

# Muscle Activation Techniques™ Frequently Asked Questions

Source: <http://www.muscleactivation.com/FAQ.html>

## Question & Answer

**What makes MAT™ unique?** - While most therapies focus on treating the muscles with tension and/or pain, MAT gets to the root of pain or injury by addressing *muscle weakness* rather than *muscle tightness*. MAT views muscle tightness as a form of protection in the body. Weak or inhibited muscles can create the need for other muscles to tighten up in order to help stabilize the joints. The goal of MAT is to identify the inhibited or weak muscles that are creating a protective response and then 'jumpstart' these muscles in order to improve their contractile capability. If the tight muscles are stretched or massaged—without addressing the root cause, the inhibited or weak muscle—then we may have violated the body's protective mechanism. We must know that when we increase range of motion through modalities like stretching or massage, that there is also stability through that increased range. MAT provides the checks and balances system to make sure that this happens. That is why MAT is a great adjunct to all forms of exercise and therapy.

**What is muscle inhibition?** Muscle inhibition has to do with the impaired communication between the brain and a muscle. It refers to the inability of a muscle to contract fully on demand. This inhibition is a neurological response and manifests particularly at the extreme ranges of motion – when the muscle is contracted fully. A muscle may have strength at the mid-range, but be very weak when moved into a shortened position; this creates instability at the joint. When the body senses instability, other muscles tighten up as a form of protection. When a muscle has been over stressed, the result is altered feedback from the nervous system. This causes a reduced capability for the muscle to contract, from the instability through full physiological range. The end result is an inability for the muscles to properly stabilize joints. Throughout this program the terms 'weak' and 'weakness' will be referring to neurological weakness or inhibited muscles.

**What causes muscle inhibition or weakness?** Factors such as trauma, stress, or overuse can contribute to a muscle becoming inhibited. When you exercise, there is a period of exertion and then recovery. It is normal to feel fatigue. When there is trauma, stress or overuse, the muscle may not recover until properly rested. If this is habitual, (i.e. - sitting at the computer in an ergonomically unsound position for 12 hours per day – every day for many years) then the result can be muscle inhibition or neurological weakness. The brain detects stress and sends a message to basically 'switch off' the overused muscle. The opposite muscle (antagonist) tightens up to protect the body from moving into a position of weakness or vulnerability. A sudden trauma will also cause a muscle to become inhibited, such as slipping on ice and moving into an extreme range of motion suddenly.

**What is the goal of MAT?** The first goal of MAT is to determine whether or not specific muscles that support a joint have the proper neurological input necessary to perform its function. Whether acting as a prime mover, synergist or stabilizer, each muscle must be capable of performing its function as forces are being placed on a joint. If a muscle does not have proper proprioceptive input, then it will not be able to perform its function efficiently and this leads to positions of vulnerability. The goal of the MAT evaluation process is to find out where the body displays these positions of vulnerability or weakness.

After identifying these areas of protection, the second goal is to attempt to improve mobility and stability of the joint. This is a process of increasing the proprioceptive input and the ability of the muscles to contract on demand when placed in a shortened position. The third goal of MAT is to provide a checks and balances system to make sure that any time joint range of motion is increased (mobility) that there is proprioceptive input (stability) through the new found motion. This is why MAT works as a great adjunct to all forms of therapies.

**What does 'proprioceptive input' mean?** Proprioceptive input has to do with the communication between the brain and a muscle. A proprioceptor is a sensory receptor that detects the motion or position of the body or a limb by responding to stimuli arising within the body. The central nervous system (CNS) receives and processes signals from these sensory receptors to coordinate movement and positioning. Throughout this program the terms proprioceptive input will be used in conjunction with neurological input, meaning communication between the brain (through the CNS) and a muscle.

A good example of a proprioceptive test is given when a police officer suspects someone of driving while under the influence of alcohol. The driver has to stand with eyes closed and arms out to the side (like an airplane) and try to touch the tip of their nose with their index fingers. Apparently, ones ability to do this is a little more challenging when under the influence. This would be an example of impaired proprioceptive input; the body senses something is off and the ability to perform the task becomes more difficult.

**What is the Law of Reciprocal Inhibition?** The *'Law of Reciprocal Inhibition'* is an important concept to help understand the root cause of muscular tension. The philosophy of MAT is substantiated by concepts related to this law. It states that when a muscle contracts (referred to as the 'agonist'), it sends an inhibition response to the opposite muscle (referred to as the 'antagonist') in order to allow for normal joint range of motion. This means that the opposite muscle (antagonist) relaxes when the agonist contracts. However, if a contracting muscle does not have proper feedback from the nervous system (referred to as 'proprioceptive input'), then the opposing muscle will become hyperactive and its rest length will be altered. This means that if the agonist muscle has become inhibited or weak, then it can not contract fully. In order to protect the joint, the brain sends a message to the opposite muscle to tighten up. This tension prohibits the body from moving into a position of vulnerability. Muscles tighten up to protect the body from moving into a position of weakness.

**What does Muscle Activation mean?** – Muscle activation refers to the process of 'jumpstarting' the muscle. The goal of Muscle Activation Techniques is to identify the position of weakness and the muscles that are inhibited, and then to activate these muscles – basically switch them back on. For a more simplistic approach to understand muscle function, compare the body to a car. The initiation of a muscle contraction occurs similarly to the way a battery initiates the starting of a car. Both rely on connections that transfer electrical energy to produce a reaction. The nerves that run from the spinal cord to the muscle are just like the cables that run from the ignition to the battery. When the key is turned in the ignition, the impulses transfer through the cables to the battery allowing the car to start. Similarly, in the body, when a message is sent from the brain, the input is transferred through the nerves to the muscles creating muscle contraction. Each muscle is independently innervated; therefore it can be seen as having many batteries, each connected by its own independent cables. When the body is functioning properly, with all batteries connected, each muscle will contract on demand and the body will function very efficiently.

Many times, due to factors such as stress, trauma or overuse, the neurological connections may become altered, creating a reaction in the body similar to that of loose battery cables in your car. When the brain sends a message for a muscle to contract, the muscle does not respond immediately, creating increased demand on other muscles to perform the desired movement. The result becomes what we know as *compensation*. Over time, these compensation patterns create altered alignment in the joint, leading to joint instability and abnormal wear on the joint surfaces. The end result becomes pain and eventually osteoarthritis. The progressive degeneration has been correlated with aging. If identified and properly addressed, it does not have to occur.

**What affect can MAT have on arthritis and the aging Process?** MAT can slow down or even reverse the aging process. If it is recognized that muscles are designed to stabilize and support the joints naturally; it must be understood that arthritic conditions and joint instability can be helped or prevented when muscles are prepared to function properly. All that is needed is to create proper connections between the brain and the muscles. Muscle Activation Techniques does this. It provides the ability for the body to function the way that it was designed to function. Just like with a dead battery, the muscles must be jumpstarted and the cables must be tightened before the muscle will function properly. In simplistic terms, through MAT, muscles that have improper neurological connections are identified, then jumpstarted; creating the ability for the muscles to stabilize the joints and reduce joint stresses that lead to arthritic conditions. That is when the body becomes efficient and the related aches and pains are deterred.

**What are the symptoms of muscle inhibition and how do I know if I have a 'weak' muscle?** The first and major symptom is that something does not feel 'right' or is not working properly. This can manifest as joint pain, muscle tension or instability of a joint: tight hamstrings, tight lower back, shin splints, aching knees, a hyper-extending joint—these are signs of probable muscle inhibition.

**How do I determine for myself which muscles are creating the tension and/or joint pain in my body?** The best way is to see an MAT Specialist and have him/her do a thorough evaluation. An MAT Specialist is highly skilled and trained with over 300 individual muscle tests to determine not only which muscles may be inhibited, but which specific fibers of these muscles. Check out our [Specialist page](#) to find a specialist near you. If you do not have access to an MAT Specialist, then be sure to check out the Self-Test section of this CDROM. This section has a number of ROM (range-of-motion) tests for you to try and self-assess your own weakness. Short of having a professional test your individual muscles, this is the best way to determine which muscles may be inhibited. These ROM tests instruct you to move your body into specific positions and take note of what you feel. If it is difficult to move into the position (such as hip flexion with internal rotation), then you can assume that the muscles that put you there (called 'prime movers') may be inhibited. Try the exercises for this position. If you still feel tension, weakness or discomfort after performing the corrective (isometric) exercises for two weeks, then try the exercises for the muscles that help (called 'synergists') to put you into that position. The Self-Test section will explain how to link into the correct exercises.

**How do I 'activate' the inhibited or weak muscles?** Again - the best way is to see an MAT Specialist. They are trained in a very specific technique that stimulates the 'weak' muscle, literally jumpstarting the neurological system and activating the muscle. This CDROM program focuses on another MAT technique that will produce the same effect—namely an *isometric contraction*.

**What is the difference between a concentric/Eccentric contraction and an isometric contraction?** A concentric contraction involves shortening a muscle against resistance, while an eccentric contraction involves lengthening a muscle against resistance. Both of these contractions involve movement. What differentiates an isometric contraction from these is that there is no movement involved. An isometric can be performed with the muscle in a lengthened position or a shortened position. MAT isometric exercises are performed while the muscle is in a shortened position. The intention is to isolate (as best as possible) a specific muscle (or even a specific fiber of a specific muscle) and put it in a shortened position with very light resistance.

**How/Why does an isometric contraction activate an inhibited muscle?** Isometric contractions are targeted at restoring optimal neurological input to the muscle. When a muscle becomes inhibited it loses proper neural input from the nervous system; technically speaking, the 'gamma input' [a neural communication to the muscle] becomes inhibited, which is regulated by the 'muscle spindle' [a tension regulator]. By isolating the muscle (as best as possible) in a shortened position—contracting it with very little force and for a very short time (6 seconds)—it sends the message to the nervous system "hey remember me?" The goal of these isometric contractions is to get the traumatized muscle to safely move back into a (previous) position of vulnerability. Once in that position a very light contraction (10% of force) is done for 6 seconds and repeated 6 times with a brief rest in between repetitions. The nervous system is repeatedly reminded of this circuit. If done correctly, it will result in the inhibited muscle being activated.

**How do I perform these isometrics correctly?** When performing these MAT Isometric Exercises correctly, joint position, direction of force, and intensity of contraction are three main factors in achieving optimum results. *Joint position* is important due to the fact that we are trying to approximate and focus specific fibers of specific muscles. *Direction of force* is important because we need these specific fibers to be the main focus during the isometric contraction. Otherwise, other muscles will take over the job of the inhibited muscle. This is referred to as compensation and is probably what has been going on for a long time if a muscle has been inhibited. In other words, when you move into the position of vulnerability (the position that hurts or feels unstable), the prime mover is not working and the synergists (helpers) are trying to carry the load. *Intensity* is vital because the gamma input (neural communicator) is trying to be targeted and if performed too intensely, then the body continues to compensate and the proper input is never restored. So there are some important guidelines for doing these exercises correctly. These are explained in each individual exercise in this program.

**What about strength training and stretching, or even yoga. Can't these correct inhibited muscles?** The answer is that it depends. If you have muscles that have been inhibited due to prolonged stress or sudden trauma, then moving into a position of vulnerability (meaning a position that contracts the inhibited muscle) will usually result in other muscles taking over the job of the inhibited muscles. This leads to the weak staying weak and the strong getting stronger. People tend to mask their weakness by developing strength in compensatory muscles. Over time, this can be dangerous as these compensatory muscles are being asked to do jobs that they are not ideally designed for. If the stress that created the weakness in the prime movers to begin with continued (habitual posture or repetitive motion – i.e. - ergonomically unsound work station, golf swing, etc.), then it is likely that the synergistic muscles will become inhibited over time. This can lead to joint

deterioration and chronic problems like tendonitis and arthritis. The best course of action is to properly assess which specific muscles are inhibited and then to take a corrective course of action. MAT is a checks and balances system that will allow you to determine which postures, exercises, and activities involve positions of vulnerability. It will then give you the tools to correct muscle inhibition so that you can move back into these postures, exercises and activities more safely—from a position of strength.

**So these are really neurological exercises then?** Yes! And this is an important distinction. If the muscle is weak, we mean inhibited or neurologically weak. This means that the connection between the brain and the muscle—via the central nervous system—is impaired. These isometric exercises are designed to stimulate the relationship between the specific muscle and the brain. To go back to the car analogy, this is really jumpstarting the engine and then tightening battery cables. If your muscle is weak, then working it hard is only going to aggravate it and keep it from becoming activated. It is entirely possible for someone to have an inhibited muscle (or lots of them) for many, many years. Moving into a position of vulnerability is asking the body to re-visit the trauma. This has to be done very gently and very specifically. 10% force is what is recommended for 6 seconds at a time. This is to be repeated 6 times. It is not about strengthening the muscle as much as it is about restoring the neurological connection.

**Should I do these exercises before or after my workout?** Before *and* after would be ideal. They do not take very long and they prepare the body for the specific activity. They also help to increase recovery after the activity.

**How often do I need to do these exercises and for how long?** We recommend that you do the exercises two to three times per day for two weeks to restore the neurological connection of an inhibited muscle. Of course this varies with every individual. If you are continuing with the activity that contributed to the problem in the first place, it may be wise to discontinue this activity for a period of time and allow the body to heal. The isometric exercises should help you to restore the connection and return to your normal exercise routine safely.

**What exactly is meant by 'checks and balances' in MAT?** If you were seeing an MAT Specialist for an evaluation, he/she would be able to use specific tests to determine which of your muscles were inhibited. From this evaluation process it would become clearer which specific positions and activities you were most vulnerable in (i.e. - external rotation of your shoulder, extension of your hip, etc.). If you were doing things in your daily life that required you to move into these positions regularly (work, hobby, exercise), then you would be at a risk of injury. The aim of MAT is to identify and then correct these inhibited muscles and positions of vulnerability. The checks and balances come in when a re-test is done to determine if the technique worked (this would be done after the technique were applied). In the case of this CDRM, the evaluation process is the ROM (range-of-motion) Self-Test. The corrective technique is the isometric exercise. Although you may not have access to a specialist to re-test your muscle, you do have the ability to move back into the range-of-motion that was difficult prior to doing the corrective isometric exercise. For example: one of the ROM Self-Tests would be to move into hip flexion with internal rotation. This feels very uncomfortable for you. The exercises for this position are for the reflected head of the rectus femoris and the tensor fascia lata. You then try the isometric exercises for these two muscles—carefully following the instructions. Lastly, you re-test by moving into hip flexion

with internal rotation and you find that it is much more comfortable. This provides the checks and balances that is missing from most therapy modalities.

**If I have an injury, should I try the exercises or do you recommend that I see my doctor or an MAT Specialist first?** By all means, see an MAT Specialist or your physician if you have an injury. You want to make sure that you have a proper diagnosis or evaluation before beginning any exercise routine.

**What if I am an athlete, will MAT help improve my performance and keep me healthy?** MAT is a technique that not only helps athletes to recover from injuries quickly, but also helps them prevent injuries from happening in the first place. MAT prepares the body to be more efficient in training and athletic performance. In order to reach optimal performance capabilities, an athlete is forced to train at a high level of intensity. Because of this, there is always the potential for injury. Some athletes may be predisposed to an injury, due to them having muscular imbalances that place increased stress on their joints and tissues. These athletes can be an injury waiting to happen. When they train at a high level, the imbalances are magnified, and the body can no longer handle the stress. It eventually breaks down. It is like driving a car with bad alignment. The faster you drive it, the faster the tires are going to wear out. The body functions the same way. If an athlete has muscular imbalances, the abnormal alignment results in increased stress on the joints and muscles. When an athlete trains at a high level of intensity, the stresses are magnified and injuries occur. The goal of MAT is to correct the problem before an injury occurs. And injury is just a 'symptom' of a deeper issue. The symptom is not the problem. It is a result of the overstressing of an area of the body, due to muscular imbalances. Conventional therapy will typically treat the symptom. This means that the cause of the injury is not being addressed. The end result is that the athlete does not heal, or they go on to experience a more severe injury.

MAT not only helps to prevent injuries, but it can also speed up the rehabilitation process. By balancing the muscular system, MAT provides an improved environment for healing. This allows the athlete to return to participation faster. The end result is improved athletic capabilities. "The benefit of MAT is that the changes can be immediate" says Greg Roskopf, the founder and developer of MAT. "A professional baseball pitcher increased his throwing velocity by 10 mph, immediately following an MAT session. This was due to improved mechanics combined with pain free motion. We see these types of changes every day."