

ADVANCED TRAINING TECHNIQUES

The more advanced you are in strength training, the harder it is to continue making progress. In this part of the book, we will provide you with tips that will help you reach a higher level using innovative training techniques and the most effective recovery methods.

TARGET MUSCLES WITH SURGICAL PRECISION

EXCESSIVE OVERLOADING IS NOT NECESSARILY THE SOLUTION

When you have a weak point, you try to progress by using heavier and heavier weights. Sometimes it works, but often, you fail. Why? During a squat, the work done by the quadriceps is relatively important past a weight that is equivalent to 60 to 70 percent of your maximum strength.¹ By adding weight, the tension is transferred from the quadriceps to the glutes. In fact, the quadriceps do less work with 90 percent of the maximum weight than with 80 percent. The difference in tension is ensured by the recruitment of the glutes.

The same thing happens during bench presses.² The recruitment of the pectoral muscles (compared to the shoulders and the triceps) during the bench press is dominant up to 70 percent of the maximum weight. At 80 percent of the maximum, the recruitment of the pectoral muscles plateaus, and the shoulders and triceps do significantly more work. At 90 percent of the maximum, the pectoral muscles are only working slightly more, and the shoulders and triceps take on an even bigger role. At the maximum weight, the front of the shoulders and, to an even greater degree, the triceps largely take over from the pectoral muscles, whose recruitment is decreased.

Obviously, these are averages that may vary from one person to another. They accurately describe, however, what happens in people who have difficulty recruiting the desired muscles using multijoint exercises. Beyond a certain weight, you feel the target muscle less than you do with lighter weights, even though, in theory, the heavier the weight you use in a squat or in a bench press, the more you should work your thighs or your chest.

You have to find strategies that help you to target more specifically the muscles that you want to develop. Better yet, within a single muscle, is it possible to hypertrophy a specific zone rather than another? In other words, can you change the shape of a muscle and, if so, how? Science shows us that it is possible, and we will provide paths for you to explore. A study illustrates this perfectly. For three months, a group of men trained their thighs twice weekly.³ The first group did only squats, in sets with eight reps each. The second group also used leg presses, deadlifts, and lunges. The weight and the number of sets were kept as close to the same as possible in both groups.

Though the overall growth in the quadriceps was the same for all participants, a specific analysis showed that the squat favored growth in the outside of the quadriceps. However, doing several exercises created more equal growth across all the heads of the quadriceps.

A MUSCLE RARELY DEVELOPS IN ITS TOTALITY

Muscles rarely develop uniformly overall. Even though, when you train your biceps, the entire muscle is supposed to contract equally along its entire length, this is not what science has revealed really happens. Training the biceps for 12 weeks increased the hypertrophy of

- 12 percent of the fibers located in the upper biceps,
- 7.5 percent of the fibers in the middle, and
- 5 percent of the fibers in the lower part.⁴

Researchers also measured differences in the activation of the triceps during multi-joint exercises that were done in a person's first strength training session.⁵ The middle part of the triceps was recruited significantly more than the upper region. So it is not surprising that the middle of the triceps, rather than the upper part, developed after 12 weeks of training using these same exercises.

THE METHOD OF CONTRACTION INFLUENCES THE MUSCLE AREA THAT IS RECRUITED

For eight weeks, a group of men did squats in two different ways: explosively or with heavy weights using slow contractions.⁶ The hypertrophy of the quadriceps was more pronounced in the upper thighs with the heavy weights. But the explosive work increased the size of the lower thighs. In the same way, training for 14 weeks on an isokinetic machine promoted growth lower in the quadriceps than normal training.⁷

Other men followed a thigh program over a period of 10 weeks.⁸ The first group trained using the positive phase of the exercises while a second group trained using only negatives. At first glance, the effect of the different trainings seemed similar.

Muscle volume increased by

- 8 percent with the positives.
- 6 percent with the negatives.

Strength increased by

- 9 percent with the positives.
- 11 percent with the negatives.

The different types of contractions produced specific effects (hypertrophy) in different parts of the thigh. The lower part of the thigh increased in size by

- 2 percent with the positives.
- 8 percent with the negatives.

The middle of the thigh increased in size by

- 11 percent with the positives.
- 7 percent with the negatives.

We can clearly see that, depending on the type of contraction, the tension created affects a variety of areas within the same muscle. This gives hope to bodybuilders who wish to change the shape of their muscles. Unfortunately, even though these studies highlight differences in muscle recruitment, these specific things are not gigantic. Restructuring a muscle takes time and requires serious effort. But at least we know that this specific targeted work within a muscle is really possible, and not something that exists only in the imaginations of bodybuilders.

STRATEGIES FOR ADJUSTING REST BREAKS BETWEEN SETS

You should think of adjusting rest breaks as a tool. As with all tools, some changes in rest breaks are more appropriate than others depending on the situation. Generally, though, you need all of your tools to be able to work effectively. We think that settling for a set amount of rest for all exercises and in all situations is inappropriate. You need to know how to benefit from short rest breaks as well as how to reap the benefits of long breaks.

DOES A LACK OF REST BETWEEN SETS REDUCE THE ANABOLIC RESPONSE?

Short rest breaks are popular, especially because they save time. By quickly moving from one set to the next, you do not have to spend as much time in the gym. However, many studies have shown that, to gain muscle, this is not an ideal strategy. Take as an example the study where the men trained their thighs with a weight that was 75 percent of their maximum.⁹ In one group, breaks between the eight sets performed were 1 minute long versus 5 minutes in the other group. With the shorter rest breaks, the volume of work was between 13 and 17 percent lower than in the group with longer breaks. Following the training, a muscle biopsy showed that anabolism increased by

- 76 percent with 1 minute of rest.
- 152 percent with 5 minutes of rest.

Paradoxically, these short breaks created a larger increase in testosterone levels in the 40 minutes following the workout. Even though this seems logical, it is good to remember that the longer the rest break is between sets, the more time the muscle has to recover its strength. This means that men can do 28 percent more repetitions during a workout using 3-minute breaks instead of 1-minute breaks.¹⁰

Fatigue accumulates faster with short breaks. For example, with 1 minute of rest, the decrease in performance from one set to the next is obvious as soon as the second set of the same exercise. With 3 to 5 minutes of rest, this fatigue is not seen until

HOW CAN YOU PROMOTE NERVE RECOVERY?

The antithesis of physical effort is sleep. Strength training wears out the nervous system, and sleep promotes recovery. Unfortunately, things are a bit more complex than that.

WHAT IMPACT DO SPORTS HAVE ON SLEEP QUALITY?

Instinctively, you might believe that fatigue caused by sport training will help you sleep better. This is not true. Paradoxically, athletes are one of the groups that have the worst sleep.⁹⁻¹⁰ The incidence of sleep disturbances is higher among athletes than it is in the general population. Athletes often suffer from a reduction in both the quality and quantity of sleep.¹¹ These are only averages, of course, which can hide large differences. But generally, a minority of athletes have better sleep and a majority tend to have worse sleep. Strength sports are particularly affected by this, because with a larger body weight comes a greater risk of sleep apnea.¹²⁻¹³ Pathologies in the neck, back, or shoulders can also disrupt sleep.

So we can conclude that sports easily have a rather negative effect on sleep, but, at the same time, physical activity tires out the body. In this context, it is even more important to sleep well, especially for nerve recovery, which is so problematic in strength training! This is an obstacle in the way of making progress, because a lack of sleep slows recovery and has a negative effect on health. Additionally, serious disruption in sleep is often an indicator of generalized, profound overtraining.¹⁴ But, if you sleep longer, you will perform better.¹⁵

A KEY ROLE FOR MELATONIN?

Melatonin is one of the main hormones that makes you sleep. But melatonin's work does not end there. It also plays a key role in nerve recovery by protecting the integrity of the nervous system (anti-catabolic effect) and aiding in the proliferation of specialized stem cells to regenerate the nerve network (anabolic effect).¹⁶⁻¹⁸ During some studies in which researchers purposefully damaged animals' neural networks, the researchers observed that melatonin had properties that protected myelin and preserved nerve conduction.

Melatonin acts as a primary hormone in charge not only of protecting existing myelin through its specific anti-inflammatory action but also of stimulating myelin renewal by accelerating its synthesis.¹⁹⁻²² In addition to the crucial hormonal aspect, nutrients like vitamin C and cholesterol also play an essential role in myelin synthesis.²³⁻²⁵

Myelin membranes are very rich in saturated fat and are composed of more than 25 percent cholesterol. The latter is essential for myelin regeneration, just as it is for muscle recovery.²⁶ Too great a reduction in fat, during a diet, for example, will only slow down nerve recovery.

WHAT IMPACT DOES PHYSICAL ACTIVITY HAVE ON MELATONIN?

If melatonin plays such an important role, you might expect that strength training would promote its secretion. This is, unfortunately, not necessarily the case. After physical activity, there may be a brief peak in melatonin secretion. You might feel like taking a nap, but this peak is not enough to allow you to sleep all night. Should you use the peak to take a little nap? Of course, so long as you have the time and it does not prevent you from sleeping well that night! However, a late workout can delay the normal evening rise in melatonin, which can delay your falling asleep that night.

As far as sport's impact on overall melatonin levels, research has been very contradictory. Some studies show that, following physical activity, there is a greater increase in the average melatonin level. But other research shows no effect, and still other studies detected a decrease in melatonin. These conflicting results are to be expected since the analyses were done with a small, random sample of people. As we saw with athletes, some sleep better, and some do not. It does not make sense to take an average out of all these people and use that to make a rule that is supposed to apply to everyone. It would be better to study more homogeneous groups and just look at the secretion of melatonin in athletes who are not sleeping well. It seems logical that, in this group, strength training causes a negative effect on this hormone.

If you do not sleep well, and because of that your nerve recovery is abnormally slow, there are two supplements that may be helpful to you: tryptophan, which is a precursor to melatonin synthesis, and Montmorency cherry extract, which can supplement for a melatonin deficit in a more natural way than taking melatonin supplements.

DO NOT CONFUSE NERVE RECOVERY AND MUSCLE RECOVERY

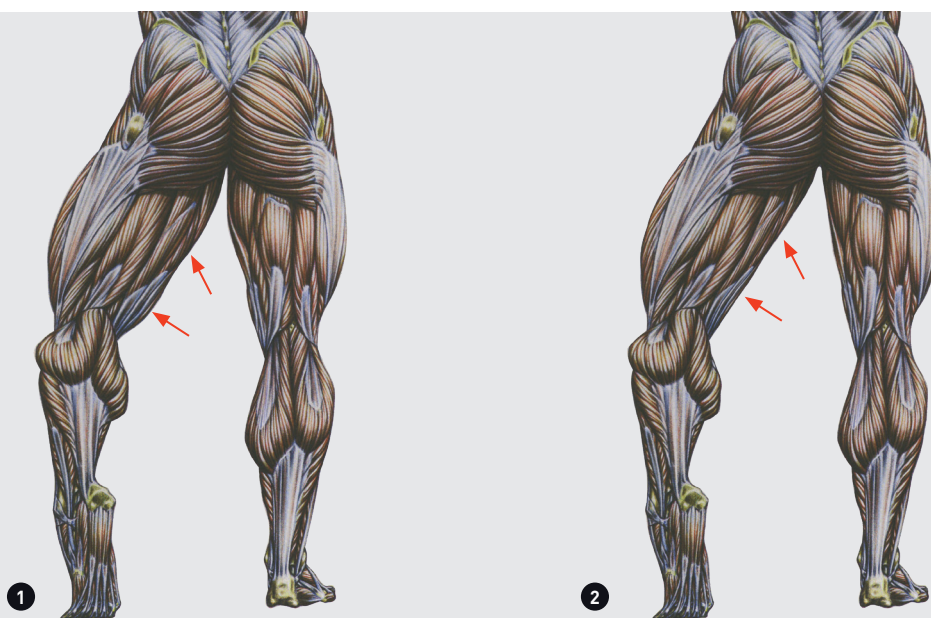
Sleep allows you to recover, especially to recover strength, primarily through its regenerative action on the nervous system. But this does not mean that you build muscle preferentially during the night. On the contrary, during the night there is a lack of nutrients, especially protein, and this means that muscles tend to lose their amino acids. This is nocturnal catabolism! Fortunately, it is not very strong.

FILL IN THE ADDUCTORS AND THE SARTORIUS

The adductors tend to be considered feminine muscles, although men and women all have the same muscles. Paradoxically, the development of the adductors is aesthetically more important for men than for women.

ANATOMY AND MORPHOLOGY OF THE ADDUCTORS

Good thighs are not made up solely of good quadriceps and hamstrings. If you look at Tom Platz's thighs, you will see that he has good quadriceps. But what makes his thighs exceptional is more the size of his adductors, which is unprecedented. Having a gaping hole between the thighs due a lack of massive adductors not only is an aesthetic issue, but it also can cause a biomechanical dysfunction. This is why all bodybuilding champions work their adductors specifically using isolation machines. If you have a weak point, whether it is your hamstrings or your quadriceps, developing the adductors becomes even more important.



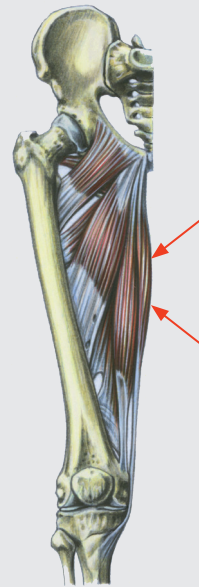
The mass of the adductors has an important role in creating impressive thighs. **1** Very developed adductors. **2** Weak adductors.

A KEY MUSCLE WHEN YOU HAVE UNDERDEVELOPED HAMSTRINGS

When you have small thighs, you can always train the quadriceps and hamstrings more. But often this is not enough to get quick results. For anatomical reasons, the hamstrings and adductors are difficult to disassociate, because the part of the hamstrings that is located closest to the inside of the leg also participates in thigh adduction. In the same way, the adductors that are closest to the inside of the leg have a similar function to the hamstrings. So by working the adductors, you are building muscle mass in the inner part of the hamstrings and you are working the entire back of the thigh in an unconventional way.

In addition to specific isolation training, we can use supersets that take advantage of the double biomechanical function common to these two muscle groups. So, after leg curls, seated or lying down, instead of resting, move immediately to an adductor machine. The reverse strategy can also be used to pre-fatigue the hamstring/adductor junction. Similarly, after sumo deadlifts with a wide stance to accentuate the recruitment of the adductors, move immediately to the adductor machine. You can do deadlifts with very heavy weights to potentiate the strength of the adductors.

A superset for pre-fatigue training is to work the adductors right before doing sumo deadlifts. In this configuration, we do not recommend using heavy weights in the deadlifts since the fatigue caused by the isolation exercise for the adductors will weaken those muscles and make them temporarily more vulnerable to injury during very intense work. We recommend using an average weight for the deadlift that allows you to do between 15 and 20 repetitions to focus on muscle burn in the adductors. Once the muscle burn gets too strong, set the bar down and squeeze your thighs together. Then, start right back so that you can use up your remaining strength.



The inner part of the adductors shares common functions with the hamstrings.

A KEY MUSCLE WHEN YOU LACK IN QUADRICEPS

Because they are close anatomically, good adductors can divert attention away from quadriceps that are a little weak. Instead of keeping the thighs very straight, you can open the legs with your feet turned outward to highlight the adductors; this will immediately give you the appearance of having more volume in the front of thigh and hide any potential deficit in the quadriceps or outer quadriceps that are too “high.”

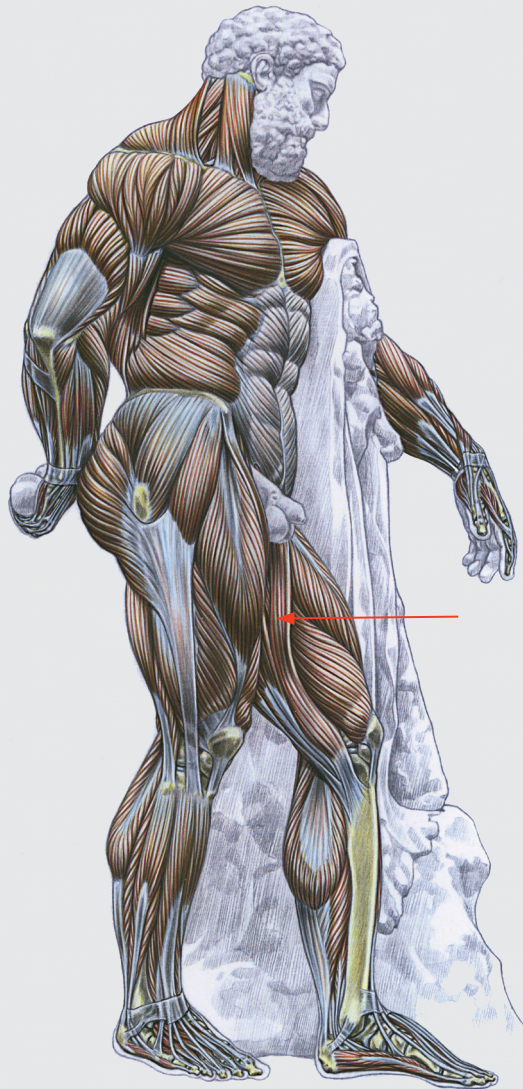
Basic training strategies using supersets with isolation exercises for the quadriceps are less important. There is no biomechanical advantage in following a leg extension with adductors (or vice versa), except to save time by not resting between sets. However, the most beneficial supersets combine multijoint exercises for the quadriceps like squats or leg presses using a very wide stance with an adductor exercise. After doing squats or leg presses (with a very wide stance to accentuate the recruitment of the adductors), move immediately to an adductor machine. Quadriceps exercises can be done with very heavy weights to potentiate the strength of the adductors. A prefatigue superset would be to do adductors just before squats or leg presses. In this configuration, we recommend that you do not use heavy weights in the quadriceps exercises for the same reasons we mentioned earlier.

Note: The limitations of this strategy are, in general, that when you have carrotlike quadriceps (thick up top and suddenly growing smaller as they go down, ending up very small and far from the knee), the adductors are also short and developed only near the top of the thigh and not at the bottom (a sprinter’s thighs). Working the adductors will create mass, especially at the top of the thigh, without filling in the gap between the thighs, lower down by the knees. In this case, you will need to play with the illusion of mass that you can get from the sartorius muscle.

THE SARTORIUS IS AN INDISPENSABLE MUSCLE FOR COMPETITIONS

The sartorius is a biarticular muscle that links the pelvis with the tibia. The fact that it has only one small tendon reduces the chance of having a short sartorius muscle. In almost all people, the sartorius is a bit longer than the femur; what varies between individuals is the size of the sartorius and thus its potential strength. The bigger it is, the more mass it can accumulate, and the more visible it can become. However, a smaller sartorius is not predisposed to hypertrophy. In this case, you have to work on its definition and its aptitude for separating the adductors from the quadriceps.

At least visually, it can partially compensate for short quadriceps or adductors. Since a well-developed sartorius is rather rare, it helps focus attention away from quadriceps that are a little weak. We will show you an exercise that allows you to work the sartorius in isolation so that you can optimize its mass and, importantly, add definition.



The sartorius is a muscle that attracts attention and occupies space. More and more champions are developing gigantic sartorius muscles.