last:** Training abs before your major body part work can result in compromises to strength and put you at increased risk for injury. Instead, train your abs last or alone in a separate workout. To save time, you can also insert ab exercises between exercises for other body parts as you near the midpoint to end of your workout.
3. **Vary your rep ranges:** You may think that lifting heavy all the time is the best way to build muscle, but going through phases of lighter work has its place, as well. Different weight loads and rep ranges emphasize different muscle-fiber types, helping you to achieve better overall muscle quality.
4. **Switch the exercise order:** A good way to keep gains coming, however, is to do your normal routine in the reverse order.
   After a good warm-up, start with what's normally your last exercise — you'll be stronger this time through because the muscle won't be pre-fatigued, thus enabling you to handle slightly heavier weights for more reps. You'll work the target muscle in a way it's unaccustomed to, touching off new growth.
5. **Focus on compound moves:** If you're looking to build serious muscle, make sure the majority of your moves in the gym are compound in nature. Compound exercises — which incorporate multiple muscle groups into a lift, such as a chest, shoulders and triceps for bench presses, or the glutes, quads, and hamstrings during a barbell squat — allow you to move more poundage and train more efficiently than isolation moves, which essentially target only one muscle group at a time.

6. **Learn your set tolerance:** Most mass-gaining guidelines recommend 12 to 16 sets for larger muscle groups like legs, back and chest and nine to 12 sets for smaller groups like arms, calves, and shoulders. However, you have to learn how your body responds. Sticking to these guidelines may cause some to overtrain while keeping others under-stimulated in the gym.
7. **Change grips:** As you gain experience, your body will start to resist growth on familiar exercises. One way to keep things fresh is to experiment with different grips. On exercises such as bench presses, lat pull downs, barbell rows, barbell curls and press downs, you can force your muscles to work in uncomfortable ways by flipping your grip or using close and wide grips, as well as neutral (hands facing each other) or mixed (one hand up, one hand down) grip positions.
8. **Mind your rest:** If you're looking to build lean muscle mass, rest periods between sets and exercises must be strictly monitored. Short rest intervals (one to two minutes) stimulate anabolic hormone production, local blood flow and result in significant lactate accumulation. All three of these byproducts contribute to an increase in protein synthesis (i.e., hypertrophy) within the muscle.
9. **Try chains and bands for strength:** Chains and bands add a different kind of resistance called LVRT, or linear variable resistance training. These implements add progressively greater tension as the range of motion increases in a movement. Using them is one way to overcome a sticking point, especially those that occur toward the bottom of the range of motion.
10. **Train opposing body parts:** Training opposing body parts superset style — such as chest with back, biceps with triceps or hamstrings with quads — give one body part a chance to rest while the other is working. This can also add

to the intensity of your workouts while limiting the time you need to spend in the gym to get the same benefits.

11. **Put your weight to work for you:** Don't overlook the importance of bodyweight exercises in your routine. Dips, push-ups, pull-ups, step-ups, and lunges work significant amounts of muscle and can contribute greatly to your cumulative gains in muscle and strength.
12. **Challenge your core:** "Core training" has also become a hot trend in gyms. To have a truly strong core, however, you need to do more than exercise-ball crunches and wobble-board balancing moves. One great option to introduce into your repertoire is the overhead barbell squat, a very difficult exercise that places a heavy demand on your entire core musculature because of the position of the weight. Mastering this move will help you lift more on your other major exercises.

12.2 Nutritional Tips for Enhancing Muscle Mass and Strength.

If you've been lifting weights for a while "but can't seem to gain weight," then you are not eating enough – it's that simple. Just vigorous workouts would not help you achieve your goal. People also need to consume the proper types of food items. Here we present few dietary tips for enhancing the results:

1. **Have protein early in the day:** To ensure that your muscles aren't being cannibalized for energy, make sure that you have 20 to 40 grams of fast-digesting whey protein first thing in the morning. This puts a halt to the muscle breakdown that occurs during your nighttime fast when your body is seeking fuel for organs.
2. **In addition to a protein shake, eat real food after your workouts:** Have a protein-packed small meal 30 to 60 minutes post workout, when muscle cells are most sensitive to uptake protein. You'll want some healthy carbs along with it — a grilled chicken sandwich on whole-grain bread will cover it.

3. **Don't ignore carbs:** Carbohydrates may be taboo to physique-minded individuals because they can affect body fat when consumed in excess or when the wrong types are eaten too often.
   But to gain mass, you have to train hard, and this is much tougher without enough muscle glycogen (which is carbs in stored form). To gain mass, aim for 2.5 to 3 grams of carbs — upward of 540 grams — per pound of bodyweight per day.
4. **GOMAD (Gallon of Milk a Day):** Obviously this method will only work if you're not lactose intolerant. Oh, and it has to be whole milk. You'll definitely put on some fat, but you'll build muscle and get really strong quickly – and then you'll adjust the diet to thin out.
5. **Eat more on "off" days:** Just because you're not training today doesn't mean you shouldn't eat big. Your days off are when most of your muscle growth takes place—the recovery phase—so it makes sense to keep plenty of nutrients on hand for the body to make the most of.
   It's fine—and probably prudent—to decrease your carb intake slightly on non-training days, as you don't need the extra energy for training, but keep your protein high and make sure your overall caloric intake doesn't drop by more than 500 calories.
6. **Be creative:** On a get-lean diet, people can go mad eating plate after plate of chicken and broccoli. Same can be said for those on a mass-gain plan — no one wants to eat egg whites and bell peppers every day. It gets boring. Instead, find new recipes that help satisfy your nutritional needs while also providing a welcome switch in the menu.
7. **Nosh at night:** Casein isn't the only way to grow at night. Eat a large amount of lean protein and some fish oil right before bed. The protein will give the body the amino acids it needs to grow, and the fish oil will slow the absorption to maintain positive nitrogen balance longer through the night.
8. **Choose your fat foods wisely:** Fat is an essential element of strength gain but you must strictly control the kind of fat you consume – saturated fat leads to heart disease, clogged arteries. It is recommended that limiting intake to no more than 16 grams of saturated fat daily.
   However, monounsaturated and polyunsaturated fat is known as beneficial. They allow you absorb fat-soluble vitamins contribute your energy sources. Foods contain healthy fat include avocados, nuts butter, quality olive oil, and tofu.

9. **Go green:** Often found in weight-loss formulas, the green-tea extract is a great supplement for general health, too. The active constituents in green tea have strong antioxidant properties, most notably epigallocatechin gallate, or EGCG for short. Green tea has been shown to stabilize cell membranes in the body, lower LDL cholesterol (i.e., the "bad" type of cholesterol), helps prevent inflammation, and has positive effects in the battle against cancer growth.
10. **Eat Whole Foods:** Whole grains are grains that have not lost nutrients during food processing. They provide an assortment of vitamins and minerals and rich amounts of dietary fibers. As carbohydrates, whole grains fuel muscles, which allows them to function properly and grow. Opting for whole grains over processed grains most of the time can improve athletic capabilities and resultant muscle growth.

12.3 Lifestyle changes for Improvising Strength and muscle mass.

1. Don't miss meals: When you get busy, food and water always fall by the wayside. However, with each missed meal, you're missing out on an opportunity to grow.

Instead, prepare all your meals for the day in advance and pack them in individual containers. This makes them easy to access for meals every three hours, as is ideal, and prevents you from heading to the vending machine when four to five hours have elapsed since your last sit-down.

2. Weigh-in weekly: Most people weigh themselves when they want to lose weight, but using a scale is a great tool for tracking muscle gains too.

Weigh yourself once a week on the same day and time, preferably first thing in the morning, after you've used the bathroom and before you've eaten. If the scale isn't

moving up, you're not gaining muscle. Plain and simple. Shoot to add about a half-pound per week to minimize fat gain and use the mirror to make sure the weight you're gaining is solid muscle.

3. Lose the shoes: Lift barefoot, if possible, or in minimalist footwear like Vibram Five- Fingers shoes, wrestling shoes, or converse chucks.

Having your feet flat on the floor lessens the distance you have to pull the bar on a deadlift, increasing your leverage and helping you lift heavier weights. Training barefoot also strengthens your feet, which in turn adds stability and traction to all your lifts.

4. Take digestive enzymes: If you're bulking up, taking in loads of extra food can be stressful to your gut and lead to poor absorption of nutrients. Digestive enzymes help break down that food. Make sure the ones you take contain protease, amylase, and lipase, which break down protein, starch, and fat, respectively.

5. Go to bed 30 minutes earlier: Recovery is imperative for muscle growth, and there's no better way to recover than by simply sleeping more. In a perfect world, you'd get eight to nine hour of sleep per night, but that's not always realistic.

You can, however, control when you go to bed, thereby giving you the best chance of getting as much sleep as you can. Record the TV shows that would otherwise keep you up and hit the hay.

6. Keep a food journal: Just as you want to be specific with your training goals and monitor your progress, you also want to keep track of your nutrition. Training hard

won't translate to new muscle unless you're eating enough calories, and a food journal gives you an objective measure of how much you're actually eating.

It also lets you make adjustments easily if you're not making the progress you'd hoped for. Write down everything that you eat and drink, along with the time of the day. If you're not gaining weight, try to see where you can sneak in more calories to kickstart your progress.

7. Go heavy, then light: Train with heavy loads one month, using sets of four to six reps. The next month, go lighter and stay in the 10–12 rep range. The heavy training allows your body to make even faster gains during the lighter weeks.

8. Limit belt use: Weight belts help if you use them sparingly. Wearing a belt at all times never allows the lower-back muscles to strengthen. We suggest that you use one only if you really need it on your heaviest sets including squats, deadlifts, barbell rows and standing overhead presses, in which you require lower-back protection. Skip the belt on other sets so your lower back has to work and can, therefore, grow stronger.

9. Increase your intensity of bodyweight moves: Dips and pull-ups are two of the best bodyweight exercises you can do for getting bigger and stronger. But when you can manage 10 to 12 good reps on your own, it's time to add weight. To do this, you can either hold a dumbbell between your feet or wear a dipping belt, which allows you to really pile on the poundage.

10. Don't overdo it: More does not mean better in weightlifting. You don't need to spend two hours in the gym, you don't need to do 15 different kinds of chest exercises.

A 45 minutes workout with 3 or 4 sets (after warm-up) for each exercise is enough to stimulate muscle growth. Three routines a week is plenty too – you shouldn't lift every day, as you need to give your muscles time to regrow bigger. Less is more – just make your routines really intense and exhausting.

Conclusion:

Here we have covered various important muscle and strength building tips with no philosophical debate, no hidden meaning, no tidy denouement of narrative — above, you've just found the most authoritative, scientific and time-proven methods for packing on pounds of lean muscle, ready for you to put to use and ace your physique-transformation test.

Chapter 13

WEIGHT TRAINING HOME GEARS

Trainers like to say the best gym is the one you pass every day. That sets one place above the rest almost by default: your home. Convenience, after all, has a way of inspiring results. So does free membership and not having to wipe someone else's sweat off a bench.

And while you don't need a ton of equipment to sculpt a stronger physique—having a few key pieces of gear at your disposal can certainly expand your exercise options and accelerate your results.

13.1 Set up your home gym with these basic pieces.

Investing in exercise equipment is an investment in your health and happiness. Being able to exercise despite the weather or time of day makes it much easier to workout regularly.

If you need to improve your health or if you want to maintain your current level of fitness, a home gym is your ideal destination. Expensive gym memberships aren't the only way to get the job done, and in fact, having equipment of your own at home can save you money in the long run while making it harder to skip a workout due to the proximity of your exercise equipment.

Here is the list of home-workout equipment that doesn’t cost much, don’t take up much space and provide a variety of good workouts to improve your fitness in the comfort of your bedroom, basement or living room.

1. **Dumbbells:**

The simple dumbbell offers a huge range of motion, a ton of exercise possibilities, and the option to train one side at a time to correct imbalances.

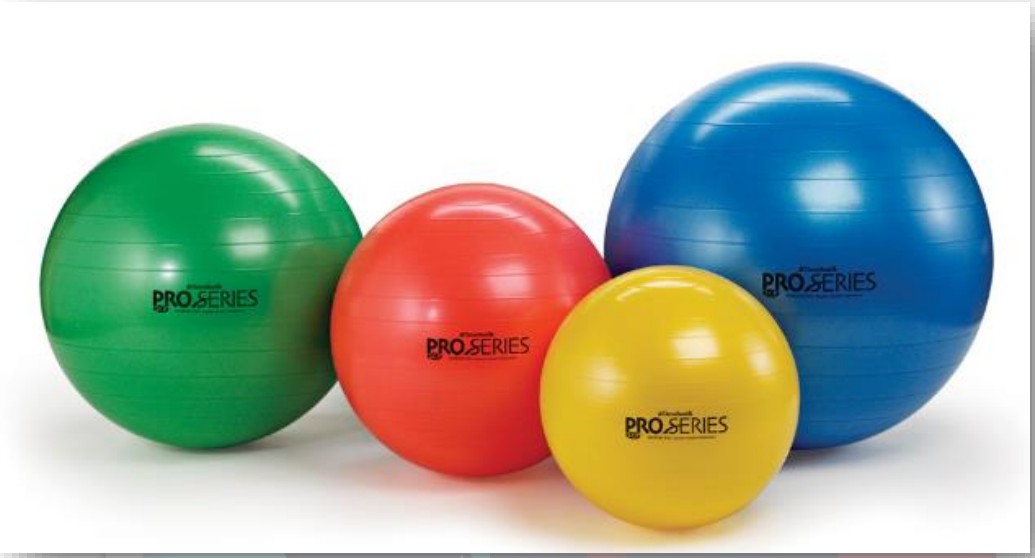
The best investment you can make is with a good set of quality dumbbells. Not only can you do a huge variety of strength training exercises, you can also use dumbbells for cardio exercises as well — dumbbell swings for example.

It's a good idea to have a variety of weights, ranging from 5 to 25 pounds. Iron hex dumbbells are a good choice because they're inexpensive and won't roll away.

2. **Exercise Ball:**

An exercise ball is a perfect choice for a home gym. You can do core work while working on your balance and stability and, like dumbbells, it has multiple uses. Use it as a weight bench (such as in a chest press) or use it for pushups, back extensions or leg lifts. You can even sit on it while watching television or working on the computer to help reduce nagging back pain.

Think of a ball as the opposite of solid ground—soft, unstable surface that challenges your core and helps you improve your balance and coordination. Used alone, it's just about the best tool you can own for sculpting a six-pack.



3. Kettlebell:

This Russian import looks like a cannonball with a handle, but that ungainly design is exactly why it's so effective. Unlike a dumbbell, a kettlebell's center of gravity shifts during an exercise, increasing the challenge and building coordination. And because it's intended for total-body moves, it adds a cardio element to what is already an intense strength workout.

You get cardio exercise while lifting, which helps to break the monotony of repetitive cardio workouts. And you gain muscle strength without the isolated reps common to most other bodybuilding techniques. Kettlebell routines are intense, which accounts for the shorter training sessions. They also put you off balance, which gives your stabilizer muscles a good workout.

4. A Step:

A step is an excellent choice for your home gym because it can be used for more than one activity. A step can be used for cardio activities, such as step aerobics, and also do double-duty as a weight bench. Get enough risers with it and you can change your step to become an incline, decline or flat bench, adding a new dimension to your weight training.

5. Adjustable Weight Bench:

If you're not into step aerobics or you tend to lift heavy weight loads, you will want a weight bench instead of a step. You'll need it for chest and back exercises, and you can even use it for a quick ab workout or some tricep dips. There are varieties of choices — from flat to adjustable. It's best to get an adjustable bench so you can do incline and decline exercises.

6. **Resistance Bands and Tubes:**

You've got your dumbbells, so you may not think you need much more than that, but resistance bands are an excellent addition to your strength training equipment.

Resistance bands can help you get a full body workout, no matter where you go. They're small enough to fit in your suitcase and versatile enough to use in any hotel room. Another bonus is that they provide a different type of resistance than free weights, so your muscles get a brand new workout (great for busting weight loss plateaus).

7. **Core Training Wheels:**

Some big ab crunch machine isn't the answer to training your core, but these are training wheels that can take you to a new level. Your core is what holds you together, joining top and bottom and making it solid. These devices come in a number of varieties and can give you a rock-solid midsection.

8. Weight Lifting Gloves:

One side effect of lifting weights, aside from sleek muscles, is that your hands can get a little rough from calluses. To protect your hands, you'll want a solid pair of weightlifting gloves.

9. Exercise Mat:

Believe or not, you will need a couple of different types of mats. The first is a no-slip yoga mat, which is great for yoga or for just regular old stretching. Plus, you will want a thicker mat you could use for floor exercises, such as crunches, that require a little more cushion.

10. Suspension Trainer:

Want to instantly make any exercise more difficult? Take it off terra firma. By adding an element of instability to your workout, a suspension trainer increases the challenge to your core and stabilizer muscles.
The greater the challenge, the greater your gains. It's also one of the most portable items on our list; as long as you have access to a sturdy anchor point—a door or a tree limb, for example—you have everything you need for a workout.

11. Gliding Discs:

Gliding Discs may seem like an odd thing to use in a home gym or, well, anywhere but they're surprisingly useful. These small discs (yes, they do look like Frisbees) can be used for any number of exercises. Stand on one and do a sliding lunge. Put them in your hands for killer ab slides or try mountain climbers and see how much your quads thank you for it. Truly, a totally different way to work your body.

12. Curl Bars:

Curl bars are designed to give you a better grip and increased comfort for your joints when exercising your arms. These bars let you work your upper body, including your biceps and triceps while positioning your arms in a natural carrying angle. The result is that you put less stress on your wrists and elbows. Curl bars are a great way to work all the muscles in your arms, giving them a smooth, toned appearance.

Conclusion:

There are so many benefits of having home gym equipment. The key to building a gym from scratch, says designer Brad Sherman, is to start small and keep it simple.

Having home gym equipment will save your time and hi-fi charges of gym memberships. Also, home gym set-up will ensure that you are following your workout plans regularly.

Above listed are the best tools for building muscle and torching flab from the comfort of anywhere—your home, your office, a hotel room, even the gym if you're so inclined. Choose the items that best suit your goal—whether it's gaining strength, shedding pounds or a combination of the two—and then follow our advice to maximize their effectiveness.

Chapter 14

14 DO'S AND DON'TS OF MUSCLES AND STRENGTH BUILDING

Health-related outcomes of having increased muscle mass include better bone mineral density and improved body composition (i.e., a better ratio of lean mass to body fat).

Gaining muscle is not easy, and there is so much conflicting information, that sometimes we need to take a step back and look at the basics.

Many people go to the gym for various reasons like fitness, weight loss, muscle gain etc. But, not all go for serious bodybuilding due to the effort and patience it involves.

Bodybuilding is no child's play, but a serious activity. Thus, it becomes all the more important to understand the art of bodybuilding in detail and be aware of the dos and don'ts of bodybuilding.

14.1 Dos of Bodybuilding.

Beginning on a positive note, let's look at the Dos of bodybuilding.

1. **Do use compound movements:**

Compound exercises involve the movements of several joints. They allow for maximum muscle fiber and motor neuron recruitment. Don't waste your time with isolation exercises. For 90% of fitness individuals, compound exercises will be all they need to be successful. Isolation exercises are fun but unnecessary in most cases.

2. **Do allow enough time for recovery:**

You grow when you rest, not when you work out. Working out tears down your muscles so that you can build them up bigger and stronger while you're resting. If you don't allow enough time between workouts, you'll be limiting your strength potential come workout time.

A minimum of 48 hours of rest should occur between strength training workouts that use the same muscles. In addition, your central nervous system needs a rest too. Don't burn yourself out. Your mind and body both need rest.

3. **Do vary your food choices every day:**

'Variety is the Spice of Life' - Variety is not just important for psychological reasons to stop you from becoming bored with the same foods, but it's also important for nutritional reasons. You need to eat different foods every day for optimal nutrition as no single food contains all the nutrients we need in sufficient quantities. Also, there are other constituents of food called phytonutrients which are not essential for life but do have possible health benefits. Examples of these include flavanoid antioxidants and some fructo-oligosaccharides which are good for our digestive systems.

There is no single food you must have, despite what some people say! If you dislike something, simply do not eat it, there are plenty of suitable alternatives to choose from.

4. **Do work out at a high intensity:**

If you're using compound exercises, you're already on the right path towards boosting your intensity. Recruiting a large majority of muscles forces you to work harder.

In doing so, you stimulate the release of all kinds of favorable hormones that will help you build muscle and lose fat. There are many other ways to boost your intensity such as cutting down rest times between sets and employing the use of drop sets or supersets.

5. **Do include high protein foods:**

Consume foods which are high in quality protein, regularly throughout the day. High protein foods include chicken, turkey, fish, red meat, eggs, milk and dairy products, quark, nuts, and beans. Eat these foods or have protein supplements at least every three hours.

6. **Do change things up from time to time:**

Your body is a very adaptive machine. Do the same thing over and over again, and it will become very efficient at that movement. That sounds good, but not if you want to make progress.

Motor neuron adaptations take place very quickly. A large portion of your strength gains is not only from muscle growth but better motor neuron recruitment too. Change your routine up every few months. Try implementing some sort of periodization.

7. **Do use proper form:**

We've seen it all. Legs flailing, rounded backs, flared elbows, and turned heads to check out the mirror. You aren't doing yourself any favors using bad form. Our own personal experience has shown us that the majority of my injuries occurred towards the end of the set when my form started wavering.

Injuries are a huge killer to moral and can throw you into a downward spiral. Do yourself a favor and do a little research before attempting exercise. Hire a trainer, read a book, or watch some YouTube videos for exercise instruction.

8. **Do contract your muscles against resistance and create some damage:**

Whether you choose to do challenging bodyweight exercises such as push-ups and pull-ups, or traditional weight-lifting moves like bench presses and lat pull-downs, you are contracting muscles against a resistive load, thereby creating mechanical tension.

Researchers believe that this type of tension slightly damages the muscle tissue, causing a growth response. Lastly, be sure to lift progressively heavier weight loads and/or perform harder bodyweight exercises as you become stronger. Performing endless repetitions with a lightweight does not promote muscle growth.

9. **Do ensure your pre- and post-workout nutrition is correct:**

It's surprising how many people think they can just go to the gym after work, pay no attention to what they eat at this time, and expect results. Pre-workout make sure you

have eaten in order to provide sufficient energy to fuel your workout, but not too much as to bloat you. Eat small amounts of slow release carb foods.

Then after training, you need to ensure you have sufficient protein for growth and repair as well as carbs to replenish your stores. The best time to fuel for a workout is actually after the previous exercise session. Have fast acting carbs like glucose or the supplement maltodextrin here.

10. Do proper warm-up exercises before workout:

Warm-up exercises are as essential as a workout. Do it before starting your weight training exercises to reduce the risk of injury and soreness.

You don't need to leave the gym crawling after your first workout, but rather take time to stretch, warm-up, and ease into a challenging, yet manageable workout session.

It's better to get your heart pumping and make your joint flexible before putting the workout pressure on them. A thorough warm-up helps increase the blood flow to the working muscle which results in decreased muscle stiffness reduced the risk of injury and often, improved performance.

14.2 Don'ts of Bodybuilding.

If it is important to do a few things for gaining optimum results from your workout plans then, it is also essential to avoid few things in order to prevent sabotaging your efforts. Let's have a look at the major don'ts of bodybuilding:

1. **Don't stress out about bulking up:**

This one is directed at both men and women, but especially at women. Most people overestimate how easy it is to build muscle. If you put on a 1/2 pound of muscle in a week, you're doing pretty good. That's 26 pounds of muscle in a year.

For many people though, they'll never hit that number. Building muscle requires calories, and unless you're eating an excess of them, you aren't going to grow much at all. Your nutrition is the biggest determinant of your size, not your exercise.

2. **Don't think you can get big without eating big:**

And don't think you'll get big in a few weeks either! If you're trying to gain muscle you need to eat enough to grow. To gain muscle you need to be in calorie and protein surplus. Eat good quality protein and carbohydrate foods regularly through the day. Think a stone ahead: i.e. if you're currently 13 stone and want to be a 14 stone man, eat like a 14 stone man. Eat big, but don't eat junk, and remember growing takes time!

3. **Don’t rely too much on protein supplements:**

Protein supplements and meal replacement powders can be really useful aids in packing on quality size. They make life easier and can be consumed quickly when we need a 'protein fix'. However don't rely too much on them and real food is superior. Too many people think that they can consume protein drinks instead of good food, when really protein supplements are there to do just that, i.e. supplement. A good quality whey protein formula can be a useful addition to improving your gains.

4. **Don't do the same thing you did the last workout:**

You need to provide a stimulus to your muscles if you want them to grow. More weight on the bar, an extra rep, or more work in a given time, are all ways to make progress.

If you went to the gym and lifted 135lbs for 10 reps, and then did the same exact thing the next workout, or even 3 workouts later, why would your body think it needs to adapt? It already has the size it needs to perform that activity. If you want to grow, you need to beat your last workout.

5. **Don't put your ego over your muscles:**

One of our biggest pet peeves is when we see people exercising their egos instead of their muscles. What does that mean? It means that you're so concerned about how much weight you have on the bar that you end up sacrificing your form so that you can lift heavier weights and feel better about yourself.

We see this a lot with people doing squats. They load up the bar and then only go down 1/2 or even just 1/4 of the way. Lower the weight, get your butt to the ground and work out your muscles – not your ego.

6. **Don't wait too long between sets:**

Resting about 60 seconds between sets appears to be the best option for muscle hypertrophy. Waiting much longer than a minute to perform your next set compromises the metabolic-stress aspect of training, while resting for less than 60 seconds doesn't allow enough recuperation for the muscle to perform well in the subsequent set.

7. **Don't forget to squat:**

We actually see this more with men than we do with women. We call these men "beach bodybuilders". They go to the gym and work out their chest and biceps nearly every single time, and that's it. They end up with a decent looking upper body stuck on top of toothpick legs.

With the exception of maybe the deadlift (maybe), the squat recruits more muscle fibers than any other strength training exercise. It, or a variation thereof, should be a staple in everyone's strength training routine.

8. **Don't compare your numbers to others:**

We think a lot of the mistakes people make are ego related. They're afraid of people watching them work out. They're afraid of doing something wrong, so they avoid it. They're afraid of not looking very strong, so they sacrifice form for more weight on the bar.

When we used to go to a public gym, our headphones would go in, and it became us and the gym. I didn't pay attention to other people, nor did I worry about what they thought. We knew that if we could best our last workout, it was a victory – regardless of how little weight we used.

You are only in competition with yourself. Don't compare your numbers to others. Strength training is about personal development.

9. Don't use a faulty machine:

One must never train on a faulty machine in a gym. Bodybuilders often engage in intense training. Various gym equipment and machines are used during bodybuilding training. Thus it is extremely important that these equipments are in good condition. Using a faulty or broken equipment can cause serious injuries. Especially in case of bodybuilding, one has to be more careful because heavy weight lifting on a broken or faulty equipment may even lead to fatal injuries.

10. Don't work for the same muscle groups too often:

Allowing muscles to rest and regenerate between challenging workouts will keep your muscle-building goals on track and help prevent overuse injuries due to overtraining. Bodybuilders have figured out how to work around this important principle by performing split routines. These allow them to train most days of the week by focusing on specific muscles each day. An example of a split routine is to work the chest, shoulders, and triceps on Monday, followed by legs on Wednesday, and finish with back and biceps on Friday. Evidence supports the practice of waiting 72 hours before training the same muscle group again to allow for adequate muscle repair, especially for exercisers who employ multi-set training.

Conclusion:

To provoke muscle hypertrophy, use the approaches above for planning your next workout.

Over the past several decades, exercise science researchers have discovered three basic mechanisms for growing muscle: 1) mechanical tension, 2) muscle damage and 3) metabolic stress.

Fortunately, you don't have to be a bodybuilder to benefit from these evidence-based techniques. The above list provides tips for exactly what to do, and what not to do when it comes to building muscles and strength.

Chapter 15

15 EXPERTS' RECOMMENDATIONS FOR BOOSTING STRENGTH AND MUSCLE MASS

Building lean muscle mass is a top priority for a lot of you who enjoy reading Muscle & Strength. So much so that 84% of you listed it as your goal for working out in the fitness survey we ran to begin the year.

We heard you. Which is why we are providing you the advice of the top experts in the fitness industry to get some of their most important tips on building lean muscle mass!

Hear these experts out, apply their knowledge, and get on track to achieve all of your muscle and strength building goals.

15.1 Experts' Muscle Building Tips on Training.

1. Miguel Aragoncillo: miguelaragoncillo.com

"Tonnage and rest.

Tonnage is referring to the total sets multiplied by repetitions multiplied by weight used that you lift in a given period of a training session. The higher the volume, the more muscle mass you will theoretically be able to build.

If you are lacking in muscle mass, I have to ask if your volume is up to snuff. You can do 10 sets of 10 reps, but if you're using 10lbs, that only equals 1,000lbs of tonnage. I'd rather see someone do ONLY 10 reps of 200lbs of weight used (depending on the exercise and technique) in order to best deliver a higher amount of tonnage at the end of the day.

And rest is a no-brainer - you can't build back up if you don't sleep and eat with appropriate intensities. So do it."

2. Nick Cheadle: Nickcheadlefitness.com

"There are two things you need to do if you're looking to build muscle.

The first is to focus on increasing total training volume over time whilst ensuring you're consuming adequate protein and eating at a calorie surplus.

The second is to double check you're doing exactly what the previous sentence outlined."

3. Mike Matthews: muscleforlife.com

"The single best way to maximize muscle growth over the long term is to maximize whole-body strength.

At the beginning of your weightlifting journey, the relationship between strength and size is weak (you can gain size without getting all that strong). That's why research shows that when you're new to resistance training, getting stronger does produce muscle growth, but you don't have to gain much strength to gain size.

Once your "newbie gains" have been exhausted, studies show that muscle growth is going to skid to a halt if you don't get serious about getting stronger.

This is where progressive overload must become the focus of your training if you want to keep your muscles growing, the best way to do it is adding weight to the bar over time, and especially on compound exercises like the squat, deadlift, and bench press."

4. John Meadows: mountaindogdiet.com

"One of the biggest tips I can give you on training for muscle size is this, go as heavy as you can for 6 to 8 reps on your heaviest sets, while NOT BREAKING FORM!

It is important that you maintain perfect form with heavier weight so that the tension is largely directed to the muscle and not connective tissue and joints. Don't compromise form!

Also, it is important that you train the entire rep spectrum for muscle size. This means training from 6 reps up to 15 reps frequently. Don't get stuck in the habit of only doing low or high reps. Mix it up for the best gains in size."

5. Greg Nuckols: strongerbyscience.com

"The most important tip for building muscle is to go back in time and pick the right parents.

Trainability seems to be pretty highly heritable, and well-controlled studies find that high responders to training build at least 4x more muscle than low responders in response to the same training.

However, in terms of things that are within your control, don't skimp on training volume (which I like to measure via hard sets, within about 0-3 reps from failure, regardless of rep range), and make sure you're eating plenty of protein.

When in doubt, if you're not growing, but you're recovering well between sessions, increase the number of weekly sets for the target muscle group by about 20%, monitor for a couple months, and add more volume if needed.

Increasing performance in the 6-10 rep range with exercises you commonly do is a decent proxy for muscle growth to let you know you're headed in the right direction."

6. Max Shank: maxshank.com

"Get some serious volume in push-ups and rows. If you can hit 30 reps of push-ups and rows, you are well on your way to building the upper body.

The great part is that you can do them every day. Just like Walter Payton and Herschel Walker.

The big takeaway here is that the basics never go out of style--do your damn push-ups! Oh and be sure to change the hand position frequently to limit overuse injuries and maintain mobility."

7. Dean Somerset: deansomerset.com

"Building muscle comes down to a couple of basic things: muscle tension (how much weight you use or how hard you can contract a muscle), and muscle damage. This could come from minor tears to the muscle from the metabolic tension or some metabolic damage from the chemical reactions occurring during the workouts.

That burning sensation could be a component of this, as could other factors of fatigue that normally

come with the workouts. If your workouts have enough tension and stress within them to create some disturbance, the next big factor is making sure you have enough fuel to rebuild that tissue, so having enough protein intake each day is essential."

15.2 Experts' Muscle Building Tips on Nutrition.

1. Alan Aragon: alanaragon.com

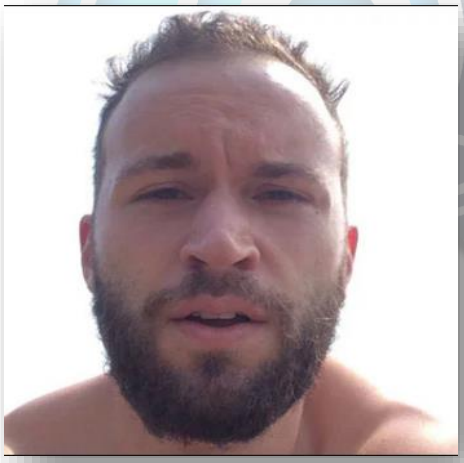
"It's always tough to take such a complex thing as building muscle and choose a "most important" tip, so I'll morph two together.

Baseline protein intake should be a gram per pound of lean body mass and ratcheted up from there if needed.

The accompanying tip would be to make sure you're getting enough total calories, and this amount will vary widely according to the individual's body mass and programming specifics.

While it's possible for certain individuals to build muscle in a caloric deficit, this has been shown to compromise muscle protein synthesis, so in order to maximize rates of muscle gain, a caloric surplus (eating above maintenance calorie needs) is necessary."

2. Erik Bowitz: skinnyyoked.com



"For lifters, both natty and non-natty alike, building muscle always comes down to primary diet and the workout itself. Get both on point and you will build muscle right?

Personally, the one thing I have found to help massively with my gains is the inclusion of natural healthy fats in my diet. Like most lifters I am always trying to look lean, however, super low-fat diets leave me relatively flat looking.

Incorporating healthy fats like olive oil, as well as animal fats, give me more energy and ultimately more gains than excessively low-fat diets do. Best pumps I've had often come after a big breakfast of bacon, eggs and a bit of pre-workout.

The point I'm trying to make is guys seem to get too obsessive about removing ALL fats from their diet, and they ultimately put a damper on their natural testosterone production and thus gains.

Cutting out unhealthy processed fats like those found in potato chips and fried foods while incorporating some healthy animal fats like egg yolks and dairy consistently has resulted in better workouts and more visible gains."

3. Douglas Kalman: qps.com; theissn.org

"One of the most overlooked yet simple aspects of gaining muscle mass is understanding how to eat adequate calories for growth yet not too much where fat gains are spurred too.

If you are looking to gain weight, muscular weight, then knowing a few tricks will help you in this goal:

1. Check your body weight, jot it down.

2. Get an idea of how many basic calories you burn per day by using an online calculator such as this one.

3. Make sure to note your activity level on the choices when doing the calorie calculation.

4. Once you know your basic caloric expenditure, add 500 calories on top in order to get an idea of your new target level for growing mass.

5. Make sure your diet has up to 35% protein (AMDR range is 10 - 35% protein). The ISSN recommends 1.4 - 2.0 gm/kg, which also fits in the AMDR range.

6. Consider using a macronutrient calculator to help make meal planning easier.

7. Websites such as this one can help with making meal plans.

8. For gaining muscle, remember each meal and snack should contain some protein (ideally not less than 20 grams of protein).

9. To prime muscle recovery and growth, make sure to have protein as part of every post-workout drink or meal, a minimum of 20 to 40 grams. Missing fueling recovery after a workout results in a wasted training session and hurts your goals of added lean mass.

10. Stay hydrated - an under-hydrated or dehydrated muscle will not be or become anabolic. Hydration matters."

15.3 Experts' Muscle Building Tips on Lifestyle.

1. Rohan Arora: gainingtactics.com

"1. Consistency: Being consistent with both your workout as well as your nutrition is the most important key throughout your fitness journey. We all go to the gym and workout, but not everyone gets to see the results. The only thing lying between those who see results and those who don't is persistence.

Gregg Plitt says "In life, it's not the genetic guy who wins or the guy with the most potential who wins; it's the person with the greatest perseverance who wins"

2. Right Supplementation: Sure diet is 70% of your fitness journey, but supplements to are 10% and every little thing matters in fitness. Supplementing with the right products will help you lift more, stay energized and recover better.

Focus on your diet first, but fill in the left gaps with the right supplements. Invest your time in researching about various supplements and which one would work the best for your current goals.

3. Recovery: Most beginners make the mistake of working out hard in the gym. It's not the 1-hour workout that matters, but what you do throughout the day.

When you perform an intense workout, you should be focusing on nutrition and sleep in the same way to reap the benefits of your workout.

Workout, nutrition and rest form the tripod for fitness and each is dependent on one another. Focus equally on all three, and results are bound to come."

2. Sara Subero: beyondvitality.com

"I'm a big proponent of the holistic approach to building muscle mass.

Every piece of the puzzle must be present for long-lasting results – real food to fuel and nourish, fluids for hydration and proper organ function, a quality sleep-wake cycle to repair, fresh air and sunshine for hormone synthesis, variety for increased adaptation, mobility and good range of motion to prevent injury as well as mindfulness for consistency and patience."

3. Ryan Douglas: theathleticbuild.com

"My most important tip for building muscle mass is consistency.

If you only train on the days you feel like training you won't get very far.

Sticking to your training schedule and not missing workouts is the easiest way to make progress when it comes to muscle building."

15.4 Experts' Tips That Combine Lifestyle, Nutrition, & Training.

1. Valentin Bosioc: valentinbosioc.com

"1. EAT MORE PROTEIN - Protein is absolutely crucial for gaining muscle. It helps keep your strength up and gives your muscles the nutrients they need to repair and grow.

Also, make sure you consume a variety of protein sources so you get all the amino acids you need.

2. DO COMPOUND EXERCISES - Forget about the dumbbell kickbacks and wrist curls. Replace these with compound exercises like bench press, pull-ups, squats, deadlifts, dips and shoulder press. These movements recruit large muscle groups and will give you more bang for your buck.

3. GIVE YOURSELF ENOUGH RECOVERY TIME - While working hard in the gym it is crucial to let

your body recover. If you aren't getting enough sleep, or if you are hitting the gym hard every day, you simply won't get the kind of growth you are looking for."

2. Diatta Harris: femmefitalefitclub.com

"I think the most important thing to focus on when building muscle mass is going heavy.

Also, eating enough protein post-workout to support muscle repair and rebuilding is essential."

3. George Romasanta: Aboutlifting.com

"FAT IS YOUR FRIEND- Cholesterol is the building block of testosterone. Studies show a more significant correlation between high cholesterol diet to muscle growth.

Make your training sessions HARD for you - utilize different ways of achieving muscle overload and muscle failure every once in a while. Keep in mind that a training session cannot be LONG and HARD at the same time.

I don't base my workout splits on weeks - why? You are being limited by the "week" when every person has different recovery abilities, different jobs, schedules, genetics, level, etc; Most of the time if one misses a workout after the weekends, it is GONE forever!

What I do instead is divide the whole thing into cycle days (or the splits). Let's say the first split is push day, second is pull day, third is for arms - so you do that in that order and it doesn't matter how many days it takes you to go from split to split - just stick to the arrangement no matter what happens.

That way you will not miss any workouts at all, and at the same time make your training schedules as flexible as it can be with your lifestyle and recovery."

4. Dr. Mike T Nelson: miketnelson.com

"Stimulate as much muscle mass as you can by focusing on a high amount of volume (weight x reps x sets) over the course of a week.

A combination of some full body work and a few smaller body part exercises do the trick there.

Make sure you consume enough protein (around 0.7 grams/lb) and more than enough calories, especially carbohydrates to fuel your training."

5. Aidan Huang: runsociety.com

"Eat an appropriate diet based on your goals, lift weights, rest and recover.

You're not going to turn into a bodybuilder just with running, although you will begin to build muscle and burn fat. So to enhance the process, you should go on a diet based on your goals, add on strength training and allow your body to rest on alternate days."

Conclusion:

Building muscle is a long process and involves being dedicated to training, nutrition, and an appropriate lifestyle outside of the gym.

Take these tips and find ways to subtly change your current muscle building efforts. Over time, continue to make these small changes. Eventually, you'll get to the point where you have incorporated most of, if not all of, these tips.

Conclusion

Bodyweight training is an art form with direct physical and emotional benefits.

Train for the high, the freedom from mental oppression and the brother- and sister-hood of the Progressive Calisthenics community.

Proper bodybuilding exercise will make you stronger, enhance your flexibility, and improve your cardiovascular conditioning— in addition to dramatically altering your lean body mass (muscle) composition.

As a result, your metabolic rate will rise significantly, which can lead to reduced body fat levels, lower blood pressure, lower cholesterol levels, and an improved sense of wellbeing.

All of this adds up to better health and fitness and a more positive self-image.

Not a bad return for an activity that requires only minutes a week of your time and that you can continue for the rest of your life.

A lifetime of strength and weight training has been shown to keep you leaner, stronger, and younger when compared with men your age who choose not to be physically active.

In addition, every time you lift, surges of testosterone and other beneficial hormones race through your body, making you feel great, both physically and mentally.

In this book, we've given you everything you need to know—and nothing you don't—in order to safely and effectively build muscle, improve your performance, and get into record shape.

Better still, you now have the tools to develop your own ongoing training workouts sessions that suit both your needs and the limitations of your gym.

Our part has now come to an end, and the rest depends on you. It's your turn to put these great training methods and techniques into practice and get after it!

Best of luck for your 'Attaining-desired-physique-journey'.