STRENGTH TRAINING

GET STRONGER, LEANER, HEALTHIER IN 2021

ELIZABETH TUCKER

Strength Training:

Get Stronger, Leaner, Healthier In 2021.

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Introduction

The mindset and exercises seem to be very common topics in the United States of America. You will come across several facts about the relationship between body esteem and exercise. Among the most common are:

- Below 30% of people meet the recommended amounts of exercises that our body needs. People between 18 years and 24 years are the most likely people who like engaging in exercises.
- It is recommended that about 30 mins a day should be spent on exercises for a normal adult. This is with the aim of maintaining a healthy weight.
- When it comes to women, above 85% of them, wish or want to lose weight. When you look at men, below 30 % of them, have complained about their body weight.
- Over half of the women who are aged between 18 years and 24 years prefer to be hit by lightning compared to being fat, but again, two-thirds of them prefer to lazy around and do nothing and be dumb compared to being fat.

These are some facts that complement what is happening in our society today. On the other side, women are getting a lot of pressure from the media for them to get thin and toned. We have seen this in many shows that are geared to getting fat women into shape in a matter of weeks. We have also seen how other female gym instructors broadcast their sessions live, showing women how they can get their bodies into shape. Apart from these, there are people who are selling products that preach to women that they can get into shape in a matter of weeks, it has become a business that is being sold to women, and they are getting into all manner of programs.

We have also seen how it has been in the media on how the US is an obese nation, and the word about exercises is the salvation of women who don't want to get obese. When you combine these messages, you get a very dangerous cocktail, making women to go to extra miles to be fit and get the bodies they want no matter the cost.

Chapter 1 The basics of building strength workouts

Understanding of split workouts

Now, you need to delve deeper into understanding what strength training is, how it works and how to organize it so that it brings the most out of it. It's time to tell you how you will build your workouts throughout the week.

The distribution of the load on different muscle groups by day as part of your workouts is called a split. How you organize it for yourself depends on three factors. The first is the time you can spend a week on your classes in the gym. The second factor is your fitness level. The third factor is the goals that you set for yourself.

The number of days per week you can devote to training in the gym plays an important role. The frequency of your workouts will depend on this. And this time will dictate to you how to break your muscle groups into different workouts so that you can train your whole body in a week. You can choose from a huge number of splits. You can start with training the whole body at a time (full body workout), and you can continue by dividing your muscle groups in training by upper/lower, into muscles agonists/antagonists, deadlifts/presses, back/front strength chain, or individual muscle groups into every workout. Each of these splits has its own advantages and none of them is a priori better than the other - you should choose them based on your needs and possibilities of practical implementation. Now I will tell you everything in detail and give you examples of the main workout splits, and you can choose the one that suits you, based on your level of training and the tasks that you set for yourself.

1 Full body or circular workout

Training all major muscle groups in one workout is usually a beginner's prerogative and is most often characterized by one exercise per body part over several sets. One of the main reasons is that training volume is deliberately low for less painful adaptation of the muscle group and, most importantly, for adaptation of the nervous system. Rather, you are teaching your body to activate and recruit more muscle fibers, rather than gaining muscle size and strength. This approach requires a higher frequency of training, and since the volume of work is low, this training should ideally be repeated three times a week with a break of 48 hours between them.

Day	Group of muscles	Exercises	Approach	Repeats
1	all groups	1 from group	3	10–12
2	Rest			
3	all groups	1 from group	3	10–12
4	Rest			
5	all groups	1 from group	3	10–12
6–7	Rest			

Another reason it makes sense to keep volume and intensity low for a beginner is to minimize muscle soreness the next day. For example, the first intense leg workout can cause soreness in the legs for an entire week, which can scare a novice and not make him want to return to the gym after that at all. The table above shows how you can organize full body workout during a week.

2 day split workout for upper or lower parts of the body

When you are following a one-day circuit training split, the amount of work (sets and reps) for one muscle group is low. The next step in increasing efficiency is a two-day split, in which your body is divided into two parts, and you will have to do two exercises for each muscle group. Typically, in this split, the body is divided into the upper part (chest, back, shoulders and arms) and the lower part (quads, glutes, hamstrings, calves and abs).

Day	Group of muscles	Exercises	Approach	Repeats
1	upper body	2 from group	3	6-8, 10-12
2	lower body	2 from group	3	6-8, 10-12
3	rest			
4	upper body	2 from group	3	6-8, 10-12
5	lower body	2 from group	3	6-8, 10-12
6–7	rest			

By increasing the amount of work on each muscle group, you can train the selected group more intensely and more precisely. In addition, you can train one group in two exercises, but with different number of repetitions in sets; one exercise is aimed at increasing strength by 6-8 reps, the second, with less weight, will be more focused on volume and is performed for 10-12 reps.

Since you will be training more intensely in this split, you will need more rest days between workouts per muscle group. The table above shows how you can organize two-day split workout during a week.

3 day split workout - deadlifts, bench press and legs

Developing further, as you gain experience in performing exercises for one muscle group, you can already afford to train the whole body not in two days, but in three days. And although in training you can combine exercises in completely different combinations, but the most popular are the combinations when all the bench exercises are done together in one workout (chest, shoulders and triceps), and all the pulling exercises (back and biceps) are done in another workout. On the third day, legs are trained. You can pump abs and calves at the end of a workout on any of these days.

The meaning of this combination of pushing muscle groups is that in basic multi-joint exercises, many non-target muscles are involuntarily involved in the work. For example, doing the bench press, we purposefully train the pectoral muscles, but in addition to them, the deltoid muscles and triceps are included in the work. Of course, they all get a serious load.

An alternative would be to train the chest one day, the deltoids the next, the triceps the third. But this will seriously harm the process of their recovery, respectively, growth - they simply will not have time to rest, since they will all be included in the work on the following training days.

Adding a third exercise to a muscle group is a good way to increase the intensity and volume of the load on the muscle, purposefully applying the load to it from different angles for its fuller development. You also have more opportunities to diversify the number of repetitions in sets. Short strength sets with low reps at the start of the workout, while you are fresh and energized, are desirable.

You can perform this workout twice a week, with one break per week cycle, as indicated in the table. Or you can do one workout per week, taking one rest day between each workout. Here you are limited only by your work schedule and, of course, your ability to recover.

Day	Group of muscles	Exercises	Approach	Repeats
1	chest, shoulders, triceps	3-4 from group	3–4	6–15
3	back and biceps	3-4 from group	3–4	6–15
5	legs	4 from group	3–4	6–15
2,4,6,7	rest			

4 day split workout for large and small muscle groups

You should choose this split when you are already set for serious results in transforming your body. By training fewer muscle groups per day, you can increase the volume and intensity of your training - the most important factors in your further progress. A four day split workout in most cases fits into a week with three days of rest in it. But it can be performed in other formats: four days in a row and rest for the fifth, or two days of rest after four.

An effective training technique here is to perform a pair of training a large muscle group and a small one. For example, chest and triceps (again, as in the previous split, the press muscles are combined). This is done for the reason that the triceps is already well warmed up and pre-tired in chest exercises. For the same reason, the back muscles are trained along with the biceps.

Alternatively, you can combine muscle groups with opposite action, such as chest and biceps, back and triceps. Only then, make sure to put a rest day or leg day between the two workouts, and don't let one muscle group work for two days in a row.

When you train a large and small muscle group in pairs, training the large group first is mandatory. Small muscles fatigue faster, and if you load them first, they will significantly reduce the ability to train a large group after them. You will have to reduce the weight and intensity of your workout. In this split training, well-planned rest days become even more important. The table below shows how you can organize four-day split workout during a week.

Day	Group of muscles	Exercises	Approach	Repeates
1	Back and biceps	3-4 on group	3–4	6–15
2	Chest and triceps	3-4 on group	3–4	6–15
3	Rest			
4	Legs	5 on group	3–4	6–15
5	Shoulders	4 on group	3–4	6–15
6–7	Rest			

5 day split workout for a specific muscle group

This split is an advanced level. It allows you to load each part of the body separately on your training day, giving you the opportunity to increase the training volume and intensity to the maximum level, without fear of not saving energy for a small muscle group that should follow the main one. Each muscle group is trained after full recovery, without the possibility of any prior fatigue that would limit exercise volume and intensity.

As part of this split, you can train the muscle as intensely as possible, and this workout will go quickly enough. In addition, rest days fall on weekends, but you can shift the split within a week as you like, depending on your personal schedule.

When composing such a split workout, be especially careful about the correct distribution of the sequence of training muscle groups by day. You can't put chest on Monday, shoulders on Tuesday, and triceps on Wednesday. This will lead to insufficient recovery of these muscle groups. This is why in the split shown in the chart, these key muscle groups are separated by 48 hours. The same goes for the back and biceps. In the split shown in the example, the biceps and triceps are trained together.

You can customize your split workout further; for example, adding back deltoid exercises to your back day, since both groups are involved in the deadlift movement together. With such fine adjustments, you can build a split workout that is perfect for your goals and capabilities.

Please note that in all the splits listed, the tables did not mention small muscle groups such as abs and calves. Both muscle groups are capable of quick recovery and can be trained every other day. Just distribute them, alternating in your split workout as you like. The table below shows how you can organize five-day split workout during a week.

Day	Group of muscles	Exercises	Approach	Repeates
1	Chest	4-5 on group	3–4	6–15
2	Back	5 on group	3–4	6–15
3	Shoulders	4-5 on group		
4	Legs	5 on group	3–4	6–15
5	Biceps / tricepcs	3-4 on group	3–4	6–15
6–7	Rest			

Variable factors of the training process

You can change many factors of your training process in order to affect your muscles, which quickly adapt to the load.

The first and most important factor is weight gain. The second factor is the number of repetitions you do in one approach. And, of course, you need to decide on the working weight. I mean the weight of the barbell, dumbbells or the resistance of the simulator with which you will perform the working approaches that come after the warm-up.

If you offhand chose some kind of weight with which you can do not ten of our agreed repetitions with the correct technique, but at least two more repetitions, then you need to adjust and take more weight. The last repetitions in the range you choose should be hard for you.

The next variable that you can change as you see fit is the number of sets in each exercise. By increasing them, you can increase an important aspect called training volume (or total tonnage of a workout) without sacrificing intensity. In each approach, you can change the speed (tempo) of the exercise and thereby you can influence another important indicator that helps the muscles grow - the time the muscle is under load.

You can, at your discretion, reduce or increase the rest time between sets. By reducing your recovery time between sets, you will shift the focus of muscle training to endurance. And if you increase it, first of all, it is important for basic (multi-joint) exercises, you will give them the opportunity to complete recovery. This way you can train with more weights. For these exercises, a rest time of two to three minutes is optimal. If you feel that you haven't caught your breath or recovered yet, give yourself an extra minute of rest.

And of course, as you become more and more experienced in the gym, you can change or add exercises for each part of your body so that the load falls on a specific muscle group at different angles. By doing this, you will ensure that you can use as many muscle fibers as possible, and your muscle growth potential will be fully realized. In addition, you can add additional exercises for lagging muscle groups. For example, if you want to focus on training the gluteal muscles, then squats and lunges alone will not be enough. You can safely include in this workout various types of hip movements, and gluteal bridge, and reverse hyperextension, etc.

Chapter 2 Tools Of Strength Training

A barbell is a primary weight currently used, a bar of steel or a rod. A steel or weighty cast-iron disks are fixed to the individual edges on the rotating sleeve. The sort of added weights are 1.25,2.5,5,10,15,20 25 kilograms.

Lifts

Three foreign lifts began in 1928 and ran through 1968. The lifts included the jerk, snatch, clean, and press (press and clean). At first, the barbell was left on the ground in every lift. The lifts' performance was achieved by placing them on a 4-meter wooden stand (13.1ft square). When the concerned lifter left the stand when he was performing lifts, there won't be a lift.

For the snatch, the used barbell that is already on the ground would be raised to the same level as the arm, above in one, continuous, volatile movement. The concerned lifter will be allowed to shift the feet away or bend underneath the used barbell as he raised it before his recovery from an upright posture. The jerk and clean can be described as a lift of double-part. When the lifting of the barbell is positioned on the shoulders, the concerned lifter jolts it above the head to the arm's level, without restraints on the allotted period needed for the lift's completion or to the movements of legs. In the two lifts, the concerned lifter should wholly finish and ensure that his feet are on track, body straightened, outstretched legs and arms, while the barbell will take charge above the head. Lifters should either grip weights above the head and stayed like that for 2 seconds. They could also hold on for the referee's go-ahead before putting down the barbell on the ground.

For press, it was as well double parts. Clean and jerk, on the other hand, usually have their barbell resting on the shoulders of the particular lifter; the exact foot movement will be permitted. The particular lifter must be on his feet, standing upright until he gets the go-ahead from the referee to finish the lift that was successfully carried out by the press of barbell in an ascending manner, stable nonstop motion to the level of the arm, above the head, however, with no help by shifting his legs.

Weight Types

The competitions for men are separated into eight types of bodyweight;

Higher given limits:

- 56 kilograms (123 pounds)
- 62 kilograms (137 pounds)
- 69 kilograms (152 pounds)
- 77 kilograms (170 pounds)
- 85 kilograms (187 pounds)
- 94 kilograms (207 pounds)
- 105 kilograms (231 pounds)
- Above 105 kilograms.
- Women have seven bodyweight types:
- 48 kg (106 pounds)
- 53 kg (117 pounds)
- 58 kg (128 pounds)
- 63 kg (139 pounds)
- 69 kg (152 pounds)
- 75 kg (165 pounds),
- Above 75 kg.

Benefits Of Strength Training

The importance of strength training is in-exhaustive. Apart from giving women physical power, other benefits abound;

- Being stronger makes your life a whole lot simpler. You won't be needing assistance every time to do domestic chores or run errands. The motto 'do it yourself' (DIY) will be your daily drive.
- Risks of getting injured will reduce when your muscles are well-developed, your bones become much stronger, plus your tendons and ligaments. This will reduce the incidences of getting injured while you engage in your hobbies.
- Assists to fight muscle problems associated with age, making you maintain your agility and independence for as long as you want.
- Sustaining muscle is more complicated. This means that you must consume more food to retain your strength.
- Pain is minimized. A powerful body simplifies daily living where joints are concerned, and you will maintain a much presentable posture. Back pain and hip discomforts are also reduced.
- Appearance is improved. Although appearance depends on individuals, some females prefer to possess a large muscle chunk, while some ladies dislike it. You may not have the power to minimize fat, but you may choose to develop additional muscles in certain areas to alter your shape.
- You can have a longer lifespan. Muscle development and strength training can aid your longevity while alive.

Even though this workout is among the most remarking exercises for boosting one's health, an estimated 20 percent of females are into it, smaller than the number of men who are doing it.

Mandy Oaklander, a personal fitness tutor, explained. 'Using data from the Women's Health Study, they followed nearly 36,000 older women who ranged in age from 47-98. The women filled out questionnaires yearly from 2000-2014 about their health and exercise levels, and one question asked

women to estimate how much weight lifting/strength training they'd done per week in the past year. The researchers tracked which of the women got cardiovascular disease—including events like heart attack and stroke—and type-2 diabetes.'

'Less appealing is the other, more neglected kind: strength-training. While about half of Americans meet the goals for aerobic exercise, only 20% do the recommended muscle-strengthening activities that work major muscle groups. Women, especially, tend to shy away from it. Strength training was also linked to a woman's risk for the two conditions. Those who said they did any amount of strength training had a type-2 diabetes risk 30% lower and a cardiovascular disease risk 17% lower than those who did none, even after the researchers controlled for other variables like age, vegetable and fruit intake and physical activity.'

'Not surprisingly, adding in aerobic exercise helped drive both risks down even more. Those who did at least 120 minutes a week of aerobic exercise and some strength training had a type-2 diabetes risk 65% lower than women who didn't do either.'

'More research is needed to determine the optimum amount of strength training for women and men to reduce their risks. But the study suggests that both kinds of exercise impart unique benefits—and that strength training has some serious scientific weight to it.'

Chapter 3 Challenges to Women and Exercise: The Stigma That Surrounds Exercise and Woman

Women and Strength Training

Stigma: The misconceptions that surround women and strength training is astonishing. There are very many research data being released to the public that points out the benefits of strength training to women, but many women resist from training because they are avoiding to develop muscles.

Everyone responds to exercises differently. While in men testosterone is a catalyst to muscle development, the DNA also contains the answers as to why the muscle size of men or women grows differently. The types of fibers we have for our muscle development is determined by our genes. The genes also have a say as to the ratio of estrogen to testosterone.

We all know the old rule that says, “If you want to build stronger muscles, you need to go for heavier weights and few repetitions, 3 to 5 reps.” To build endurance, go for lighter weights to finish off the reps that you could not complete. You can begin with a heavy weight. Start with a set and continue to three sets, then eight and finally, 12 reps. You do not have to go for many reports. Women should try and experience a muscle build up of between 20% and 40% after about five months of resistance training.

You will need to first understand your body type and how you respond to exercises. This is for you to set goals that are realistic. Do not start comparing yourself with others; no two people are the same. Focus on how the exercise will keep you rejuvenated, lose weight, and shape your body. It takes time, but step by step, you will see the difference.

Pregnancy and Training in Women

Stigma: You cannot train or lift weights when you are pregnant.

You need to understand that as a woman, you need to be even more motivated to live a happy lifestyle when the lifestyle and health changes. When you get pregnant, do not avoid exercising, consult your doctor so that you can start a prenatal exercise plan. Your doctor needs to assess you, and approve that you are fit to train since, for medical reasons, it is difficult for women to have workouts when they are pregnant.

Your fitness level in relation to your pregnancy can be reviewed by your doctor. This will enable you to have an understanding of how you should go about training while pregnant. If before pregnancy you were active, you will most likely be advised to continue training, but you will not train in either a moderate or advanced level.

Some women normally have pregnancies that are uncomplicated. These kinds of women can do regular exercises which will be an added benefit to both the child and the mother. There are very many benefits that exercise offers a pregnant woman. For instance, if a woman has the right workout routine, common issues that are usually as a result of hand swelling, varicose veins, cramps on your legs, mood swings, and fatigue may be countered, you can also ease your recovery period, and for the better part, shorten it after birth.

Understanding Your Body

During pregnancy, you should be careful when you are exercising, because of the changes your body goes through. These include the different postures, new body alignment, endurance, and even reduced strength. A hormone is also produced in the body that makes your joints and ligaments relax. Be very careful to avoid stretching too much.

According to the American College of Obstetricians and Gynecologist, women who have what is deemed normal pregnancies are recommended to go for at least half an hour of exercise, at least four days in a week. To take part in an activity like aerobics, a woman can walk since no equipment is needed for training. During this exercise, it is recommended that a woman should be accompanied by a friend. Always remember to spend at least 5 minutes for warm up before engaging in your workout.

Tips on How to Exercise When You Are Pregnant

- Try to keep your heart rate below 140 bpm.
- Avoid engaging in activities like horseback riding, contact sports, skiing, and soccer because they can easily cause an injury on the abdomen when you fall.
- Avoid movements like running or jumping during the last trimester
- Engage in Kegel exercises on a regular basis. When you do Kegel exercises, you are strengthening the muscles that provide support to the bladder, rectum, uterus, and urethra.
- Drink lots of water before you start exercising, during an exercise and after the activity.
- When your baby continues to grow in the womb, reduce the level of exercise training. This is due to the additional weight that your baby adds, which makes it hard for them counter to maintain intense exercises.
- If you start feeling fatigue, shortness of breath, or dizziness during a workout, go slow on it.
- Avoid exercising in altitudes that are higher than 6000 feet. This is because of the low oxygen levels at this point. You should also avoid scuba diving because of decompression sickness.

Exercise Outline For Pregnant Women

- Begin with exercises that warm you up, get your blood flowing, and pay more attention to the shoulder, hip, and the lower back.
- You should bike, swim, or even walk for between 20 to 40 minutes, depending on the fitness levels of where you are at in your pregnancy.
- Maintain and monitor your heart rate to be at 140bpm and below. Cool down after your exercise to get your heart rate to the normal range and stretch for about 10 minutes.
- To reduce the strain. Modify the abdominal exercises. With a pillow under your hip, lie on one side and not on the back when you want to do floor exercises. When a pregnant woman is on her 2nd or 3rd trimester, she should not lie flat on her back since the weight can cause compression of the uterus. This is to avoid the lowering of the mother's blood pressure that can be resulting from blood vessels being strained.

Pregnant Women Best Exercises

The best exercises for pregnant women are supposed to free your body from excess weight. Cycling and swimming can still be done when one is pregnant. Low impact aerobics and walking can also be done. Your doctor should give best advise on the best exercise for you and your child.

Walking: This is a great cardio exercise, and it can be done anytime during the pregnancy period. It is low impact, and it is very affordable to do.

Swimming: Water supports the body weight, it reduces clumsiness or imbalance. Water workouts make the muscles relax. This makes you relief a woman's body from the exercises that are enhanced by gravity.

Cycling: It is a low cardio exercise that can be done anytime during pregnancy.

Weight training: It was uncommon for weight training to be done by pregnant women. But recently, many women still have the energy to continue their normal routines, but they also need to be guided carefully.

Aerobics: Low impact aerobics strengthens your lungs and heart. You should avoid high kicks. Always strive to avoid putting stress on your body joints. Avoid high leaps or kicks. When you do this, it shouldn’t be an issue for you to get back to your daily program.

Relaxing techniques: Meditation and breathing exercises are effective to reduce panic attacks, irritability, depression, headaches, muscle tension, stress disorders, and fatigue. This is a great way to reduce pregnancy stress.

Yoga: Select a routine that has been made specifically for expectant women. Mainly, it should be on relaxation, body awareness, posture, and breathing.

Step machine: Throughout pregnancy, you can perform this low-intensity workout. It is a simple exercise that allows aerobic conditioning. The best part about it, is that it places less stress on the body joints.

Postpartum Exercise

After giving birth, you might take a while before recovering from the pregnancy. Always contact your doctor for recommendations, on resuming the workout routine. When you are going to give birth soon or already have, back pains are likely to increase, this is due to the hormones having done their effects of softening joints and ligaments. We are going to list down some tips that will help you prevent any injuries. One of the first tips is never to carry your child while supporting it with your hip. It can easily cause a spine twist. Another major tip: when changing the bay, avoid leaning on the baby, sit right next to the baby while changing. When feeding the baby, avoid leaning over the baby with rounded shoulders. Also, support your baby using a pillow.

When you want to reach for objects that are low, set your legs apart and bend your knees. Straighten your knees and lift when you are picking up the object. Avoid pushing and pulling an object when you are moving it. Push using your legs and not your arms.

Avoid bending your waist when you have your feet straight. Instead, squat, kneel, sit, or bend your knees while you are leaning towards your hips. When you are getting out of bed, in the same direction, turn your hips, pelvis, and back, ensuring your back is vertical. Roll over to your side when you are getting out of bed then push yourself from the bed.

Here are some strength exercises you can do in different stages of pregnancy

Pregnancy Period

Stability ball squats with dumbbells

Plank

Lateral side raises

Clam shells

Kneeling bird dogs

Front/side dumbbell lunges

Tricep overhead extension on ball with dumbbells

Kegel
Chair squats
Abductor and adductor with resistance band
Chest stretch
Leg raises, toe in and out
Sitting and stretching tailored
Standing push-ups
Pelvic clocks
Cat back
Incline pelvic tilt with ball
Bicep curls while standing using a ball
Bent over rows using a dumbbell
Wall slides
Buddha stretch
Postpartum Workout Exercises with a Baby
Hip Adductions
Lunges
Calf Raises
Crunches
Trunk Twists
Squats
Leg Curl
Leg Extensions
Hip Abductions
Exercises with a Baby to the Side
Side Plank
Push-ups
Lateral side raises
Plank and half plank
Chest presses
Tricep Extensions
Reverse crunches
Lateral front raises
Vertical arm lift
Dumbbell row
Bicep curls

Chapter 4 Build Muscles at 40, 50, and Beyond

Are you skeptical? Do you think that the years have gone by and that you should have gotten into weightlifting and bodybuilding 10 years ago, or even 20 or more years ago? Or you worked out with weights back then, but your career got in the way, and you quit? Those years may be gone, but your opportunity to build those muscles, and gain that strength, is still here, waiting only for you to say to yourself, "This is my chance to make up for lost time and build the body I've always wanted."

Consider when Tug McGraw said, "Ya gotta believe," the admonition that turned around the losing New York Mets, and put them into the 1974 World Series. It's all about positive thinking and having confidence in yourself.

It's not too late. Even if you are middle-aged and have never worked out, even if you're overweight, out of shape, and lack energy, it is not too late for you. This is your time if you have the motivation and commitment to start and continue a weightlifting program. If you are ready, you can fulfill your hopes and dreams of fitness, health, and energy. Yes, you can lift serious weights and build serious lean muscles. You can do this.

The Science of Muscle-Building

To reinforce your confidence and erase any doubts you may have about whether it is possible to become a successful weightlifter at this time in your life, this chapter is going to give you the basics from science and experience to convince you that there are physiological processes that you can initiate that will pay you back generously with results that will surprise you, maybe even astound you.

Science may not be the first thing that comes to mind when planning a muscle-building program, but it is important to ignore the old clichés and anecdotal tales because safely and effectively building lean muscles is based entirely on scientific principles. What does this mean? The scientific method means facts are established by test results that can be consistently repeated and not by opinions and traditions. The principles that apply to young weightlifters also apply to middle-age weightlifters with the understanding that age requires some adjustments to achieve good results safely.

The Concept of Hypertrophy

The muscles we are concerned with are the 650 skeletal muscles that enable us to move and do work. They are made up of muscle fibers which, in turn, are built up from fine thread-like fibers called sarcomeres and myofibrils. These muscle fibers are the fundamental elements of muscular contraction. When you flex a muscle or put it to work, it is within the fibers where the action is taking place. Keep these fibers in mind as we progress because they will be the units of growth that strengthen and build your muscles.

Muscles contract on command when certain nerves, called motor neurons, receive their signals from cells known as the sarcoplasmic reticulum. As your body becomes more conditioned, the signals will become more adept at getting your muscles to contract, and you will become stronger even before muscles are much larger. If you can train to activate your motor neurons effectively, it can jumpstart the processes to build bigger muscles to lift heavier weights.

First, do the damage. The process of hypertrophy, the creation of muscle growth, begins with the damage done to muscle fibers during weightlifting. The extreme effort of lifting or pulling heavy weights breaks

down some of the muscle fibers that are involved in the hard work; this occurs at the cellular level and is completely normal. Your cells are being sacrificed by doing more work than they are accustomed to.

Next, repair the damage. To repair the damage, the cells use amino acid molecules to fuse into muscle fibers and to form new myofibrils out of strands of protein. This is why protein needs to be an important component of a weightlifter's diet; it is the building block from which the myofibrils are constructed.

Importantly, during this process of hypertrophy:

- ➢ The myofibrils are not just repaired and rebuilt to their previous size but are made thicker and more numerous. They get slightly larger. They experience growth.
- ➢ Hypertrophy, or muscle growth, occurs when the production of muscle protein exceeds the previous pre-damage level. On a day-to-day basis, the muscle tissue increments are microscopic, but over time they accumulate, and muscle bulk becomes visible.

Satellite cells. The effectiveness of your hypertrophy is dependent upon what are known as satellite cells, which spur the growth of the myofibrils by increasing muscle protein nuclei and enabling the cells to divide more frequently. According to trainer and coach John Leyva, who is technical editor of the BuiltLean Blog (2020), the degree to which the satellite cells are active is dependent on the type and resistance of the exercises performed and the amount of stress that is placed on the muscles:

1. **Tension of the muscles** is the result of progressively increasing the load that muscles are lifting and pulling, exceeding the amount of resistance they are accustomed to. So if you do bicep curls regularly with 15-pound dumbbells, your biceps and upper arms will retain their current muscle size and strength, but will not grow larger or stronger until you increase the weight to introduce greater resistance and cause stress.
2. **Damage to muscle cells** and tissues releases immune system cells and inflammatory molecules that trigger the activation of satellite cells which, in turn, stimulate the growth of muscle tissue protein and boost hypertrophy. One clear signal that this has occurred is muscle soreness in the hours and even days after your workout. This is due to the damage done during the workout, and

it sets the stage for the over-rebuilding of muscle tissue to follow. Much of the soreness is from lactic acid buildup which will dissipate within a day or two.

3. **Metabolic stress** results from intense muscle tension and causes swelling of the cells in and around the muscle. It's the result of the accumulation of blood, which is bringing extra oxygen to the tensed and damaged muscle fibers, plus the arrival of glycogen, the sugar molecules that provide the muscle cells with energy. These effects may contribute to increased rebuilding, but much of the increased muscle size after the workout, while impressive, is temporary, and the muscles will return to their normal size as the fluids drain from the muscles.

Hormones

The role of hormones in building muscles is frequently debated. This is what is known today about the natural hormones in our bodies:

- ➢ Testosterone and insulin-like growth factor I (IGH-I) are the two most active hormones that contribute to muscle growth.
- ➢ While testosterone is at higher levels in men, women also have testosterone (and men also have estrogen), although a woman's testosterone is at a lower level, which is a key reason that men can build muscles more readily than women.
- ➢ Both men and women can increase strength through weightlifting and other resistance exercises.

While most of our testosterone is not free-roaming or available to affect muscle building, studies show that hard resistance exercise can release more testosterone, which can activate satellite cells, prevent or reduce protein breakdown, increase protein synthesis, and stimulate other anabolic hormones. It may also encourage muscle cell receptors to be more sensitive to free testosterone. Testosterone can also increase the number of neurotransmitters at the site of damaged fiber, help activate tissue growth, and stimulate growth hormone responses.

The bottom line on natural hormones in our bodies is that resistance training can stimulate the release of hormones that further enhance the building of muscle and strength.

Hormones supplements? You are not encouraged to take hormone supplements to build muscle mass unless prescribed by a doctor following a

blood test that identifies a hormone deficiency.

Rest and Muscle Loss vs. Muscle Gain

The muscle repairs and rebuilding we've been discussing do not occur during the time while you are actually lifting the weights and damaging the muscle fibers. Instead, muscle growth — hypertrophy — takes place while you, and your muscles, are at rest.

It is during rest that recovery can take place. If the muscles continue to be worked, even to less extreme levels, there will be no opportunity for hypertrophy to do its work and, at best, no repairs can occur. Of greater concern, hard resistance exercise performed too soon after a good weightlifting session can have negative effects:

- If your muscles do not receive sufficient rest to prepare and conduct their repairs, you can reverse the protein-building process and allow your body to fall into a destructive or catabolic state. Over time, this can lead to muscle loss.
- The time needed for recovery and hypertrophy after a resistance exercise session is about 24 to 48 hours. So weightlifting that challenges any specific muscle group should not work that same muscle group for at least one day, preferably two days.
- If you follow a routine of doing total-body resistance workouts in a single workout session, then you should not have weightlifting or resistance sessions more than three times a week.

Weightlifters over 40. The need for rest and recovery is of special importance to you as a middle-age weightlifter because your recovery time is longer as a function of your age and a slower metabolism. A two-day rest and recovery period after each weightlifting session is ideal for you.

Up the protein. During the rest and recovery days, your diet should be rich in protein since the amino acids that make up protein molecules are needed for the repair of muscle fibers. Vegetarians and vegans can increase their consumption of beans and other legumes, plus soybeans, buckwheat, and quinoa, which are among the few plant sources of complete protein, including the nine essential amino acids that our bodies need to get from our food.

Over 40: It's Not Too Late

We've just been through the scientific basis for muscle building, and you can appreciate there is no magic or mystery involved. Resistance exercises, followed by adequate rest and recovery and with enough protein in the diet, will build muscles. The cells that compose your muscles get damaged, then repair themselves with added protein, and the cells then over-repair.

As a result, lean muscle tissue increases in size over time, and you grow stronger. Hypertrophy is inevitable if the rules of the game are followed.

Yes, you may be thinking that may work for the young, but you are over 40, or maybe over 50 or 60, and yet now you are being told that it's not too late for you to get those muscles bigger and stronger.

How can this be? With age, your muscles are not as large, some body fat has accumulated, energy isn't the same, and your knees, shoulders, and other joints ache when you bend, crouch, or lift something. Your testosterone level has undoubtedly slipped lower. The porosity of your bones may have increased, maybe osteoporosis is happening, and your bones may be more susceptible to breakage.

An Ideal Time

So, you may ask, all in all, is this really a good time to start, or get back into, serious weightlifting and other forms of resistance exercises? Isn't it too late?

Not only is it not too late, as you have already read, but it's also an ideal time. Stronger, bigger muscles are not a vanity. They are your protection against growing weaker, frail, fragile, less mobile, less flexible, and, here's the big one, less likely to be overweight or obese, and subject to heart disease, diabetes, and a long list of other serious diseases. It's your time right now. You have nothing to lose, and everything — health, longevity, strength, energy and vitality, a great build you can be proud of, self-esteem — to gain.

Weightlifting coach and trainer TC Luomo sums it up in his TC Nation (2019) article by asking if you were an aging professional athlete, presumably having passed age 40, and didn't have what you used to, and you weren't keeping up with the younger athletes, would you give up, retire, and get soft, or would you work harder to regain what you've lost?

More to the point, if you wanted to play even better now, even if your joints ache a bit and you're less flexible than before, would you train and work out harder or easier now? His answer is "Harder, of course."

You, at age 40-plus, have unquestionably lost some of the luxuries of your youth so it becomes necessary to train harder — and smarter — to compensate for what the years have taken, gradually and unseen, as a normal part of the aging process. But when you were born, as TC Luomo puts it, you did not have a 40-year expiration date tattooed on your posterior, so what's to stop you from getting back into the muscle-building and fitness game and doing it better than ever before?

New Rules of the Training Game

If training hard and training smart is the formula for success after age 40, there is a set of rules, let's call them guidelines, that will get you where you need to go faster, easier, and more effectively than picking up a barbell, pulling, a cable, stretching a rubber exercise band, or dropping into the plank position and knocking off some push-ups.

The following chapters will guide you through the specific exercises, but these guidelines are meant to give you the big picture, the perspective, on what to do and why to do it.

- ➢ Quick definition: Reps are repetition, the number of times you lift or pull the weight successively. In total, the repetitions become one set. So an upper-arm workout might be three sets of eight reps of barbell curls, with a one-minute rest between sets.

1. Breathe deeply. Unless you have been working hard on the cardiovascular side and have been running, race walking, cycling, swimming, or hitting the elliptical machine or stair climber with sufficient frequency and intensity, you are probably not close to a high level of aerobic conditioning. OK, you may think, "I get it, for cardiovascular health and to help keep off the pounds, I need to deal with that, but later, because I want to get going with weightlifting first."

Yes, the long-term benefits of cardio training are fantastic, but this is about getting you in shape for the immediate term, to ensure that you have the aerobic capacity to breathe and function as you lift weights. This aerobic training will involve three or four days a week when you perform your resistance exercises and will take 10 to 20 minutes starting out. Don't force your heart rate up in the beginning, just be sure that you warm up slowly for two or three minutes. Pick up the pace so that you are breathing

hard and deeply for a minute, slow down for one minute, then pick up the pace again and give it a good intensity for one minute, slow again, then fast again. End with a one-minute slowdown.

- ➢ This is an abbreviated version of HIIT, or high-intensity interval training, a compressed form of aerobic conditioning. It will save you the time of slower, dragged-out exercise, and has been proven to increase the growth and vibrancy of mitochondria, the energy factories in our muscle cells.
- ➢ Perform this aerobic exercise before you begin the weightlifting, not after. Your objective is to oxygenate your muscle cells before the stress that the resistance exercises create. It is also better to get your heart muscle warmed up slowly rather than forcing it up suddenly with eight reps of lifting a heavy weight.

2. Work hard. Whether you prefer to lift heavy or lighter weights, you are going to be working hard.

You may be lifting heavier weights with fewer reps because some professionals believe it is the best way to catch you up with where you left off, or where you need to start if this is all new to you. That is not to say that you'll be straining, but the recommendations from many trainers are to forget about doing lots of reps with light weights. They say lighter weights with lots of reps may help build endurance but won't address the building of muscle mass or strength.

There is an opposite approach also advocated by some trainers: lifting lighter weights and doing more reps. For example, instead of doing eight to 10 reps with a heavy weight, you lift a lighter weight for 15 to 20 reps. The advantage of lighter weights is that they place less strain on joints, tendons, and ligaments, and since each of us responds uniquely to physical effort and stress, you will need to be the final judge of what works best for you.

3. Manage the pain. The expression, "No pain, no gain," became popular in the 1980s when the weightlifting and calisthenics movements began to gain momentum. This expression was subsequently criticized for encouraging people to push past their limits which could lead to injuries ranging from torn ligaments and muscles to joint damage. Today, we know that the responsible approach is to push towards your limits but don't exceed them. Pain is a warning and should not be ignored.

Lifting heavy weights can cause a variety of pains. Joints can creak and ache, muscles can cry out when pushed hard as you try to get that last rep

done to conclude a set. These are generally normal but only within limits. Give that last rep a good effort but force it. Do your best but don't punish yourself.

- ➢ Be especially careful with your shoulders because that set of muscles, called the rotator cuff, is susceptible to tears if subject to shock or excessive stress. Most of your skeletal muscles will hurt too much for you to damage them, and the pain will force you to back off or stop the movement, but your shoulders give little warning when at risk.

4. Heavy, but not too heavy. Some weightlifters practice powerlifting, which is very few reps with very heavy weights. This not for you since your 40-plus-year-old joints and connective tissues no longer have the flexibility and resilience they had 20 years ago. So, if you prefer to lift heavy weights, make sure that the weight is not so heavy that you can't do at least eight reps without difficulty. If you can only do three or four reps, the weight is too heavy. Ratchet back until you can find a weight that you max out at eight to 10 reps.

Remember, building muscle and strength takes time and patience. So does losing the extra weight you may be hoping to shed. That's again why the motivation to get started is not enough; you need to commit to going the distance, putting in the months and then making it part of your lifestyle for the years ahead.

5. Rest, but not too much. By now, the importance of rest and recovery time has been driven home; you got it, muscles get damaged and need time to build, rebuild, and overbuild. Hypertrophy requires rest. The right amount for the age 40-plus weightlifter is 48 hours. Those two days are what your body needs to get the muscles rebuilt and ready for action. One day of rest might have been enough when you were younger, but at this stage of life, that extra time is needed. If you rush back to the weights too soon, as you have learned earlier in this chapter, more harm than good can occur.

But there is a limit. Too much rest allows the muscles to get lazy, to forget the conditioning, and start to soften. So two or three days of rest between weightlifting sessions is perfect, four or five days is stretching it a bit, and six or more days rest is too much. Never worry about one missed scheduled workout day, but have the self-discipline to catch up sooner

rather than later. Each workout is like an investment, and you want to protect it.

Chapter 5 How To Eat Properly For Exercise

All food products contain nutrients - substances that give energy. These include proteins, fats and carbohydrates.

Proteins are complex compounds made up of amino acids and are the carriers of life. One gram of protein carries four kilocalories. Proteins are the building blocks of muscles, so it is vital for a exercising person to consume them in large quantities. Moreover, no matter what your goal is - losing weight, gaining muscle mass or developing strength, the amount of protein consumed should remain within 1.5-2 grams per kg of your body weight. In addition to the fact that proteins act as a building material for your muscles, in the human body they also perform a protective, transport function. It's also important to know that proteins come in two flavors: fast and slow.

Fast proteins are absorbed by the body in a very short time. Therefore, it is advisable to use them before training, immediately after it, and also combine them with slow proteins during the day. Fast proteins are found in meat, eggs, fish, and dairy products. Slow proteins are absorbed by the body for several hours. They need to be consumed during the day, ideally before going to bed, or when you will not be able to eat for a long time, in order to ensure the process of protein intake into the body for a long time. Slow proteins are found in cottage cheese, mushrooms and soybeans.

Fats are water-insoluble substances. They carry out energy, protective, thermoregulatory functions. They are able to store energy for a much longer time than carbohydrates. But this energy is slow. One gram of fat carries 9 kilocalories. Fat should be consumed within 1 gram per kilogram of body weight. Fats should be consumed during breakfast, or during the first half of the day. It is best to avoid fats before exercising as they can cause drowsiness and a heavy stomach, which can adversely affect the intensity of your exercise.

Fats can be divided into saturated and unsaturated. Unsaturated fats are “good” fats for the body, as they contain omega-3 fatty acids that are beneficial to health. Unsaturated fats can be found in walnuts, soybeans, oats, rapeseed, flaxseed, olive oils, and fish oil. Saturated fat contains

vitamins A and D, but also contains bad cholesterol. They are very nutritious and should certainly be present in the diet; however, these fats should not be abundant. Saturated fats are found in meat, lard, and dairy products. The proportion of unsaturated and saturated fat in the human body should be 60/40 in favor of unsaturated fat.

Many sweets, chips, fast food, frozen convenience foods also contain fats, but these are so-called "trans fats" - unhealthy fats that should be avoided altogether.

Carbohydrates are primary source of energy for humans. By varying the amount of carbohydrates in our diet, we can control our physical fitness. If you eat about 5-6 grams of carbohydrates per kg of body weight, and at the same time, you exercise intensely, then you will gain muscle mass. If we limit our carbohydrate intake to 1-2 grams per kg of body weight, also not forgetting about exercise, then we will lose weight and burn fat. However, for each person, the amount of carbohydrates consumed will be different, depending on the goal you want to achieve, since each person's metabolism is different.

If a large amount carbohydrates is consumed that will be stored as fat. However, a lack of carbohydrates is also harmful to the body, since you will have no energy at all, severe fatigue will begin to appear, and blood sugar levels will decrease. It makes sense to consume all carbohydrates during the first half of the day. The fact is that by eating them shortly before going to bed, you will not have time to burn the energy obtained from carbohydrates, and it will remain with you in the form of subcutaneous fat.

Carbohydrates can be divided on simple and complex. The emphasis in nutrition should be on complex carbohydrates, since simple carbohydrates are likely to stay with you in the form of excess fat. Complex carbohydrates are found in all grains such as buckwheat, millet, as well as potatoes and rice. Derivatives of complex carbohydrates are: starch, fiber, cellulose and glycogen. Simple carbohydrates (in fact, regular sugar) are found in juices, fruits, and sweets. Derivatives of simple carbohydrates are sucrose, fructose, lactose, glucose and maltose.

To understand how much protein, fat or carbohydrates a particular product contains, just read its nutritional value on the label.

Nutrition rules for better results

So, in order to achieve the ideal physical shape for you (depending on your goal), you do not need to infringe on yourself in food and completely abandon your favorite foods. At the initial stage, it is enough to only slightly adjust your diet, the type and amount of food and water consumed, so that training really brings results. Remember these 10 rules that will help you achieve results:

1. No alcohol, drugs and cigarettes.
2. It is better to eat more often, but less.
3. Avoid foods high in carbohydrates and fats.
4. Skip snacking at night.
5. Eat carbs in the morning.
6. Don't starve, never feel hungry.
7. Make sure you eat on time and what you need.
8. Be sure to drink plenty of water.
9. Eat immediately after training.
10. Eat protein and carbs before workout.

To summarize, I must say that following these basic ten rules, you can get yourself in perfect shape; however, how long it takes depends on your current shape and willingness to strictly follow these rules.

What to eat for gaining muscle mass

So, as we have already found out from the previous paragraph, it is proteins, fats and carbohydrates, or rather their amount and ratio in your daily diet, that determines your physical shape. To grow, you must eat more calories than you burn throughout the day. With intense strength training, the amount of protein consumed per day should be approximately 1.5 - 2 grams for every kilogram of body weight. If protein is not enough, then the body will have nowhere to take the building material for muscle growth. However, a large amount of protein is also harmful, as it harms the digestive system, but it will hardly be absorbed by your body. It will fit optimally in the interval of 1.5 - 2 grams of protein for every kilogram of body weight, that is, if you weigh 70 kilograms, then you should receive at least 105-140 grams of protein from the food consumed per day.

It's even easier with fats. The norm for the consumption of fat, I would call about 1 gram for every kilogram of body weight. This amount of fat is essential for maintaining your health.

The situation with carbohydrates is a little more complicated. It is difficult to say the exact amount for a set of lean muscle mass, since each person's metabolism is individual, and if your goal is precisely a set of lean muscles without fat, then I advise you to try the following method: try to consume 4 grams of carbs for two weeks for each kg of body weight (if you weigh, say, 80 kilograms, then eat 320 grams of carbohydrates per day, and mainly complex carbohydrates) and see how your weight and your physical form change.

There can be three options for the development of events:

Option 1: Nothing changes, you practically do not grow, you feel that you obviously lack energy, and, in your opinion, you are not recovering quickly enough, or you are losing weight altogether. In this case, increase the amount of carbohydrates consumed to 5 grams per kilogram of body weight, and repeat the experiment. If the situation does not change, then add other gram of carbohydrates for every kilogram of body weight until you start to grow (muscles).

Option 2: You see improvements for the better, you gain muscle mass, mood and well-being. This is what we wanted. In this case, leave everything as it is.

Option 3: You start to get fat. So 4 grams of carbohydrates for every kilogram of body weight per day is a lot for you. Most likely, either you initially tended to be overweight, or you do not move enough during the day. Cut the amount of carbohydrates consumed to 3 grams for every kilogram of body weight per day and see in which direction your shape changes.

Also, I ask you not to forget that you need to eat often and little by little, be sure to eat immediately after waking up in order to start the metabolism, eat an hour and a half before and immediately after training, as well as an hour before going to bed. Such nutrition will allow you not to feel hunger during the day and evenly nourish your training body. Also remember to drink enough water.

What to eat for losing weight

If for gaining muscle mass you created an excess of calories in your diet, then in order to lose excess weight, on the contrary, their deficit should be created. In other words, during the day you should burn more calories than you received from food. However, there are some nuances here, which we will talk about in this paragraph. If you simply cut your diet to a minimum, then muscles will be burned along with fat, and then, when you return to your usual diet, it is fat that will return in the first place, since the human body is aimed at survival, and in the first place will store exactly the fat mass. Accordingly, after leaving such a diet, after a while the fat will return, but the muscles will not. You will look, accordingly, even worse than before the diet, and you will also feel worse.

So how do you build your diet to burn exactly excess fat? My answer is that when you are engaged in fat burning, you must remember about one more goal - to preserve muscle mass. This is possible if you train as intensely as at the stage of gaining muscle mass, try to maintain your strength indicators, and naturally, do cardio loads, as they will speed up the process of fat burning, due to the fact that you will also expend calories during cardio workouts. In the diet, we will only regulate the amount of carbohydrates. If the level of consumed proteins and fats can be left alone, and leave everything as it is (1.5 - 2 grams of protein per kilogram of body weight, and up to 1 gram of fat per kilogram of body weight), then carbohydrates will have to be reduced to 1-2 grams for every kilogram of body weight. Thus, if you weigh 90 kilograms, then you will need to consume 90-180 grams of carbohydrates.

There are also three possible scenarios for the development of events:

Option 1: if you lose more than one kilogram in weight per week, then we can confidently say that you are also losing muscle tissue, and we do not need this at all. In this case, add 0.5 grams of carbohydrates for each kilogram of body weight and monitor the dynamics.

Option 2: if you are practically not losing weight, then reduce the amount of carbohydrates by 0.5 grams for each kilogram of body weight until the result appears.

Option 3: you lose 0.5 - 1 kg of body weight per week. This is your main task in drying - it strives to reduce the fat mass of the body by 0.5 - 1

kg per week. It should be borne in mind that in the first days or even weeks of your fat burning diet, you can lose a lot of weight due to water, some of which will leave you as soon as you decide to dry out.

Thus, to summarize, it should be said that the weight and your diet during drying must be monitored especially closely. Do not forget that it is undesirable to keep a fat-burning diet for more than two months (8 weeks), as the body adapts to such a diet, and over time the process of fat burning slows down. If you need to lose more than 10-15 kg, then there is also a trick here. After 8 weeks of drying, take a break and return to your usual diet for two to three weeks, and then start drying again for 8 weeks. Naturally, during such two to three week exits from drying and returning to their usual diet, part of the weight will return back, but only a part! Ideally, you should lose 8 kg for drying, then gain 2-3 kg during the break, and then again lose 8 kg during drying, and the process is repeated again. Gradualness and consistency are important here. Don't rush the results - they will definitely come if you do everything right. Adhering to this tactic, you will burn fat for a long time and get by with minimal loss of muscle mass. Do not forget that carbohydrates for drying (to get rid of fat) should be consumed in the first half of the day, and these should be exclusively complex carbohydrates. For optimal results, you will need to divide your entire daily diet into 6-7 meals; this will also be required so that you do not suffer from hunger.

Nutrition and natural stimulators

And a few more words about nutrition. First of all, the body should receive a complete set of nutrients, including trace elements and vitamins. After the age of 40 -50, it is necessary to reduce the amount of proteins and fats, as well as consume less foods containing carbohydrates (the main suppliers of energy), preferring plant foods. In addition, it is important to remember that all products can be divided conditionally into “dead” and “living”. The first ones are chemically inert and require for the assimilation of large expenditures of the internal energy of the body. The second ones are chemically active, capable of transmitting maximum of their energy with minimal participation of enzymes.

Especially dangerous are excess fats of animal origin, as well as excess carbohydrates from starchy foods. As for nicotine, alcohol and narcotic substances, they are antibiological substances; their target becomes the central nervous system - the most responsible link of any living organism. As a result of regular “bombardment” of nerve cells with these substances, their irreversible decay begins, and then the loss of psychophysical health.

The stimulating effect on the increase in the volume of skeletal muscles is: dosed work - strength and running training.

Running training is extremely effective as an anabolic agent and can be a good addition to training of a purely power character. Athletic training can end with a run (if inside, at the spot), which reduces fatigue of the nervous system caused by strength training. The share of cross-country training is limited by the level of general fatigue, which can affect the basic training. Therefore, you need to find a reasonable combination of strength and cross-country workouts, carefully increasing the latter as you adapt to them.

Amino acids

When running, the sensitivity of cells to somatotropin and insulin increases. There is an increase in the release of gonadotropic, somatotropin; adrenaline, norepinephrine; easily digestible proteins - special sports proteins, fish, cottage cheese, soy; amino acids - the following amino acids possess anabolic activity - aspartate, arginine, ornithine, glycine, proline, series, tyrosine, citrulline, taurine, valine, isoleucine, leucine, lysine, and tryptophan.

- Arginine causes the release of growth hormone, stimulates tissue regeneration, enhances spermatogenesis, and is part of bone and tendon cells.

- Aspartate is involved in the formation of ribonucleotides (RNA precursors), increases the level of cellular energy, helps protect the liver, and improves the excretion of excess ammonia.

- Glycine slows down the process of muscle degeneration, promotes the synthesis of DNA and RNA, is involved in the synthesis of creatine, and stimulates the secretion of growth hormone.

- Ornithine increases the secretion of growth hormone, increases the metabolism of excess fat. Its effect is enhanced in combination with arginine and L-carnitine.

- Proline is the main integral component of collagen, strengthens cartilage, articular joints, ligaments and heart muscle.

- Serine is involved in muscle growth, the biosynthesis of purine, pyrimidine, creatine.

- Tyrosine stimulates the synthesis of growth hormone.

- Citrulline helps to produce energy and restore the body after fatigue.

- Valine is necessary for normalization of muscle metabolism, tissue repair and maintenance of nitrogen balance in the body.

- Isoleucine accelerates the process of energy production, increases stamina and promotes the restoration of muscle tissue. Leucine has a similar effect.

- Lysine is involved in the production of hormones, enzymes, promotes the formation of collagen, and is necessary for the synthesis of albumin. It is an essential amino acid in the construction of proteins.

- Tryptophan is involved in the synthesis of albumin and globulins, accelerates the secretion of growth hormone. To stimulate protein metabolism, not individual amino acid preparations are more effective, but their combinations. Such combinations have biologically active additives produced by various companies.

- Calcium - in an easily digestible form (as a building material for bones, ligaments, muscles).

- Iron preparations - as a component of myoglobin, as a catalyst for many biochemical reactions, as an integral part of hemoglobin - an oxygen carrier. Anabolic and biologically active substances with anabolic properties: coenzymes, vitamins, and so on.

Note. In building your diet, gradualness is very important, since sudden changes in your diet are stress for the body and for the nervous system. If you put in tremendous effort to eat right, there is a great risk of burnout and breakdown. Therefore, here, as in training, we do everything carefully. For the first time, I recommend that you switch to the correct diet, depending on your goals, within 3-4 weeks. This smooth transition will allow you to avoid stress, and once you get used to such changes in your diet, in the future, with changes in the diet, the transition stage is no longer required.

Chapter 6 No-Equipment Strength Training Exercises

Most people look at strength training activities as a type of training that can be achieved only in the gym. However, you don't need to visit the gym before engaging your body with the necessary strength training activities required to stay fit. These days, you don't even need any equipment to participate actively in some of these training. As a beginner, strength training experts may advise you to begin your training from the basics. Then, improve gradually until you can be able to handle sophisticated gym equipment.

Some of these beginner strength training activities can be done anywhere. All you are required to do is to learn the tactics of accomplishing the tasks involved in the training. On that note, you are advised to learn every tactic needed to participate in no-equipment strength training exercises, before engaging yourself in any workout. When you are considering the best no-equipment strength training exercise to work out, you should channel your attention to the following exercises;

Lunges

Lunges exercise helps to improve your body posture, range of motion, and physical appearance. The essence of starting with this type of training is because lunges tend to increase the mass of your butt, core, and legs. Women are advised to include lunges in their basic training as it helps to build the quadriceps, calves, back, hamstrings, and abdominal muscles.

You are expected to follow this strength training routine as often as possible to get a desirable result. Since the training is simple and easily accessible, you can engage yourself with it as often as possible. When you are consistent with this type of training, you will begin to realize the changes in your body shape and muscle mass within a short time.

Direction

- Step 1: Begin by standing up very tall.
- Step 2: Ensure that you move forward with one leg until it reaches a 90-degree angle.
- Step 3: Proceed to lift your front lunging leg and probably return to the initial position.
- Step 4: Repeat the process from step 1. Endeavour to attain 10 to 12 reps on each leg.

Mountain Climber

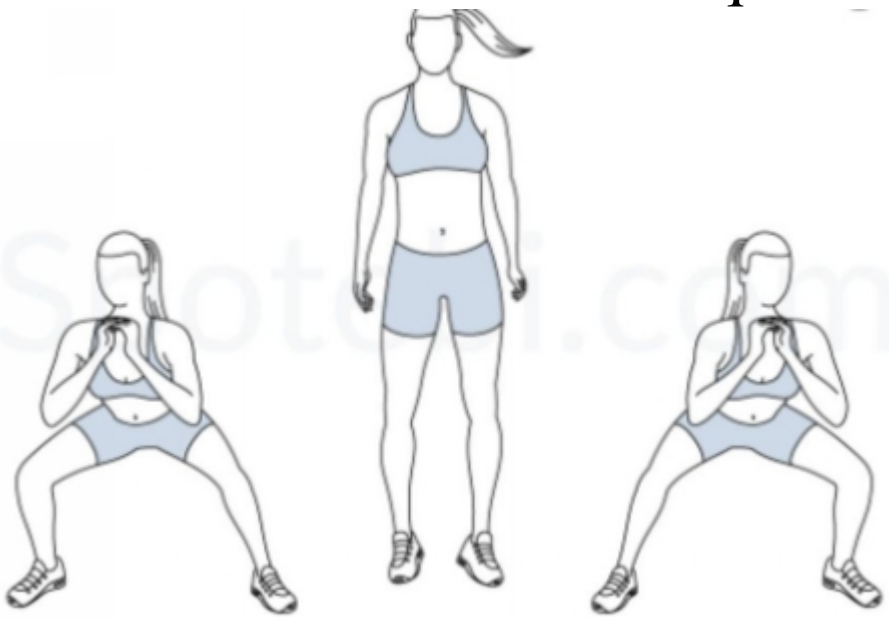
Most women will see this type of strength training as a complicated one. Some may assume that a real mountain is required to accomplish the training. However, you can engage yourself with mountain climbing exercise on your floor at home. You don’t need to visit a real mountain to enjoy every benefit that comes from this type of strength training.

Direction

- Step 1: To proceed with this type of exercise, you are expected to relax your body in a plank position. Ensure that no equipment or any dangerous object is lying next to your training ground.
- Step 2: When you have relaxed on the floor, maintaining the plank position, then proceed to move one of your knees towards your chest. Ensure that you balance your body weight between your hands and your toes.
- Step 3: Return the leg to its formal position to complete one cycle of the training. Your hands should be placed carefully shoulder-width apart, and your abs must be engaged as well. You may start with the right leg, after which you will repeat the same exercise on the left leg to complete the training. If you are doing the mountain climber for the first time, begin with slow moves. Slowly increase your speed when you realize that the slow-motion isn't performing much better on your muscles. Endeavour to keep your hips down while running your knees as fast as possible. However, while you look up to increasing your speed, ensure that you maintain the plank position to avoid any accident. Mountain climber can be done anywhere, and you don't need a training coach to begin this special strength training. All you are expected to do is to know the basic positions and movement required to facilitate the training session. Some common mountain climber mistakes made by most women include weight adjustment, stopping the toes from touching the floor, and many others. You must carry out this exercise with caution. The reason why you should participate actively in this type of exercise is that it attracts a lot of health benefits to the body. Generally, mountain climber provides your body with agility, cardio endurance, and core strength. When you are consistent with this type of training, you will enjoy a total body workout at the same time. You can burn a lot of calories through the mountain climber exercise.

However, the amount of calories you will burn highly depends on your speed.

Lateral Squats



This strength training exercise attracts a lot of health benefits to women. The lateral squats help to increase your hips, and you can build a lot of strength from this unique exercise.

Direction

- Step 1: To proceed with the lateral squats, you should set your legs wider than your hips. Ensure that your toes and knees are pointing toward a forward direction. Move your feet gradually to an angle that looks like 11 o'clock. If you are not comfortable with this angle, you can move in an angle that appears like 1 o'clock.
- Step 2: After that, you are expected to shite your weight into your right feet. Adjust your hips backward, before bending knees. Ensure that your left leg is in a straight position.
- Step 3: Get your thigh to be in parallel with the floor, as you can gain more balance through this approach. Move your arms in front of you as they work as a counterbalance then. Clasps your arms at your chest to complete the process. Move via your right foot to reverse the movement. Pause the movement and stretch your hips in a forward direction.
- Step 4: Repeat the same exercise on the part of the body to balance the training. You should repeat this exercise as much as your strength can carry you. Whenever you get tired, ensure that you get some rest, then continue afterwards.

Rotational Jack

When your primary intention is to get your muscles warm and heart rate up, then rotational jack exercise is the best strength training routine for you.

Direction

- Step 1: To begin this healthy exercise, you are expected to spread out your legs wide apart. Ensure that your standing position is balanced across both legs.
- Step 2: After that, proceed to extend your arms straight to your side so that they will become parallel to the ground. Ensure that your head and neck are in a stationary position before proceeding to the next stage.
- Step 3: Move your hips forward and revolve your torso so that your right hand can touch the ground. The next step is to return to the starting position and skip your feet at the same time. After you must have missed your feet back out, move forward again, and revolve to the left while touching your hand to the ground.
- Step 4: After that, you are expected to return to the previous position and skip your feet together, and then rotate again to the right. To gain more strength through the rotational jack exercise, you should complete between 12-15 reps for three sets.

Squat Jump

Basically, athletes use squat jumps to improve their vertical jumping abilities. You can use it to improve your agility and strength across the entire muscles of your body. However, this strength-training activity creates a high impact on the body. If your joints are so sensitive to high impact exercises, handle the squat jump with caution. Unlike most exercises, squat jumps require no equipment to accomplish. All you are required to do is to get your body in the right position, and then proceed to carry out the exercise effectively.

Direction

- Step 1: To start up the squat jump exercise, you are expected first to lower your body into a squat position. As you adjust your body, ensure that your arms are bent, and your hands are joined together in front of you.
- Step 2: Suspend your body up into a jumping position, use your full strength to push through, and land back with your feet. When you finally return to the ground, squat down, and repeat the entire process.
- Step 3: Continue with the process until you gain a better result. Strength training experts reveal that you are supposed to complete between 10 – 12 reps per 3 sets, for the exercise to work well on your body.

Pullups

Just like the regular pushups, pull-ups require a lot of concentration from you. Many women thought this type of exercise is created explicitly for men alone. However, several studies countered this belief by revealing the health benefits of pull-ups on women. Some of the health benefits include the following; strengthens the backbone, improve grip strength, improve physical health, improve overall body fitness level, strengthens shoulder and arms muscle, and improvement of mental health.

Direction

- Step 1: You need to find a bar that is a bit taller than you. Grab the bar with both hands, and spread them a bit wider than shoulder-width apart. The essence of spreading your hands across the bar is to get a benefitting balance.
- Step 2: After grabbing the bar, proceed to lift your feet off the floor and hang your arms safely on the bar. Apply pressure in pulling yourself upwards. Return to your previous position to complete one cycle of the exercise. Ensure that your elbows pull towards the ground while rising into the air. Endeavour to release the applied pressure while returning to the floor.

Flutter Kicks

Flutter kicks are one of the best exercises to prepare your core for more challenging strength training activities. Some people prefer to use this specific training to build up their abs. However, women enjoy a healthier thigh muscle with this exercise.

Directions

- Step 1: Put your body parallel on a mat facing up. Ensure that your legs are extended in the air. At this point, you must put your body in 90-degree angle forms to begin your exercise.
- Step 2: Gradually put down your right leg and move it towards the floor. As you bring down the leg, ensure that it maintains contact between the ground and your lower back.
- Step 3: After that, you are expected to return your right leg to its previous position to complete the cycle.
- Step 4: Repeat step 2 and step 3 on your left leg to balance the pressure applied on both legs. You are expected to carry out 20 total reps for three sets to gain every health benefit coming from flutter kicks. While you work on yourself, ensure that you take the exercise seriously as you will have a lot to gain in return.

Broad Jumps

When you desire to burn a lot of energy during your strength training routine, broad jumps may serve as the best routine for you. Due to the large amount of energy required to complete the tasks involved in broad jumps, this type of exercise is regarded as a high impact move. Therefore, you are required to carry out every task needed to accomplish this exercise with caution.

Direction

- Step 1: Begin the broad jumps by spreading your feet about shoulder-width apart. Ensure that your arms are down at your side.
- Step 2: Slowly squat down about halfway, and then use your entire energy to jump forward. Allow your arms to move forward with your feet while your jump and this movement have to occur uniformly.
- Step 3: While you return to the ground, ensure that you land with a soft foot to gain more balance. Your body weight must slightly move forward to complete the exercise.
- Step 4: To become more active in this exercise, you are expected to repeat it about ten reps for three sets. However, if you don't have enough strength to complete the entire jumps, you can take some rest and continue after the rest.

Burpees

Burpees belong to high-impact plyometric exercise, which requires a full-body move to supply a lot of health benefits to the body. Most experts usually encourage women to participate more in this type of strength training, as they would see the outcome of the training fast enough. Generally, Burpees are a callisthenics form of exercise that concentrates more on a full-body workout. The essence of participating actively in this type of exercise is that you will acquire endurance in your lower and upper body parts. When you talk about building up muscle strength, burpees are the best exercise meant for you. The exercise tends to improve hips, abdomen, shoulder, legs, buttocks, chests, and arms muscles.

Direction

- Step 1: Begin by standing in a straight position. Ensure that your feet are shoulder-width apart, while your arms are positioned down your sides.
- Step 2: Begin to squat down slowly while pushing out your hands out in front of you.
- Step 3: Immediately your hands touch the ground, go ahead to extend your legs straight back, and place your entire body in a high plank position.
- Step 4: As soon as you achieve the high plank position, proceed to jump up your feet to the same level as your palms. Ensure that your waist participates actively during the exercise.
- Step 5: Stand up and commence a jump squat exercise immediately.
- Step 6: When you land back on the ground, stretch out your legs back again, and repeat the whole process from the beginning. Most strength training coaches will advise you to repeat the process up to 15 times to get a realistic result.

Pushups

Pushups are the most popular non-equipment exercise used by people to build their upper part of the body. Generally, pushups focus more on strengthening the triceps and upper body. When you are consistent with this type of training, your muscle will develop within a short time. As a beginner in strength training activities, you should make it a habit of engaging yourself in pushups training as it would transform your body system fast enough.

Unlike lunges which are a unilateral exercise, pushups are generally known as a compound exercise. Pushup can also be used as a cardiovascular exercise to increase your health. Regular pushup exercises can enable you to use many muscle groups at the same time. When you put too many muscle groups to work at the same time, you may drive the heart to work harder to enable the flow of oxygen-rich blood to your muscles.

The health benefits of pushup include control of fat deposit on your body, protection of shoulders from injuries, prevents lower back, and many others. Both men and women have different views when it comes to pushups. Women are expected to participate in the following types of pushups;

Girl Pushups

The girl pushup is specifically meant for women alone. Unlike the general pushup meant for everyone, girl pushups only require you to place both knees on a mat, using your hands to support your body. Slowly lower yourself down to the ground following the everyday pushup style. Ensure that the hand supports are firm to give you more balance. Since you require a faster result from your strength training activities, you are expected to keep on repeating the girl pushup about 10-15 times per round. If after the first round, and you discover that you still have the strength to do more, continue with the process until you become exhausted.

Wall Pushups

The wall pushup requires less effort to accomplish. All you are expected to do is to place your both hands firmly on a wall. Ensure that your hands are separated to be wider than your shoulder width. Place your legs in a straight position and stretch your body. To get more results, you are expected to stand on your toes.

First, push your body towards the wall while maintaining the original balance. Then, slowly move back to the original position to complete the process. Continue to repeat the process until you feel tired. To master the wall pushups fast enough, you are expected to begin with a half pushup. When you are confident enough to do more, you can upgrade to the standard pushups.

Diamond Pushups

The diamond pushups require women to make a diamond shape using their hands. Unlike the normal pushup where you are expected to separate your hands at a width wider than your shoulder, you are expected to join your hands together and form a diamond shape. Once you must have actualized such a figure, then go-ahead to do the pushups. Maintain the diamond shape throughout the exercise and position the rest of the body like a normal pushup exercise. Consistency matters a lot in this type of training, as you can gain a lot of benefit from it.

Knuckle Pushups

The knuckle pushups are done using your knuckles. Unlike the regular pushup where you are expected to place your palms on the floor, the knuckles are used instead. If you are strong enough to stand on a single knuckle, then go ahead and do it.

However, as a beginner, you may not have the endurance to carry out this pushup exercise using a single knuckle alone. Begin with two knuckles, until you are strong enough to use only one knuckle. Using a single knuckle to complete the training exercise will help to give your body more balance. You can gain a lot from this training routine.

Simple Pushups

This type of pushup requires lesser effort to accomplish. You are expected to place both hands on a higher surface, and then push slowly to get a desirable result. When your hands are firmly placed on the surface, stretch out your body, and stand your foot on your toes.

Before you start up with the pushup, ensure that the high surface is in a firm position. When you are so sure about the surface, do not continue with the pushups. Instead, find an alternative surface to continue with your pushups.

Ballistic Pushups

Just like every other type of pushups, ballistic pushups require a lot of concentration for you to achieve a better result. Before engaging yourself with ballistic pushups, ensure that you can do the regular pushup perfectly. To carry out the ballistic pushup, you are required to lie down in the position of a standard pushup. After that, proceed to suspend both legs in the air, and balance your both hands comfortably on the flat surface.

After achieving the balance that you desire, proceed to lift your upper body as high as possible. A real force may be required to ensure that you accomplish this process. Ensure that your hands rise with your upper body at the same time. When you are in the air, you are expected to clap your hands loudly before return to your previous position. Your legs must remain in the same position through the exercise. Repeat the training process until you are tired.

Spiderman Pushups

The spiderman pushups may appear strange to some women. However, it requires lesser effort to accomplish if you are consistent with pushups training. To proceed with these specific pushups, you are expected to relax on a flat surface while maintaining the standard pushup position. Proceed to carry out the standard pushup training while watching your body movement.

To introduce the spiderman style to your regular pushup, you should move up one of your knees towards your elbow. Ensure that you drag the knees as close as possible. Return the knee to its previous position to complete one cycle of the spiderman pushups. Since you cannot carry out this training process on both legs at the same time, you may repeat the same exercise to the other leg to balance your body system. For example, if you decide to do ten spiderman pushups on the left knee, you should repeat the same ten spiderman pushups on the right knee.

The Elevated Pushups

Unlike the normal pushups, the elevated push may require a high surface to accomplish. To proceed with this pushup, you should place your legs firmly on the elevated surface, and then push your body down gradually. Stretch your body out to achieve a better result. If the high surface is not solid enough, you may encounter an accident. Therefore, ensure that you study the surface before anything else.

Conclusion

Engaging in strength training boosts self-confidence, and boldness. Whether you do back workout bands, squat bent-over, or dumbbell drills, the dream of getting that muscle that you so much crave for. Be sure to be disciplined. Do not back down on your dreams.

Make your exercises work for your body. Employ a private tutor for your weightlifting training if you have the means, or get videos and books on the best muscle development and general strength enhancement tips. Whatever you do, don't forget to make yourself happy through it all and set goals that are easy to achieve.