Protective Muscle Guarding

A Clinical Report from X10 Therapy

Protective Muscle Spasm

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When the physical therapist pushes your knee one way and your brain triggers your body to push back… you are experiencing a Protective Muscle Spasm

- It is possibly the biggest obstacle to regaining your range of motion
- And it's a devil to treat

After a total knee replacement, your body will go through several different stages of healing. One of those stages is the **inflammatory response**, the first step of tissue repair in which your body sends extra cells to help repair and protect the area. As you continue to heal, you will go through the **proliferation phase** (the rebuilding phase) and then the **maturation phase** (the final stage of remodeling). Unfortunately, this process doesn't always go to plan. You may experience an **increase in inflammation**, and/or a **hematoma** (a collection of blood under your skin), both of which can restrict motion and hinder the repair process of your body and **cause an increase in pain, spasms and atrophy**. Your body will try to limit how much pain you experience, which results in protective muscle spasms, or muscle guarding."

Muscle Spasms (Protective Muscle Spasm)

A protective muscle spasm happens when **trauma is induced in the muscle**. It is an involuntary contraction of the muscle fibers intended to protect and splint the area of trauma. The body is locking down the area to lessen the chance of re-injury.

For example, if you burn your hand your body will involuntarily contract your bicep to take your hand away from the fire or thing that elicited trauma.

If you've had trauma to part of your quad muscle of your thigh following surgery, you may have muscle guarding in other parts of your quad (remember the quad is a group of 4 muscles), or your body may even contract other muscles in the area including your hip flexors or hamstring.

Protective Muscle Spasm

In theory, protective muscle spasms are a good thing. Your body is trying to protect the injury so that you do not injure yourself further. However, after a total knee replacement, protective muscle spasms often cause pain, which can impede necessary gains of range of motion, cause loss of function, and muscle atrophy. The protective muscle spasms cause more pain, which then produces more spasms, which in fact will cause more pain – and we have **a vicious cycle**. Getting rid of muscle spasms as soon as possible will help prevent further these negative consequences (decreased ROM, loss of function, muscle atrophy).

It's About Protection

The **muscle spasm is caused by direct trauma (over pushing the knee into pain**), decreasing oxygen available to the muscle. This initiates secondary cell death, as well as neurological dysfunction. As muscle tissue is disrupted, your nerve fibers get disrupted. And that means they are not firing the way they should. They no longer sense the environment the way they should when not injured.

So the body goes on lockdown through the use of the muscle spasm. While helpful in protecting the muscle, this process causes new issues. Spasms stimulate mechanical and chemical pain receptors and stimulate pain. The more pain we have, the more we're going to spasm. The more spasm we have, the more pain we're going to have.

> And we get stuck.

The Trouble with Spasms

Eventually we must start moving this body part to get to normal function. Moving the is also crucial to achieve normal lymphatic drainage… that's why PT's like you to do ankle pumping and passive motion. If we experience excessive muscle spasming, that drainage is just not going to happen. We cannot allow muscle spasm to hinder this essential process. We need to get rid of that spasm as soon as possible.

What do the PT's do? If you have a spasm challenge, your PT team might put you in an **ankle brace, a cast,** or on crutches**.** Of course this gets in the way of a good recovery. Any knee recovery program is supposed to advance you from passive to active motion, and then to strengthening. If you cannot get to these recovery stages soon enough, if the spasms continues too long and you cannot push your muscles into proper movement, **the result is muscle atrophy and weakness**.

Muscle Atrophy. If you muscles becomes atrophied and weak, your PT really can't start rehab. You have to go back and re-strengthen that muscle first.

Inflammation. Edema and inflammation end up stimulating the golgi tendon organs (GTO)*. so they feelthe inflammation (it feels pressure from the edema) and that tells the body to try to relax and that this tissueshouldn't move.

Muscle Atrophy as a Condition

We get this increased rate of atrophy when we're not using a muscle. When we don't use a muscle, it can lead to reflexinhibition which means that it can actually shut down our reflex function. Additionally there is a condition we callArthrogenic Muscle Inhibition (AMI) which is a presynaptic reflex inhibition. This too gets in the way of proper muscle response.

Protective Muscle Spasm

Joint Effusion

As swelling sits in the joint, it interferes with how the motor neurons of these muscles (that cross the joint) arerecruited, which also leads to atrophy. Swelling hinders the rehabilitation process by delaying strength gains. Itinterrupts joint proprioception. That's why we do all these balance activities after a lower extremity injury. We wantthe tissue to know where it is in space so that it doesn't injure itself anymore. But if there's a lot of swelling inthere, it puts artificial pressure on those receptors and it can't sense position anymore and they become disused.Andthen we're at a bigger risk of injury because now we're more likely to put ourselves in positionswhere we can be injured again.

How to Avoid Protective Muscle Spasm?

So how do we get rid of the protective muscle spasms, or muscle guarding?

- Mobilize your knee just short of pain
  - Work to the edge of discomfort, but don't cross the line into pain
  - The lack of pain means you don't trigger the spasm
  - And don't cause edema to enter the area
- With gentle and frequent mobilization of the knee you give yourself the opportunity to make steady gains in your ability to flex and extend your knee
- And most importantly you are preventing your body from entering this vicious cycle or spasms and pain.

And – if you read between the lines – this is the opposite of "no pain no gain." You do not need to go into pain to make yours a highly successful recovery from knee surgery.

We hope this article helps you understand this condition a lot better so you are equipped to solve it.

Protective Muscle Spasm

The X10 Knee Recovery System™ completely negates a protective muscle spasm. 100%. Patients relax immediately and their muscles ease up and they make progress daily. We have solved this condition. If you are experiencing guarding… reach out to one of our specialists.

X10 Therapy breaks the PT/Pain/Swelling Cycle so you can regain range of motion (extension and flexion) and strength.

If you have had an MUA or are considering Manipulation Under Anesthesia in the near future, The X10 is most likely your answer. We avoid painful physical therapy and get results within a few weeks.

WHAT IS X10 THERAPY?

X10 Therapy is knee recovery in your home under the remote supervision of a Physical Therapist.

The knee rehabilitation we provide centers on the X10 Knee Machine that we deliver to your home.

It typically takes 2-3 weeks to fix a “sticky” stiff knee and get you back to your life.

HOW DOES IT WORK?

The X10 adjusts to your body. It feels your knee tension/tightness and helps you find the edge of discomfort but never cross the line into pain.

By working the edge of your comfortable range of motion, relentlessly, you gain incremental degrees of bending and straightening each day.

And you avoid setbacks as you never again allow your physical therapy to be too aggressive.

Protective Muscle Spasm

CAN X10 FIX YOUR RECOVERY?

Call Mary Elliott to find out. At any given moment there are many people on the X10 who are avoiding Manipulation Under Anesthesia or recovering quickly after MUA.

Learn from People Who Avoided Manipulation Under Anesthesia with X10 Therapy

Bruce (Avoid MUA) – In the end Bruce blew away his goals… getting to 126° range of motion. He was able to avoid a third MUA… and then some. In his own words you can see Bruce approached this knee bending problem like he approaches life… with perseverance and hard work… the result being success! Watch our brief interview to learn more about Bruce's journey. – **Read More**

Kathy (Avoid MUA) – I decided I needed to look for something different. I came across a testimonial. Someone had done this thing called the X10. It avoids painful physical therapy. Then a whole world came tumbling open to me. And I realized it was a real thing. And I realized that it was helping people. It ignited something in me which had been lacking for a long time, which was hope that there was something that could help me.- **Read More**

Jeanie (Avoid MUA) – Just two more weeks. That is all she asked for. Before agreeing to go ahead with a return trip to the hospital, more anesthesia, swelling, pain and a new round of rehab Jeanie wanted to solve this problem on her own. In the end she found the X10 which came with a great remote coach and, finally, hope. In two weeks… no MUA… click the picture to watch Jeanie's story. – **Read More**

Christine (Avoid MUA) – At six weeks post surgery Dr. Scott and Christine's favorite physical therapist were talking about a Manipulation Under Anesthesia. The CPM had failed in helping with range of motion. P.T. was getting nowhere. The clock was ticking. Learn how Christine avoided an MUA in just a few weeks by clicking on the picture here. – **Read More**

Learn from People Who Recovered After Manipulation Under Anesthesia (and skipped painful physical therapy) with X10 Therapy

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Nancy (After MUA) – Depression. Frustration. Tears. The CPM machine had failed to help. The Biodex machine caused excruciating pain. The physical therapist (who was doing his best to be caring) pushed Nancy so hard, she had to "vocalize" her discomfort to the alarm of everyone in the facility. She promised herself that after the Manipulation Under Anesthesia things would be different. – Read More

Carol (After MUA) – Both of my knees were injured on 9/11. I was crushed in Tower Two when it collapsed. I had immediate surgeries, right after 9/11. And then with all the other surgeries and injuries, I was in a process of recovery for a very long time. In fact, I'm still in the process of physical recovery from 9/11. I have neck injuries, back injuries, knees, shoulder, and foot. This knee is a 9/11 injury that I've just been dealing with over the years. – Read More

Allen (After MUA) – Allen avoided painful physical therapy. Allen's surgery by Dr. McLawhorn at HSS was spot on. No problem there. It was just the nature of his physiology that derailed his recovery after total knee surgery. But even after the MUA Allen was still stuck in the 70's... at least in terms of his range of motion. He needed some help to make this knee surgery a success. – Read More

Robert (After MUA) – Unlucky. A dirty needle on a routine Cortisone shot. And then a three hour surgery to remove infection, a difficult rehab that ended up failing, and then a Knee Manipulation Under Anesthesia. Yet, you just get the feeling that Bob smiled his way through all of this... at least you will once you watch this interview. You will cheer for Bob like we did... and we were the ones who worked with him after that MUA to get him well and back to the sports he loves. – Read More

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