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MYO-REPS

THE SECRET NORWEGIAN METHOD TO BUILD LEAN MUSCLE IN 70% LESS TIME

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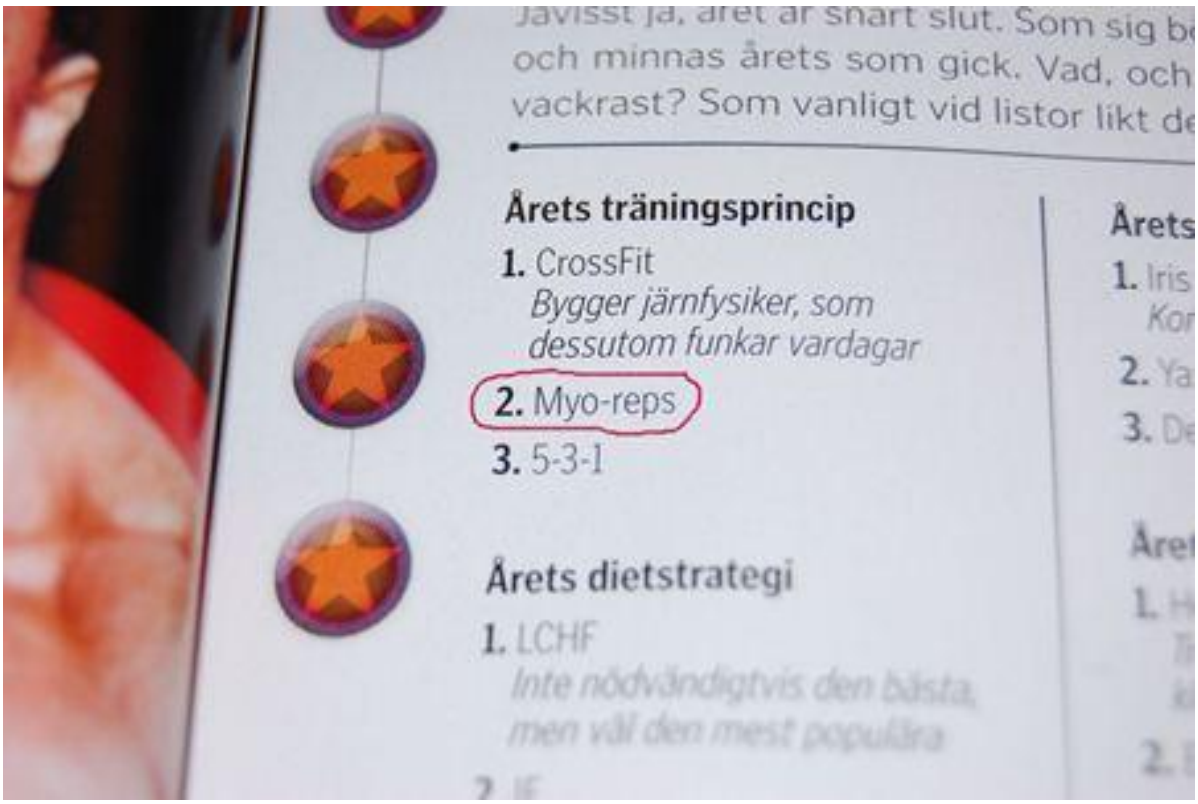
INTRODUCTION

It's been 10 years since I developed Myo-reps and published a series of articles about this training method. Myo-reps is based on a combination of science and studies that have been looking at the mechanisms of muscle growth and fat burning, but obviously also a lot of personal experience with currently 20 years coaching people.

The method has spread worldwide by now, and if you search for Myo-reps on YouTube, you'll get more than 4000 hits, and 72.000 hits on Google.

This training method is a part of the curriculum in athletics and personal training studies at many international schools. It came in 2nd place as the training principle of the year in the Swedish magazine "Body" a few years ago, right after Crossfit (but it beat the popular 5-3-1 program… yay!).



The method has been a topic of several podcasts, books, and lectures worldwide, and I have gotten inquiries from recognized scientists and

training experts who have used this method in everything from clinical rehabilitation to elite athletes in strength sports and athletics.

One example is Mike Tuchscherer, the founder of Reactive Training Systems. He began powerlifting in 1997, and already in his 20s is breaking records regularly. Currently his achievements are:

- Winning the Gold Medal at the 2009 World Games (first male in USA Powerlifting history to do this)
- Winning 8 USA Powerlifting National Championships
- 2 Bronze, 3 Silver, 1 Gold medals in IPF World Championships
- Set 3 IPF World Records multiple times

Not only is he a great lifter himself, but a great coach who has guided several men and women to National and World Championship medals.

Mike is a good friend and an overall great guy, and we have discussed training many times throughout the years. He has used Myo-reps extensively in both his own training and with his clients, with great success.

And I have, obviously, tested this method thoroughly on hundreds of my own clients, of all levels of advancement and goals.

At first, I based this book on my previously written material, but I ended up simplifying it and revising most of the text.

I also spiced it up with more recent and updated knowledge, and accompanying this e-book are some training program templates you can start using immediately, with examples of how you can combine Myo-reps with your regular training program.

Those of you who are familiar with my writing have experienced that it usually requires a double espresso and several bathroom breaks to get through everything.

When I empty my surprisingly large head, it doesn't come in small drops, it's more like a tsunami.

For this time though, I'll spare you all the details that nerds (like myself) think is cool to read about.Therefore, in this book, I have focused on what's important so that you can start using this method and experience the incredible pump and training effect that comes from applying Myo-reps to your training.

When you're trying to achieve muscle growth, you should be eating for that to happen—sufficient calories so that you are slowly gaining weight without gaining fat.

On a diet where you are eating less calories to force the body to burn stored bodyfat, it is even more important to provide the body with an optimal growth stimulus to MAINTAIN muscle growth and strength.

By using Myo-reps, many experience further muscle growth while losing fat, as the metabolic cost of this unique training method is significant.

Many have seen great results when using Myo-reps to "tone" their bodies as well. I don't really like this term very much, but the effect is a function of gaining muscle and burning fat (to be able to show off the muscle better). Doing both concurrently is possible if you optimize your training and nutrition, but you also need to be further from your genetic potential with more room to grow muscle.

Myo-reps has a muscle gaining and a fat burning effect that should contribute to this effect, within the proper context.

An important note: Myo-reps demands great exercise technique and that you already know your fatigue threshold. So, for those of you who are newbies, I would advise at least 3 months of a simple training program so that you have a foundation.

You also have to eat enough- and the right kind of food to achieve optimal results from Myo-reps. Myo-reps is so intense that you can experience a higher fat burning effect hours afterward.

One research paper shows a 15 % increase in the metabolism with a training method that is almost identical to Myo-reps (Paoli et al., 2012).

ADVANTAGES OF MYO-REPS:

- Timesaving
- Lighter weights are easier on joints and tendons
- Increases the blood circulation and glycogen stores of the muscles
- Has a fat burning effect
- Has a cardiovascular/conditioning effect
- It could "reactivate" muscle growth if you have stagnated

Let's take a closer look at what makes Myo-reps so effective.

MUSCLE FIBER ACTIVATION – WHY IT'S IMPORTANT

In addition to the conversation with Dan Moore (who developed the MaxStimulation method) many years ago, I'd like to give a considerable amount of credit to the Swedish scientist Mathias Wernbom for the development of Myo-reps. He's one of the leading scientists behind the comprehensive analysis (meta-review) of all the relevant studies that have ever been published about strength training and hypertrophy, where the variables of training frequency, intensity and volume were summarized in some specific recommendations.

Myo-reps is a form of "rest-pause" training, where a brief pause is taken between repetitions (also called "cluster training"), or a short series of repetitions.

I have obtained many of my principles of program design from his mega-study/research, but I have also included more recent research and experiences from my own Guinea pigs (my PT-clients) through 20 years – somewhere around 4000 and 5000 clients, roughly speaking.

You can't always wait for research to show you if something works: as a coach you need to combine science and practical experience into a cohesive framework with proper context.

How heavy (intensity), how much (volume determined by sets and reps) and how often (frequency) you should lift depends on your individual genetics and hormonal environment, as well as your lifestyle, diet, sleep, and stress.

I have 2 articles in Norwegian that I will have translated into English soon on stress management and biorhythm strategies, and I will send you a notification on e-mail once I have them published on my site.

Rest-pause training isn't something new. Peary Rader wrote about rest-pause training in 1946 in one of his Ironman training courses, and there have been numerous variations since then, some of the most popular being the 20 rep breathing squats popularized by Randall Strossen in his book Super Squats, Mike Mentzer's version from High Intensity Training, and Dante Trudell's "DoggCrapp" or DC-training method.

You will soon learn how Myo-reps goes beyond just taking a rest-pause between repetitions, and what makes it into one of the most unique and effective training methods.

It's a well-known fact that heavy weights lead to strength and muscle mass gains, so why is Myo-reps using light weights so effective?

While mechanical tension on the muscle, i.e. the load lifted is the primary determinant, recent studies have provided a more nuanced picture. You can get a robust signal for getting stronger and bigger with less mechanical tension, as long as you expose all muscle fibers of a muscle to the load, for a longer time under load.

So, essentially, you compensate for the lack of loading by allowing that load to do its work on the muscle for more time.

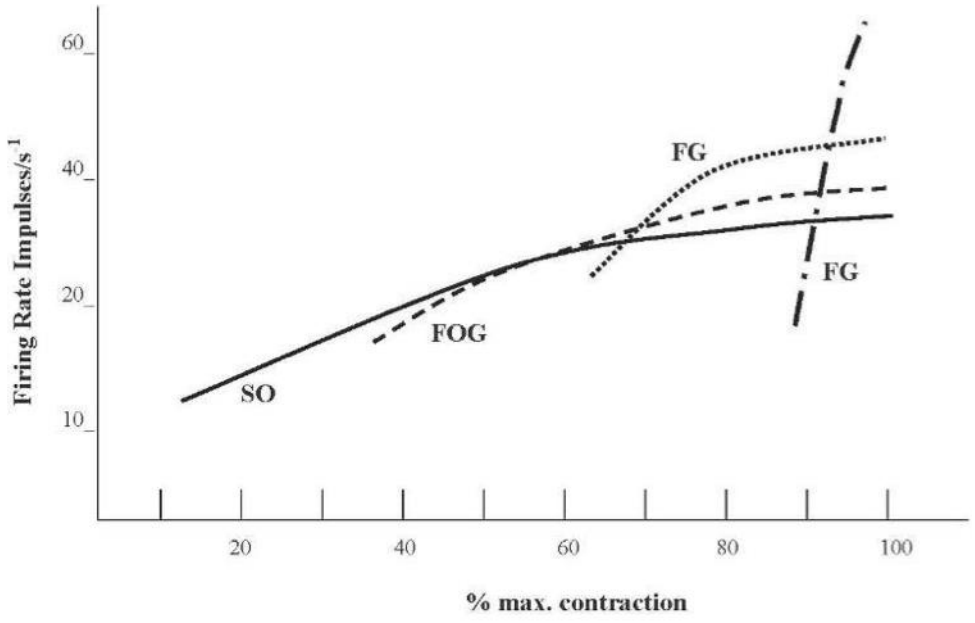
There are three ways to achieve maximal activation:

(Technically, there are more, but these are the most relevant):

1. Explosive movement, i.e. throwing, hitting, jumping or lifting a light weight as fast as possible. You will achieve maximal activation in the short acceleration phase of a few milliseconds, before the moment of force takes over and allows the object to keep moving without having to apply additional force. The weight is usually 30-50% of your current maximum capability, so moving quickly is relatively easy.

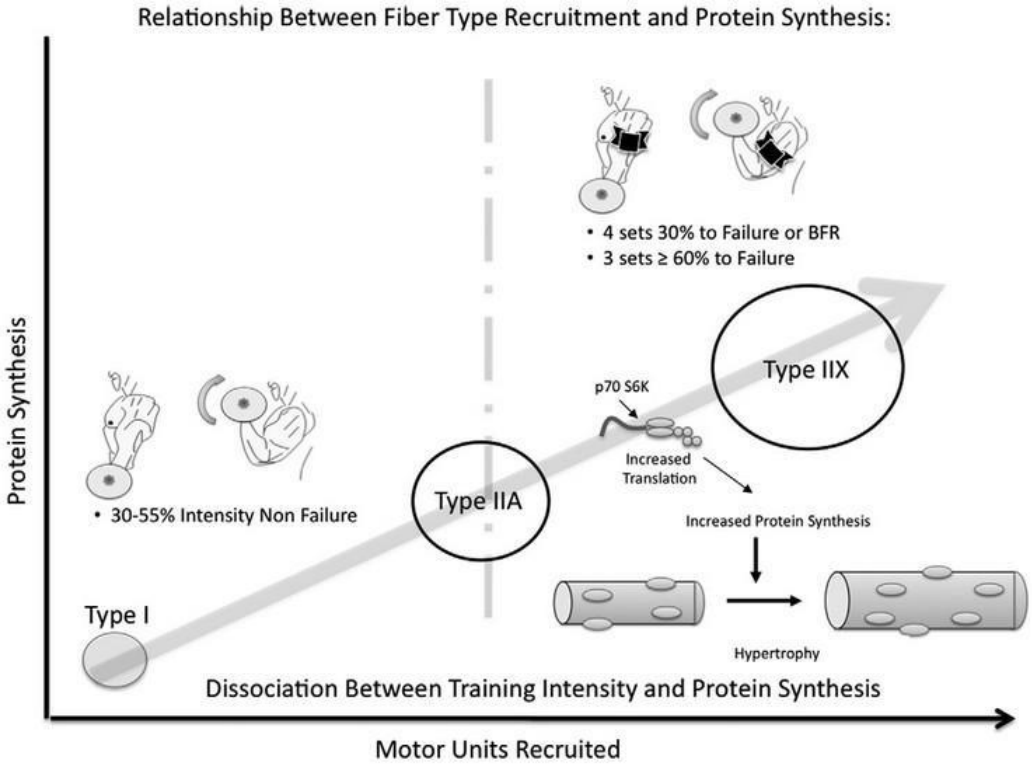
2. Lift a weight you're only able to do from 1 to about 6-8 repetitions with, but still try to lift as explosively as possible. The weight is so heavy that it will still move slowly, but the intent should still be to move the weight quickly. All the repetitions at these loads will achieve maximal activation. Heavy weights lead to more neural fatigue vs. metabolic fatigue (see the next point).

3. Lift moderate to light weights until fatigue; weights you can do for at least 8 repetitions. The most weakest muscle fibers with the most endurance capabilities are activated first, then progressively larger and more explosive muscle fibers are activated when the smallest get exhausted. You'll also feel a burn in the muscle from various waste products accumulating, and a change in the pH-level (acidity) of the muscle's environment. This is referred to as metabolic fatigue. The nervous system will also get fatigued during the last repetitions, but less so than with heavier weights. You should achieve close to maximal activation on the 3-6 final repetitions of the set, depending on how heavy the weights you're lifting are.



Here is an illustration of this fiber recruitment pattern, also called the Henneman principle

SO=slow oxidative (or slow-twitch, endurance fiber type), FOG=fast oxidative-glycotic (also relying on the carbohydrate metabolism), FG=fast glycolytic (the most explosive, least enduring fibers)



BFR=Blood Flow Restriction, or Occlusion training, a term which will become familiar soon

Some studies have shown that you don't get the same muscle activation at lighter loads, but I have seen data where you get higher spikes of activation when using Myo-reps that are equal to the spikes seen with heavier loads.

We can tell that the first and the second point give maximal activation. On the other hand, we can't just jump around or lift maximum weight all the time, so what do we do with number three?

It's logical that we could improve the training result by MAINTAINING maximal activation, so that every succeeding repetition is "effective" – that as many muscle fibers as possible are exposed to the tension and not just the low- or medium threshold fibers.

"Effective reps" is a term I have kinda made up, but I have seen others in the business adopting it as recent research has surfaced validating that this is indeed true.

Most people will intuitively choose to make it easier for themselves to achieve more repetitions. We are "lazy" by nature, or more precisely - it is a normal psychological response to try to lessen the perceived stress.

This is why we have eventually invented machines, cars and airplanes, after all. The thing is, that when you want the body to adapt to a certain stressor, it makes more sense to do what you can to achieve FEWER repetitions.This essentially means that you reach maximum activation sooner.

Let me explain.

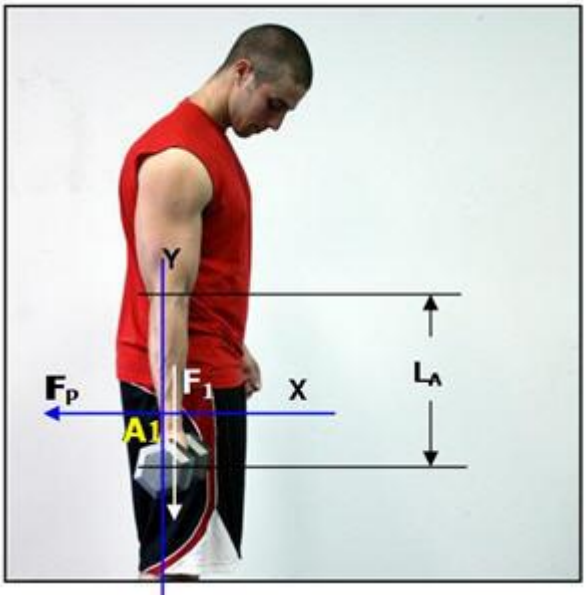
Notice the way most people at the gym will heave and swing their bodies when doing biceps curls? This allows them to lift a heavier load, but they are only cheating themselves because they are using momentum to lift the weight - the muscle is doing LESS work. This is why it’s called a “cheat curl”, after all.

When you put your back against a wall, your biceps muscles takes the brunt of the work to curl the weight. You will barely be able to do half the number of reps at the same load you did cheat curls with, but the biceps muscle will receive a better training stimulus.

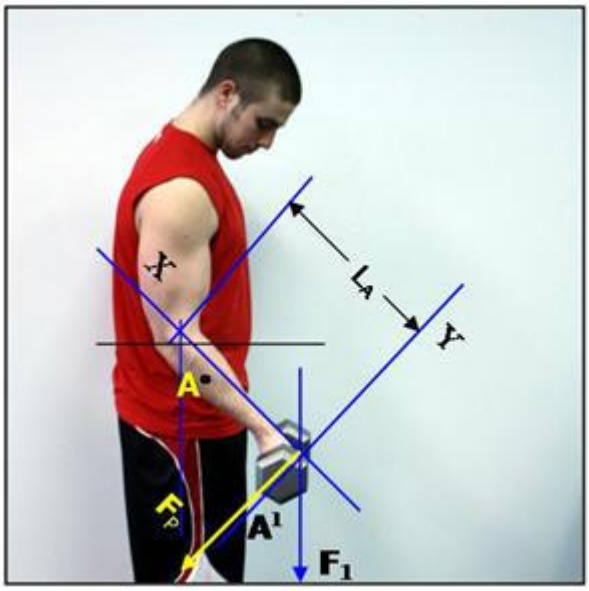
Now, avoid releasing the tension at the bottom by stopping the movement right before you straighten your elbows, and also stop the movement at the very contracted point at the top - without moving your elbow forward and thus involving your front deltoid in the movement.

Notice how much harder that was? Great, you just increased the activation level of your biceps muscle.

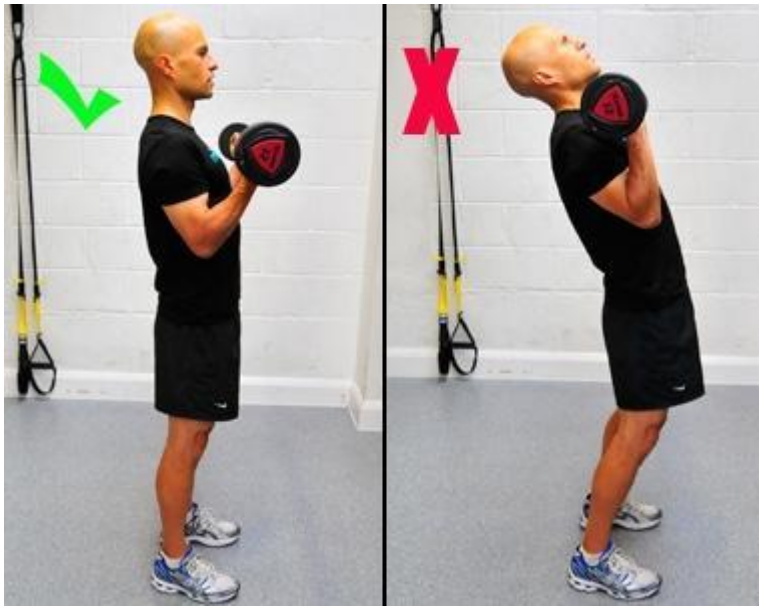
Look at the following images to understand this better.



The arm is hanging straight down, and there is very little tension on the biceps



The arm is slightly bent and there is tension on the biceps. This is the end range for Myo-reps.



Left: Correct. Stopping the movement here maintains tension on the biceps.

Right: Leaning back and/or pushing the elbow under the wrist drops the tension on the biceps to almost zero.

Occlusion Training - And How It Could Give You a Better Training Effect

Mathias Wernbom is one of the scientists who has done the most research on occlusion training.

Mathias Wernbom in his lab. He would tell me about putting on occlusion cuffs, doing 50 reps on the leg press, jabbing a biopsy needle (it looks like a mini harpoon just to give you an idea) into his leg, then hobbling over to the microscope to look at what just happened inside his muscle. The big guy walks the walk and talks the talk, that's for sure!

Occlusion training is a method where you restrict some of the blood flow of your muscles. This causes a temporary lack of oxygen in the muscle cells, which increases muscle fiber activation and several other signals that we still don't know exactly the function of, but they are obviously involved in creating a higher performance.

You use a pressure cuff wrapped tightly around your arm or leg, which looks like the one you use when you measure your blood pressure. In the lab, this is connected to an automated compressor which maintains a particular pressure, no matter how thick or thin the arm is, or what movement is being performed.

When this became popular, you would see people walking around with elastic bands or knee/elbow wraps around their arms or legs. The burning sensation from the buildup of metabolic byproducts can be extremely painful – but then again, this is what the hardcore bros and gals are chasing.

I did some personal experimentation with full-body occlusion training where I wrapped a rubber band around my neck and did circuit training with short rest periods.

It was only partially successful.

At first, I felt dizzy, which was fun (a cheap way of getting drunk, as we would say in northern Norway), but in the end I just ended up with a bigger head….and a severely compromised, dry sense of humor.

Scientists have induced dramatic increases in muscle mass among test subjects with occlusion training, from simply walking on a treadmill!

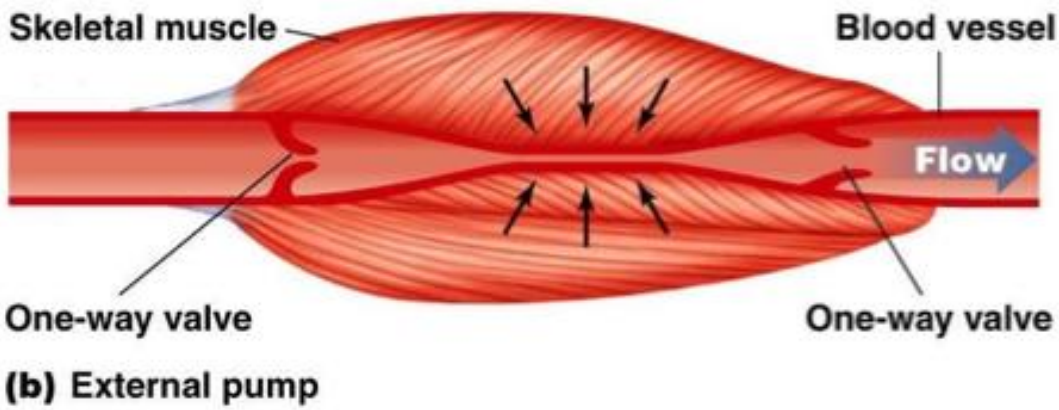
A lot of the occlusion training research on weight training has been done in the range 20-40% of 1 rep max – loads most people would be able to do for 30-50 reps before hitting failure. There are also a lot of studies on untrained, older or rehabilitation patients.

Mathias Wernbom and the Norwegian professor Truls Raastad at the Norwegian School of Sports Sciences (NIH in Norway) have seen increases in the cross-sectional area of the muscles of even the most advanced powerlifters after 2-4 weeks of training.

EMG-measurements (looking at the electrical activity, a proxy for muscle fiber activation levels) of occlusion training show that you can get very close to what you would see at heavy weights (3-5RM).

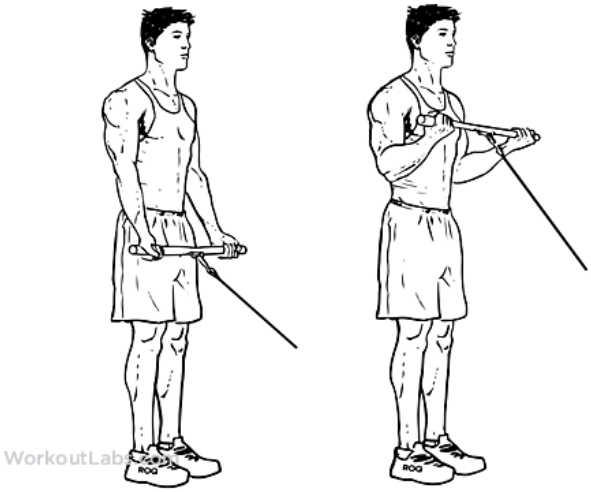
However, occlusion training with a pressure cuff or rubber bands that reduce the blood flow to the muscle isn't really necessary, if you use a special technique.

When you lift a weight and contract and shorten a muscle, you restrict the blood flow internally in the muscle.



To maximize fiber activation with internal occlusion, you have to avoid resting or locking out at the end points of an exercise.

It would also be beneficial to choose exercises where you have a high load in the most contracted part of the movement. Look at this illustration and notice how there would be more resistance at the top/contracted part of the movement when facing the cable vs. facing away from it.



Some research suggests stretching the muscle under load/tension as an effective stimulus for muscle growth, and I prefer to use stretch-type of exercise for heavier loads. See the example programs for specific recommendations.

I recommend that you try to lift explosively, referring back to point 1 of the 3 criteria given earlier, to achieve maximum muscle fiber activation.

At lighter loads, research shows that you need to train close to the point of failure to get maximum benefits, but that having 1 rep in reserve can allow you to recover faster than going to complete failure while still providing the same benefits.

You should have some experience with training to absolute failure to determine your individual fatigue point before commencing Myo-reps, but a good rule of thumb is that you can stop and put the weight down when rep speed slows noticeably.

If you push to failure, it will limit the number of total reps you can get.

If you stop several reps from failure, you would need to compensate by doing several sets in the Myo-reps series and also shortening rest periods. It most likely also means that you are a pussy.

The trick is to **manage fatigue, not chase it**.

THE MYO-REP SET

So you have done your warm-ups and chosen your exercise.

The Myo-rep set in brief:

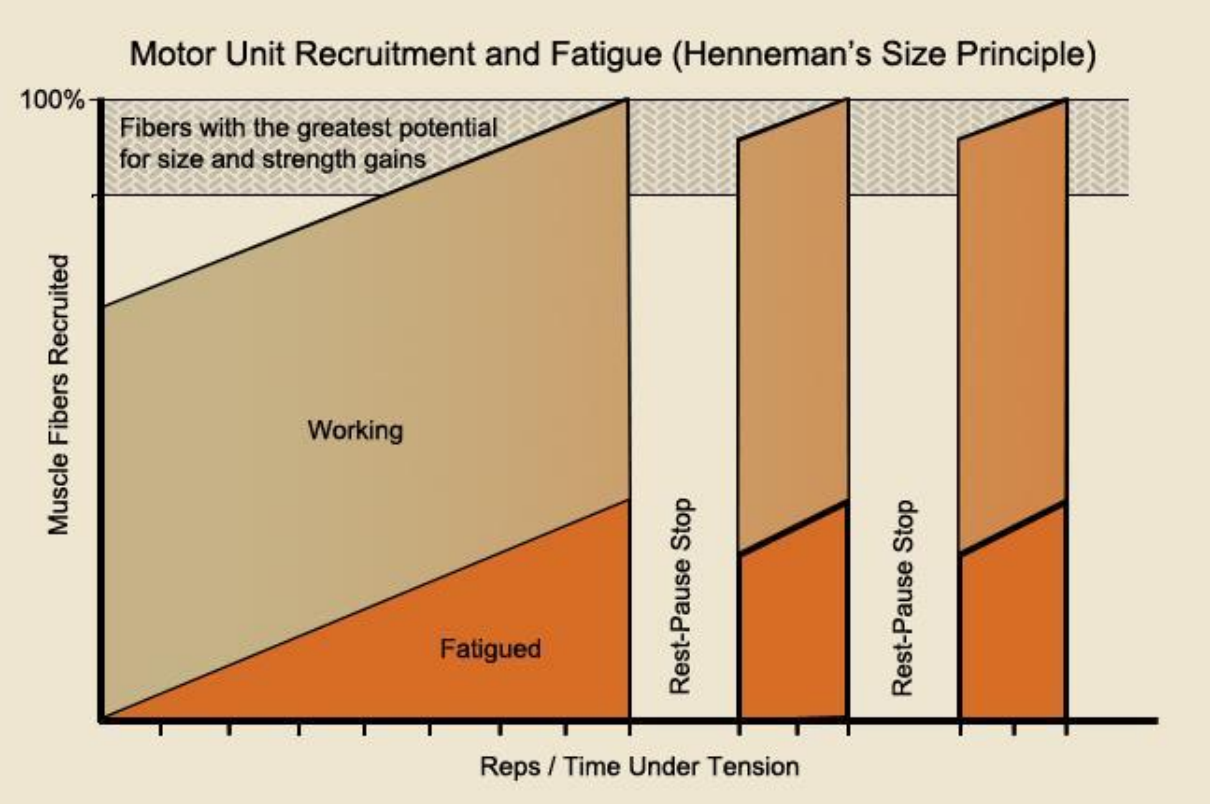
1st set: “Activation set” - 15-30 reps

Pause for 5-15 seconds, do another 3-5 reps, pause for 5-15 seconds, and so on until you have done up to 5 sets of 3-5 reps.

The key is to only take a short break before you do another set with more reps of the same load.

Myo-reps requires that you find that subtle balance between resting just enough to allow more reps, while still maintaining a high activation level.

Here's a visual demonstration of the concept:



The number of reps you will achieve on the activation set and the Myo-reps series of sets, will vary from person to person and even from exercise to exercise.

I tend to use 30-50% of your current 1RM - one rep maximum (beginners: 30%, intermediate: 40%, advanced 50%) in a given exercise as a starting point, calculated from a tested 1RM or an estimation off of 3-5RM by using this calculator).

Now, the number of reps on the activation set will fall anywhere between 15-25 reps or even more – so a simpler way is just to preselect a rep range from 15-25, whatever you enjoy doing…and this will actually correlate well with the testing approach, incidentally.

I tend to recommend a minimum of 8-10 reps to get the maximum benefits from Myo-reps. This is because you already have close to maximum fiber recruitment at heavier loads (approx. 80% of 1RM).

Myo-reps really shines at lighter loads, where the internal occlusion effect and a certain minimum time under load creates those spikes in muscle fiber recruitment, and an amplification of the mechanical tension stimulus from the lighter loads.

WORKING 3 TO 5

To stay at the “just right” fatigue level to maintain high activation, you shouldn't rest more than 5 to 15 seconds between sets in the Myo-reps series.

Instead of checking your watch and lose focus of what you’re doing, you should instead just count how many times you inhale and exhale.

Combine that with getting the “just right” number of total reps (volume) at the loads we are working with, I have come up with a simple, easy-to-remember rule for Myo-reps:

3-5 reps, for 3-5 sets, with 3-5 deep breaths of rest between sets

So, a Myo-rep set may look like this:

- 20+5+5+5

or

- 22+3+3+3+3

or

- 25+4+4+4+4+3

In the free program templates you will get with this e-book, the notation is: 20-25 +3-5x

First is the number of reps in the activation set, the + denotes the 3 to 5 deep breaths in the rest-pause, and the 3-5x is “do 3-5 reps in the Myo-reps series”.

Remember to put the weight down or to "lock out" (e.g. at the top of a leg press where you are able to release tension on the muscles) between sets to allow blood flow and ATP recycling.

If you're holding the weight with tension in the muscle, you may not be able to continue doing another 3 reps before you fail.

You should also limit it to 5 sets in the Myo-rep series, as we want the stimulus to signal strength and muscle growth. Overdoing it and doing endless sets and reps turns into a strength-endurance exercise.

If you're training to get stronger and build muscle, the cells secrete specific signals for precisely this purpose. If you're training for endurance, the cells secrete signals that are in conflict with the signals for strength and muscle growth, so we do not want to mix them up in this context.

Also referred to as the “interference effect”, this is also why combining strength training with endurance training in the same workout doesn’t work as well as separating them by at least 4-6 hours.

If this is what ends up happening to you, for instance if you’re not able to push close enough to failure – or if your individual physiology just recovers that quickly – you should shorten the rest period even further and consider doing more reps per set.

Ok, so let’s have a look at how a Myo-rep set looks like, by yours truly.

Myo-reps: 20-25 +3-5x (20+3+3+3+2) (click to watch the video)

Did you notice a couple of interesting things? Well, not my amazing haircut and impressive biceps, those are a given - but I was referring to:

1. Moving my elbow back and forth during the rep, in order to maintain continuous tension on the biceps
2. The enormous pump that develops a couple of minutes after completion of the Myo-reps set

The pump is due to an effect called “hyperemia”, where blood and fluids rush back into the tissue as a compensation for the metabolic effects within the muscle caused by Myo-reps.

It literally feels like **the muscle is going to blow up.**

Quoting Arnold Schwarzenegger from the movie “Pumping Iron”:

"The greatest feeling you can get in a gym, or the most satisfying feeling you can get in the gym is... The Pump. Let's say you train your biceps. Blood is rushing into your muscles and that's what we call The Pump. Your muscles get a really tight feeling like your skin is going to explode any minute, and it's really tight - it's like somebody blowing air into it, into your muscle. It just blows up, and it feels really different. It feels fantastic.

It's as satisfying to me as, uh, cumming is, you know? As, ah, having sex with a woman and cumming. And so can you believe how much I am in heaven? I am like,

uh, getting the feeling of cumming in a gym, I'm getting the feeling of cumming at home, I'm getting the feeling of cumming backstage when I pump up, when I pose in front of 5,000 people, I get the same feeling, so I am cumming day and night. I mean, it's terrific. Right? So you know, I am in heaven."

So in my case, when the pump/orgasm was at its peak and the camera shut off, I just **had to** do Myo-reps on the other arm as well.

A man gets paranoid if he needs to walk around the gym with an arm that is twice the size of the other one.

For the same reason you need to switch hands when vacuuming the floors, as you don’t want to get uneven muscle development.

Am I the only one thinking these strange thoughts?

Well, I don't think you ladies would think it was fun to walk around with one butt cheek looking like Kim Kardashian, while the other one was just flapping around like an empty pocket, would you?

Here's another video, from back when I was…ehrmmm…heavier.

Notice how I was straining to get +3+3 in the Myo-reps set, my face contorted and blown up like a puffer fish, and that I barely managed to stay conscious.

Moral of the story: **Permabulking sucks**

Also, lying sideways on an incline bench while doing a side lateral raise for the shoulder maintains tension on the muscle throughout the movement.

A standing side lateral raise is actually pretty good for Myo-reps, but you would need to stop the movement before your arms are hanging straight down as that is when tension is released on the deltoid muscle.

VOLUME – HOW MANY SETS AND REPS

"How many sets/reps should I do?" is probably one of the most common questions I hear. Also: "Why do people from Norway swear so much?"

There's probably no right answer to either of these question, but I can do some damn good guessing at the first one.

First, consider a "normal" set, of 3 sets of 20 repetitions, 1-2min rest between sets.

If you train to failure on each set, there will be a natural drop in the number of reps you can do from set to set. For demonstration purposes, let's assume you do 20 in the first set, 18 in the second and 16 in the third.

Let's also assume it takes 3 seconds per rep (2 seconds down, 1 second up).

We also assume that the last five reps are reaching maximum levels of muscle fiber activation, which is pretty close to the truth when looking at various studies.

- Total amount of reps: 20+18+16=54
- Effective reps: 5+5+5=15
- Total duration: About 7 minutes (2min rest between sets)

Compare this to Myo-reps at 20+5+5+5+5

- Total amount of reps: 40
- Effective reps: 25 (5 in the activation + all reps in the Myo-reps sets)
- Total duration: About two minutes and 40 seconds

You have achieved 70% more effective reps, in less than half the time with Myo-reps vs. traditional sets.

We are making a few assumptions here with regards to “effective” reps and time under tension, but I think it is easy to see that Myo-reps is an exceptionally time efficient way of training.

By all estimations, but most of all from my experience over the years:

1 Myo-reps set equals 3 or even 4 normal sets

Let’s look at my thought process when I design programs. We need to look at what happens on a biological level when you expose the muscle to a mechanical load, for a certain duration, at a certain frequency.

THE WORK:MUSCLE GROWTH RELATIONSHIP

Many studies and a lot of training programs for building muscle will tell you that 8-12 reps is a fail-safe recommendation.

One study authored by Brad Schoenfeld in 2014 demonstrated that the total amount of work may be a more important variable.

In this study, they compared one group doing 7 sets of 3 reps at 90% of 1RM, with another one doing 3 sets of 10 reps at 70% of 1 RM.

Calculating from the intensity numbers, the total amount of work is:

- 7 sets x 3 reps x 90 = 1890
- 3 sets x 10 reps x 70 = 2100

There was a small strength benefit in the group training doing 7x3.

This is due to the specificity of testing. If you test 1RM and your training 3 reps, you get to practice under conditions close to the actual test.

So if you train close to your 1RM, you'll also get better at demonstrating a 1RM. This is incidentally also a good way to boost your 1RM with a low total volume of work – just work up to a 1RM, or close to it.

Interestingly, muscle growth was almost identical in both groups.

Turns out that total amount of work is an important factor if we want to build muscle mass. While “practicing the test” can make us better at a

1RM test, some additional work is usually needed to maximize hypertrophy.

In practice, there were a few important caveats, though.

The 7x3 group spent **70 minutes** in the gym, and was completely beaten up afterwards. In fact, there were several dropouts due to injuries.

The 3x10 group spent **17 minutes** in the gym, and everyone stated that they could've done much more!

So, even though you build muscles just as well doing lower reps as doing higher reps, it takes more time and increases connective tissue injury risk. With lighter loads, especially loads used with Myo-reps, the injury

risk is significantly lower – unless you do something stupid or your connective tissue health is crap.

What is supposed to be a great advantage, may tend to be a huge problem if you're the type who just can't leave the gym until you are completely exhausted – so please just stick to the recommended program for at least 4 weeks before you start experimenting with more volume.

Research indicates that number of "hard" sets [2], i.e working close to failure is a more accurate volume recommendation than total reps. That is already taken care of with Myo-reps.

Let's first look at my general volume recommendations:

Beginners can get great results from training at lighter loads of 60-70% of 1RM or less, or approximately a load you can lift from 12-20 reps with. The beginner also doesn't need more than 3 sets total per workout or even per week, since his stimulus threshold is so low (0 sets when he first starts training).

Training frequency: 2x/week, but can be up to 3-4x/week, since a beginner needs more practice to perfect his technique, but also because the overall stress per workout is less since you're not strong enough to lift heavy loads yet.

For 3-4x/week training, I would advise using 1-2 of the extra workouts to focus on technique, by doing several submax sets of 3-5 reps just for practice. Strength is a skill, and as a beginner you definitely need to develop your skill.

The more advanced you get, the higher loads you need to lift and the more volume you need to stimulate an adaptation. I tend to recommend a 2-4x/week frequency for each muscle group for most intermediate lifters, but one of those workouts may be low-to-moderate volume, low rep training with submaximal weights to improve skill and neural drive (the strength of the signal from the nervous system to the muscles).

Some very successful benchers are doing some variation of the bench press up to 5-6x/week, as the renowned Norwegian Frequency Project (covered in a later chapter) showed.

For most exercises, and if the goal is a combination of strength and muscle mass, you should stay in the 70-85% of 1RM range most of the time, which is a load corresponding to 5-12 reps for most people.

If your main focus is absolute strength for powerlifting, you should obviously lift heavier and with lower reps – as mentioned above.

Let's discuss some of the thought processes behind my recommendations, and get more specific.

How Many Reps Are Optimal?

Muscle fiber type composition is largely genetically determined, and it even varies from muscle group to muscle group in an individual. In the general population, differences in percentage of slow to fast twitch muscle fibers are usually minor, but we do see larger variations in trained lifters.

We can speculate on whether that is due to them already being genetically inclined for this type of training, or if their training is converting their fiber types to the more explosive kind.

Recent studies, most notably by Dr Andy Galpin, indicate that muscle fibers are more plastic and adaptable than we once thought – and that muscle fibers can indeed change to accommodate the training stress you are exposing them to.

Fast twitch fibers generally respond better to relatively low volume, more rest between sets, higher loads and lower frequency – whereas slow twitch fibers respond better to higher volumes, shorter rest between sets, lower loads and can recover faster.

A simple test you can do to determine if you are an "outlier", is the following:

Test your 1 rep max (1RM). It doesn't have to be an extreme grinder, just estimate it based on your performance – i.e. if you managed a single at 95kg and felt like you could easily do one more rep, you can just set it at 97.5kg or 100kg and not have to test another set.

Now, rest for 3-4 minutes. This is important.

I think most bodybuilders are making too much out of the metabolic effects of short-rest training, and treating weight training as a HIIT workout. There are **several studies** showing short rest intervals (<2 min) impairing training adaptations for hypertrophy and strength.

Long rest allows you to train close to failure with high loads, so I am not saying you should be doing one rep sets – just that there is an optimal amount of fatigue, and too much of it will inhibit adaption.

Bill practiced Yoga regularly to recover from his hard Myo-reps workouts. Every Saturday night, his enhanced mobility turned out to be very useful.

Following the 3-4 minutes of rest after the 1-3RM test, drop the load to 80% (down to 80kg if your 1RM is 100kg) and do 3 sets of max reps, separated by at least 2 minutes of rest. And by “max reps” I am not talking about absolute failure or cheating reps, it is fine to leave a rep in reserve.

Looking at your performance on these sets, we can make a couple of observations:

1. Your fiber type composition, your training history and even your personality traits: If you got 6-8 reps on the first drop set you have a pretty even distribution between fast and slow-twitch fibers, and you are probably used to training close to this rep range. If you only managed 3-5 reps you may be very fast-twitch dominant, you may already be a sprinter, weightlifter or powerlifter, but you may also have personality traits such as being more impulsive and impatient. The latter is a topic I won't go into here. It may also be that you just hate higher rep training. A running joke is that powerlifters consider 5 reps "high rep training", and it's actually not far from the truth. If you managed 10 reps or even more, you are probably very slow-twitch dominant, or you have an endurance background, you like the pump and the burn, and you might be a fan of percentage-based programs, planning in advance and perhaps you are slightly neurotic (?). In the end, I have generally found my clients to have better gains when they get to train in a rep range dictated by a preset intensity of 1RM and what often correlated with their own liking, instead of forcing them to do a lot of 5 rep training if they hate doing it and it just hurts. That's not to say that the low rep lifter can't get a lot out of some strategic higher rep training, and vice versa – as we'll discuss later.

2. Your volume and work tolerance: if reps drop significantly from set to set, you have a low volume tolerance and should probably keep your total number of sets in moderation. E.g. if you see 10, 7, 5 reps, I would limit volume to 2-3 sets per exercise or muscle group. On the opposite side of the spectrum you have those who manage 10,10,9 reps displaying a higher rep and volume tolerance, and these lifters can usually also handle more sets in training. At the same time, I would advise them to stay at least 1 and maybe 2 reps from failure on most sets, only approaching failure on the final set. Even then, beginners should do fewer sets than intermediate and advanced lifters, so scale the numbers accordingly.

When using Myo-reps, everything is turned upside-down, and low loads, higher reps suddenly becomes very effective. As you have learned so

far, the occlusion effect creates some unique training effects, and there is one more crucial mechanism you should know about—a mechanism that makes it particularly interesting for the more advanced lifters who have stagnated on the heavy lifting.

Reignite Progress With Myo-reps

Have your gains stagnated for a while now? Have you tried increasing volume, doing some special exercises, eating more, or taking “magical” supplements?

What if I told you that there is something very special about Myo-reps, that could potentially restart your progress?

Let me give you some background understanding first.

Myonuclei (myo=muscle, nuclei=cell core) is the powerhouse, or command center of a muscle cell. There is at any point of time a certain ratio between the **size of a muscle cell** and the **number of myonuclei** that it contains. Generally speaking, the more myonuclei, the bigger the muscle – or the **potential** for a bigger muscle.

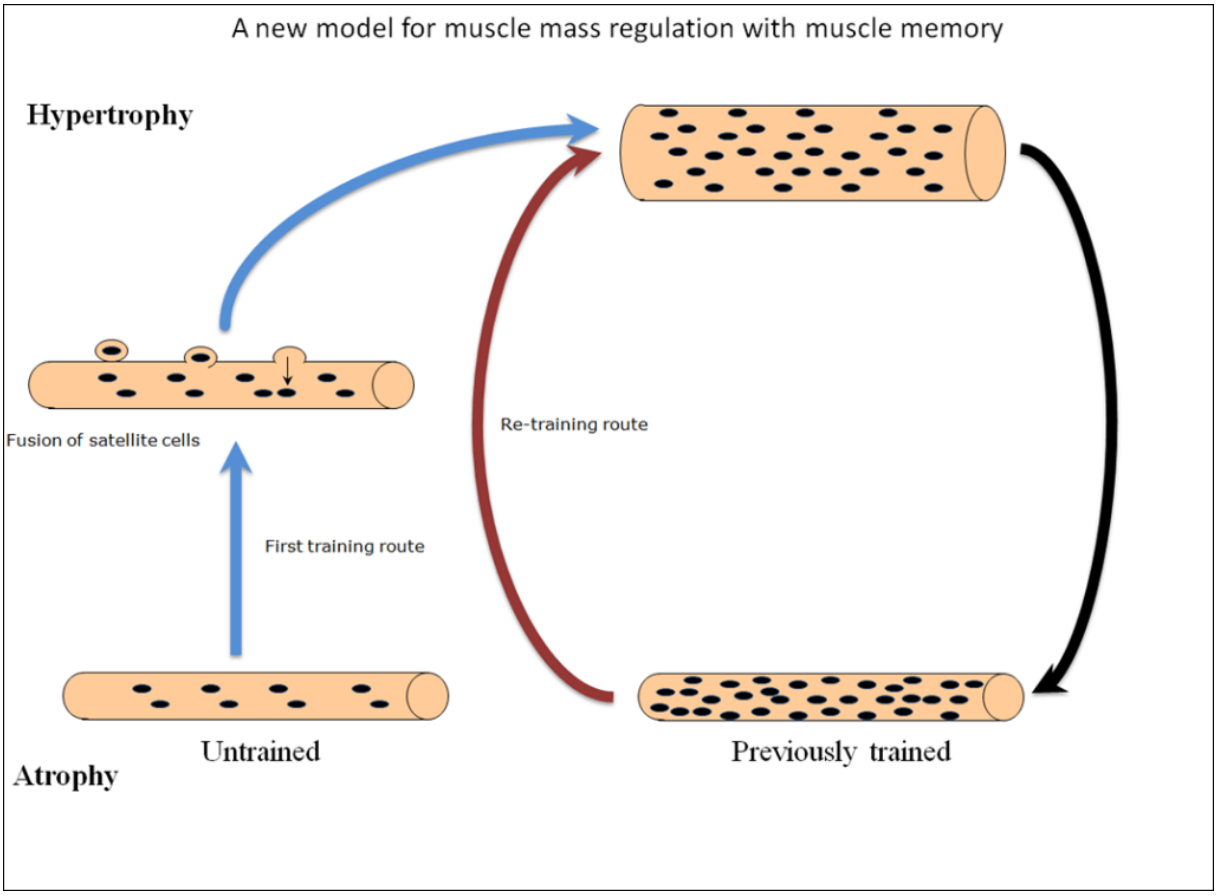
One of several mechanisms of hypertrophy is the activation of satellite cells. These are dormant stem cells located in the vicinity of muscle cells, capable of turning into whatever the body requires of them. These satellite cells merge with muscle cells and donate their nuclei when conditions demand it, such as when the muscle cell is exposed to a mechanical deformation through lifting a weight or even stretching the muscle.

Occlusion research has shown that the metabolic effects of high rep training also activates satellite cells, even in the presence of low mechanical tension. This, in turn, explains how occlusion and metabolic stress are believed to “amplify” mechanical loading.

When resting the muscle for 2-4 weeks or more, even though the muscles shrinks (atrophies), the number of myonuclei is maintained.

When you start training again after a hiatus or longer period of rest, you will quickly return to your previous muscle size and strength. This is what we know as “the muscle memory effect”.

The muscle is simply seeking to maintain the relationship between the number of myonuclei and its size, and it responds quickly to stimuli.



You all know that it takes less time to recover lost muscle mass than it takes to surpass your previous bests in muscle mass, but to know the underlying reason is valuable to understand what goes on when you lift weights, but also in order to stimulate further research teasing out the complex mechanisms behind muscle growth.

Studies into the “repeated bout effect” (the addition of both contractile and connective tissue to protect against further damage) show that whereas moderately advanced lifters can see a muscle protein synthesis (MPS) anabolic response for up to 24-48 hours after a workout before returning to baseline, advanced lifters have adapted to training to such as extent that the muscle growth response is blunted and only lasts for 6 hours, up to 12 hours at the most.

Doing more volume only works to a certain point and can potentially become counterproductive if you can't recover from it.

Even more importantly – the satellite cells are dormant. They don't activate and donate myonuclei to muscles any more.

If you can't increase the number of nuclei, there will be a limit to how large the muscle can be, so the more advanced you are, the harder it is to get bigger. We know this intuitively, but this is one of the underlying explanations why.

Extreme eccentric protocols utilizing loads heavier than a concentric 1RM have been shown to re-activate satellite cells. Alas, this type of training can also cause microtrauma, inflammation, and brutal soreness, which require several days of recovery. A low training frequency with extreme training protocols requires a long time to make a noticeable impact on the myonuclei pool.

Wernbom has seen that you can achieve satellite cell activation even in elite and well trained athletes with occlusion and light weights in his lab.

See the following illustration and note that "free flow" is without occlusion.

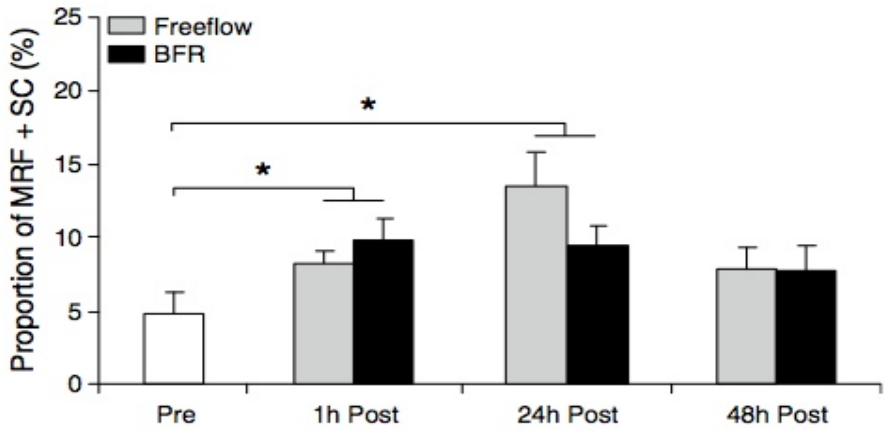


Fig. 4 Changes in the proportions of MRF-positive satellite cells (expressed as % of the total number of satellite cells). *$p < 0.05$ versus baseline for both legs combined

MRF positive is activated satellite cells. The free flow group was only a few repetitions away from failure on the first set and probably had very high levels of muscle fiber activation (as per the aforementioned criteria). Blood flow restriction (BFR) is occlusion training.

Take particular note that the response peaks only 24 hours after the workout for the free flow group. This means that we can do a workout with Myo-reps, and increase the growth potential of a heavier workout the next or two days later.

The lighter loads will spare the nervous system, joints, and connective tissue, and the transient inflammation subsides quicker than with heavy training. If you recover faster, the muscle can be trained more often.

Wernbom showed me some data where they had observed dramatic increases in muscle size over a four-week period with twice daily occlusion training of the quads.

These were advanced lifters without any measurable increase in muscle size for many months before this experiment.

This is logical. If you already spent several hours at the gym with high loads over several months and years, it is difficult to increase volume or loading significantly over a certain time span.

The recovery capacity and volume tolerance is also trainable but unfortunately it doesn't increase at the same rate as most people’s training volume. So the myonuclei count, and muscle size remains unchanged until you do something drastic - or smart.

And the smart thing is – obviously – to include Myo-reps in your training!

There is a lower threshold of loading where the training effect diminishes, so it is necessary to use techniques like occlusion or Myo-reps when you lift weights you can do for more than 20 reps.

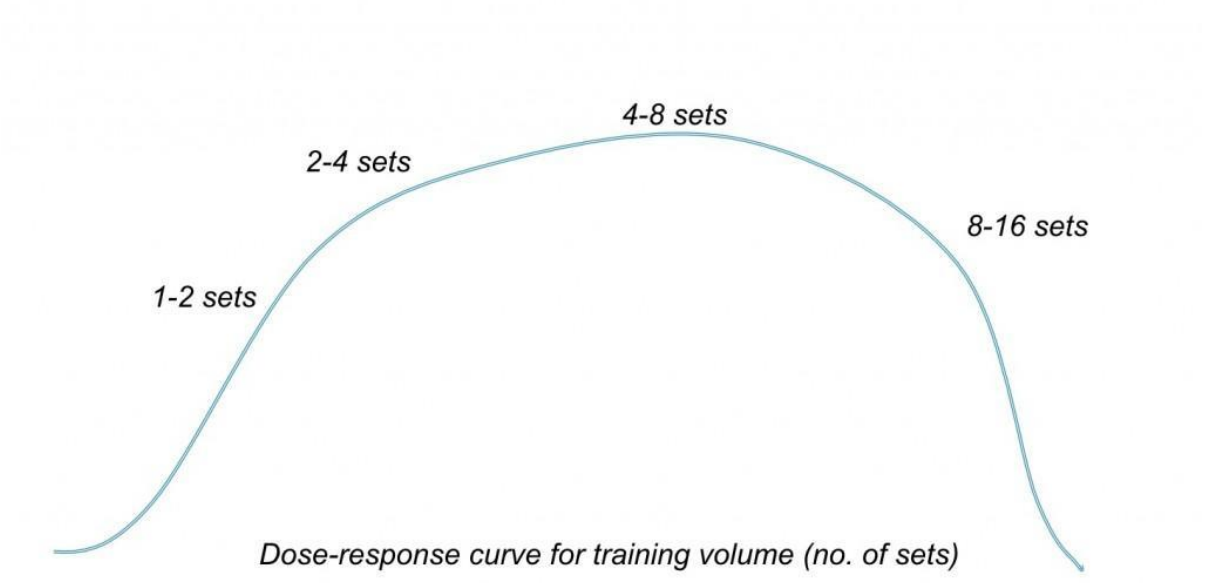
There exists a certain threshold of work that you have to exceed in order to stimulate an adaptation (i.e. strength and muscle growth). This threshold increases with training age and experience.

However, a common misconception is that if you double the training volume, you also double the stimulus.

Sorry, but if it were that easy, we would all be massive just from copying the high volume routines of Arnold or Ronnie. Anyone who idolized Arnold back in the 80s or Ronnie back in the late 90s knows for a fact that this line of logic didn't turn out as well as we hoped.

Even the famous German Volume Training protocol of 10 sets of 10 reps, popularized by Poliquin in the now defunct Muscle Media in the year 2000, has been debunked by research. 5 sets was found to be superior to 10 sets in this study.

Here is a pretty graph I made to illustrate the concept:



As you can see, the dose-response curve increases sharply at first but then flattens out, and eventually drops down into the proverbial shitter.

Also keep in mind that the lower end or the range is number of "hard" sets approaching failure, whereas the higher end of the range is submaximal training with more reps in reserve and/or low-rep training – and inherently low volume per set.

The higher end of the range also demands that all your ducks are lined up in a row: food quantity and quality, stress management, sleep and biorhythm optimization.

The high volume-tolerance lifters also thrive and benefit from the higher end of the range.

The reason for the shape of this curve is that excessive volume will require more recovery time. At best, you create low grade inflammation and that soreness we all secretly fall in love with. This soreness may actually mean that resources are directed towards repair and not growth, so it is probably wise to back off the next time you go to the gym.

At worst, you get an acute injury or increase your risk of repetitive strain injury and overtraining over the long term.

JUNK VOLUME

I know this is going to cause some controversy, but controversy is good. It means that it is making you think about preconceived notions, and hopefully reconsider certain accepted truths.

As the years go by and I work with more and more people, I am becoming more and more convinced that you don't need as much volume as you think.

Most lifters do way too much—something I call "junk volume".

As the illustration on the previous page shows, it only takes 1-2 hard sets to get 80-85% of the training effect, and increasing volume by 200-400% only provides marginal benefits of 5-10% or less, with a large increase in potential negatives.

Even Schoenfeld's meta-analysis (there are some obvious confounders with reviews, but I'm not going into that here) showed that less than 5 weekly sets provided 5.4% gains, 5-9 weekly sets, 6.6% gains, whereas 10+ sets provided 9.8%. When stratified into less than 9 and more than 9 weekly sets, the difference was 5.8% and 8.2%, respectively.

This makes it sound like you get twice the gains by doubling the volume, but in practice, it doesn't quite play out like this.

The rate of gains might be higher in the short term, but a very common outcome is that fast gains leads to faster stagnation. There is a limit to

how large the muscle can grow in the short term, due to the satellite cell-myonuclei process mentioned earlier.

In many cases, various connective tissue problems or other overreaching symptoms also pops up as you outgrow the capability to recover. It also takes time for energy substrate supply (oxygen delivery, capillarization, glycogen storage) to upregulate.

Those who tolerate, thrive or benefit from the higher volumes usually have one or more of the following traits:

- submaximal training (keeping more reps in reserve, either by intent or because they're not used to going to failure). This type of high-volume training works great for strength (via skill/practice) and the Norwegian Powerlifters who dominate on world rankings are reknowned for this type of training.
- great genetics, with a frame built for strength and muscle
- young guys and girls with optimal hormone levels and great recovery
- specialists who have worked up to tolerating that volume over years within their respective sport. At the specialist level, the 1-2% advantages win trophies so the investment is worth living on the brink of overreaching. They also have their recovery needs taken care of, and some are often full-time athletes or competitors who live, breathe and die by their respective sports.
- drug use. This includes some coaches who are obvious or self-admitted drug users.

It is hard for a coach to avoid confirmation bias — I know I have suffered from it many times during my career — so my best advice for mitigating this is to always question if what you believe is really true.

A lot of the time, a belief can be true but only in specific contexts - which is what inspired me to write this in the first place.

Dmitrij Klokov, a world champion weightlifter who also got several top placings in bodybuilding competitions. A genetic freak built for lifting has trained his whole life and is doing amazingly well with high-volume training. What works for him may not work for you.

Everyone else - we might THINK or WANT to belong to one of these demographics, but I think it is wiser to take an objective look at what hand nature has dealt us, and do a more intelligent investment strategy with your training efforts.

I know you probably don't like to hear this, but when we get to a certain point it will be hard to gain even 1-2lbs/0.5-1kg of muscle mass per YEAR. How much effort and time are you really willing to put in to gain that 500g/1.1lbs of muscle?

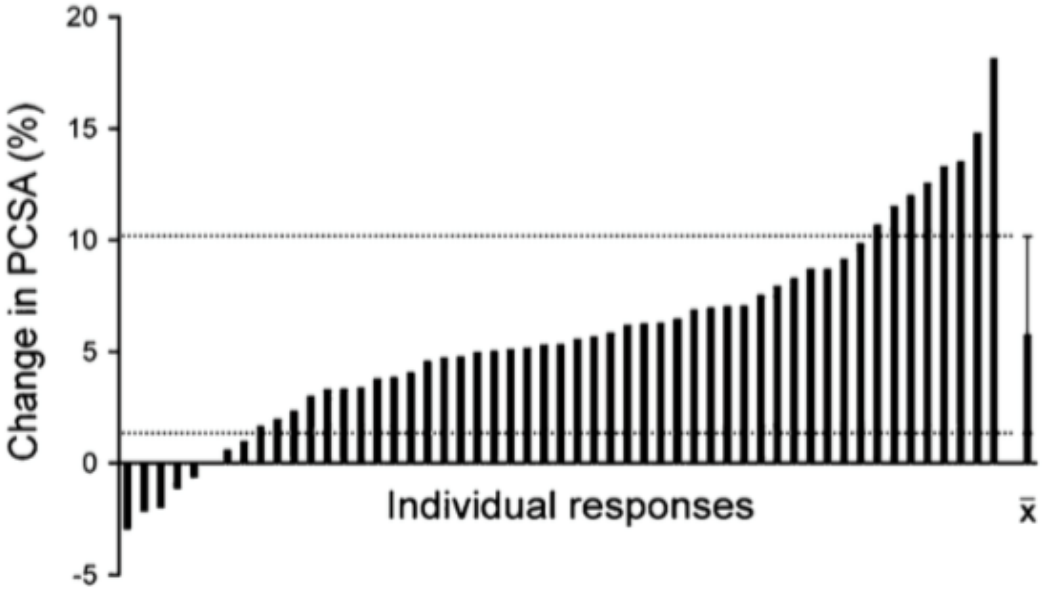
Answer that before reading on.

I have lowered volume consistently with most of my clients and it has only provided better results. I have also had several previous high

volume clients on "rehab", with the same story. Their gains were awesome in the beginning, they were constantly sore and tired but had some great gains...then they eventually experienced various aches and pains, and some of them ended up completely demolished.

When all motivation to train is gone, and when joints and tendons are starting to hurt - but you still keep going because this study or that expert says that it is "optimal", I think we are - again - stuck in the mindset of general vs. individual.

Look at the following illustration, demonstrating individual responses to the same training program:



On average, 10% gains is pretty good, so we should all be doing this training protocol, right? The truth is that there are 8 hyperresponders who are pulling the average up. Most lifters are only around 5%, and there are 8 participants who either lost muscle (!) or barely gained anything (what is referred to as “statistically insignificant”).

So should those bottom 8 let their training be dictated on the top 8? In reality, this is usually what happens.

I have built a reputation for getting those bottom 8 results they didn’t even believe was possible, but figuring out just what these people need is both an art and a science – and I hope this book can provide you some insights into my central thought process.

I could pull all sorts of more relevant studies and show you how the outliers skew the averages in various studies on volume. There are high-responders, average-responders, and non-responders in various studies - yet the average gains in one volume tier vs. the other may favor the higher volume.

The problem is that people who should be doing fewer sets, **think** they are more advanced than they really are, and end up doing too much.

Use this table to determine what training level you are at, and note that it can be different from lift to lift.

E.g. if your bench is “advanced” while your squat numbers are at the lower end of intermediate, the volume and frequency should be different and the program won’t look like any pretty, generic upper-lower or full-body split.

In my humble experience, from the clients I work with long-term - there are very few non-responders with more conservative and sane workout approaches.

To give you an idea: Probably 80% of my clients train each muscle group or exercise 2-4 workouts per muscle group per week, and 1-3 sets per muscle group per workout.

When everything is in order with nutrition, stress management and sleep – and if the client is willing to invest the time and effort (many are), volume and frequency is increased, but I still have to teach the client strategies to deload reactively based on a given workouts performance.

I’ll talk more about this later.

The gains may not be as impressive in the first 6-8 weeks, but when I work with someone for 12-16 weeks (3-4 months) or longer, the gains just keep coming at a steady rate. An added, but important bonus is that they stay motivated, fresh and pain-free during that whole time.

I have clients returning after 3-6 months on their own, and they are still gaining, as long as they didn’t get tempted to chase excessive volume/frequency, or contract a difficult case of the well-known disease "fuckaround-itis").

DELOADING WEEKS

I don’t prescribe to the periodization model where you are supposed to intentionally overreach or overtrain, and then take a week or two of reduced training or rest (deloading) to improve performance or muscle growth.

It just doesn’t make biological sense to do something now to achieve a positive adaptation in several weeks. The body adapts over hours and days from a given stressor.

What you are seeing is the effects of fatigue masking your true performance, but accumulating fatigue doesn’t necessarily lead to a better adaptation. I have heard many claims of this, but still seen no real evidence of it.

It makes more sense to impose a sufficient stimulus and follow that with sufficient recovery, and if you balance this correctly you should be seeing gains the very next workout. Increases in muscle mass are hard to measure on a short-term basis, so you would look at performance markers (load, or reps at the same load) going up consistently as a sign that you are programming the stress:rest ratio correctly.

In fact, if you take a week off and your strength increases significantly, you were most likely doing too much. If you lose strength, you were doing just enough.

Most physiological processes work like this, with an acute stressor leading to an adaptation that takes hours or a few days to display, and this adaptive process can keep going in a positive direction as long as you apply the right dose of stress with the right dose of recovery.

If you want a nice suntan for the beach, would you intentionally get a sunburn for 3-4 weeks and then “deload” by staying indoors to “supercompensate”?

Sweet. Now I just need to stay indoors for a week, and I'll turn into Batman.

No, you gradually expose your skin to increasing intensity and duration of sunlight, and you get an immediate feedback if you overdid it by getting a sunburn.

The same principle applies to just about any adaptive process in the body. To grow a larger and stronger muscle, you gradually and progressively increase the resistance you are lifting, and the duration you are exposing that muscle to loading.

Volume is a driver for endurance adaptation, and this is exactly what world-class athletes are doing. Lots of running/biking/swimming, where the intensity is low (high intensity training is maybe 10-15% of their total training). This produces an energy-effective and smaller muscle.

For strength, power and a larger muscle, intensity (load) is the driver and volume needs to be kept in check. This is why even studies on advanced lifters show that 2-3 hard sets can be plenty and that the dose-response curve flattens out in the 4-6 set range.

Chasing volume is fine if you fit into the categories I mentioned above, and you are willing to stay on the brink of overreaching for the sake of squeezing out a few extra % gains. Or maybe you just like to spend all your free time in the gym. In that case, you should compensate for the

volume by working sub-maximally and taking longer breaks between sets.

For the rest of you, I would take some time for honest introspection. Are your gains in the gym the last few months or years, in line with the time and effort spent there?

In some cases, it is absolutely worth doing those extra sets to potentially squeeze out 10 percent extra gains, but it is easy to forget that this will also increase recovery requirements.

A high volume of training requires a lower frequency to work, and this is what elite bodybuilders are doing. They are also adding drugs which enhance recovery, and prolong the muscle building process for several days, vs. the 6-12 hours in someone relying on their natural testosterone production.

Do this little thought experiment:

Let's say you can achieve a hypothetical 100 percent training effect by doing 8 sets, but you need at least 3-4 days of recovery.

Over fifty days, you can do ten workouts, so let's give it a theoretical value of 10 X 100(%) = 1000.

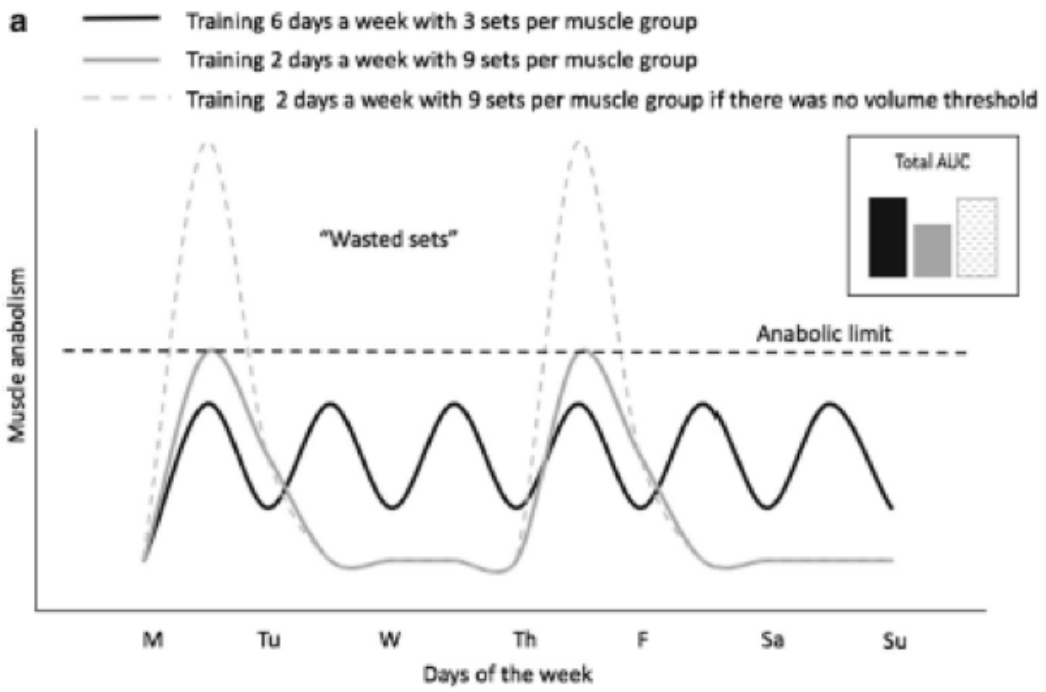
Doing 1-3 sets provides 80-85% of the maximal training effect, and is a more conservative volume which allows you to recover faster and train more often.

Daily stimulus of the same muscle group is possible, but let's assume an average Joe/Jane and allow 48hrs of recovery.

Over 50 days, that's 25 workouts.

25 X 80(%) = 2000.

Double the gains, bro! And most likely with more motivation and less pains and aches.



Yes, I know that was purely a theoretical calculation, but it's a solid assumption that has played out well in practice, in the right context.

THE FREQUENCY PROJECT

The Frequency Project from 2009 has been discussed extensively these last couple of years. It was a collaboration between the Norwegian Powerlifting Association, the Norwegian School of Sports Sciences, and Olympiatoppen – the team responsible for creating Norway's top athletes.

Advanced and elite powerlifters were divided into two groups.

One group trained the classical power lifts (bench press, squat, deadlift, or variations of these) three days a week with a program developed by national head coach Dietmar Wolf.

The second group divided the same weekly training volume over six days (i.e. half as many sets each training day as the three times a week group).

Average intensity/load was equalized between groups.

Carl Yngvar Christensen, 23 years old at the time. Multiple world record holder and a genetic freak of nature. Also a product of high frequency training.

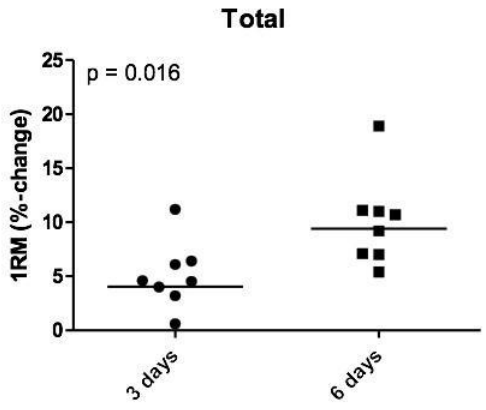
The results haven't been published in peer-reviewed journals nor have they received the attention they deserve. It kind of looks like the NSF would rather keep it a closely guarded secret and dominate internationally with their lifters, instead of share what they have learned with the rest of the world.

As a powerlifting nation, Norway is a force to be reckoned with. A handful of lifters dominate their respective classes, perhaps not in total medals, but Norway is a country with a population half that of New York, where most of the adolescents are either partying or doing CrossFit and not easily swayed into moving heavy slabs of iron through space in a misty fog of chalk and bromance, with the hard rock band Rammstein playing at full volume.

Compare that to the giant locomotive that is Russia, where boys are recruited when they're barely out of kindergarten, and then selected based on those who have the genetics and work ethics to survive brutal training regimes over years and decades.

And lest we forget, I doubt that the WADA shows up at their doorstep at 4:00 a.m. to make them pee in a cup for a drug test. Norwegian lifters have to expect and accept this as a regular occurrence, if they want to avoid being shut out of the organization and society in general, with “cheater” tattooed on their foreheads.

But let's look at the study results. Here are the strength gains between groups:



Here are the muscle mass gains:

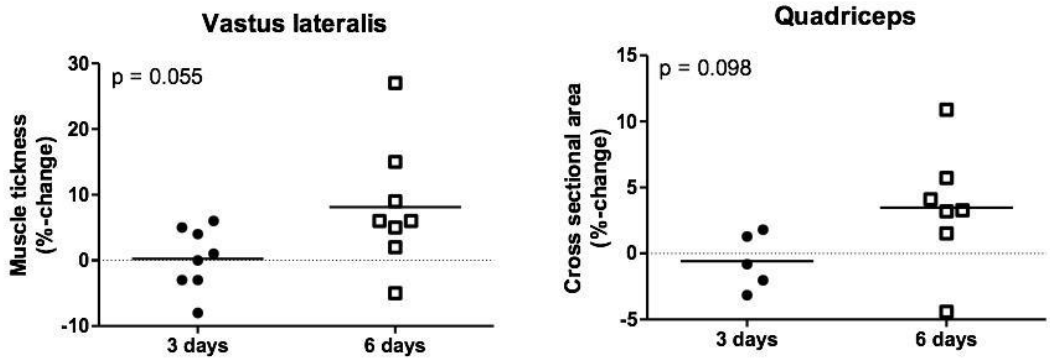


*Figure 2.*Change in muscle thickness of *m. vastus lateralis* (left) and in cross sectional area of *m. quadriceps* (right) during the 15 week intervention period in which an equal training volume was divided into either 3 (3 days) og 6 (6 days) training sessions per week.

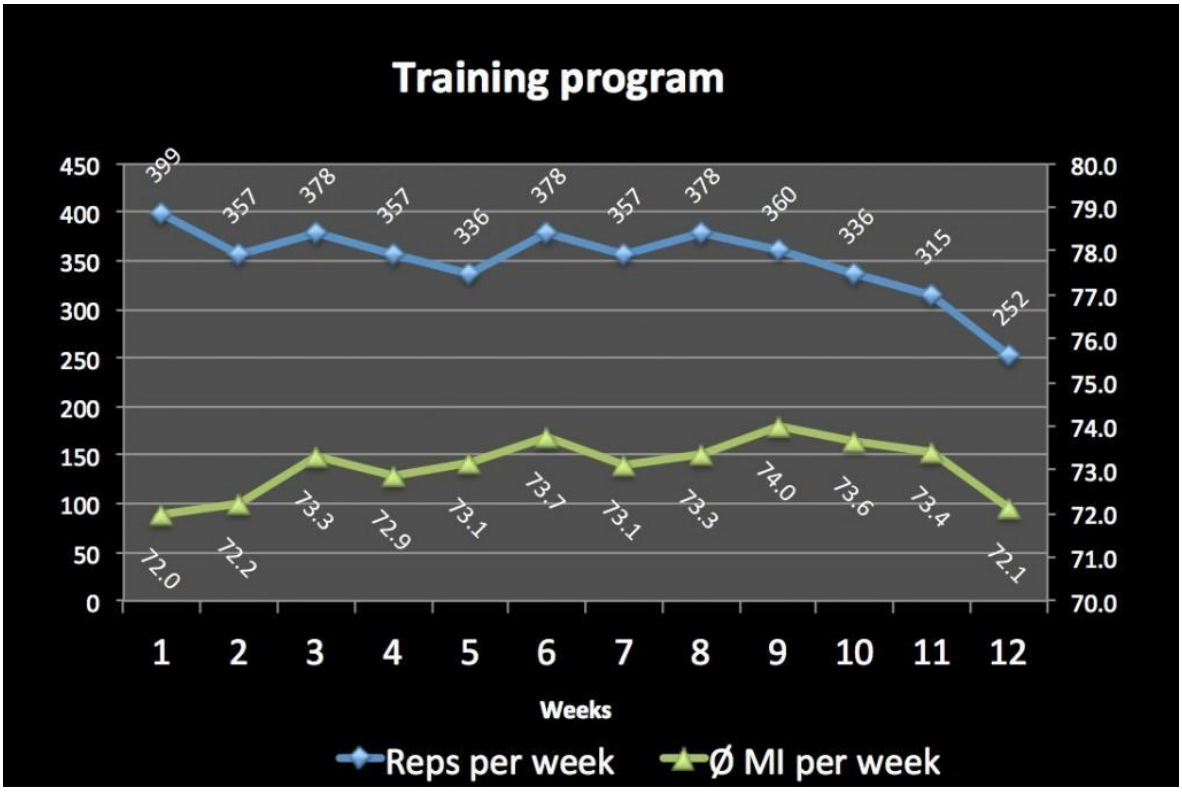
As you can see, there was a pretty dramatic difference in both strength gains and muscle mass after the 12-week study period, with a clear advantage to the group training six days per week. In fact, the total strength gains in the 6x/week group were double those of the 3x/week group.

Even if this was a typical powerlifting program, muscle cross sectional area (CSA) increased by an incredible 5–10 percent in the six times a week group, with no change (and even some regression) in the three times a week group. Oh, and look at that freak who gained 30 percent in

his vastus lateralis…everyone knows a guy like that. And we all envy him or whisper “steroids” when he isn't within hearing distance.

An important caveat of the Frequency Project is that in order to achieve such a high volume and frequency, intensity measured as a percentage of the 1RM was relatively low—an average of 73.1 percent.

See the graph below, showing weekly number of reps per exercise (of the bench, deadlift, and squat) as well as intensity in % of 1RM.



Seventy-three percent is a load that most people can lift for 10–12 reps. Looking at the training logs, lifts were usually performed in the three- to eight-rep range, and while some of the sets would be considered a warm-up by most standards, they still add to the total. The number of “working sets” in the traditional sets, meaning sets where the lifter was lifting closer to failure, is usually around 2-4 sets per lift per workout.

Incidentally, this is also what Mike Tuchscherer is doing in his programs. although he will work closer to failure on some sets, he rarely does more than 3-4 sets per exercise/lift per workout, and usually 3-4 exercises/lifts per workout.

See, the commonalities are several in successful coaches' and lifters programs, and much internet debate could be avoided if context was defined more precisely.

The Norwegians also never grind or train to failure in training; maxing only happens in competition. Reducing neural stress improves recovery, and the powerlifts can be successfully trained 4–6 days per week.

This is in stark contrast to the local hero at the gym who, on every Monday—international bench press day—keeps grinding out twenty sets of bench presses to failure with forced reps.

His buddy spotting him happens to have a set of enormous biceps, gained from repeatedly saving his bench buddy from a crushed rib cavity every time the barbell hits a sticking point, and free falls down to his underdeveloped, overtrained chest. He's lifting the same load on the bar as he did 5 years ago, but still thinks that just training a little harder or doubling up on his pre-workout will get his bench moving.

Drawing his last breath, Jim could at least find solace in the fact that Jeff's sweaty balls would never touch his face again, at least not in this life.

For the intermediate lifter, on a moderate-volume routine going closer to failure on every set, I don't think it is necessary to do daily training. In fact, unless your recovery (sleep, nutrition, stress management, biorhythm) is on point, it can potentially be counterproductive and lead to the same downward slope as doing too much volume in a single workout.

My go-to recommendation for frequency is usually 2-4x/week per muscle group for most of my clients.

Summary and Practical Take-Aways

Ok, so hopefully you got through all of that with some new perspective, even if you didn't agree with it all. Or maybe you just skipped it and came straight to this part for the practical guidelines, you lazy ass.

Here are my current recommendations.

Number of "hard" sets per muscle group per week –> sets per workout, workouts/week:

- Beginners: 3-9 sets -> 1-3 sets/workout, 2-3x/week
- Intermediate: 9-18 sets -> 2-4 sets/workout, 2-4x/week
- Advanced: 12-24 sets -> 2-6 sets/workout, 3-6x/week

Remember the rule of thumb when counting volume that 1 Myo-rep set equals 3-4 "normal" sets.

So for Myo-reps, here's how the same recommendations would look:

Sets per muscle group per week –> sets per workout, workouts/week:

- Beginners: 1-3 sets* -> 1 set/workout, 1-2x/week
- Intermediate: 3-6 sets -> 1-2 sets/workout, 2-4x/week
- Advanced: 4-8 sets -> 1-3 sets/workout, 3-6x/week

*Beginners would do 1 Myo-reps set on 1-2 workouts of the week, then 1-2 workouts with straight sets, for a total of 3 workouts.

I usually make people start in the lower-middle end of the range, and then increase if I see that progress is good or if they have a high work capacity.

As for sequencing, I recommend doing Myo-reps on one workout, followed 1-2 days later with higher load, low rep "powerlifting" or higher volume and moderate intensity "bodybuilding" training. This can be on subsequent days or with 1-2 days of rest in between.

See the workout templates for examples.

Dr. Mike Zourdos has done extensive research into periodization strategies, and found that this sequence works better than a more traditional light-medium-heavy approach, and it reflects my experience with my own clients.

Also remember that absolute novices shouldn't be doing Myo-reps, so a "beginner" is someone with at least 3 months of consistent training experience. Focus on building a solid technique, and gradually explore your failure and fatigue thresholds.

Pressing "Reset"

Incidentally, this is also an approach I advise if you have been overworking yourself and stagnated on your progress for a long time. - Take 9-14 days completely off and do something completely different.

Walking/hiking, biking, swimming, play with your balls (I'm obviously talking about soccer, basketball, tennis etc), some easy mobility work (e.g. tai chi and yoga), just do something completely different to reset your mind and body. The point is to press "reset" and recover, so I would even advise taking time off from watching training videos on YouTube or spending too much time on related Facebook/Instagram channels.

Then, use the following program:

First, pick 1 exercise for each movement pattern.

- Horizontal push (bench press or pushups)
- Horizontal pull (any row variation, I prefer face pulls)
- Vertical push (shoulder press)
- Vertical push (pulldown or, if you are strong enough – pullups/chins)
- Some type of squat (split squat also viable)
- Some type of hip hinge (deadlift, RDL or even hip thrust)

For programming:

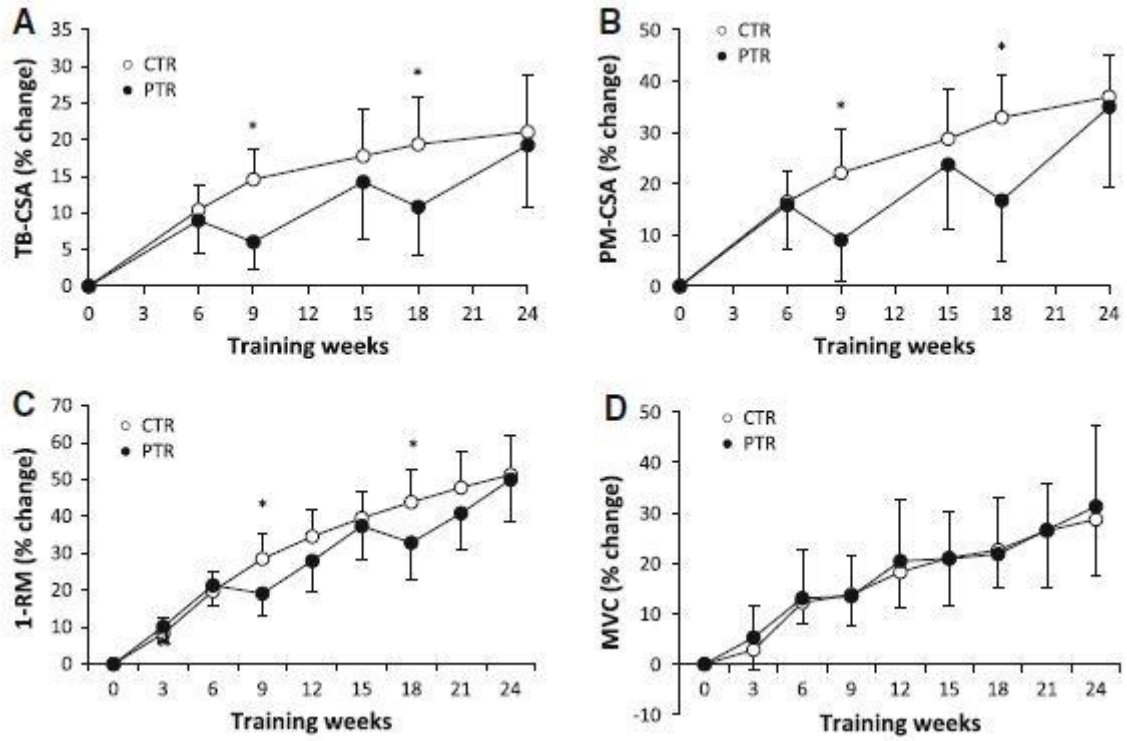
- Start with 1 set only, and lighter loads (15-20 reps) for the first week. 2-3 workouts/week per muscle group is fine, and make one of these a technique/practice session where you do 3-5 sets of 3-5 reps at the same load as the 15-20 rep session.
- Go heavier for the next week or two, 12-15 reps. Add in 1-2 sets on 2-3 exercises (not all of them).
- Your strength should increase quickly at first, and then settle at a reasonable but consistent rate over time (3-5%/week possible for beginners, 2-3% per week for intermediates, 2-3% per month for advanced).
- Don't push it, and learn to appreciate how it feels to leave the gym without being completely drained or with various aches, pains or soreness constantly bothering you.
- Enjoy training, but not just in the gym lifting weights. I believe it is important to have fun, and your body is capable of a lot more than just doing squats and biceps curls. Or biceps curls in the squat rack.

Then start implementing Myo-reps on a select few muscle groups and exercises, and adjust according to progress.

This is the Introductory Program in the program templates.

I know some of you are paranoid of losing strength and muscle mass if you take some time off. Just relax. Even 2, up to 3 weeks of rest will maintain strength and muscle in both beginners and trained lifters.

There was even a study showing that a group following a sequence of 6 weeks of training, 3 weeks of rest (Periodic) gained just as much muscle mass over 24 weeks (that's almost 6 months) as the group training Continuously. Apparently, the Periodic training group had an upregulated sensitivity to training after 3 weeks of rest, and experienced higher rates of strength gains and muscle growth that eventually caught up with the Continuous group.



Quite the mindfuck, yes? Of course, this also shows that taking 3 weeks of rest every 6 weeks doesn't provide any advantages either, but it would be interesting to see if a different ratio of training and recovery—e.g. 8 weeks of training and 1 week of rest—would.

PROGRESSION – INCREASING THE STIMULUS

Humans are amazingly adaptive creatures, and given the right balance between stress and recovery we can grow resilience to most things nature can throw at us.

To grow bigger and stronger muscles, it is going to be necessary to gradually and progressively increase the loads you are lifting.

If you're not getting stronger—and here's where keeping a training log is mandatory—you need to adjust something.

It's really that simple.

And here's how to do it with Myo-reps.

If you reach the higher end of a given range, e.g. 25 reps when doing 20-25+3-5x—increase the load next time.

When doing two or more sets on the same exercise, increase the load in the next set.

If you barely hit, or don't hit, the lower end of the range—decrease the load the next time or the next set.

This way of adapting the loads to your progress curve is something I have been a fan of for most of my career. In fact, auto-regulatory load progression has been shown in studies to be more effective than pre-planning loads, although this may also differ based on your personality—a topic for another time.

Be realistic about your load increments, though.

If you do 100kg x whatever in a workout, most would be able to make 102.5 next week, a 2.5% increment.

However, that same 2.5kg increment over a year is 130kg, which probably isn't realistic anymore.

What about that same 2.5kg increment from 20kg to 22.5 kg, is that also realistic? Maybe to some lifters, once in awhile—but it's actually a 12.5% load increment, or 5 times more than incrementing from 100kg to 102.5kg.

Would you be able to increase your biceps curl from 20kg to 150kg in a year? Probably not, as the biceps curl world record, to my knowledge, is currently at 113kg.

This is a strict curl with the back lined up a wall, and not the one you see (in the squat rack) where the guy looks like Neo in The Matrix.

The world record holder Denis Cyplenkov is, incidentally, also the guy holding the world record for biggest hands…and we all know what that means, right?

Yes, he indeed needs to use bigger gloves.

The way around this problem is simply incrementing reps at the same load for some workouts, and then a load increment is “triggered” only when you hit a certain rep target or hit the upper end of a rep range.

So for instance, at 20-25 +3-5x:

50 x 23 +3+3+3+2

50 x 25 +4+3

52.5 x 22 +5+5+4

52.5 x 25 +3+3+3+3+3

55 x etc

Also notice how reps in the Myo-rep series is auto-regulated, which you will learn more about in a few minutes.

Another way to implement realistic increments is by using PlateMate or similar magnetic micro weights of 100-250g, and I think the magnetic

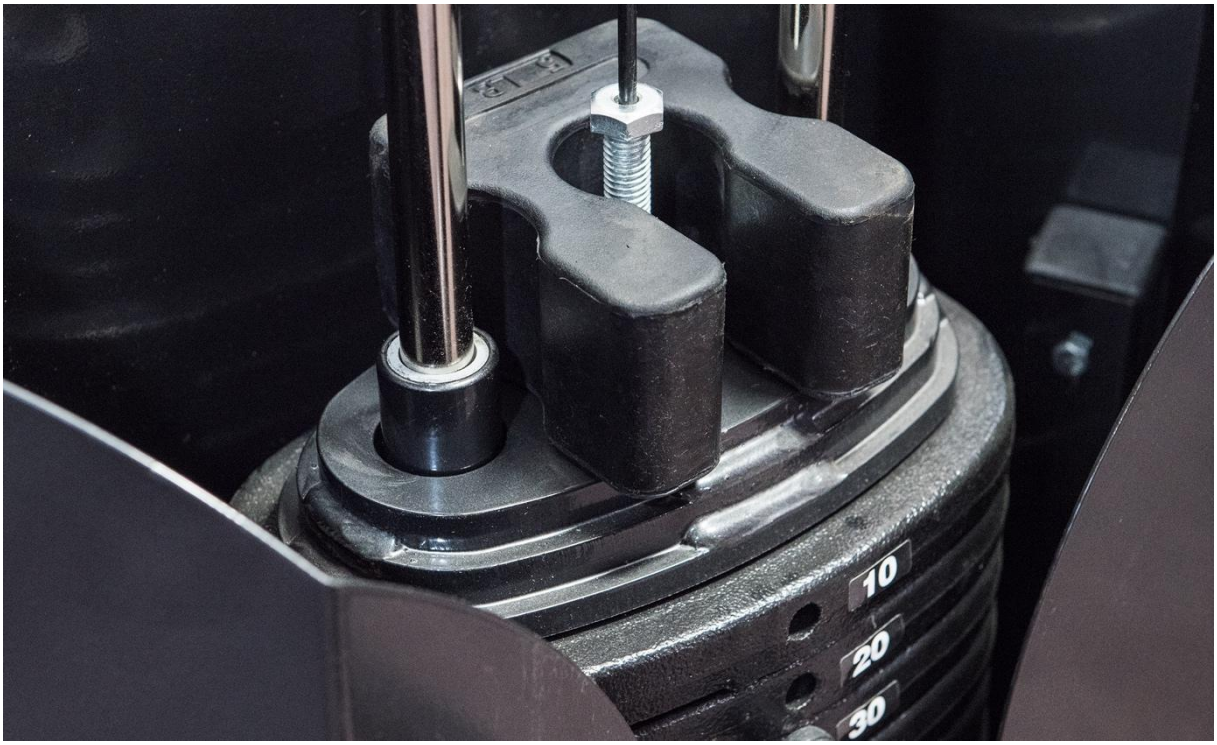
type you clamp at the end of a dumbbell or barbell, or straight onto another weight plate is awesome:

You could also use wrist or ankle weights:

Even the metal spring clamps you find in most gyms, weighing around 150-250g, can be used:

They mostly work with barbells, and not dumbbells, though.

For cable or machine exercises, just hang plates or wrist/ankle weights on the weight stack – or get one of these add-on weights:



Adjusting the load increment to a realistic strength progression allows loads to go up over weeks and months, vs. using the big plates and having to reduce the loads and build back up again over and over.

Feel free to experiment with both, though: a gradual, progressive increment strategy on some exercises or weeks, then a wave-like progression on others.

AUTO-REGULATION

Many of you may get totally OCD and experience panic attacks from not being able to control and pre-plan every aspect of your life, but sometimes life gets in the way of optimal. Very often it does, in fact.

This is where a concept called auto-regulating is useful.

Our body, is an allostatic system, which means that it always seeks to achieve balance and stability—also referred to as homeostasis—through adaptations on a physiological or psychological level.

Allostasis differs from homeostasis in an important way, it adapts to continuous stressors and challenges life throws at us, not from gradual fluctuation.

So most of our dose-response recommendations on how many sets, reps, frequency, exercises and so on can only be based on a qualified estimate from a snapshot of your current status.

On an individual basis, your training tolerance will differ on a daily basis according to what other stressors you are exposed to, and how you handle these. Your activity level, your diet and even how you subjectively feel about yourself and your environment.

A standardized and pre-planned training program can only be as effective as how perfectly it aligns with your current situation.

This is why I'm a fan of using a set of rules that ensures the lifter is able to adjust the stressor according to how he performs, and not based on an estimation several weeks earlier – or from a program found online.

Let's go back to the 20-25 +3-5x notation and illustrate the concept with an example.

You are sleep deprived and your meals have been hit-or-miss the last week, as you've been working overtime at work trying to hit a looming deadline. Your shoulder hurts from failing on Monday's bench workout.

To compensate, you use the latest pre-workout with a "proprietary blend of stimulants" – a secret formula with the fancy name Fucked-Up-Beyond-Belief or something like that.

Last time you did 5kg x 23+5+5+5+5+5 on your pinky-twist one-arm cable curls where the cable rubs your crotch to stimulate extra testosterone release.

You are blasting black metal through your headphones, and slap yourself multiple times leaving hand marks all over your face.

Today is the day records fall!

- 5kg x 18 +5+3

What the hell?

Not only did you get fewer reps on the activation set, but you barely got the 5 on the first Myo-rep set, and on the 3rd rep of the second Myo-rep set you accidentally twisted the cable around one nut, and the agony seared through your tender loins!

OMG - what a complete fuck-up you are.

You are a miserable human being who barely deserves to walk around as a free man, and you're most likely going to die lonely.

Fortunately, you remember what I have been telling you. For some reason you also feel like having tenderloin for dinner.

So listen: It's OK to have bad days now and then, and your body is telling you that you simply haven't recovered from last time. Instead of trying to dig yourself deeper into a hole, end the exercise and move on.

Note: I would end the exercise if you only get 22 reps or less on the activation set, this already shows that you stagnated or regressed and adding the Myo-rep series is potentially adding an excess stimulus to your current state.

Get some extra sleep and food, get that work project handled, and come back stronger next time. Or add another rest day or two until you do.

And for God’s sake, stop violating the gym equipment with your smelly genitals. Ok? Good.

Now, you have finally heeded my advice and taken an extra day off.

It’s Sunday and you're at the spa with your girlfriend where you just had a relaxing massage, enjoyed the lunch buffet, and even slept for 10 hours last night.

You feel rested and go down to the hotel gym to get your session done before you're going on a boat trip.

On your first set of lateral raises, this happens:

- 5kg x 25 +5+5+5+5+5

Wow, what happened?

Maybe you’re a great guy after all, and you immediately get flashes of living happily ever after, with the theme of Disney’s “Frozen” playing in the background, conceiving well-behaved children with your beautiful, supermodel wife.

Maybe...or maybe there were some hallucinogens in those mushrooms at the salad bar.

Anyway, you sure had more left in you, but you stopped at the prescribed 5 sets of 5 in the Myo-rep series, increased the load since you hit the upper end of the rep range, and did another set.

This is an example of auto-regulation: regulating the tension and duration of that tension based on where you're currently at on the recovery and progress curve.

You decide on how many reps to do in the Myo-rep set based on how you feel that day, and you end the set as soon as you drop 1 rep from the initial.

So these are all good:

25 +5+5+5+5+5

25 +4+4+4+4+3

25 +3+2

These are not good:

25 +5+5+5+5+5+5+5 (stop at 5 sets)

25 +4+4+4+3+2+1 (stop when you drop from 4 to 3 reps)

25 +3 (you could have done one more set of 2 or even +3+2)

If you always end up getting +3+2 in a given exercise, here are some possible causes and solutions:

- You're very explosive and fast-twitch dominant. You should most likely do less reps for the activation set, more rest between sets in the Myo-rep series (so 6-7 deep breaths), and even try doing sets of 2. Some high rep training is good for you, even if the majority of your training should probably be lower reps.

- You're new to training with higher reps, your work capacity sucks, or you just don’t like it. Give it more time and you should adapt soon enough. Same as above – try longer rests between sets and 2 reps per set.

- You are calorie deprived. Eat more. Especially carbs. Myo-reps is very glycogen demanding.

- You pushed yourself to total failure in the activation set and/or the first Myo-rep set. You should shouldn't need to grind any lifts, the point is to balance fatigue so you can get in more effective reps at high muscle activation.

If you, on the other hand, consistently get +5+5+5+5+5 and you feel like you could go on forever, here are some possible causes and solutions:

- Your strength-endurance is great, you are most likely slow-twitch dominant in your muscle fiber makeup and/or your work capacity is above average. Try shorter rests (2 deep breaths) and/or do more reps per set in the Myo-reps series (+6 or +7)

- You're stopping several reps shy of failure, so your failure point isn’t really your failure point. Either grow some balls, you big pussy, or actually experience what if feels like going to absolute failure. There are

different definitions here, and with safety in mind I don't want you to compromise technique to the point where you are in danger of hurting yourself.

My loose definition of failure is where you physically can't move the weight another inch, even if someone gave you a thousand bucks for it or threatened your family. You might be a typical "grinder" and your rep speed slows down way before you actually reach failure, so this will be a great learning experience for you. With that new reference point of true failure, you should know better what 1 rep from failure actually means.

I use the same auto-regulation concept on normal sets, so if the program calls for 3 sets of 9-12 reps, a "good" day might be 12,11,11 reps, whereas a "bad" day might be 12,9,6 reps. See how the volume is automatically higher if you can tolerate more, and vice versa? Simple, but also very effective.

Rest Between Exercises

You should have at least 2 and up to 5 minutes break between two sets of Myo-reps, or between two exercises for the same muscle group.

You should expect getting less reps on a second set of the same exercise, or doing e.g. chest flyes after bench presses vs. doing chest flyes before bench press.

That is fine.

Remember that the goal is to reach high levels of muscle fiber activation, to stay there by balancing fatigue/failure, and to progressively increment the loads in a reasonable and realistic time frame.

Shortening rest periods over time is fine, but remember what you learned earlier about the interference effect – don't mix endurance training with training for strength and muscle mass.

As you gain fitness and work capacity you will probably be able to shorten your rest periods over time, while still maintaining performance, but let this happen naturally and don't try to force it.

A great time saver is antagonistic supersets, where you do an opposite movement or muscle groups with a short rest period. So you could so rows or pulldowns a few seconds after bench press and still perform at maximum capacity—some of you may actually perform better by pairing up exercises like this—but if you were to do bench press and chest flyes you would reduce performance if the rest period is too short.

You can also do an upper-lower combination, so bench press followed by leg extensions is viable. Due to the oxygen demands of compound exercises, you would probably be less successful doing bench press followed by leg press, however.

THE BEST EXERCISES

Due to the intensive and oxygen-demanding nature of Myo-reps, and higher rep training in general, I advise caution with exercises where the lower back takes a beating, such as squats, deadlifts and bent over rows.

Not only do you risk injury if your lower back gives out before your legs or arms do, but you will most likely also run out of breath before you're able to hit true muscular failure.

Many have done it and have experienced great benefits, but you should work up to it gradually over time, and make absolute sure that you have the endurance, technique and a lower back strength to tolerate it.

Bench press can also be risky, if you fail before you expected to and get trapped under the bar. Have a spotter nearby.

The word you're looking for is: Crap.

Exercises such as bench and shoulder press with dumbbells can also be difficult, as you will expend a lot of energy stabilizing the weights, but also getting the weights up in position.

Imagine doing 20 reps to failure, putting the weight down for 3-5 deep breaths, and then having to heave the weights back up to do another 3-5 reps. You might even struggle to get the weights up at all.

These Power Hooks are brilliant for that purpose:

If you don’t have or want to get these, have a qualified spotter help you.

It's obviously easier to do Myo-reps on isolation exercises, where only 1-2 muscle groups are targeted. When you distribute the tension over several muscle groups in the compound lifts, some muscles will get more stimulation and some might end up understimulated – such as the triceps

or delts taking over in the bench press, or the biceps taking over in pulldowns or chin-ups.

I would still focus on compound exercises from a time-efficiency perspective, but add in isolation exercises where needed.

A Portable and Versatile Training Tool

An underappreciated piece of workout equipment are elastic bands.

Not only are they easy to pack up in your suitcase when traveling, but they have a unique quality—the resistance increases the more you stretch them.

This is perfect on exercises where tension drops as leverages improve, such as at the top of a bench press or leg press.

Elastic bands are also very effective at overloading the contracted part of the movement range, and thus increasing the internal occlusion effect.

Here is a video where I demonstrate biceps curls using a resistance band.

Pulldowns, rows and lateral raises are already “optimal” in this regard, and elastic bands are less useful – but still great options when you are traveling, or just don’t want to get your lazy ass to the gym.

With only your bodyweight and a set of elastic bands of various resistances, you can get in a great workout with Myo-reps on bodyweight exercises and whatever you have available at home or in a hotel room, anywhere in the world!

I have made an exercise guide for busy people, since I know there are many of you who can’t always make it to the gym.

Myo-Reps as a Long-Term training Strategy

These are my favorite ways to use Myo-reps in my programs, and in what contexts.

2-4+ weeks, Myo-reps training exclusively:

- If you have been overtrained, suffering from various aches or pains, injuries, or even just a general lack of motivation.
- After a week of rest or more, either forced due to injury (God forbid) or voluntarily as part of a long-term training strategy, to “reset” or just because of holiday or vacation time.
- With 2+ weeks of rest, you should do a week or two of just gradually getting back into things before starting Myo-reps, as covered earlier in the chapter on “Pressing Reset”.
- To reignite progress for advanced lifters, as discussed in the chapter with that heading.

See the Introductory Program in the program templates.

As part of a regular program, for 4+ weeks or even months/years:

- On a separate day (see the Flex Template)
- As additional volume for an exercise, after the heavier work
- On days you just don’t feel like lifting heavy, as part of a flexible programming strategy.
- On days you are short on time
- On days you just want to have fun!

An overview of the program templates you get with this e-book:

- An Introductory Program with progressive loading, implementing Myo-reps on isolation, cable and machine exercises, and regular sets on selected compound lifts.
- Intermediate Programs, which are both 2-splits—an upper/lower and a push/pull split.
- A Flexible Template, which is one of my favorites, and can be used from the intermediate stage all the way up to advanced, just by increasing number of training days. It's also great as part of a flexible non-linear periodization strategy where you just pick days and even exercises based on how you feel, whenever you have the time or inclination to go to the gym.

Covering all possibilities and variations would demand a book of its own, so just keep in mind that there are no perfect programs.

The templates are provided to demonstrate how the fundamental loading parameters intensity, volume and frequency you have learned about in this e-book, can look like in a practical setting.

Conclusion

A Myo-rep set involves the following:

Choose a load between 30-50% of your current 1 rep max (1RM) in an exercise, or simply use 15-25 as a rep range for the first set.

The first set, done to failure or 1 rep from failure, is called the activation set. Continue doing up to 3-5 sets of 3-5 reps of the same load, but only resting for 3-5 deep breaths between sets in the Myo-rep series.

You can increase the training effect by not locking out at the end points of the movement, keeping constant tension on the muscle. This allows you to do less reps than locking out, but this amplifies the occlusion effect that we are after.

Myo-reps works best with isolation exercises, cables, or machines which allows you to focus the load on a few muscle groups at a time.

On compound exercises, be careful with exercises such as squats, deadlifts or bent rows where the lower back can be compromised by loss of technique. The big lifts may also cause you to run out of breath before you have hit the fatigue point of the involved muscle groups.

Exercises such as bench and shoulder press with dumbbells can also be hard to do, as it requires so much energy to stabilize the weights and get them down and back up into position with such short rest periods.

Myo-reps is a fun, time-effective and highly productive training method you can use to not only gain muscle and strength, but also a great strategy to give tendons and joints a relief, and to restart stagnated muscle growth.

You even get to have orgasms at the gym from the amazing pumps!

If you didn’t get that reference, you probably skipped to the end.

Myo-reps amplifies the mechanical signal from lighter weights, and is a training tool that can be used both exclusively for shorter or longer periods and as part of your normal training program.

After all, training is about lifting sufficiently heavy weights, for a sufficient number of sets and reps, done frequently enough to stimulate the body to growing bigger and stronger muscles.

I would also say that one critical aspect for long-term gainz is one that many seem to forget:

Have FUN!

I hope you enjoyed this book, that you gained a new and better perspective on the training process, that my dry sense of humor made you at least smile uncomfortably a couple of times, and that you are looking forward to experiencing some amazing results with Myo-reps!

Good luck!

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(Read the whole page to see if you qualify first. I have a very limited availability and need to be extremely selective with who I take on as a client)

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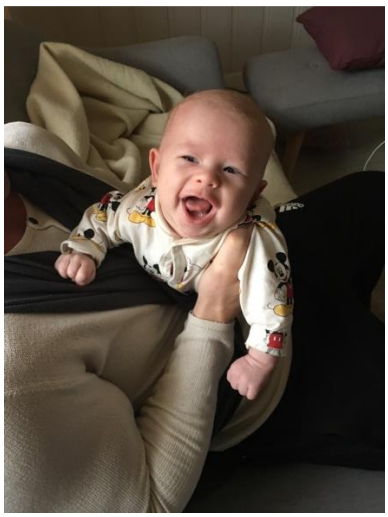
My son Isak, for reminding me of what is important in life, and for making me want to be a better father first and foremost. I love you more than life itself.



SELECTED REFERENCES

This is obviously not an exhaustive list of relevant studies, but they will get you started if you are interested in digging deeper. Read the reference list of each study, and use the feature in Google Scholar where you can search for related studies or studies citing the study in question.

But please, don't send me requests for references of this or that, I simply don't have the time or inclination to spend my days looking for obscure references for every minor detail of Myo-reps or training theory in general. Sometimes you just have to decide if you want to trust me and my experience or not. If I had to wait until science came up with a perfect study to support what I have seen through my years of working with thousands of people, I would never be where I am today.

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