

Can You Use The Muscle Memory Phenomenon, Without Ever Having The Muscle?

Researched and Composed by Jacob Wilson, BSc. (Hons), MSc. CSCS

Introduction

Each of you has heard of the phenomenon known as muscle memory. It is the occurrence of insanely extreme and fast growth in a person who is regaining the lost muscle he has allowed to atrophy. Stories such as 40-50 pound muscle gains(in a short time span) in regards to this subject are not uncommon. The question however remains, what exactly is muscle memory and what causes it to occur? I not only intend to address this question, but also to answer the title of this article in a very positive manner. You see, I believe that an athlete can literally mimic this tremendous phenomenon! Read on if you want to find out how!!!

Note: The following article discusses muscle memory, as a term to define a recapturing of past growth. The term however should not be used in a motor sense, as that 'memory' is actually in the nervous system.

What Exactly Is it that Occurs During Memory?

Lets say that you busted your behind in the gym and built a huge, massive pair of quads measuring 30 inches in circumference! Then for one reason or another you stopped training your legs. During the time off, your quadriceps atrophied(shrunk) down to 24 inches. Determined to regain your lost mass you decide to hit the gym again with extreme ferocity! Only this time you are able to gain back those 6 inches in a matter of months, where as originally it took you years to gain that much mass! What happened?

Before I can answer that, I need to ask you a very important question. What surrounds, binds and holds every muscle group in place?

" Essentially all bets are off, due to the amount of room you will have to grow! "

If you answered connective tissue, you would have been exactly right! In order to further explain muscle memory it would behoove us to briefly review what exactly this connective tissue is(for a greater explanation read my article, the anatomy of a muscle fiber. It goes in great depth in what I am about to cover. So if it seems a bit confusing, you definitely need to consult this article.). Simply put every muscle is

made up of 1, 000s of muscle fibers. These muscle fibers are all individually wrapped with a connective tissue wrapping, or a sheath. This is called the endomysium. These individual muscle fibers are then organized in bundles(called fascicles) which are covered by another connective tissue sheath called the perimysium. These bundles or fascicles are then placed together in an orderly arrangement(which determines the shape and functionality of the muscle) and held in place by a layer of connective tissue known as the epimysium. Finally each of these layers is held together by the deep fascia(a courser material). The connective tissue of every muscle fiber acts like a girdle of sorts. Which means that it binds a muscle group together, and to its neighboring muscle in many cases. It also protects, organizes and allows the force of contraction generated by the thousands of muscle fibers in a particular group, to be harnessed with great efficiency!

The important thing to understand is this: **Connective tissue** is not only a tuff material but also hugs tight to its surrounding area, almost constricting it! What does this have to do with muscle growth you say? Ahh, that my friend, is where muscle memory comes in! Think about it for a moment. In order for a muscle to hypertrophy, what needs to take place if it is restricted by this tight binding girdle? The tissue must stretch and become more pliable right?! If this did not occur, then muscle growth would be hindered(you cannot grow unless there is enough room to do so)!

When you increased your muscle mass by building 30 inch wheels, you also ended out stretching and expanding the muscles encasing tissue. Therefore the manipulation of these protective sheathes was a major factor in your ability to stimulate hypertrophy! In the scenario painted, we also discussed you taking time off from training. So much so, that your lower body atrophied to a point in which 6 inches were lost off of your legs. However, even with this tremendous setback, you still had stretched the connective tissue to a great extent. When you came back to the gym and trained, you were no longer fighting the **restrictions** of tight, unpliant fascia, but rather a more elastic and pre-expanded connective tissue! Essentially all bets were off, due to the amount of room you had to grow! More room to grow enables more mass to be accumulated! This is one of the top theories held today for what we coin " muscle memory. "

How Can Muscle Memory Be Mimicked?

Mimicking this process would center around the manipulation of the connective tissue surrounding, organizing and binding a muscle. As mentioned it can literally prevent the expansion of growth. Therefore our goal will be to create an environment similar to one in which a muscle group had previously been larger. In essence you will have to stretch and expand the fascia, epimysium and other tissues. This, can certainly be done and done effectively! However, you need to understand that this is a tuff tissue, and expanding it can be a very complex process.

The question now is what will it take to accomplish such a goal. Perhaps the most recognizable figure in regards to this subject is the great John Parillo. He uses a technique called " fascia stretching. " This is a special procedure used that actually expands the fascia. One of the greatest scientists the sport of bodybuilding has ever known is D.J. Millward. He has made some of the most incredible break throughs Only D J Millward calls this revolutionary technique the bag expansion theory. You

see, the connective tissue surrounding a muscle is often referred to as a bag, hence the title of the theory.

" By then you will be begging for mercy! "

Interestingly enough, before any expert or scientists began coining phrases, great athletes such as Tom Platz and Arnold Schwarzenegger were using techniques that would most certainly expand the fascia(discussed in greater detail in a bit)! However, I would credit the field of massaging with the earliest breakthroughs in fascial expansion. I believe their theories paved the way for one of the most extreme growth methods every presented in this brutal sport.

In particular I am referring to a woman named Dr. Ida P. Rolf. She invented a famous technique called rolfing. It is a special, extreme form of massage that as Ida puts it, manipulates deep tissue. She theorized that you could move around, loosen, expand, realign and strengthen this tissue with her great techniques! Interestingly enough, her techniques applied to Parillo and Millwards can not only drastically enhance muscle growth, but also increase separation between muscle groups. How incredible is that!?

From a physiological standpoint John Parillo believes that the deep fascia is the main concern of the bodybuilder to target, and Millwards research leads him to believe that the endomysium and perimysium are chiefly responsible for the restriction of muscle growth. The great news is that the same techniques for expansion of the fascia, work for the expansion of the endomysium and perimysium.

How To Expand The Fascia for Enhanced Muscular Size and Shape!

At this stage I am going to have to issue one of my essential warnings. If you do not have a high pain threshold I would not suggest reading any further. The methods discussed here are extremely **painful**, and only an athlete with the mentality of a warrior will have the guts it takes to apply the following principles! However, when the smoke clears, you will have a greater capacity for growth, a fuller muscle, and greater separation between body parts!

Again, our goal, as D J Millward puts it is to create a larger bag. In order to accomplish this feat we will need to stretch the connective tissue beyond its previous limits, cause damage and then allow it to heal in such a way that it grows back larger than it was previously. There are four factors involved in fascia stretching.

1. Heat

If you are intent on truly mimicking muscle memory, you must not only stretch the fascia, but you must do it in an absolutely perfect environment or you will not reap even near optimal results! The first factor mentioned above was heat. You see a cold muscle has a limited range of motion. Our goal is to stretch the fascia past its

previous limits and this cannot take place if range of motion is limited. Therefore you must adequately warm up before performing the techniques discussed shortly.

2. An incredible blood pump

Everyone here understands the extreme power of fluid! Whole canyons have been carved from water erosion! The same principle is applicable here. A tremendous back flow of fluid in a muscle group will stretch the connective tissue that restricts muscle growth. In other words the greater the pump, the more direct and effective the stretch in the fascia, epimysium, and perimysium will be!

3. Insanely Extreme Stretching

The third and most painful step in fascia expansion, is to manually stretch it. This entails stretching the target muscle group with insane intensity! By doing this you will force the girdle which inhibits enhanced mass, and enable further growth in the myofibrils(the largest aspect of a muscle fiber).

4. Recovery!

Unfortunately, like every aspect of bodybuilding, we must have enough will power to allow the area worked to recover. You see, the pump, combined with extreme manual stretching will damage the connective tissue. In order for it to grow back and be remodeled as Millard puts it, into a larger bag, it must have a significant enough time to recover. This is not only a painful process, but like any type of extreme training is also stressful, and needs significant time to recover.

Now that we understand the factors involved in fascia expansion, we must apply them in an organized fashion in order to reap incredible results!

Applying The Principles!

The absolute best way to describe how to apply these principles would be to take you through another training scenario. Lets say you are working your pectorals out and want to expand the fascia in the area. You would go through your normal warm up and then begin the process. The first key here is to use a training protocol that produces a maximum back flow of blood(pump) into the pectorals. When I say maximum, I mean a pump that is literally so insane that the skin becomes tighter than a drum! For example, normally you can move a muscle group around with your hand when it is relaxed. It seems semi pliable until flexed. An optimal pump essentially fills the muscle with so much blood, that it almost feels contracted while in a relaxed position. Again, the skin should be tight and the muscle should be hard. In order to produce a pump such as this you need to perform a high repetition set, a massive superset, or a strip set. Lets say you decide to perform dumbbell bench presses. I would suggest performing a set of 12 repetitions, followed by a drop set of 12 repetitions, and if you feel the pump is not adequate, then finish it off with one more drop! At this point your pectorals should be so full of blood, that you literally cannot flex! Your arms should feel like led. I'm talking about a pump so extreme, that you can't take your shirt off to pose in the mirror. Its important to understand that the connective tissue is not only increased in temperature, but also being stretched extremely by this process!

Now is when the pain begins(as if producing a mind boggling pump wasn't insanely painful.)! You need to find a stretch that expands the fascia of the pectorals to a maximum. This muscle is responsible for pulling the humerus(upper arm bone) across the midline of your body. It contracts when your arms move in and lengthens when your arms move backwards. A great stretch would be to simply extend your arms straight out to your sides as wide as possible and then extend your arms backwards, as if you were performing the negative on dumbbell flys! Now, when performing a facial stretch(as John Parrillo coins it) you will need to stretch with applied pressure to the area. You need this, because the stretch has to be applied past the point of comfort in order to expand the connective tissue surrounding the muscle. Therefore you have a few options. Firstly you can have your partner grab your arms and pull backwards, secondly you can use a wall and apply your own body weight as resistance. For example, I may place both of my arms in a doorway and lean forward, to stretch the pectorals.

Lastly is my personal favorite way to stretch the fascia! In fact I usually never see athletes utilize this in the gym, but I believe it is the absolute most effective way to expound on the bag theory! You simply choose an exercise that stretches the muscle and hold it in the stretched position for the desired amount of time! Therefore I would use dumbbell flys and hold it in the bottom position of the exercise. Once you have decided what stretch to use, do the following procedure while the muscle is pumped(again it must be pumped or you will not maximally expound the tissue)! You will first slightly stretch the muscle. Do this by slowly extending your arms until you have reached a maximum stretch. It should feel just right(almost soothing), now hold this for 10 seconds. Rest for about 5 seconds and then extend your arms all the way back until they are stretched to a maximum. This is a very painful and intense stretch! You will hold this for a total of 30 seconds(some athletes hold it till they literally cannot bare the pain, but I prefer 30 seconds), by then you will be begging for mercy, especially with the blood pump! Remember, you are getting a double stretching effect here, not only manually but with the back flow of blood.

Thought you could relax! Unfortunately that is not an option! While the connective tissue is pliable, we will want to get one final influx of blood into the target muscle to assist in the expansion process! Therefore you now need to flex the target muscle group as hard as possible for 30-60 seconds! For the pectorals you will cross your arms across your body and squeeze! Literally try and crush your pecs with your arms! By the end of this procedure you will be drenched in sweat and relieved that it is all over!

Frequency And Recovery

How frequently should fascia stretching take place and what type of volume should be used within a workout? As with any training protocol, this is a much debated subject. Let me say this; frequency is determined by volume. In other words the more damaged caused, the more rest an athlete should take. A trainer like John Parrillo believes that fascia stretching should take place after every working set. Therefore, if you performed 12 sets for the pectorals, then you would implement deep fascia stretches between each and every set! Other trainers recommend a bodybuilder to implement this on the main pumping set of each exercise. For example, if you were to perform 9 sets of quadriceps exercise, the last set would emphasize an extreme pump and this is when you would expand the fascia. While

still others will perform it within every segment of a workout for the particular body part. Lets say that you were working the biceps. If you performed 4 different exercises then you would manipulate the tissue on the last set of each exercise.

I personally believe that each has its success stories, and each should have a place in your program. You see I feel that as athletes, we should be open minded to different training protocols. Never allow yourself to stagnate with one philosophy. That said, I would recommend using a combination of these. Almost apply the principle of periodization if you will. Here is what I mean:

Week One: Run The Gambit! This means apply deep fascial stretching after every exercise. If you are into extreme volume however, then I would limit this to no more than 10-12 deep fascial stretches!

Week Two: Only use this technique once in the workout and do it on the set in which you are most pumped!
This will be enough to continue the process of bag expansion, but also relieve the stress placed on the body.

Week Three: Use Deep Fascial Stretching within each section of the workout. So if you use 4 exercises, apply this principle four separate times!

Week Four: Allow your connective tissue to recover fully.

Week Five: Begin The Process All Over Again!

HIT Style Athletes: For the athlete that utilizes HIT training, I would recommend one deep, deep, high intensity stretch at the end of each session. They would benefit greatly by doing this 4 weeks on, one week off.

Muscular Separation

One thing I notice in the masters division of bodybuilding is a lack of separation between muscle groups. For example, Robbie Robinson is still in phenomenal, phenomenal shape! I mean this guy is a freak! He is symmetrical, well balanced, massive and can out pose most athletes in the masters Olympia! The only aspect in my opinion that he really lacks compared to his older days, is that classic, literally unmatched separation between muscle groups. You see gravity and certain negative stresses that go along with weight training combined have a negative effect on muscular separation, in that they cause muscle groups to literally stick together. If you talk to any great deep massage therapist, they will tell you that the fascia on neighboring muscle groups, almost glues together over time.

Connective tissue manipulation, via hardcore stretching will pull these muscle groups(or the fascia surrounding them) apart, clearly enhancing separation. In fact you will see incredible separation, such that you never thought genetically possible! There is not an athlete in this sport, that does not understand the benefit of this. And it applies to each bodybuilder. If you feel you have achieved maximum separation, and haven't incorporated this technique, then I can guarantee you, that you have not even come close to reaching your full potential!

The key is using a variety of angles in your program. Do not simply use one stretch! For example for a basic quadriceps stretch, you would kneel down and plant your knees firmly on the ground. Then you would slowly lean back, using your bodyweight as the applied pressure, necessary for expanding the fascia. For maximum separation you would change angles. For the first stretch, have the knees close together. On the second stretch spread them out wider to hit the inner thighs. See the point? Like your exercises, you need to use a variety of stretches. Another example would be the utilization of free weight stretches. I personally like to use the dumbbell fly in the bottom position for a stretch. For maximum separation of the upper and lower pectorals, I will also incorporate incline dumbbell flies and pullovers (of course, these are lowered to the bottom position and held for 30 seconds, to emphasize the stretch)!

Recommended Stretches Per Body part

To further the effectiveness of your program, I will now list relevant stretches for each body part.

Pectorals

1. Dumbbell Flies In a Stretched Position - Take a pair of dumbbells. About the amount of weight you would use for a 12 repetition set of flies. Lie flat on a bench and lift them in a contracted position. Now slowly lower them to the position that stretches your pectorals maximally. Hold this for the target amount of seconds. I suggest using a decline and incline position.

Flat Fly Stretch
Stretch

Decline Stretch

Incline Fly

Back Muscles

1. Pullovers In The Stretched Position - The best stretches for the latissimus dorsi are any form of dumbbell pullovers emphasizing the stretching position. Take close grip semi bent arm pullovers. Grasp the barbell with a 12 inch spacing and extend it directly overhead after laying flat on a bench. Following this, lower the weight until you feel a complete stretch in your lats. Now hold for the appointed amount of time. I suggest using barbells, dumbbells, and straight arm cable pullovers in the stretched position to expand the connective tissue in the lats.

**Flat Pullover Stretch
Stretch**

**Decline Pullover
Incline Pullover Stretch**

2. Seated Rows Stretched - I believe that separation and growth between the rhomboid muscles and middle and lower traps is best achieved by emphasizing the stretched position in a seated cable row, or any row for that matter! Simply sit down next to a seated cable row machine, grasp the handle and fasten yourself feet firmly in front of you. Now pull row the weight so as to get a complete peak contraction and slowly lower it until in a stretched position. At this point hold for the appointed amount of time. I prefer a good amount of weight on the stack, for a maximum stretch. This technique can be done with t-bar rows, bent over rows etc.

**High Pulley Stretch
Bar Row Stretch**

Low Pulley Stretch

T-

Shoulders and Upper Traps

1. Medial Deltoid Stretch - There are a few ways to perform this. The key is to place your arms at your sides. Then keeping your arms straight move them behind your back and try and bring them together. It is similar to [behind the back side laterals](#)(the starting position), except you do not have dumbbells. From here have your partner assist you in pressing your arms together. This will maximally stretch the side deltoid. You can also grasp a low cable pulley, stand up and allow the pull from the weight stack to stretch your side deltoid. A third way to perform this would be to use a wall as a focal point and simply lean into the wall for resistance in the stretched position. Finally you can lie down on a bench as you would when performing [lying dumbbell held to the rear laterals](#), and simply hold the dumbbell in the lower aspect of the exercise(this can be done on incline as well).

Stretch Behind The Back Dumbbell Stretch While Lying
Dumbbell Stretch While Lying On An Incline

2. Front Deltoid Stretch - Grasp a pair of dumbbells in a hammer position and lie back on an incline bench. Allow your arms to lean all the way backward, producing a maximum stretch in the anterior deltoid. Now hold for appointed amount of time.

Incline Front Delt Stretch

3. Front Deltoid Stretch Two - Find a stationary bar of sorts. It may be the smith machine bar. Now turn facing away from it and grasp it with your palms down. Walk forward slowly until your delts are maximally stretched.

4. Trap stretches - Grasp a pair of heavy dumbbells as if you were going to shrug them. However, you will simply lower the weight down until your traps are maximally stretched. This can be done with dumbbells, and a barbell to the front and back. I also recommend cable shrugs in the stretched position. As a side note, if you grasp one dumbbell and lower it till fully stretched, and then move your neck to the opposite side of the body, it can not only add to the trap stretch, but also expand the connective tissue surrounding the medial deltoid.

Cable Shrug Stretch**Behind The Back Shrug Stretch****Quadriceps**

1. Quad Expansion - The absolute best way to expand the connective tissue around your quadriceps is to utilize seated thigh stretches. Simply knee down and separate your feet enough so that you can sit between them. Put your hands on the floor behind you and lean back as far as possible, feeling the stretch in the quadriceps.

seated quadriceps stretch

As a variation you can spread your legs out further to hit the inner thighs. The most painful variation and probably most effective is the no handed stretch. Bring your feet together so that you have to sit on them, and not between them! Now fold your arms(or place them behind you) and lean back, using your bodyweight as resistance to the stretch! Try these after a drop set on leg extensions and your quads will literally explode in ways you never imagined possible!

Hamstrings

1. Seated Forward Hamstring Stretch - Personally this is my favorite way to enlarge the bag surrounding the hamstring region. Sit with your legs together, extended out in front of you. Bend forward at your waist and reach as far forward as possible! You will need your training partner to apply pressure from behind. The whole point is to expand the connective tissue, and for this to happen, pressure needs to be applied. You can also use variations such as spreading your legs all the way out to either side.

Calves

1. Oh The Pain - Calves are on a par with quadriceps as far as the pain goes while stretching them. The absolute best method of expanding the perimysium, epimysium and fascia is to use the lower position of a specific exercise. I believe that standing calf raises and leg press calf raises are the best(when in the bottom position and held) for the gastrocnemius(upper calves). However, seated are most effective when stretching the soleus(lower calf). Simply stand or sit underneath the calf raise machine, get a peak contraction and then lower the weight until a maximum stretch has been reached. Now hold for an appropriate amount of time. Be sure and use as many variations as possible for maximum growth!

standing calf machine stretches

seated barbell calf stretches

Forearms

barbell stretches - Simply grasp a barbell with an underhand grip for the forearm flexors and an overhand for the extensors. Wrest your arms on your knees so that your wrists can hang off the edge. Now slowly lower the weight until a maximum stretch has been achieved. Hold for specified amount of time. As with all the above, use as many variations a possible! My personal favorite variation is the barbell over a bench stretch!

barbell stretch across a bench dumbbell one arm stretch
squatting two arm dumbbell stretch

Biceps

Incline/flat stretch - The two single best stretches for the biceps are the bottom positions of both incline and flat dumbbell curls. Simply sit or lie back on the bench, curl the weight up and lower slowly until a maximum stretch has been reached in the biceps. The second front delt stretch using the bar above is also an excellent way to expand the connective tissue in this area.

Incline dumbbell stretch

lying dumbbell stretch

Triceps

1. Old School Stretches - Anyone who has used Old School extensions will attest to the extremely painful stretch produced by the exercise. I personally feel that this is one of the absolute best ways accomplish our extreme goal today in the triceps region. To do this lay on a flat bench with your arms extended behind your head. The movement starts out in the same position as a dumbbell pullover. Bend your elbows back until they almost touch the floor. From here allow the weight to completely stretch the triceps to their maximum!

Old School Triceps Stretch

2. Pre-Extension Stretch - This simply emphasizes the lower portion of any form of triceps extensions. I prefer dumbbells as it allows for a greater stretch and they are easy to control. Grasp a pair of dumbbells and lay back on a bench. Extend both arms straight upward and then lower the dumbbells slowly to either side of your head. Hold until stretch is complete.

lying dumbbell stretch

incline dumbbell stretch

These are excellent examples that will increase your mass by leaps and bounds! The main reason why I prefer weights(for most bodyparts) for this process, is because I feel they are superior when attempting to accomplish the goal laid out in this article. Take a look at Arnold Schwarzenegger's pecs. He would get the pump of his lifetime and then stretch his pectorals using dumbbell flies held in the lower position of the movement just as I am suggesting you to do! The Oak could actually touch the floor with his arms, and he arguably has the best chest in the history of the sport and certainly the most effective! Tom Platz is the same way, and no one argues the fact that he had by far the freakiest quads in the history of the sport!

Vital Nutritional Aspects In Deep Tissue Manipulation!

In order to maximize this process you will need to heighten both recovery and the pump! A massive pump must take place during the workout or you will not accomplish your desired goal, therefore you must emphasize this nutritionally. This is why I suggest implementing fascial stretching on bulks and not emphasizing this procedure on a cut. You simply will not get maximized gains. You need to be carbed completely up, or the pump will not be sufficient. Therefore I recommend 4-6 carb rich meals a day for this process. If you are on a low carb diet, then carbining up before your workout will also suffice. Creatine and glutamine further assist the pump dramatically! Hydration is also a must. You need to drink water like it is going out of style. Lastly, drink a huge post workout shake, chalk full of sugar immediately after training to refill glycogen stores.

A well balanced diet will speed recovery, and so will vitamin C! This gem has been shown in several studies to increase the healing process of connective tissue. Seeing how this is the goal, it would behoove you to take a minimum of 2-3 grams a day, not including post workout.

Yours In Sport Jacob Wilson jwilson@abcbodybuilding.com
President Abcbodybuilding / Beyond Failure Magazine